

V&V Reference Report

L2 ASCDS Version : 10.8

Observation 21563 - L2 Version 1
Chandra X-Ray Center

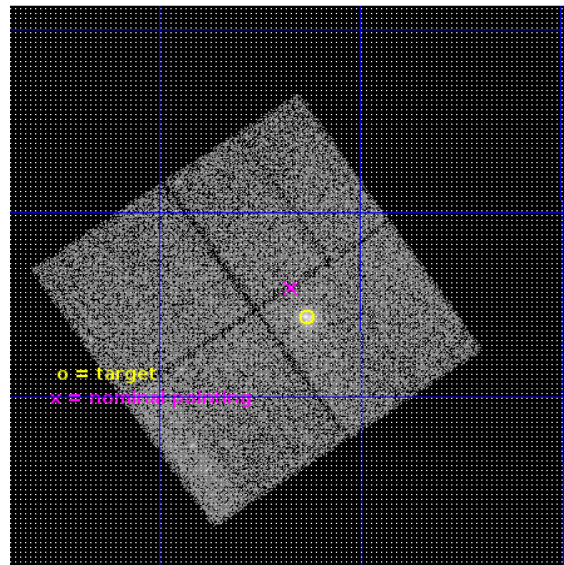
L2 Processing Date : Sep 15 2019

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1 Front

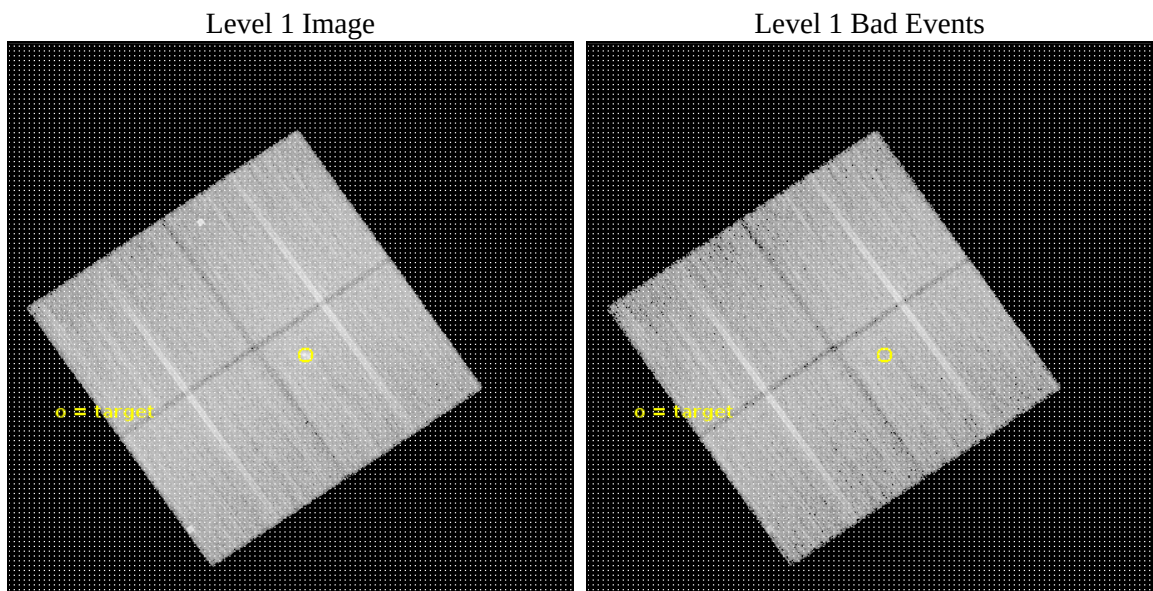
seq_num	801841	Sequence number
obs_id	21563	Observation id
title	Characterizing the most X-ray luminous galaxy clusters at z=0.5-1	
observer	Harald Ebeling	Principal investigator
object	eMACSJ0834.2+4524	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	128.565417	Observer's specified target RA [deg]
dec_targ	45.405	Observer's specified target Dec [deg]
ra_nom	128.58558755396	Nominal RA [deg]
dec_nom	45.432177037217	Nominal Dec [deg]
roll_nom	55.522275424156	Nominal Roll [deg]
revision	1	Processing version of data
ontime	33067.618373632	Sum of GTIs [s]
livetime	32635.565595554	Livetime [s]
ontime0	33073.900254488	Sum of GTIs [s]
ontime1	33064.477303743	Sum of GTIs [s]
ontime2	33070.759284258	Sum of GTIs [s]
ontime3	33067.618373632	Sum of GTIs [s]
l2events	98249	Number of level 2 events



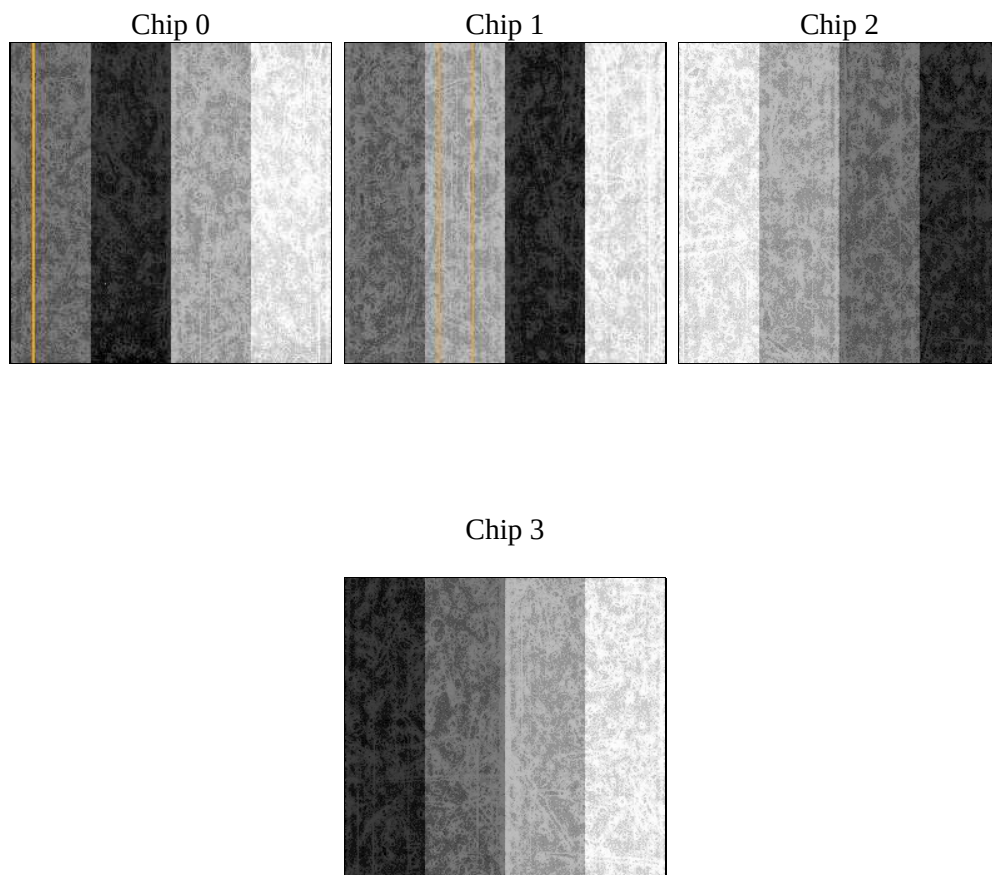
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	33000.000000	[s] Scheduled observation exposure time
ascdsver	10.8	Processing system revision	ontime	33067.618373632	Sum of GTIs [s]
caldsver	4.8.4.1	 	ontime0	33073.900254488	Sum of GTIs [s]
date	2019-09-15T05:36:12	Date and time of file creation	ontime1	33064.477303743	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	33070.759284258	Sum of GTIs [s]
			ontime3	33067.618373632	Sum of GTIs [s]
			l1events	996435	Number of level 1 events

