

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 19750 - L2 Version 1
Chandra X-Ray Center

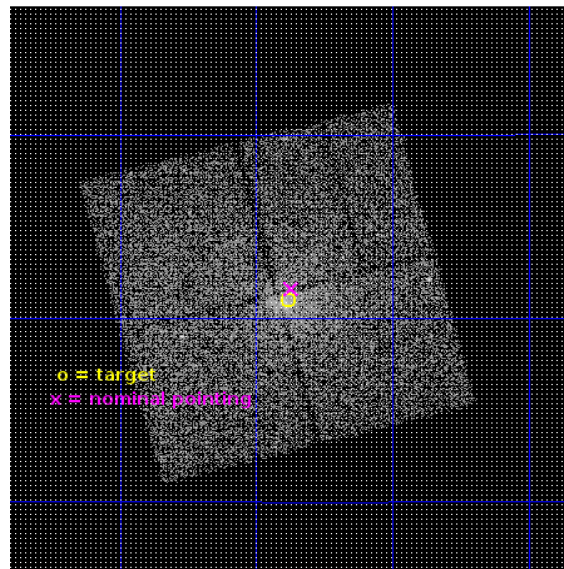
L2 Processing Date : Nov 29 2017

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1 Front

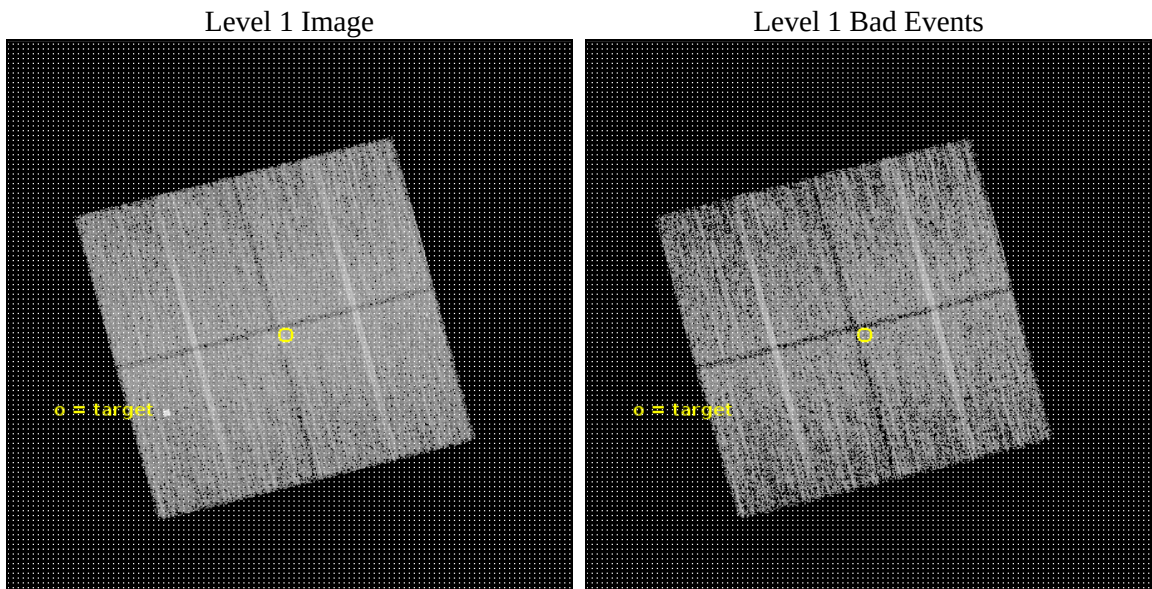
seq_num	801687	Sequence number
obs_id	19750	Observation id
title	Observations of Radio Relic Galaxy Clusters	Proposal title
observer	Ralph Kraft	Principal investigator
object	CIZA J0649.3+1801	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	102.345	Observer's specified target RA [deg]
dec_targ	18.016667	Observer's specified target Dec [deg]
ra_nom	102.34271925686	Nominal RA [deg]
dec_nom	18.026875675273	Nominal Dec [deg]
roll_nom	75.20942464056	Nominal Roll [deg]
revision	1	Processing version of data
ontime	13077.831522465	Sum of GTIs [s]
livetime	12906.960025864	Livetime [s]
ontime0	13074.567312121	Sum of GTIs [s]
ontime1	13077.749442458	Sum of GTIs [s]
ontime2	13071.508281827	Sum of GTIs [s]
ontime3	13077.831522465	Sum of GTIs [s]
l2events	42826	Number of level 2 events



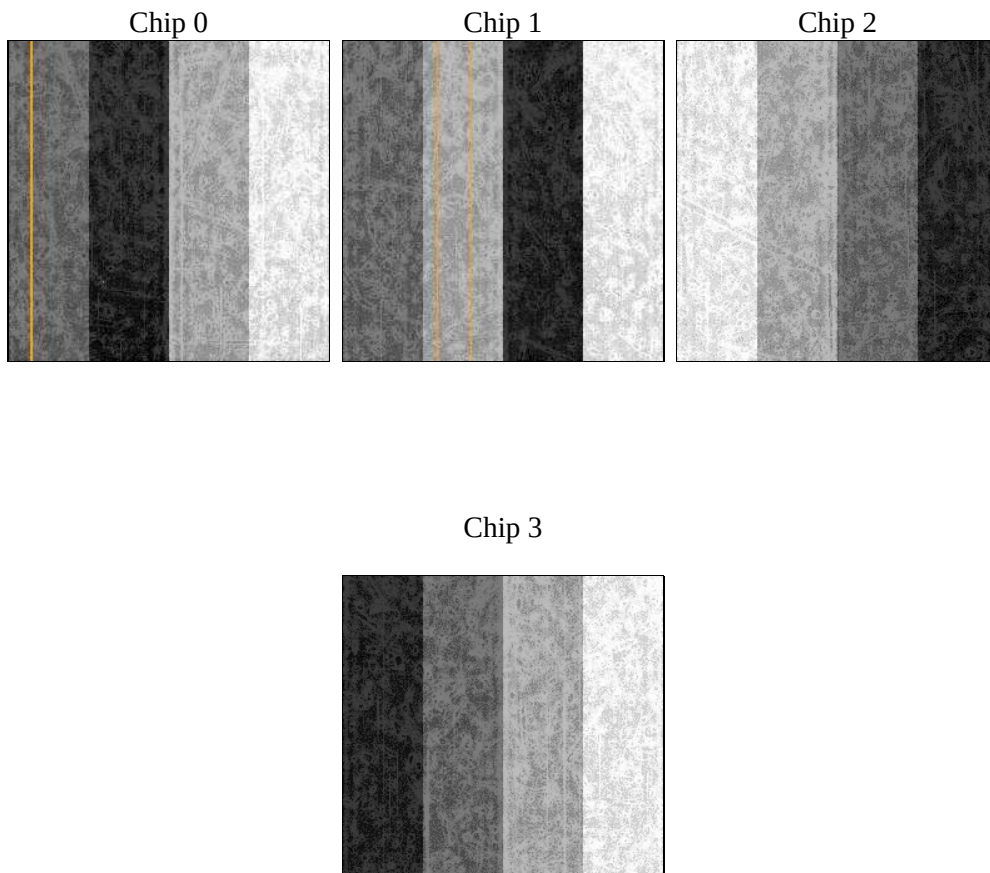
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	13000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	13077.831522465	Sum of GTIs [s]
caldbver	4.7.6	 	ontime0	13074.567312121	Sum of GTIs [s]
date	2017-11-29T06:01:39	Date and time of file creation	ontime1	13077.749442458	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	13071.508281827	Sum of GTIs [s]
			ontime3	13077.831522465	Sum of GTIs [s]
			l1events	379642	Number of level 1 events

