# V&V Reference Report
# L2 ASCDS Version : 8.4.5

Observation 14349 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Nov 29 2014

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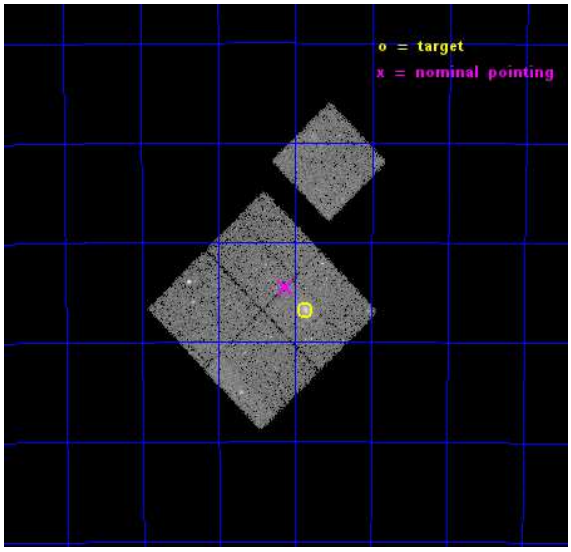
# 1 Front

| | | |
|---|---|---|
| seq_num | 801197 | Sequence number |
| obs_id | 14349 | Observation id |
| title | A DETAILED CHANDRA/HST STUDY OF THE FIRST z approx 1 CLUSTER BLINDLY DISCOVERED IN THE PLANCK ALL SKY SURVEY | Proposal title |
| observer | Dr. Pasquale Mazzotta | Principal investigator |
| object | PLCKG266.6-27.3 | Source name |
| dtycycle | 0 |   |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 93.966667 | Observer's specified target RA [deg] |
| dec_targ | -57.781 | Observer's specified target Dec [deg] |
| ra_nom | 94.031575334132 | Nominal RA [deg] |
| dec_nom | -57.742282677288 | Nominal Dec [deg] |
| roll_nom | 45.763577907555 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 25081.048936009 | Sum of GTIs [s] |
| livetime | 24753.346567261 | Livetime [s] |
| ontime0 | 25080.925816 | Sum of GTIs [s] |
| ontime1 | 25077.825845599 | Sum of GTIs [s] |
| ontime2 | 25081.007896006 | Sum of GTIs [s] |
| ontime3 | 25081.048936009 | Sum of GTIs [s] |
| ontime6 | 25080.884775996 | Sum of GTIs [s] |
| l2events | 73667 | Number of level 2 events |

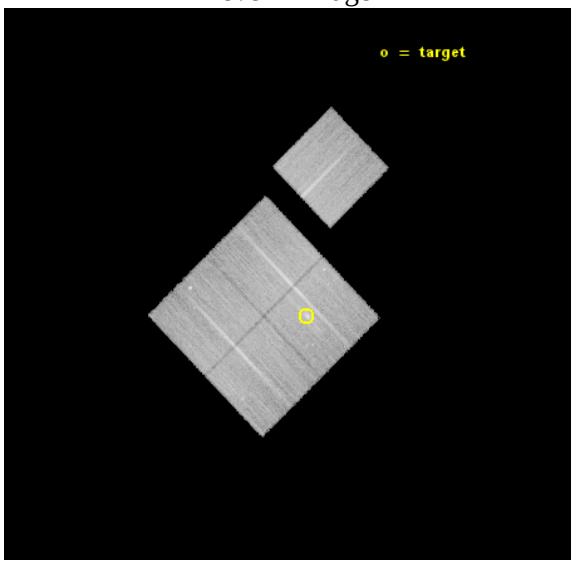


# 2 OBI

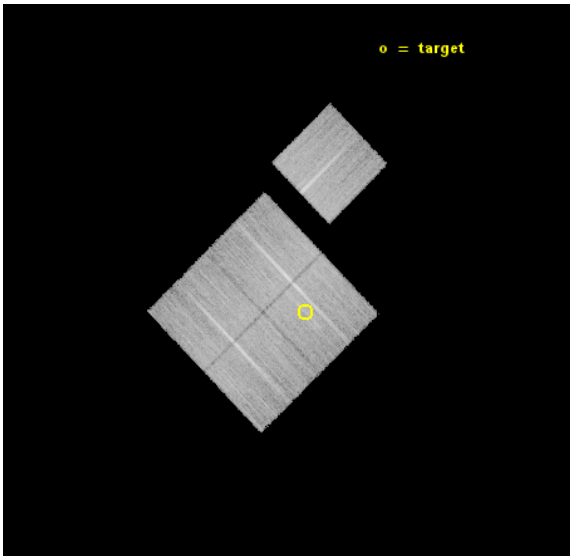
## 2.1 OBI

### 2.1.1 Images

Level 1 Image

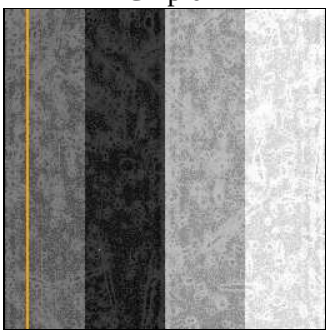



Level 1 Bad Events

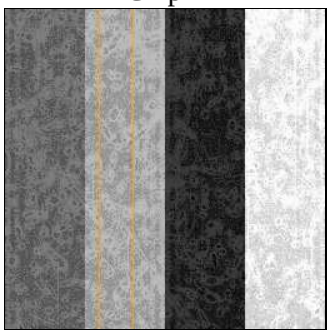



### 2.1.2 Bias

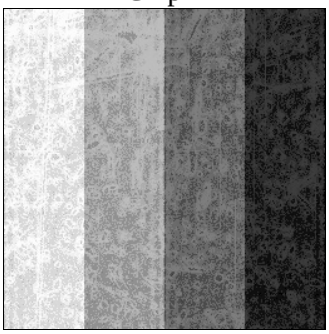
Chip 0



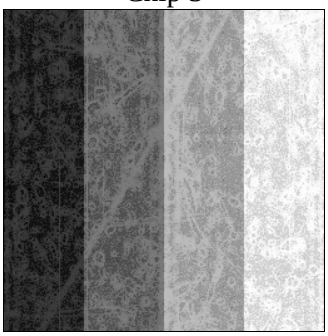
Chip 1



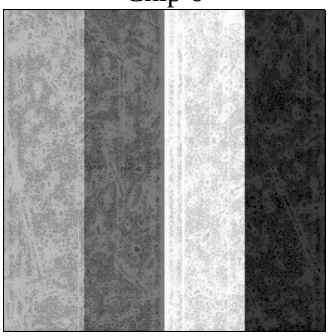
Chip 2



Chip 3



Chip 6



### 2.1.3 Parameters

| | | |
|---|---|---|
| obi_num | 0 | Obi number |
| ascdsver | 10.3 | Processing system revision |
| caldbver | 4.6.4 |   |
| date | 2014-11-29T12:49:12 | Date and time of file creation |
| revision | 2 | Processing version of data |

| | | |
|---|---|---|
| sched_exp_time | 25000.000000 | [s] Scheduled observation exposure time |
| ontime | 25081.048936009 | Sum of GTIs [s] |
| ontime0 | 25080.925816 | Sum of GTIs [s] |
| ontime1 | 25077.825845599 | Sum of GTIs [s] |
| ontime2 | 25081.007896006 | Sum of GTIs [s] |
| ontime3 | 25081.048936009 | Sum of GTIs [s] |
| ontime6 | 25080.884775996 | Sum of GTIs [s] |
| l1events | 662515 | Number of level 1 events |

### 2.1.4 Events

| | **ccd 0** | **ccd 1** | **ccd 2** | **ccd 3** | **ccd 6** |
|---|---|---|---|---|---|
| level 1 events | 126424 | 129055 | 135031 | 136583 | 135422 |
| rejected events | 109585 | 111078 | 119400 | 117633 | 118657 |
| rejected % | 86% | 86% | 88% | 86% | 87% |

