

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 20828 - L2 Version 2
Chandra X-Ray Center

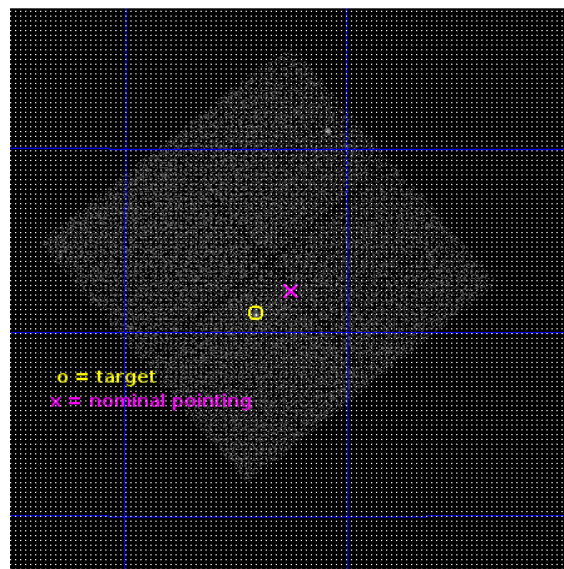
L2 Processing Date : Oct 31 2017

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1 Front

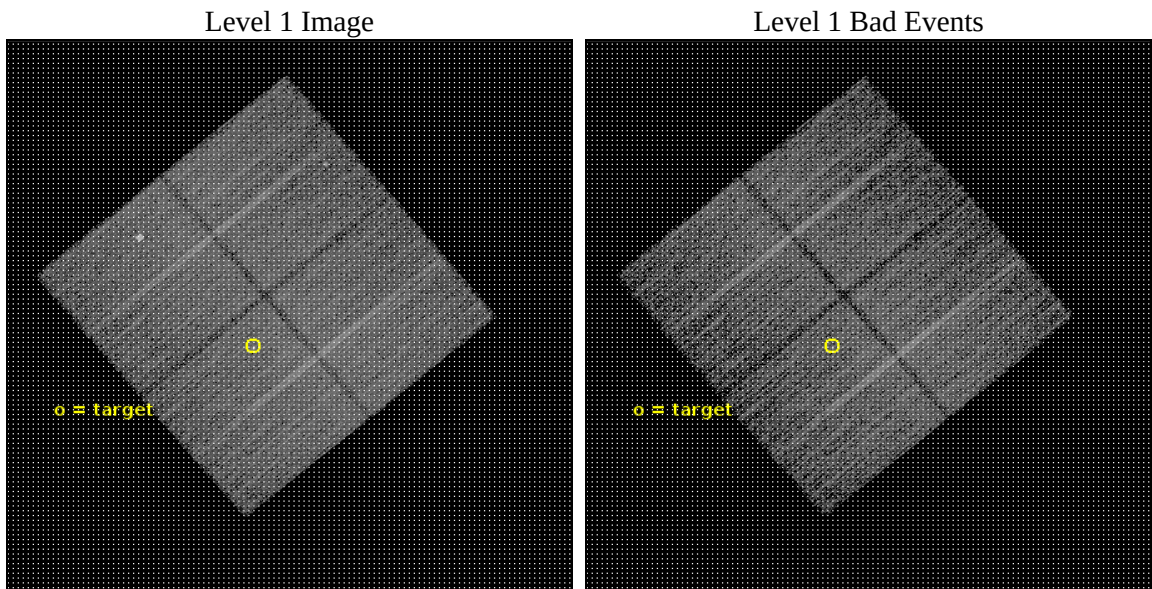
seq_num	801801	Sequence number
obs_id	20828	Observation id
title	A Unique Sample of Extreme-BCG Clusters at $0.2 < z < 0.5$	Proposal
observer	Gordon Garmire	Principal investigator
object	SDSS395	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	47.602083	Observer's specified target RA [deg]
dec_targ	39.184361	Observer's specified target Dec [deg]
ra_nom	47.562133246717	Nominal RA [deg]
dec_nom	39.204690564423	Nominal Dec [deg]
roll_nom	140.2339093821	Nominal Roll [deg]
revision	2	Processing version of data
ontime	15078.400116086	Sum of GTIs [s]
livetime	14881.389718013	Livetime [s]
ontime0	15075.259025812	Sum of GTIs [s]
ontime1	15078.400116086	Sum of GTIs [s]
ontime2	15078.400116086	Sum of GTIs [s]
ontime3	15078.400116086	Sum of GTIs [s]
l2events	39899	Number of level 2 events



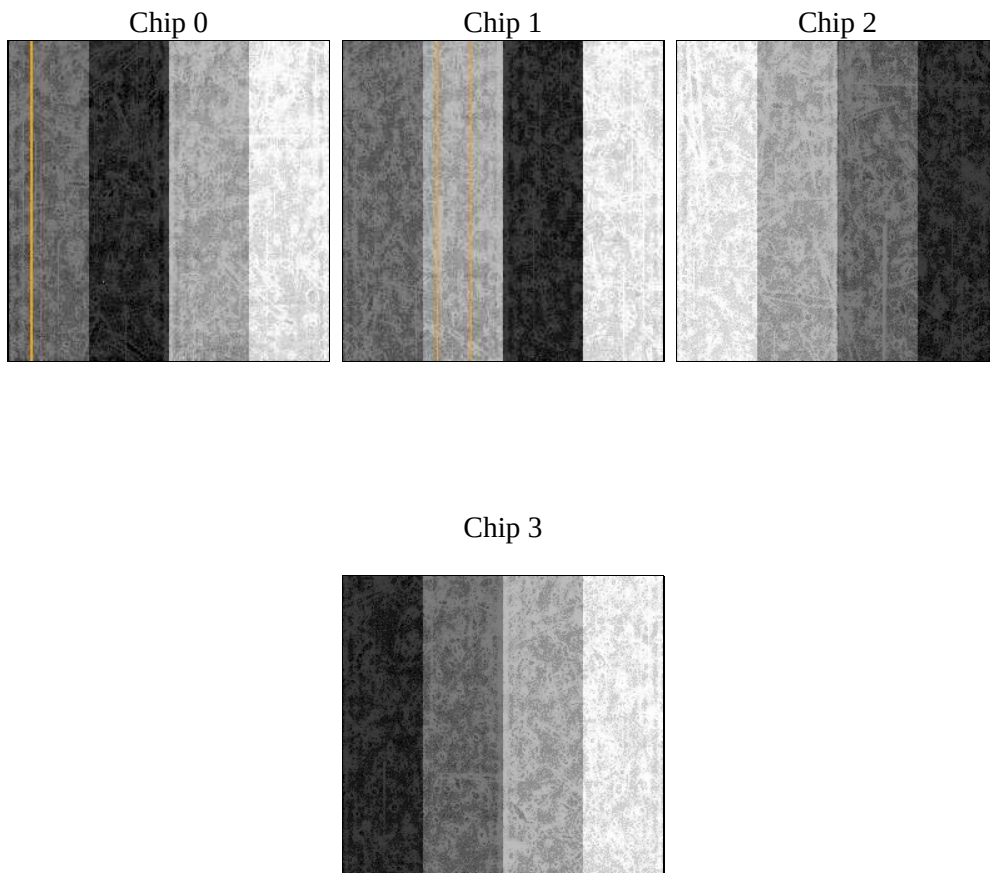
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	15078.400116086	Sum of GTIs [s]
caldsver	4.7.6	 	ontime0	15075.259025812	Sum of GTIs [s]
date	2017-11-01T03:04:38	Date and time of file creation	ontime1	15078.400116086	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	15078.400116086	Sum of GTIs [s]
			ontime3	15078.400116086	Sum of GTIs [s]
			l1events	413549	Number of level 1 events

