

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21286 - L2 Version 1
Chandra X-Ray Center

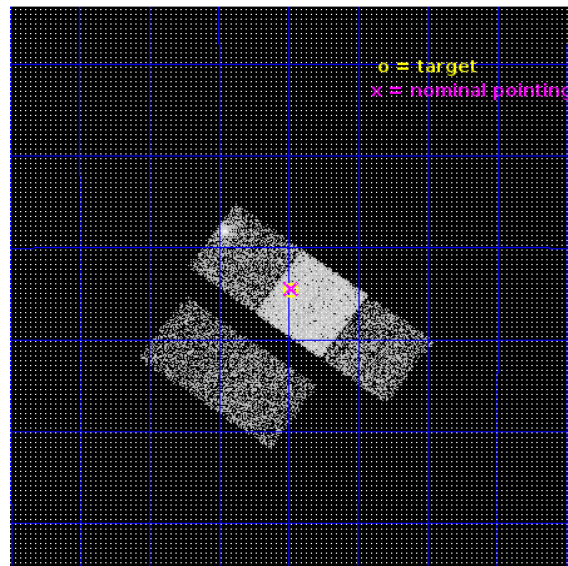
L2 Processing Date : Jan 20 2019

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1 Front

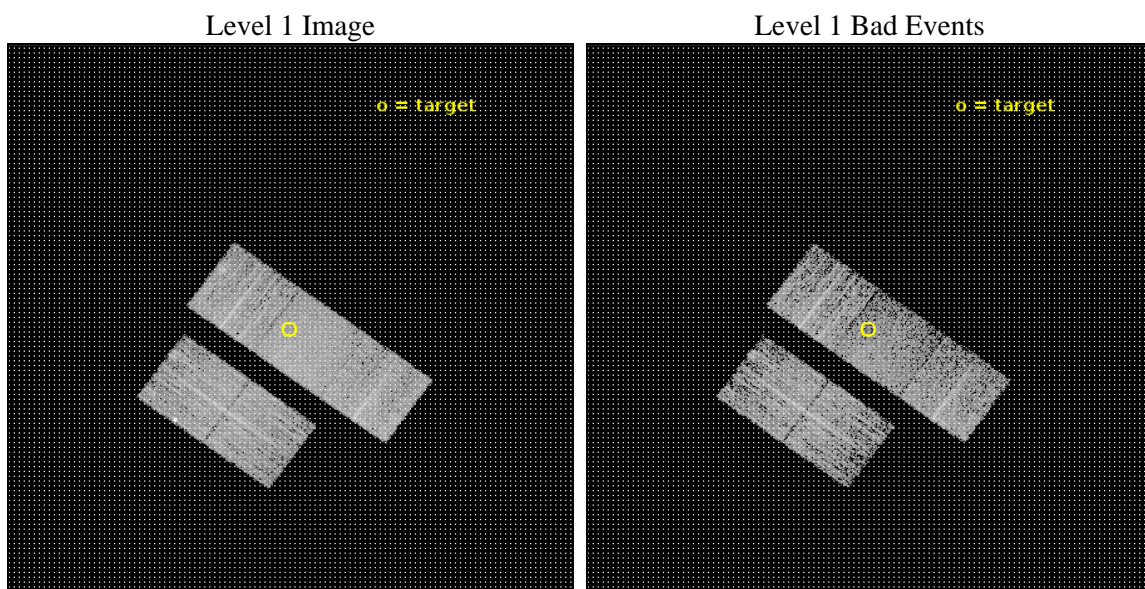
seq_num	503059	Sequence number
obs_id	21286	Observation id
title	Where Have All the Central Compact Objects Gone?	Proposal title
observer	Eric Gotthelf	Principal investigator
object	PSR J0944-1354	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	146.120417	Observer's specified target RA [deg]
dec_targ	-13.911556	Observer's specified target Dec [deg]
ra_nom	146.11958001447	Nominal RA [deg]
dec_nom	-13.908071259678	Nominal Dec [deg]
roll_nom	35.763171828078	Nominal Roll [deg]
revision	1	Processing version of data
ontime	3551.2837810516	Sum of GTIs [s]
livetime	3504.8836440351	Livetime [s]
ontime2	3551.1196210384	Sum of GTIs [s]
ontime3	3551.201701045	Sum of GTIs [s]
ontime6	3551.2427411079	Sum of GTIs [s]
ontime7	3551.2837810516	Sum of GTIs [s]
ontime8	3551.1606611013	Sum of GTIs [s]
l2events	25843	Number of level 2 events



