

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 22068 - L2 Version 2  
Chandra X-Ray Center

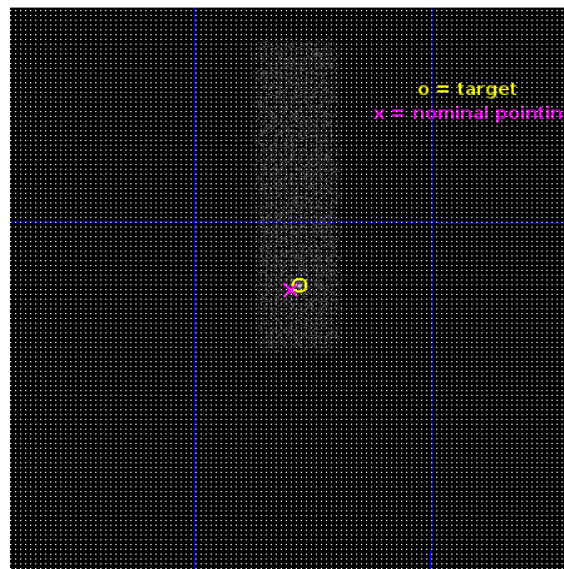
L2 Processing Date : Feb 4 2019

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# 1 Front

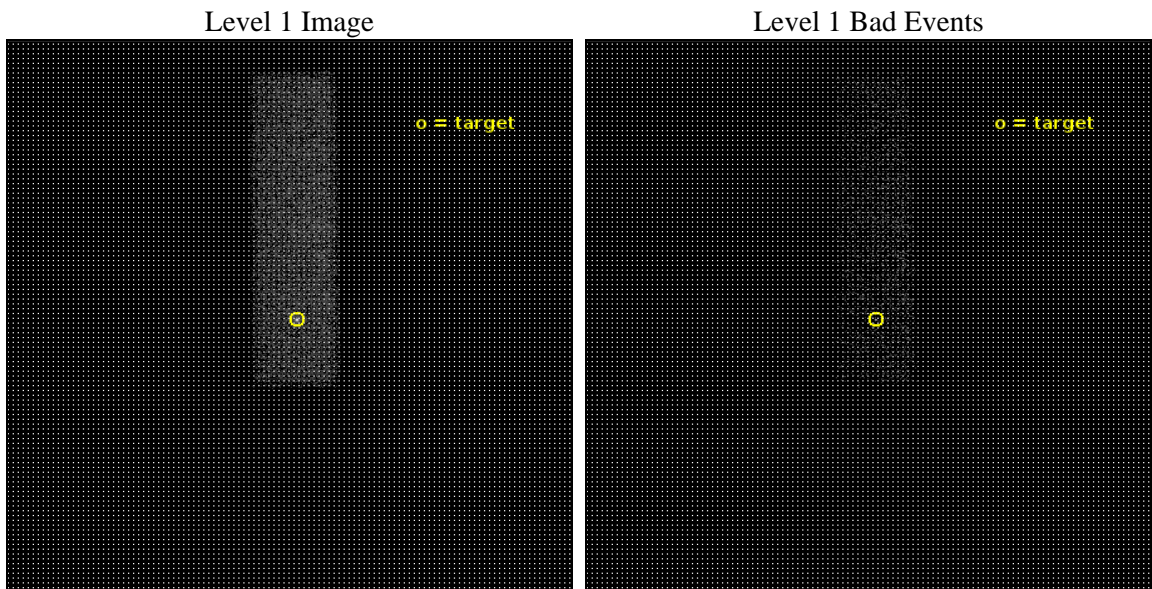
seq_num	703857	Sequence number
obs_id	22068	Observation id
title	C-BASS: A Chandra Legacy Survey of AGN at the Highest Spatial Resolutions	Proposal title
observer	Michael Koss	Principal investigator
object	HE0103-3447	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	16.444578	Observer's specified target RA [deg]
dec_targ	-34.528965	Observer's specified target Dec [deg]
ra_nom	16.448727577972	Nominal RA [deg]
dec_nom	-34.530674416292	Nominal Dec [deg]
roll_nom	269.23471487319	Nominal Roll [deg]
revision	2	Processing version of data
ontime	10060.500371575	Sum of GTIs [s]
livetime	9569.5808728007	Livetime [s]
ontime7	10060.500371575	Sum of GTIs [s]
l2events	15613	Number of level 2 events



## 2 OBI

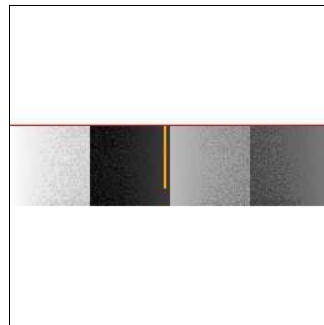
### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias

Chip 7



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	10060.500371575	Sum of GTIs [s]
caldbver	4.8.2	&#160	ontime7	10060.500371575	Sum of GTIs [s]
date	2019-02-04T17:28:36	Date and time of file creation	l1events	29301	Number of level 1 events
revision	2	Processing version of data			

### 2.1.4 Events

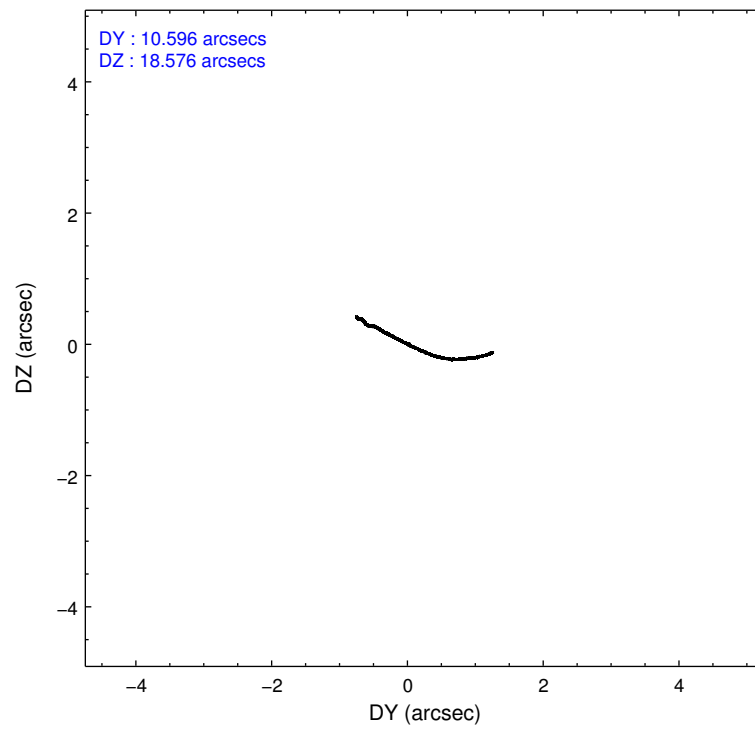
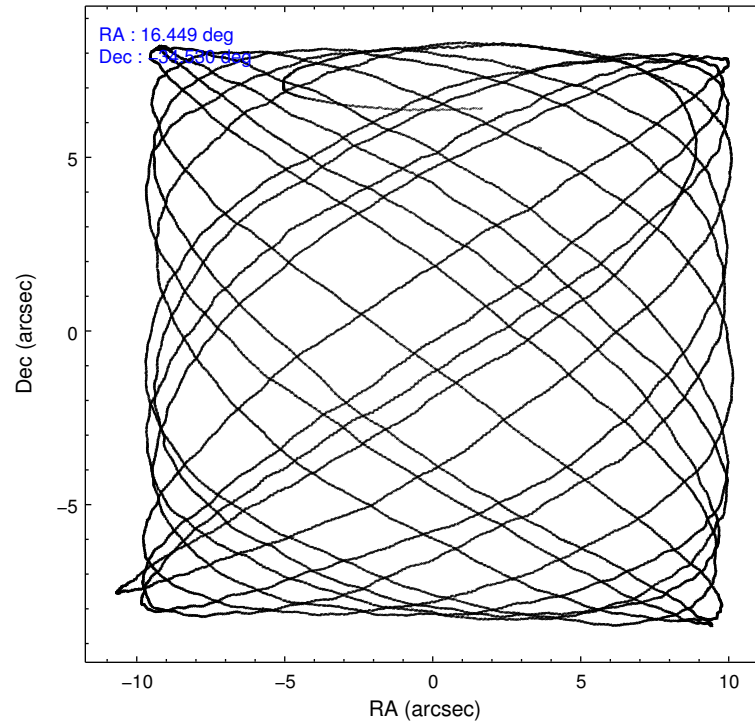
	<b>ccd 7</b>
level 1 events	29301
rejected events	13291
rejected %	45%

