

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22125 - L2 Version 2
Chandra X-Ray Center

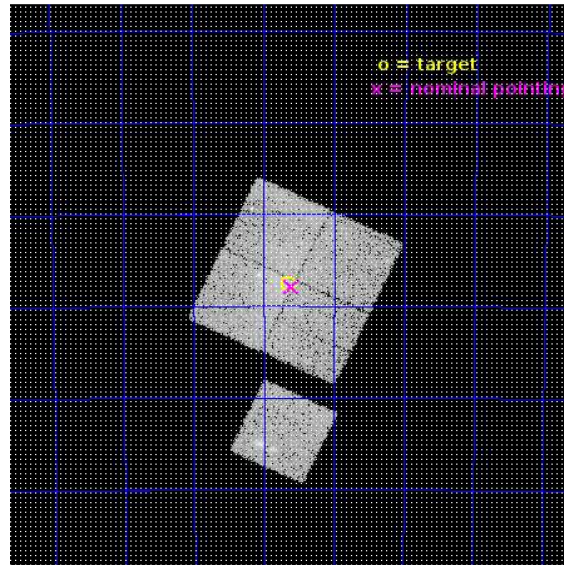
L2 Processing Date : Mar 6 2019

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1 Front

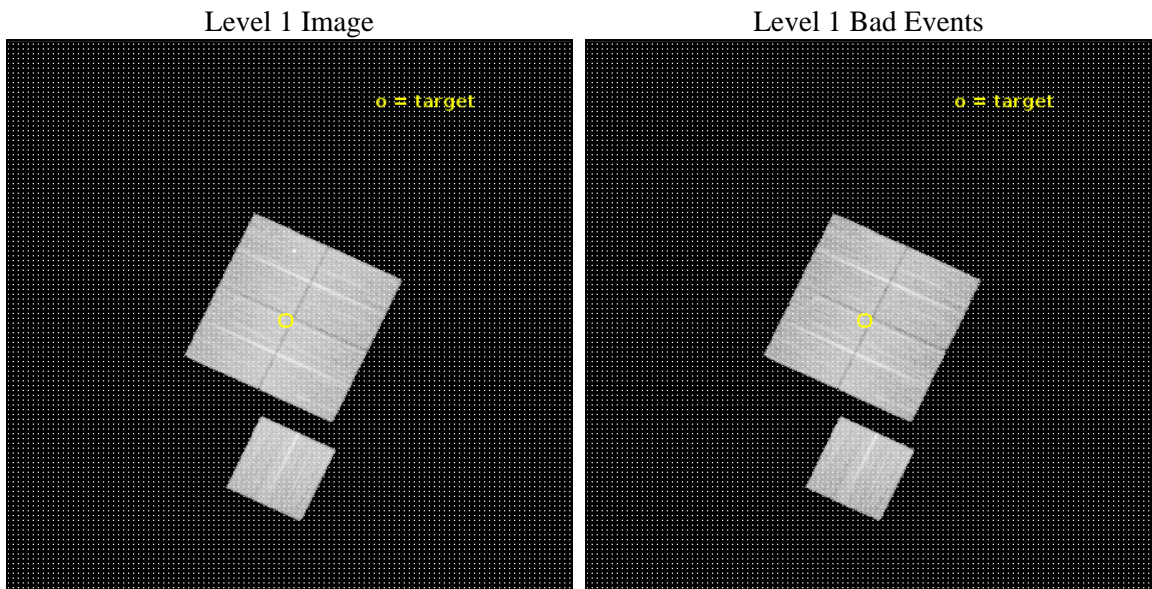
seq_num	801744	Sequence number
obs_id	22125	Observation id
title	Double bullet cluster A4067	Proposal title
observer	Chong Ge	Principal investigator
object	Abell 4067	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	359.660833	Observer's specified target RA [deg]
dec_targ	-60.625806	Observer's specified target Dec [deg]
ra_nom	359.65186570923	Nominal RA [deg]
dec_nom	-60.631723754165	Nominal Dec [deg]
roll_nom	205.20088703086	Nominal Roll [deg]
revision	2	Processing version of data
ontime	18057.459128857	Sum of GTIs [s]
livetime	17821.52513163	Livetime [s]
ontime0	18060.600139022	Sum of GTIs [s]
ontime1	18057.459128737	Sum of GTIs [s]
ontime2	18060.600139022	Sum of GTIs [s]
ontime3	18057.459128857	Sum of GTIs [s]
ontime6	18057.45913887	Sum of GTIs [s]
l2events	71810	Number of level 2 events



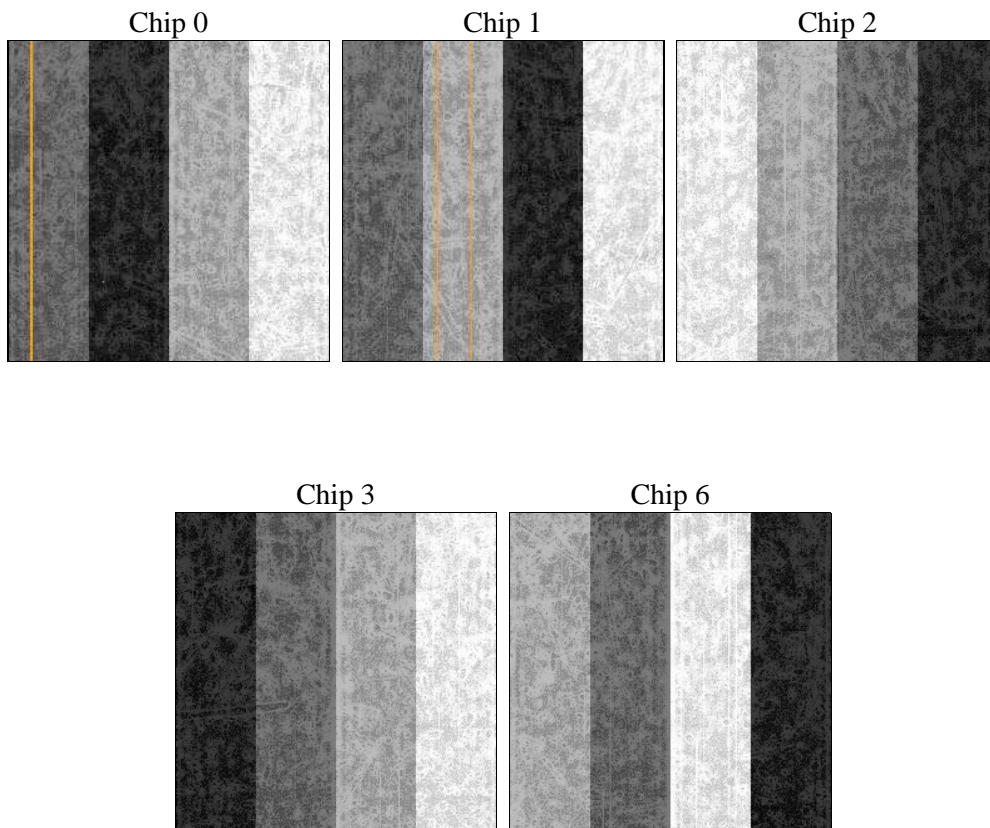
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	18000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	18057.459128857	Sum of GTIs [s]
caldbver	4.8.2	 	ontime0	18060.600139022	Sum of GTIs [s]
date	2019-03-06T23:36:56	Date and time of file creation	ontime1	18057.459128737	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	18060.600139022	Sum of GTIs [s]
			ontime3	18057.459128857	Sum of GTIs [s]
			ontime6	18057.45913887	Sum of GTIs [s]
			l1events	716027	Number of level 1 events