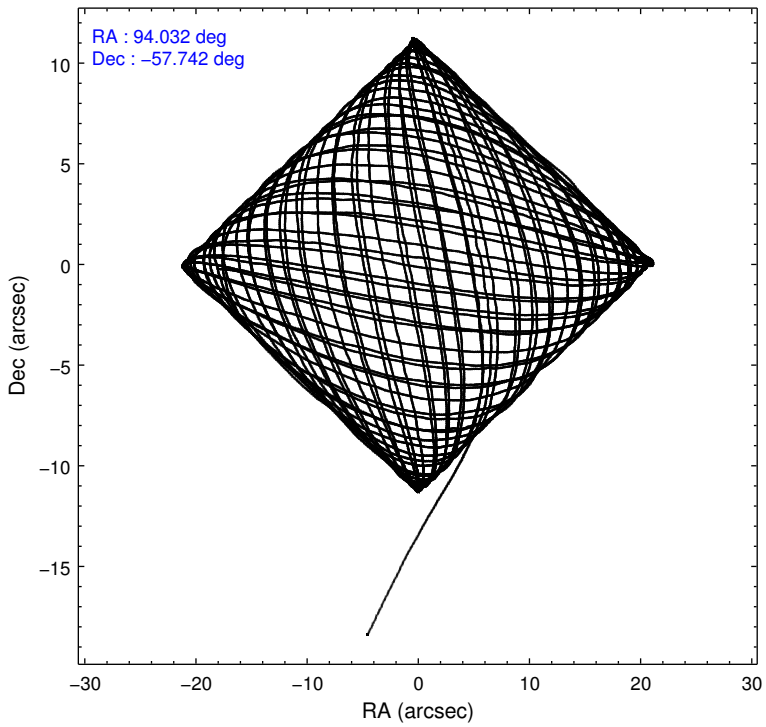
| | **ccd 0** | **ccd 1** | **ccd 2** | **ccd 3** | **ccd 6** |
|---|---|---|---|---|---|
| grade 0 events | 6249 | 6364 | 5564 | 8419 | 6048 |
| | 4% | 4% | 4% | 6% | 4% |
| grade 1 events | 70 | 72 | 88 | 90 | 73 |
| | 0% | 0% | 0% | 0% | 0% |
| grade 2 events | 3977 | 4370 | 3856 | 3773 | 3798 |
| | 3% | 3% | 2% | 2% | 2% |
| grade 3 events | 1783 | 1750 | 1586 | 1726 | 1616 |
| | 1% | 1% | 1% | 1% | 1% |
| grade 4 events | 1581 | 1743 | 1575 | 1754 | 1658 |
| | 1% | 1% | 1% | 1% | 1% |
| grade 5 events | 6260 | 6667 | 6076 | 7111 | 6850 |
| | 4% | 5% | 4% | 5% | 5% |
| grade 6 events | 3255 | 3754 | 3059 | 3282 | 3647 |
| | 2% | 2% | 2% | 2% | 2% |
| grade 7 events | 103249 | 104335 | 113227 | 110428 | 111732 |
| | 81% | 80% | 83% | 80% | 82% |

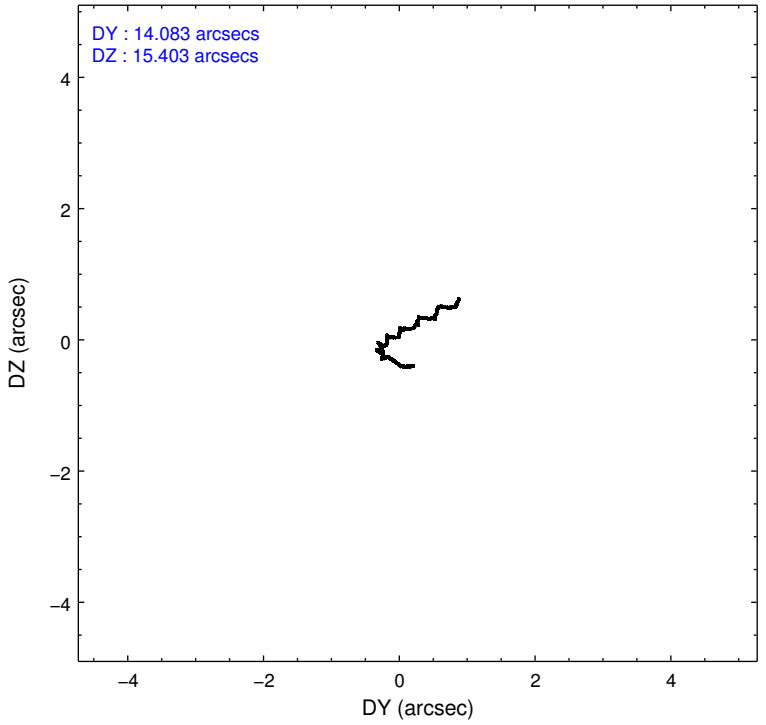
## 2.2 Compared Parameters

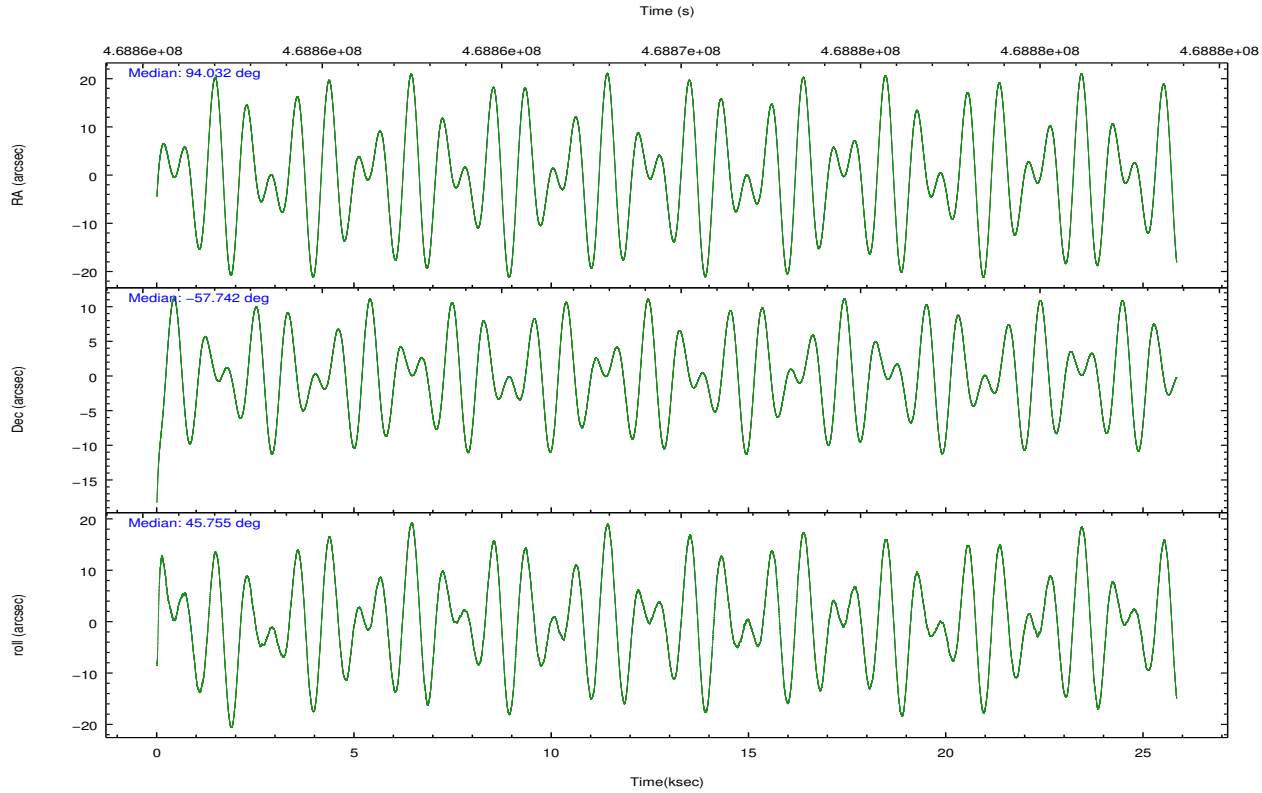
| Parameter | Planned | Actual |
|---|---|---|
| Instrument | ACIS | ACIS |
| Detector | ACIS-01236 | ACIS-01236 |
| Grating | NONE | NONE |
| Data mode | VFAINT | VFAINT |
| Observation mode | POINTING | POINTING |
| [deg] Pointing RA | 94.019077 | 94.03157533413177 |
| [deg] Pointing Dec | -57.768959 | -57.74228267728793 |
| [deg] Pointing Roll | 45.544332 | 45.76357790755539 |
| [mm] SIM focus pos | -0.782348 | -0.7809083437167272 |
| [mm] SIM defocus | 0 | 0.001439871863259334 |
| [mm] SIM translation stage pos | -225.842463 | -225.8433433320239 |
| [mm] SIM translation stage offset | -7.75 | -7.749109670905796 |
| [s] Observation start time (MET) | 468857527.184000 | 468855868.99749 |
| Observation start date | 2012-11-09T14:11:00 | 2012-11-09T13:44:28 |
| [s] Observation end time (MET) | 468882527.184000 | 468883423.04897 |
| Observation end date | 2012-11-09T21:07:40 | 2012-11-09T21:23:43 |
| Read mode | TIMED | TIMED |

