

V&V Reference Report

L2 ASCDS Version : 10.8.4

Observation 23251 - L2 Version 1
Chandra X-Ray Center

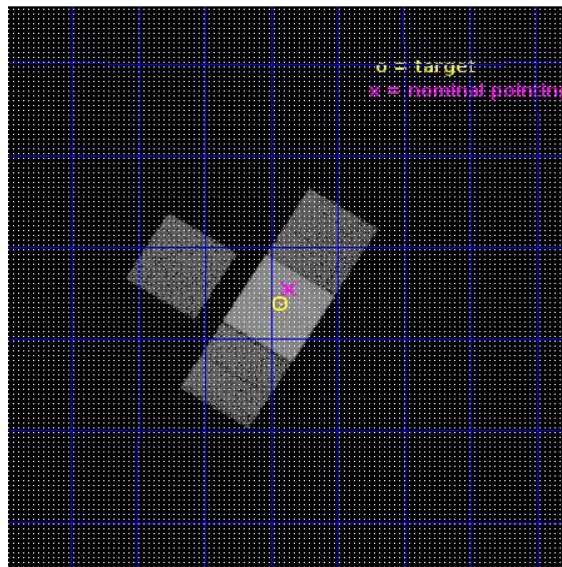
L2 Processing Date : May 18 2020

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1 Front

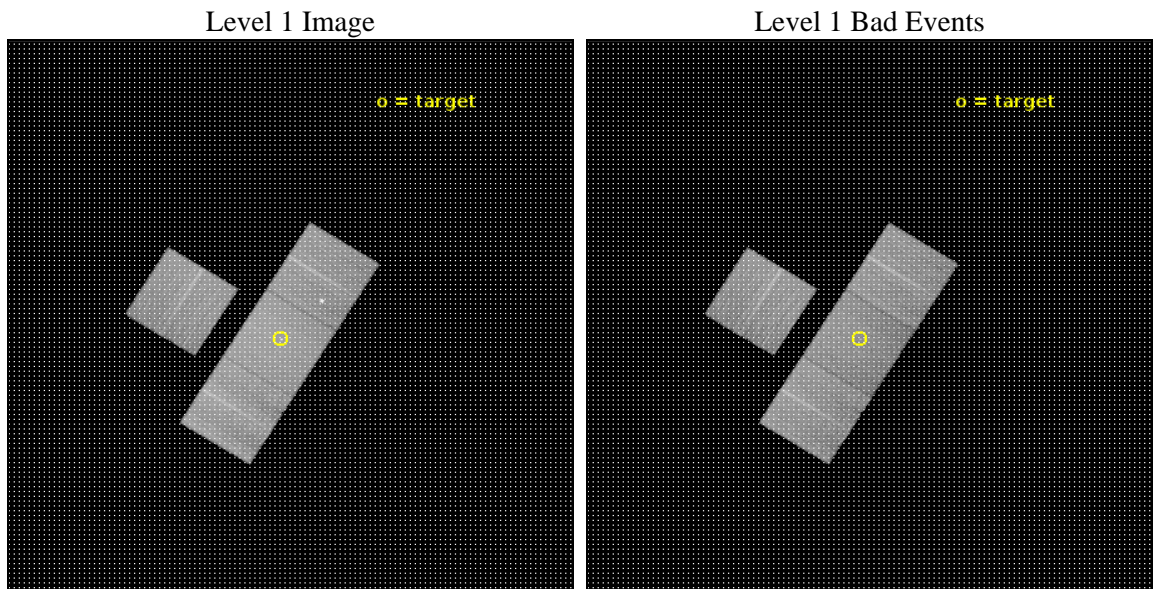
seq_num	503204	Sequence number
obs_id	23251	Observation id
title	Light echoes from the magnetar, SGR J1935+2154	Proposal title
observer	Ersin Gogus	Principal investigator
object	SGR J1935+2154	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	293.732	Observer's specified target RA [deg]
dec_targ	21.89672	Observer's specified target Dec [deg]
ra_nom	293.715248616	Nominal RA [deg]
dec_nom	21.9248958011	Nominal Dec [deg]
roll_nom	121.91447483	Nominal Roll [deg]
revision	1	Processing version of data
ontime	19061.460132599	Sum of GTIs [s]
livetime	18812.408123124	Livetime [s]
ontime3	19061.378052592	Sum of GTIs [s]
ontime6	19061.419092655	Sum of GTIs [s]
ontime7	19061.460132599	Sum of GTIs [s]
ontime8	19058.195982337	Sum of GTIs [s]
l2events	128425	Number of level 2 events



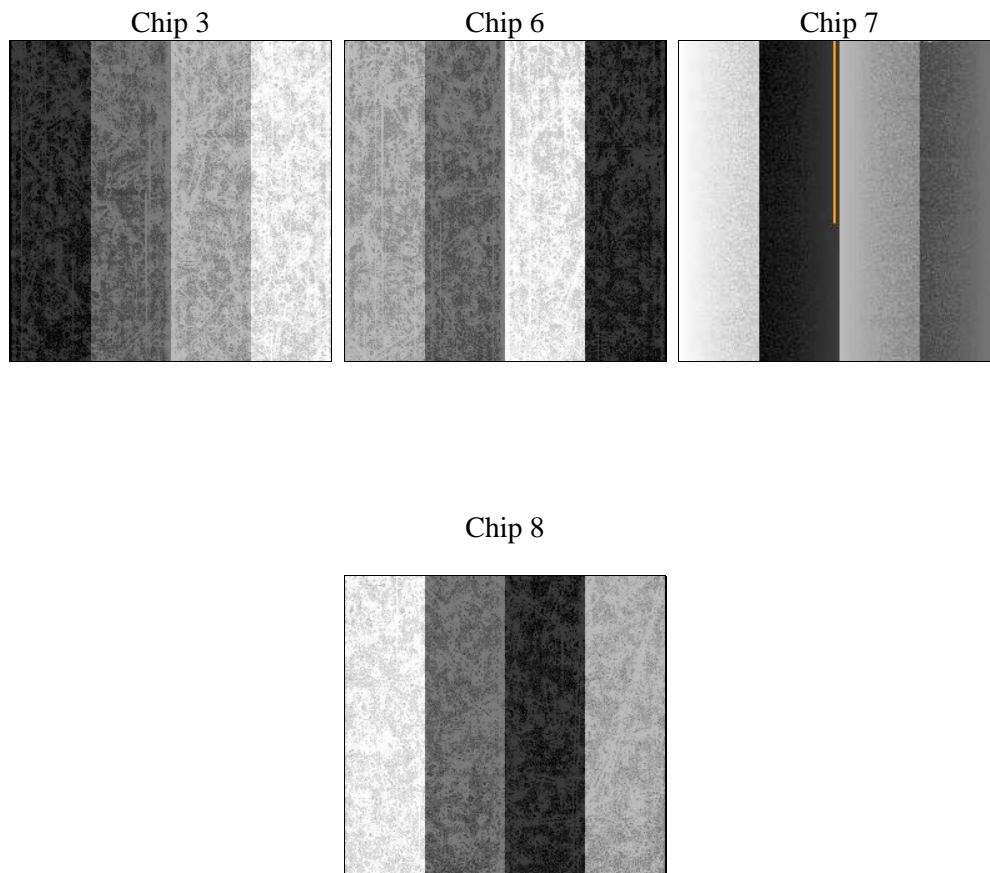
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	19000.000000	[s] Scheduled observation exposure time
ascdsver	10.8.4	Processing system revision	ontime	19061.460132599	Sum of GTIs [s]
caldbver	4.9.1	 	ontime3	19061.378052592	Sum of GTIs [s]
date	2020-05-19T02:02:14	Date and time of file creation	ontime6	19061.419092655	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	19061.460132599	Sum of GTIs [s]
			ontime8	19058.195982337	Sum of GTIs [s]
			l1events	713859	Number of level 1 events

