

V&V Reference Report

L2 ASCDS Version : 10.4.3.1

Observation 17146 - L2 Version 1
Chandra X-Ray Center

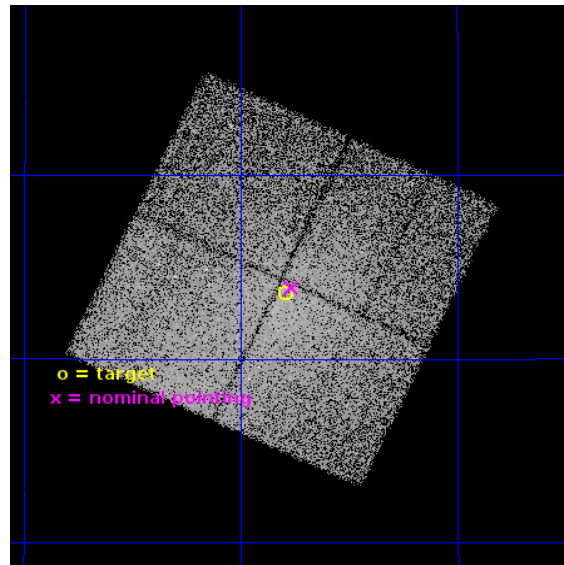
L2 Processing Date : May 11 2016

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.4.5	Slot 7	13
2.5	FID Slots	14
2.5.1	Slot 0	14
2.5.2	Slot 1	15
2.5.3	Slot 2	16
A	Summary	17
A.1	Status	17
A.2	Comments	17

1 Front

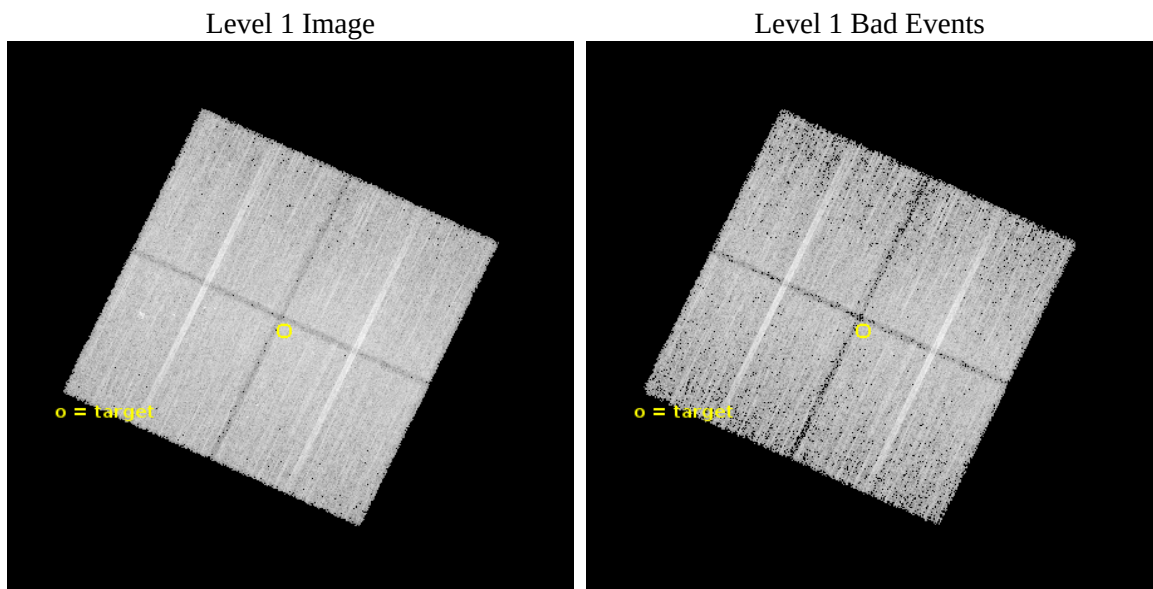
seq_num	703135	Sequence number
obs_id	17146	Observation id
title	The Rise to Power: Half a Billion Years of Intense AGN Activity in the Merging Cluster Cygnus A	Proposal title
observer	Dr. Michael Wise	Principal investigator
object	Cygnus A - NW Subcluster	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	299.698333	Observer's specified target RA [deg]
dec_targ	40.893111	Observer's specified target Dec [deg]
ra_nom	299.691608521	Nominal RA [deg]
dec_nom	40.898104519041	Nominal Dec [deg]
roll_nom	115.21308624614	Nominal Roll [deg]
revision	1	Processing version of data
ontime	25081.768101573	Sum of GTIs [s]
livetime	24754.056336397	Livetime [s]
ontime0	25072.222020626	Sum of GTIs [s]
ontime1	25081.686021566	Sum of GTIs [s]
ontime2	25078.586021423	Sum of GTIs [s]
ontime3	25081.768101573	Sum of GTIs [s]
l2events	96776	Number of level 2 events



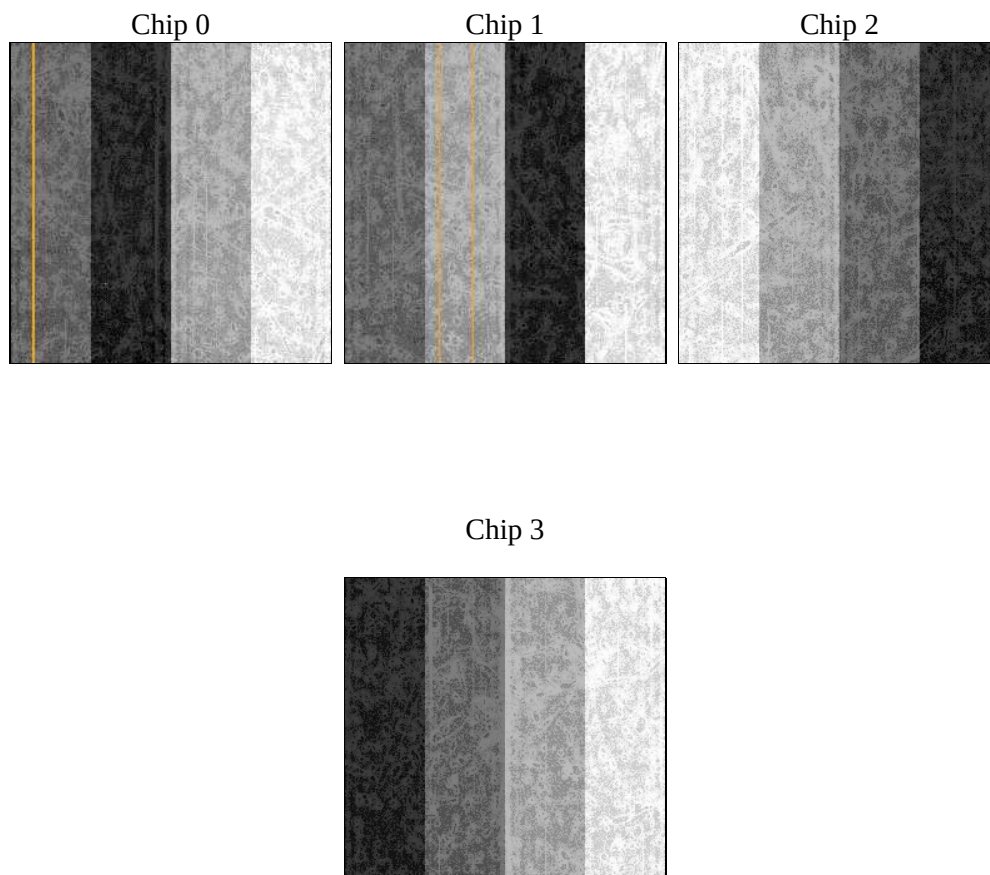
2 OBI

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	10.4.3.1	Processing system revision	ontime	25081.768101573	Sum of GTIs [s]
caldsver	4.7.1	 	ontime0	25072.222020626	Sum of GTIs [s]
date	2016-05-11T15:44:26	Date and time of file creation	ontime1	25081.686021566	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	25078.586021423	Sum of GTIs [s]
			ontime3	25081.768101573	Sum of GTIs [s]
			l1events	645681	Number of level 1 events