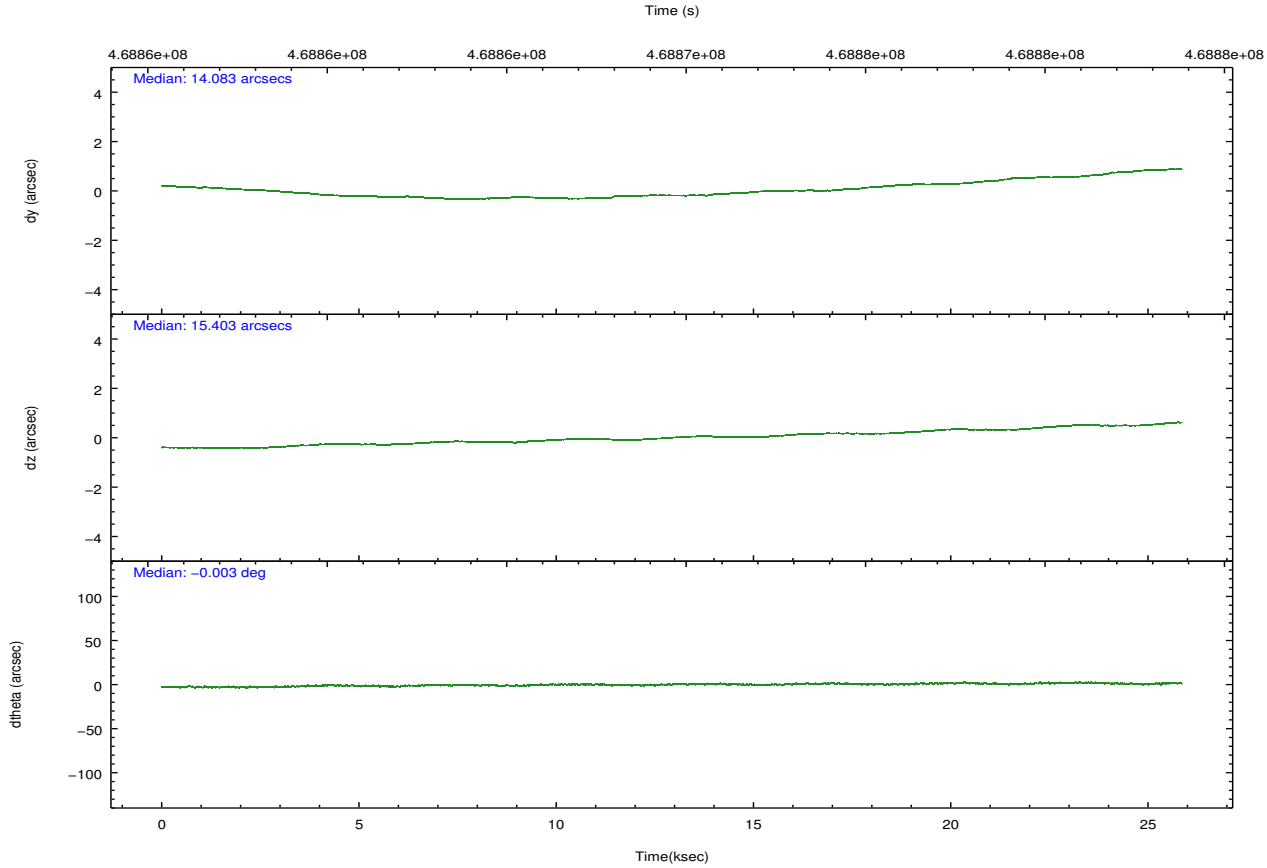
| Parameter | Planned | Actual |
|---|---|---|
| Obspar format version number | 7 | 7 |
| Obspar file type | PREDICTED | ACTUAL |
| Obspar update status | NONE | UPDATED |
| CCD I0 on | Y | Y |
| CCD I1 on | Y | Y |
| CCD I2 on | Y | Y |
| CCD I3 on | Y | Y |
| CCD S0 on | N | N |
| CCD S1 on | N | N |
| CCD S2 on | O1 | Y |
| CCD S3 on | N | N |
| CCD S4 on | N | N |
| CCD S5 on | N | N |
| 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


RA : 94.032 deg
Dec : −57.742 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−15
−30
−20
−10
0
10
20
30


DY : 14.083 arcsecs
DZ : 15.403 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
4.6886e+08
4.6886e+08
4.6886e+08
4.6887e+08
4.6888e+08
4.6888e+08
4.6888e+08
Median: 94.032 deg
RA (arcsec)
Median: −57.742 deg
Dec (arcsec)
Median: 45.755 deg
roll (arcsec)
Time(ksec)

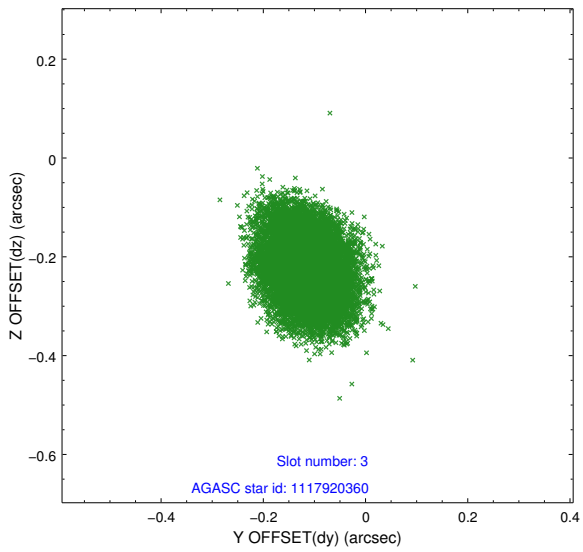

Time (s)
4.6886e+08
4.6886e+08
4.6886e+08
4.6887e+08
4.6888e+08
4.6888e+08
4.6888e+08
Median: 14.083 arcsecs
dy (arcsec)
Median: 15.403 arcsecs
dz (arcsec)
Median: −0.003 deg
dtheta (arcsec)
Time(ksec)

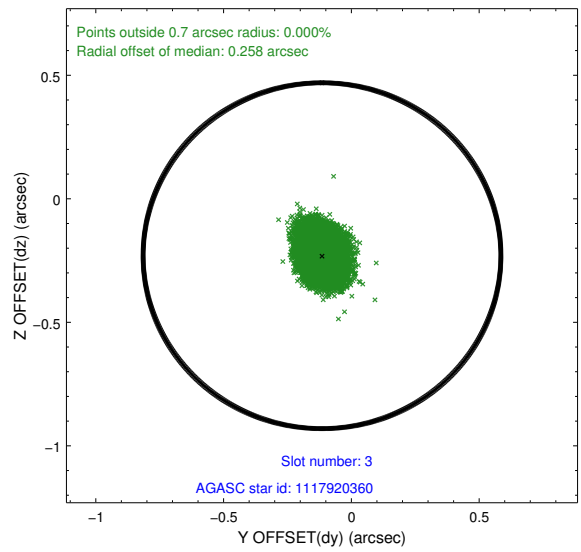
Slot Statistics

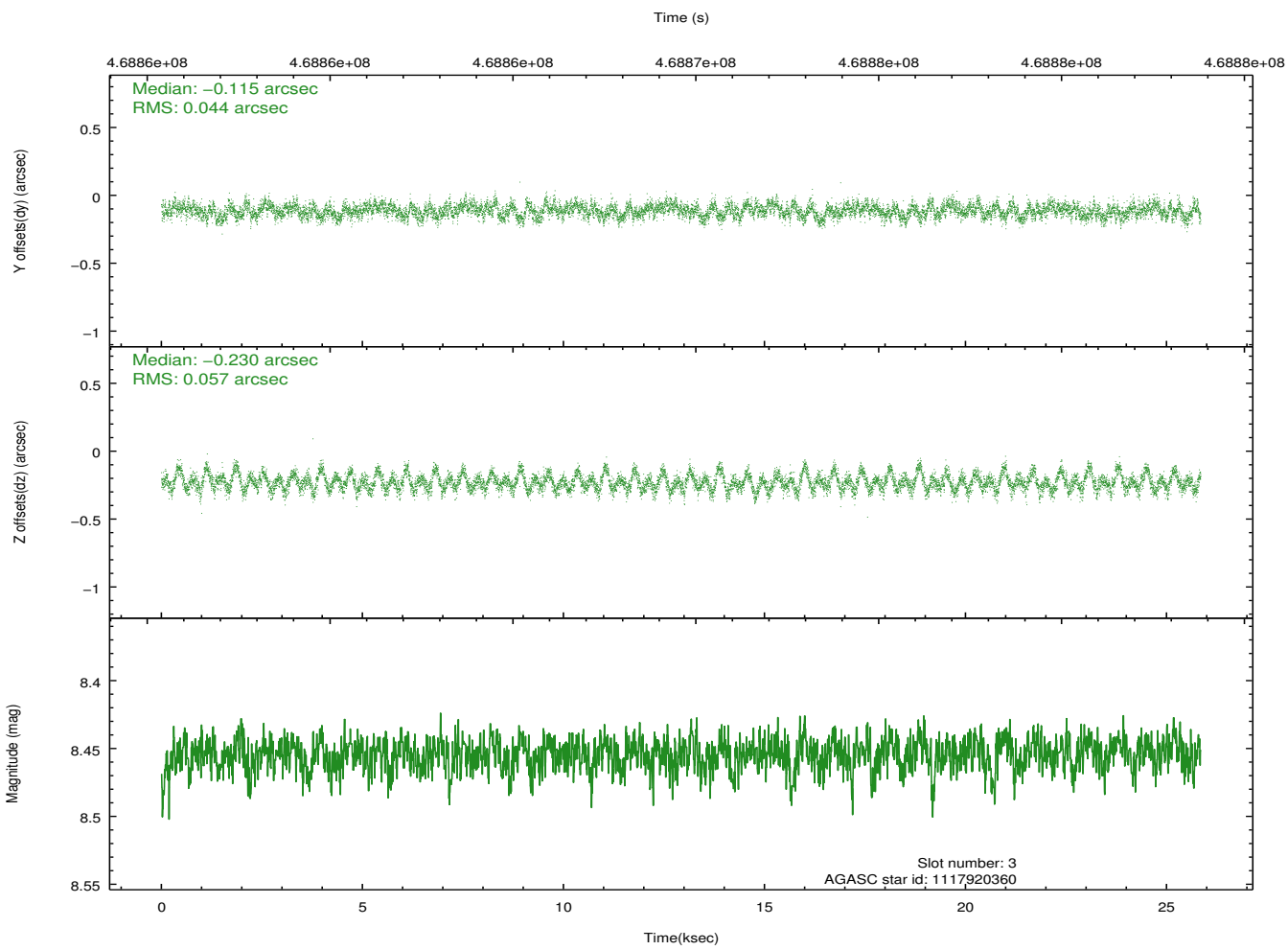
| slot | status | used | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | FID | | ACIS-I-1 | 7.12 | 6305 | 0.136 | -0.110 | 0.023 | 0.035 | 0.000000 | 0.000000 | 925.34 | -998.21 |
| 1 | FID | | ACIS-I-5 | 7.11 | 6305 | -0.322 | 0.099 | 0.015 | 0.025 | 0.000000 | 0.000000 | -1823.19 | 899.36 |
| 2 | FID | | ACIS-I-6 | 7.12 | 6305 | 0.092 | 0.080 | 0.011 | 0.020 | 0.000000 | 0.000000 | 390.68 | 1544.01 |
| 3 | GUIDE | used | 1117920360 | 8.45 | 12604 | -0.115 | -0.230 | 0.077 | 0.124 | 92.689586 | -57.826981 | -1951.78 | 1655.08 |
| 4 | GUIDE | used | 1119617128 | 9.08 | 12604 | 0.466 | 0.533 | 0.100 | 0.165 | 93.986624 | -58.000911 | -638.68 | -539.72 |
| 5 | GUIDE | used | 1119617976 | 7.99 | 12593 | -0.219 | -0.217 | 0.071 | 0.115 | 94.543198 | -57.336411 | 1822.07 | 361.59 |
| 6 | GUIDE | used | 1119620096 | 8.98 | 12599 | -0.245 | 0.114 | 0.120 | 0.179 | 94.803811 | -58.054312 | 308.48 | -1791.69 |
| 7 | GUIDE | used | 1119619792 | 9.40 | 12536 | 0.105 | -0.196 | 0.103 | 0.174 | 93.499770 | -57.916921 | -1077.95 | 332.91 |