2.1.4 Events

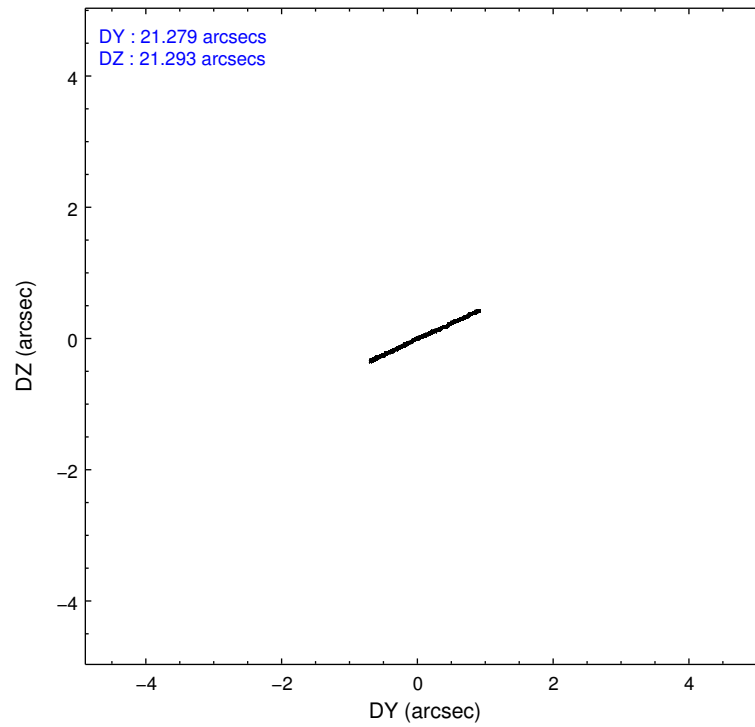
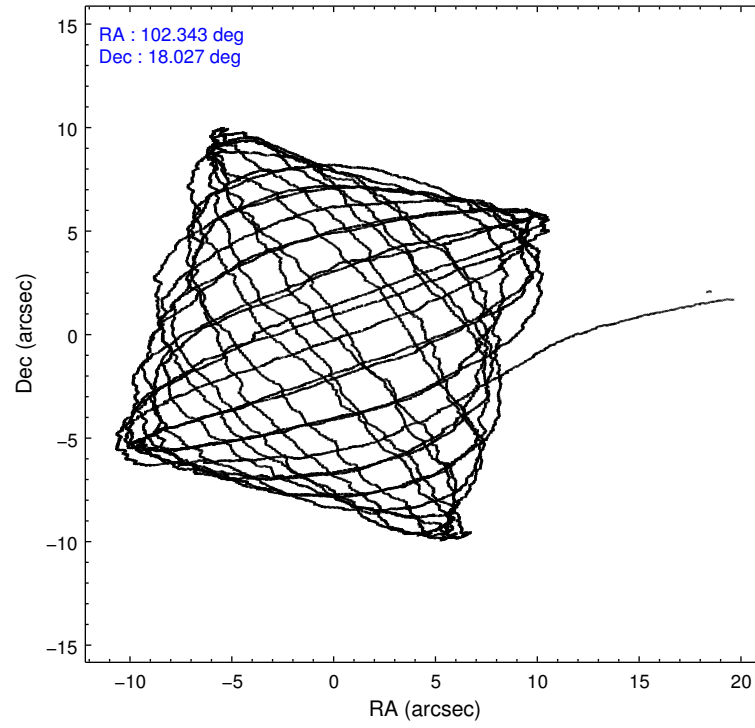
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	89088	94159	100587	95808
rejected events	76732	79035	89274	83015
rejected %	86%	83%	88%	86%

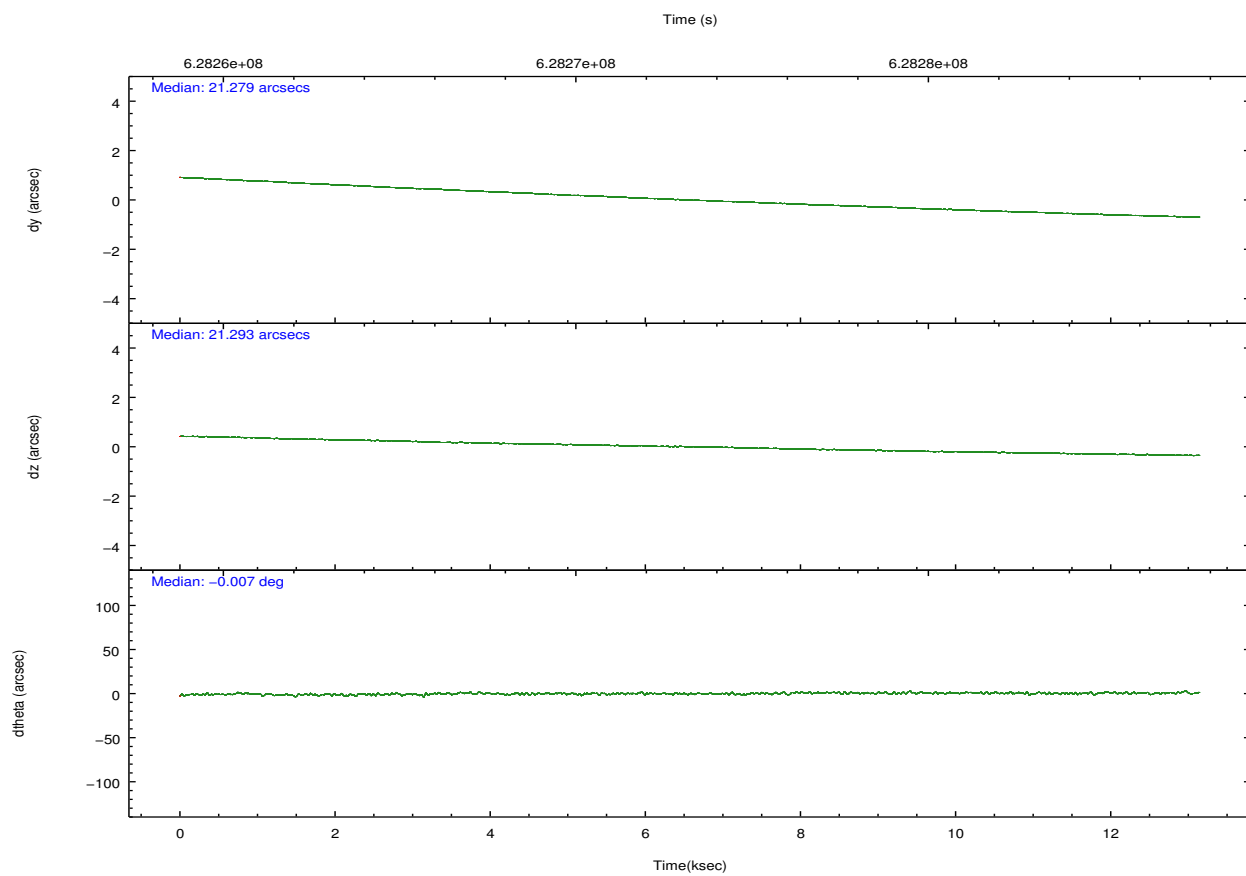
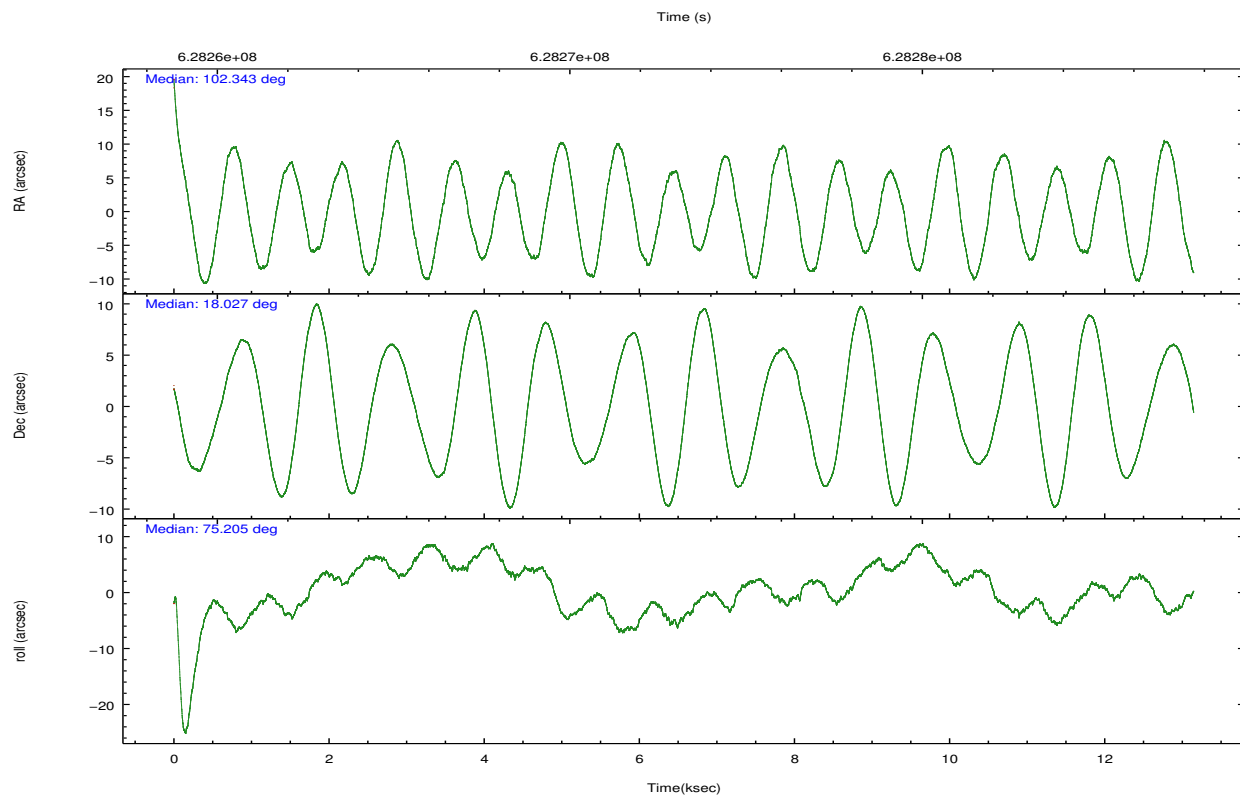
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	5070	6958	4724	5916
	5%	7%	4%	6%
grade 1 events	55	55	53	59
	0%	0%	0%	0%
grade 2 events	2782	3132	2400	2487
	3%	3%	2%	2%
grade 3 events	1094	1092	1042	1100
	1%	1%	1%	1%
grade 4 events	1060	1090	1055	1075
	1%	1%	1%	1%
grade 5 events	3870	3979	3633	4515
	4%	4%	3%	4%
grade 6 events	2359	2861	2095	2220
	2%	3%	2%	2%
grade 7 events	72798	74992	85585	78436
	81%	79%	85%	81%