2.1.4 Events

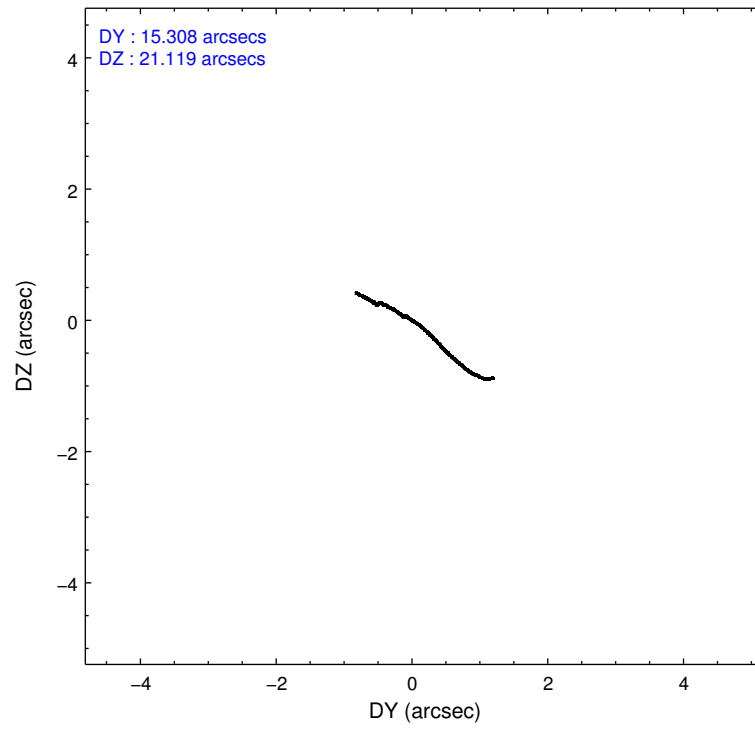
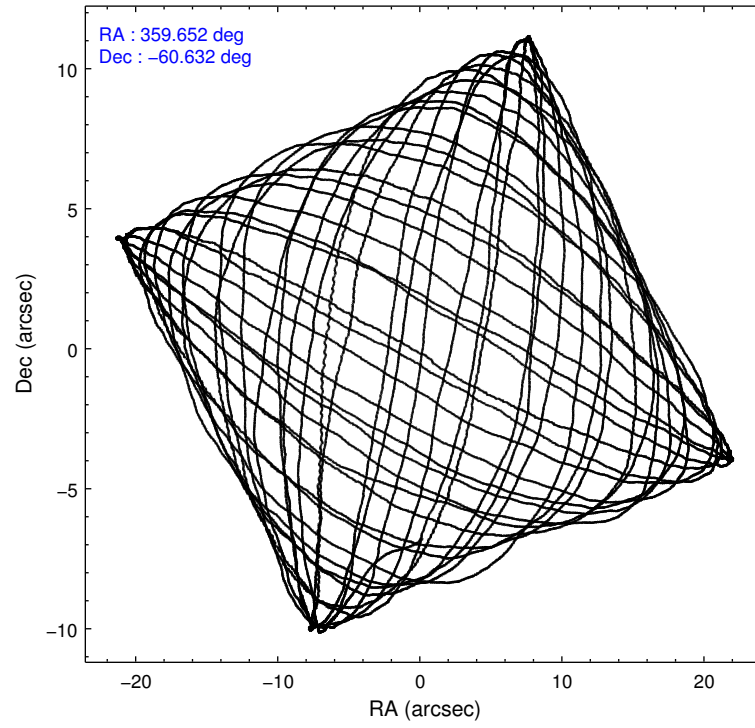
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	136518	137513	149678	143544	148774
rejected events	120817	117233	134303	126129	132431
rejected %	88%	85%	89%	87%	89%