2.1.4 Events

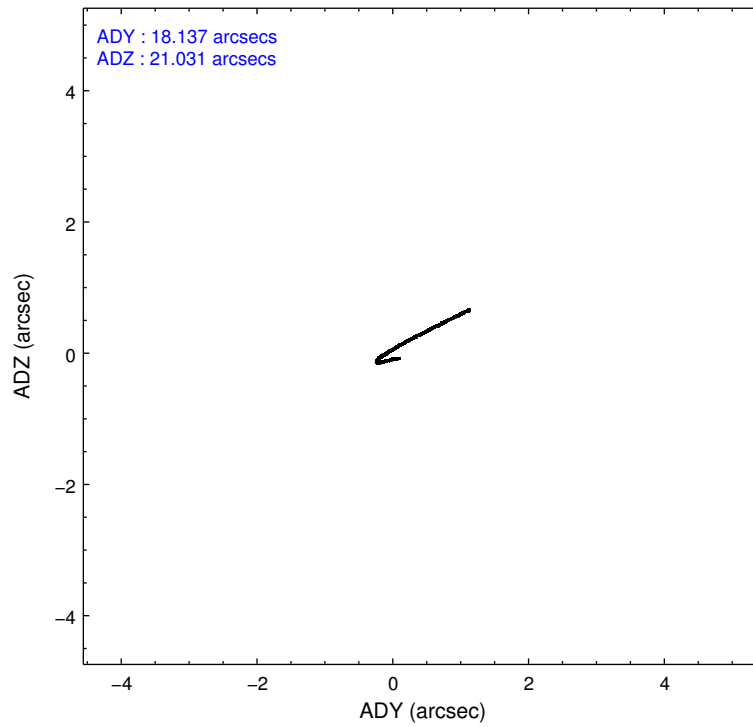
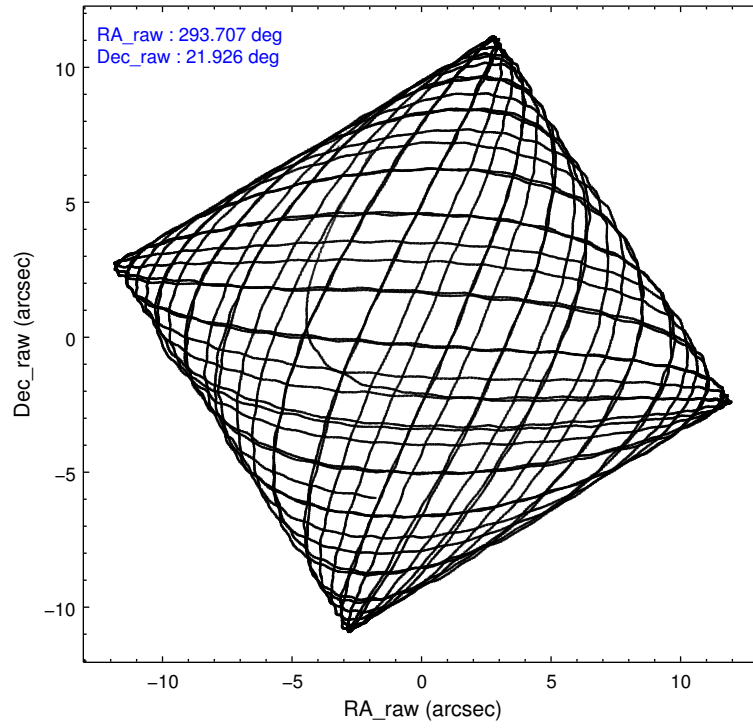
	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	157593	164645	198981	192640
rejected events	142456	141859	112354	144551
rejected %	90%	86%	56%	75%

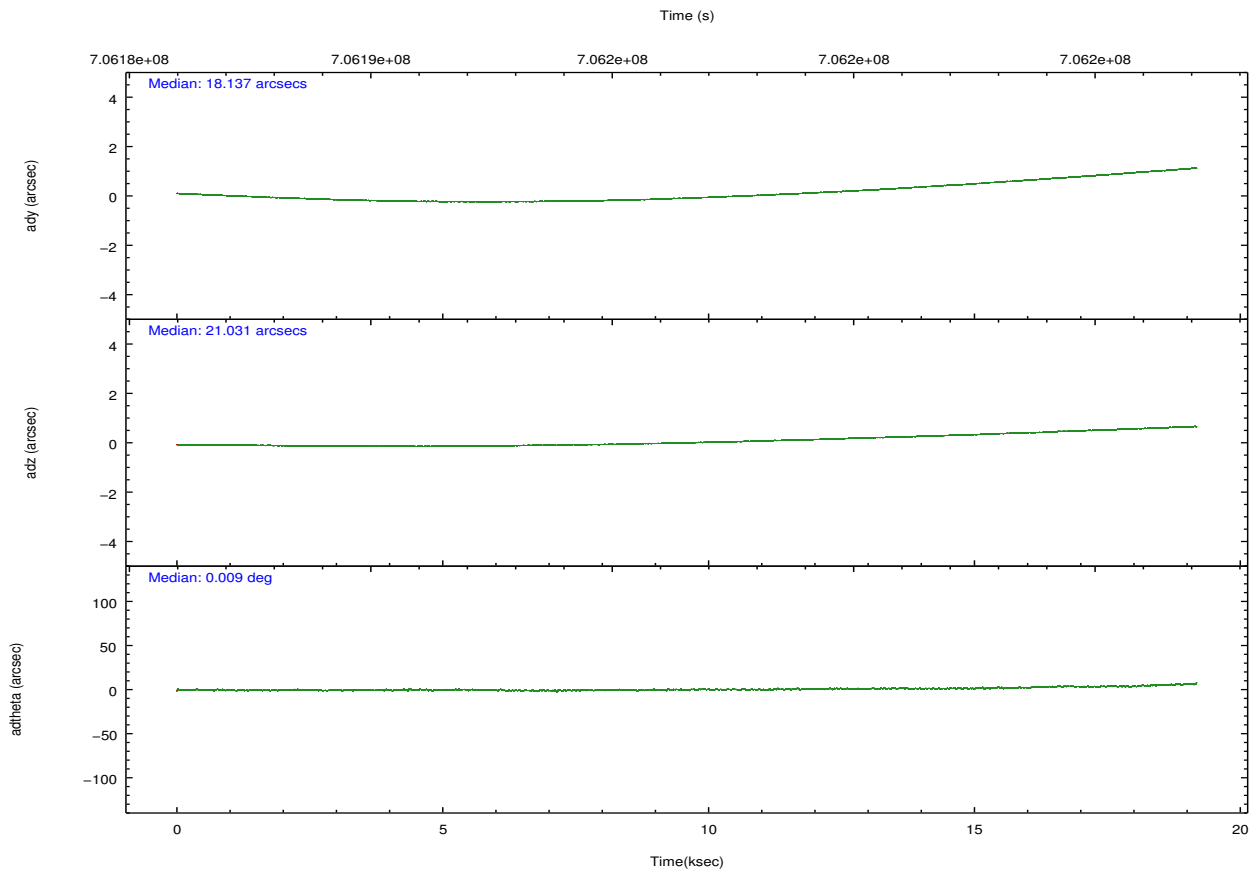
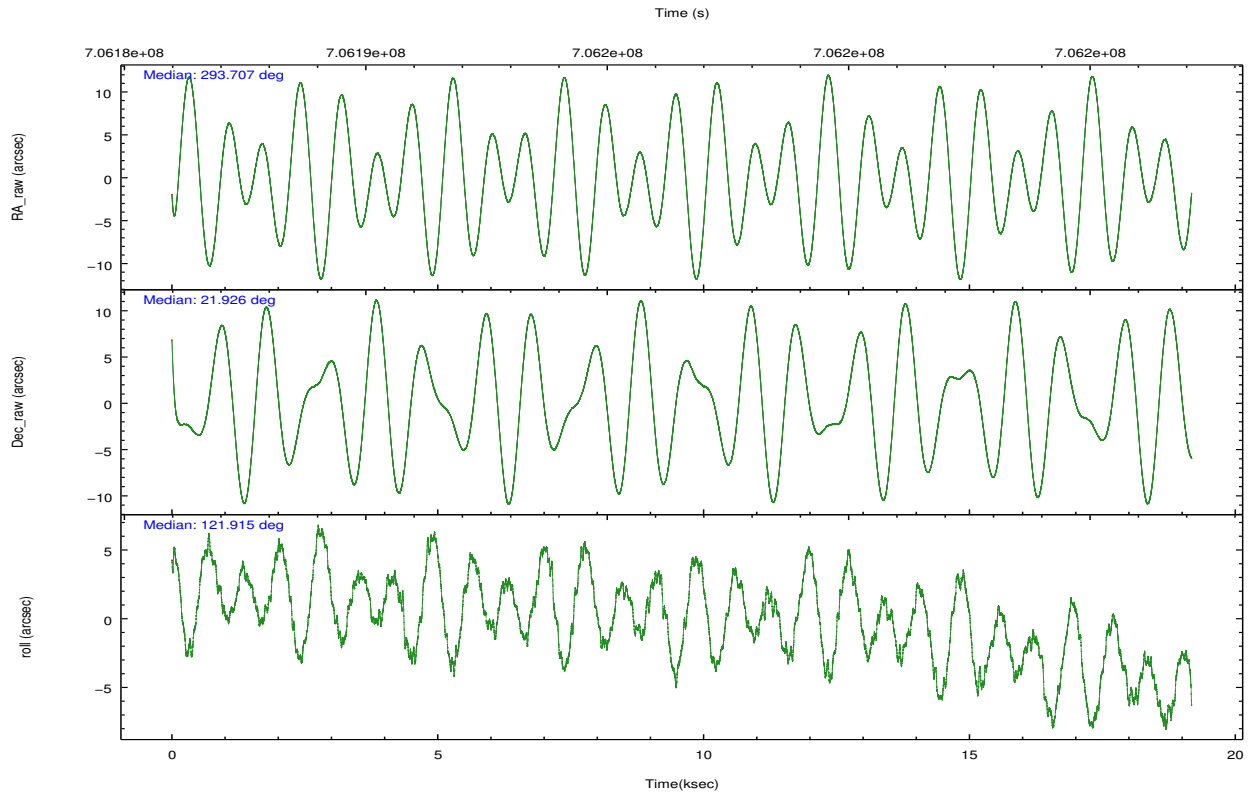
	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	4976	9972	7371	13115
	3%	6%	3%	6%
grade 1 events	73	124	311	148
	0%	0%	0%	0%
grade 2 events	3597	5246	18447	12050
	2%	3%	9%	6%
grade 3 events	1506	1252	6694	4752
	0%	0%	3%	2%
grade 4 events	1459	1253	6644	4393
	0%	0%	3%	2%
grade 5 events	6397	5821	18631	9835
	4%	3%	9%	5%
grade 6 events	3606	5065	47482	13847
	2%	3%	23%	7%
grade 7 events	135979	135912	93401	134500
	86%	82%	46%	69%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
Detector	ACIS-3678	ACIS-3678	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	293.732704	293.715248616	CCD I2 on	O1	N
[deg] Pointing Dec	21.913498	21.9248958011	CCD I3 on	O2	Y
[deg] Pointing Roll	121.758501	121.91447483	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	N	N
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	O3	Y
[s] Observation start time (MET)	706187122.184000	706186094.143	CCD S5 on	N	N
Observation start date	2020-05-18T11:04:13	2020-05-18T10:48:14	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	706206122.184000	706206739.18176	On-chip summing requested	N	N
Observation end date	2020-05-18T16:20:53	2020-05-18T16:32:19	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect