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	102.350431	102.3427192568568	CCD I2 on	Y	Y
[deg] Pointing Dec	18.000259	18.02687567527342	CCD I3 on	Y	Y
[deg] Pointing Roll	74.998320	75.20942464055983	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	O2	N
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	O1	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	628265177.184000	628263716.21983	CCD S5 on	N	N
Observation start date	2017-11-28T14:05:08	2017-11-28T13:41:56	Number of optional ACIS chips dropped	2	2
[s] Observation end time (MET)	628278177.184000	628279197.3082401	On-chip summing requested	N	N
Observation end date	2017-11-28T17:41:48	2017-11-28T17:59:57	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



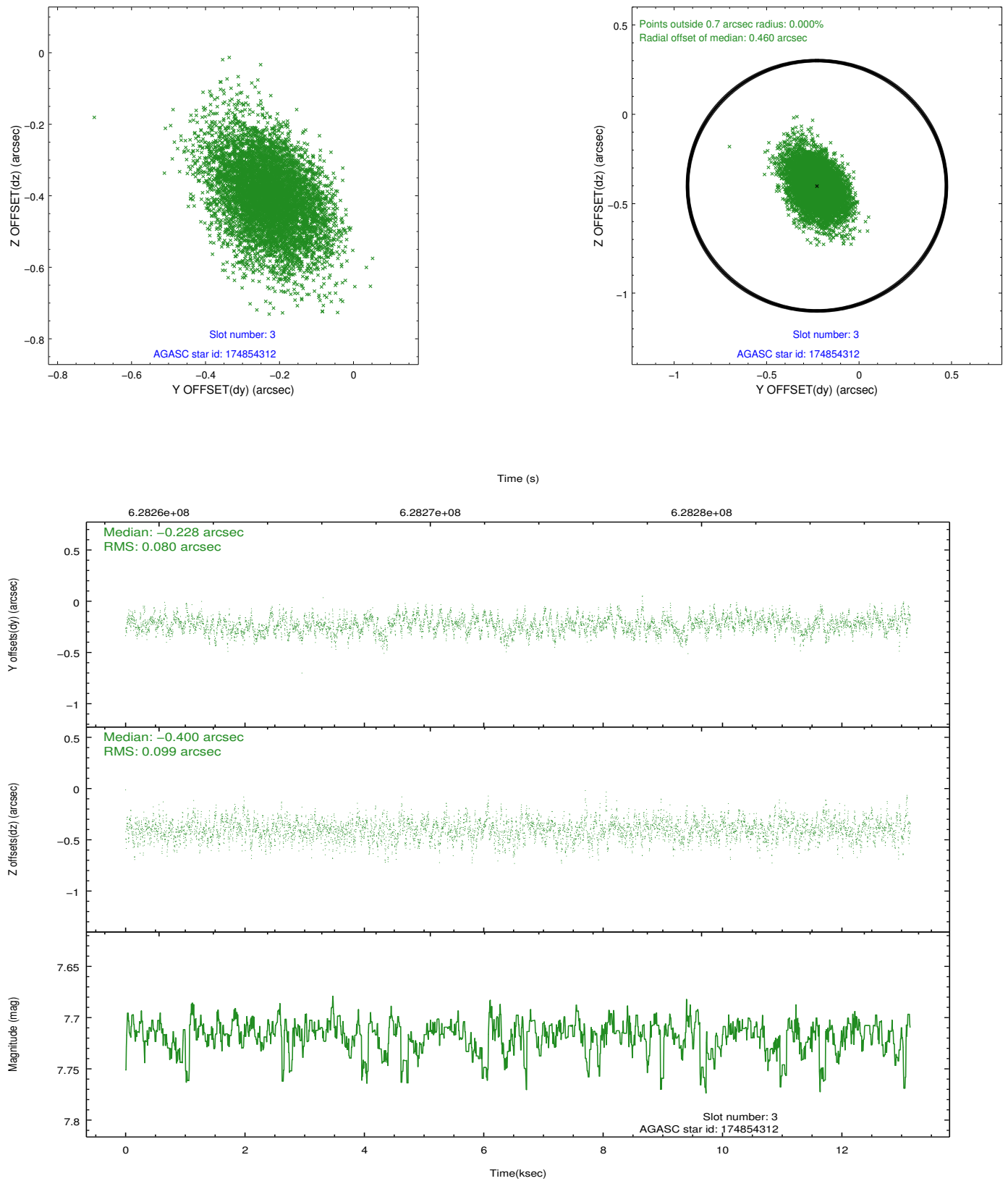


Slot Statistics

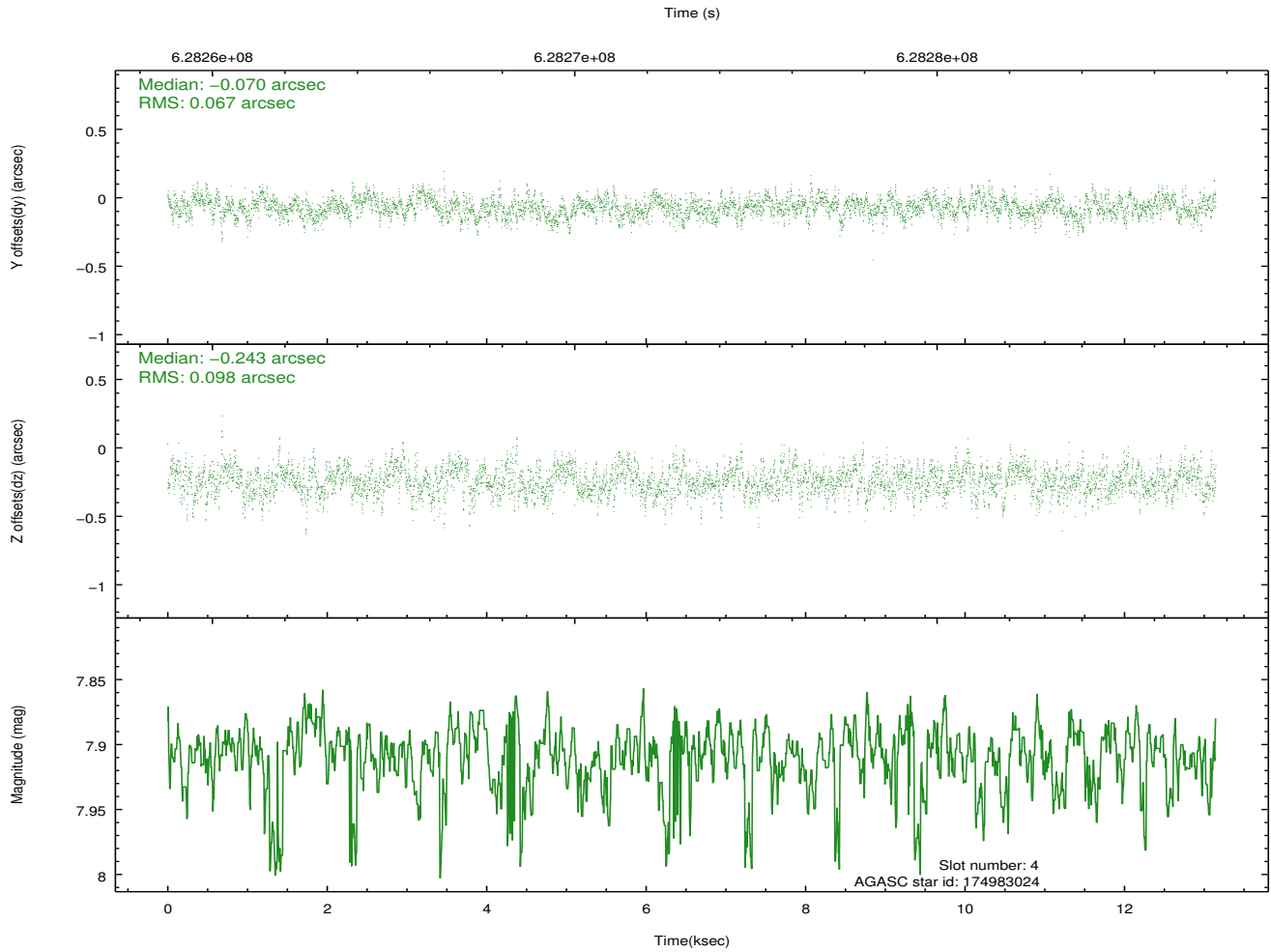
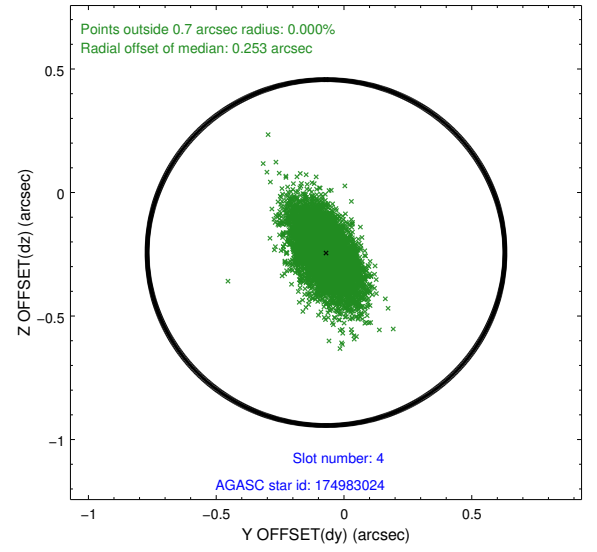
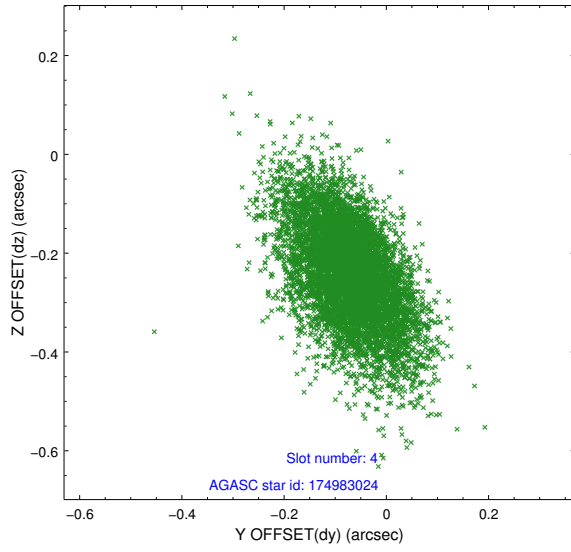
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-2	7.16	3207	-0.267	-0.136	0.020	0.033	0.000000	0.000000	-776.40	-851.62
1	FID		ACIS-I-4	7.23	3207	0.623	0.176	0.019	0.030	0.000000	0.000000	2138.23	1054.90
2	FID		ACIS-I-5	7.25	3207	-0.457	0.030	0.012	0.019	0.000000	0.000000	-1830.09	1052.71
3	GUIDE	used	174854312	7.72	6411	-0.228	-0.400	0.135	0.225	101.830248	18.322790	663.26	2018.24
4	GUIDE	used	174983024	7.91	6411	-0.070	-0.243	0.121	0.216	102.286054	18.198074	631.15	397.10
5	GUIDE	used	174983760	8.44	6395	-0.012	0.376	0.159	0.263	102.627488	18.506188	2005.15	-441.41
6	GUIDE	used	174854232	8.24	6413	-0.371	-0.447	0.131	0.226	101.805114	18.173747	123.07	1963.34
7	GUIDE	used	174994112	9.12	6409	0.678	0.716	0.175	0.289	102.219536	17.403583	-2190.35	-121.15