2.1.4 Events

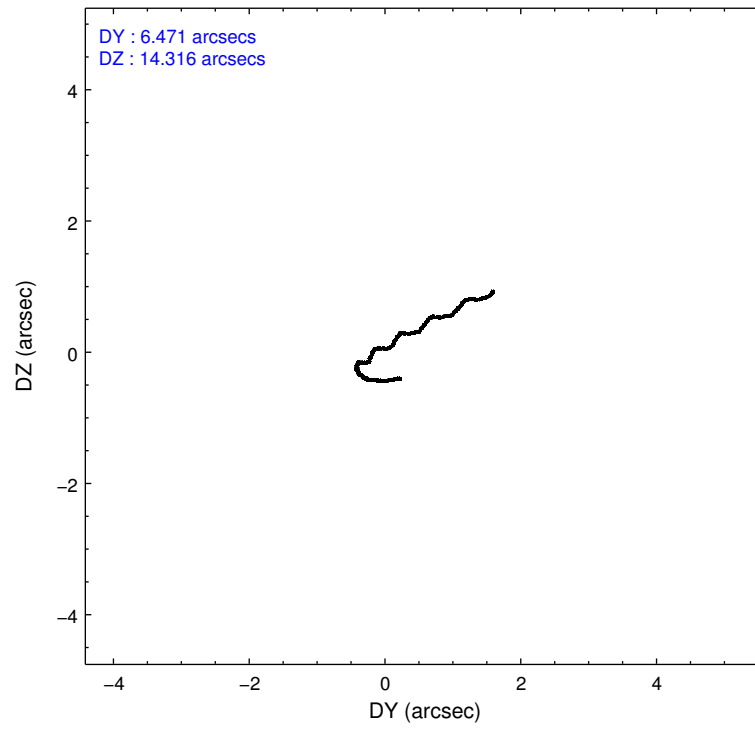
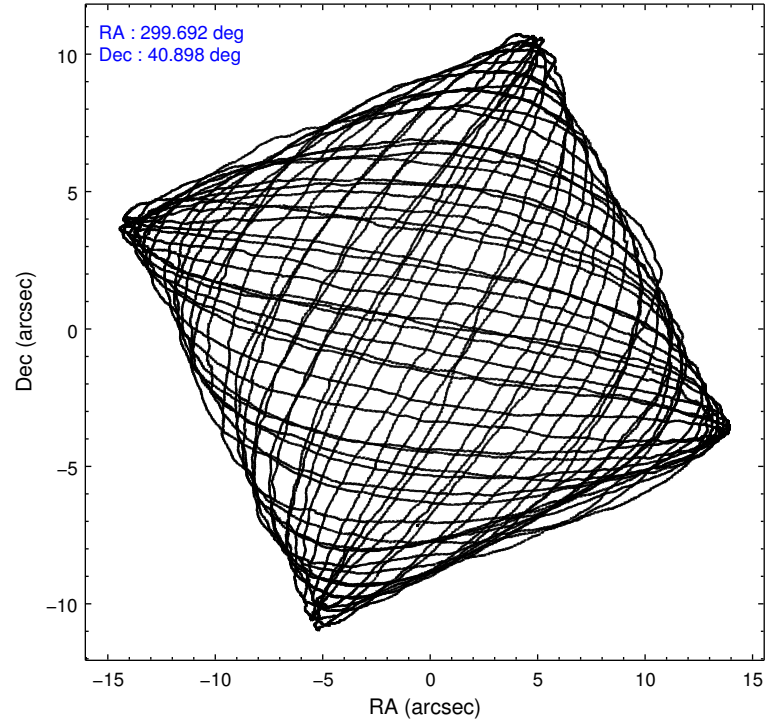
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	150184	165511	164623	165363
rejected events	129023	128618	142192	135153
rejected %	85%	77%	86%	81%

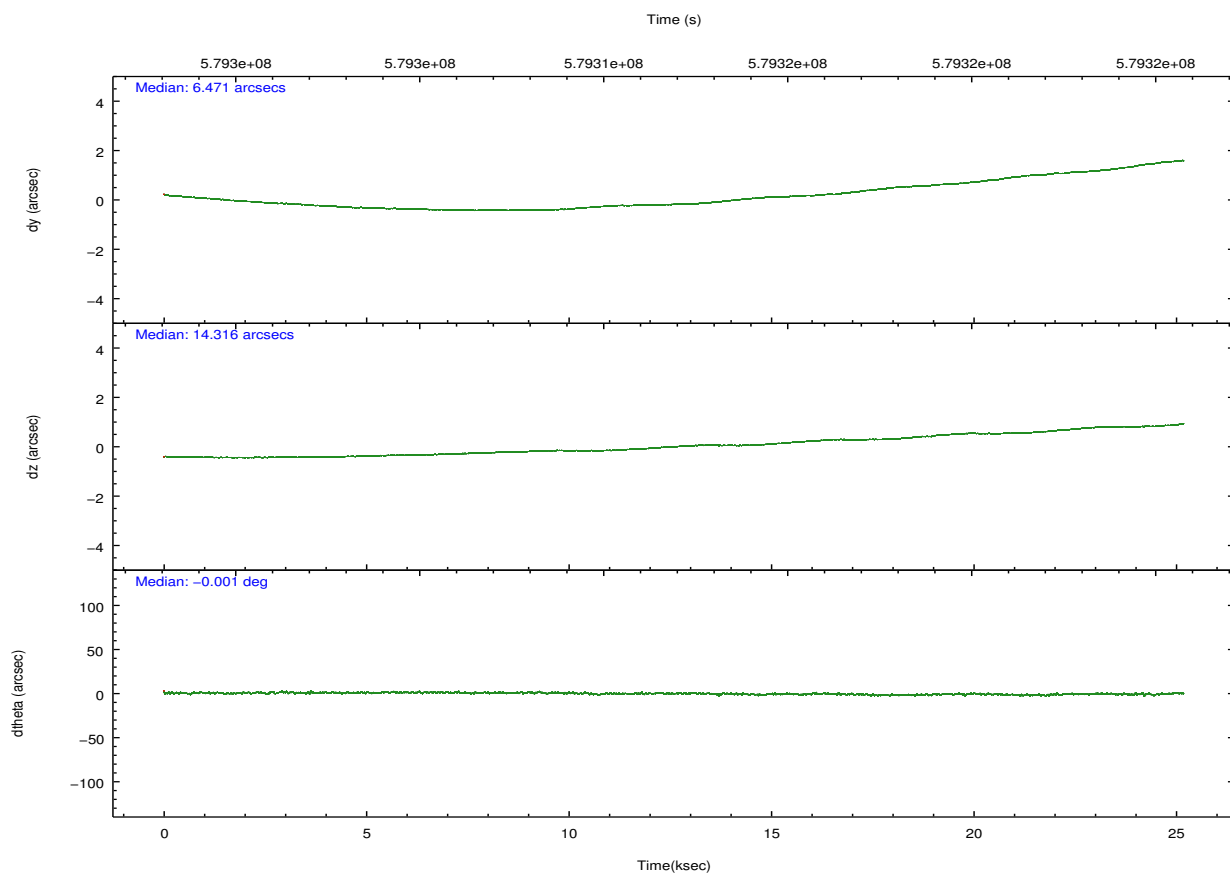
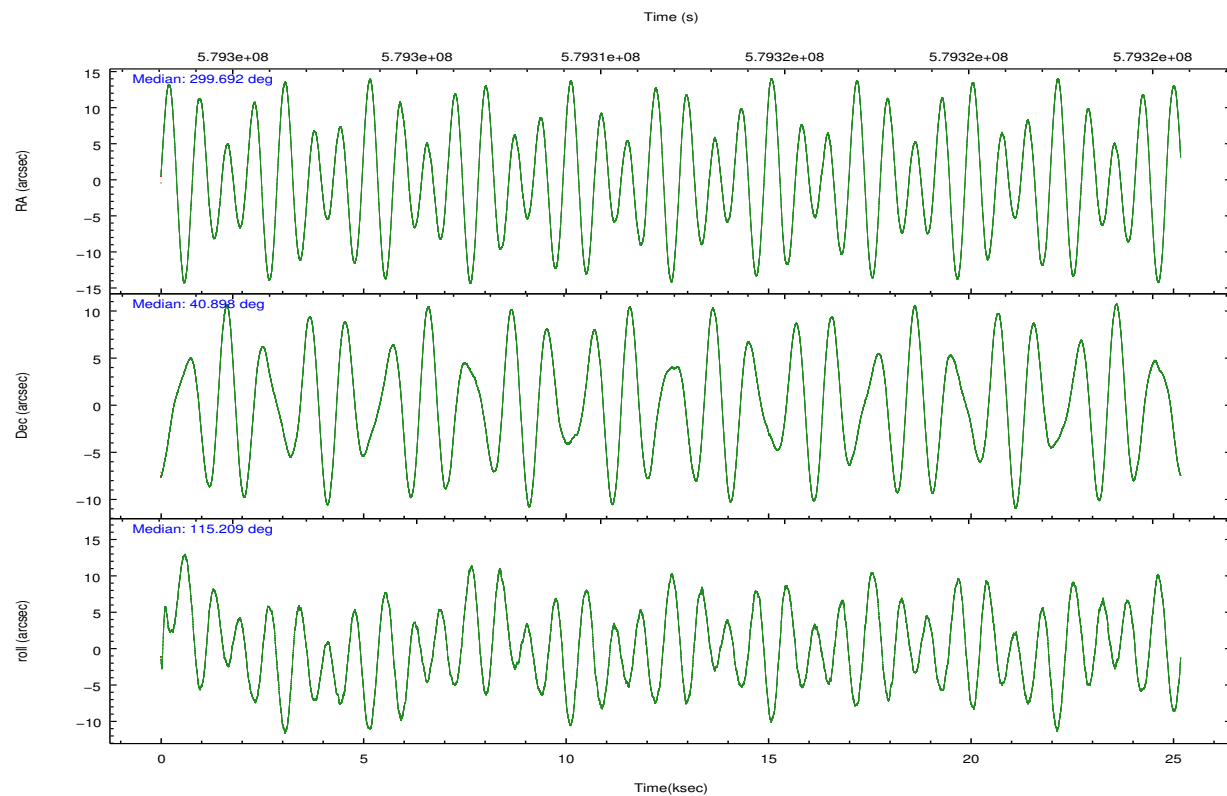
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	9006	19729	10621	16642
	5%	11%	6%	10%
grade 1 events	85	92	111	151
	0%	0%	0%	0%
grade 2 events	4665	7212	4656	5095
	3%	4%	2%	3%
grade 3 events	1898	2449	1874	2221
	1%	1%	1%	1%
grade 4 events	1817	2471	1965	2215
	1%	1%	1%	1%
grade 5 events	6508	6909	6089	7551
	4%	4%	3%	4%
grade 6 events	3777	5039	3323	4050
	2%	3%	2%	2%
grade 7 events	122428	121610	135984	127438
	81%	73%	82%	77%

