

V&V Reference Report

L2 ASCDS Version : 10.5.4

Observation 17525 - L2 Version 1
Chandra X-Ray Center

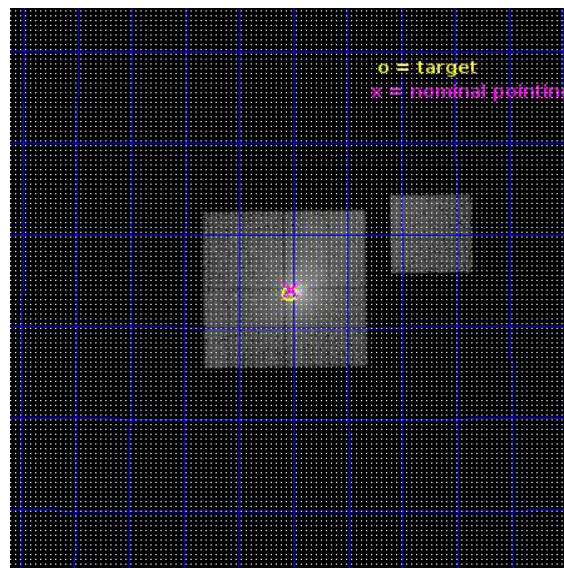
L2 Processing Date : Apr 22 2017

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1 Front

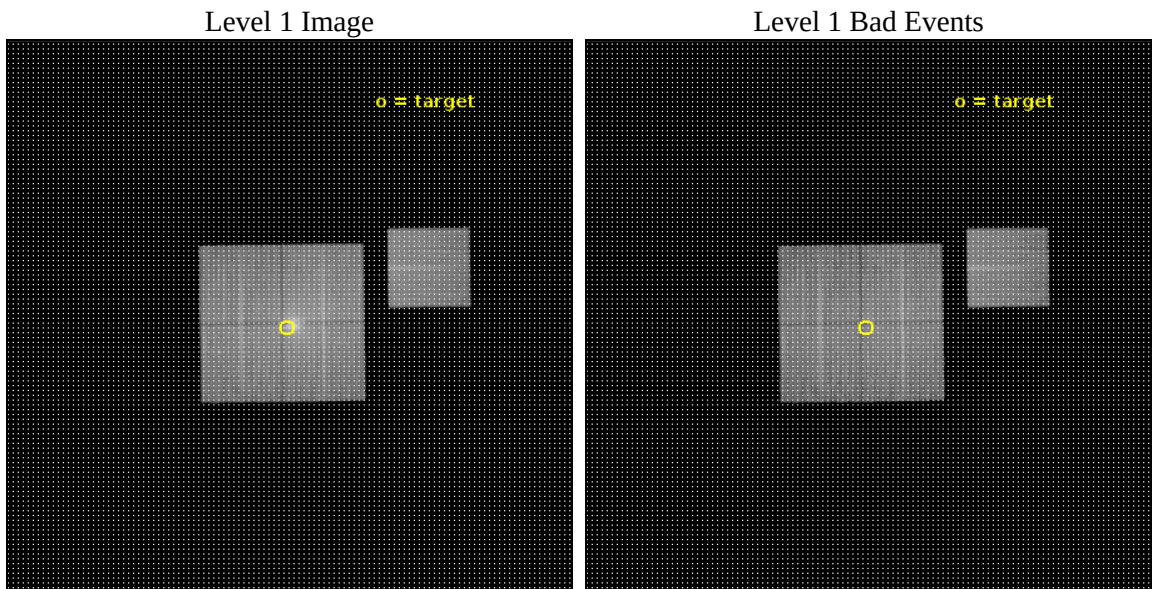
seq_num	703133	Sequence number
obs_id	17525	Observation id
title	The Rise to Power: Half a Billion Years of Intense AGN Activity in the Merging Cluster Cygnus A	Proposal title
observer	Dr. Michael Wise	Principal investigator
object	Cygnus A - E Hotspot	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	299.883333	Observer's specified target RA [deg]
dec_targ	40.727889	Observer's specified target Dec [deg]
ra_nom	299.87930766028	Nominal RA [deg]
dec_nom	40.734859883061	Nominal Dec [deg]
roll_nom	89.211321108559	Nominal Roll [deg]
revision	1	Processing version of data
ontime	25063.459192276	Sum of GTIs [s]
livetime	24735.986646479	Livetime [s]
ontime0	25063.386959195	Sum of GTIs [s]
ontime1	25063.428049207	Sum of GTIs [s]
ontime2	25066.600192904	Sum of GTIs [s]
ontime3	25063.459192276	Sum of GTIs [s]
ontime6	25063.345879197	Sum of GTIs [s]
l2events	197308	Number of level 2 events



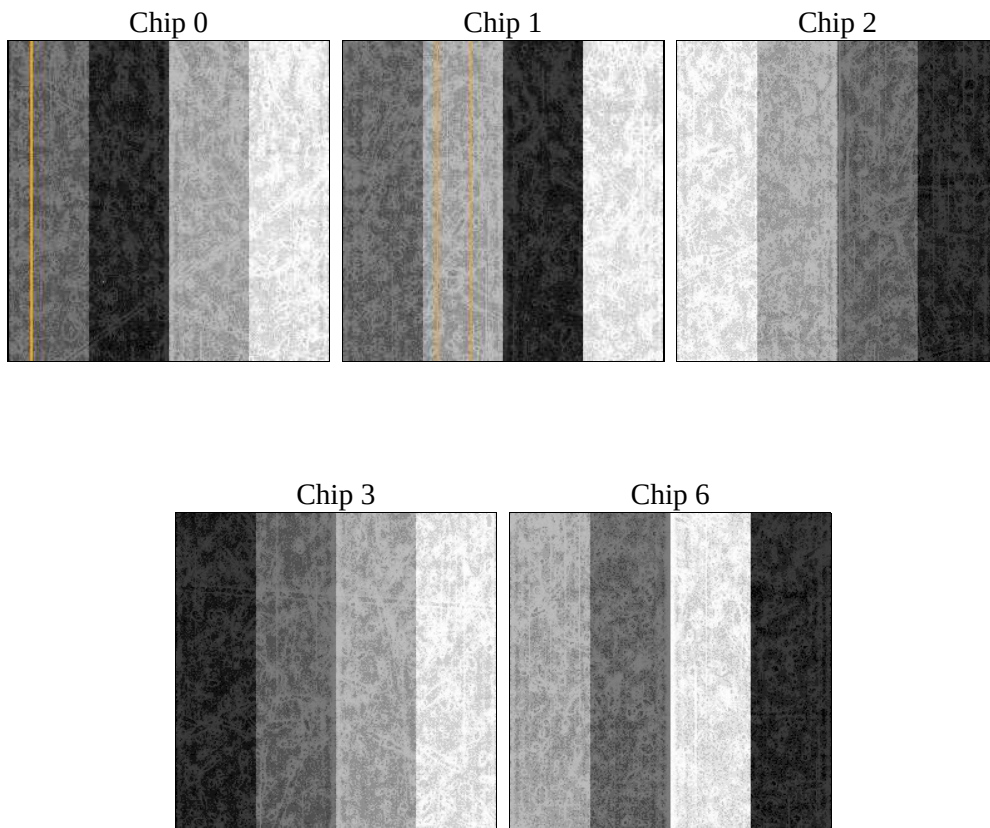
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	25000.000000	[s] Scheduled observation exposure time
ascdsver	10.5.4	Processing system revision	ontime	25063.459192276	Sum of GTIs [s]
caldsver	4.7.3	 	ontime0	25063.386959195	Sum of GTIs [s]
date	2017-04-22T15:49:05	Date and time of file creation	ontime1	25063.428049207	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	25066.600192904	Sum of GTIs [s]
			ontime3	25063.459192276	Sum of GTIs [s]
			ontime6	25063.345879197	Sum of GTIs [s]
			l1events	996399	Number of level 1 events