2.4 Star Slots

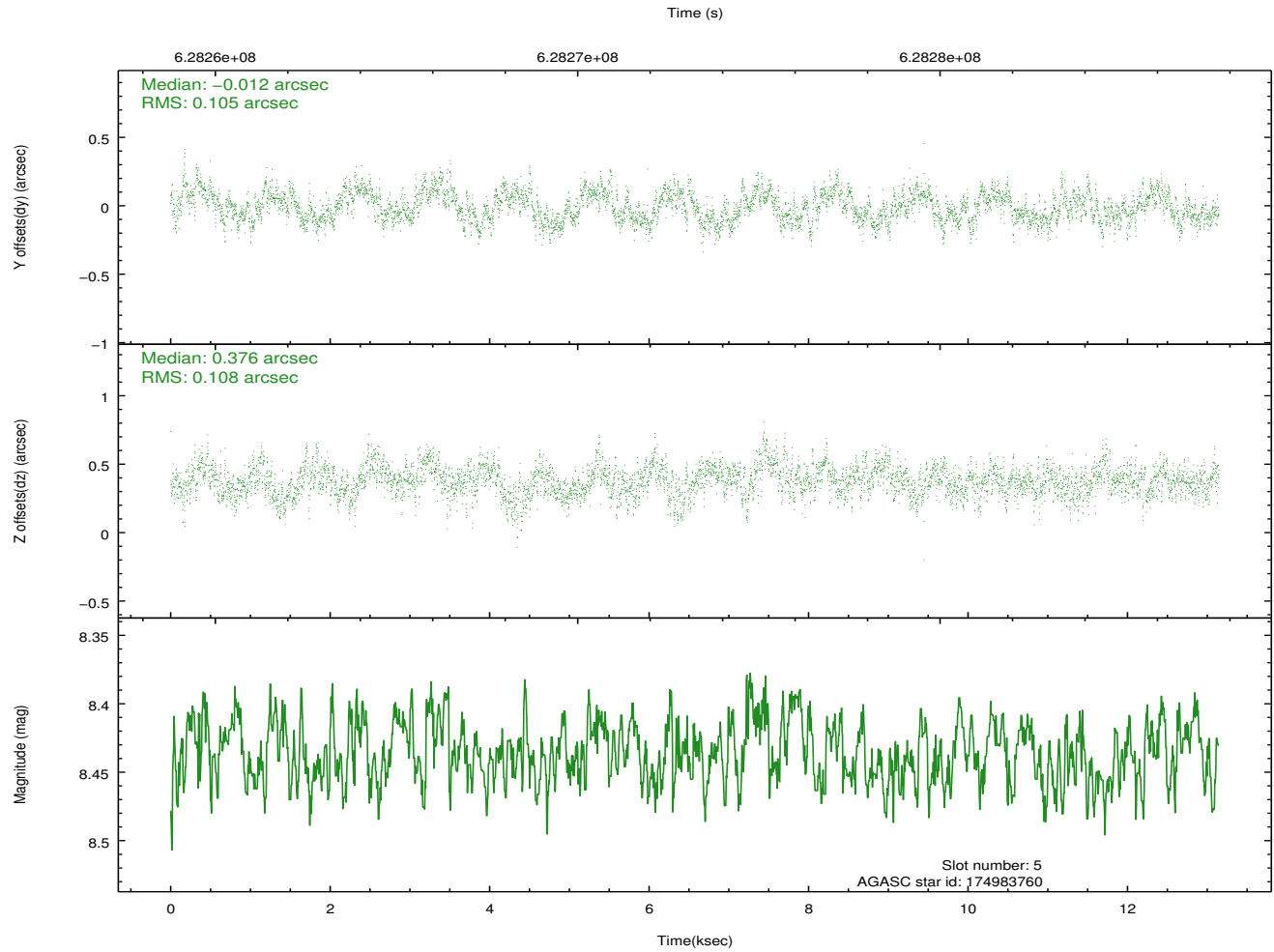
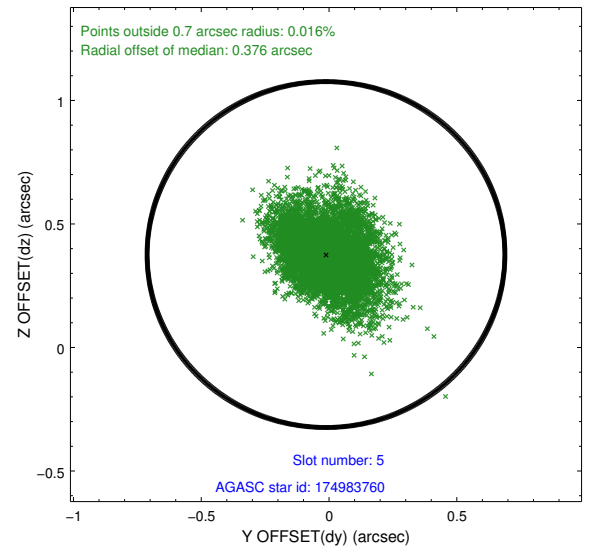
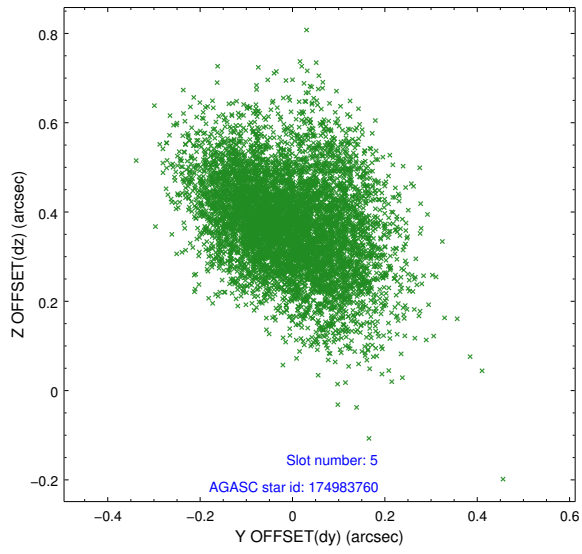
2.4.1 Slot 3