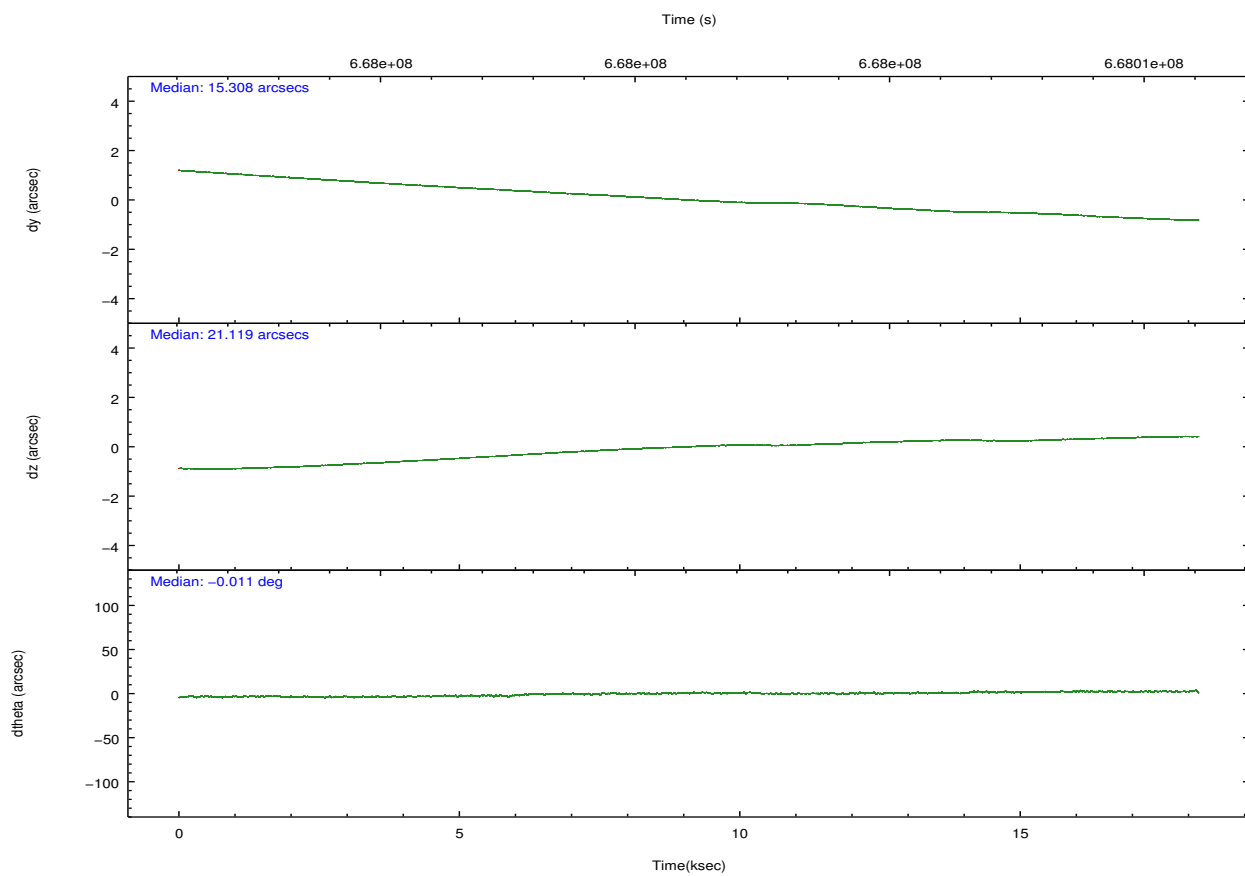
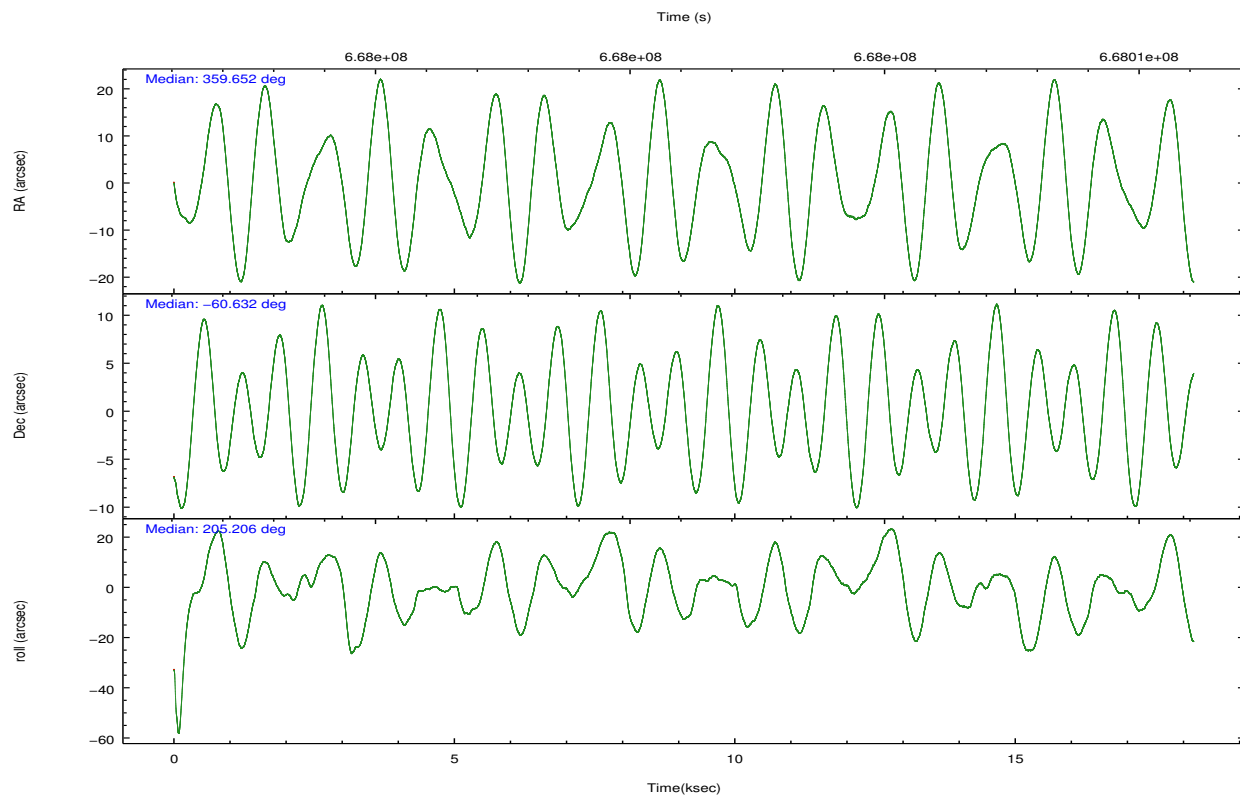
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	5334	7722	5883	7879	5303
	3%	5%	3%	5%	3%
grade 1 events	74	62	90	105	55
	0%	0%	0%	0%	0%
grade 2 events	4085	5303	3474	3364	4227
	2%	3%	2%	2%	2%
grade 3 events	1510	1520	1459	1518	1327
	1%	1%	0%	1%	0%
grade 4 events	1347	1525	1521	1578	1409
	0%	1%	1%	1%	0%
grade 5 events	5304	5524	5101	6144	5650
	3%	4%	3%	4%	3%
grade 6 events	3433	4221	3043	3079	4081
	2%	3%	2%	2%	2%
grade 7 events	115431	111636	129107	119877	126722
	84%	81%	86%	83%	85%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01236	ACIS-01236	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	359.683823	359.6518657092324	Subarray requested	NONE	NONE
[deg] Pointing Dec	-60.608988	-60.63172375416485	Alternating exposures requested	N	N
[deg] Pointing Roll	205.020034	205.2008870308618	[s] Primary exposure time	0.000000	3.1
[mm] SIM focus pos	-0.782348	-0.7809083437167272			
[mm] SIM defocus	0	0.001439871863259334			
[mm] SIM translation stage pos	-233.592463	-233.5874344608287			
[mm] SIM translation stage offset	0	-0.005018542100998502			
[s] Observation start time (MET)	667992153.184000	667990801.39143			
Observation start date	2019-03-03T09:21:24	2019-03-03T09:00:01			
[s] Observation end time (MET)	668010153.184000	668011506.39266			
Observation end date	2019-03-03T14:21:24	2019-03-03T14:45:06			
Read mode	TIMED	TIMED			