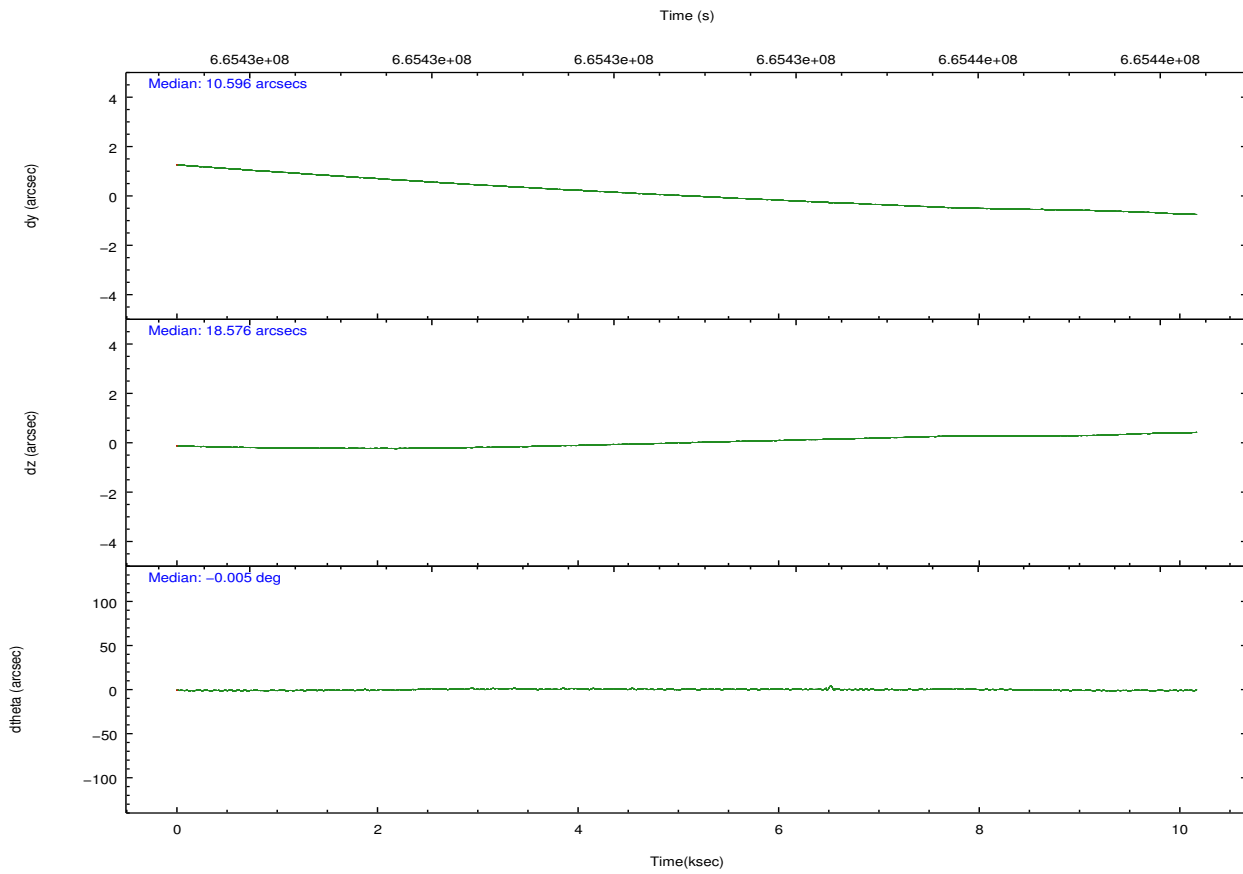
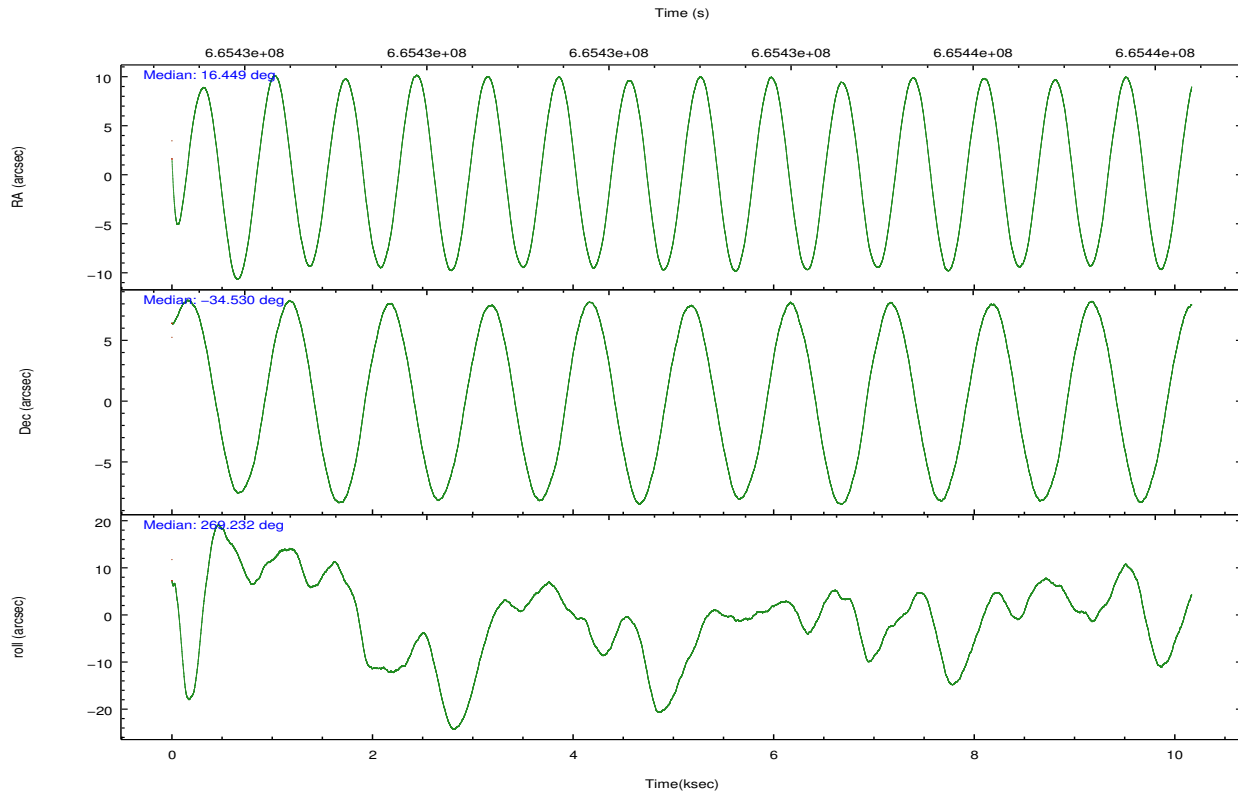
	<b>ccd 7</b>
grade 0 events	2104
	7%
grade 1 events	91
	0%
grade 2 events	3413
	11%
grade 3 events	1712
	5%
grade 4 events	1717
	5%
grade 5 events	2612
	8%
grade 6 events	7067
	24%
grade 7 events	10585
	36%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-7	ACIS-7	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	16.432071	16.44872757797182	Subarray requested	CUSTOM	1/4
[deg] Pointing Dec	-34.506938	-34.53067441629151	Subarray start row	385	385
[deg] Pointing Roll	269.068618	269.234714873194	Subarray row count	256	256
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	0.8
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	665427901.184000	665426557.20069			
Observation start date	2019-02-01T17:03:52	2019-02-01T16:42:37			
[s] Observation end time (MET)	665437901.184000	665438468.7264			
Observation end date	2019-02-01T19:50:32	2019-02-01T20:01:08			
Read mode	TIMED	TIMED			