2.1.4 Events

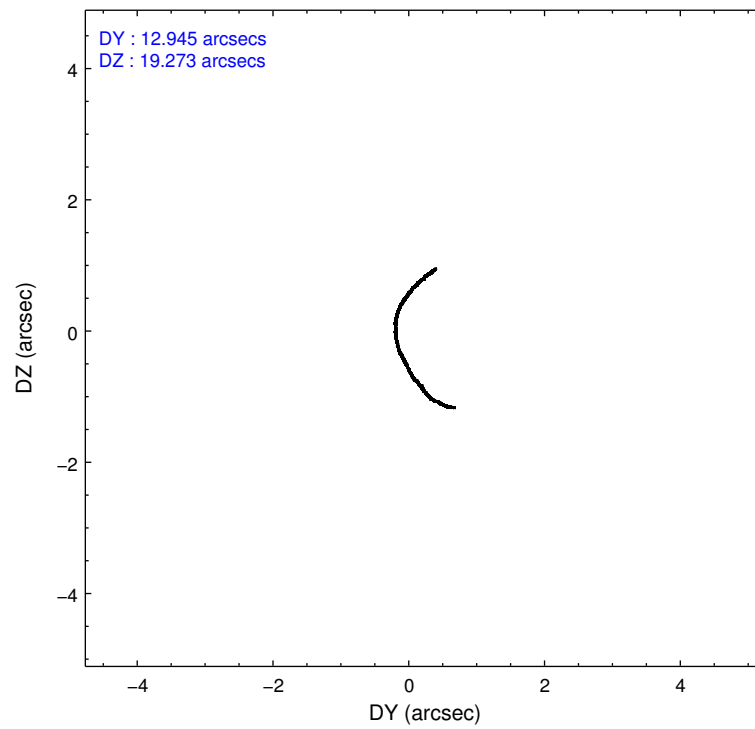
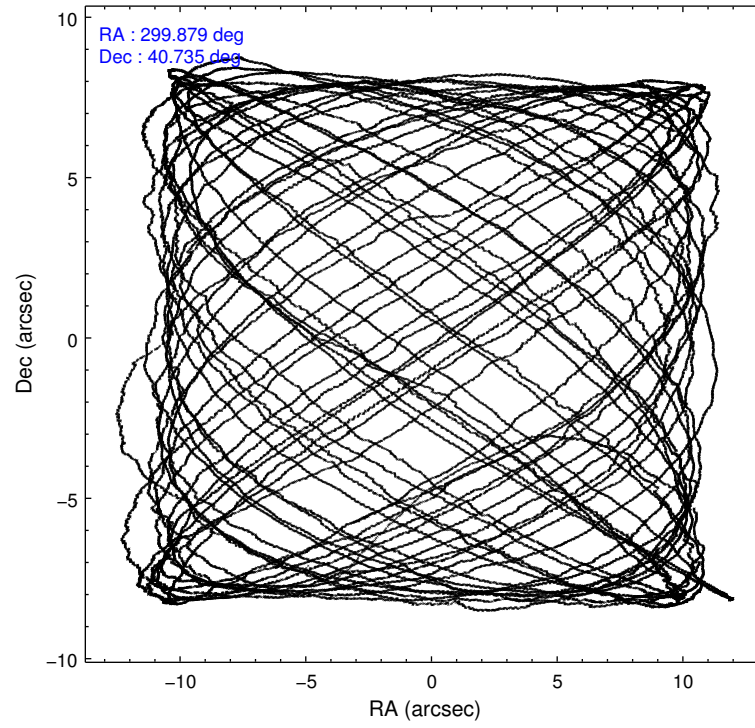
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	173253	173998	234747	229962	184439
rejected events	143224	143088	169948	160433	160571
rejected %	82%	82%	72%	69%	87%

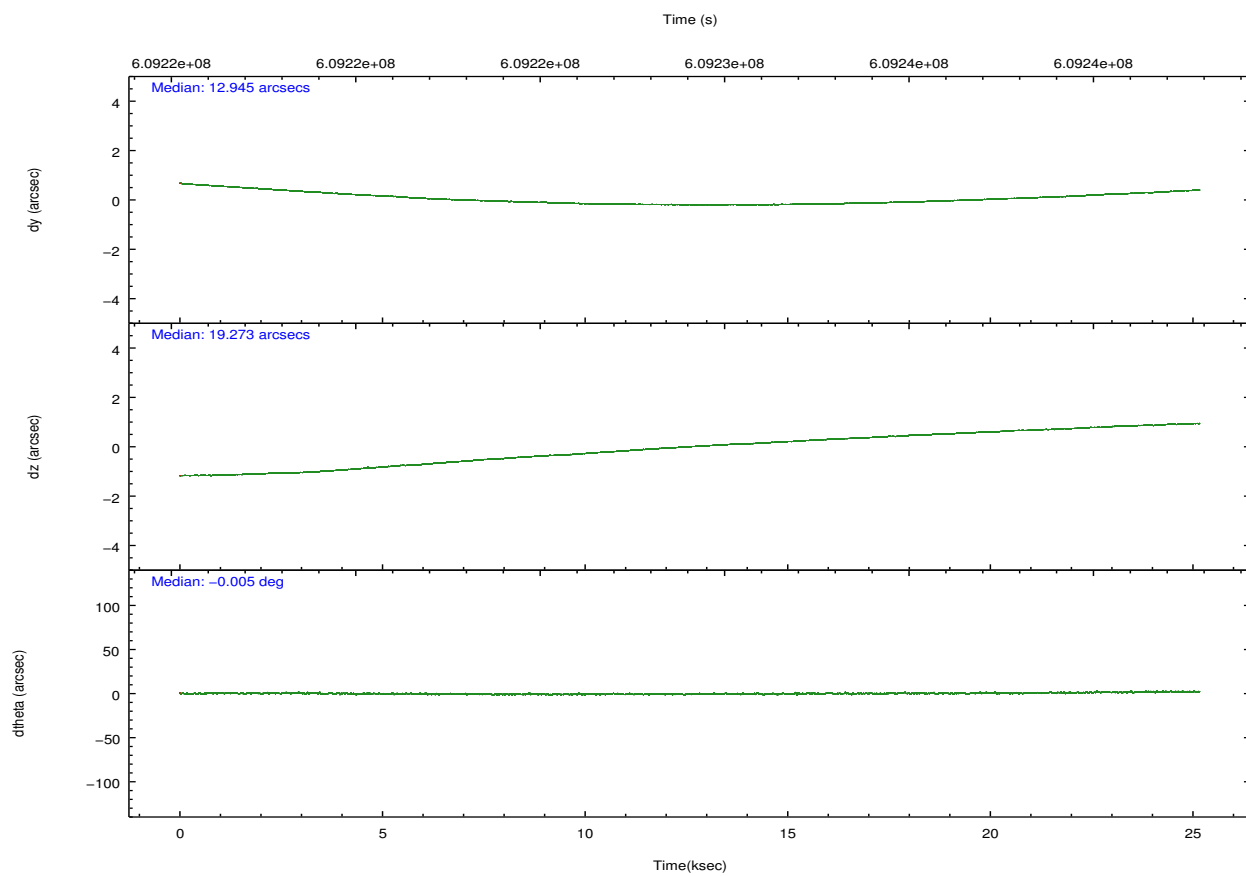
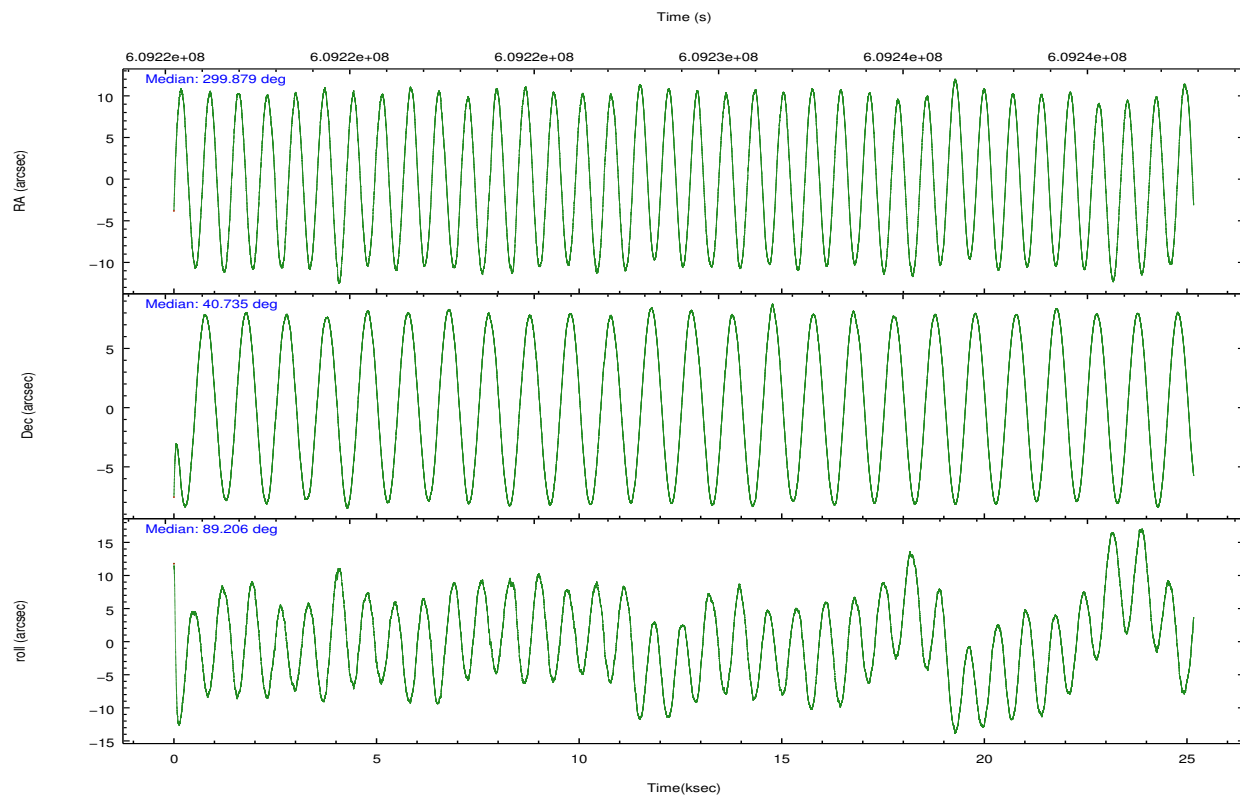
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	14772	14243	42818	46444	9599
	8%	8%	18%	20%	5%
grade 1 events	137	124	307	551	86
	0%	0%	0%	0%	0%
grade 2 events	6199	6937	9501	9555	5371
	3%	3%	4%	4%	2%
grade 3 events	2318	2155	3507	3804	1957
	1%	1%	1%	1%	1%
grade 4 events	2282	2247	3492	3717	1976
	1%	1%	1%	1%	1%
grade 5 events	7247	7528	6800	8711	7642
	4%	4%	2%	3%	4%
grade 6 events	4460	5334	5497	6024	4973
	2%	3%	2%	2%	2%
grade 7 events	135838	135430	162825	151156	152835
	78%	77%	69%	65%	82%