2.3 Aspect



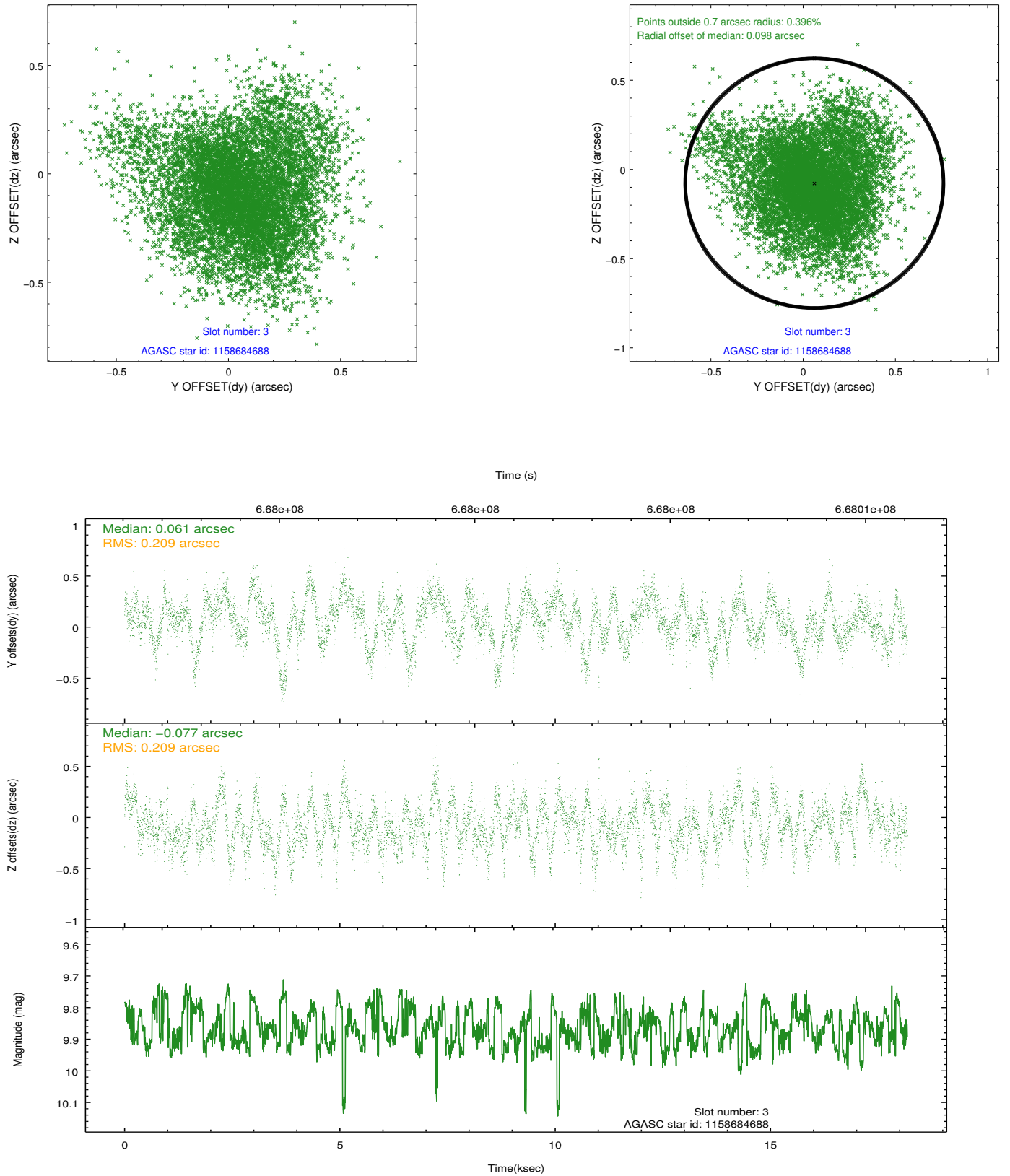


Slot Statistics

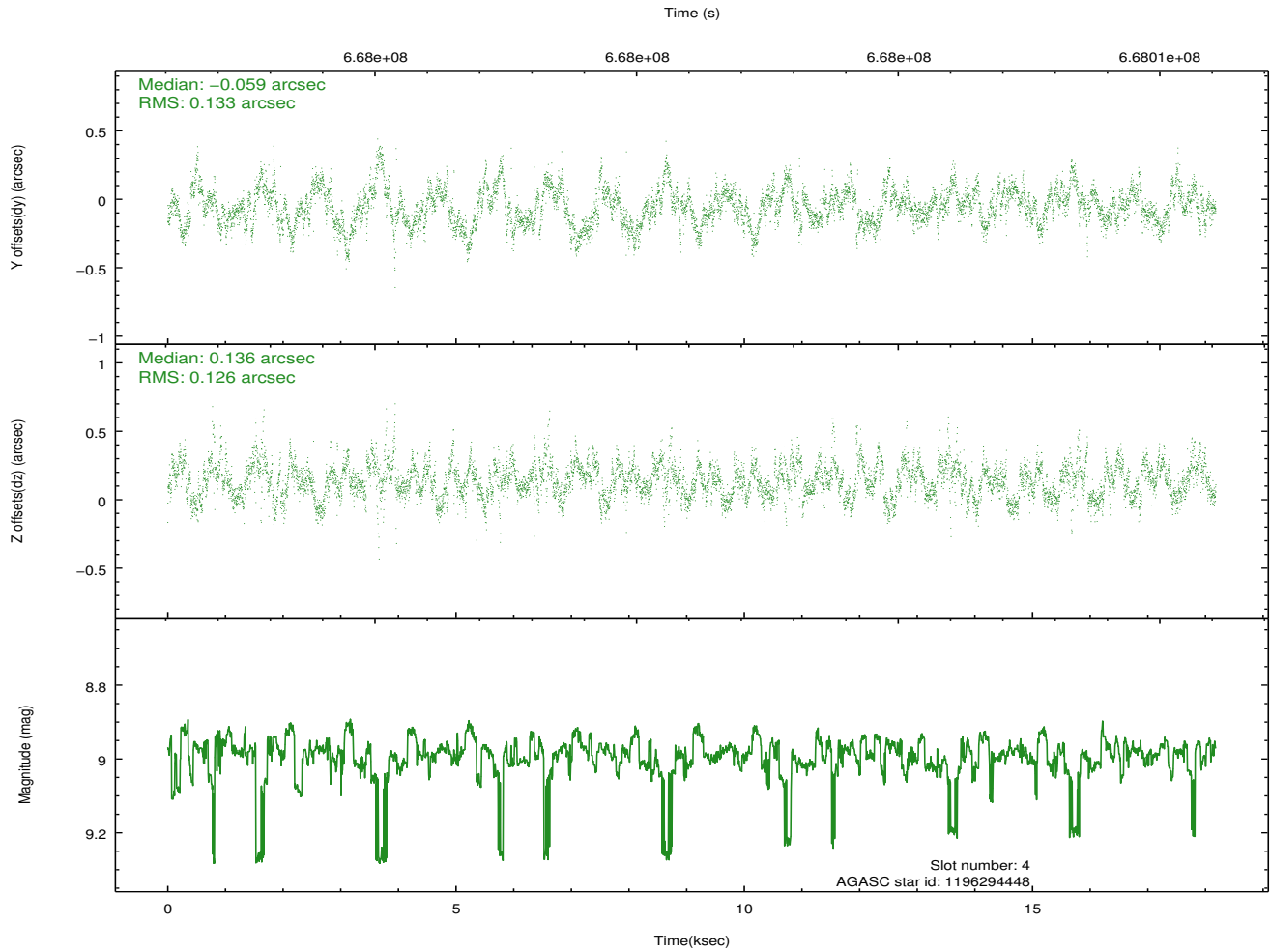
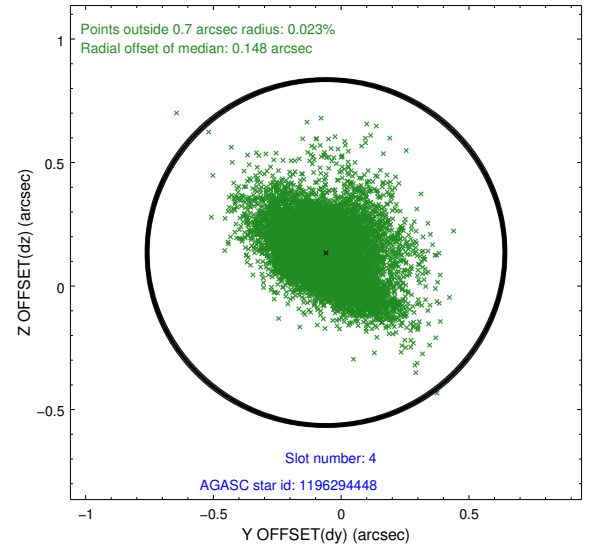
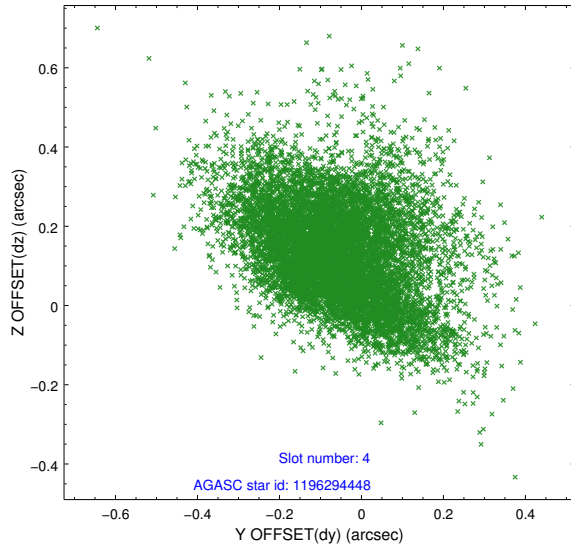
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.26	4435	1.000	0.230	-0.230	0.025	0.036	0.000000	0.000000	924.43	-844
1	FID		ACIS-I-3	7.49	4433	1.000	-0.074	0.182	0.030	0.061	0.000000	0.000000	41.77	-977
2	FID		ACIS-I-5	7.25	4435	1.000	-0.243	0.119	0.013	0.026	0.000000	0.000000	-1824.54	1052
3	GUIDE	used	1158684688	9.87	8841	1.000	0.061	-0.077	0.316	0.518	1.119998	-60.745878	-2069.38	1541
4	GUIDE	used	1196294448	8.99	8852	1.000	-0.059	0.136	0.188	0.330	358.652774	-60.349341	1272.04	-1608
5	GUIDE	used	1196296176	9.89	8579	1.000	0.375	0.401	0.314	0.631	359.593480	-60.213862	-455.01	-1356
6	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
7	GUIDE	used	1196299136	8.55	8860	1.000	-0.345	-0.404	0.141	0.224	358.918581	-60.979672	1778.05	651