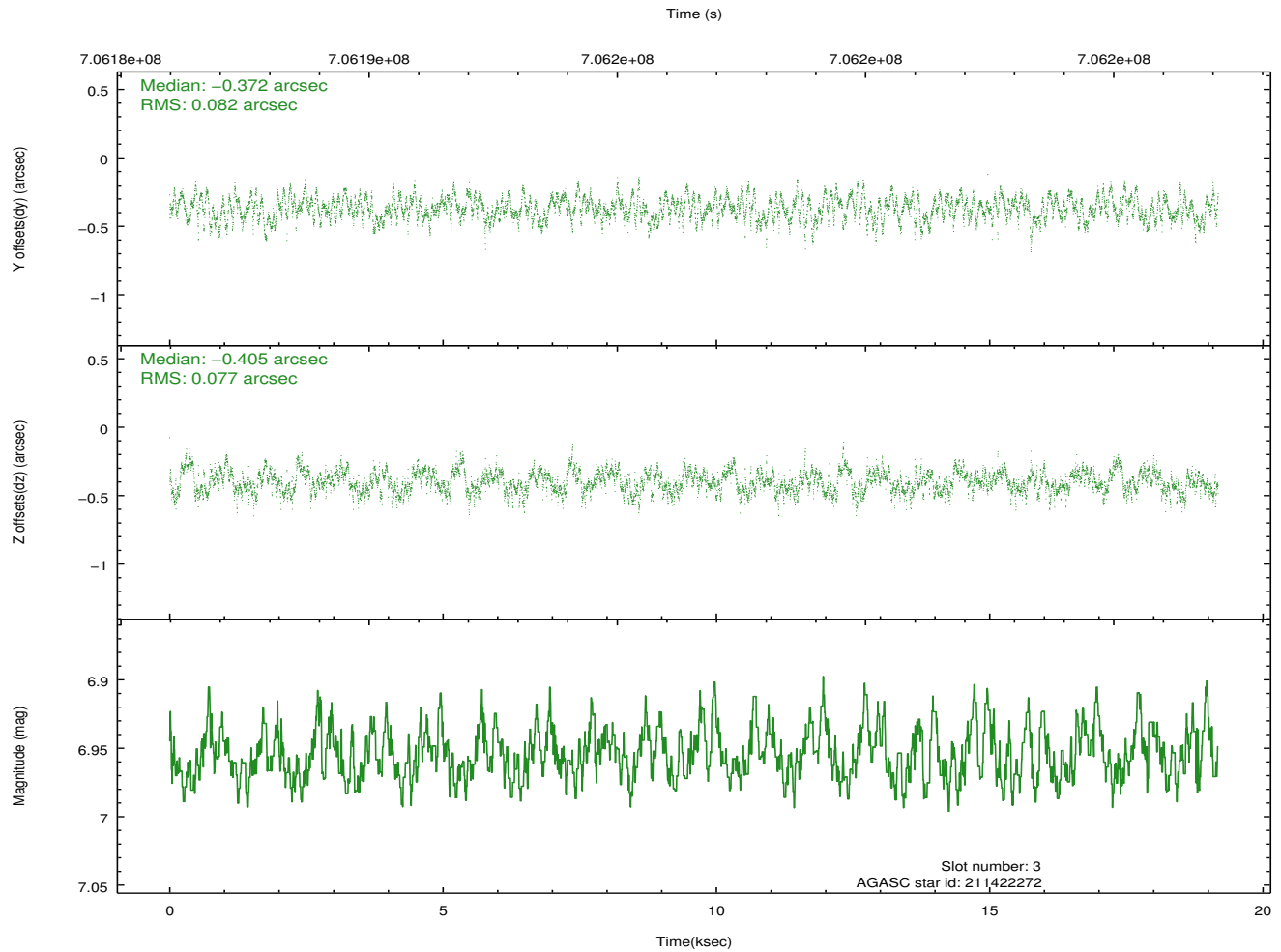
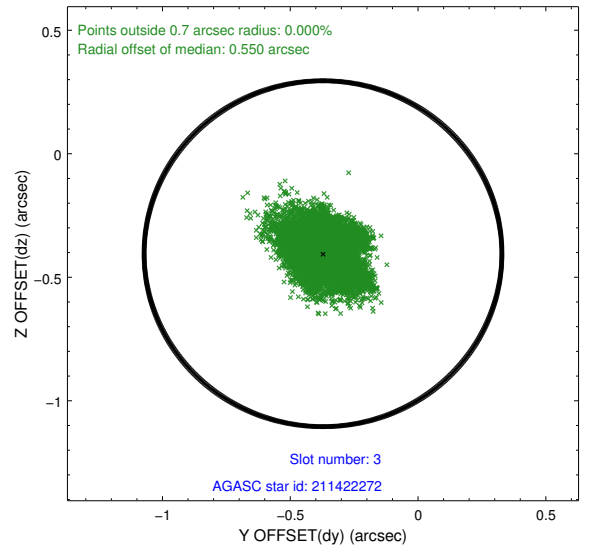
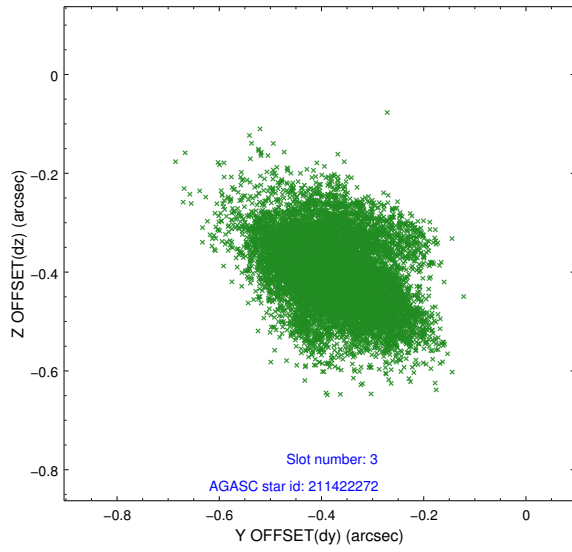
Slot Statistics