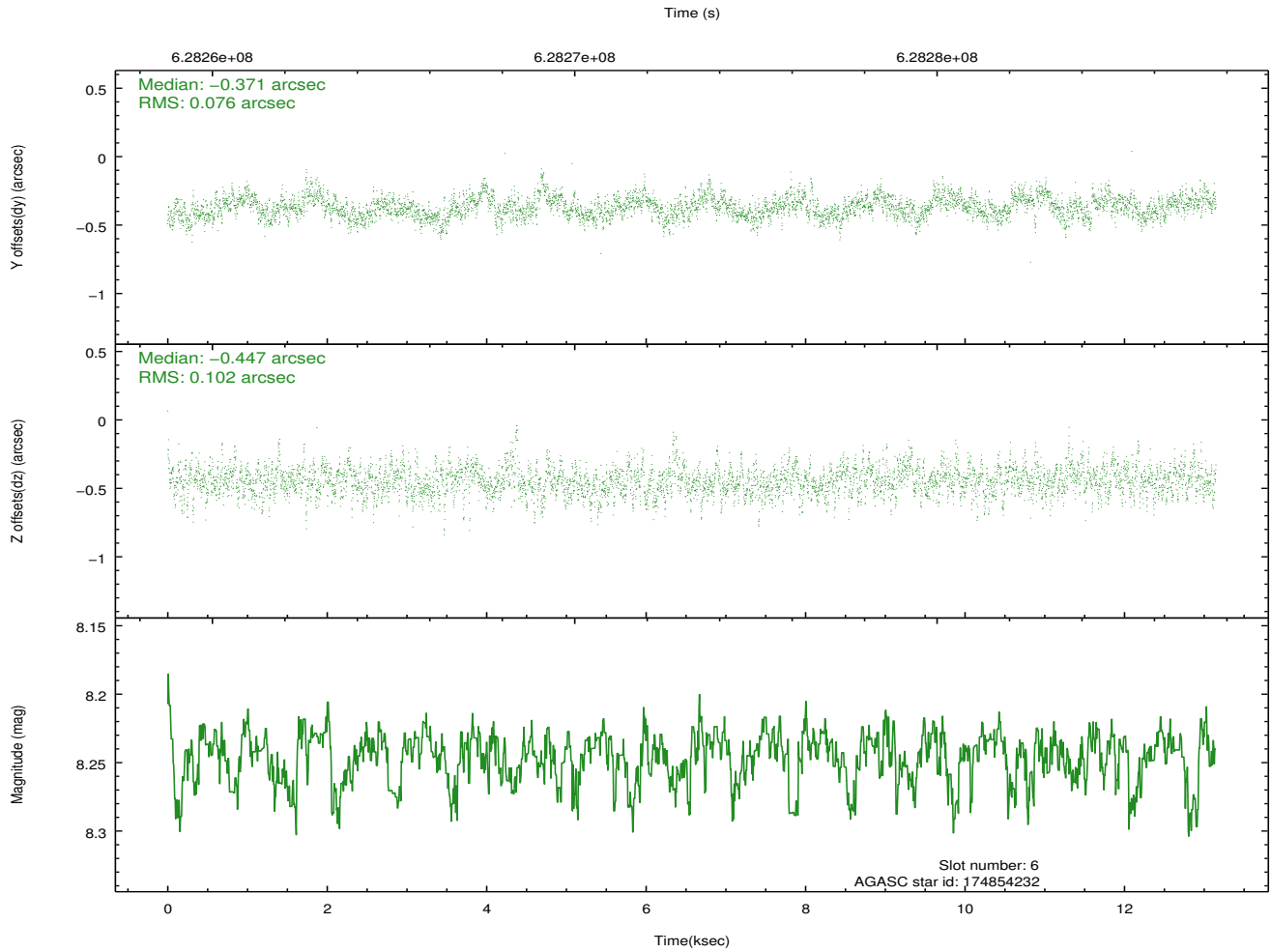
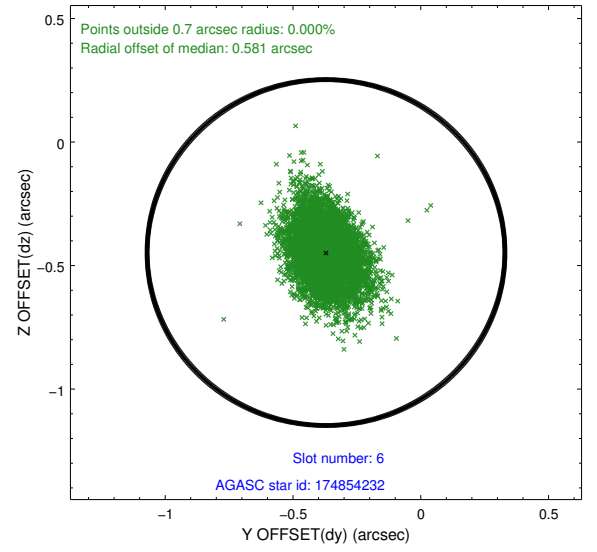
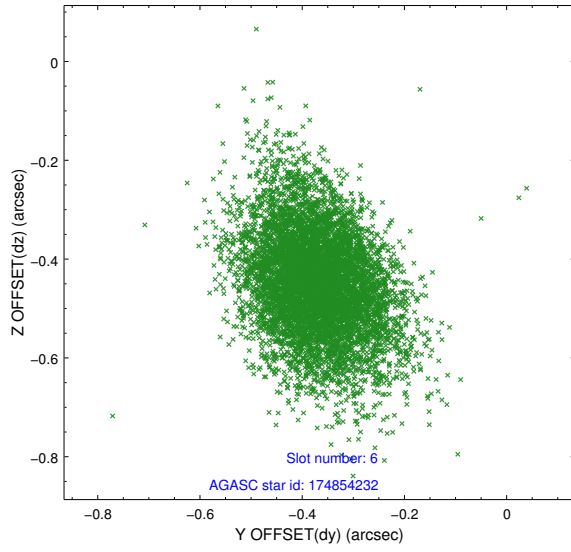
2.4.2 Slot 4