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	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	299.897164	299.8793076602824	CCD I2 on	Y	Y
[deg] Pointing Dec	40.710822	40.73485988306086	CCD I3 on	Y	Y
[deg] Pointing Roll	88.990976	89.21132110855871	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	Y
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	609216653.184000	609215338.55742	CCD S5 on	N	N
Observation start date	2017-04-22T02:49:44	2017-04-22T02:28:58	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	609241653.184000	609242539.4965	On-chip summing requested	N	N
Observation end date	2017-04-22T09:46:24	2017-04-22T10:02:19	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



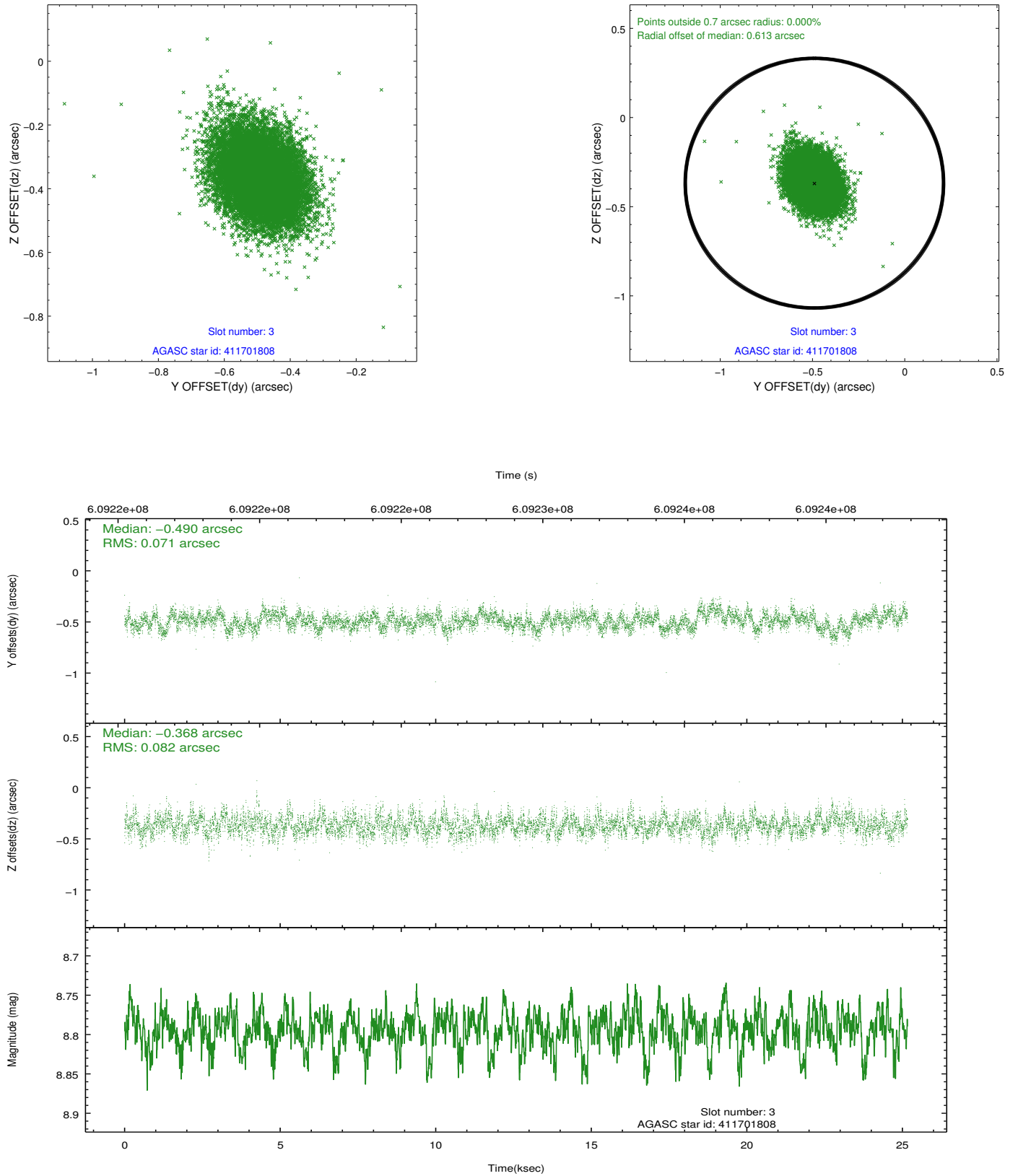


Slot Statistics

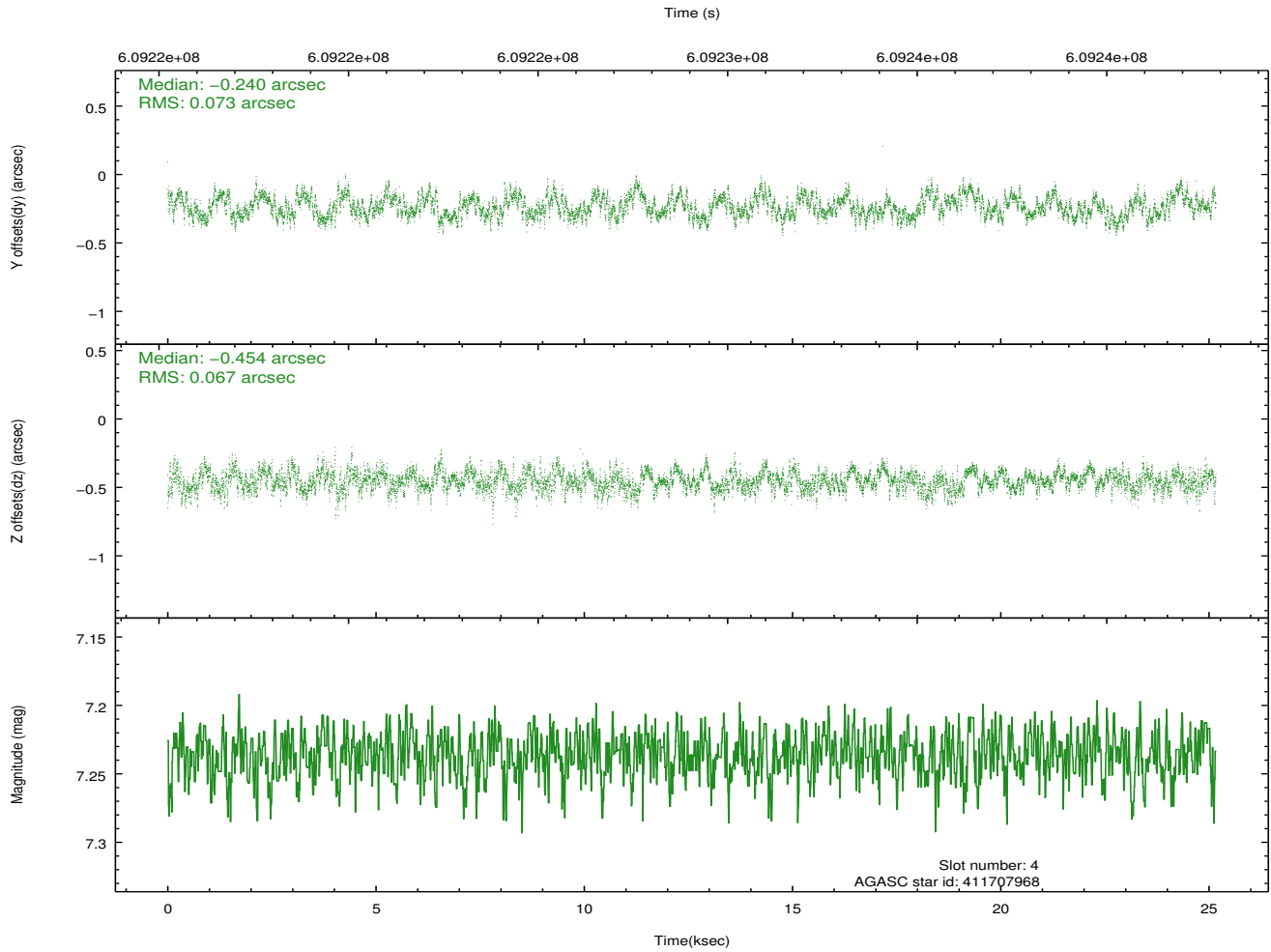
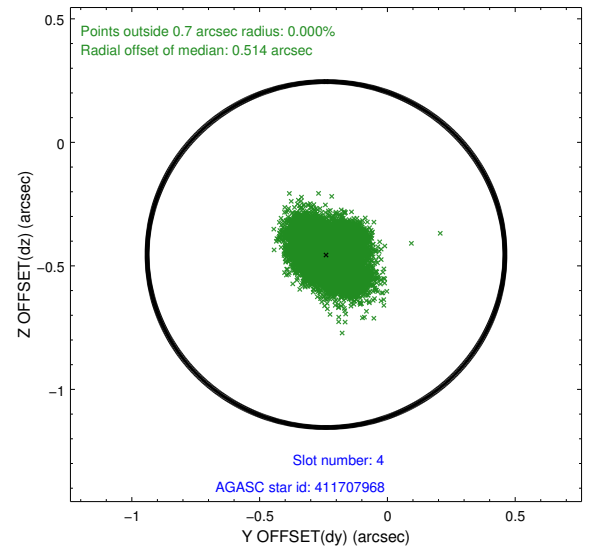
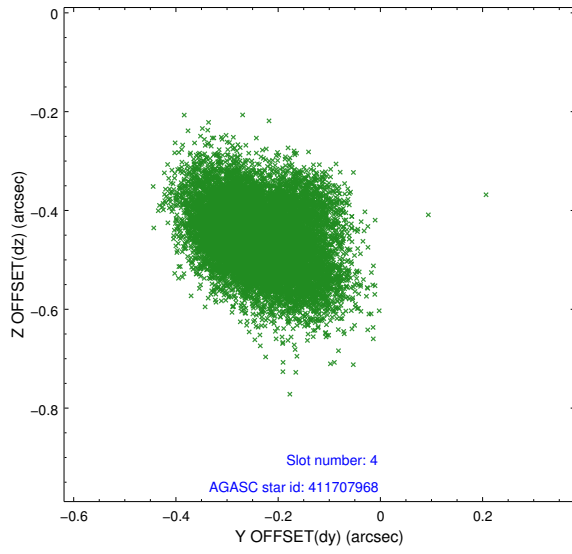
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.24	6139	0.063	-0.024	0.015	0.034	0.000000	0.000000	926.61	-842.90
1	FID		ACIS-I-5	7.24	6139	-0.336	0.031	0.007	0.013	0.000000	0.000000	-1821.92	1054.47
2	FID		ACIS-I-6	7.24	6139	0.182	0.063	0.015	0.030	0.000000	0.000000	392.02	1699.24
3	GUIDE	used	411701808	8.79	12270	-0.490	-0.368	0.114	0.187	299.419536	40.880184	589.83	1310.61
4	GUIDE	used	411707968	7.24	12277	-0.240	-0.454	0.106	0.171	299.509933	40.926839	761.50	1066.68
5	GUIDE	used	413937088	8.00	12272	0.198	-0.094	0.116	0.204	300.780094	41.277874	2095.96	-2351.81
6	GUIDE	used	413418136	8.81	12270	0.255	0.487	0.098	0.162	300.734950	40.100582	-2144.18	-2344.88
7	GUIDE	used	413425016	7.94	12274	0.278	0.430	0.106	0.167	300.758532	40.173167	-1881.67	-2402.43