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-3	7.42	4676	1.000	0.305	-0.240	0.013	0.027	0.000000	0.000000	41.72	-1871
1	FID		ACIS-S-4	7.31	4679	1.000	0.080	-0.041	0.011	0.032	0.000000	0.000000	2142.12	165
2	FID		ACIS-S-5	7.27	4679	1.000	-0.412	0.292	0.009	0.017	0.000000	0.000000	-1824.32	160
3	GUIDE	used	211422272	6.96	9354	1.000	-0.372	-0.405	0.121	0.189	293.356474	21.840331	435.88	1210
4	GUIDE	used	211423008	7.63	9354	1.000	-0.041	-0.009	0.100	0.174	293.928006	22.140110	351.15	-982
5	GUIDE	used	211550896	7.32	9355	1.000	0.168	0.140	0.141	0.229	294.277529	22.005948	-670.89	-1722
6	GUIDE	used	211554832	7.28	9350	1.000	0.183	0.470	0.118	0.194	294.562841	21.884642	-1541.27	-2305
7	GUIDE	used	280249608	6.84	9355	1.000	0.062	-0.170	0.139	0.237	294.034800	22.585765	1530.51	-2127

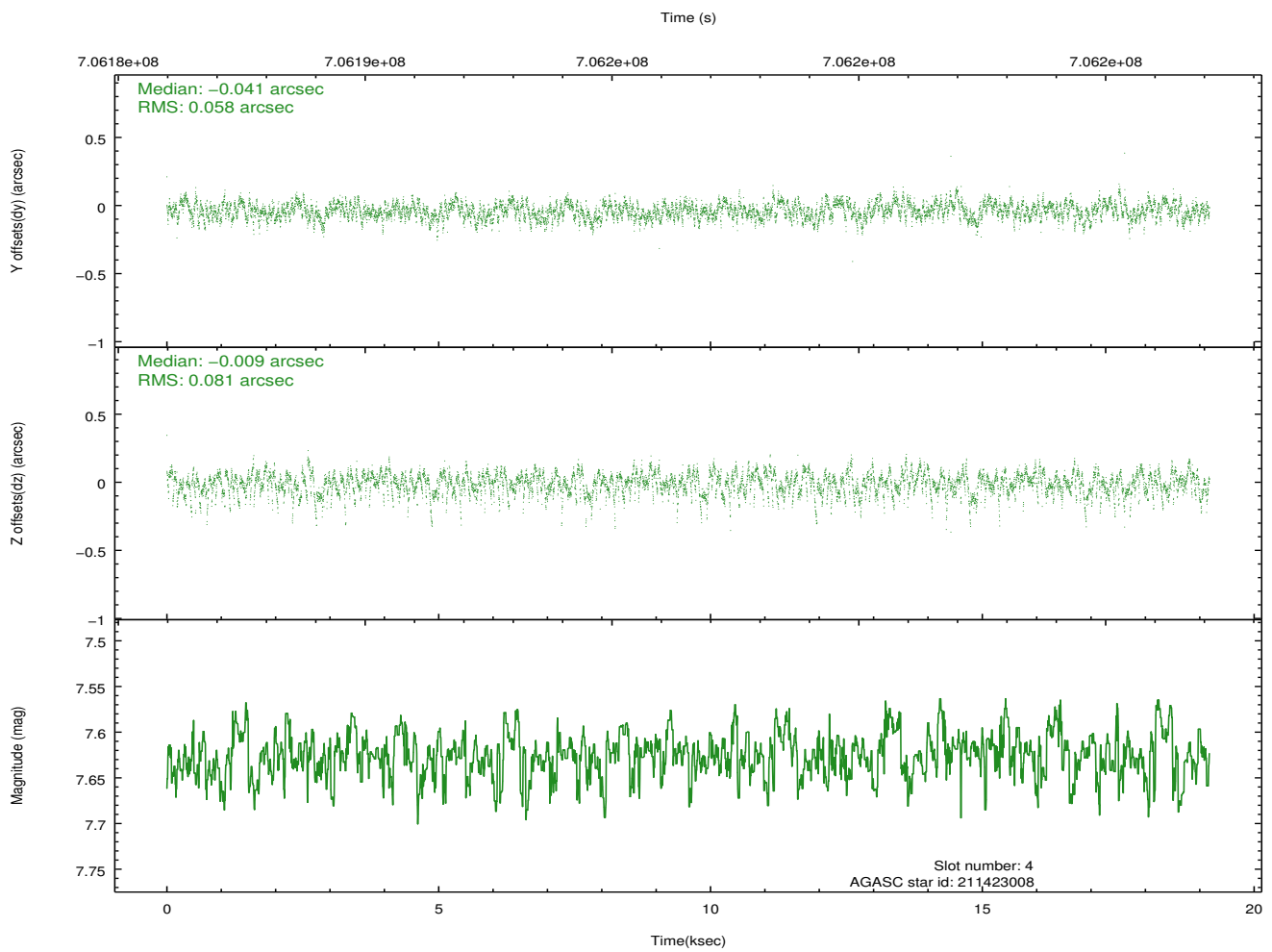
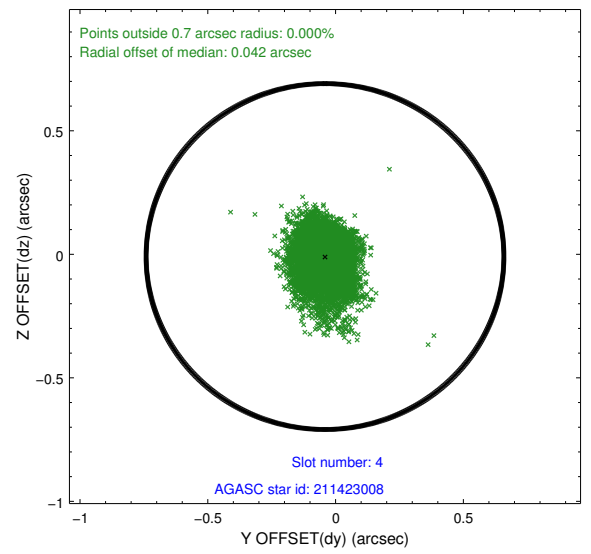
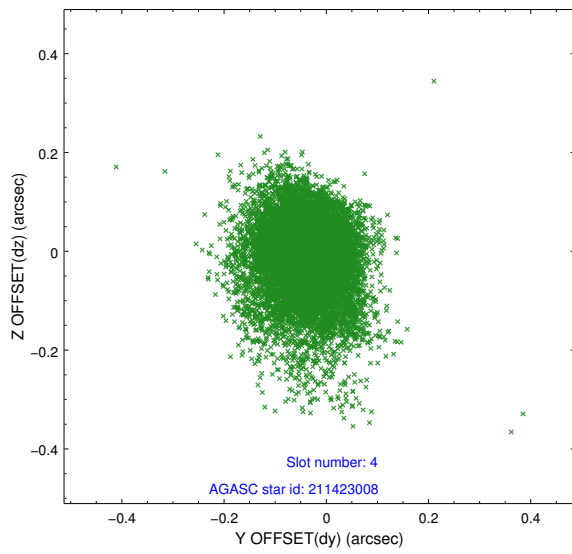
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2.4 Star Slots