2.4 Star Slots

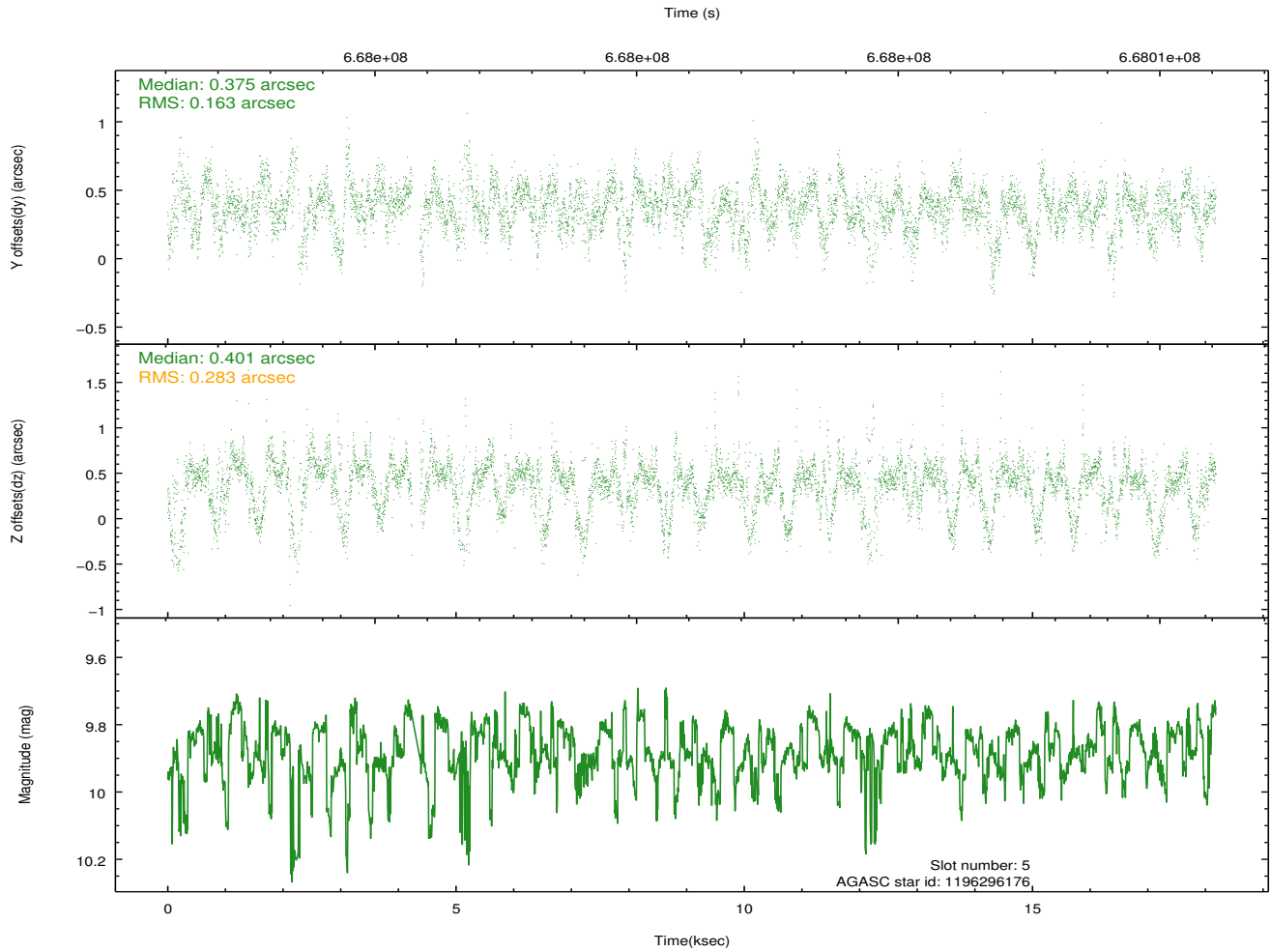
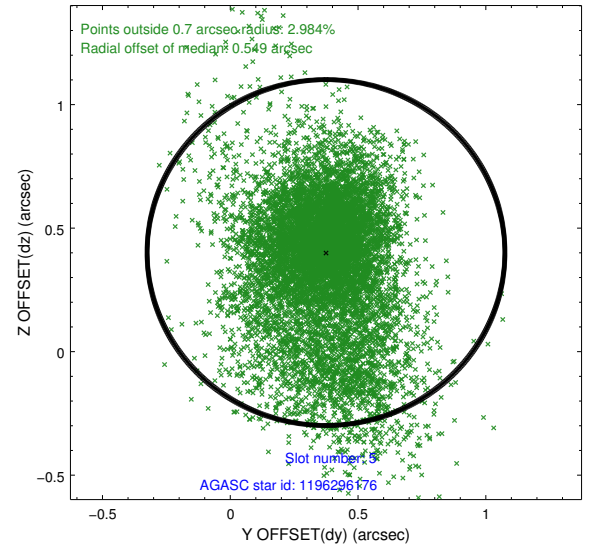
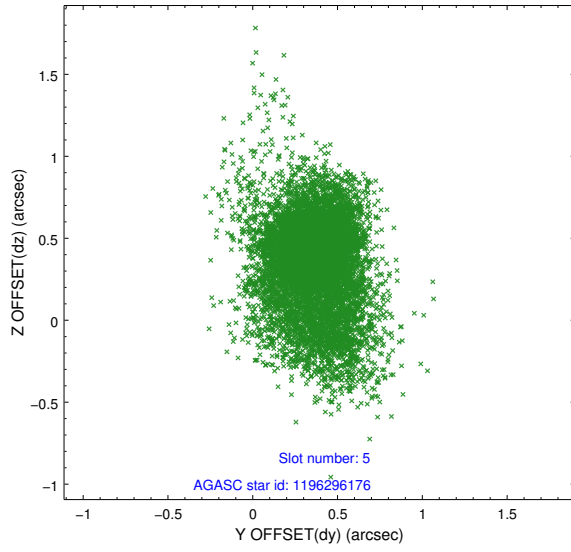
2.4.1 Slot 3