2.4 Star Slots

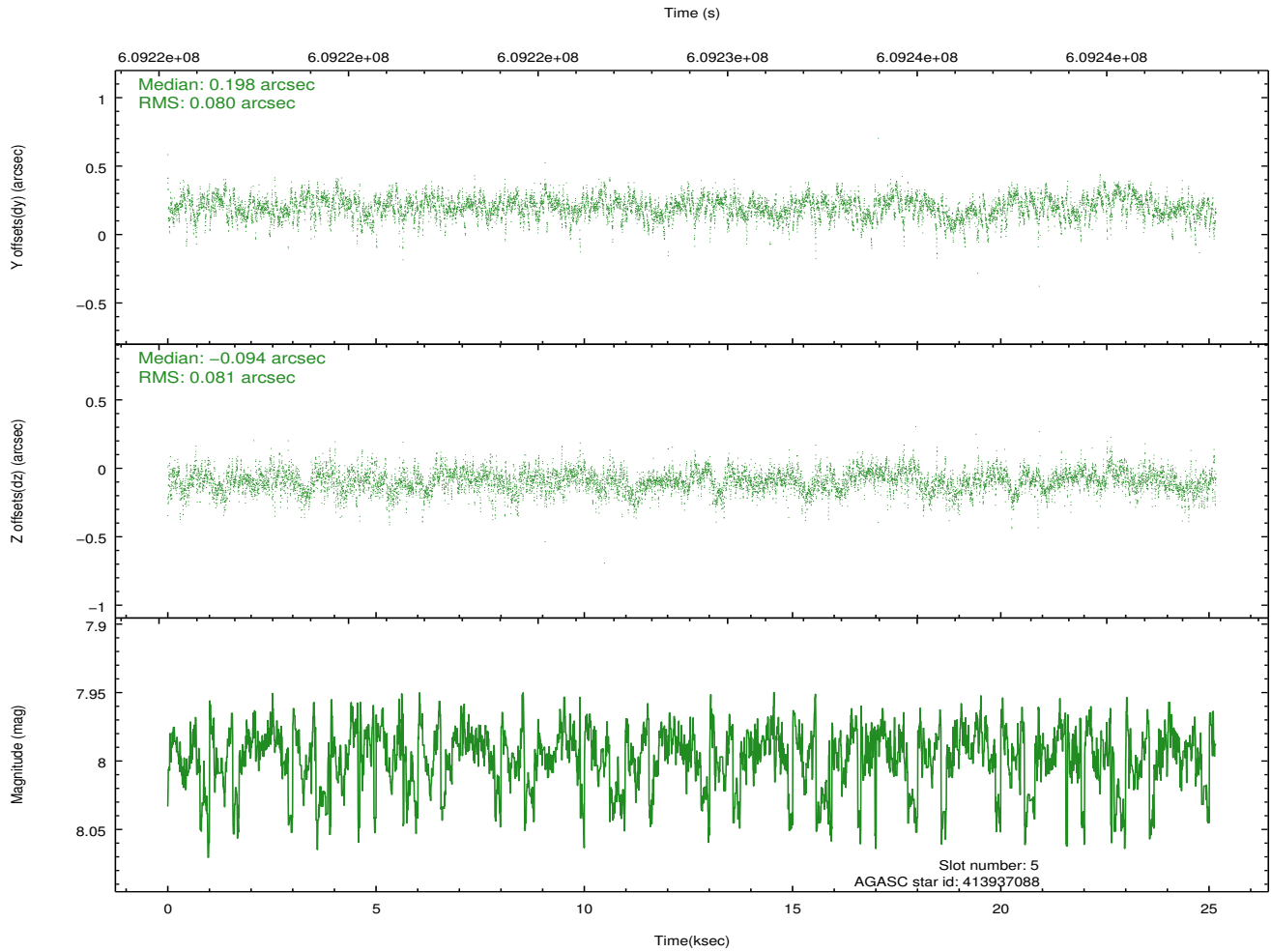
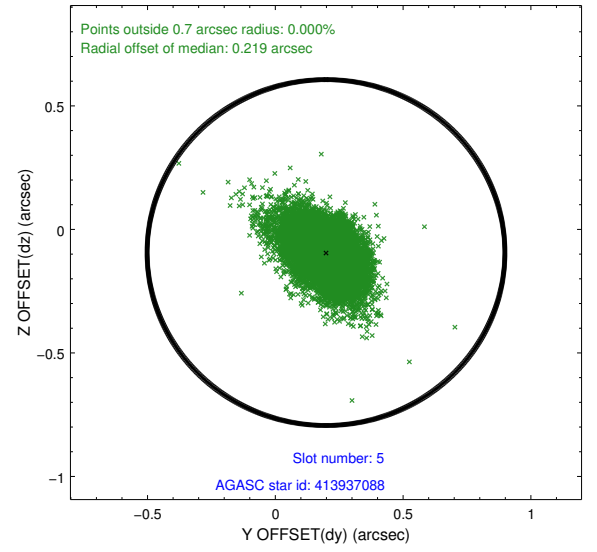
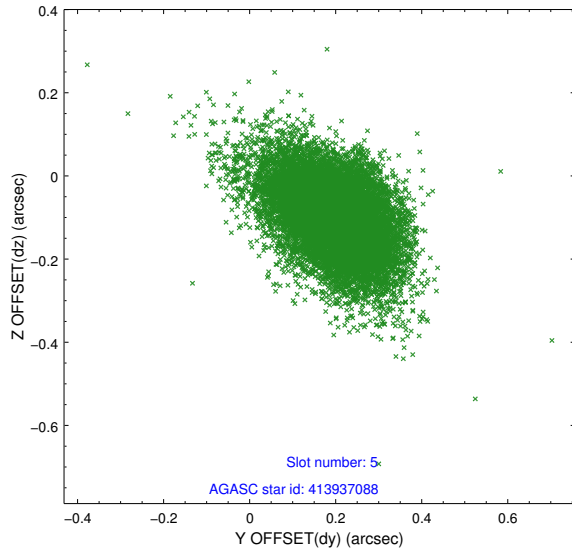