## 2.3 Aspect



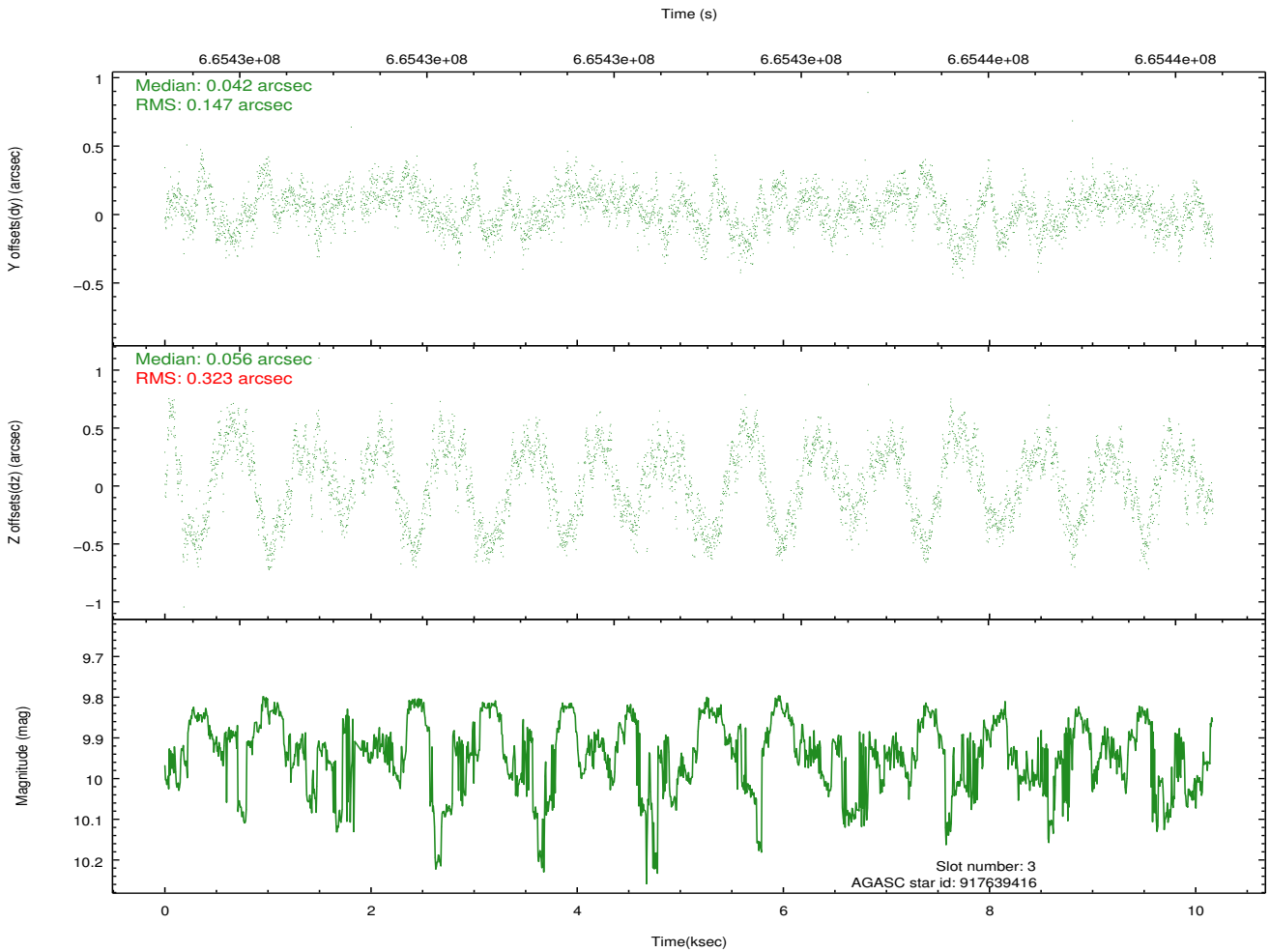
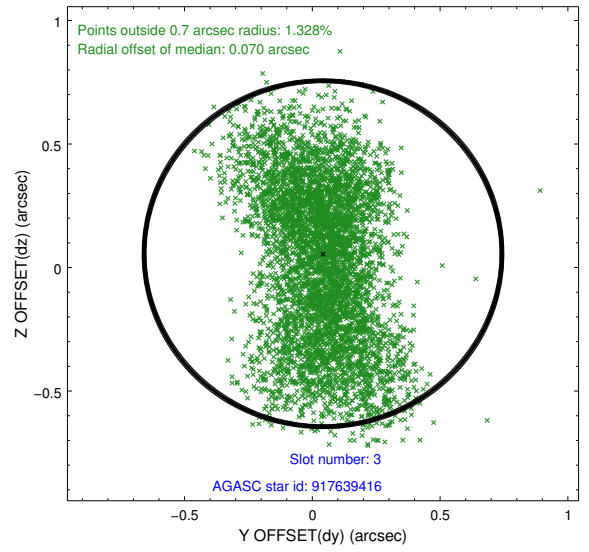
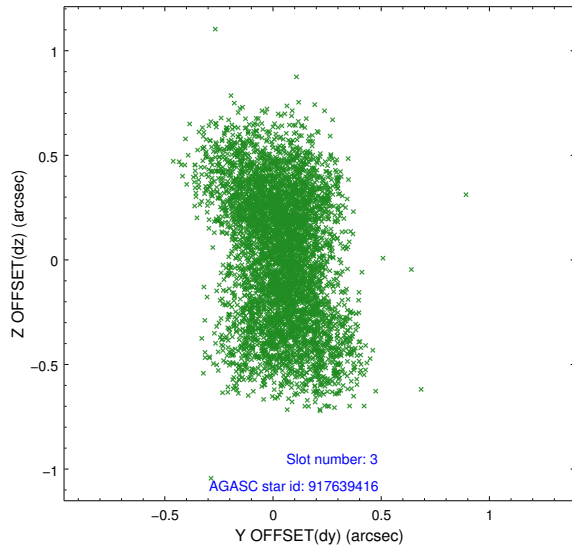