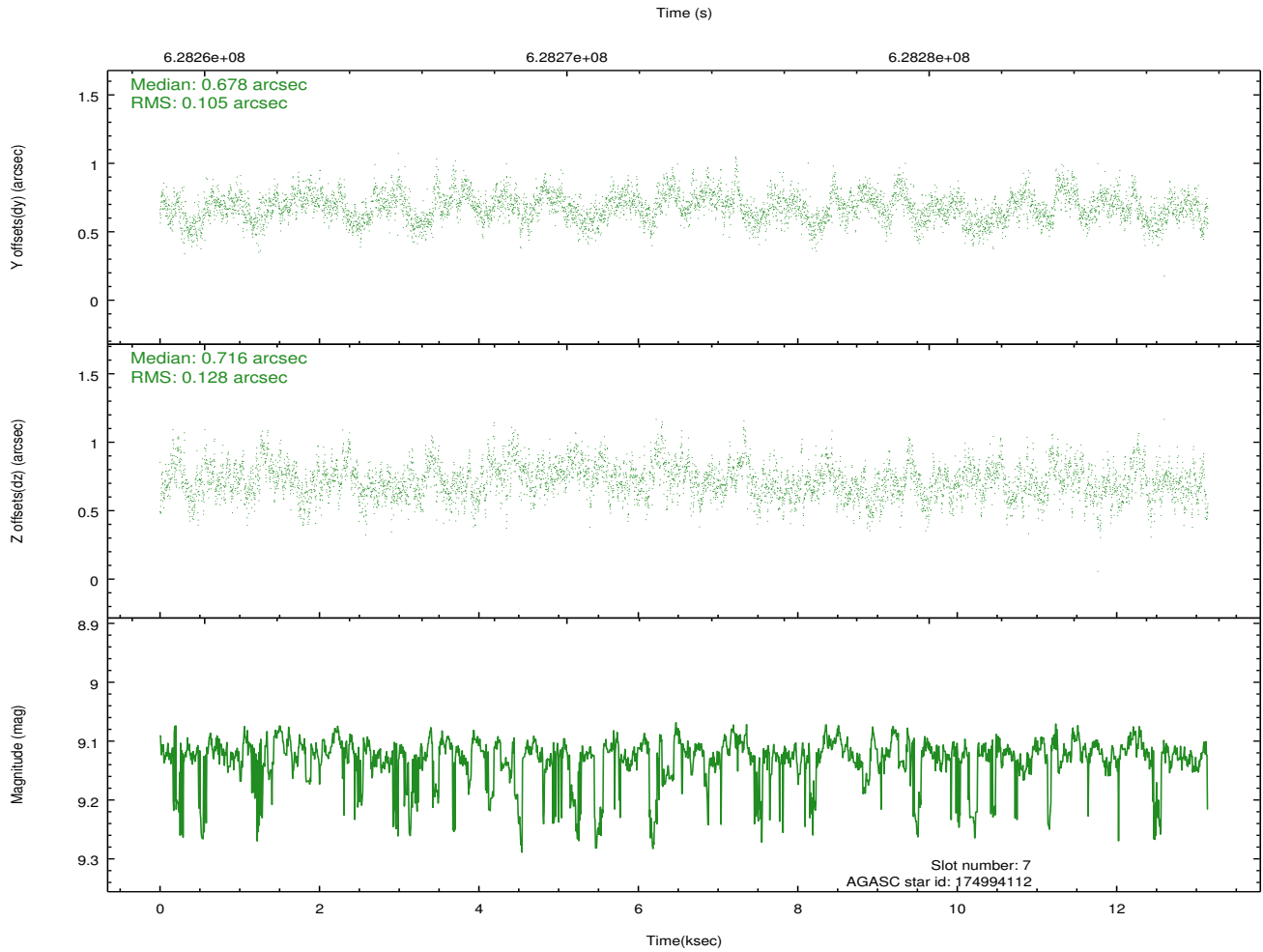
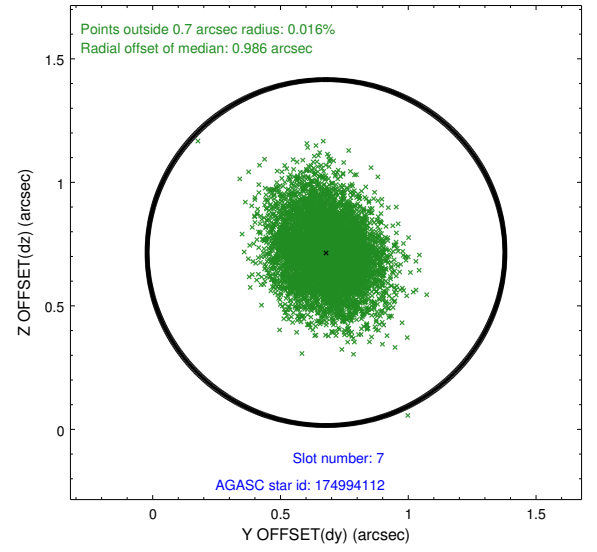
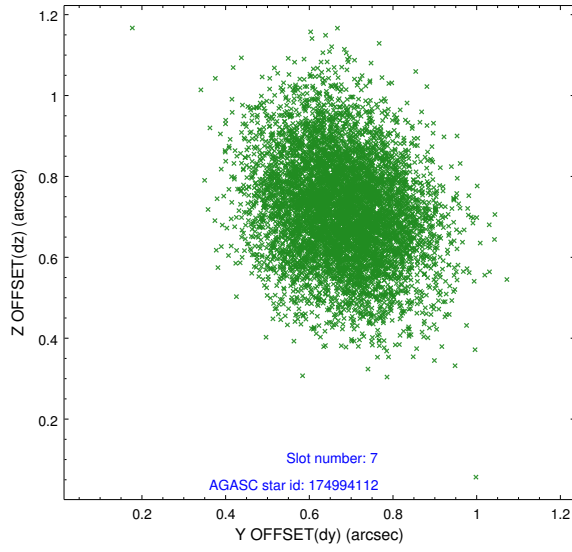
2.4.3 Slot 5