2.4.1 Slot 3



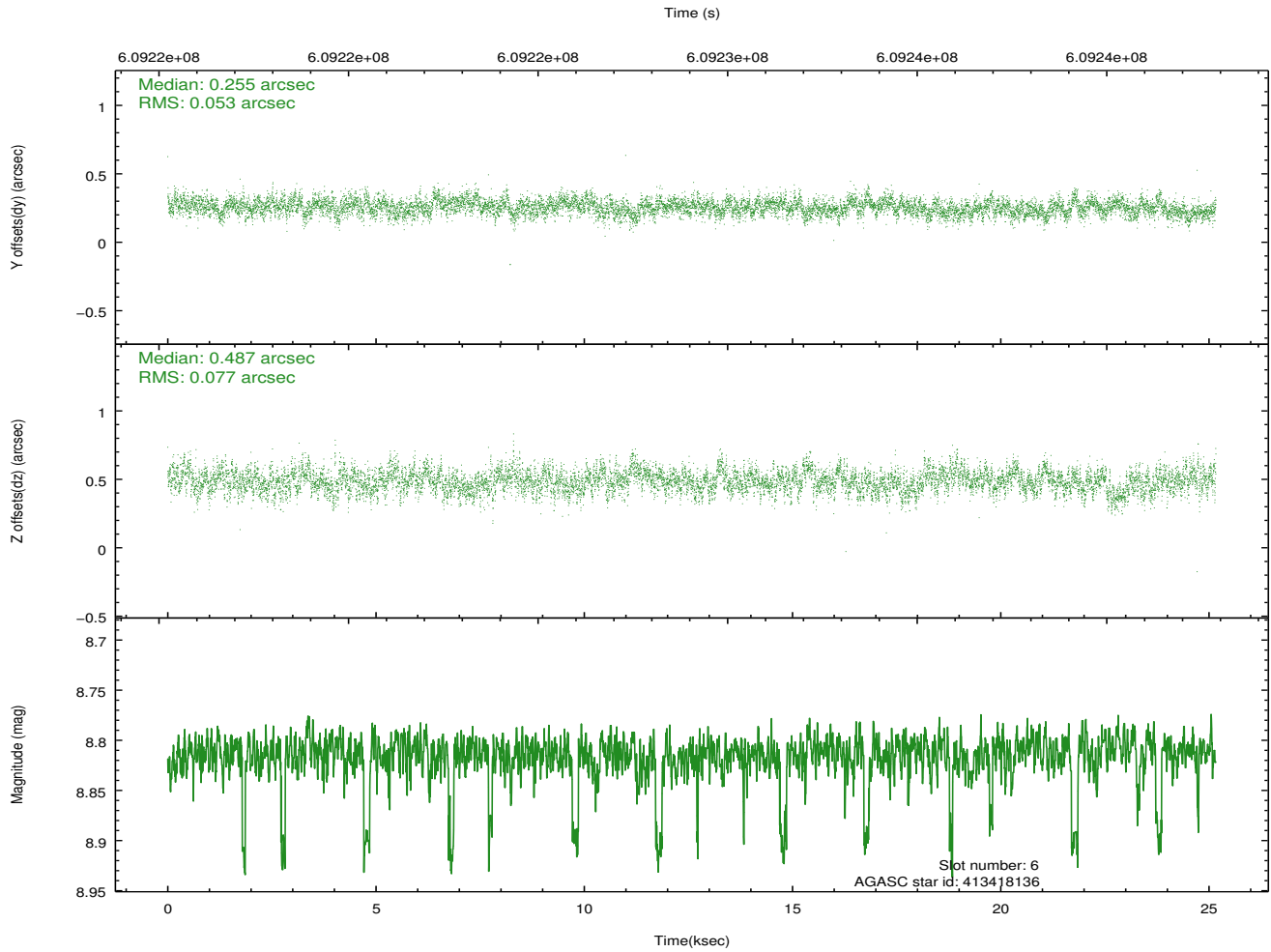
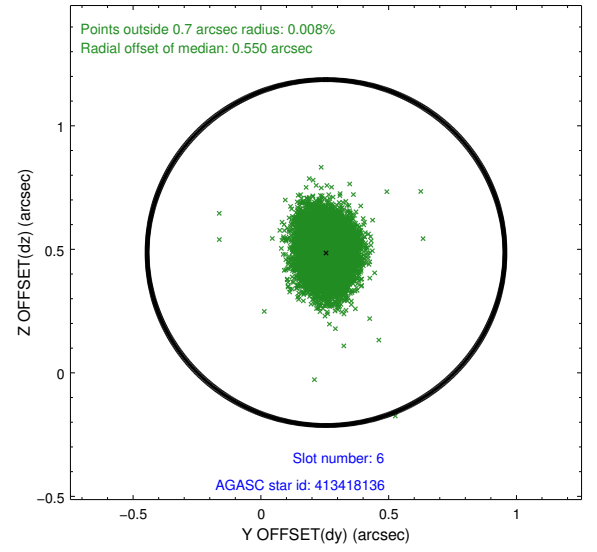
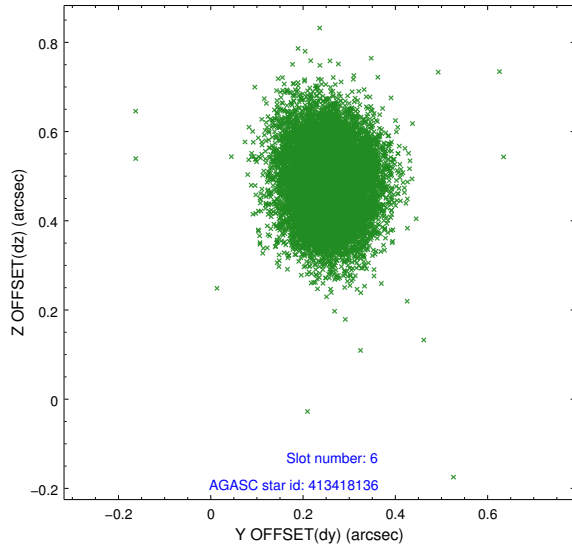
2.4.2 Slot 4