2.1.4 Events

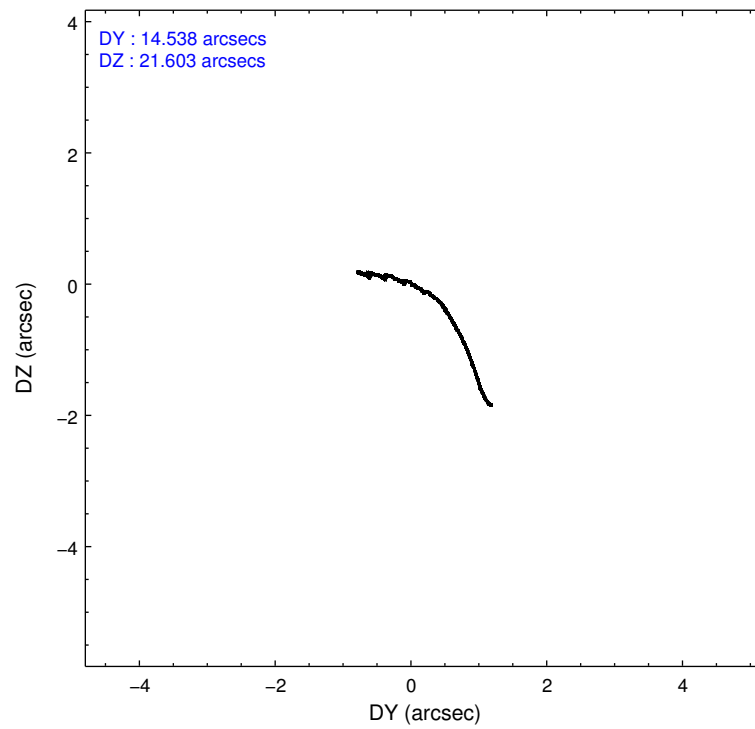
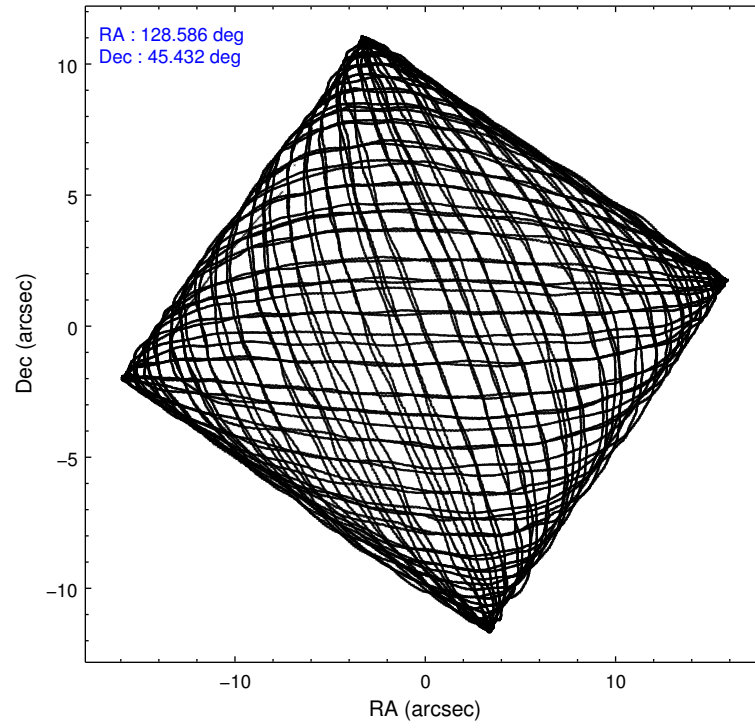
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	235614	241403	262791	256627
rejected events	207846	209333	234181	226095
rejected %	88%	86%	89%	88%

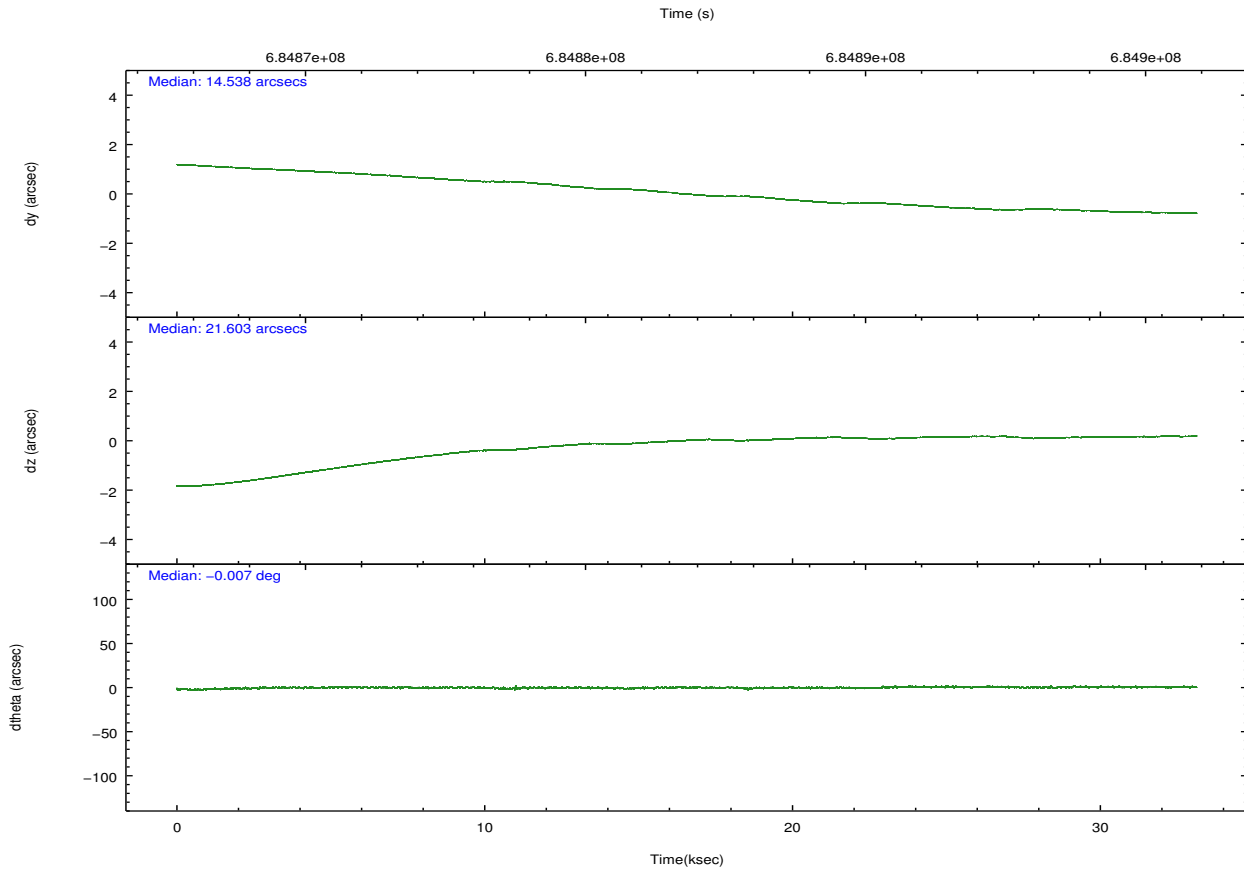
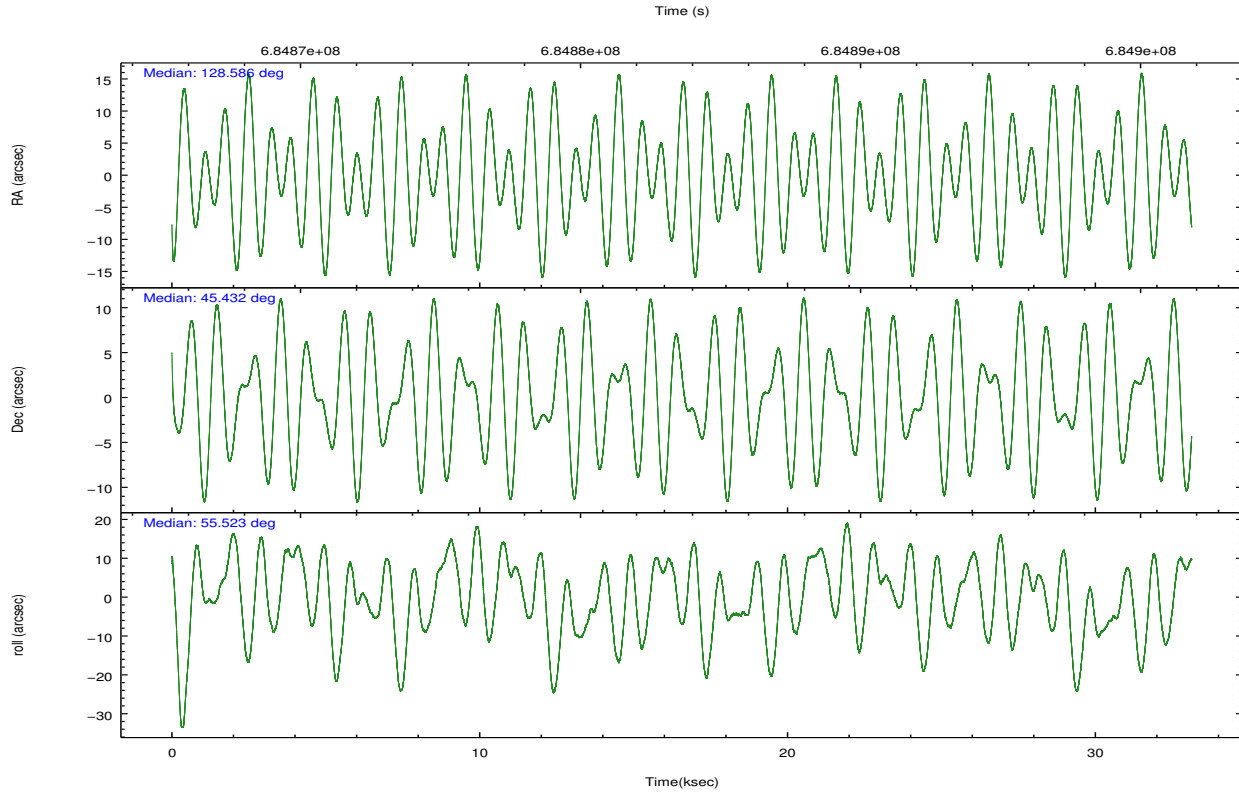
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	9236	10508	11069	12789
	3%	4%	4%	4%
grade 1 events	119	181	166	160
	0%	0%	0%	0%
grade 2 events	7084	8663	6820	6270
	3%	3%	2%	2%
grade 3 events	2713	2746	2629	2910
	1%	1%	1%	1%
grade 4 events	2605	2697	2619	2820
	1%	1%	0%	1%
grade 5 events	10117	10583	9606	11543
	4%	4%	3%	4%
grade 6 events	6138	7460	5482	5748
	2%	3%	2%	2%
grade 7 events	197602	198565	224400	214387
	83%	82%	85%	83%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-0123	ACIS-0123	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	128.582648	128.5855875539639	Subarray requested	NONE	NONE
[deg] Pointing Dec	45.404665	45.43217703721676	Alternating exposures requested	N	N
[deg] Pointing Roll	55.315684	55.52227542415634	[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	-229.442463	-229.4438428438578			
[mm] SIM translation stage offset	-4.15	-4.148610159071865			
[s] Observation start time (MET)	684867197.184000	684865884.26613			
Observation start date	2019-09-14T16:52:08	2019-09-14T16:31:24			
[s] Observation end time (MET)	684900197.184000	684900852.65573			
Observation end date	2019-09-15T02:02:08	2019-09-15T02:14:12			
Read mode	TIMED	TIMED			