2.4.4 Slot 6

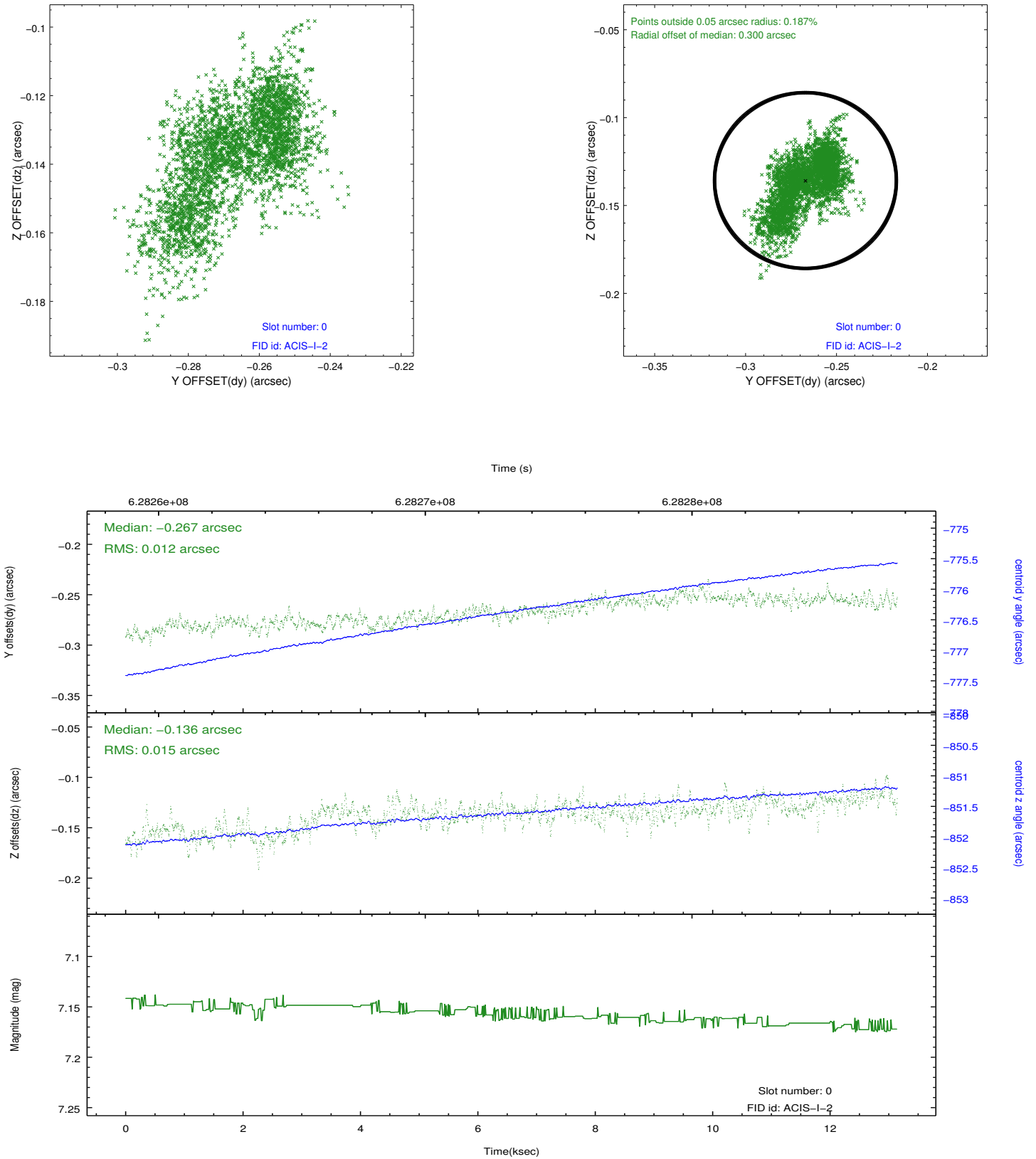


2.4.5 Slot 7

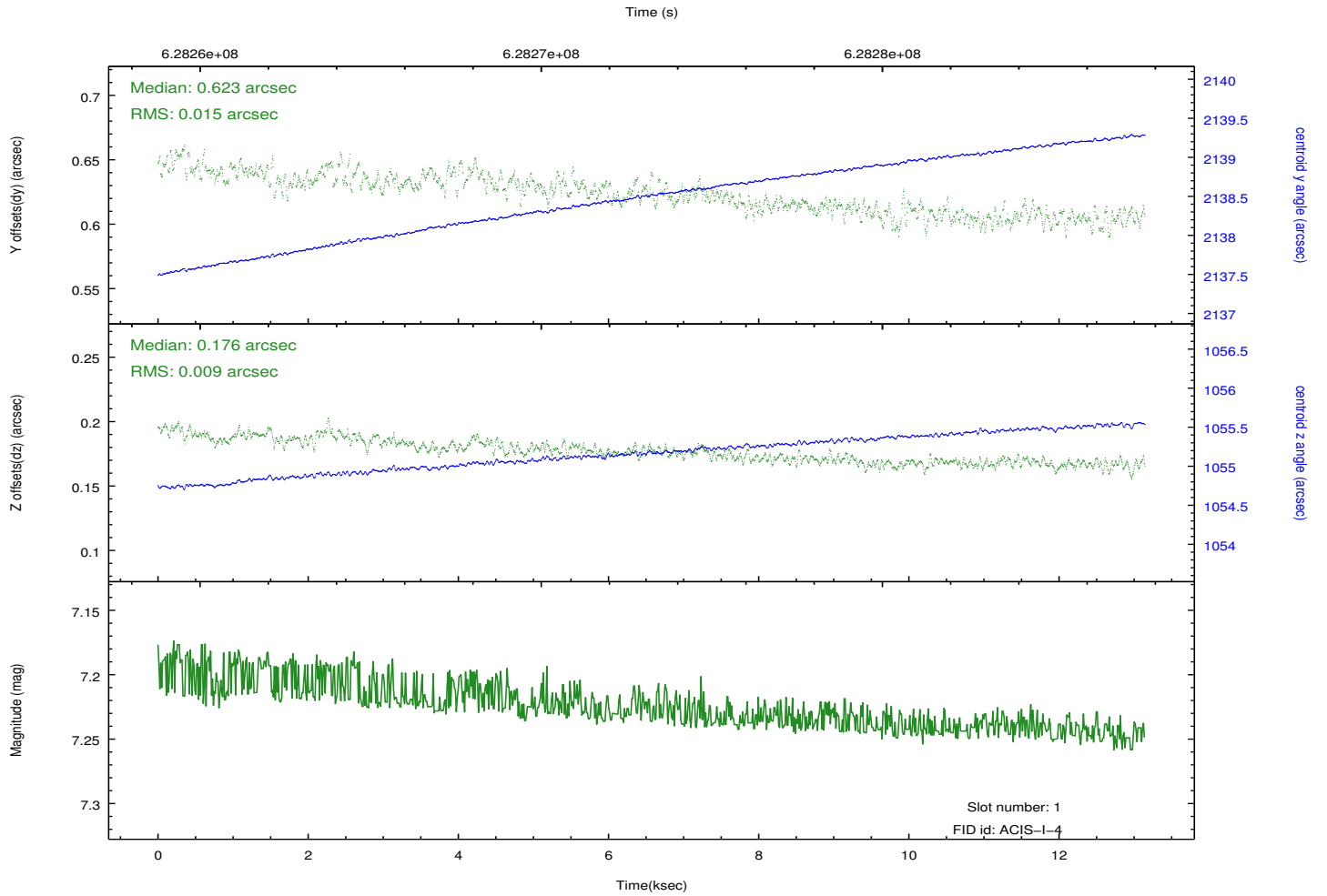
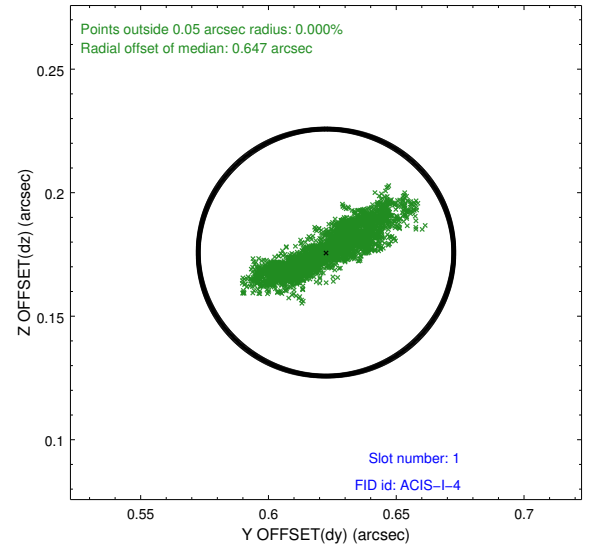
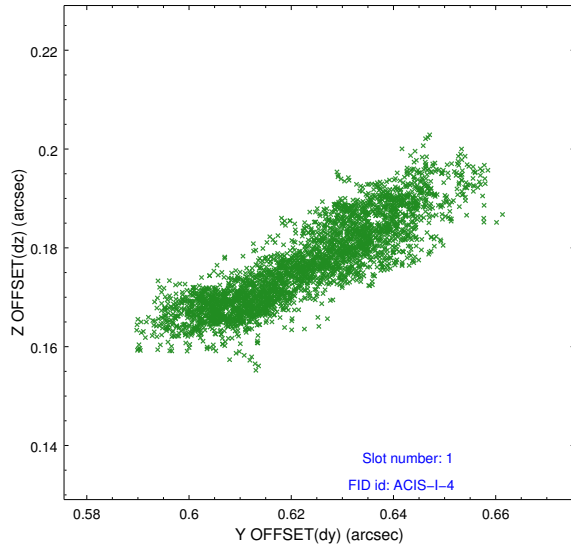