### Slot Statistics

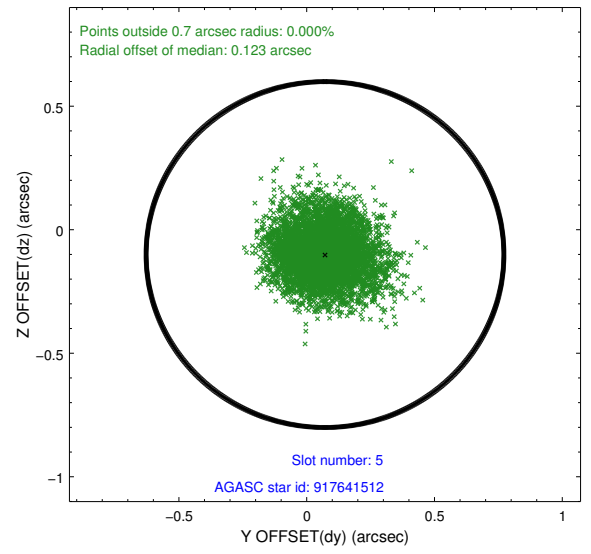
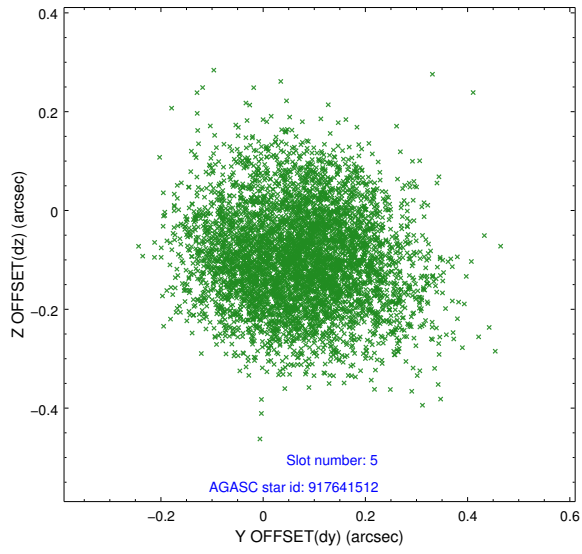
slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-S-2	7.15	2481	1.000	-0.307	-0.210	0.020	0.029	0.000000	0.000000	-763.81	-1740
1	FID		ACIS-S-4	7.29	2481	1.000	0.753	0.203	0.017	0.029	0.000000	0.000000	2150.25	168
2	FID		ACIS-S-5	7.27	2481	1.000	-0.475	0.014	0.030	0.046	0.000000	0.000000	-1816.19	162
3	GUIDE	used	917639416	9.93	4894	1.000	0.042	0.056	0.388	0.614	15.947780	-34.008495	-1766.34	-1473
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	917641512	9.40	4955	1.000	0.072	-0.101	0.158	0.249	16.037252	-34.450525	-180.80	-1174
6	GUIDE	used	917642024	8.86	4955	1.000	0.069	0.099	0.229	0.345	15.645887	-34.369984	-445.59	-2341
7	GUIDE	used	917643896	9.34	4945	1.000	-0.194	-0.023	0.258	0.394	15.999405	-34.676744	635.36	-1270