2.3 Aspect



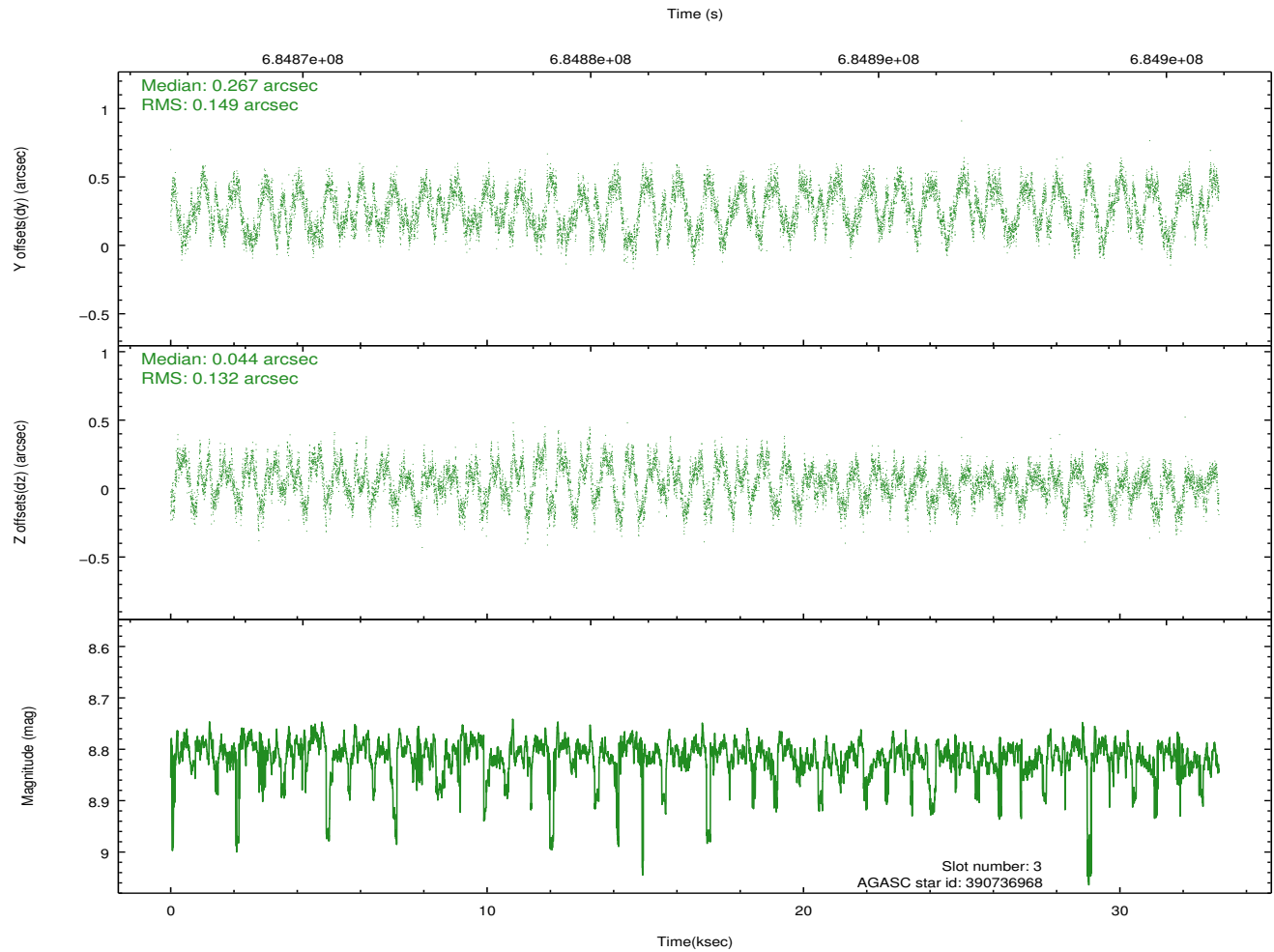
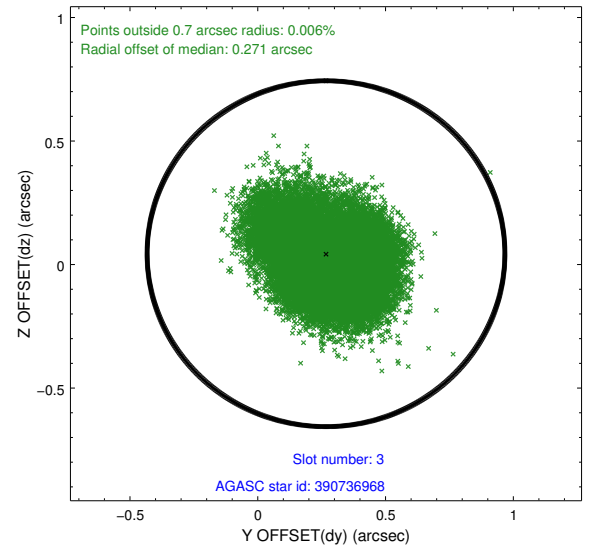
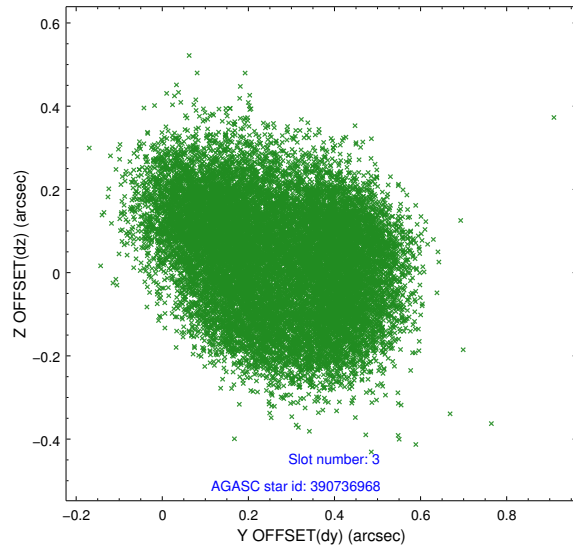