2.1.4 Events

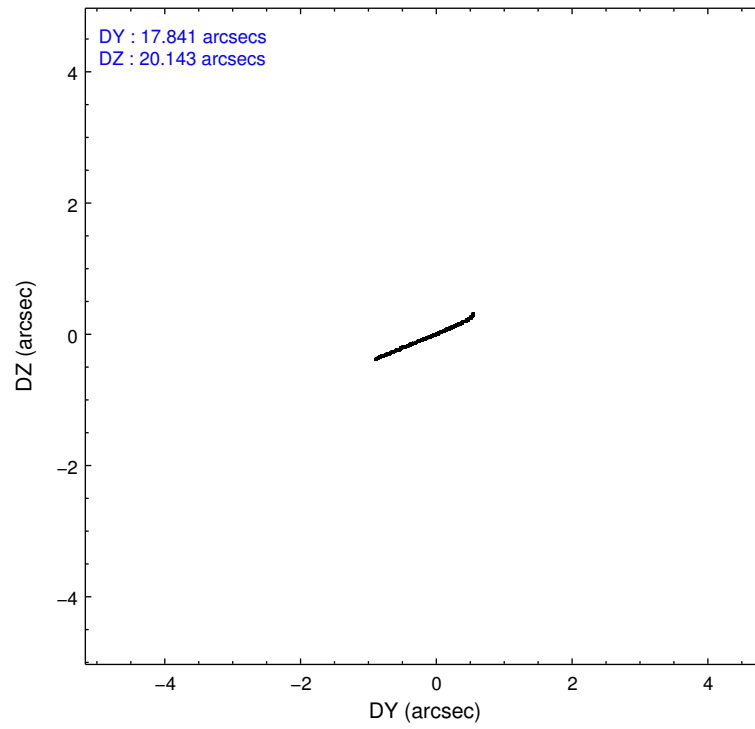
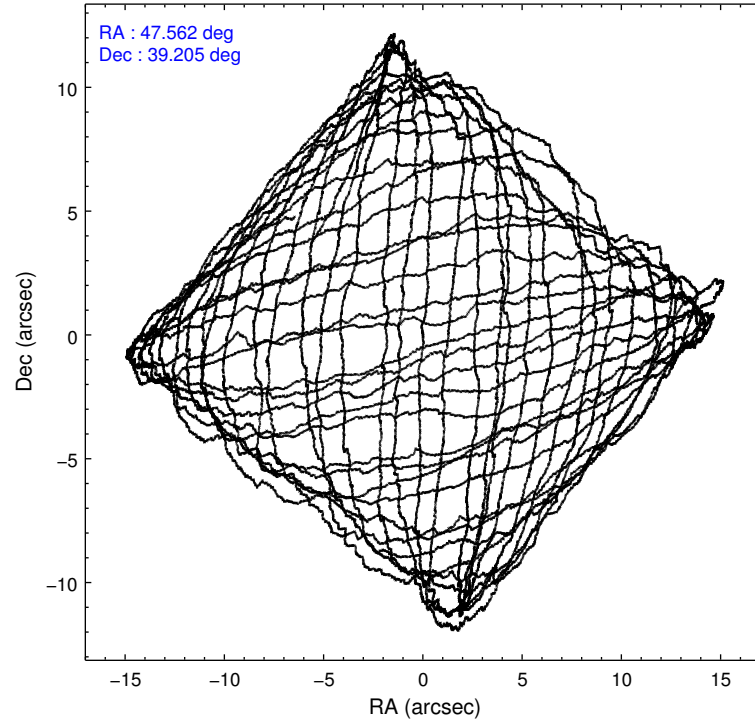
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	96427	101934	106832	108356
rejected events	84954	87069	96334	95024
rejected %	88%	85%	90%	87%

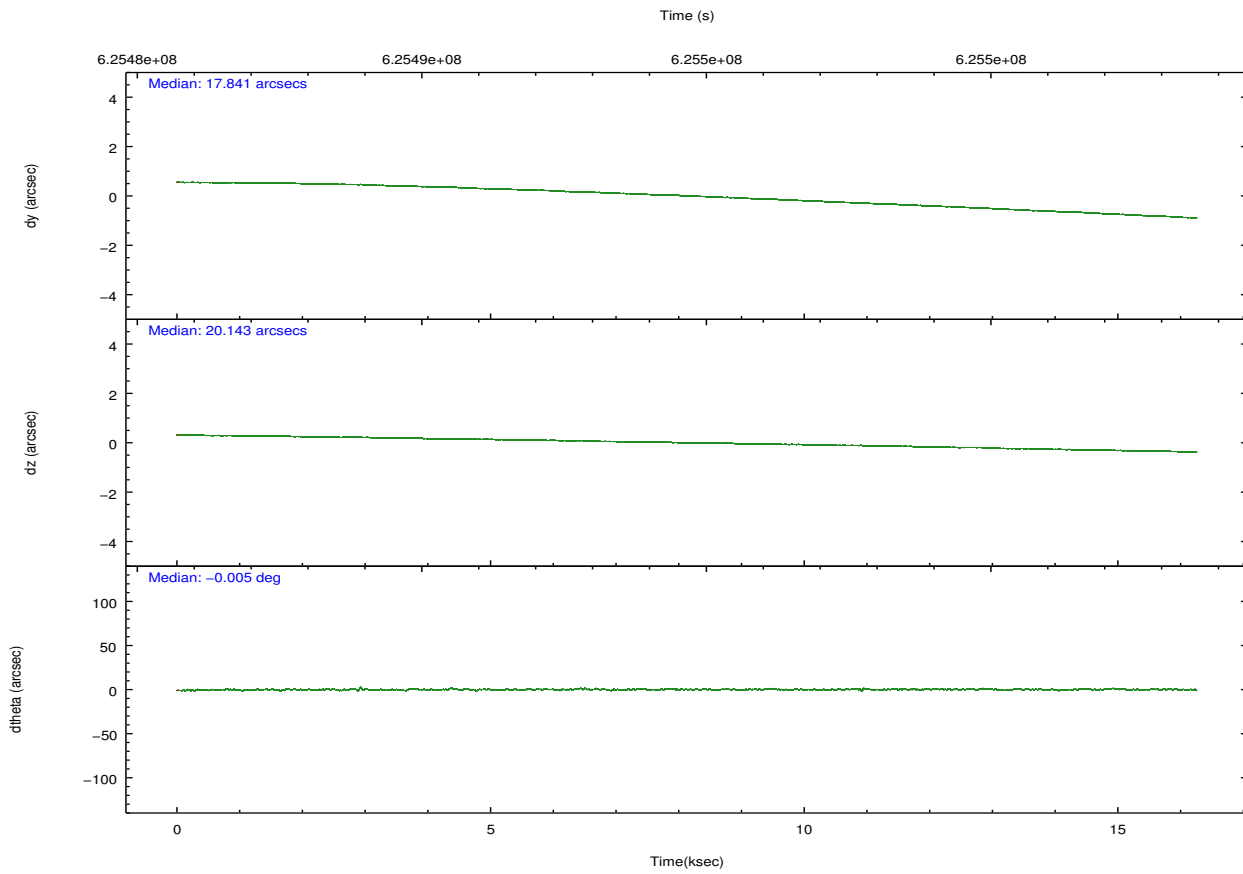
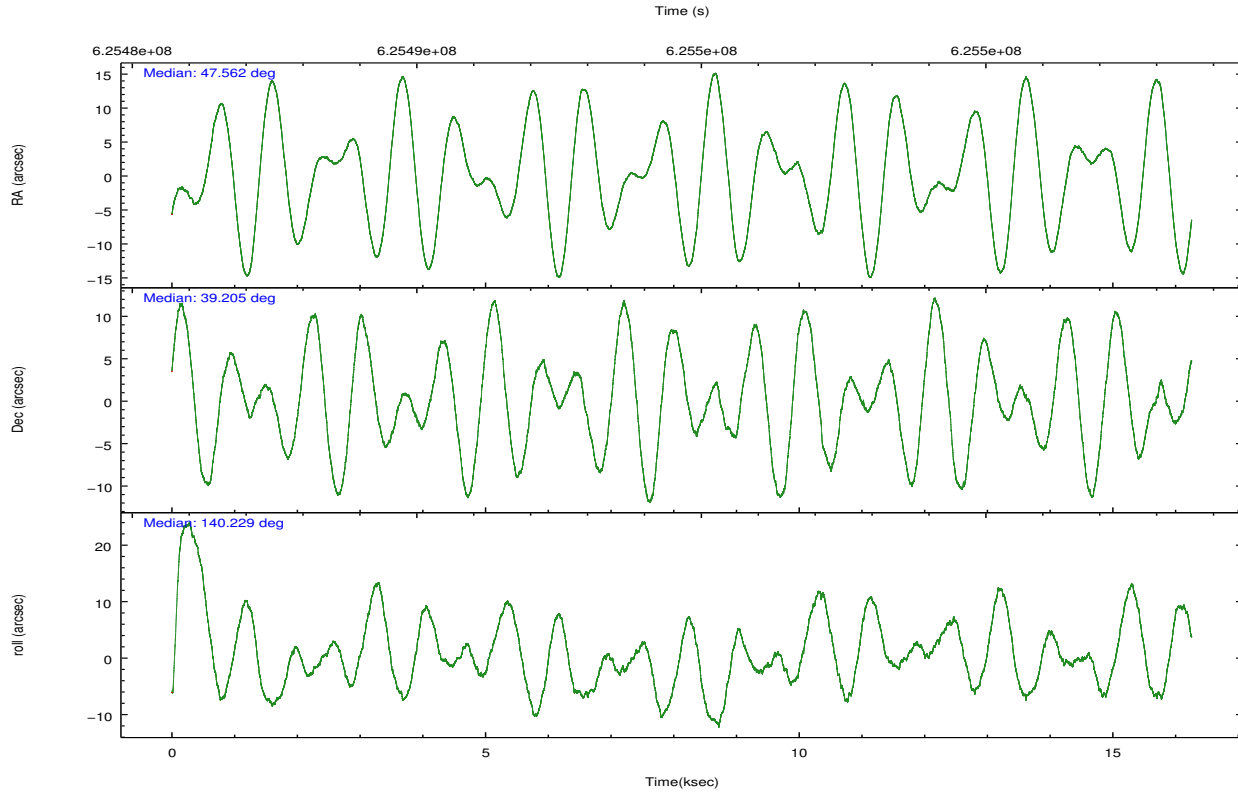
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	3944	6714	3610	5608
	4%	6%	3%	5%
grade 1 events	43	62	52	232
	0%	0%	0%	0%
grade 2 events	2810	2935	2493	2666
	2%	2%	2%	2%
grade 3 events	1125	1062	1072	1224
	1%	1%	1%	1%
grade 4 events	1074	1113	1114	1252
	1%	1%	1%	1%
grade 5 events	4199	4216	3871	4769
	4%	4%	3%	4%
grade 6 events	2526	3042	2211	2583
	2%	2%	2%	2%
grade 7 events	80706	82790	92409	90022
	83%	81%	86%	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	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	47.597300	47.56213324671701	CCD I2 on	Y	Y
[deg] Pointing Dec	39.200088	39.20469056442322	CCD I3 on	Y	Y
[deg] Pointing Roll	140.003012	140.2339093821035	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	N
[mm] SIM translation stage pos	-230.082463	-230.0875075610572	CCD S3 on	N	N
[mm] SIM translation stage offset	-3.51	-3.504945441872508	CCD S4 on	N	N
[s] Observation start time (MET)	625487774.184000	625486216.1569	CCD S5 on	N	N
Observation start date	2017-10-27T10:35:05	2017-10-27T10:10:16	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	625502774.184000	625503666.78292	On-chip summing requested	N	N
Observation end date	2017-10-27T14:45:05	2017-10-27T15:01:06	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