## 2.4 Star Slots

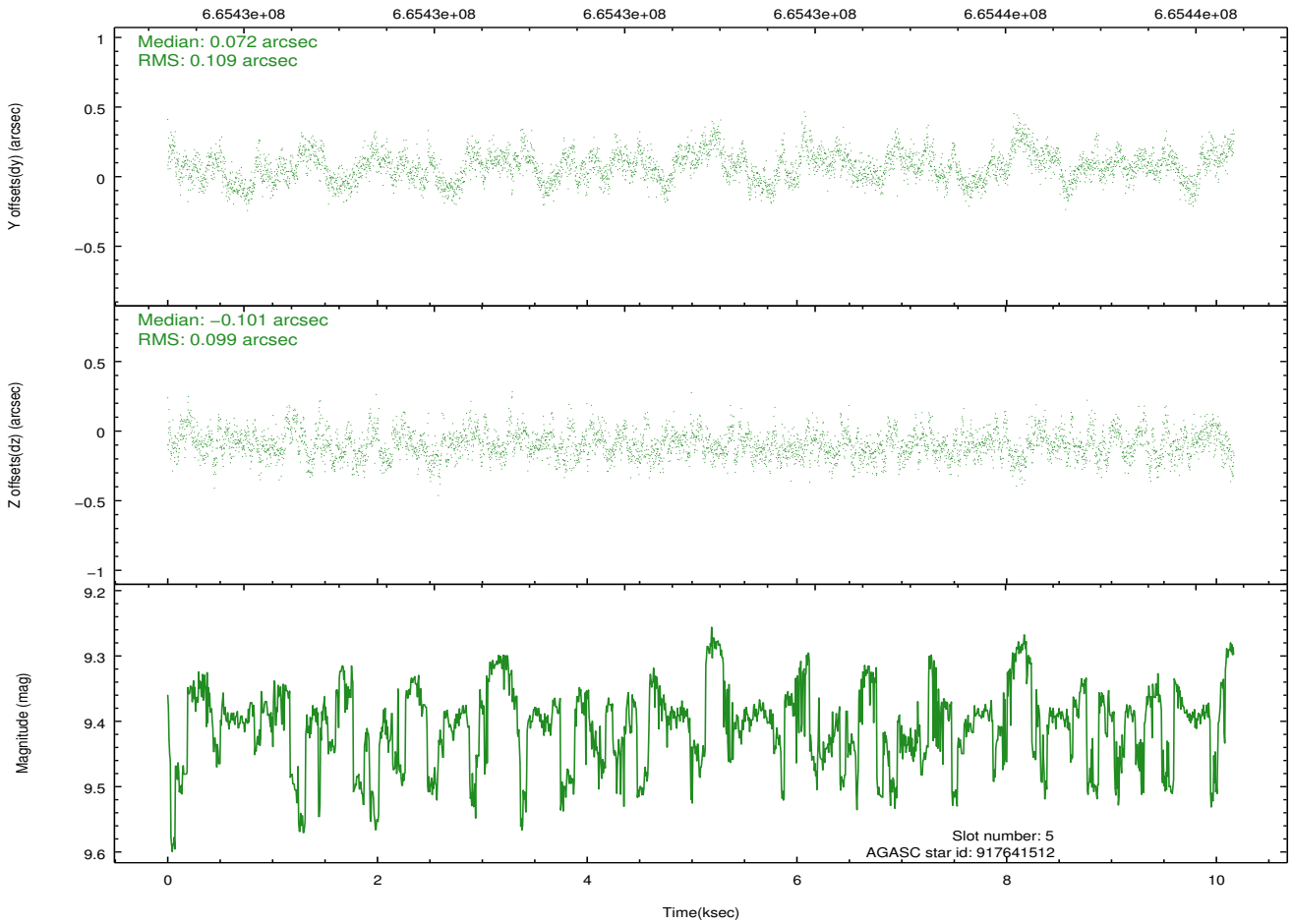
### 2.4.1 Slot 3



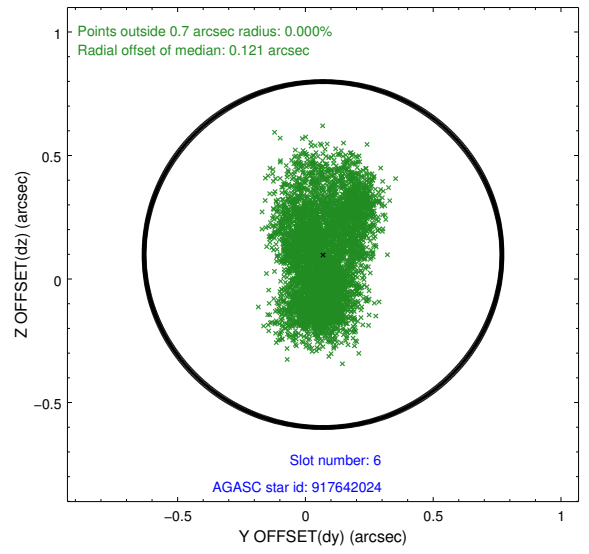
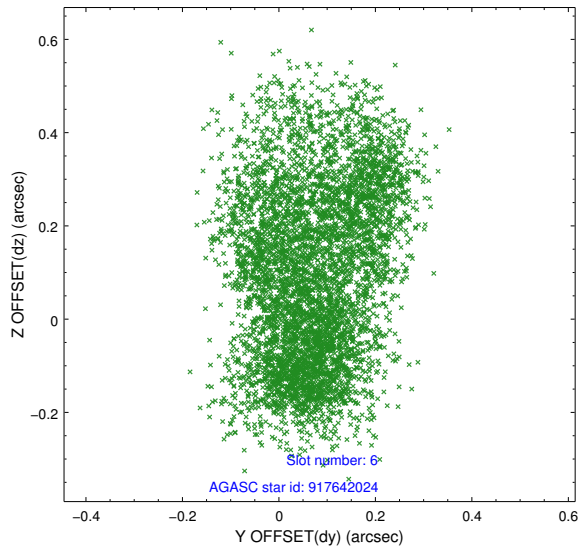
## 2.4.2 Slot 5



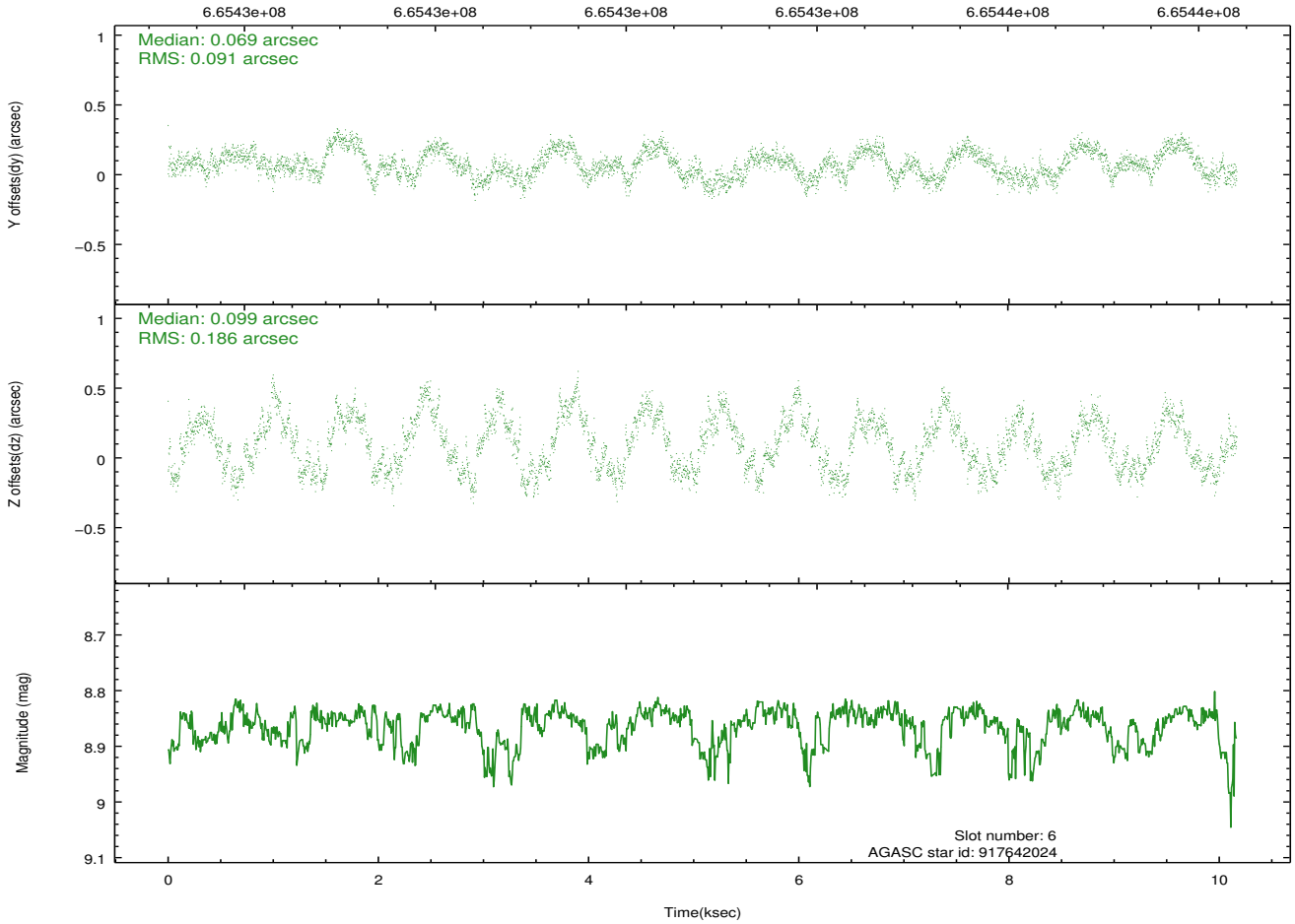
Time (s)



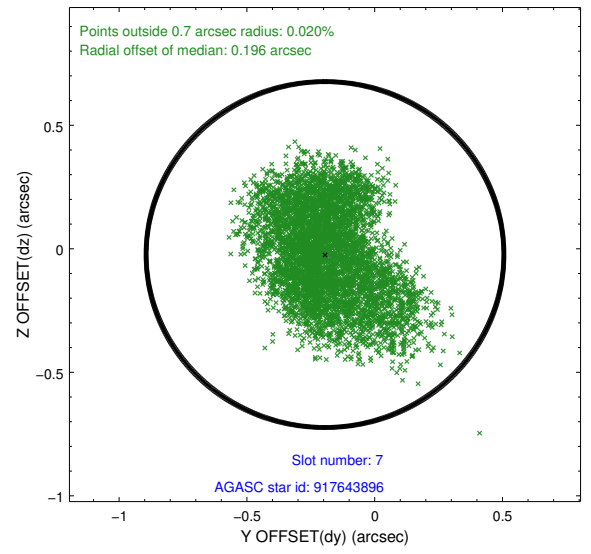
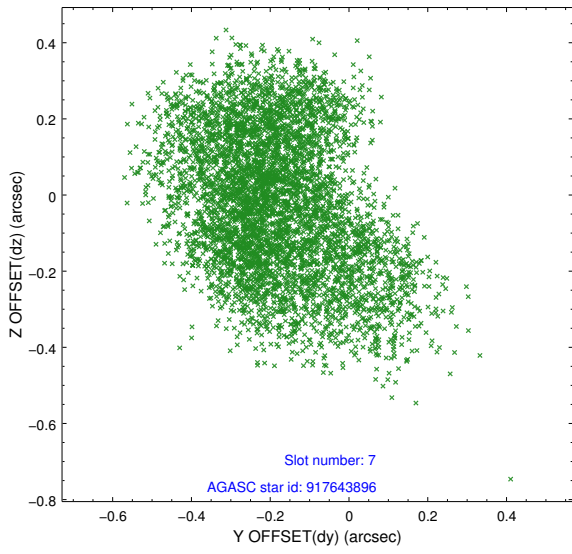
### 2.4.3 Slot 6