Slot Statistics

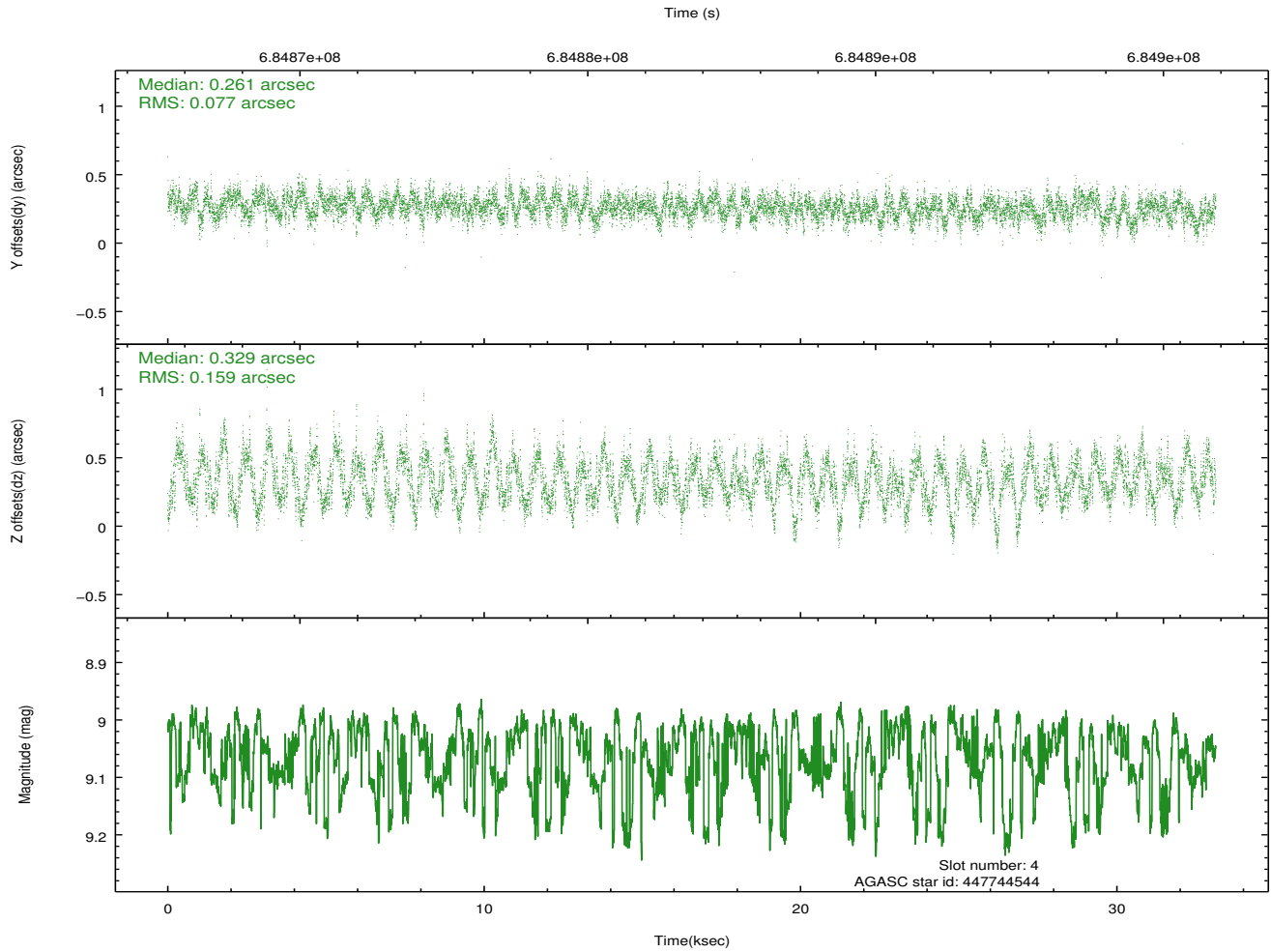
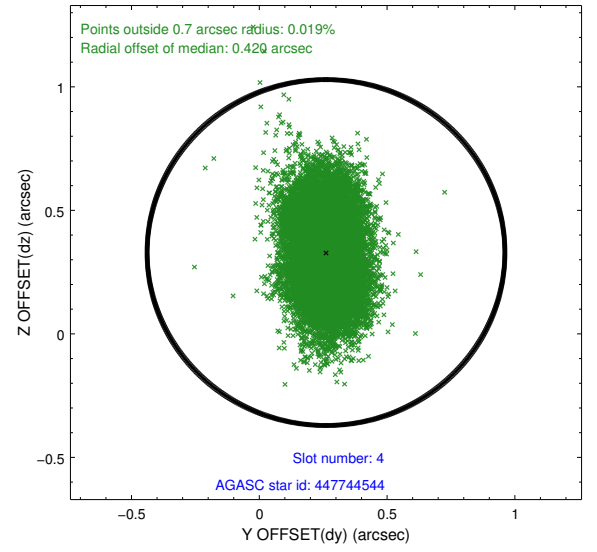
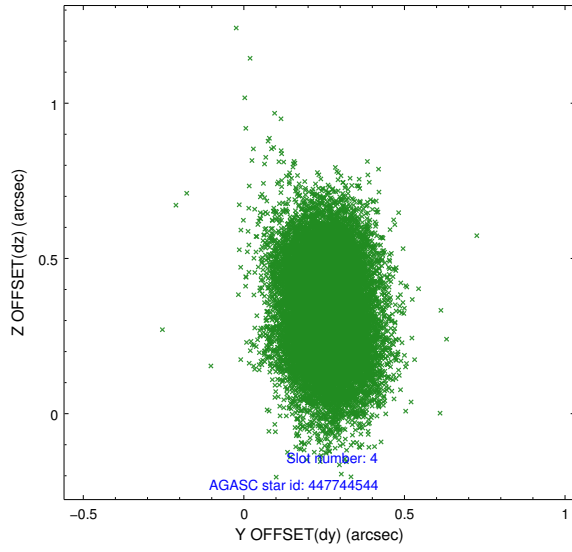
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.25	8081	1.000	0.215	-0.168	0.026	0.045	0.000000	0.000000	925.06	-930
1	FID		ACIS-I-5	7.21	8081	1.000	-0.541	0.111	0.020	0.036	0.000000	0.000000	-1823.93	967
2	FID		ACIS-I-6	7.24	8080	1.000	0.235	0.127	0.024	0.054	0.000000	0.000000	390.37	1612
3	GUIDE	used	390736968	8.81	16149	1.000	0.267	0.044	0.219	0.313	128.168376	44.979391	-1857.79	-1
4	GUIDE	used	447744544	9.06	16142	1.000	0.261	0.329	0.185	0.307	129.183991	45.042577	-195.79	-1995
5	GUIDE	used	447745680	8.05	16155	1.000	-0.012	0.178	0.130	0.203	128.566161	45.196654	-639.32	-390
6	GUIDE	used	447755768	9.37	16128	1.000	-0.328	-0.279	0.194	0.338	129.280166	45.641961	1708.15	-952
7	GUIDE	used	447759808	9.09	16137	1.000	-0.190	-0.276	0.209	0.333	127.955520	45.389058	-942.56	1275