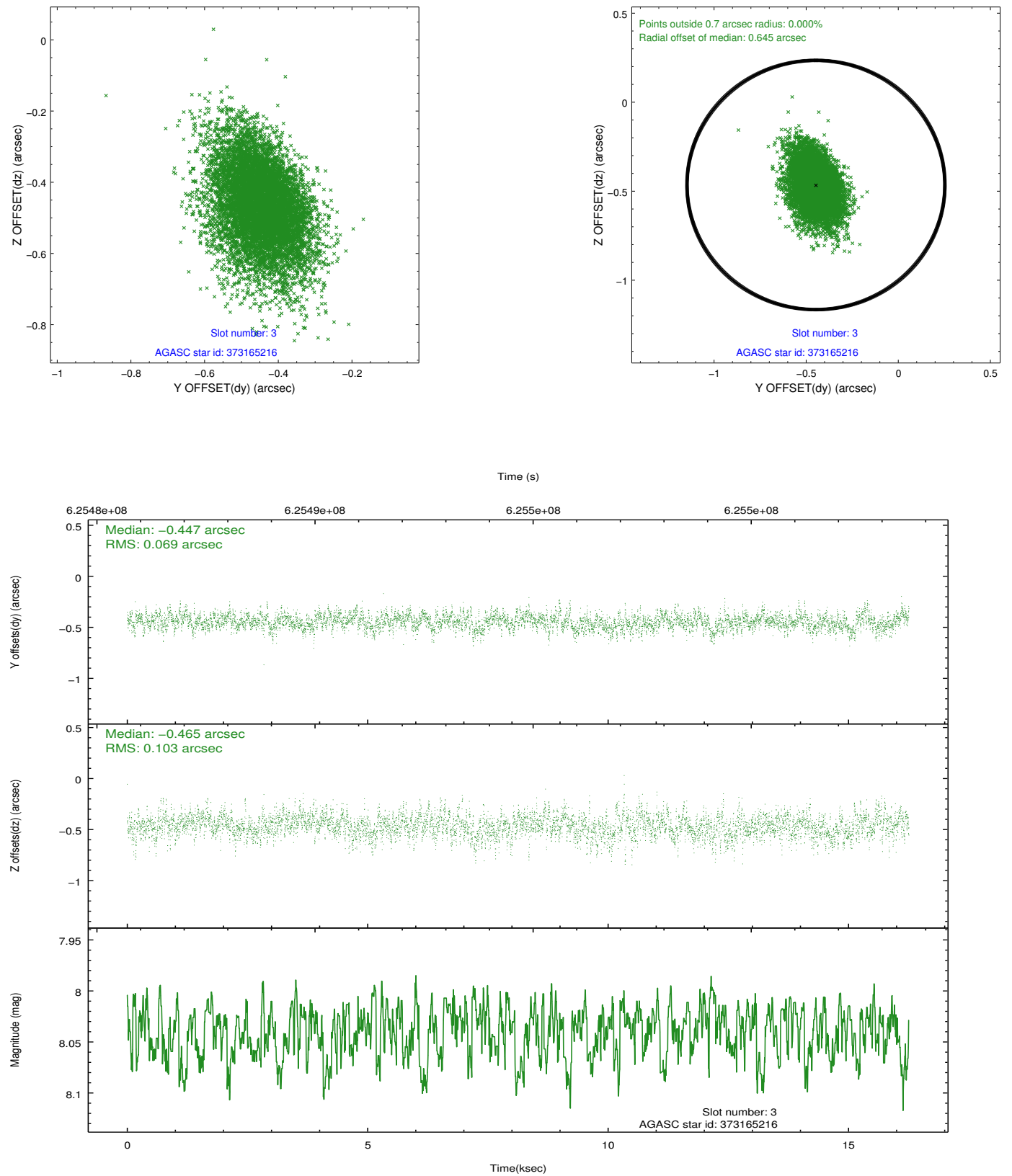


Slot Statistics

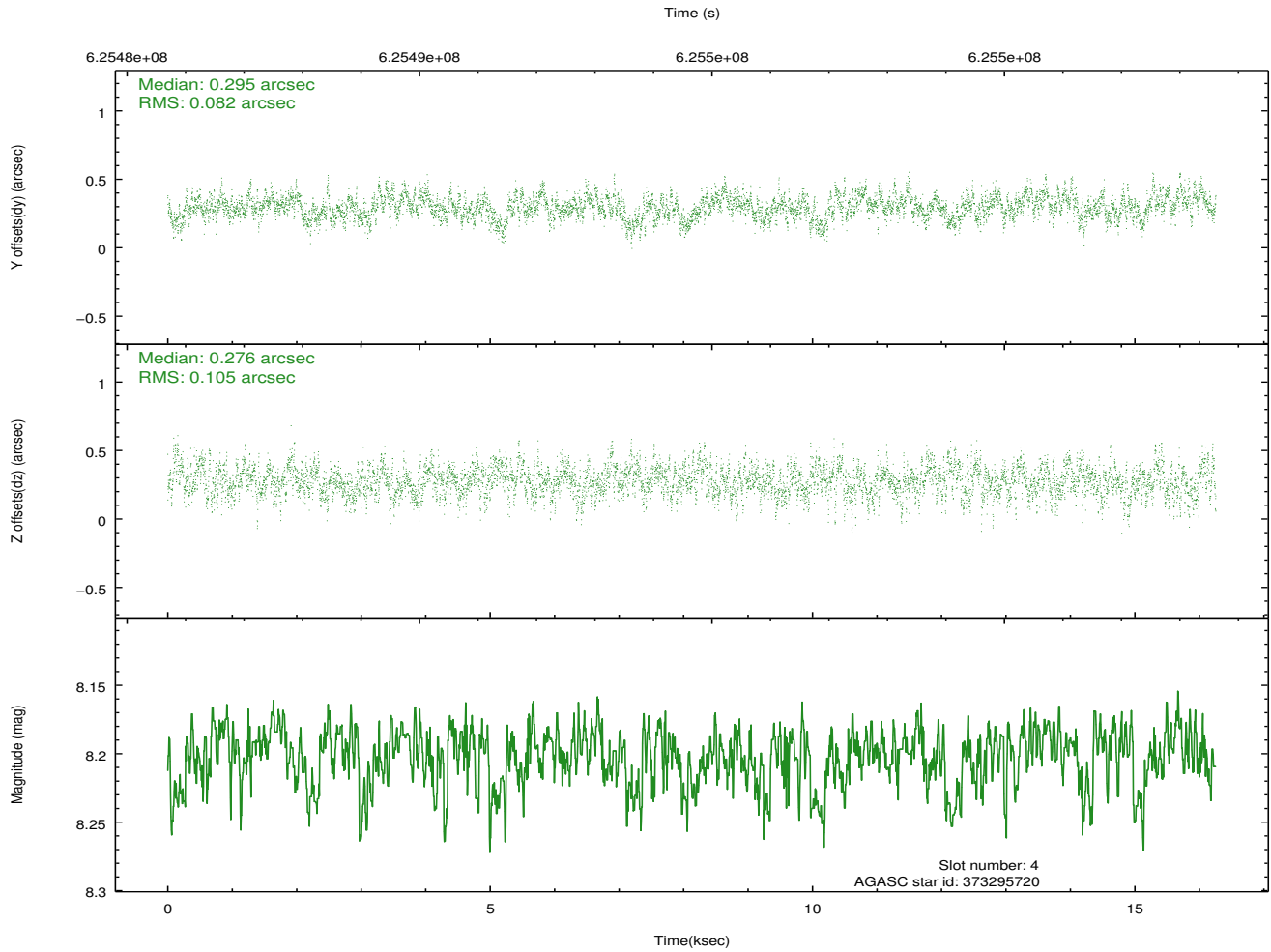
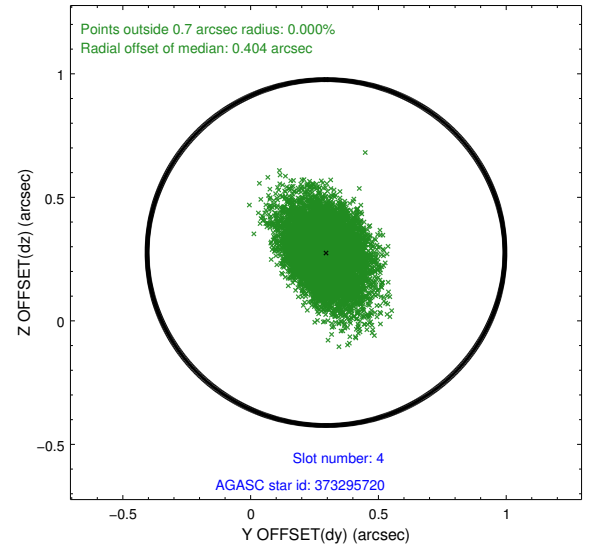
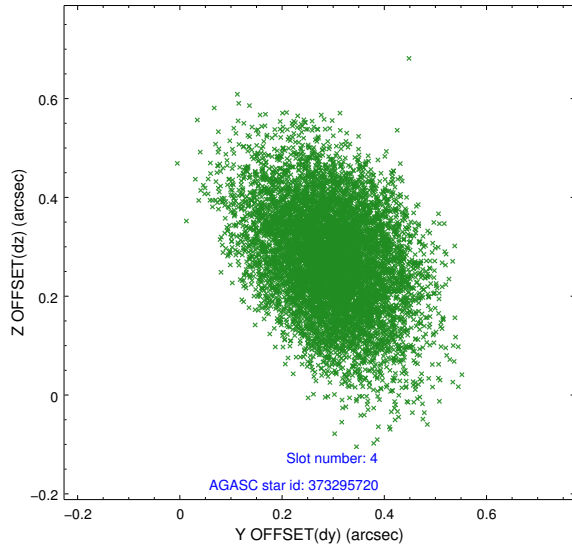
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.28	3966	0.140	-0.083	0.014	0.025	0.000000	0.000000	921.71	-915.80
1	FID		ACIS-I-5	7.27	3965	-0.432	0.077	0.007	0.012	0.000000	0.000000	-1826.92	981.54
2	FID		ACIS-I-6	7.25	3965	0.201	0.077	0.013	0.022	0.000000	0.000000	386.89	1626.47
3	GUIDE	used	373165216	8.04	7930	-0.447	-0.465	0.127	0.228	46.883695	39.086712	1270.16	1589.02
4	GUIDE	used	373295720	8.20	7927	0.295	0.276	0.141	0.235	48.281407	38.972607	-1988.23	-608.34
5	GUIDE	used	373295776	9.68	7902	0.064	-0.133	0.275	0.415	47.654210	38.864257	-899.13	823.70
6	GUIDE	used	373700432	9.58	7921	0.078	-0.104	0.240	0.407	47.105517	39.773947	2371.34	-710.55
7	GUIDE	used	373821976	9.81	7845	0.018	0.412	0.340	0.590	47.727979	39.714201	913.36	-1649.95