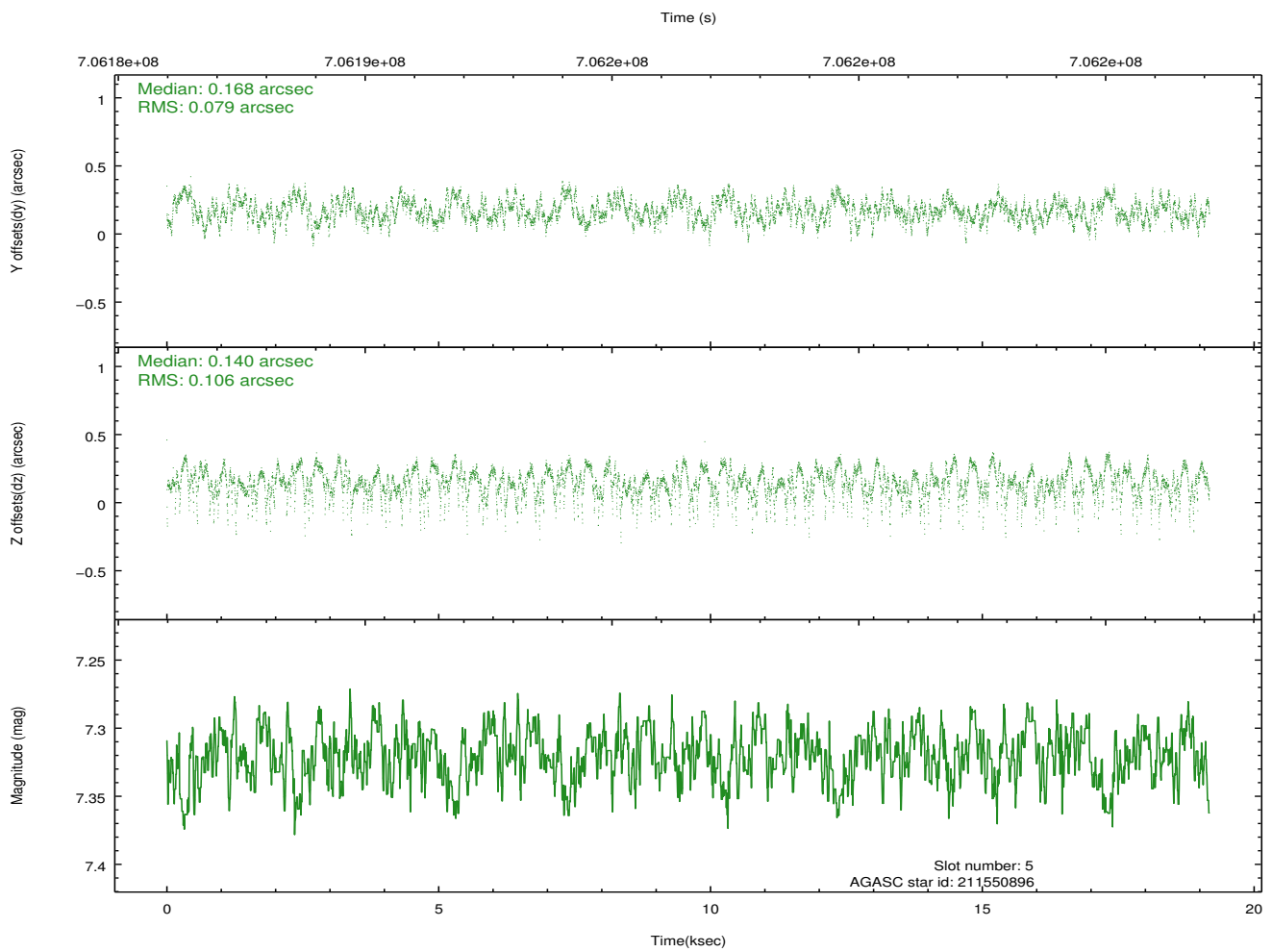
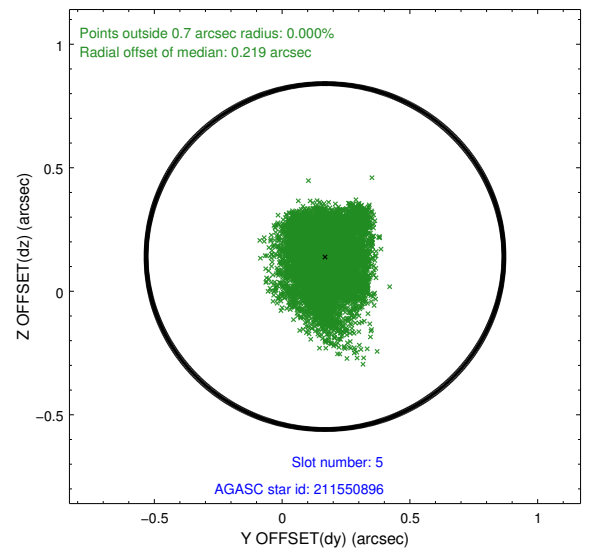
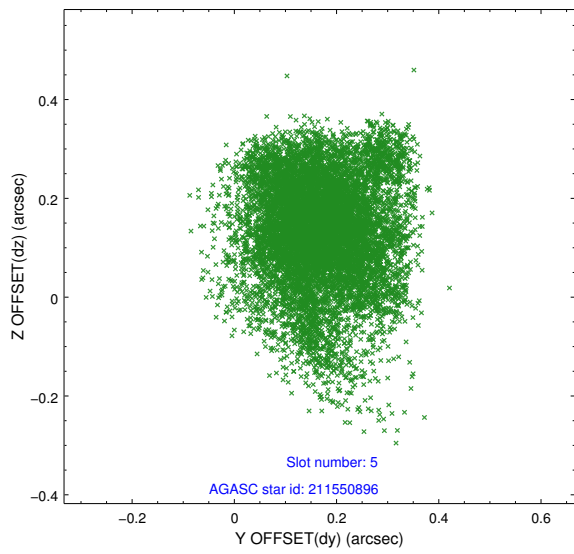
2.4.1 Slot 3



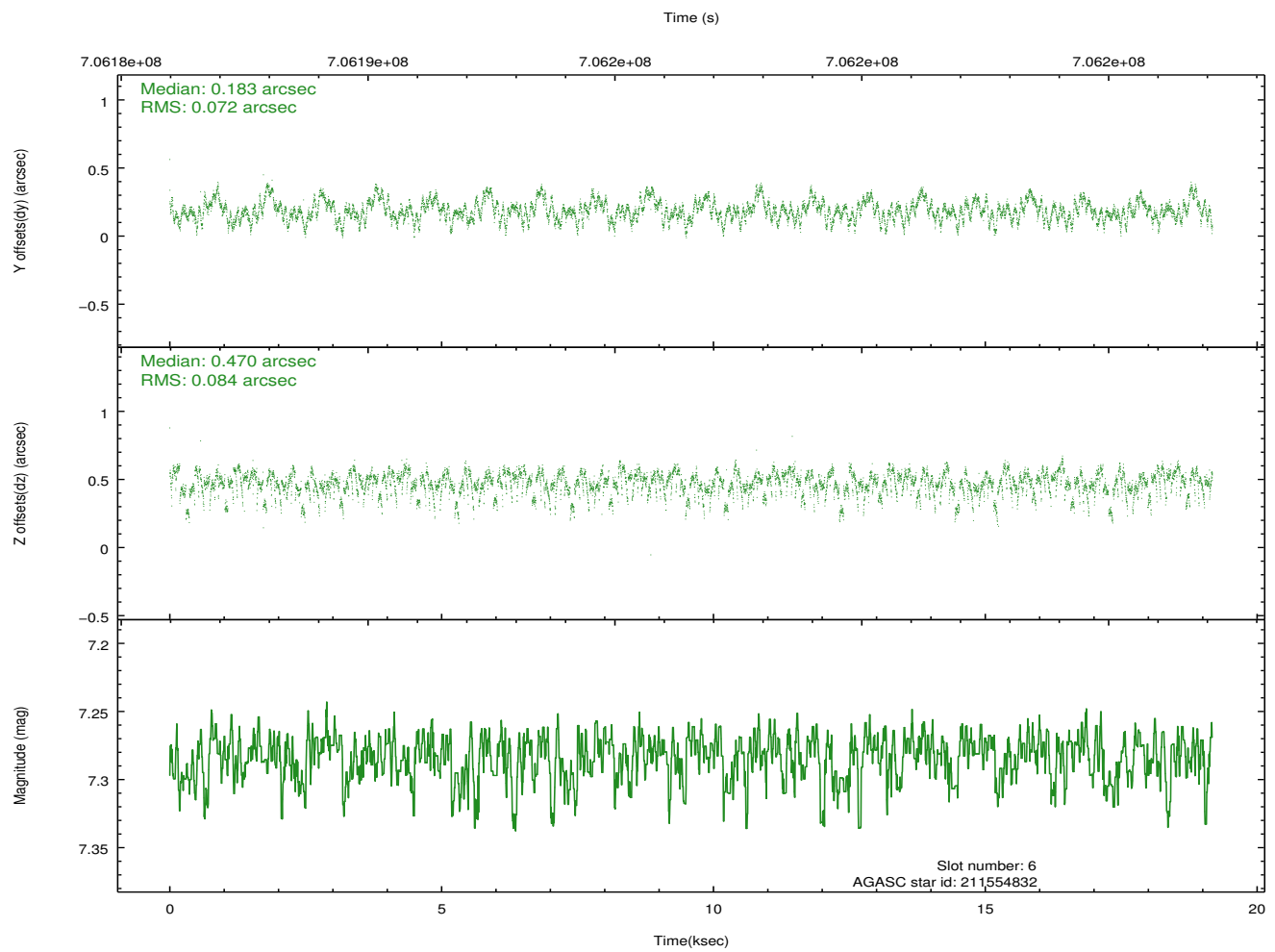
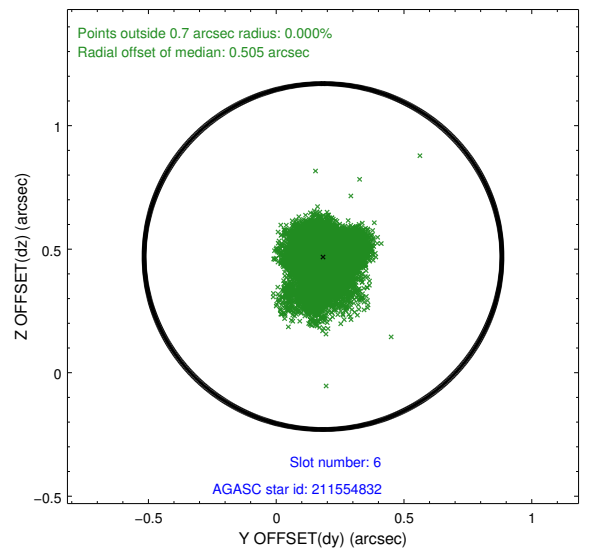
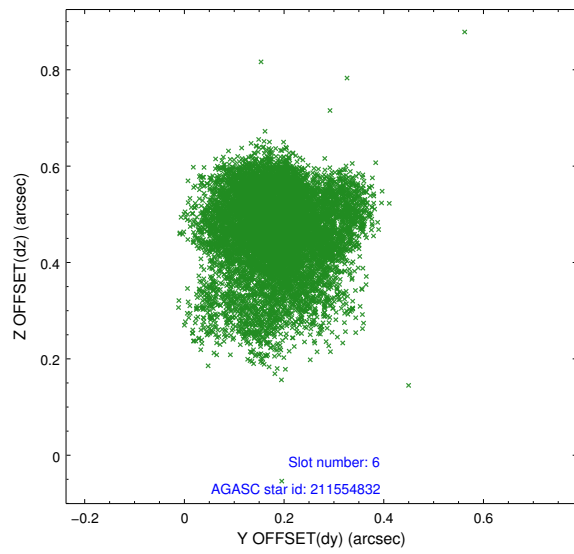
2.4.2 Slot 4