2.4 Star Slots

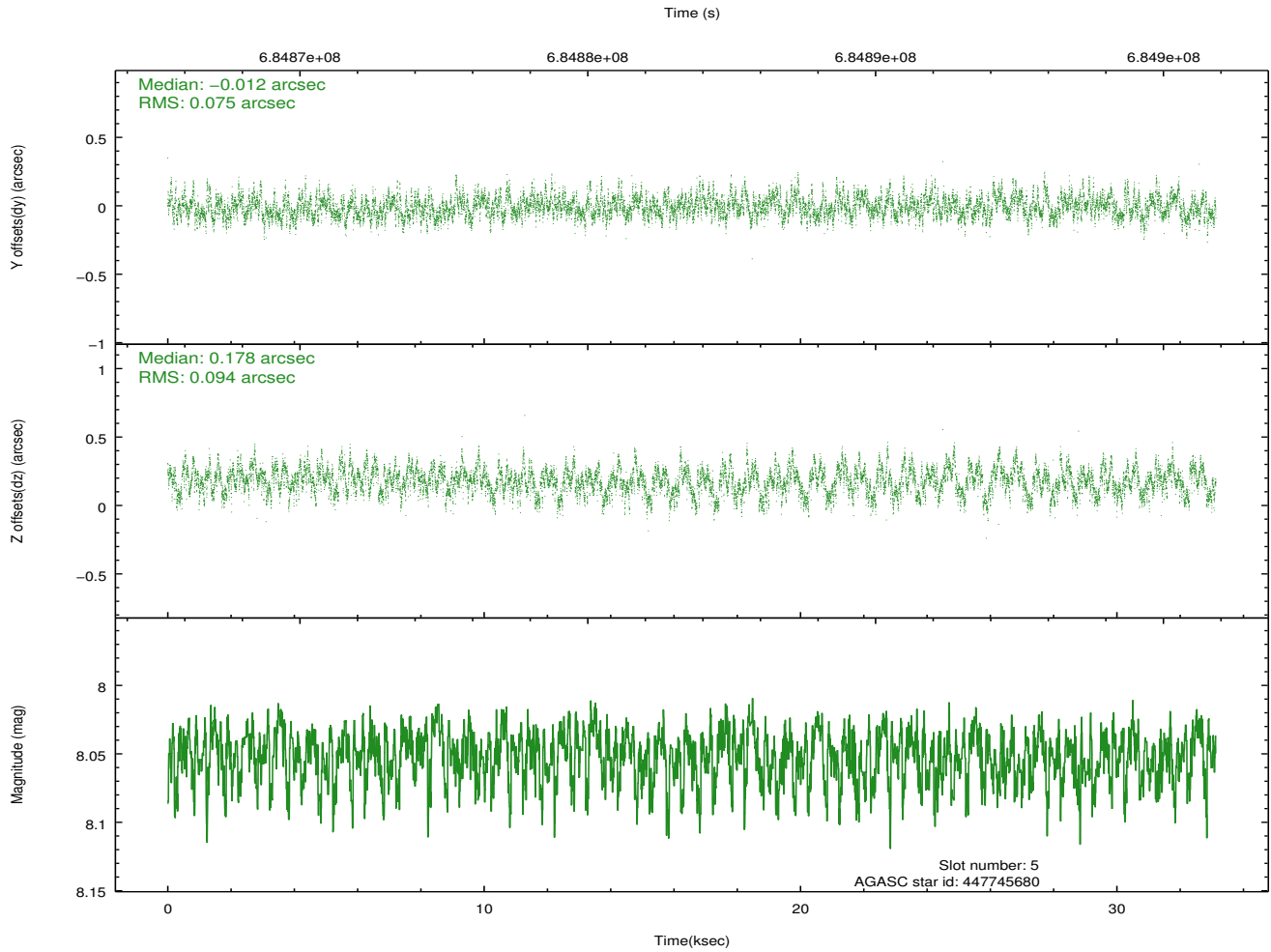
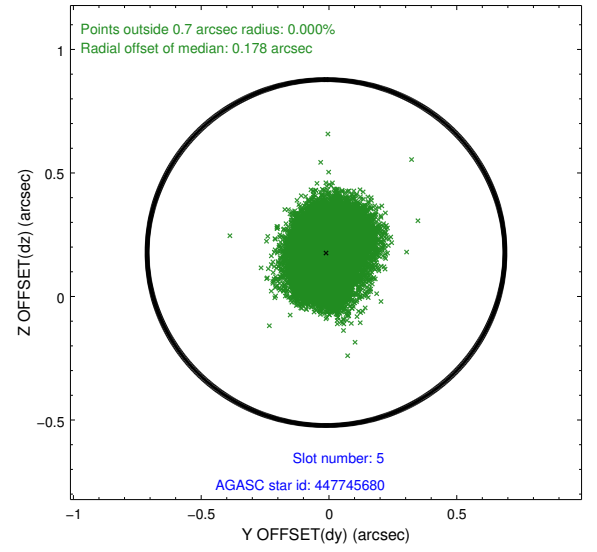
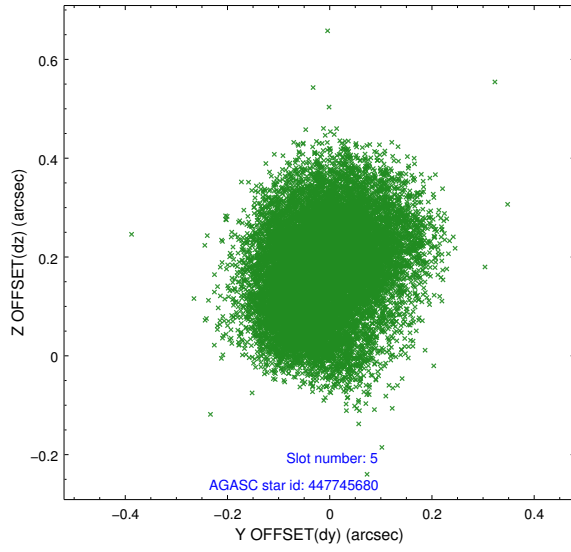
2.4.1 Slot 3