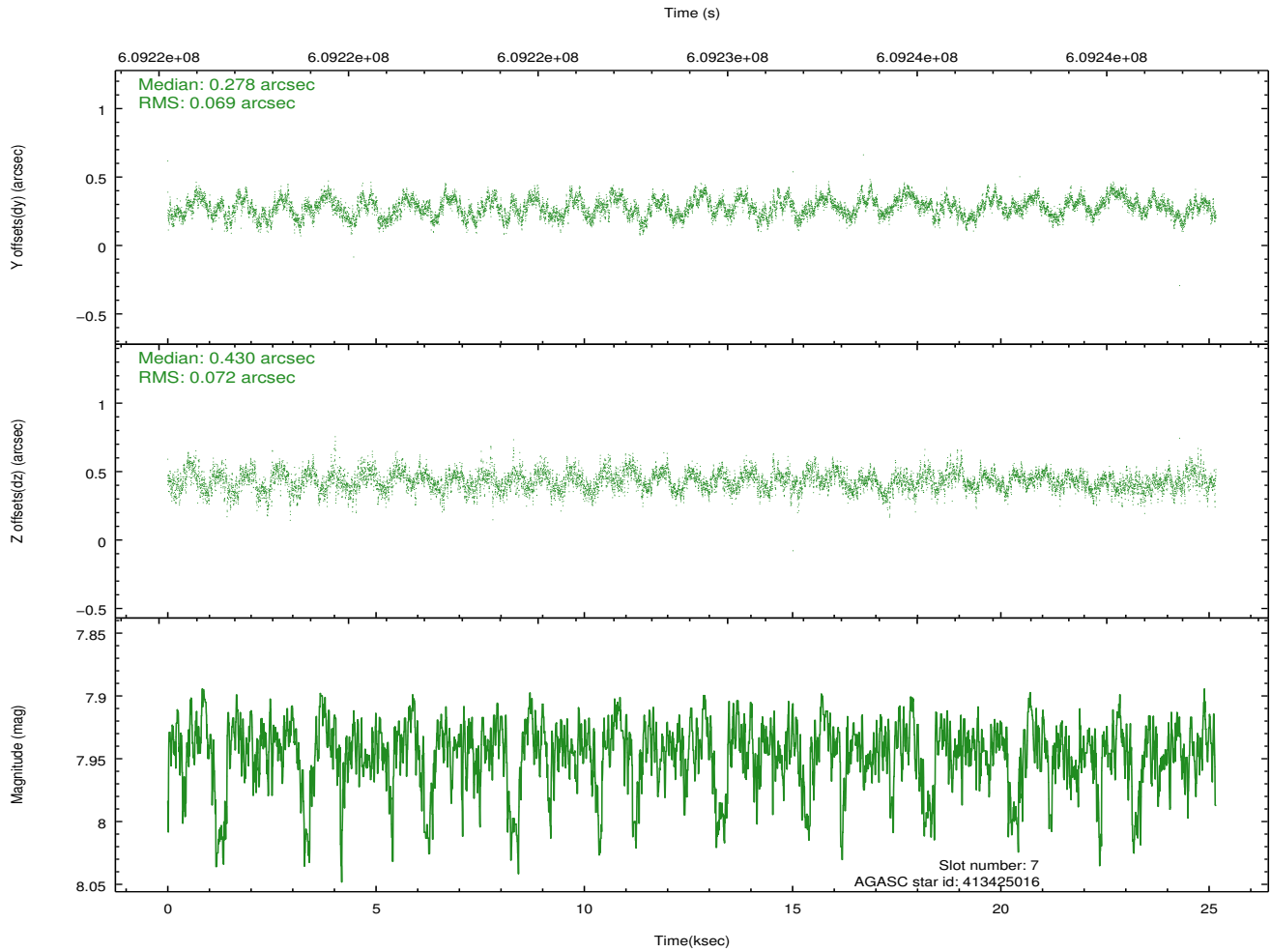
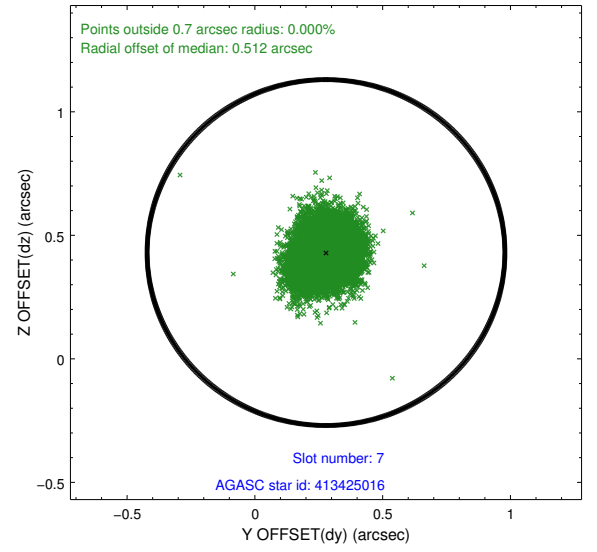
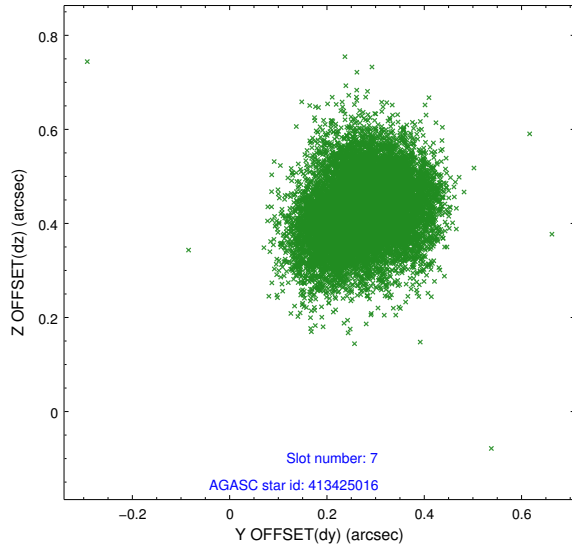
2.4.3 Slot 5