## 2.4 Star Slots

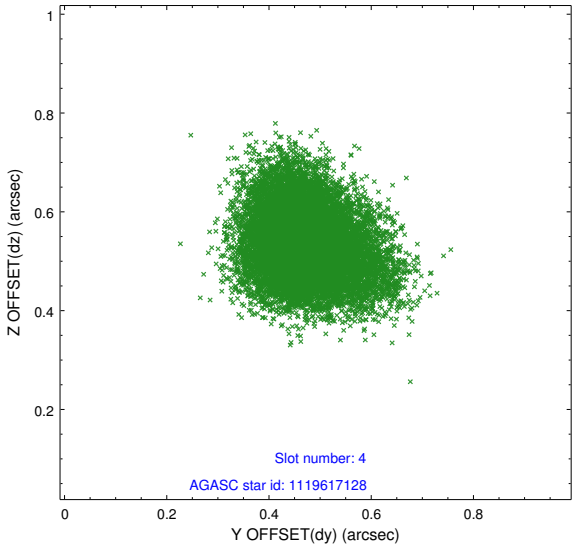
### 2.4.1 Slot 3

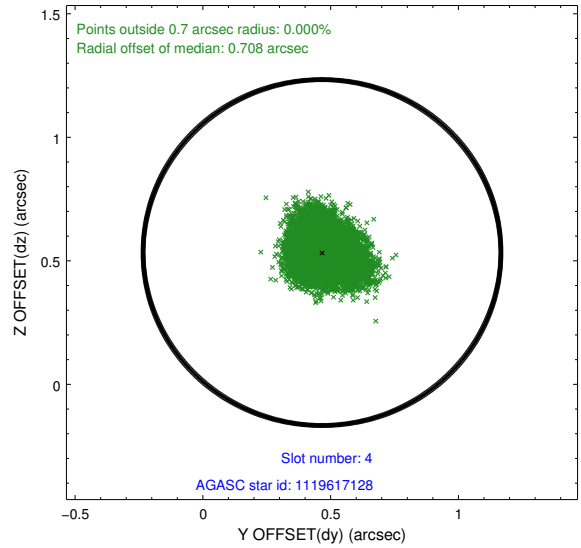


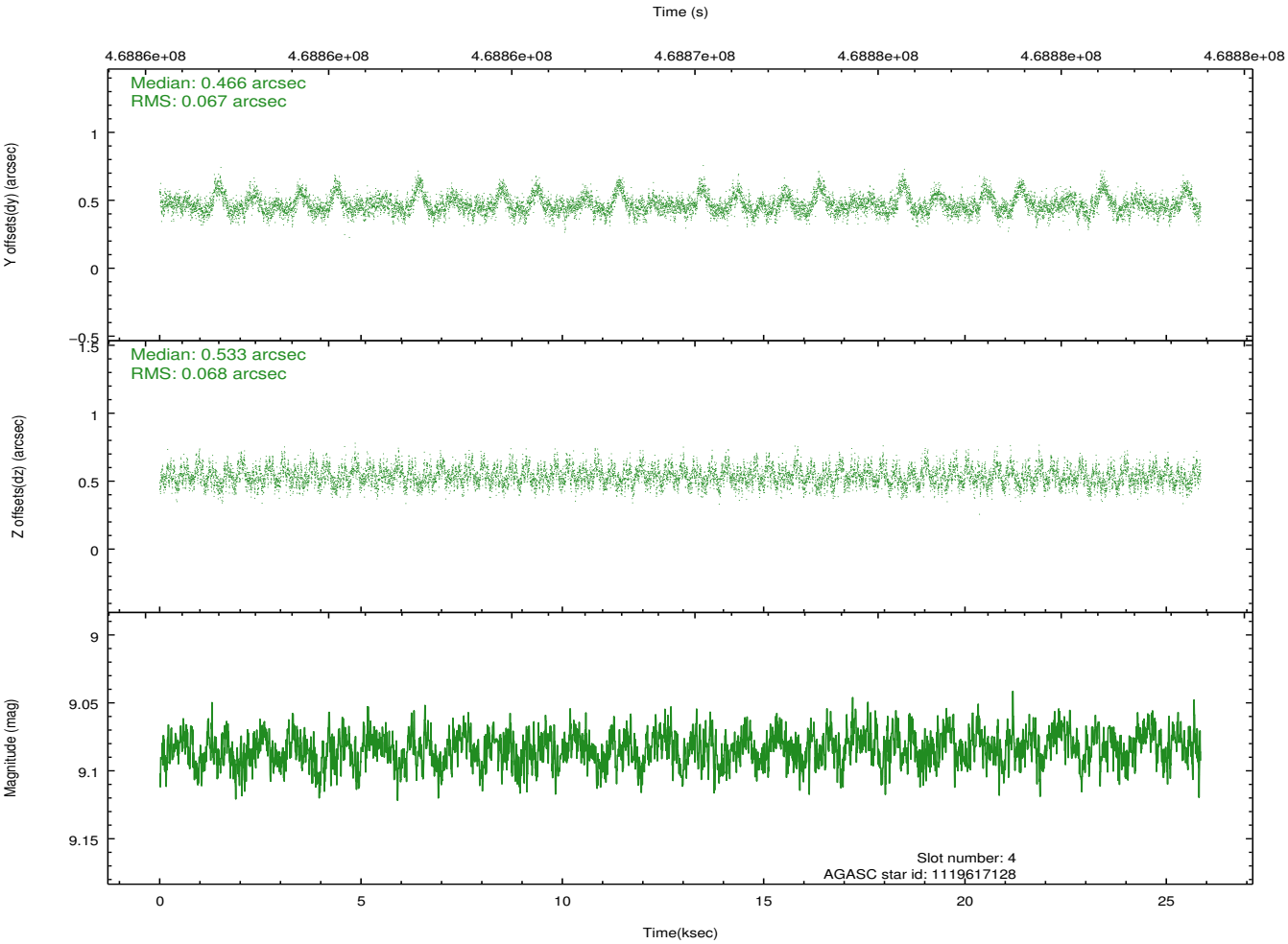



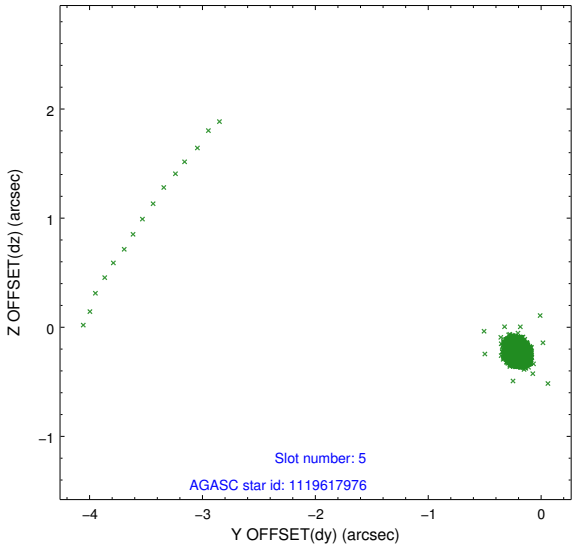
### 2.4.2 Slot 4

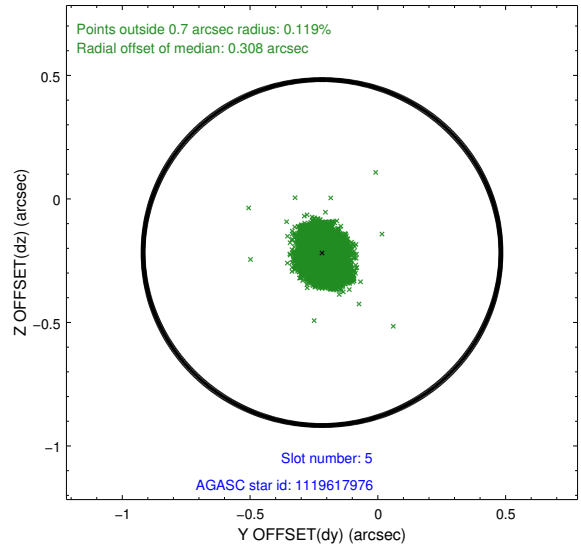

Slot number: 4
AGASC star id: 1119617128
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