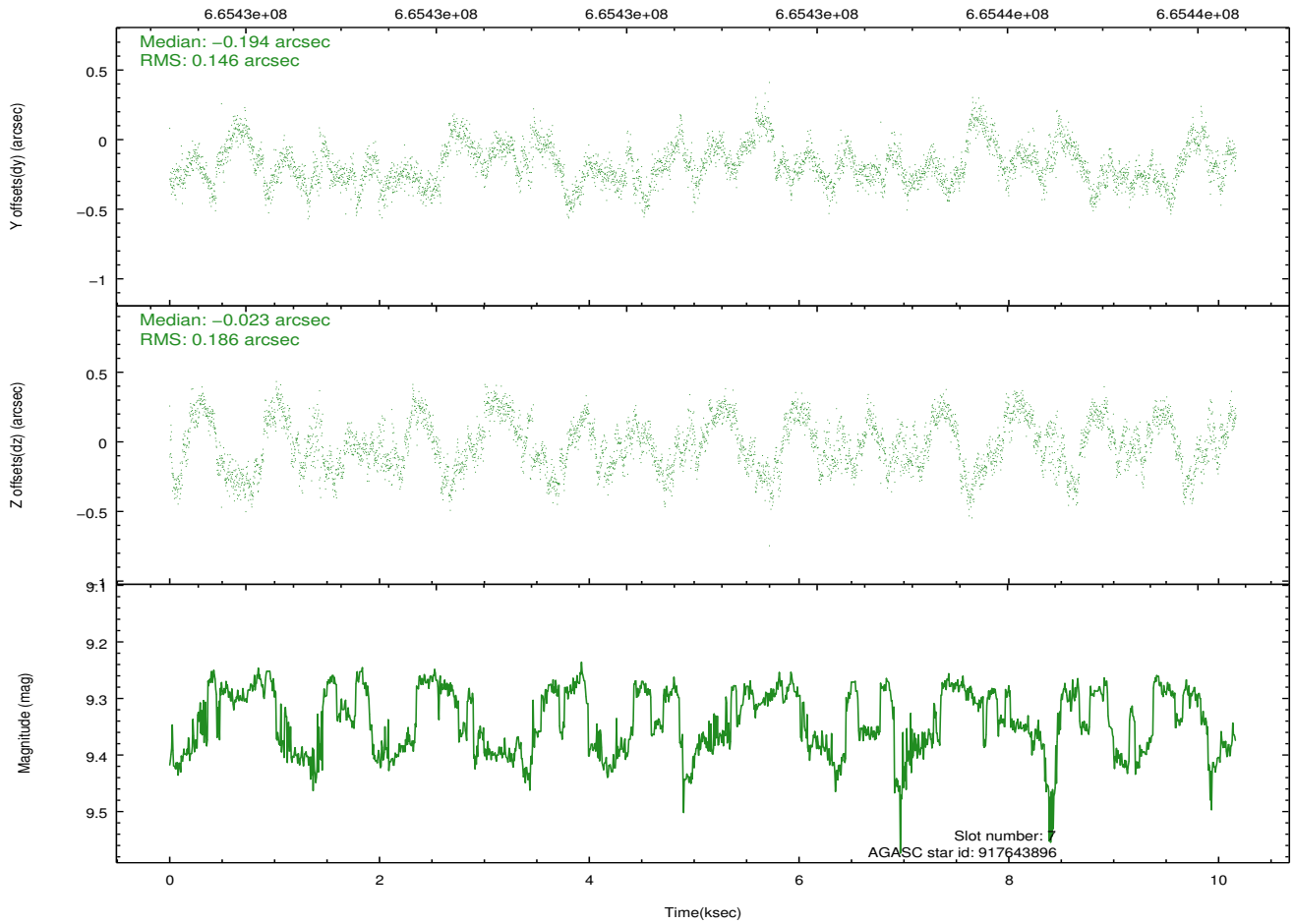
Time (s)



### 2.4.4 Slot 7

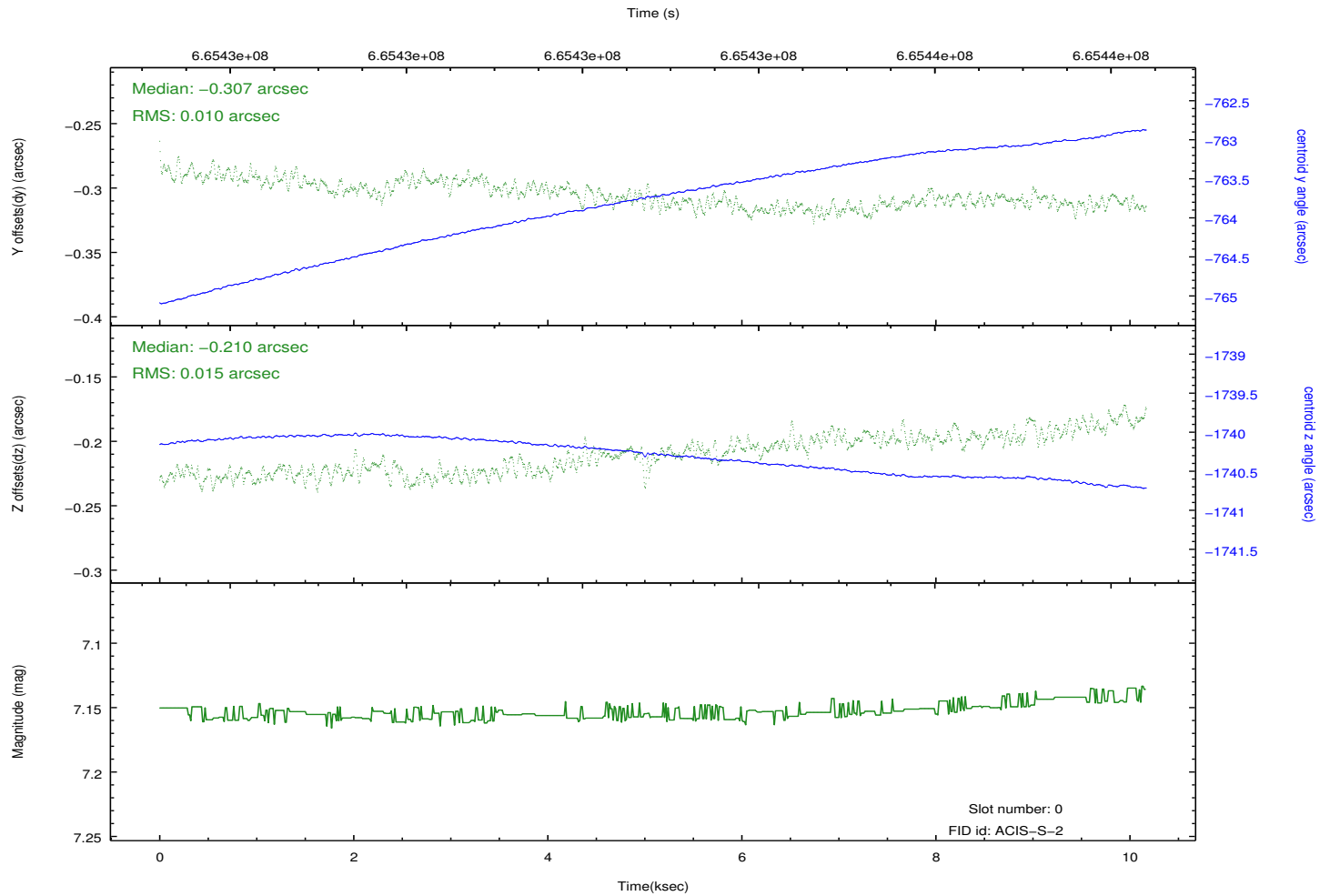
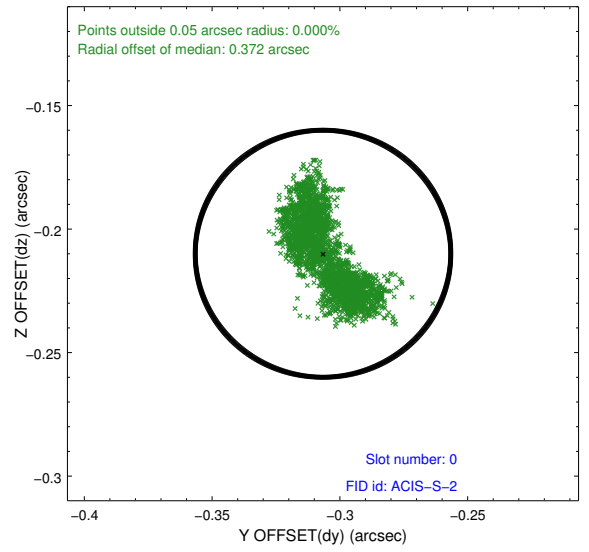
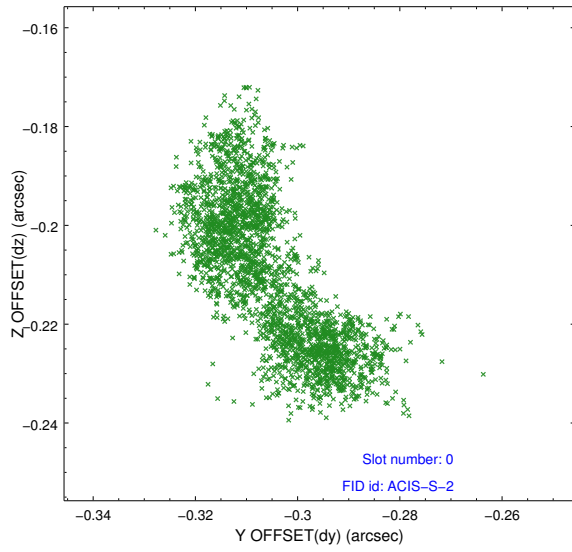