2.4.4 Slot 6

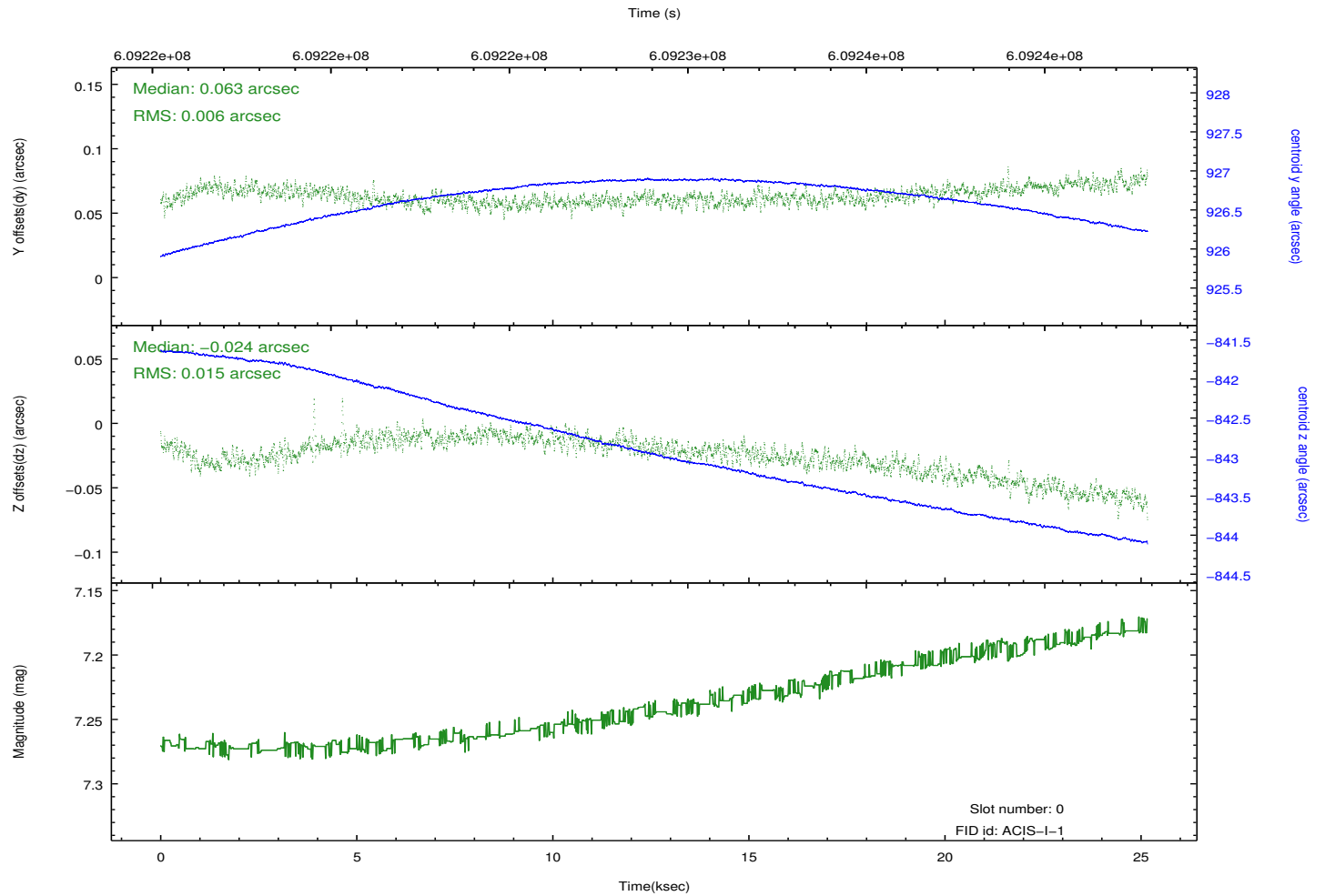
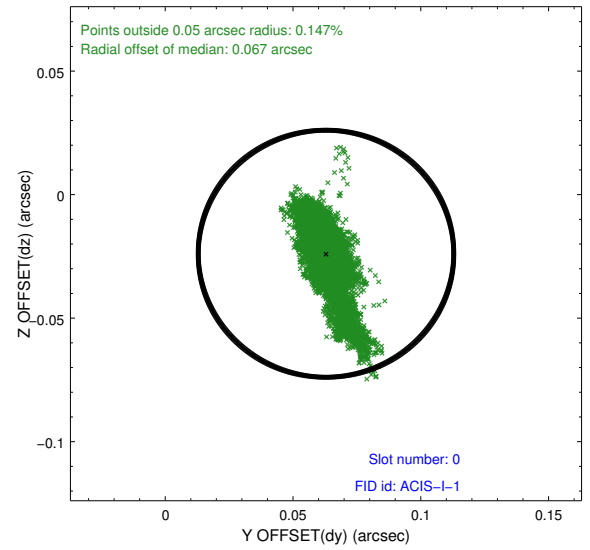
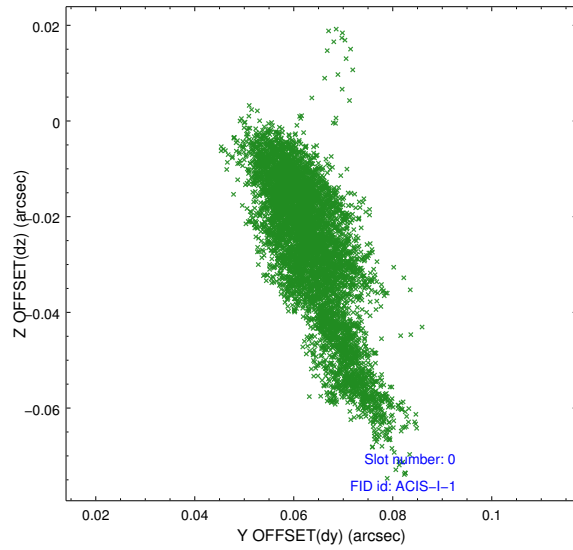