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	299.721634	299.6916085210013	CCD I2 on	Y	Y
[deg] Pointing Dec	40.882447	40.8981045190414	CCD I3 on	Y	Y
[deg] Pointing Roll	114.984750	115.21308624614	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	-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)	579299504.184000	579298404.55715	CCD S5 on	N	N
Observation start date	2016-05-10T20:30:36	2016-05-10T20:13:24	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	579324504.184000	579325409.20868	On-chip summing requested	N	N
Observation end date	2016-05-11T03:27:16	2016-05-11T03:43:29	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



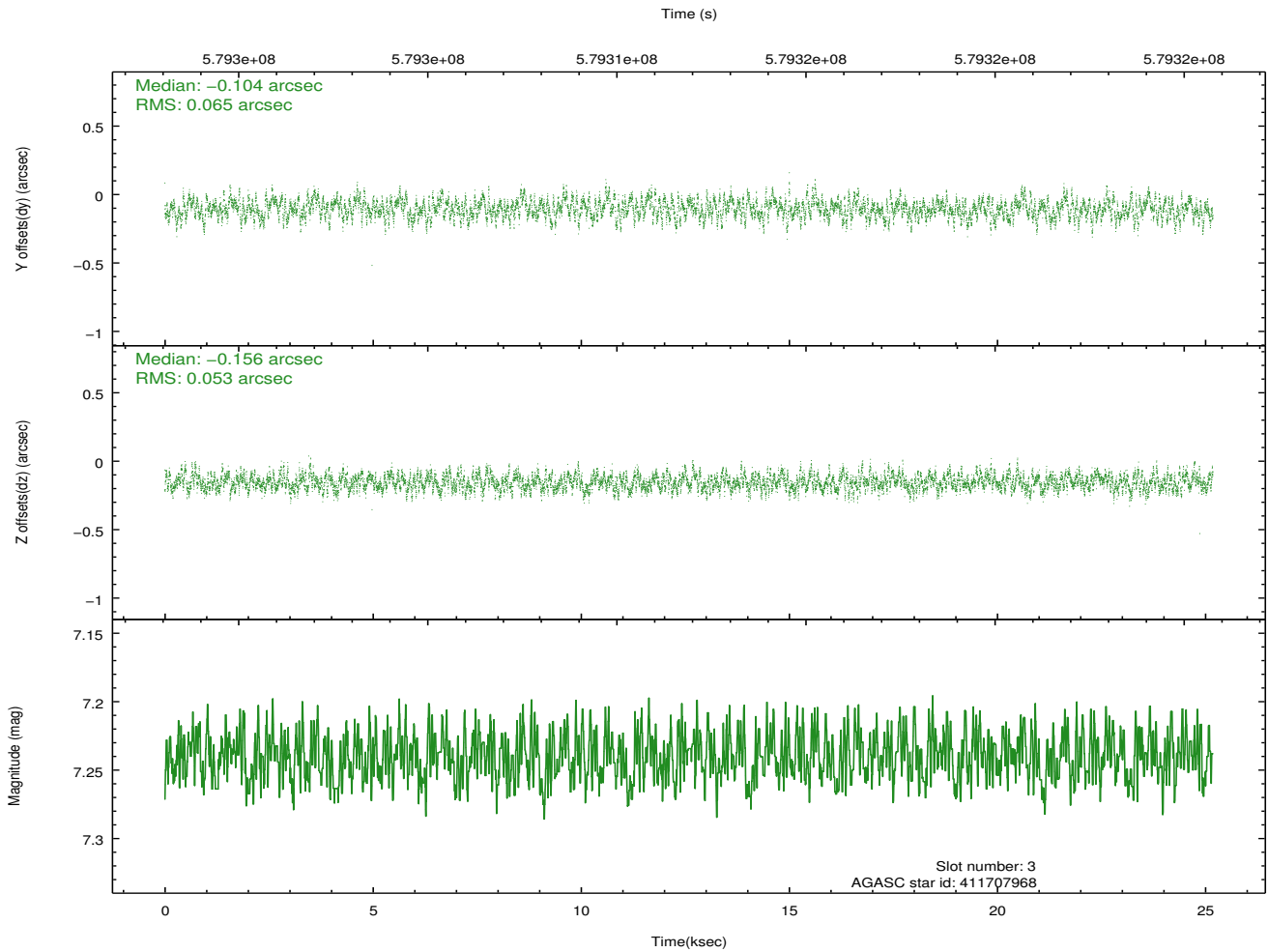
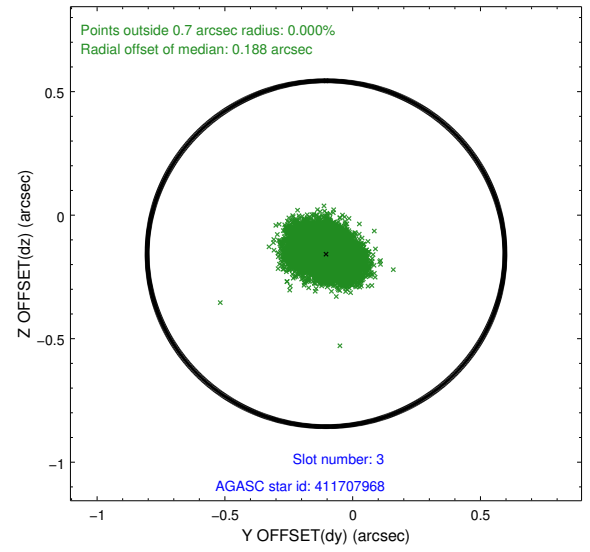
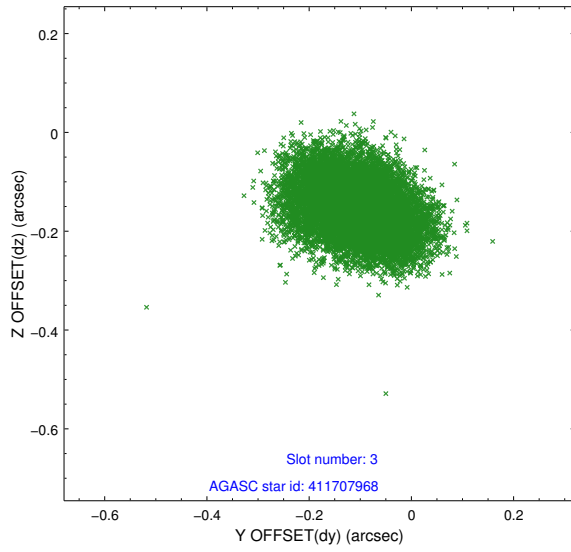