2.4 Star Slots

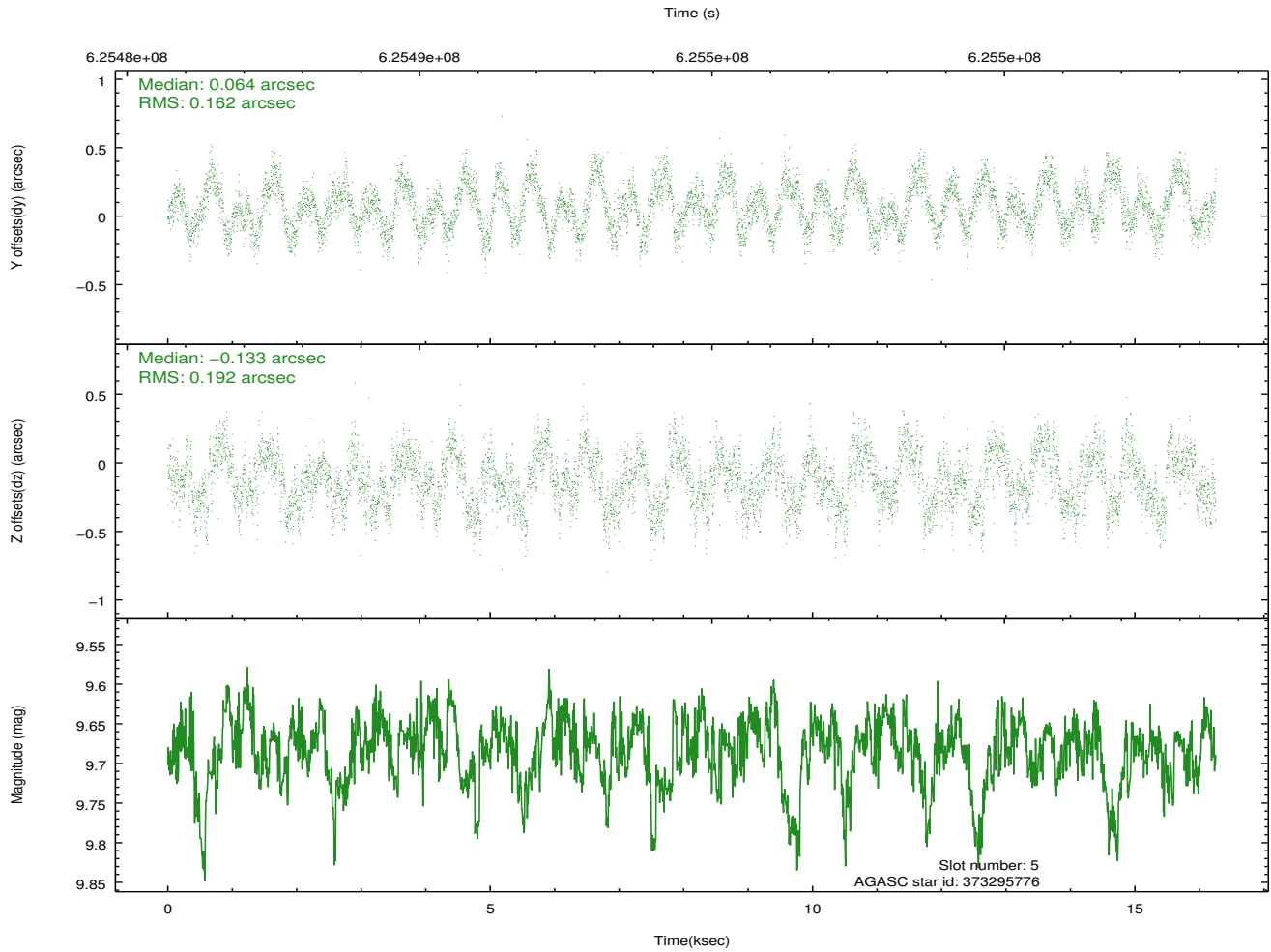
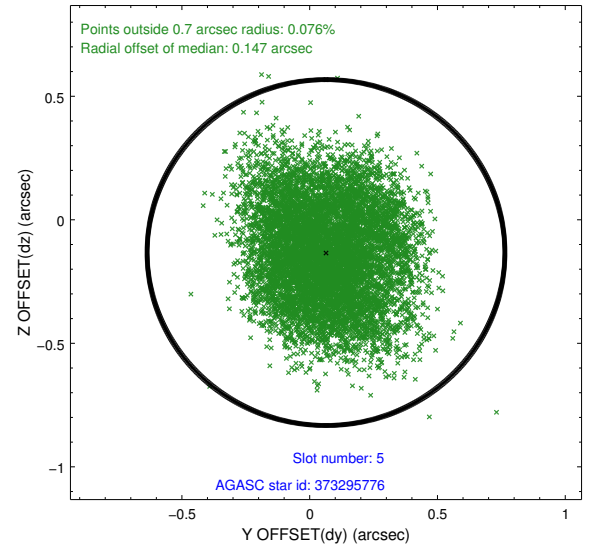
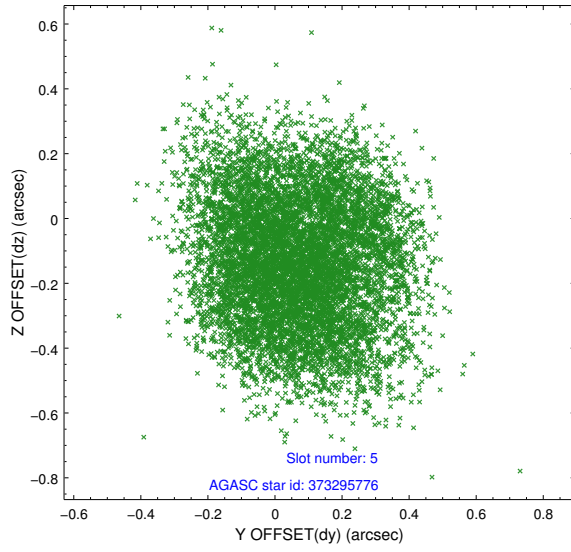