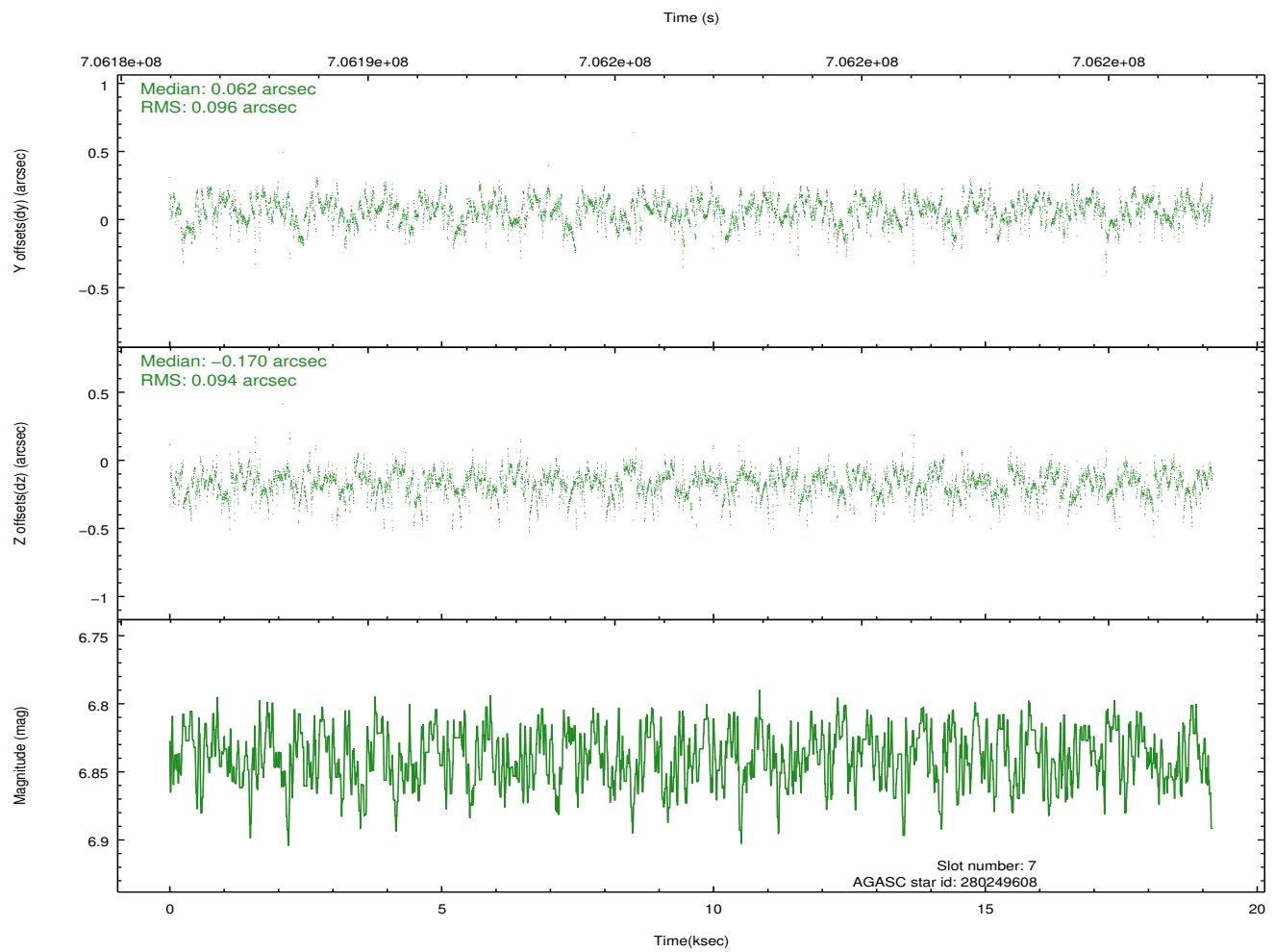
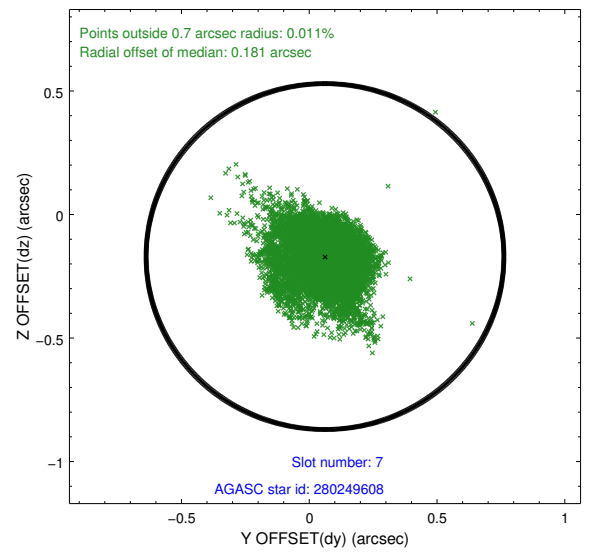
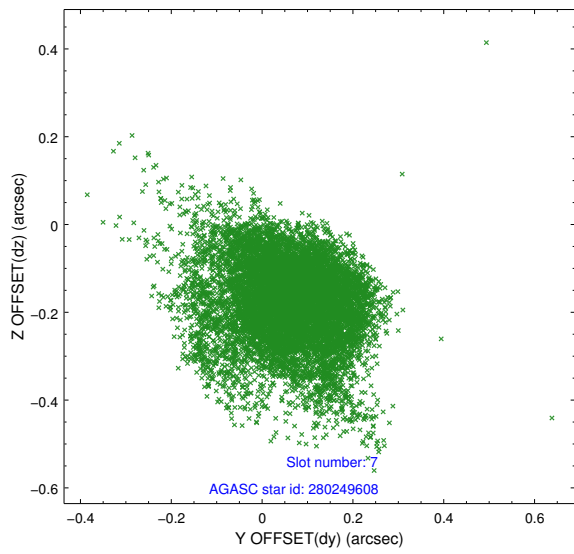
2.4.3 Slot 5