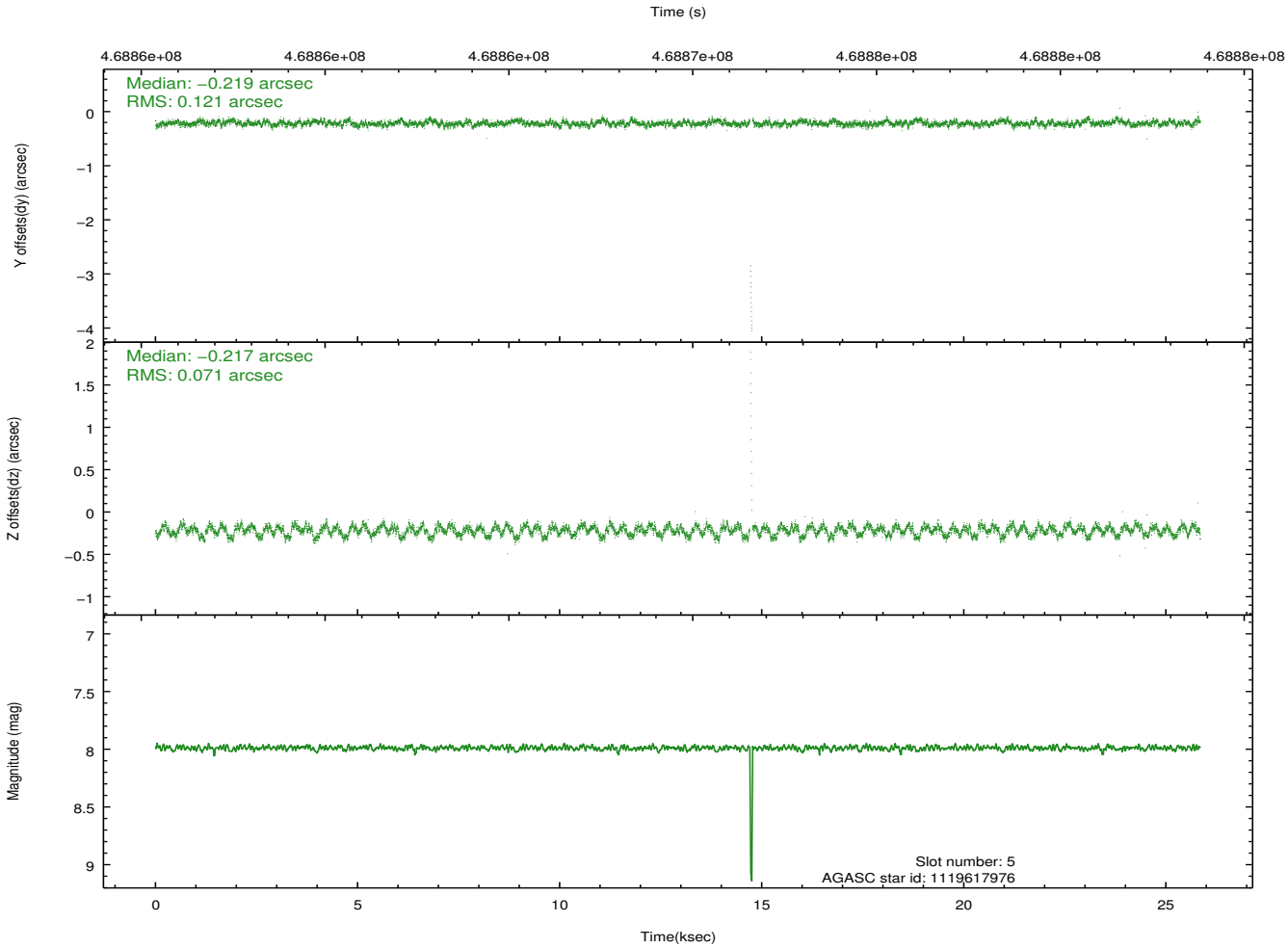

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.708 arcsec
Slot number: 4
AGASC star id: 1119617128
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)


Time (s)
Median: 0.466 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: 0.533 arcsec
RMS: 0.068 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 1119617128
Time(ksec)