2.4.1 Slot 3



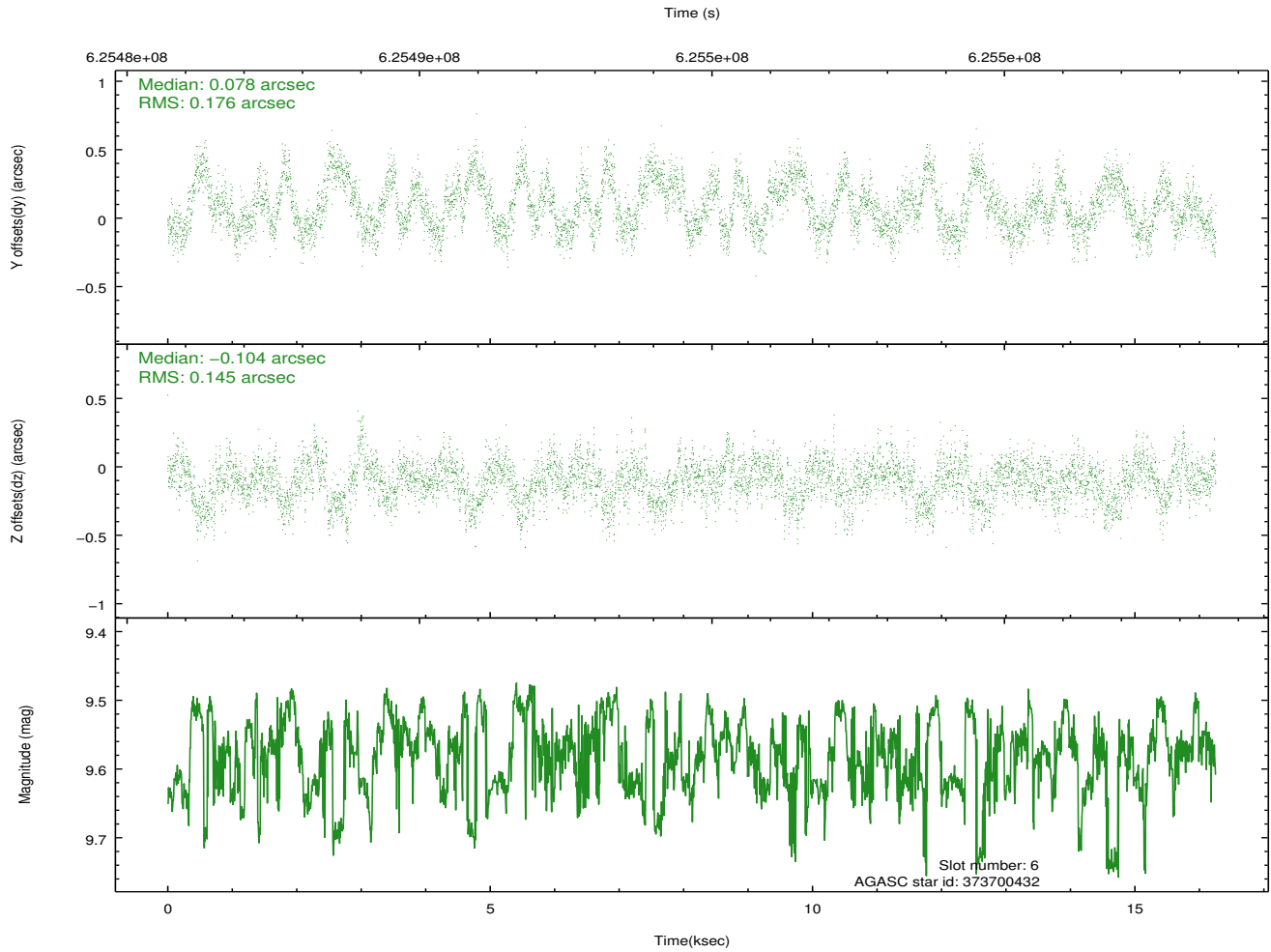
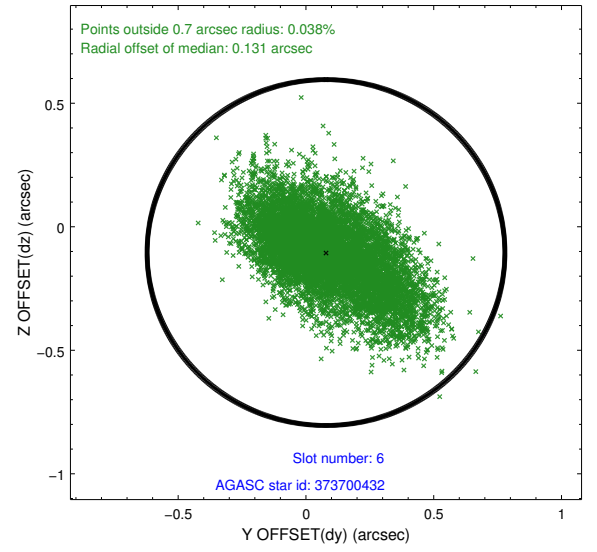
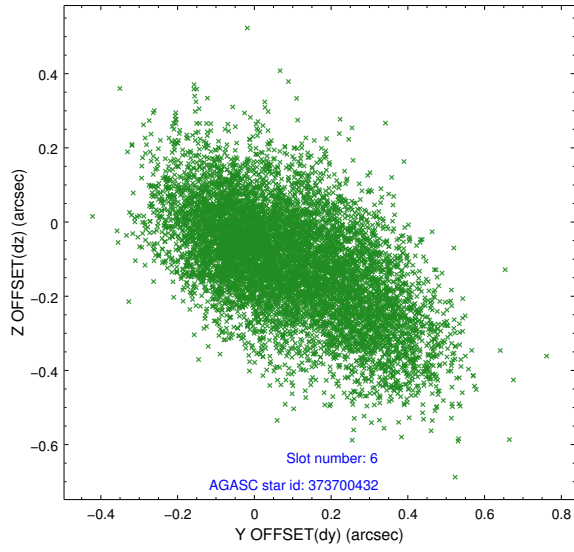
2.4.2 Slot 4