2.4.4 Slot 6

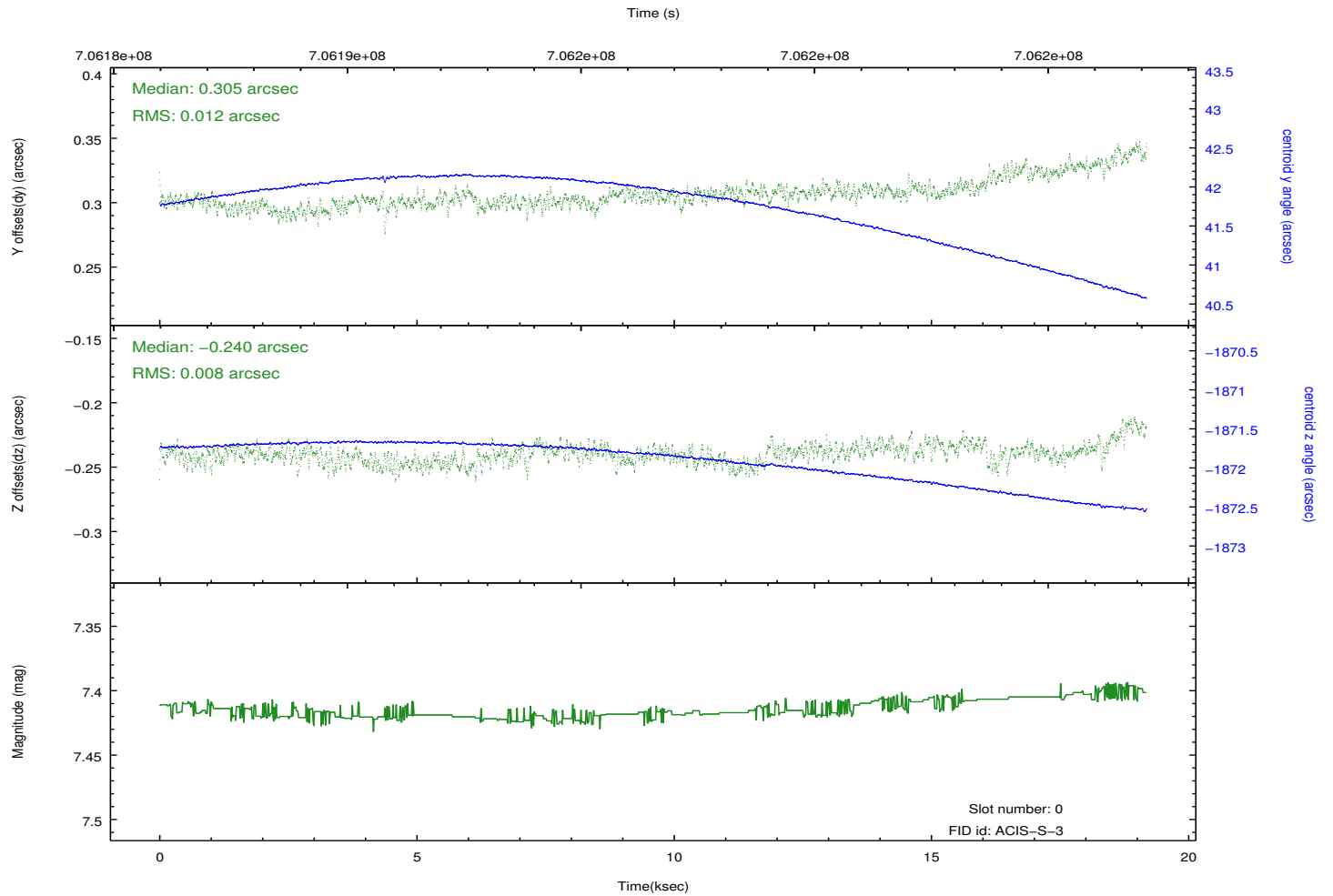
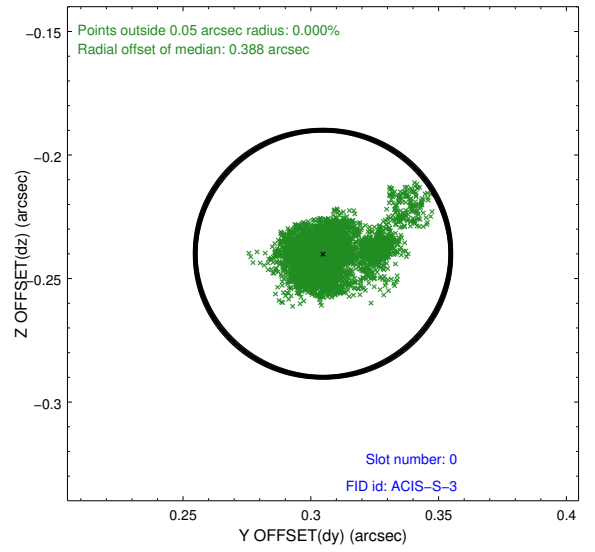
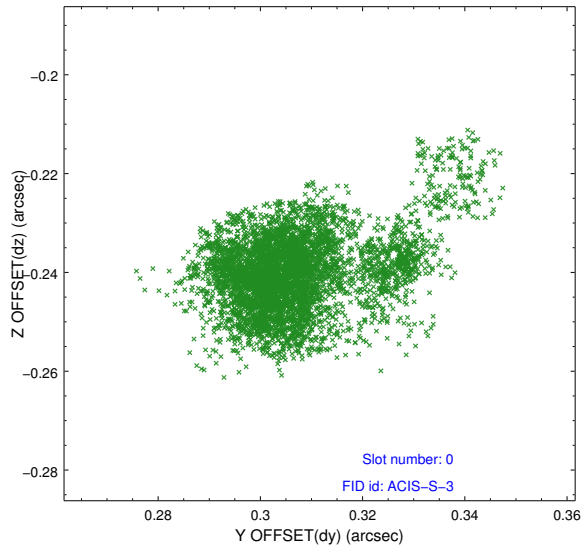


2.4.5 Slot 7

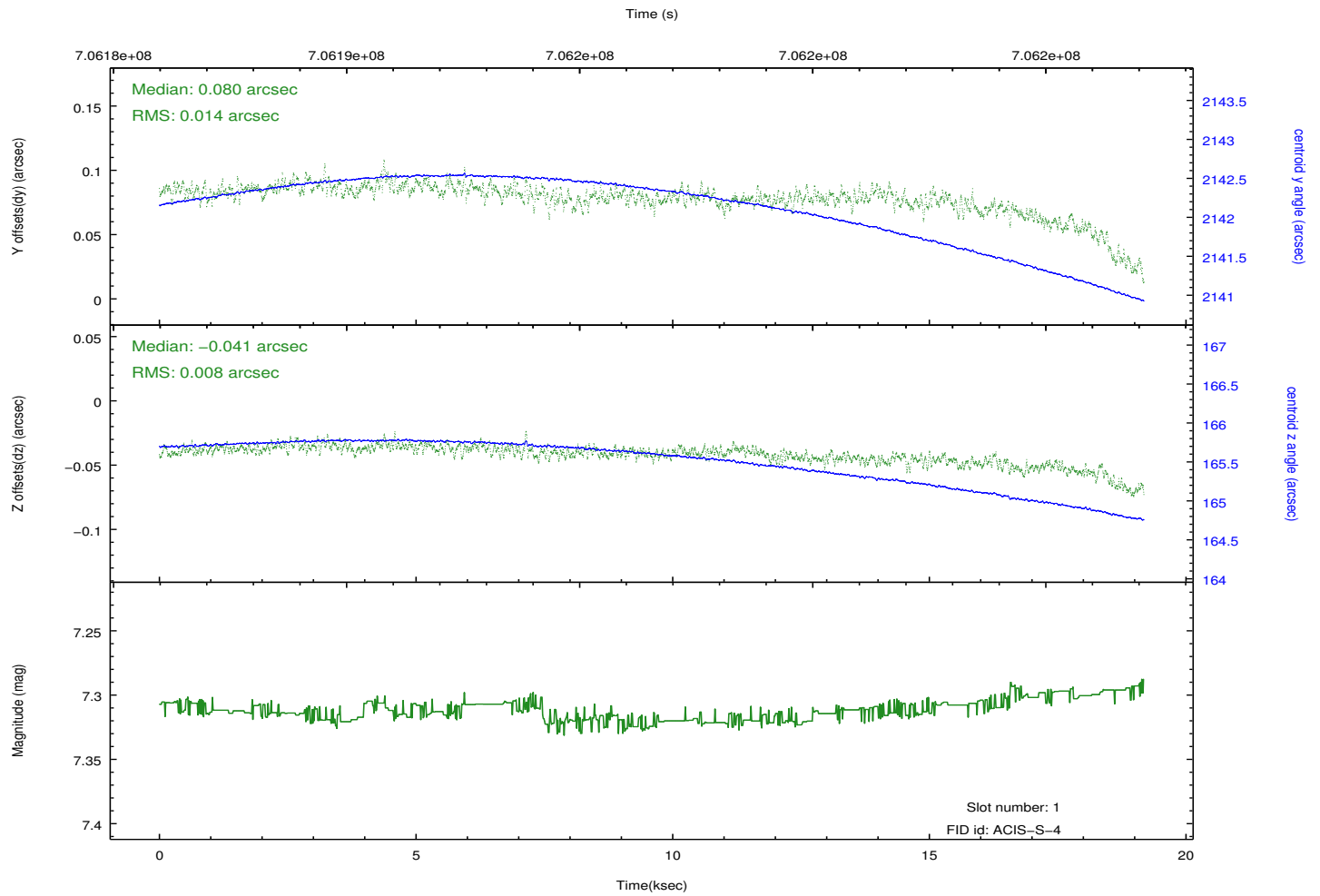
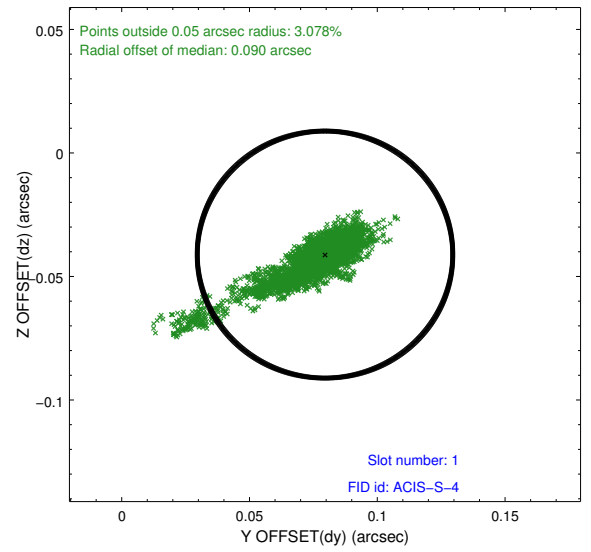
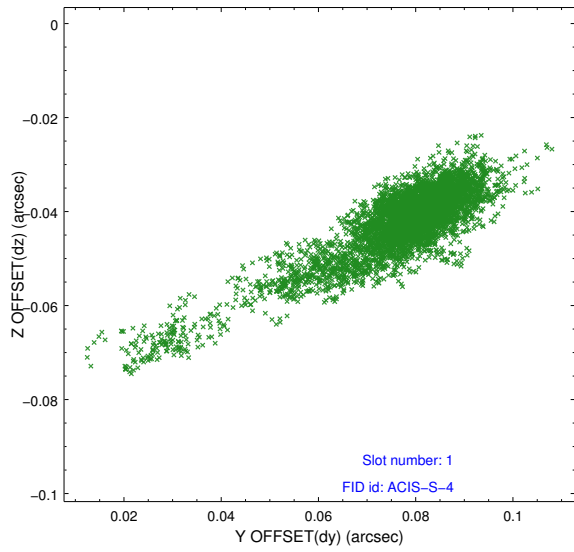