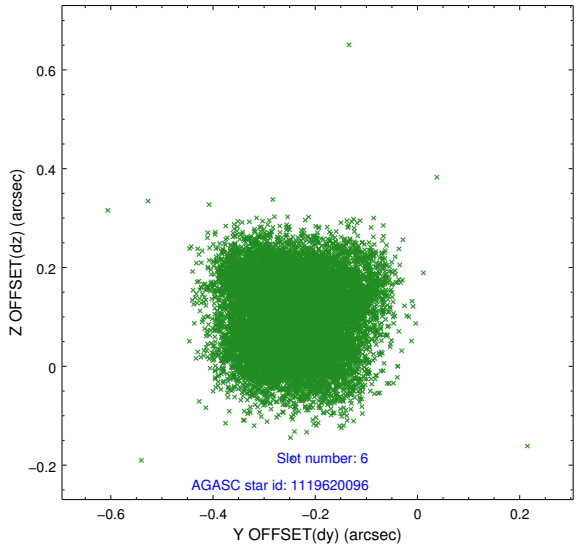
### 2.4.3 Slot 5

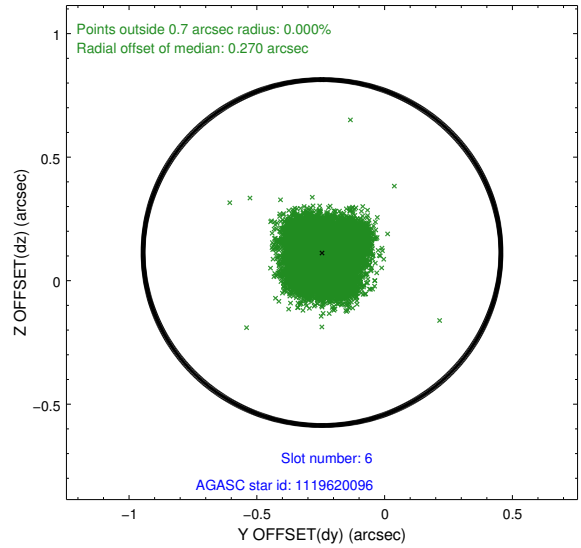

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1119617976

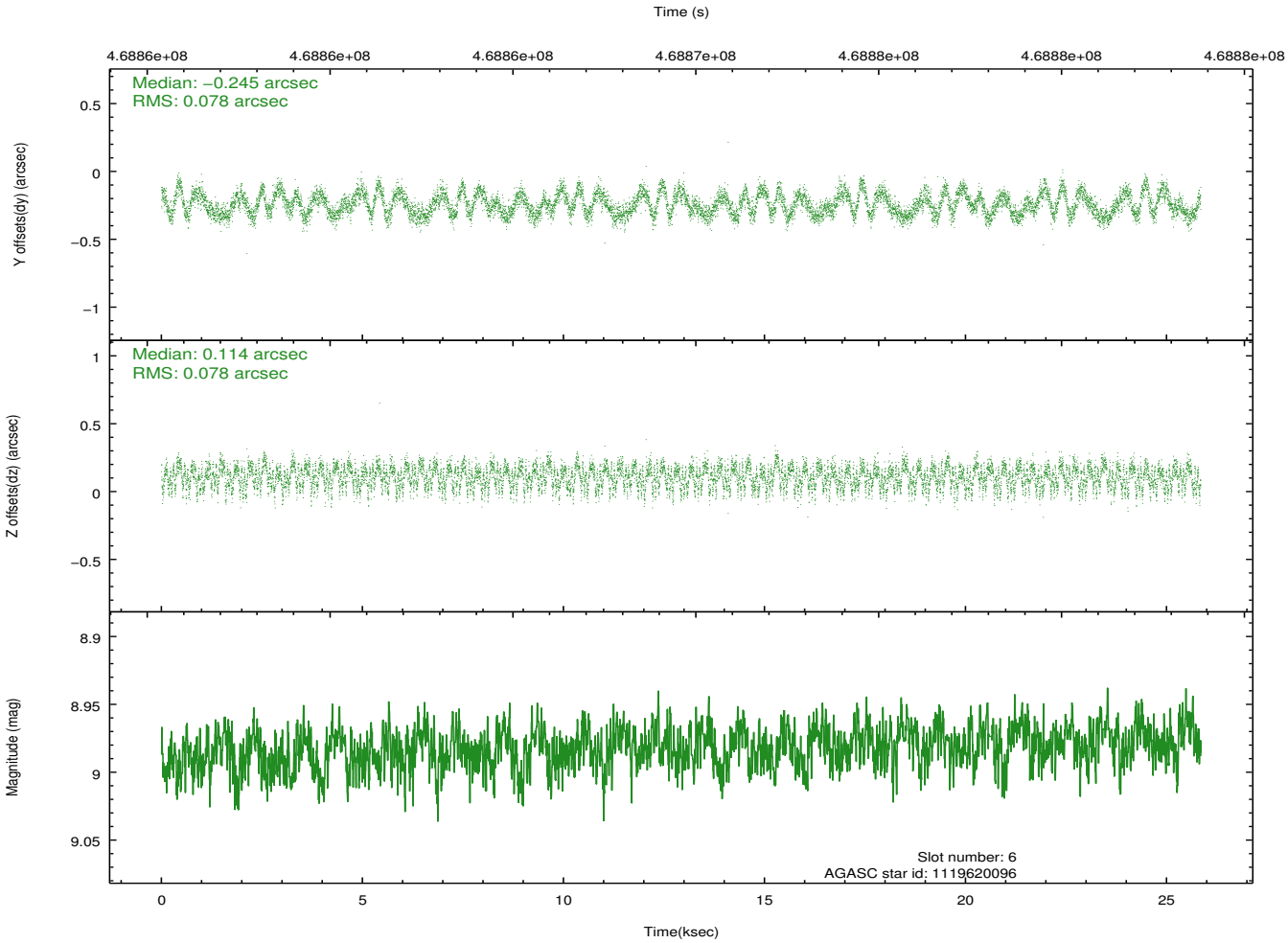

Points outside 0.7 arcsec radius: 0.119%
Radial offset of median: 0.308 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1119617976


Time (s)
Median: −0.219 arcsec
RMS: 0.121 arcsec
Y offsets(dy) (arcsec)
Median: −0.217 arcsec
RMS: 0.071 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 1119617976
Time(ksec)

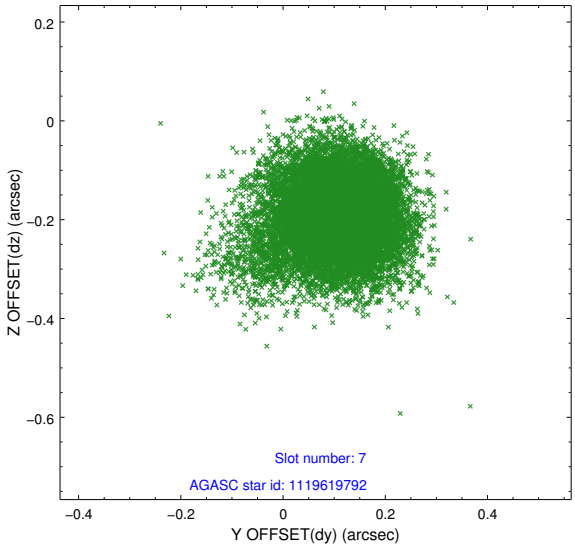
### 2.4.4 Slot 6

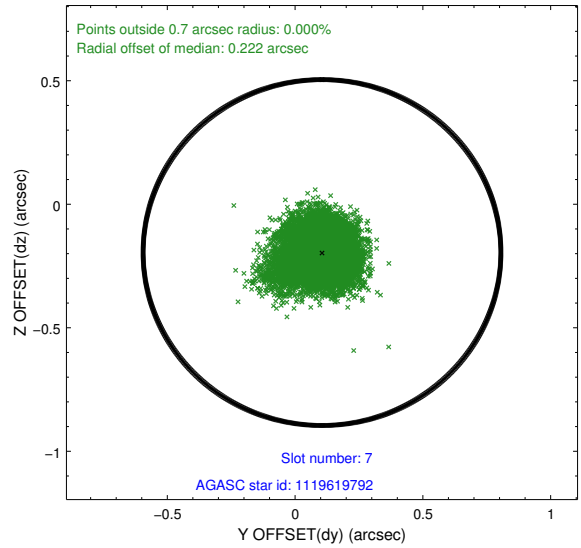

Slot number: 6
AGASC star id: 1119620096
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

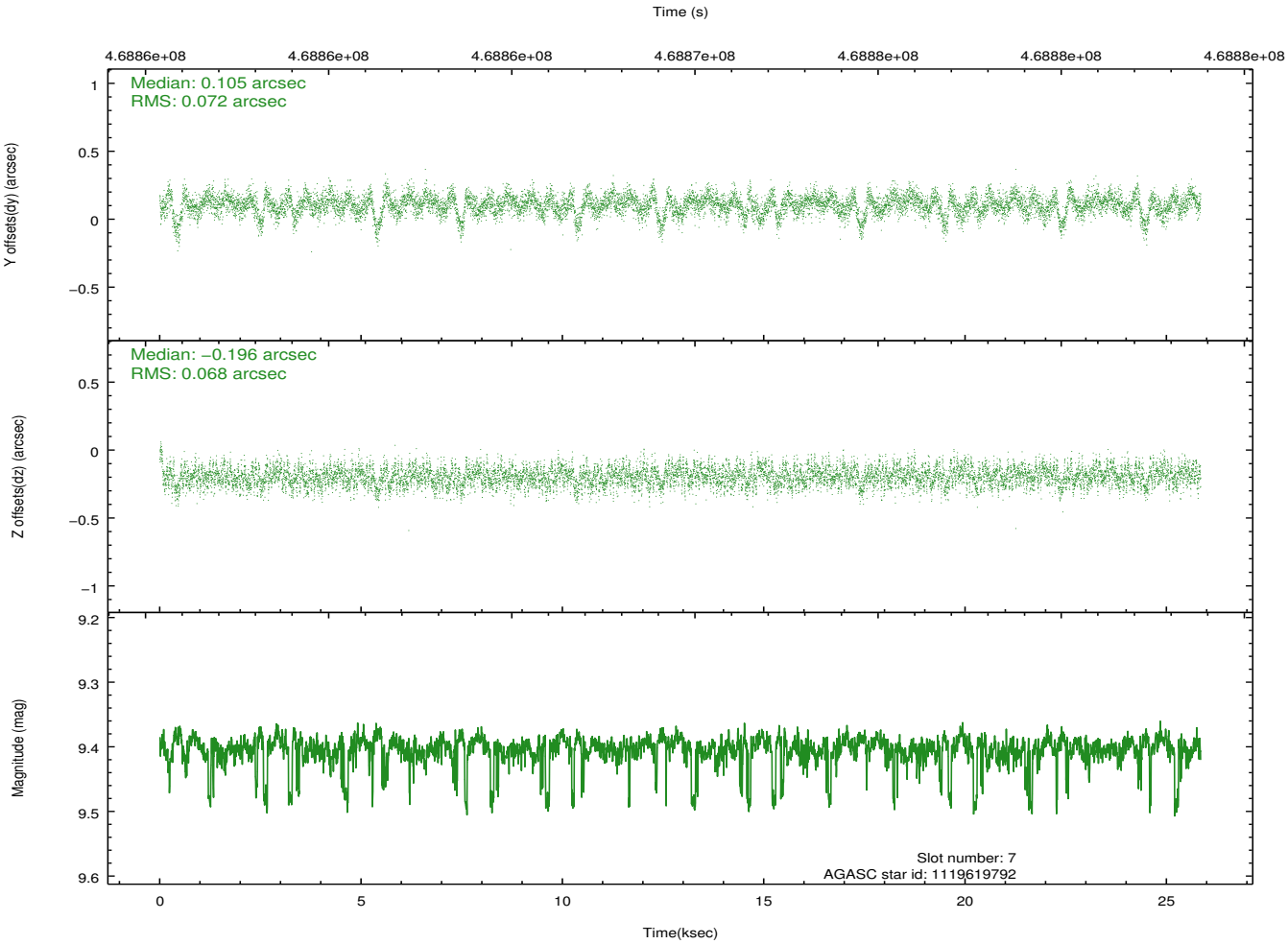

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.270 arcsec
Slot number: 6
AGASC star id: 1119620096
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)


Time (s)
Median: −0.245 arcsec
RMS: 0.078 arcsec
Y offsets(dy) (arcsec)
Median: 0.114 arcsec
RMS: 0.078 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 1119620096
Time(ksec)

### 2.4.5 Slot 7

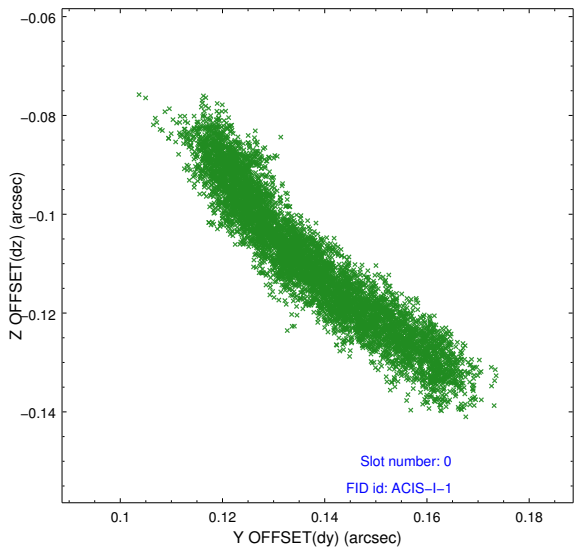

Slot number: 7
AGASC star id: 1119619792
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