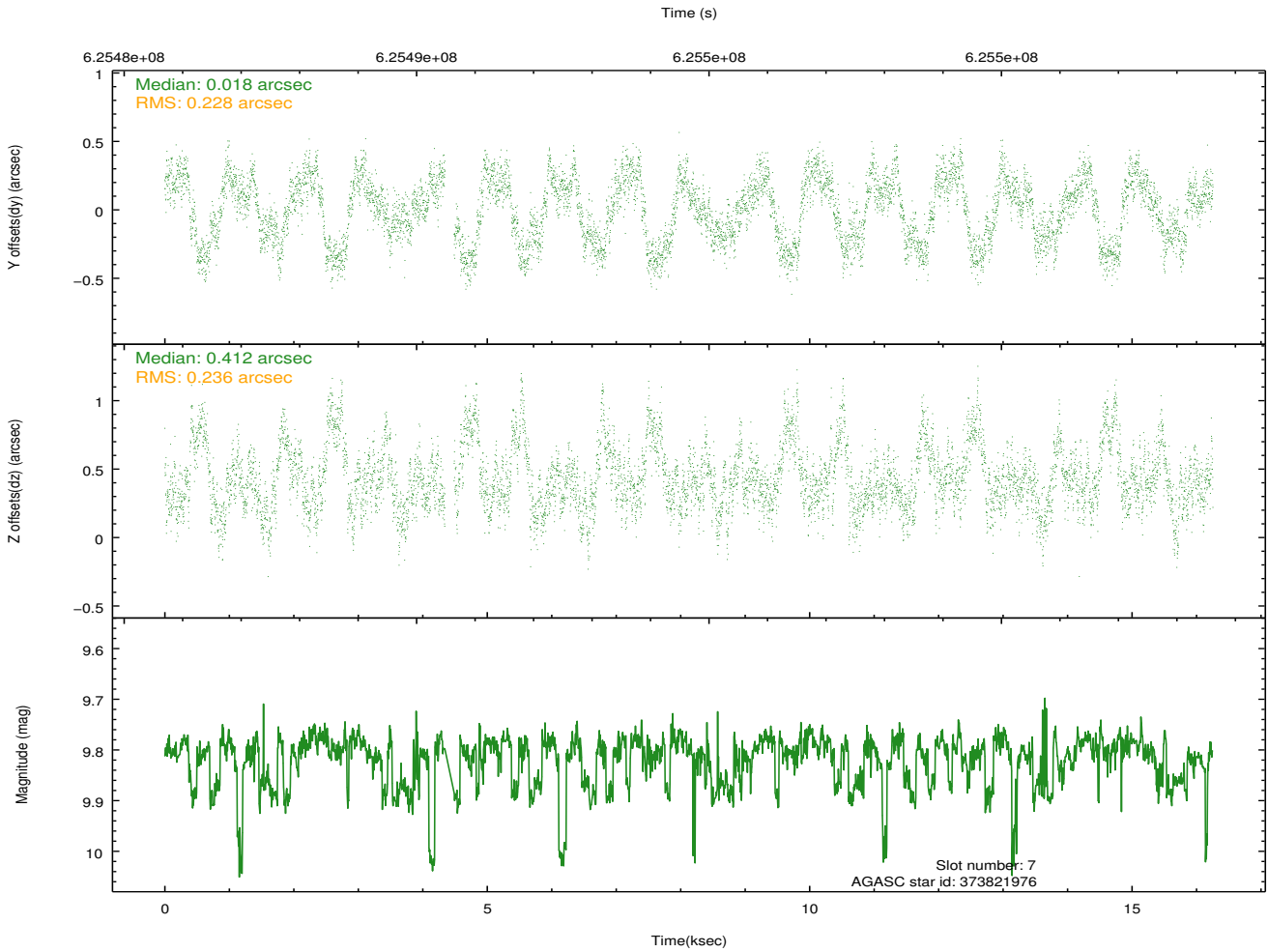
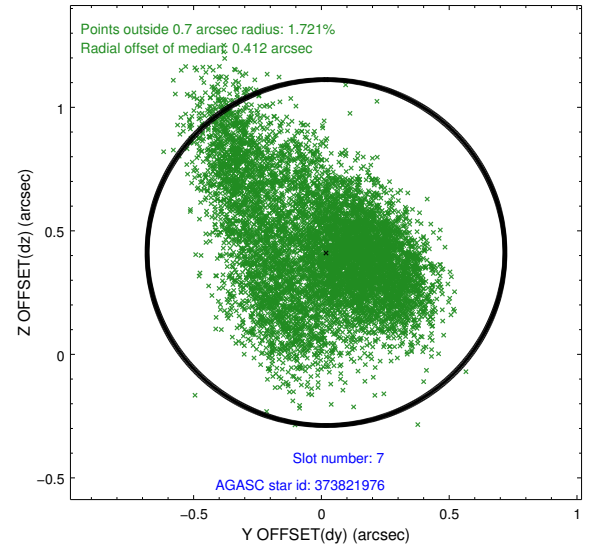
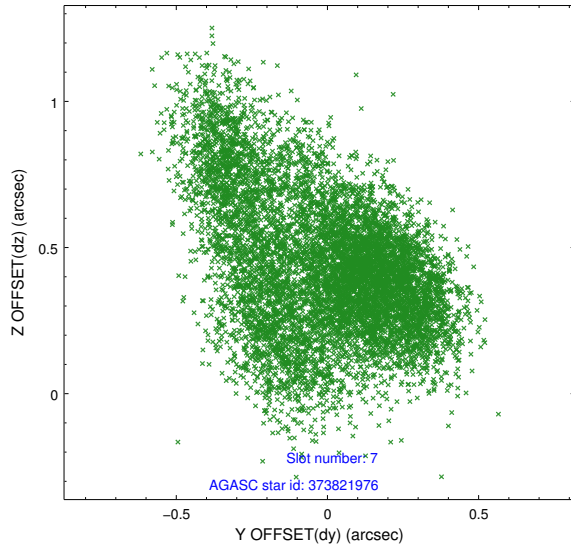
2.4.3 Slot 5