Slot Statistics

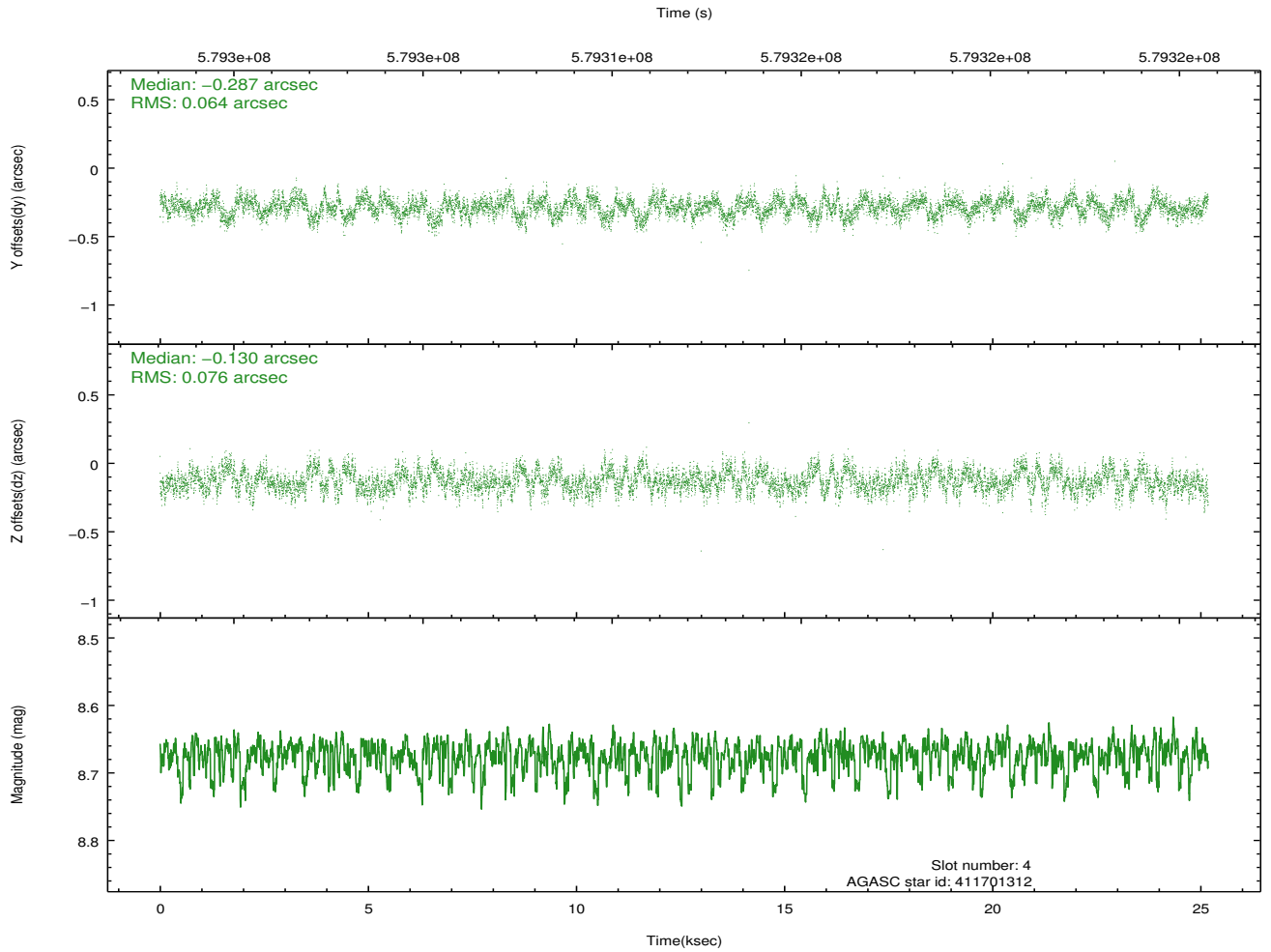
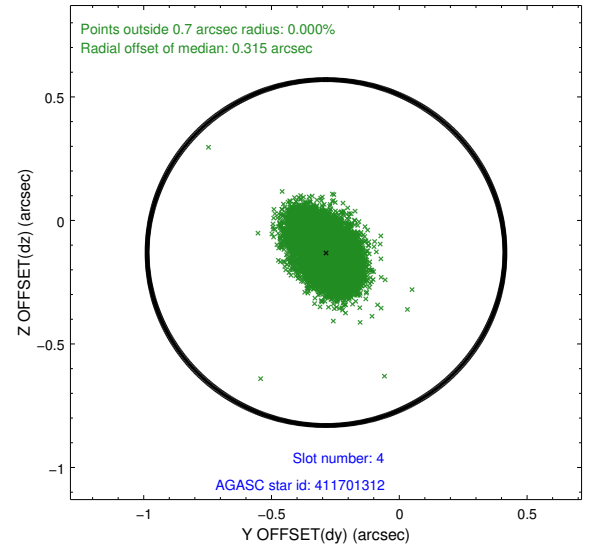
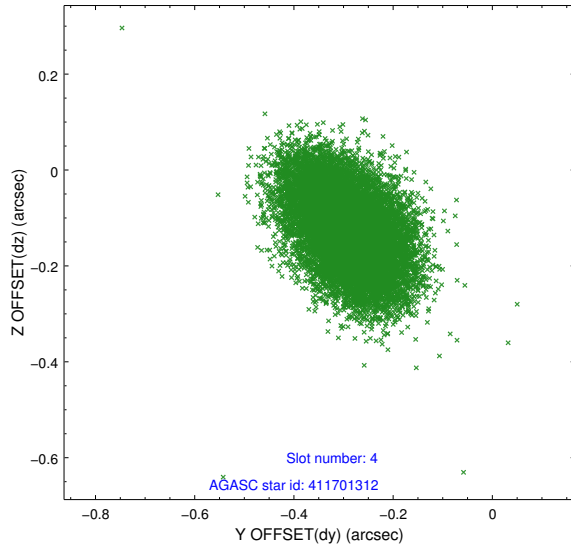
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-2	7.16	6142	-0.024	-0.150	0.012	0.021	0.000000	0.000000	-761.19	-844.47
1	FID		ACIS-I-5	7.23	6142	-0.220	0.070	0.010	0.018	0.000000	0.000000	-1815.50	1059.55
2	FID		ACIS-I-6	7.25	6142	0.150	0.149	0.011	0.024	0.000000	0.000000	398.61	1704.24
3	GUIDE	used	411707968	7.24	12283	-0.104	-0.156	0.089	0.144	299.509933	40.926839	389.08	453.90
4	GUIDE	used	411701312	8.67	12280	-0.287	-0.130	0.105	0.172	298.889956	40.820220	763.78	2143.66
5	GUIDE	used	412240520	9.05	12275	-0.081	-0.404	0.100	0.163	298.791827	41.286181	2392.19	1660.44
6	GUIDE	used	413414112	8.75	12281	0.344	0.230	0.084	0.136	300.390444	40.913917	-658.51	-1699.57
7	GUIDE	used	413421624	8.69	12274	0.130	0.456	0.093	0.148	300.399768	40.893051	-737.79	-1691.73