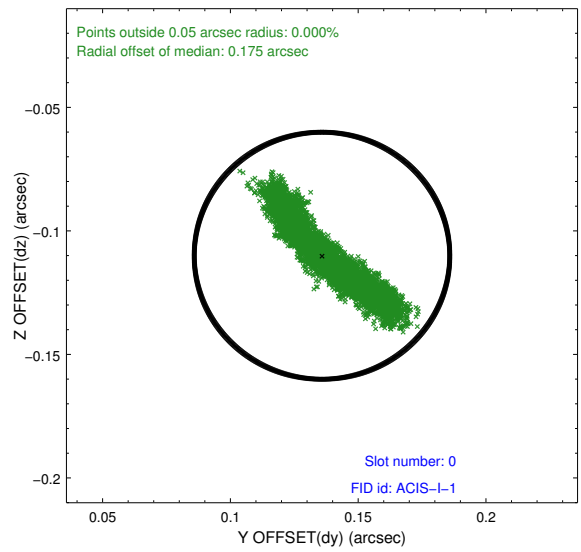

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.222 arcsec
Slot number: 7
AGASC star id: 1119619792
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

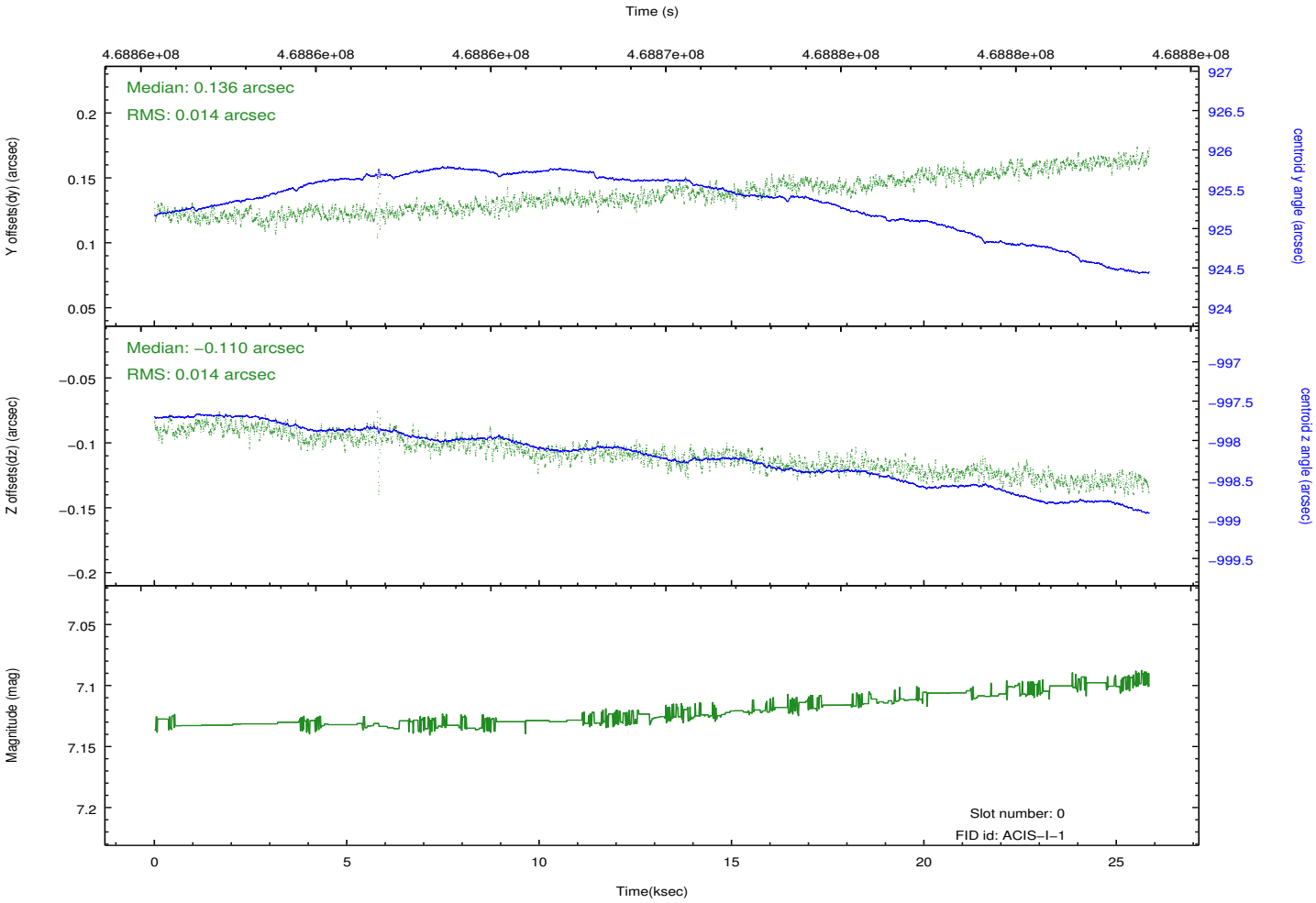

Time (s)
Median: 0.105 arcsec
RMS: 0.072 arcsec
Y offsets(dy) (arcsec)
Median: −0.196 arcsec
RMS: 0.068 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 1119619792
Time(ksec)