2.5 FID Slots

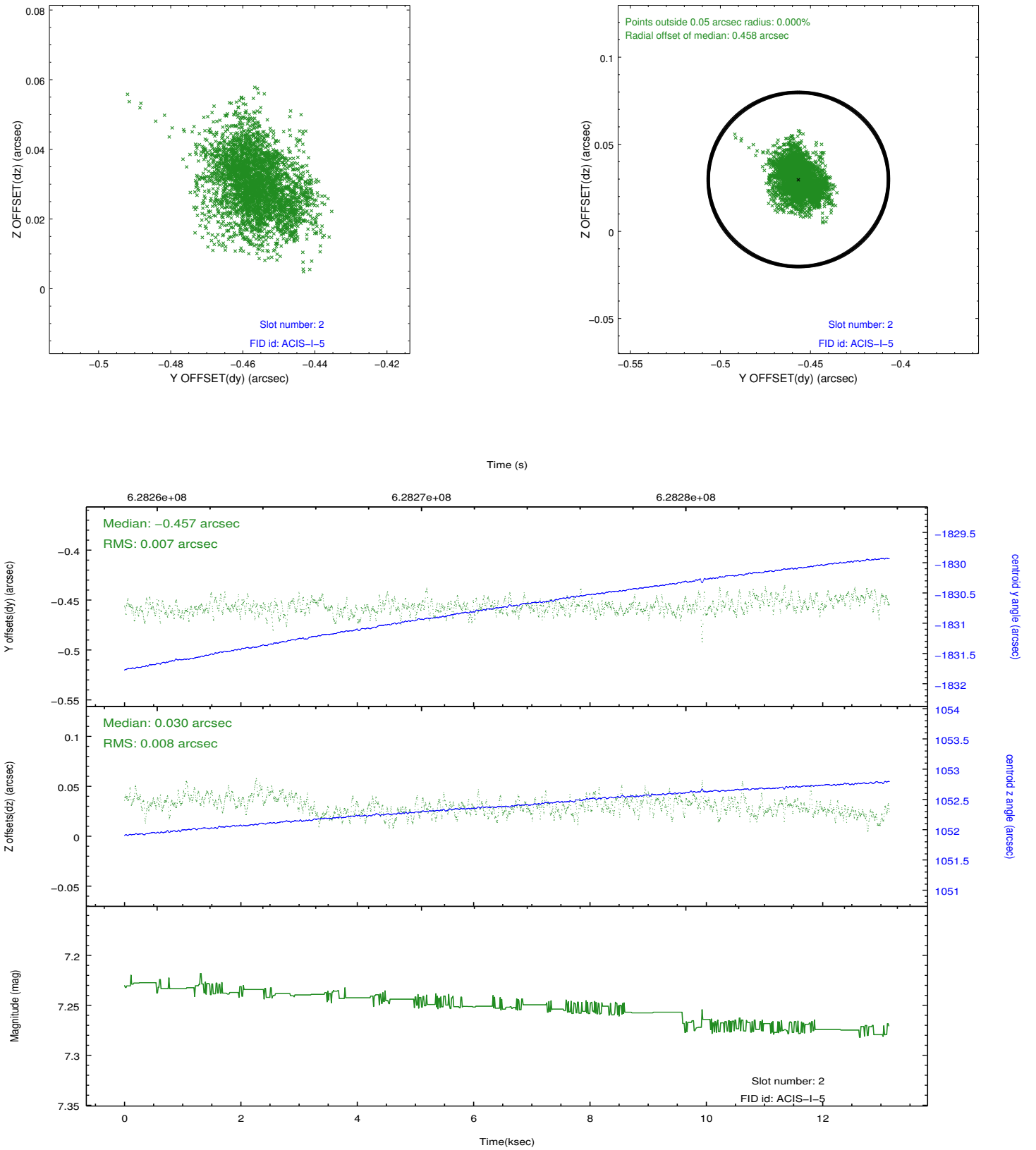
2.5.1 Slot 0



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	13.077831522465

A.2 Comments

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.