2.4 Star Slots

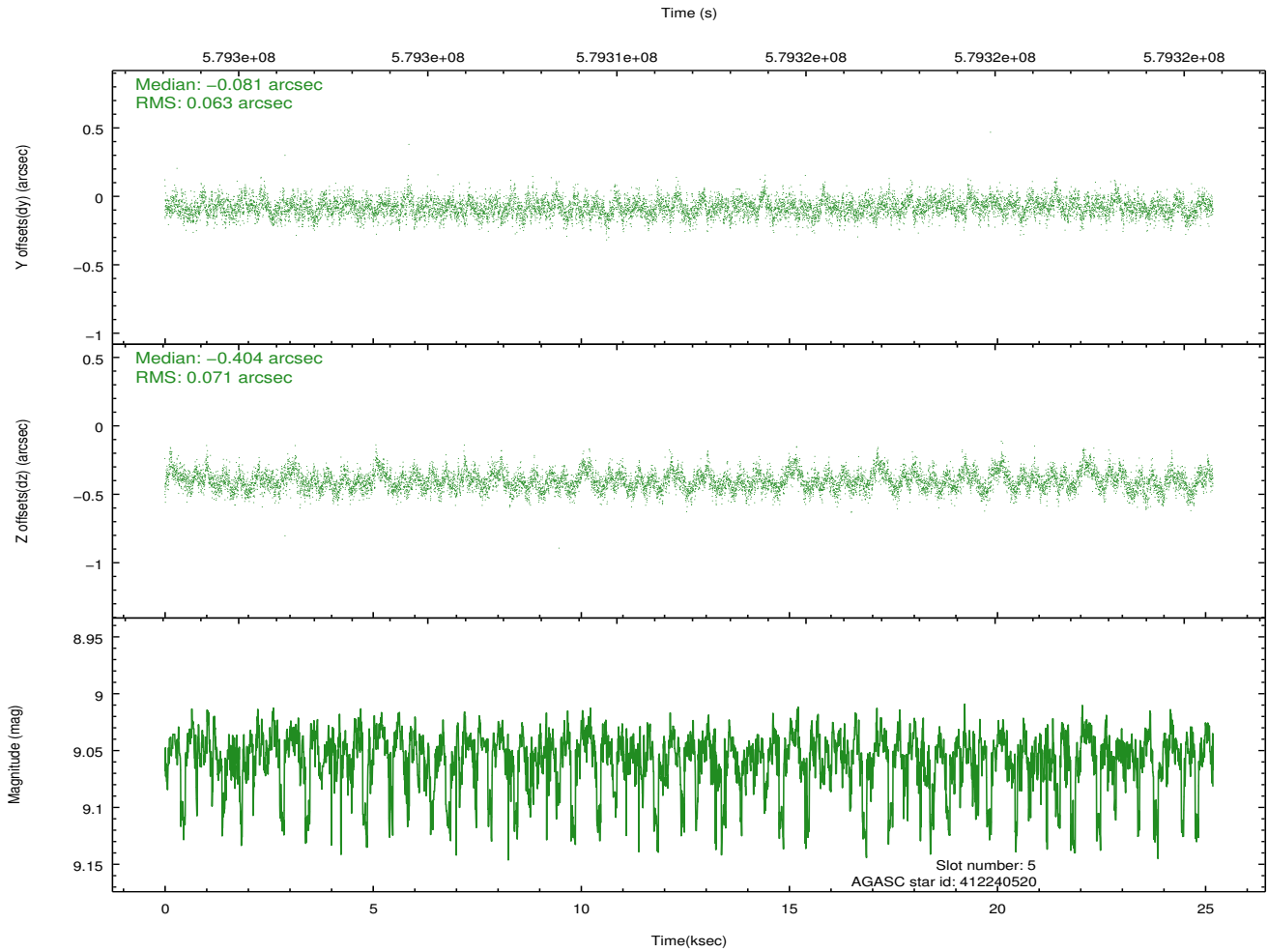
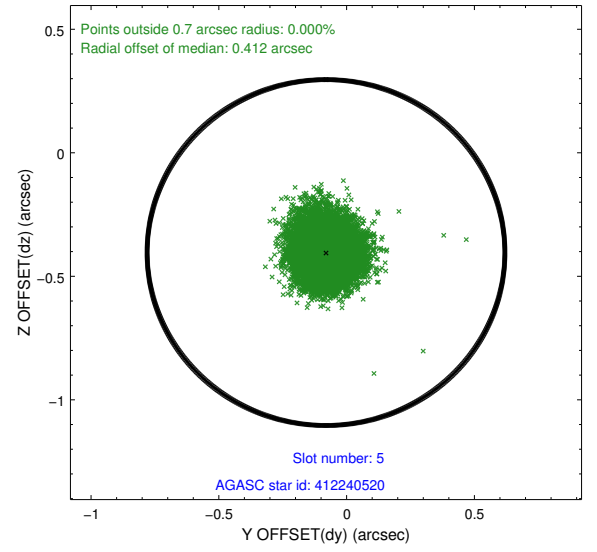
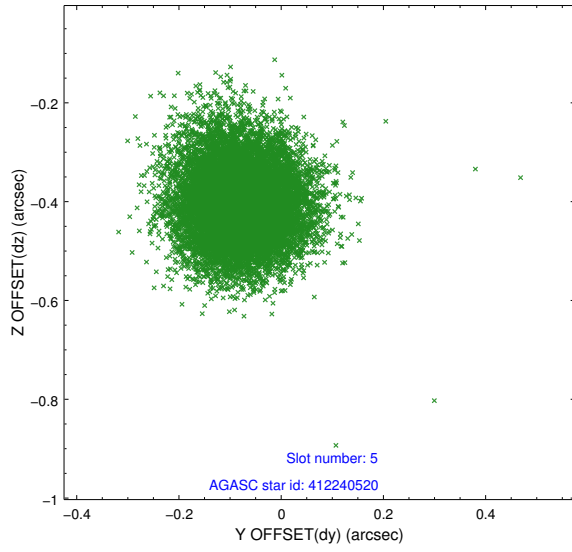
2.4.1 Slot 3