2.4.5 Slot 7

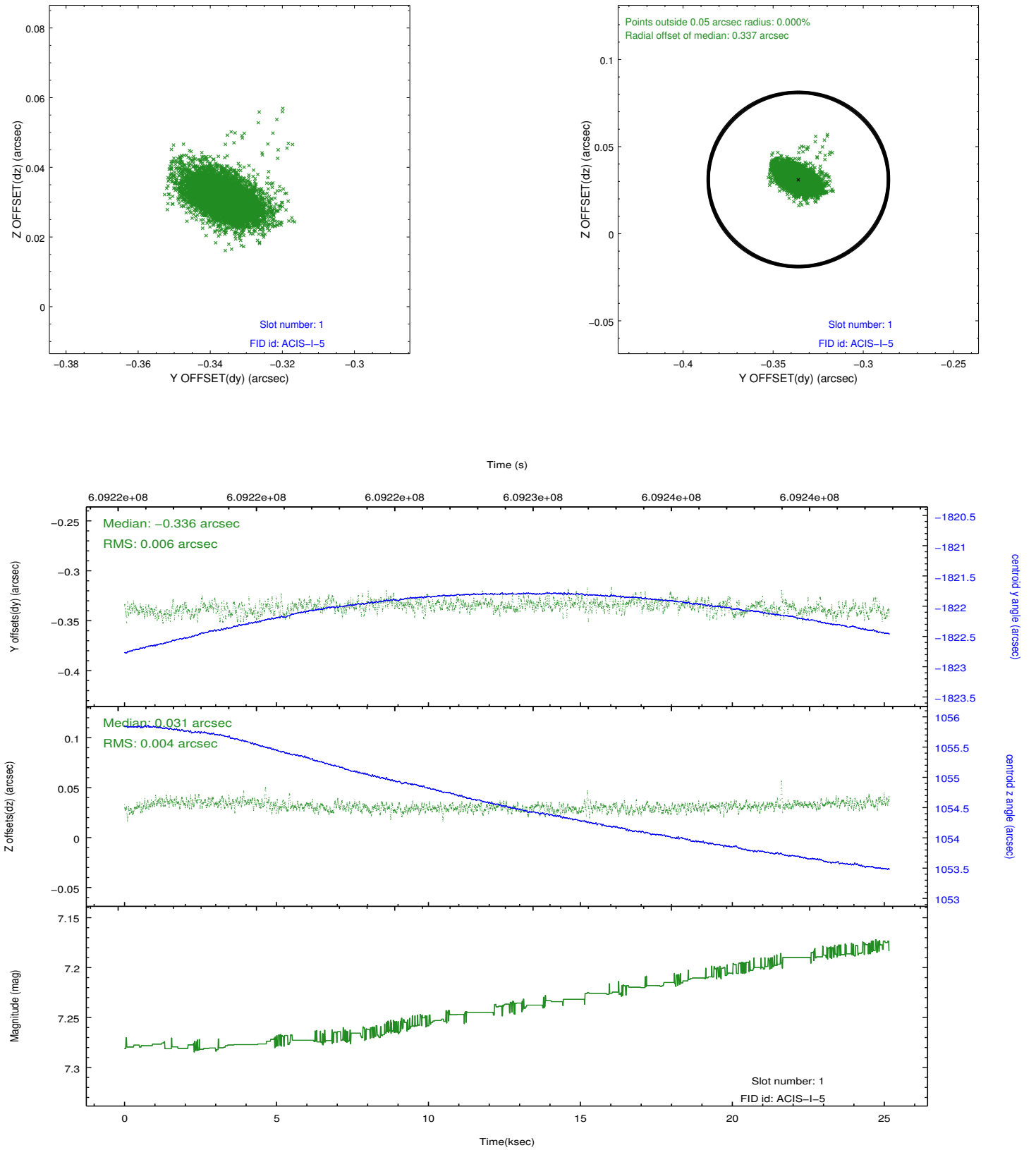


2.5 FID Slots

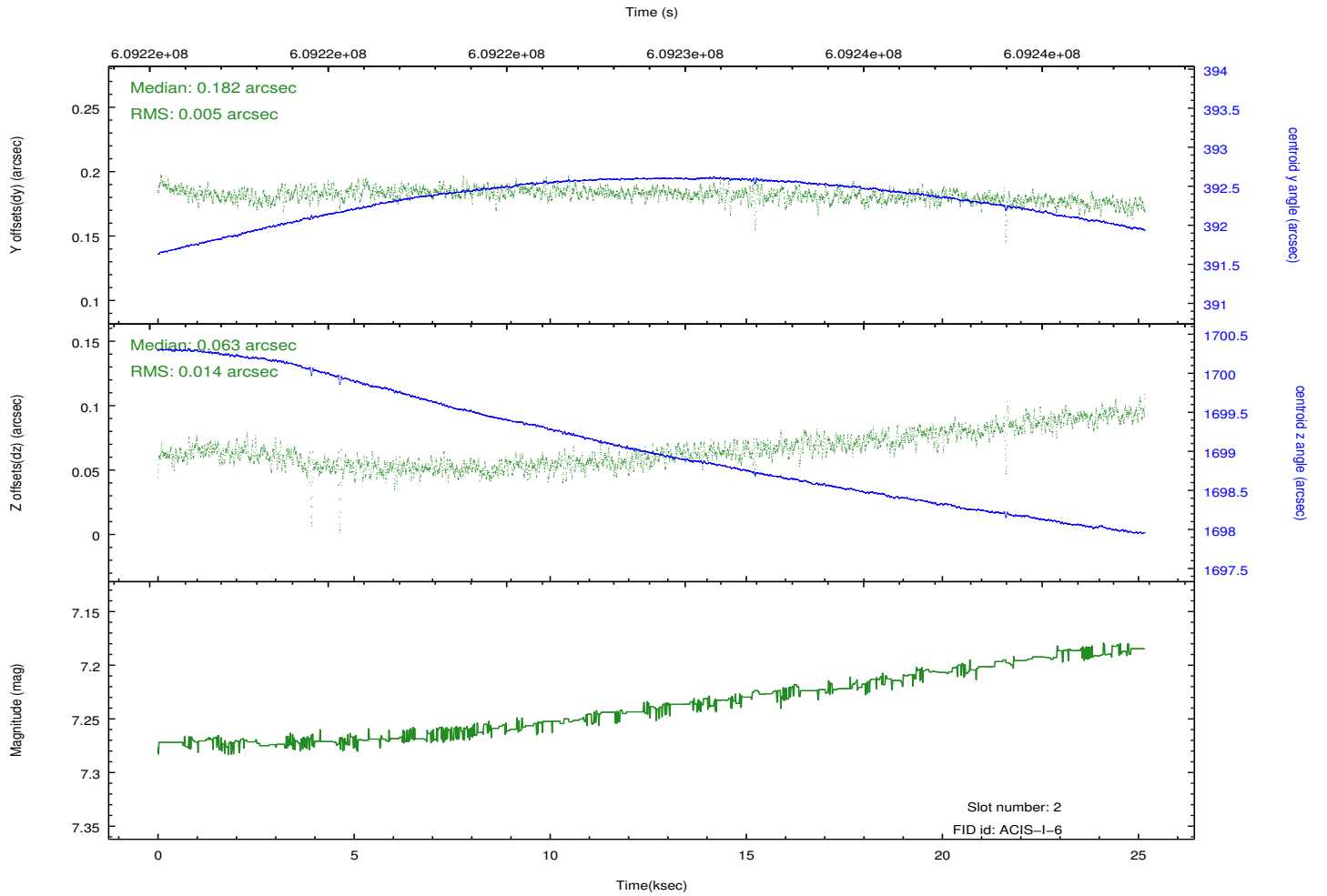
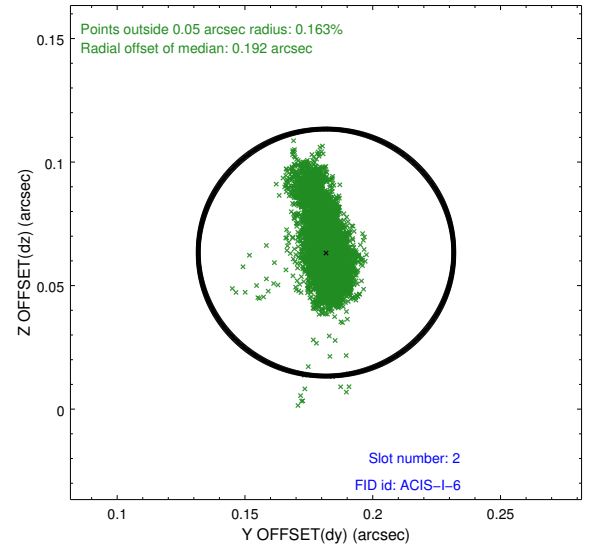
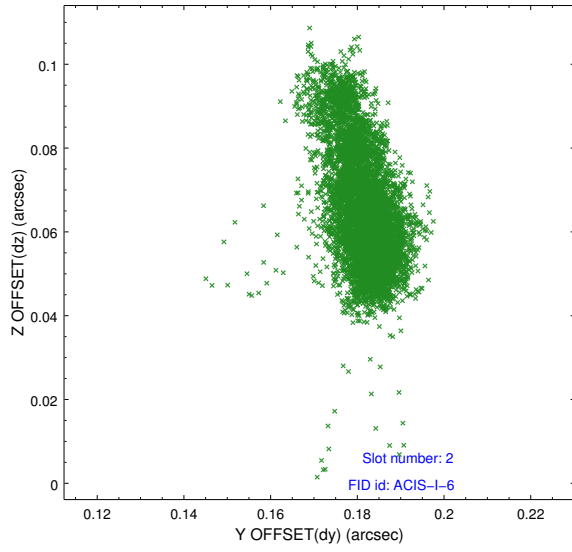
2.5.1 Slot 0



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)	2018.03.06
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	25.063459192276

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.