## 2.5 FID Slots

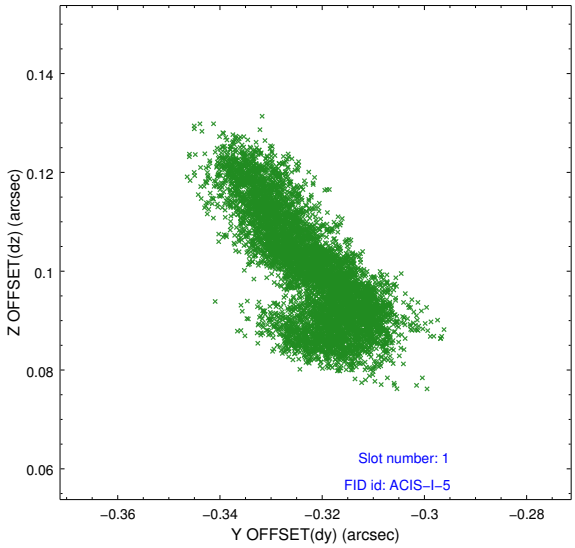
### 2.5.1 Slot 0

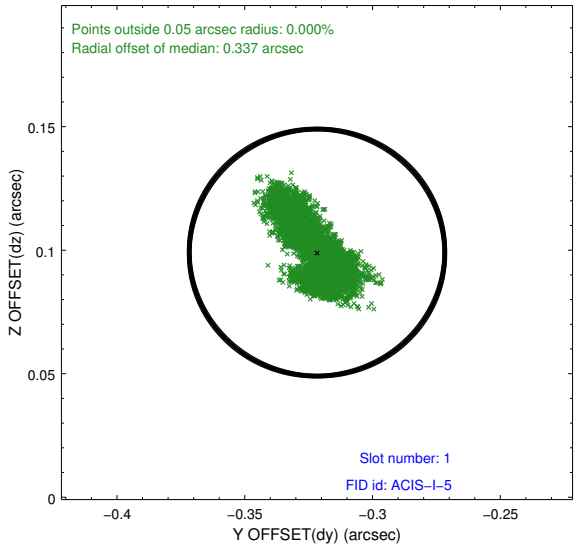


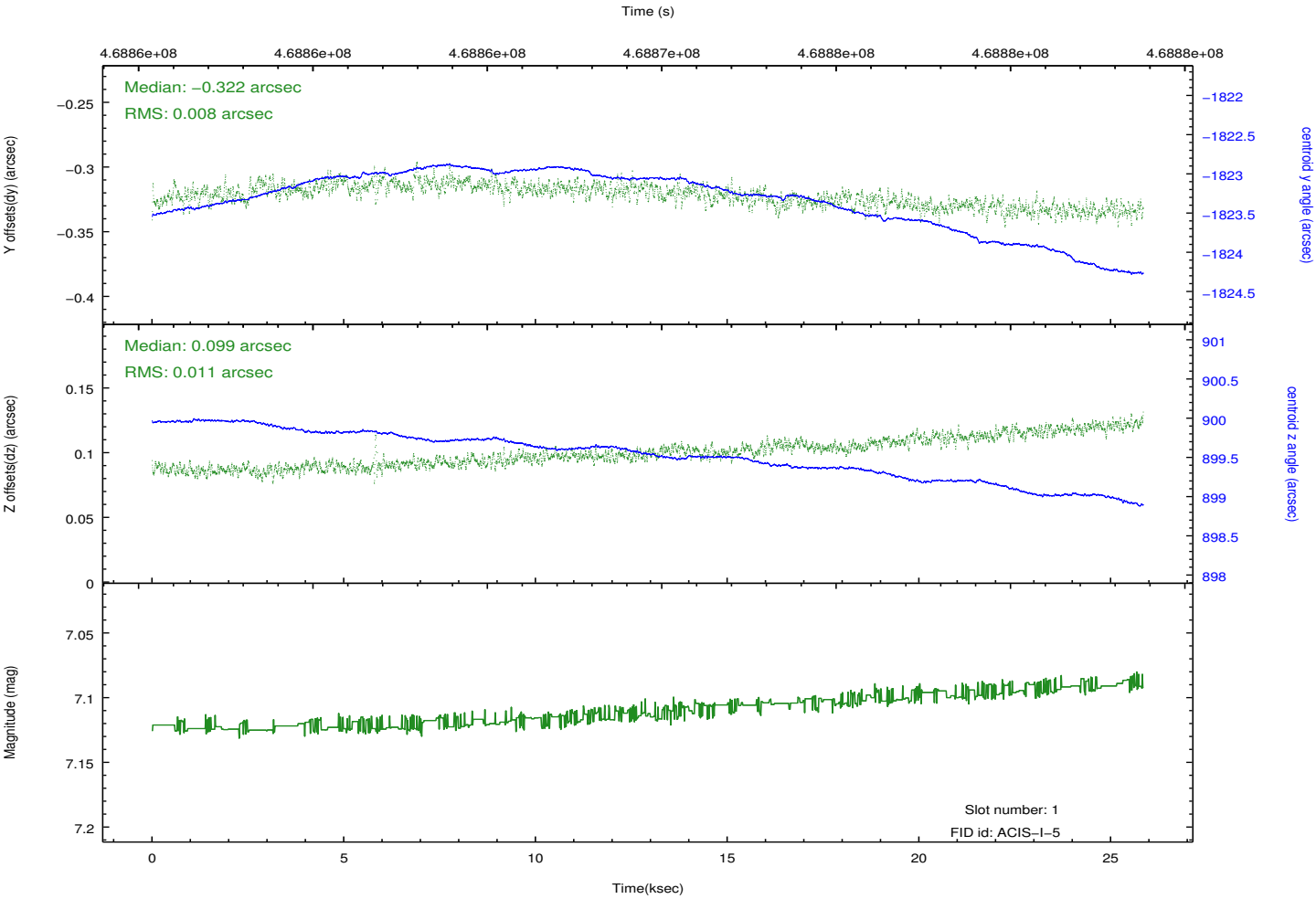



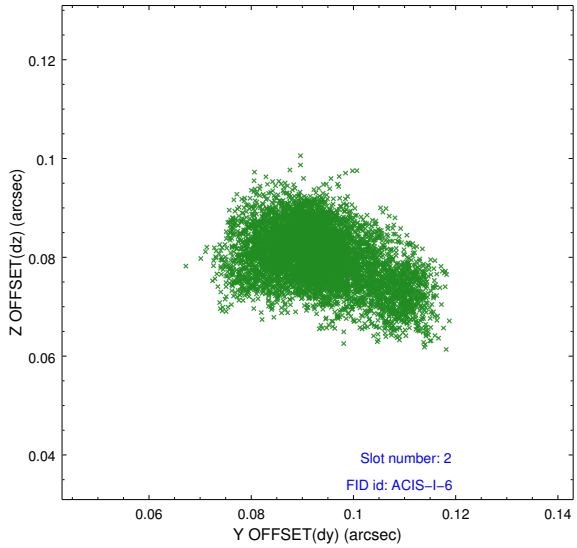
### 2.5.2 Slot 1

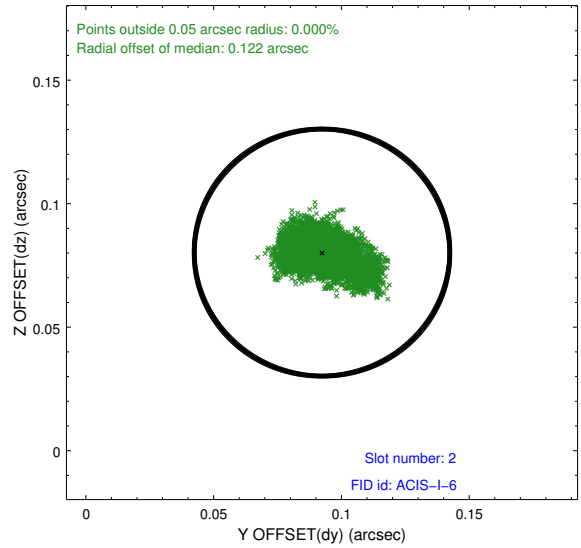

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5

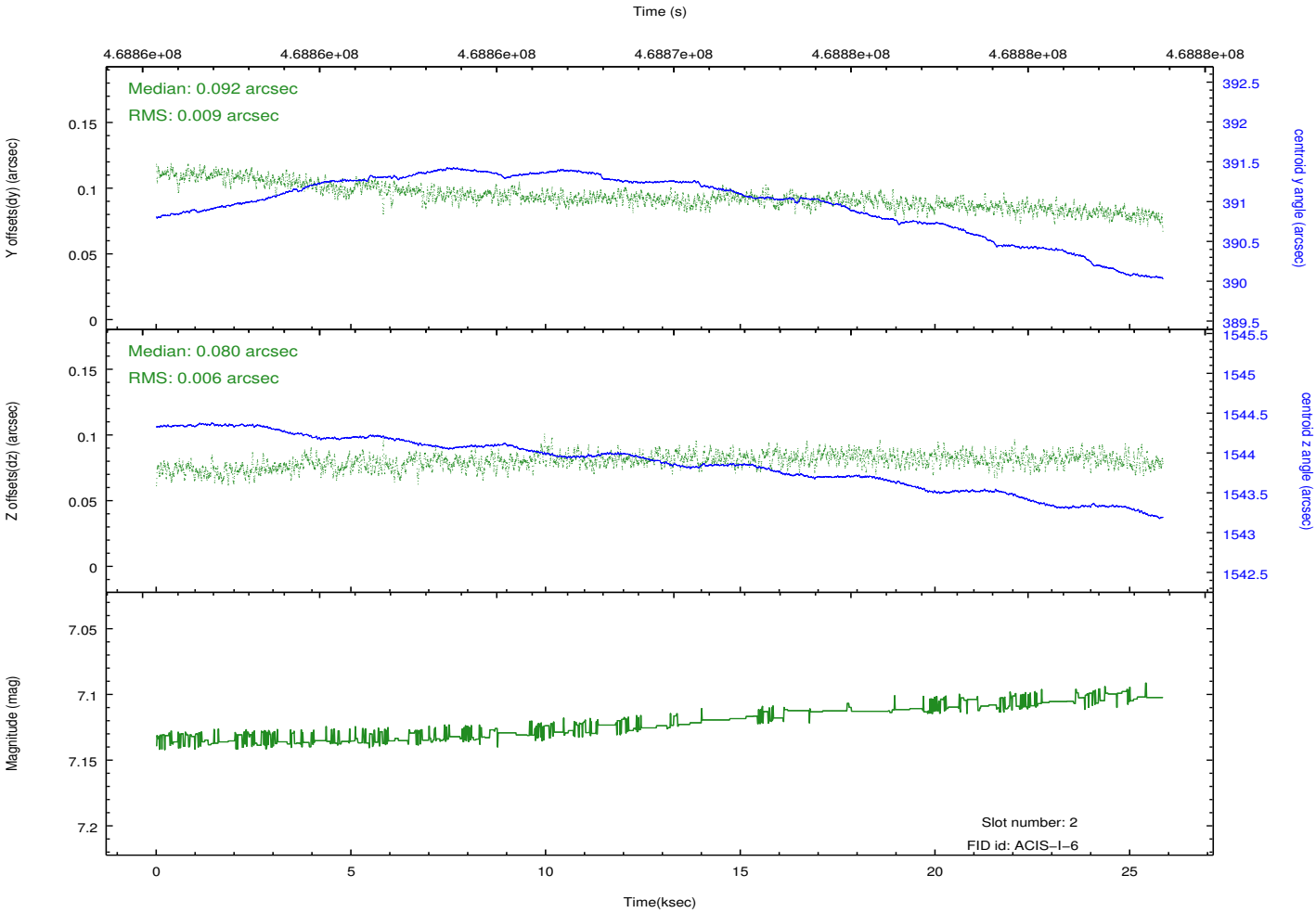

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.337 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5


Time (s)
Median: −0.322 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.099 arcsec
RMS: 0.011 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−I−5
Time(ksec)

### 2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−I−6


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.122 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−I−6


Time (s)
Median: 0.092 arcsec
RMS: 0.009 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.080 arcsec
RMS: 0.006 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−I−6
Time(ksec)

# A Summary

## A.1 Status

| | |
|---|---|
| V&V Scientist | Beth Sundheim |
| V&V Date (YYYY-MM-DD) | 2014.12.03 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 25.081048936009 |

## A.2 Comments

```
Joint proposal with HST.
These data have been reprocessed with new aspect alignment calibration
files that correct small mean offsets (up to 0.4 arcsecs) and improve
overall astrometric accuracy. The new calibration was determined using
data from the time period being reprocessed and was performed using
cross-correlation of X-ray sources with radio and optical counterparts.
```