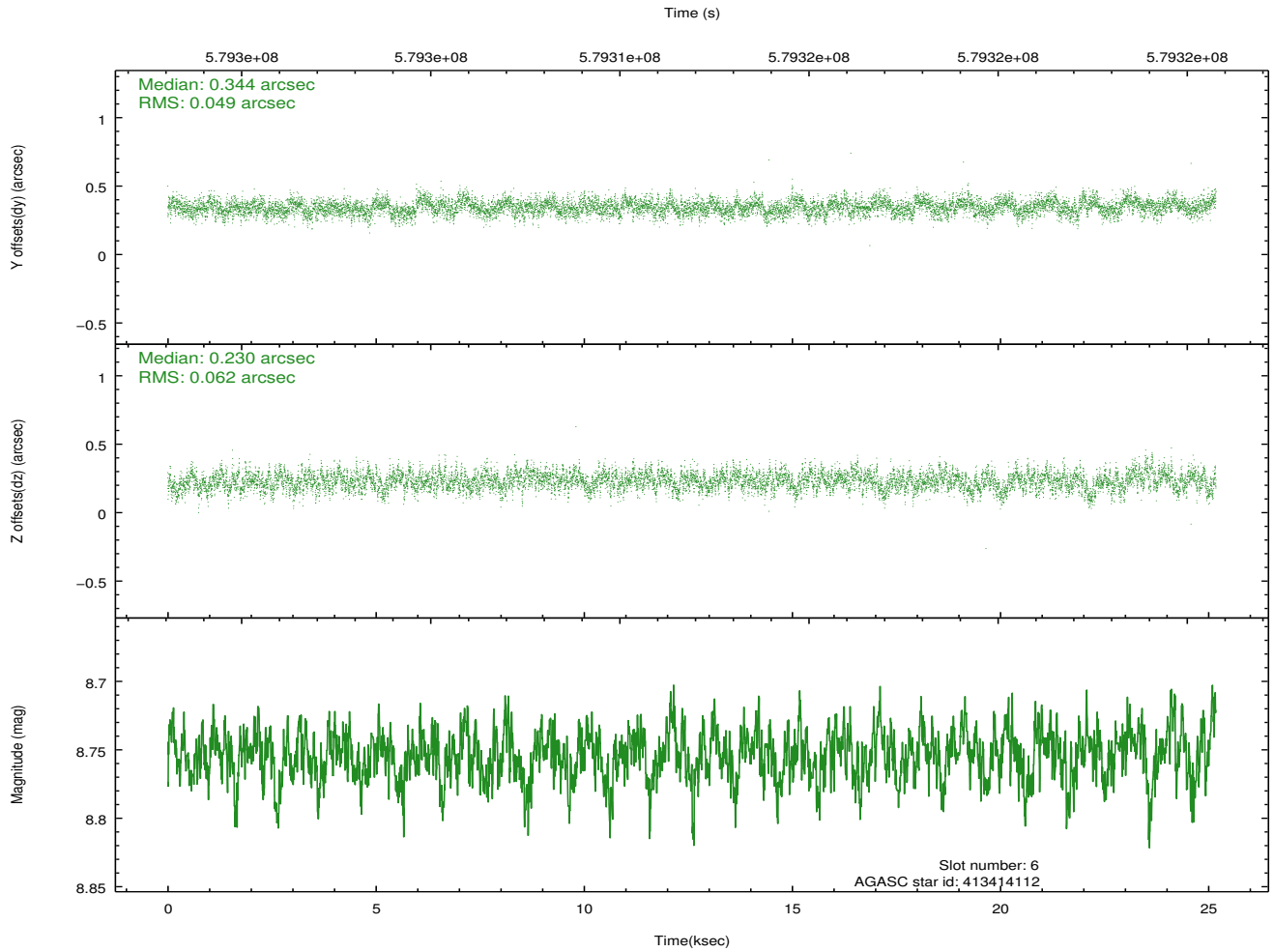
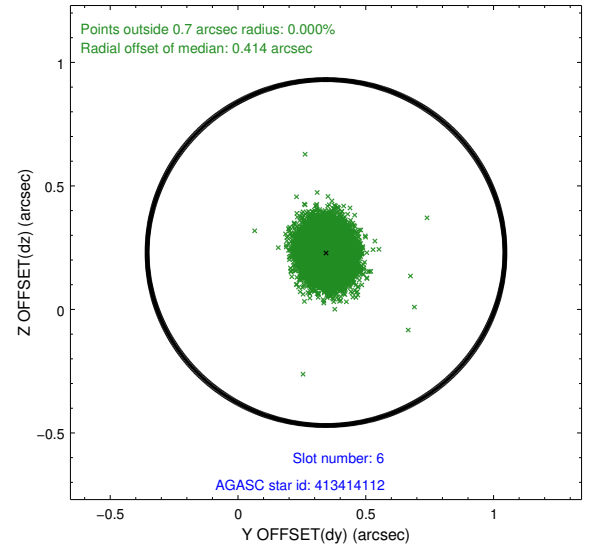
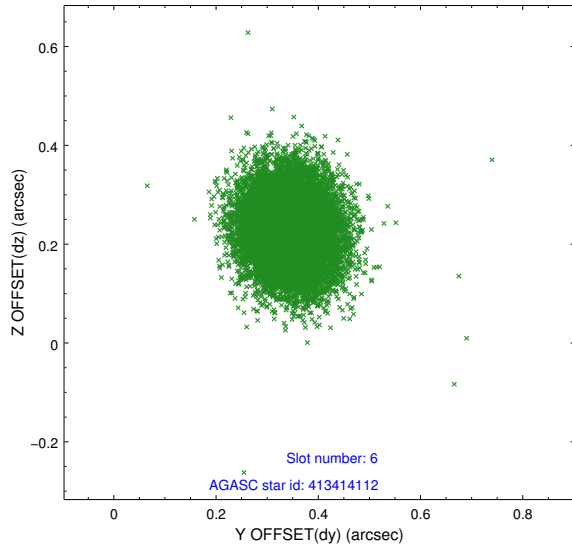
2.4.2 Slot 4



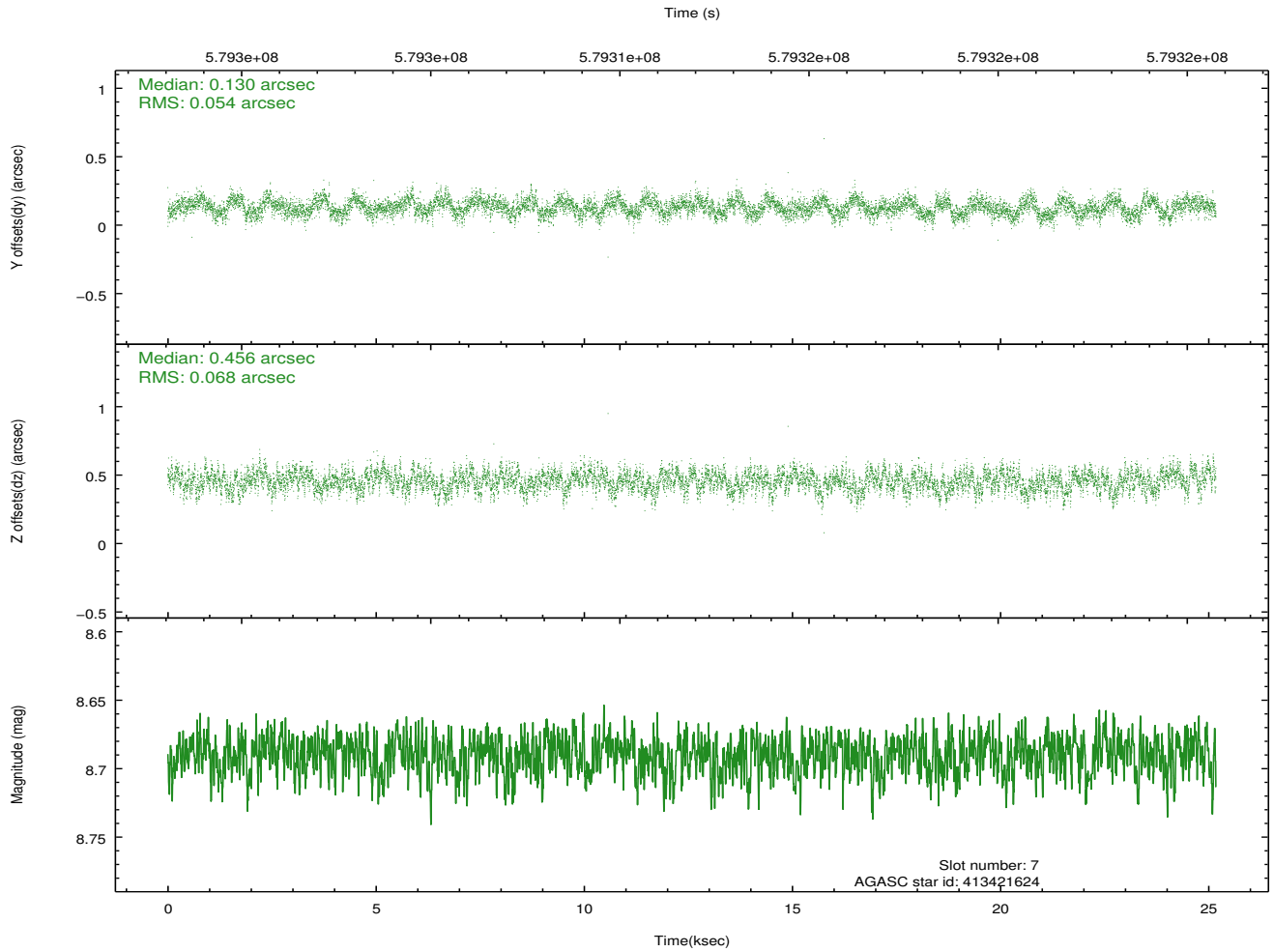
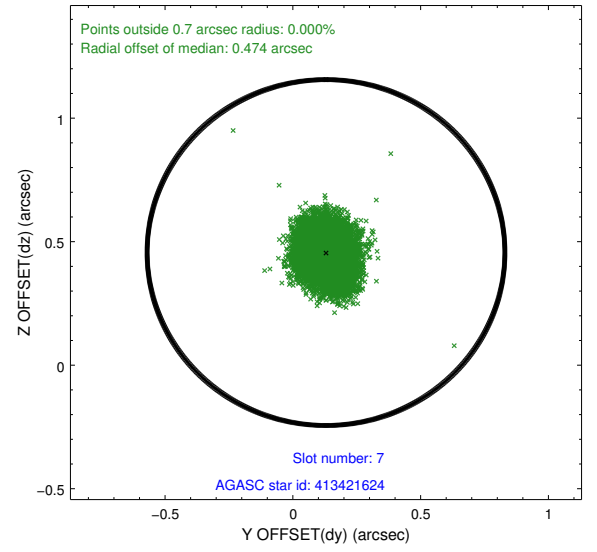
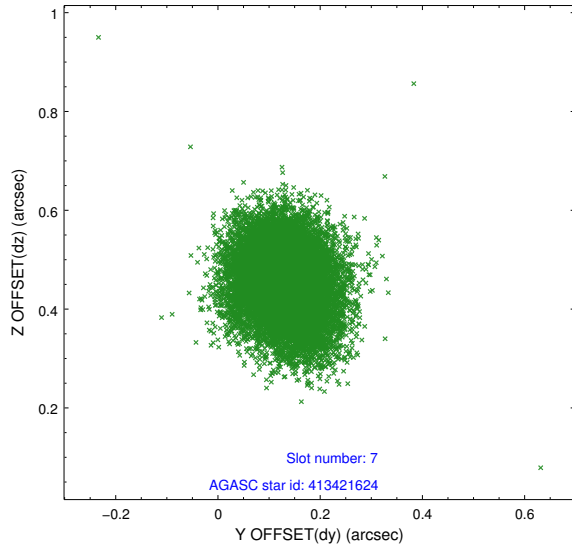
2.4.3 Slot 5