2.4.4 Slot 6

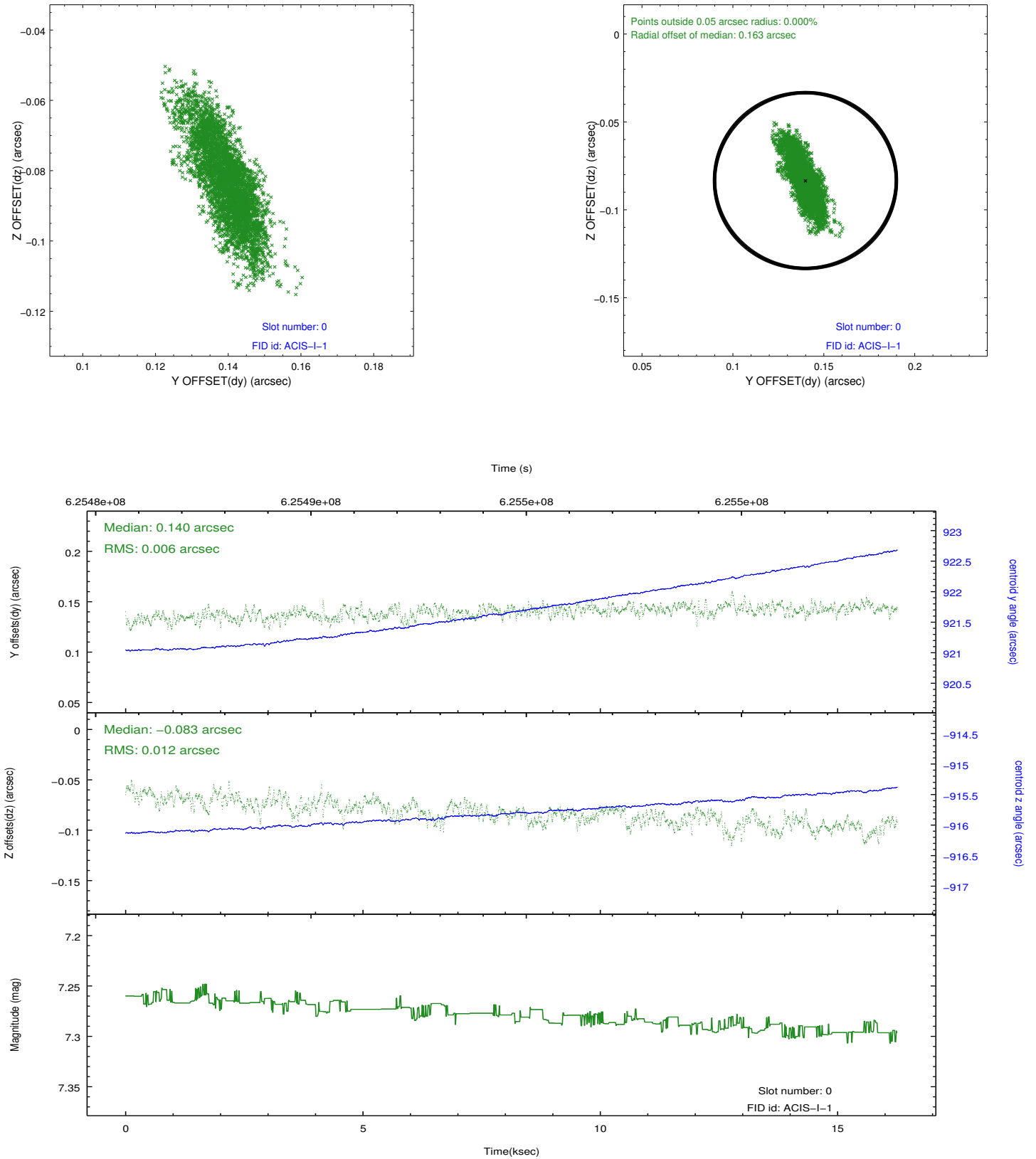


2.4.5 Slot 7

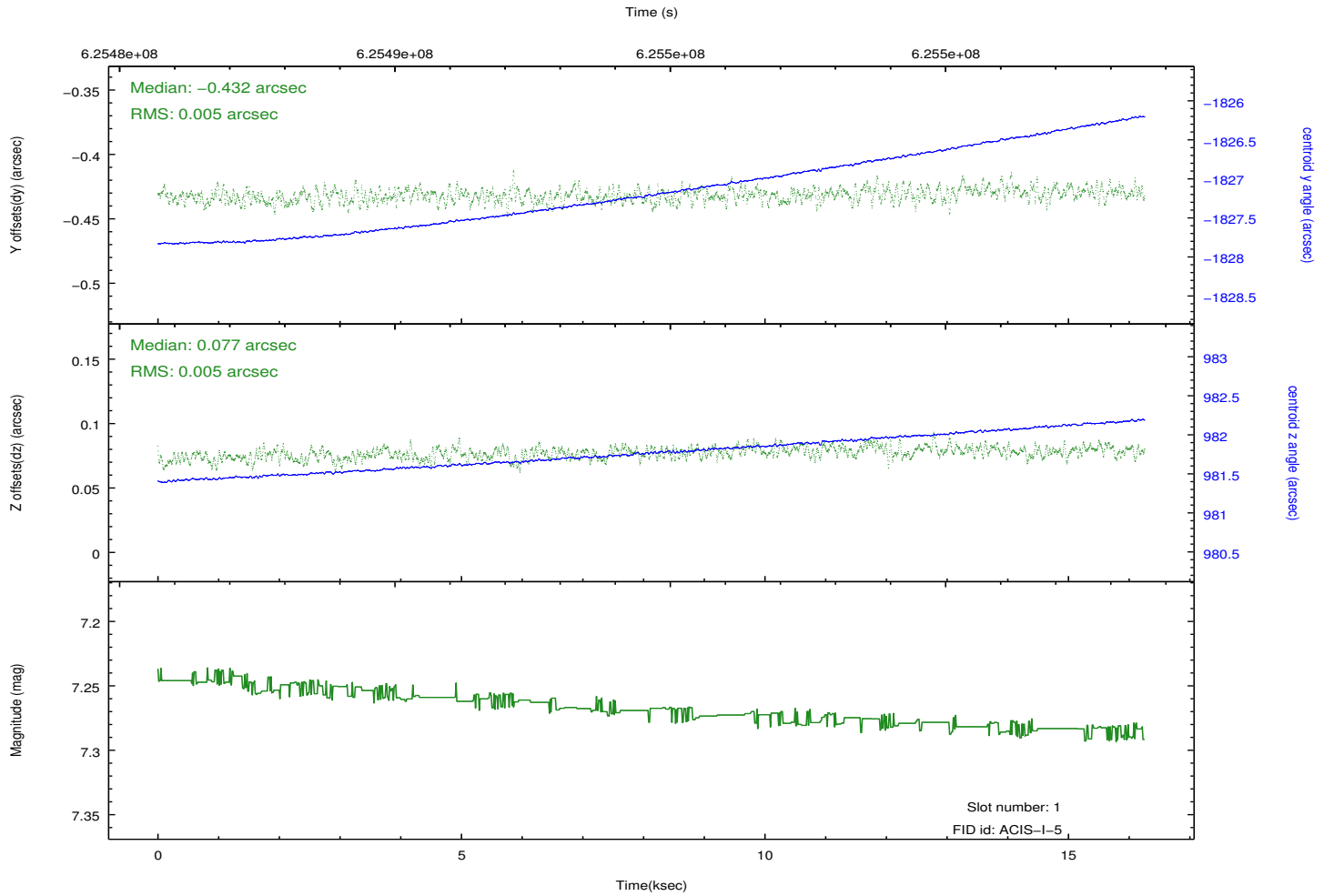
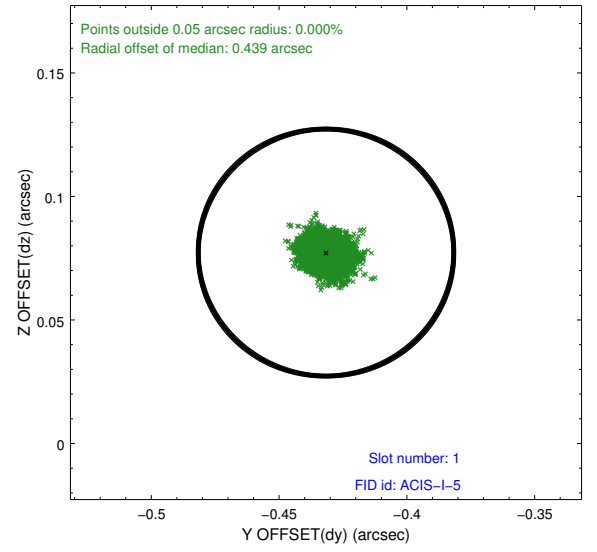
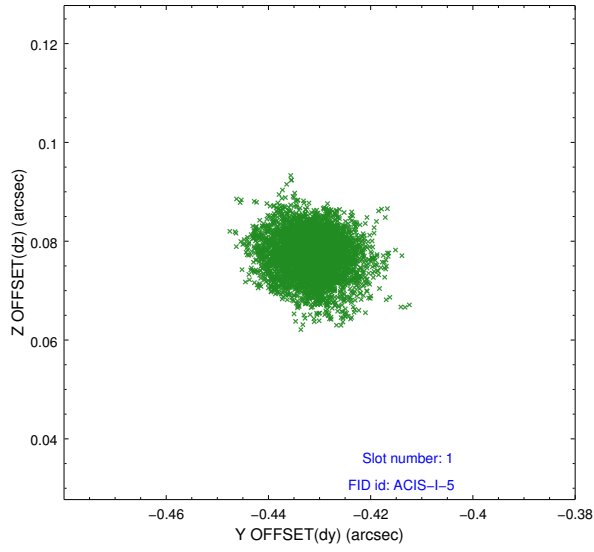