2.5 FID Slots

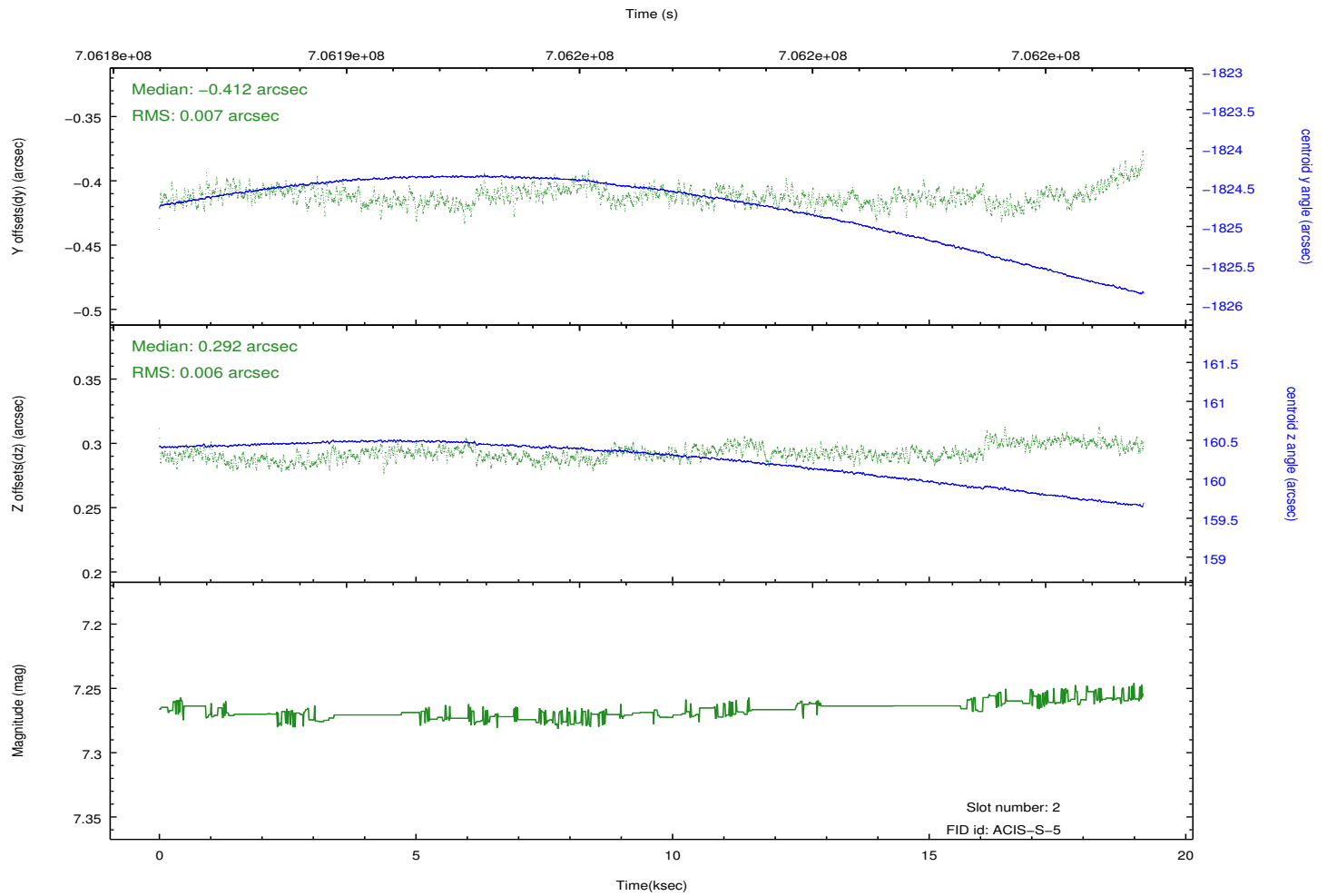
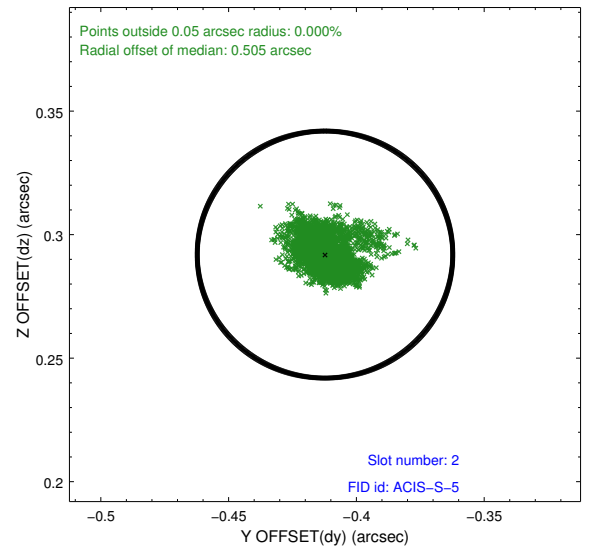
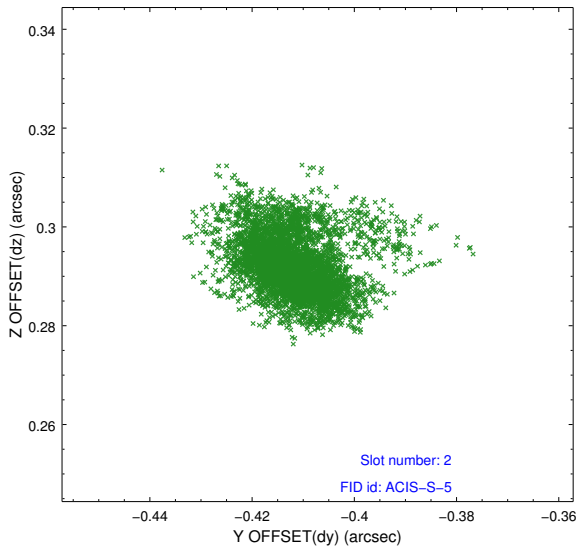
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2020.05.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	19.061460132599

A.2 Comments

Comments for Obi 0

Comment for FP temp violation

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The focal plane temperature during the interval 706187174.49 - 706193653.49 (MET s) of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -111.0 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

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.

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Optional chip I2 not included.