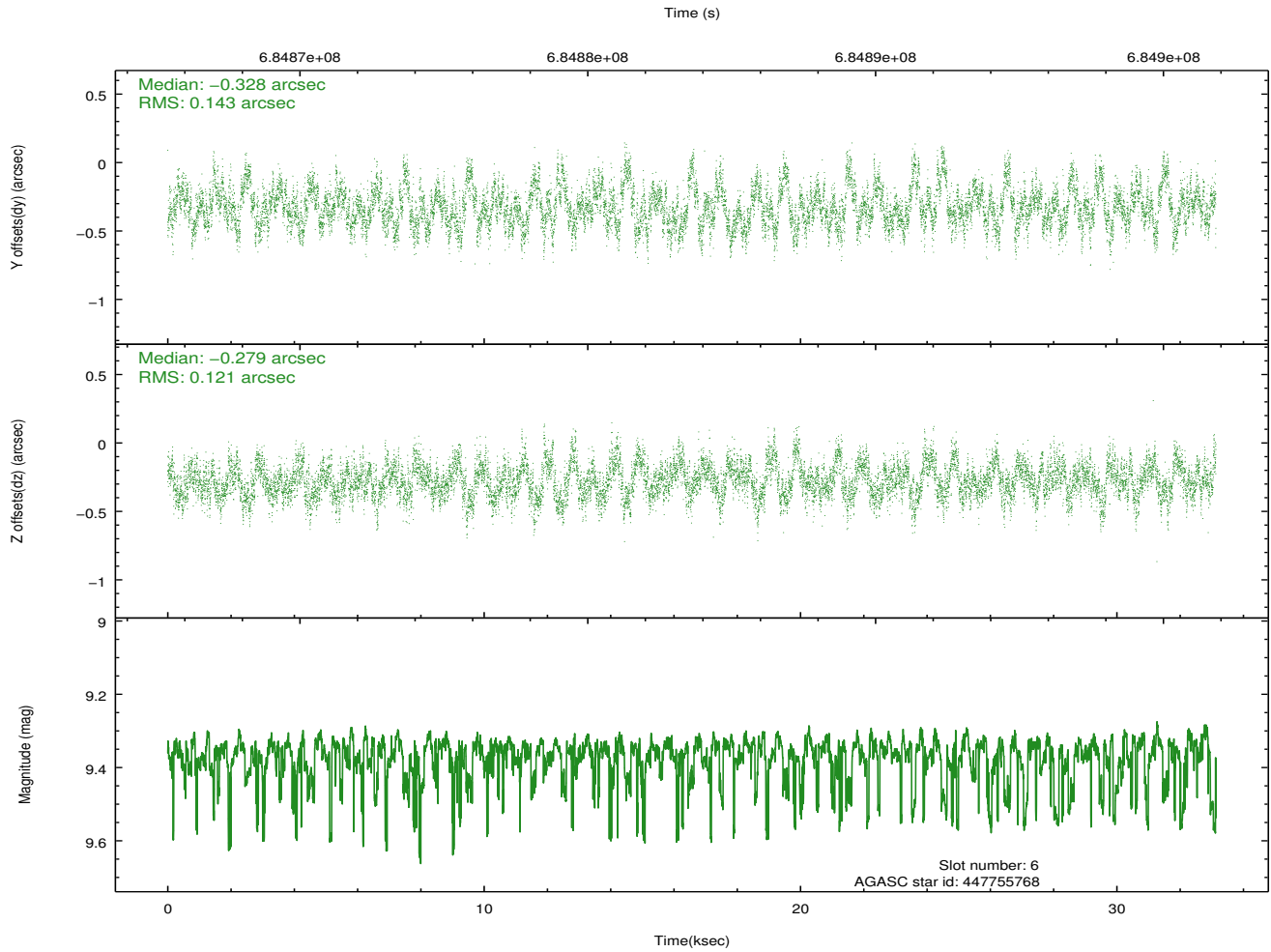
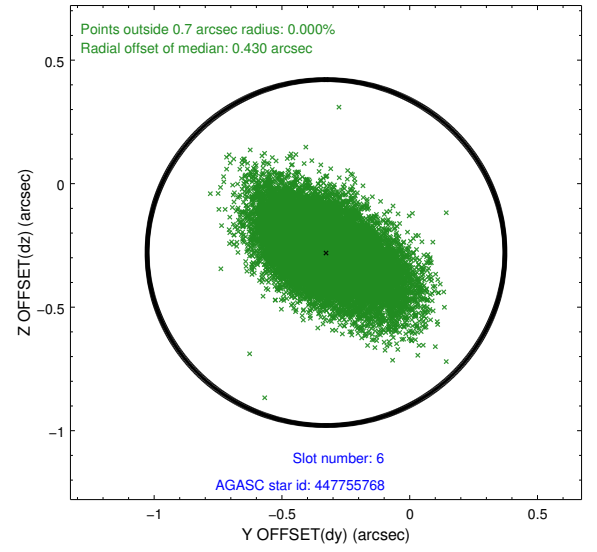
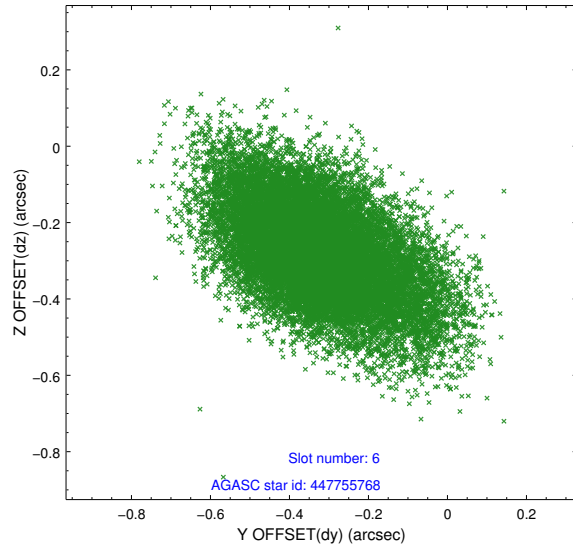
2.4.2 Slot 4



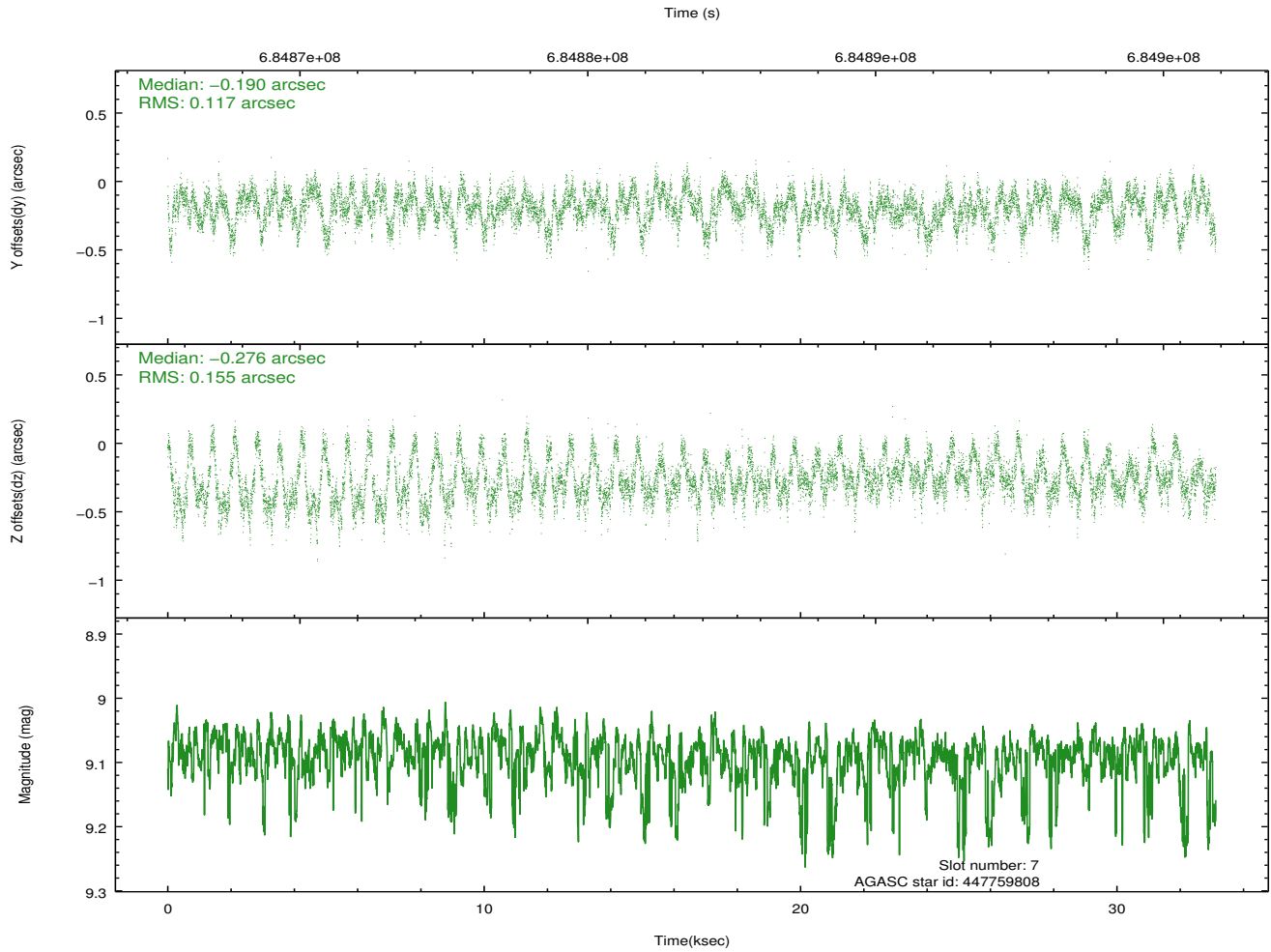
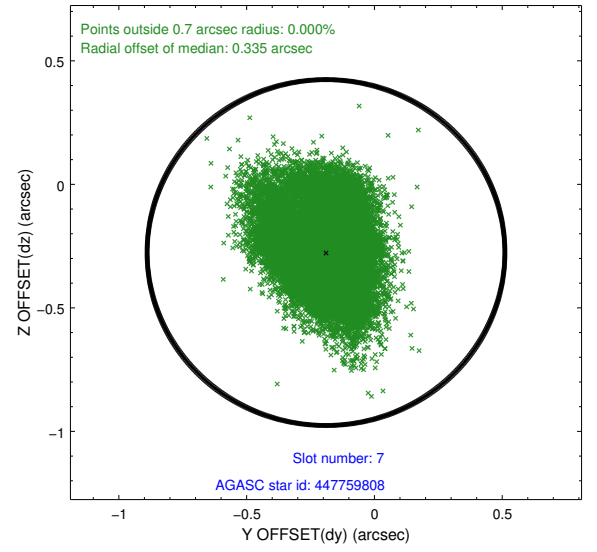
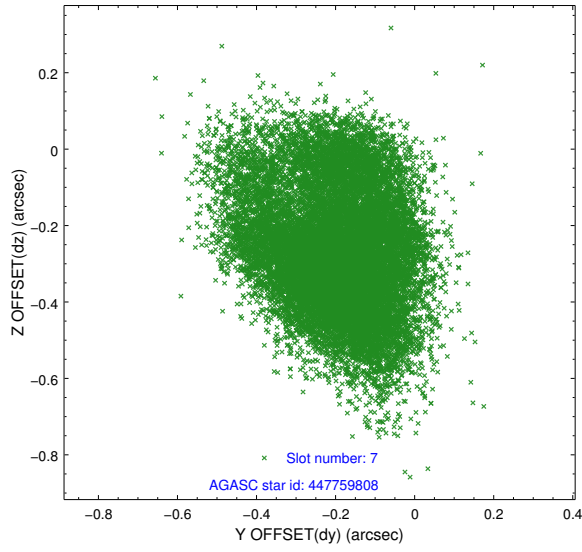
2.4.3 Slot 5