2.5 FID Slots

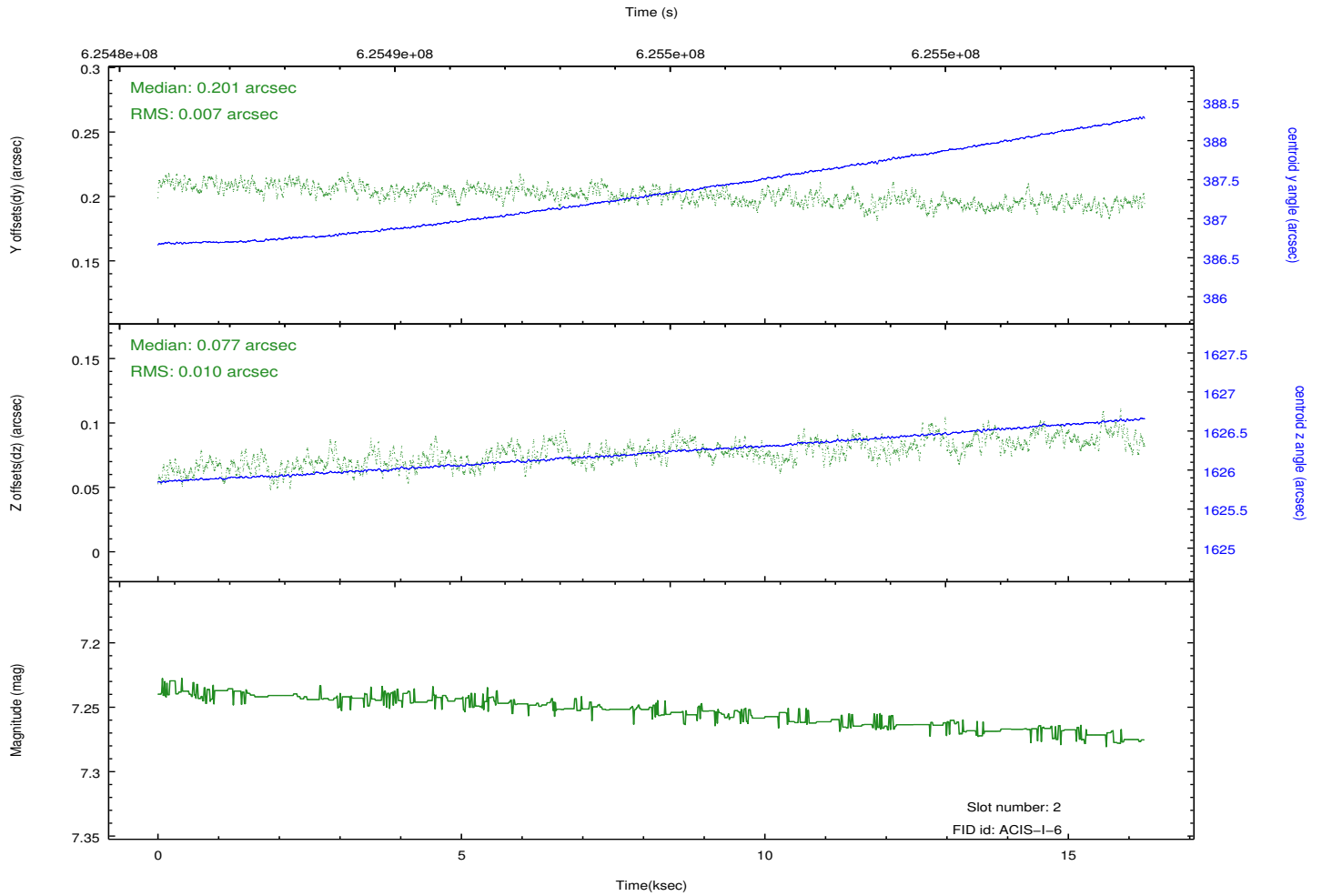
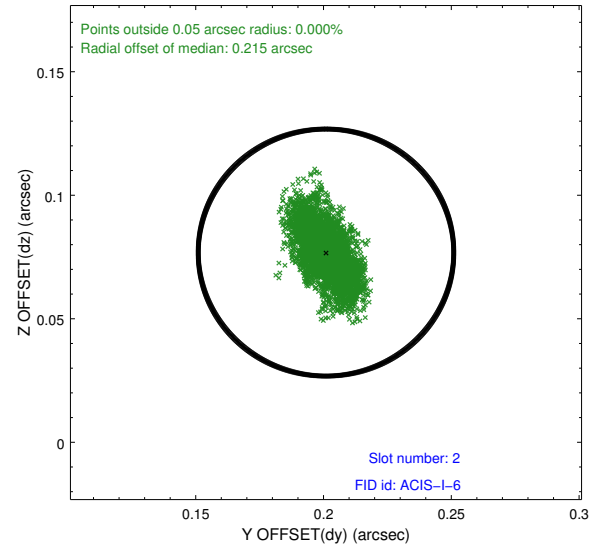
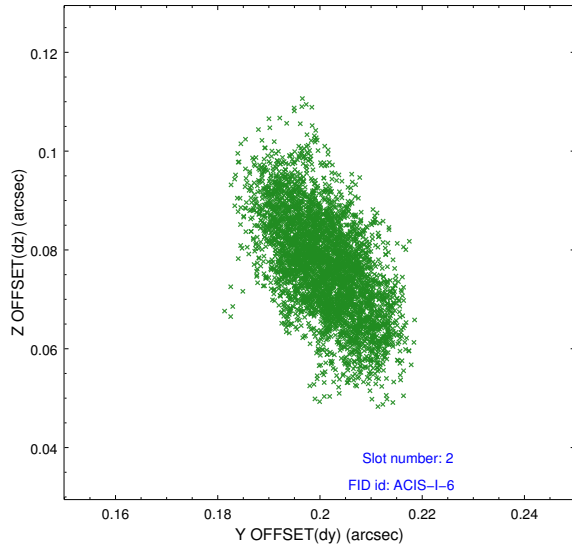
2.5.1 Slot 0



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)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	15.078400116086

A.2 Comments

One optional chip was dropped.

A spatial region of the original bias map for CCD = 1 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~ 20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 1 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords: (47.83487,39.23896), (47.83724,39.24116), (47.78510,39.27492), (47.78030,39.27430).

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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

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.