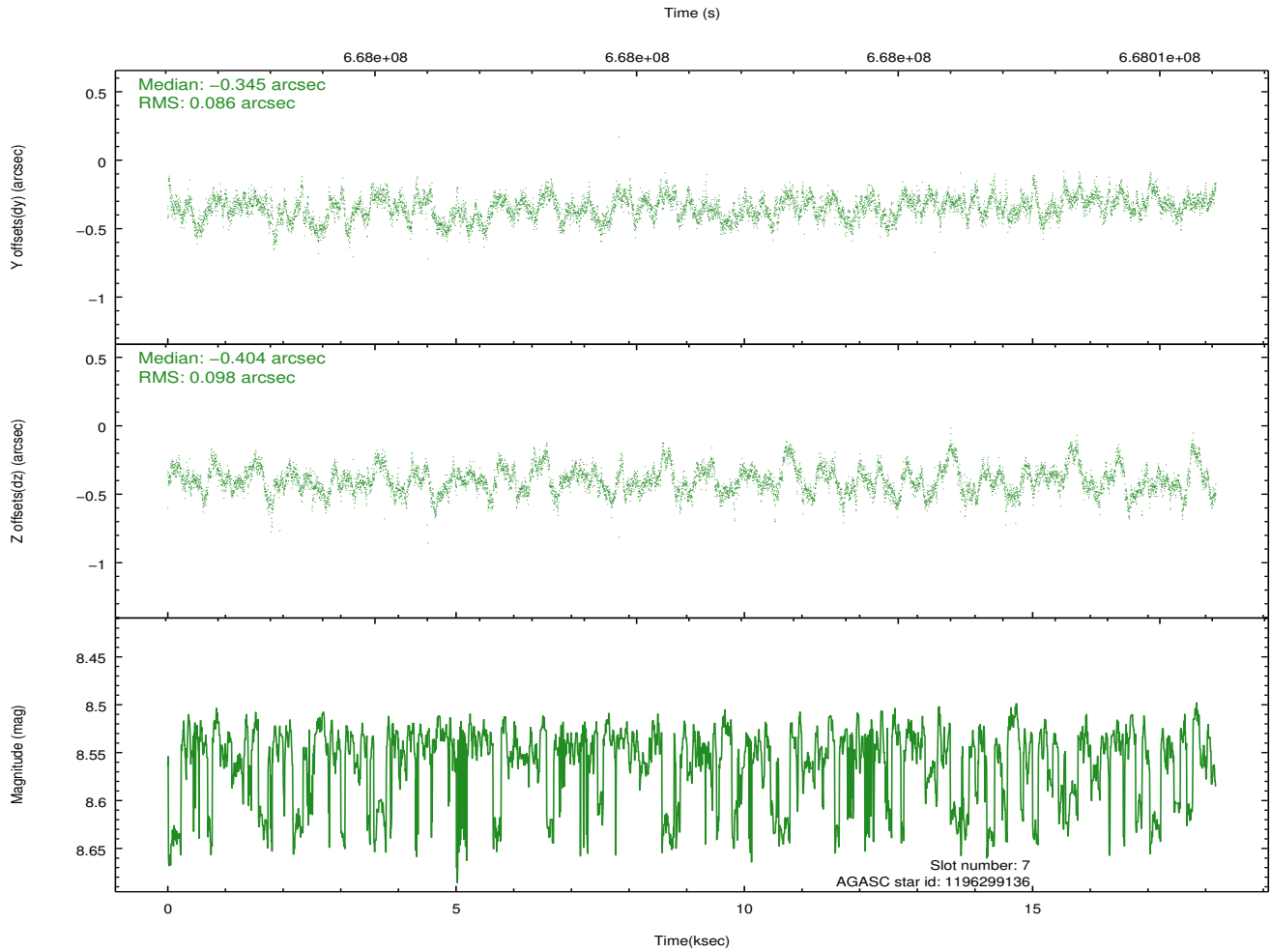
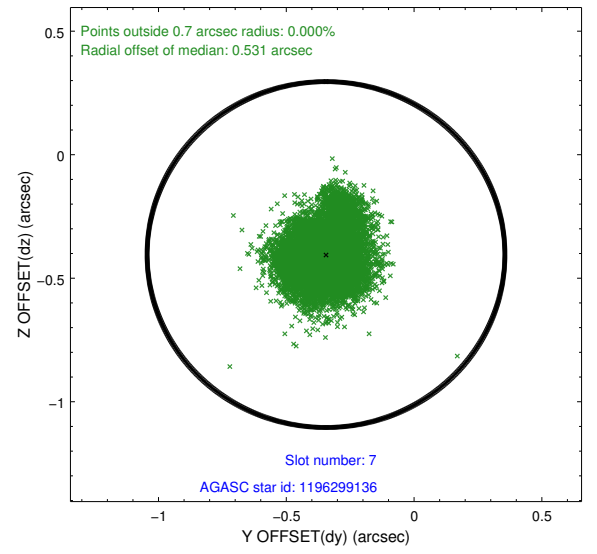
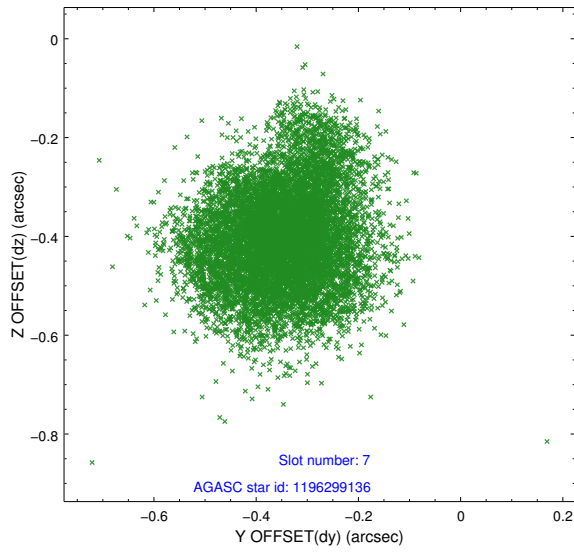
2.4.2 Slot 4