2.4.4 Slot 6

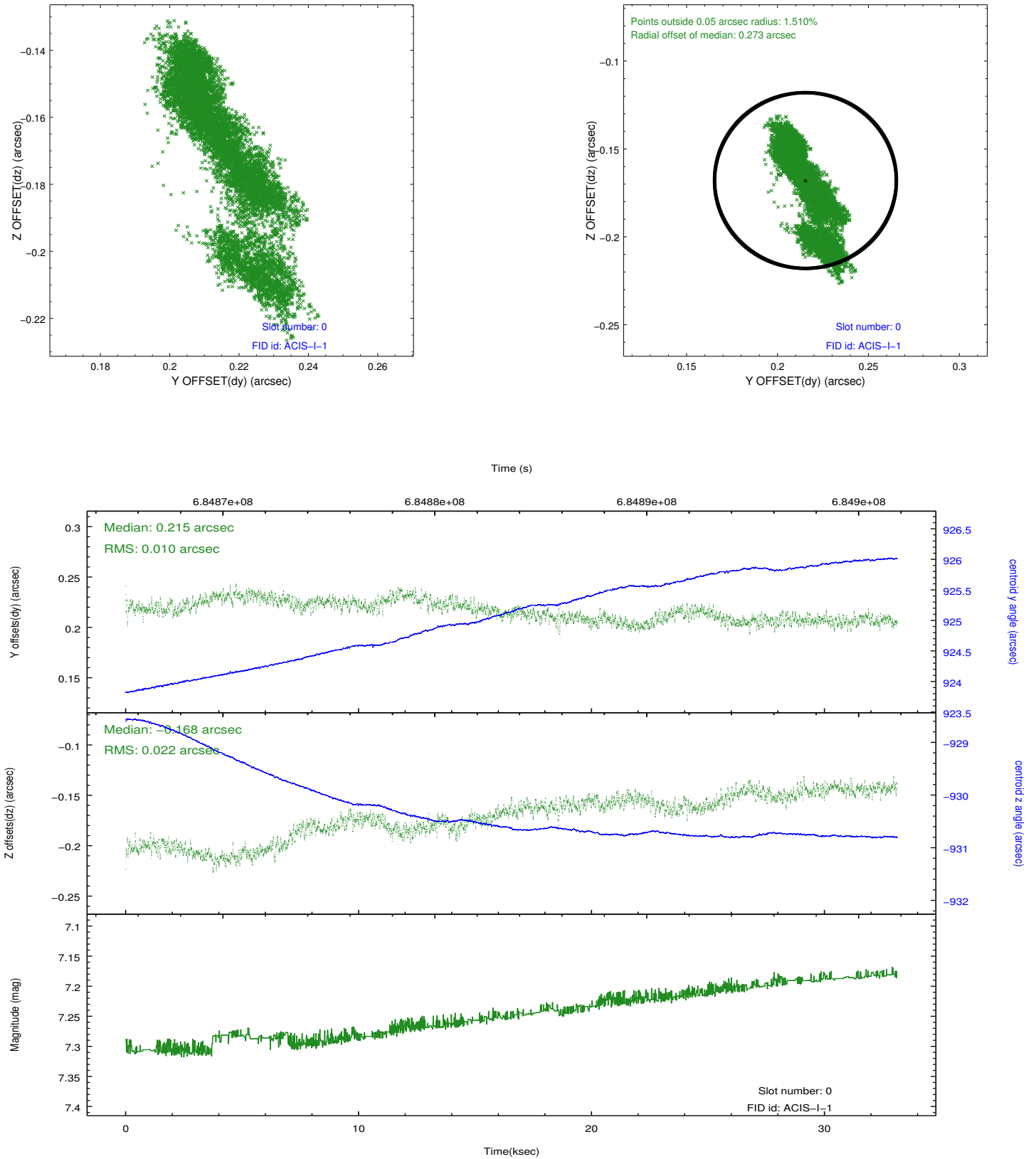


2.4.5 Slot 7

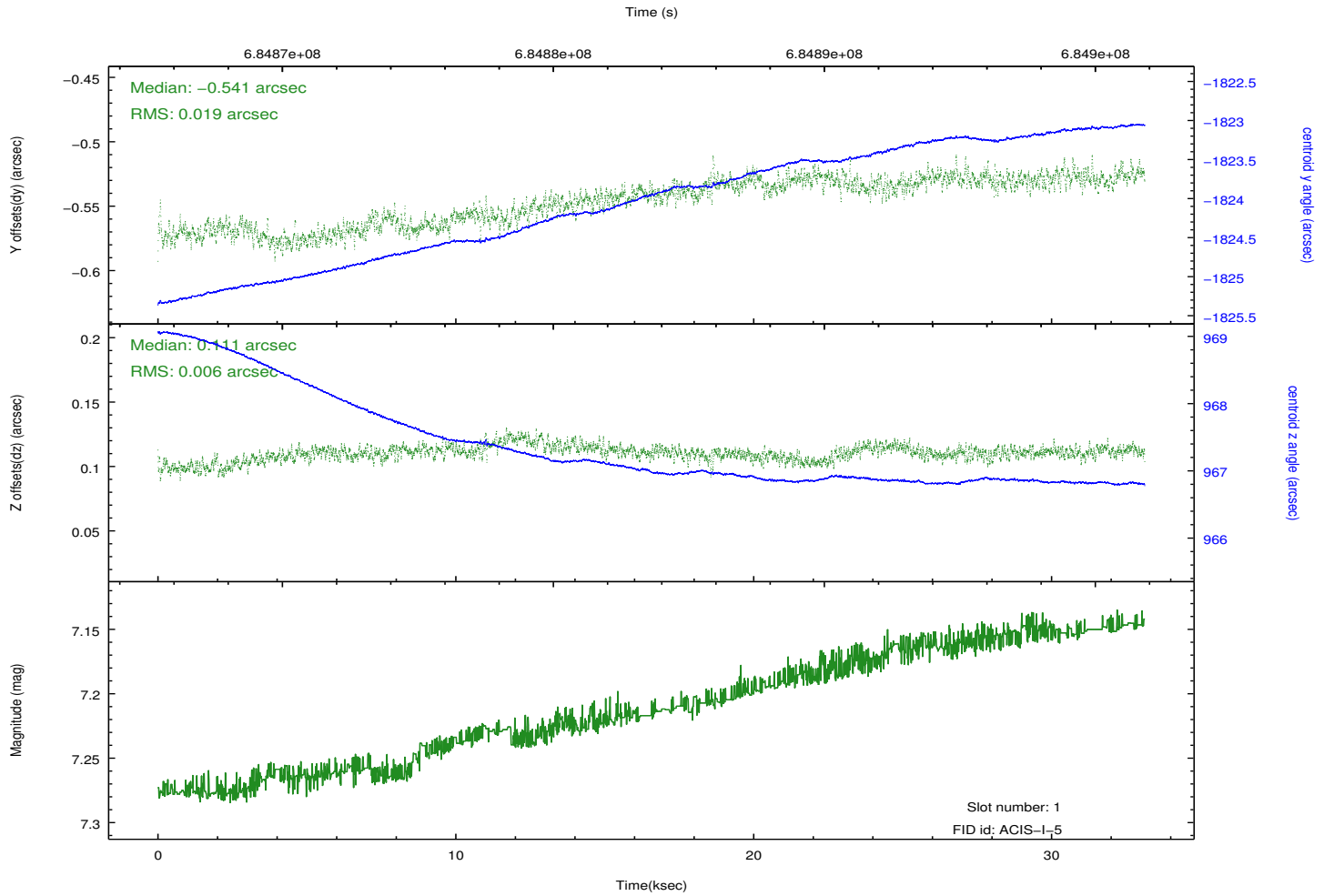
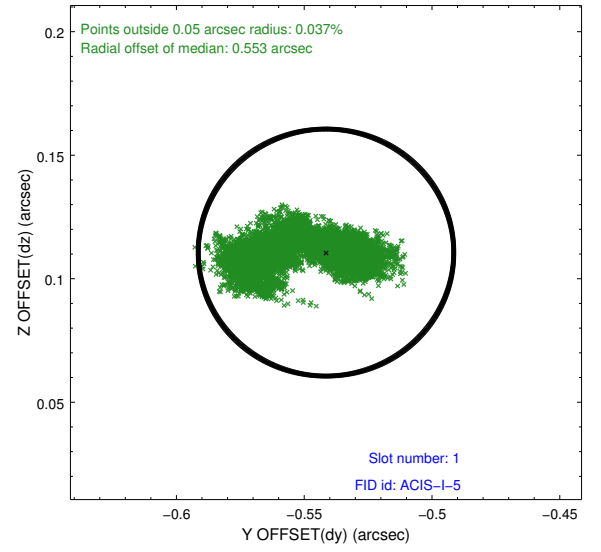
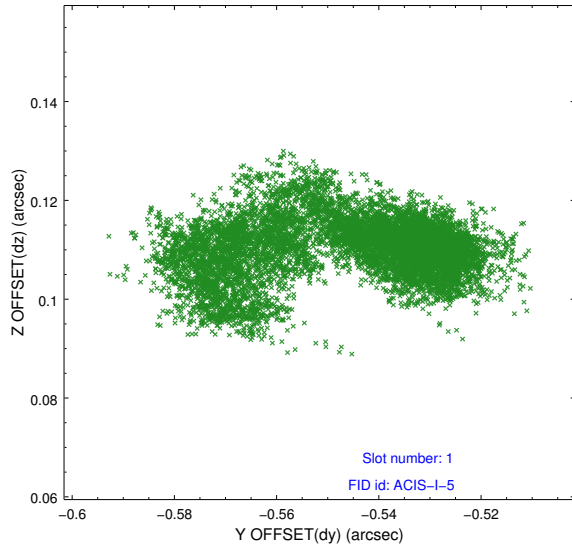


2.5 FID Slots

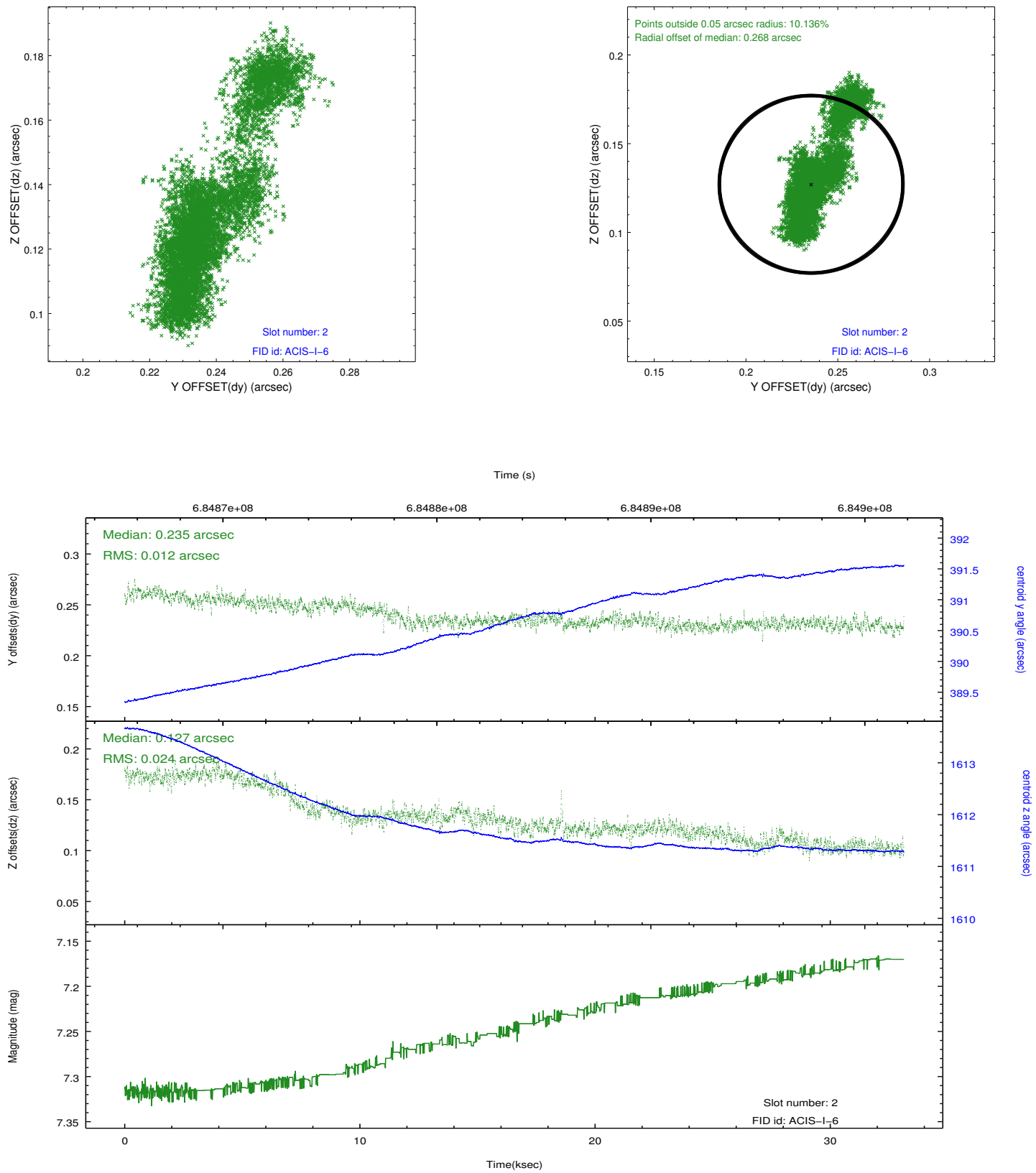
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2020.04.02
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	33.067618373632

A.2 Comments

Joint proposal with HST.

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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., -112.0 C for ACIS-I).

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.