Time (s)

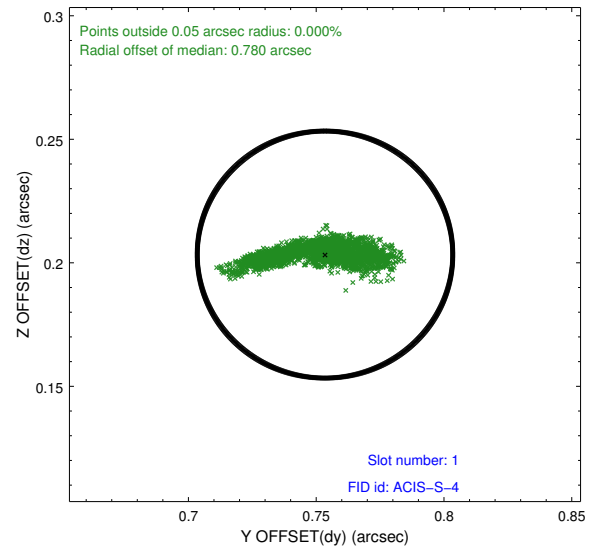
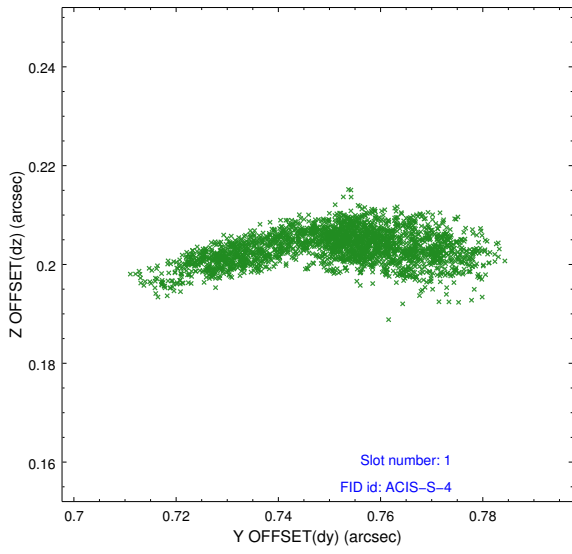