2.4.3 Slot 5

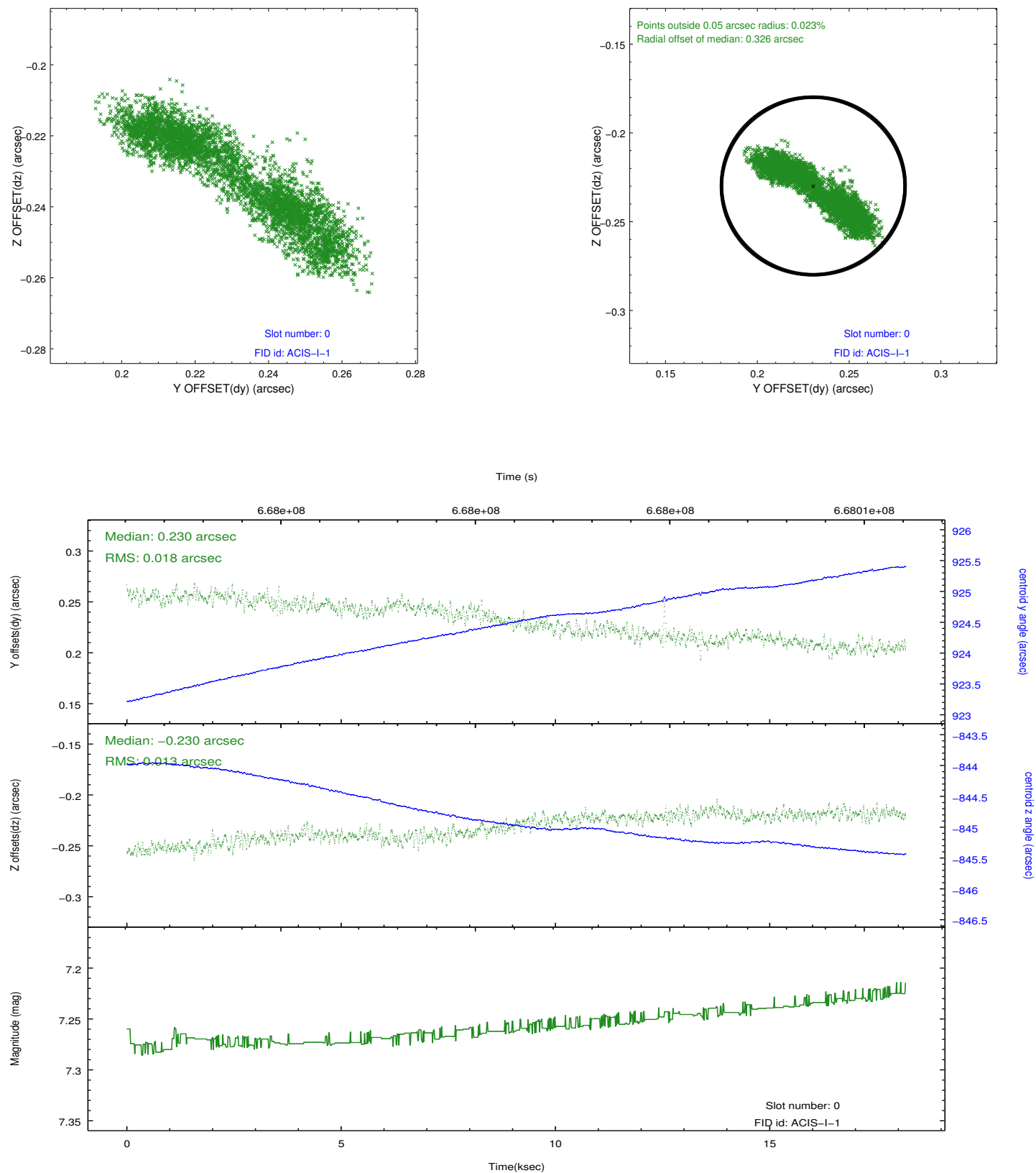


2.4.4 Slot 7

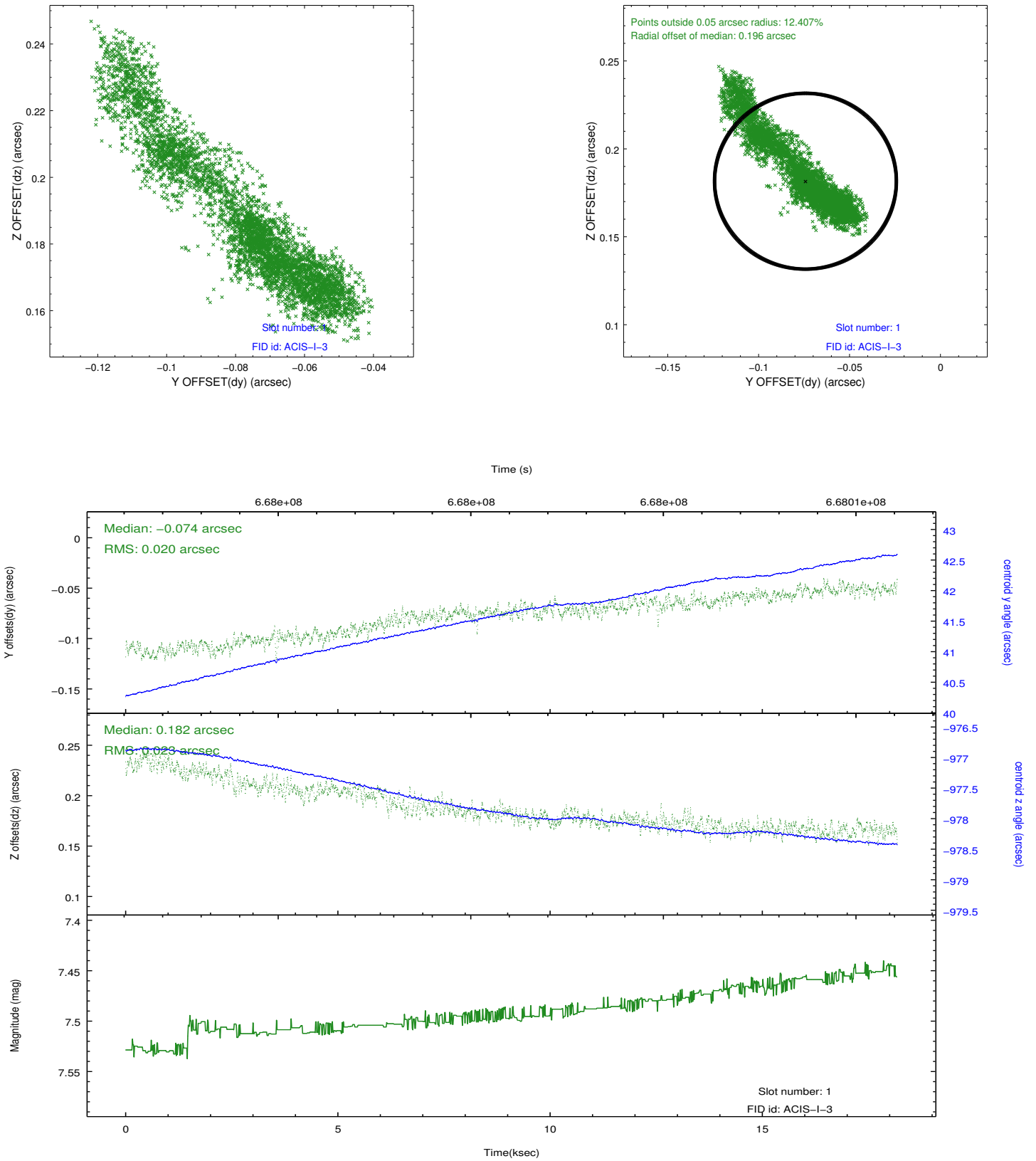


2.5 FID Slots

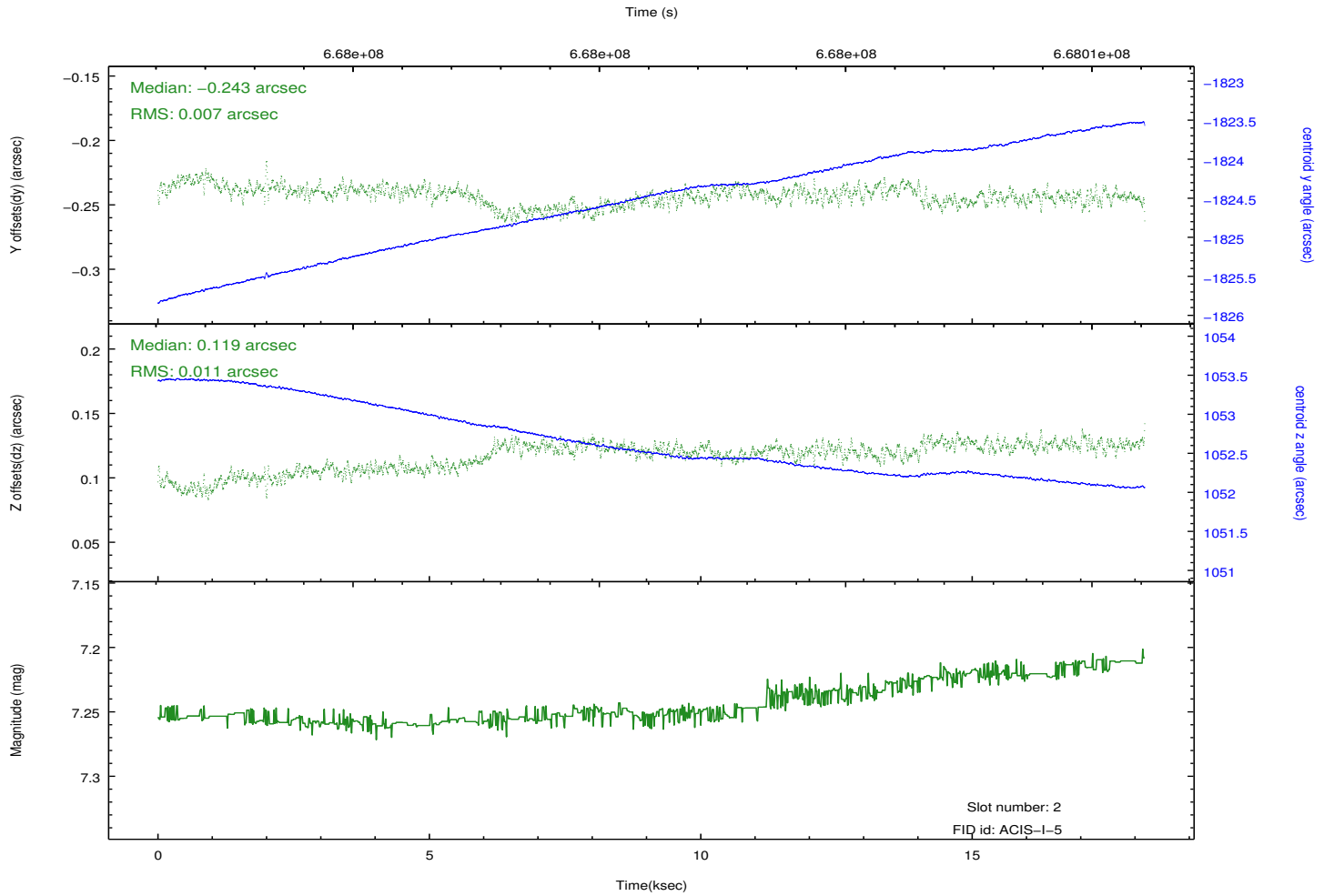
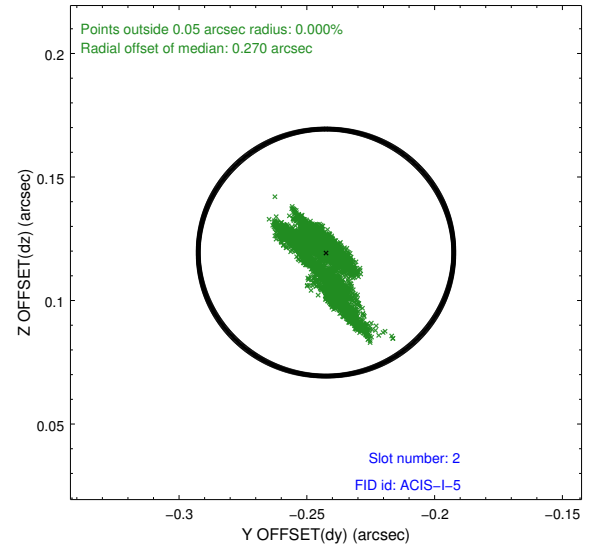
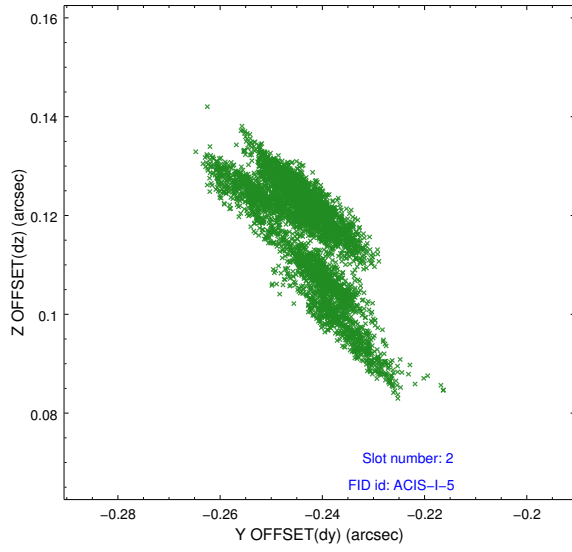
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2019.03.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.057459128857

A.2 Comments

The guide star in slot 6 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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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/Acis_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.