2.4.4 Slot 6

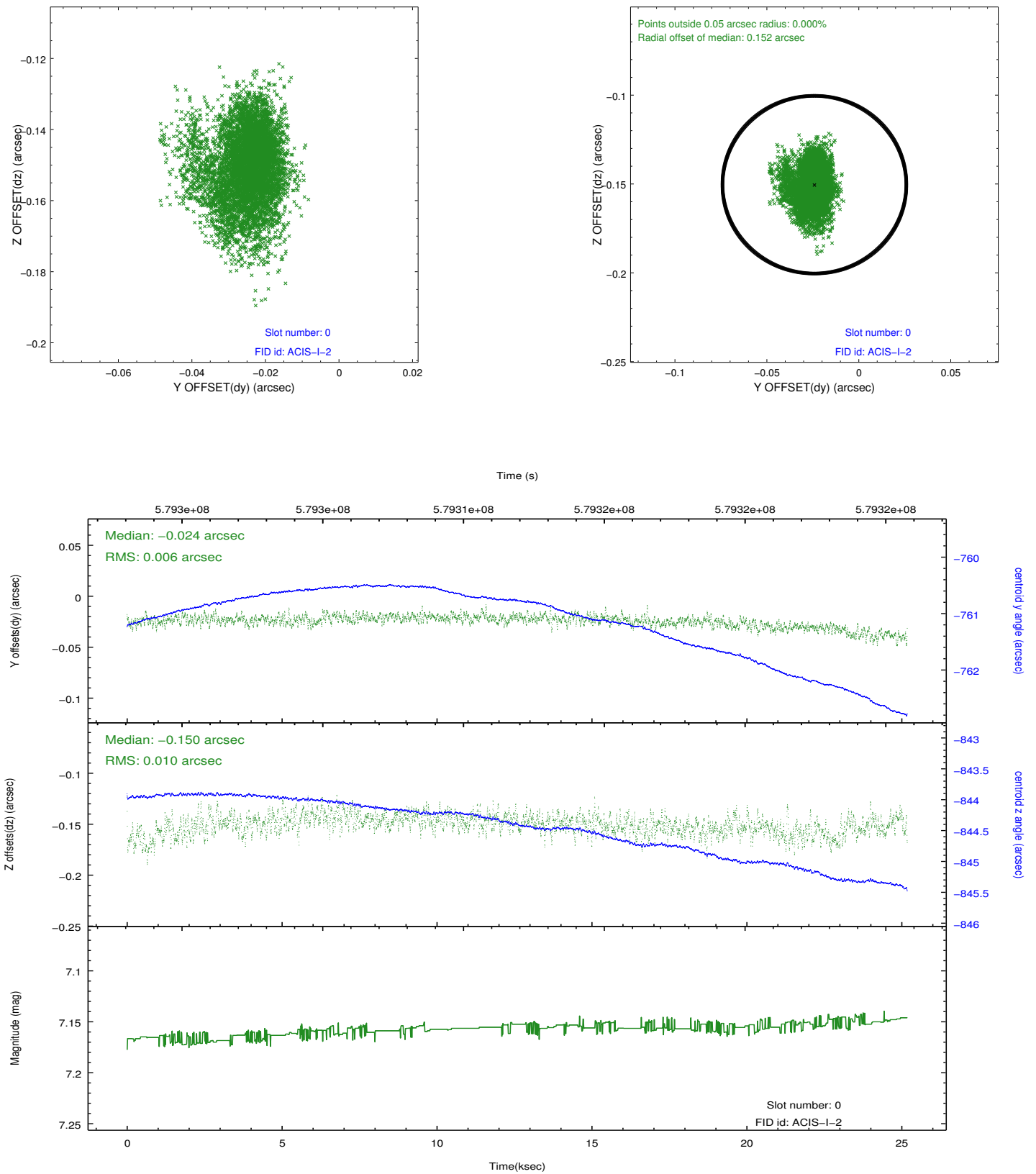


2.4.5 Slot 7

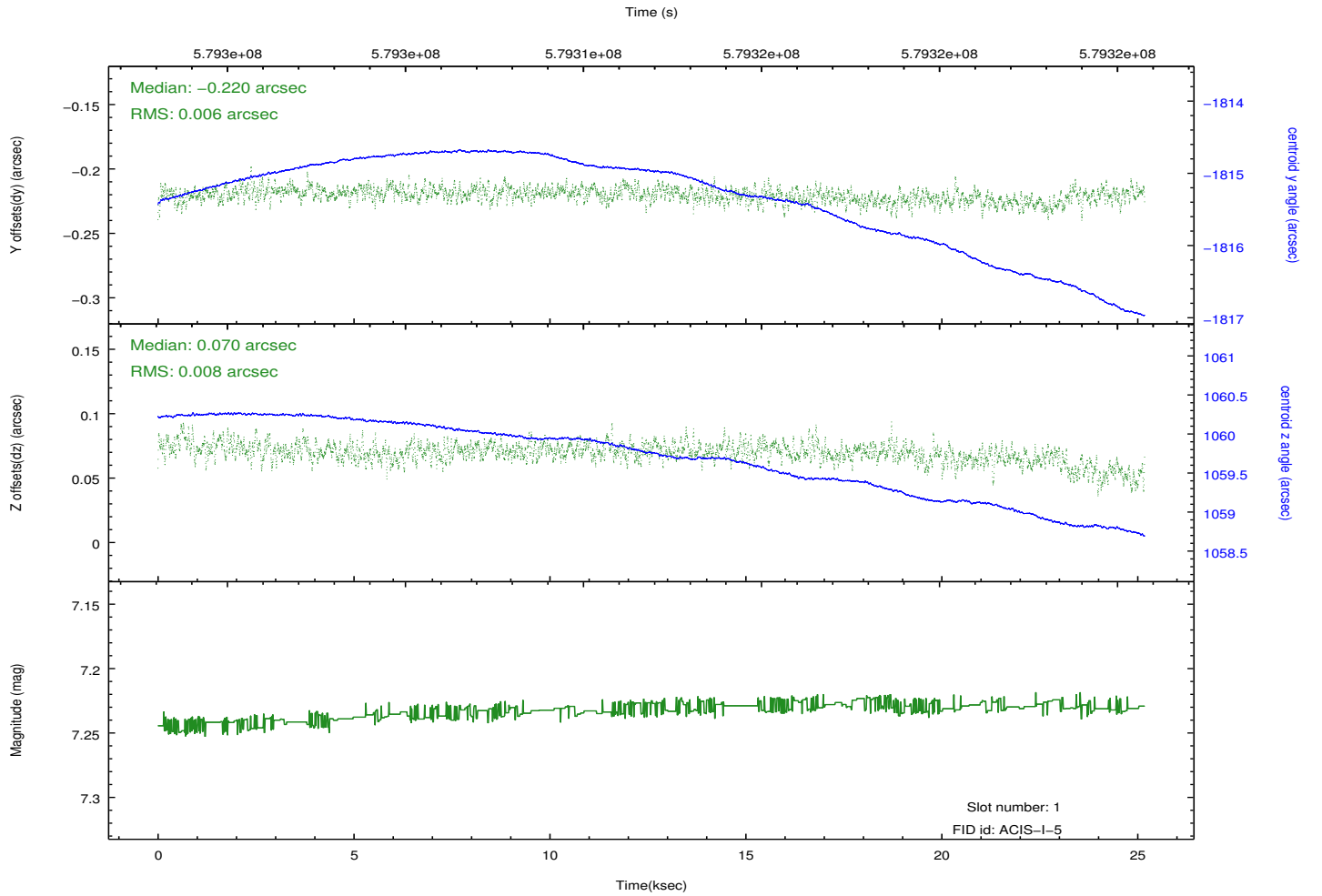
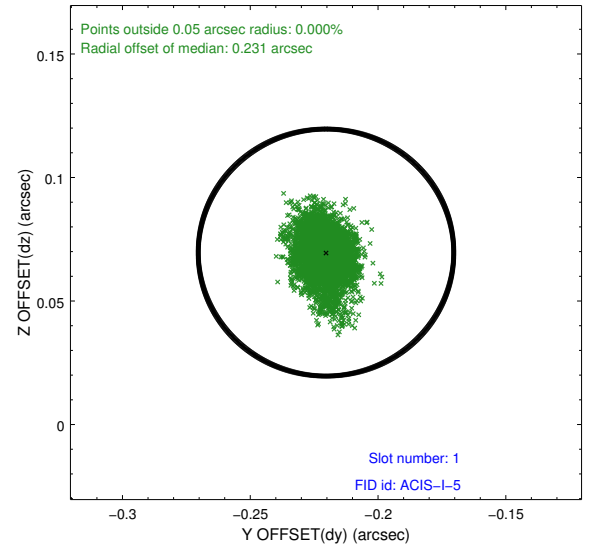
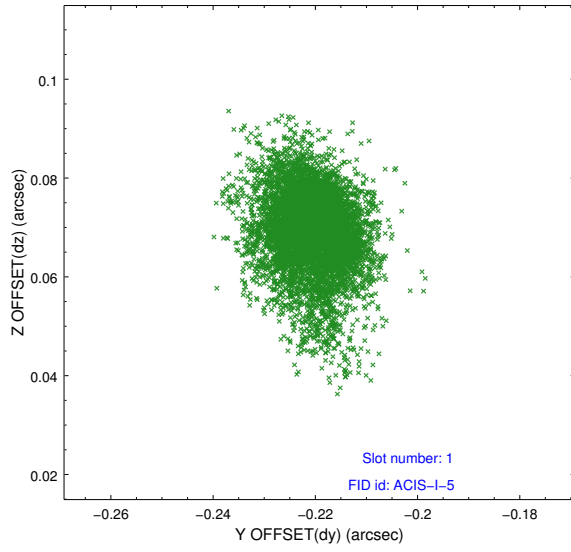