## 2.5 FID Slots

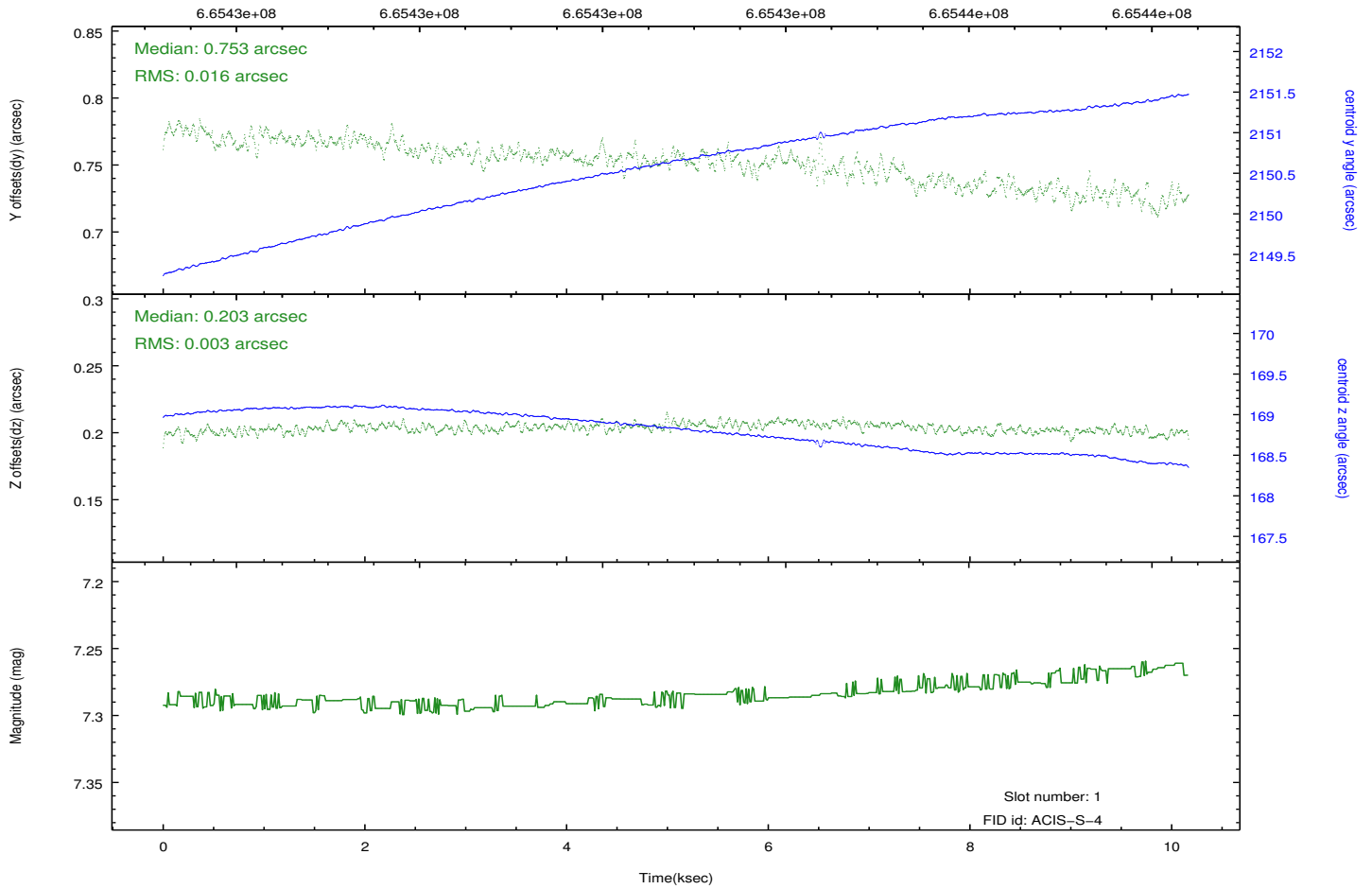
### 2.5.1 Slot 0



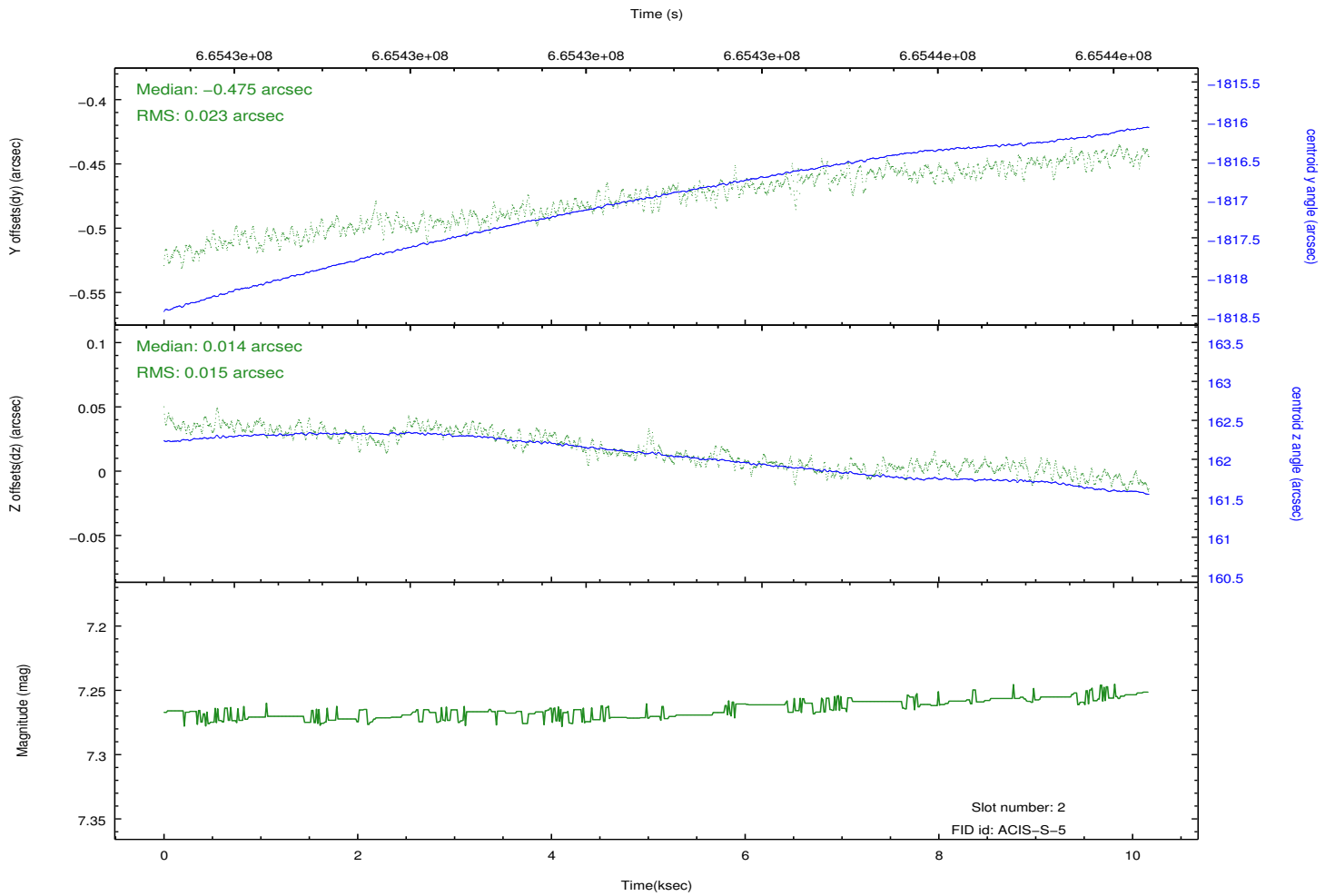
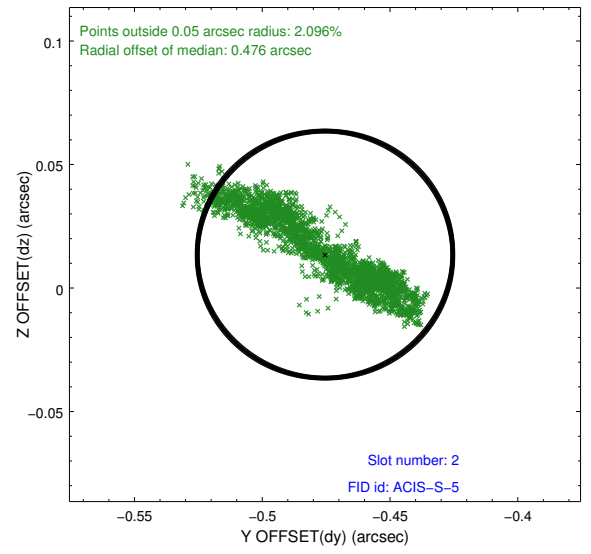
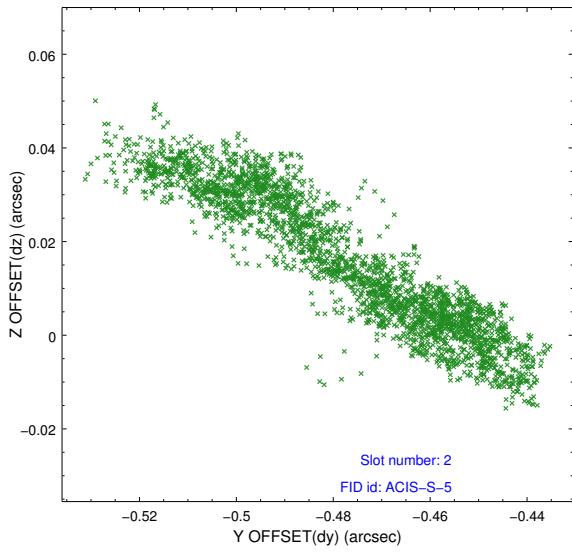
## 2.5.2 Slot 1



Time (s)



### 2.5.3 Slot 2



# A Summary

## A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.02.04
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.060500371575

## 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.

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The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

[http://asc.harvard.edu/cal/Acis/Cal\\_prods/Gain\\_and\\_Spectral\\_Resolution/A\\_CIS\\_response\\_summary.html](http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/A_CIS_response_summary.html)

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
  - 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
  - 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
  - 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
  - 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.
- In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.