2.5 FID Slots

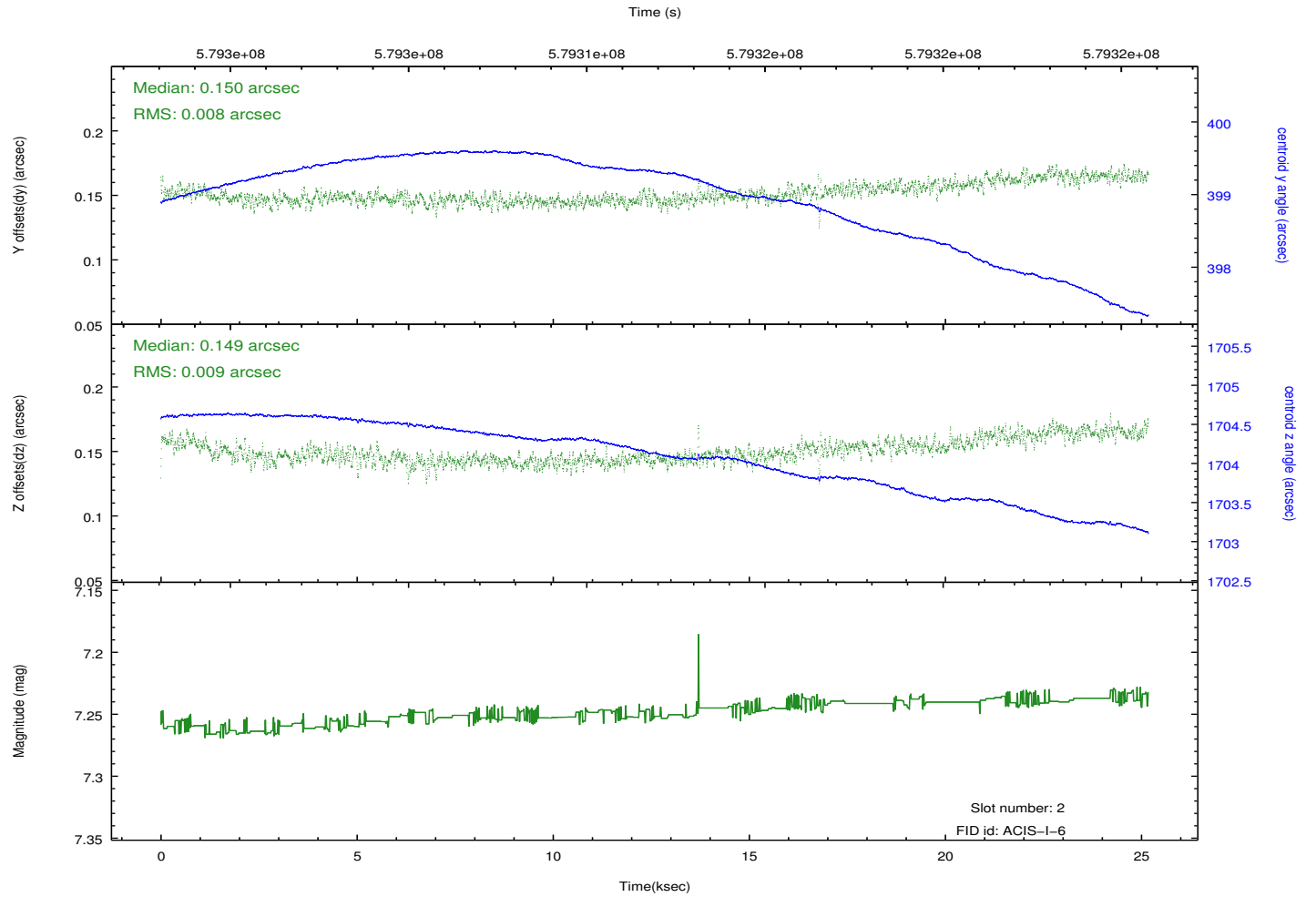
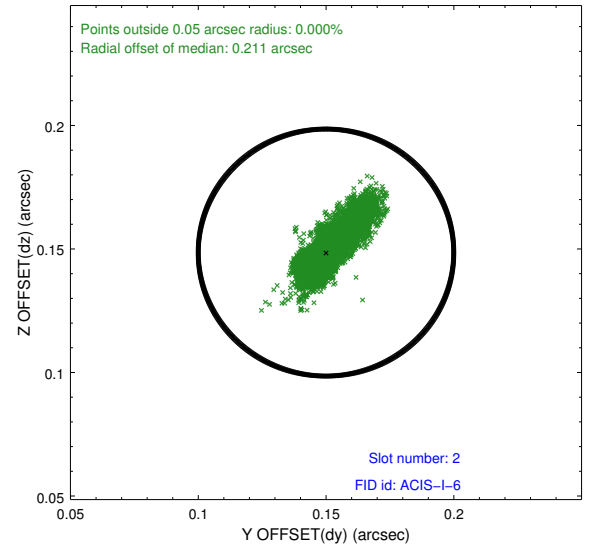
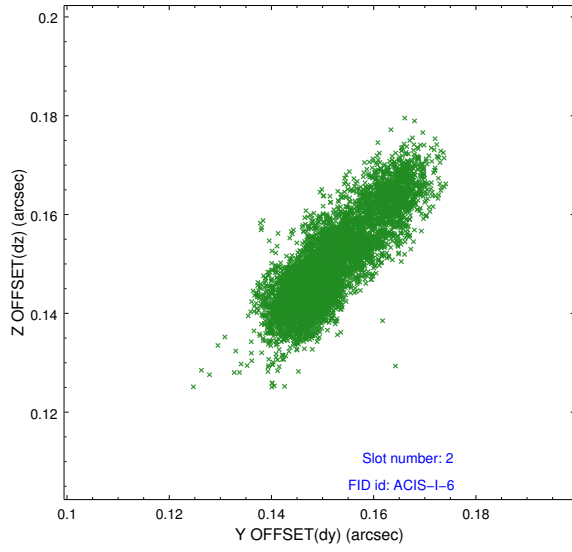
2.5.1 Slot 0



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	25.081768101573

A.2 Comments

One optional chip was dropped.

==

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.