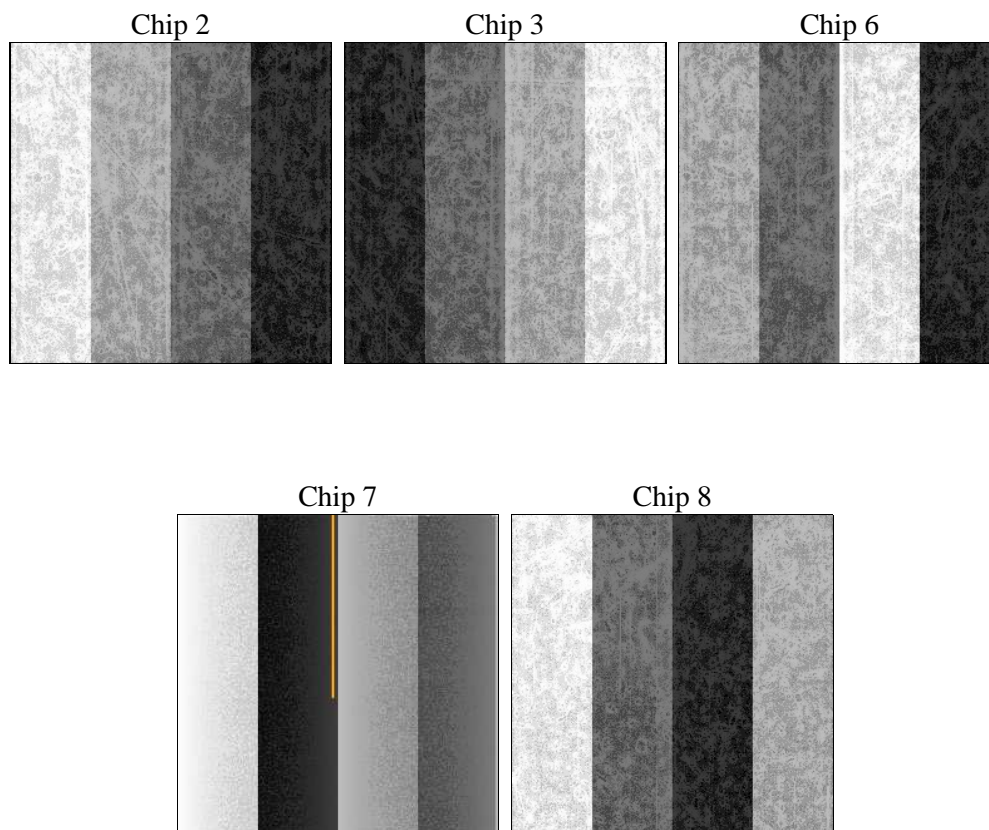
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	3500.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	3551.2837810516	Sum of GTIs [s]
caldsver	4.8.2	 	ontime2	3551.1196210384	Sum of GTIs [s]
date	2019-01-20T16:30:01	Date and time of file creation	ontime3	3551.201701045	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	3551.2427411079	Sum of GTIs [s]
			ontime7	3551.2837810516	Sum of GTIs [s]
			ontime8	3551.1606611013	Sum of GTIs [s]
			l1events	163357	Number of level 1 events

2.1.4 Events

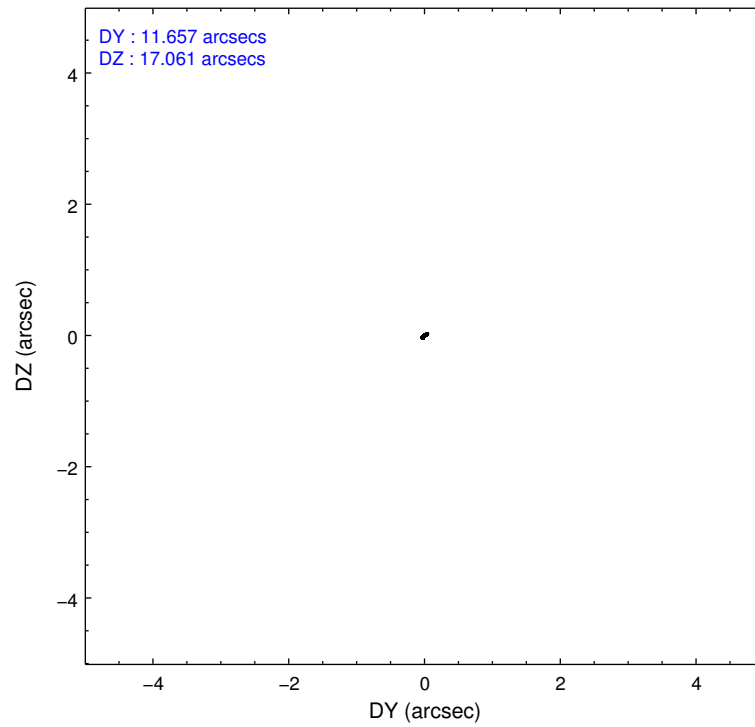
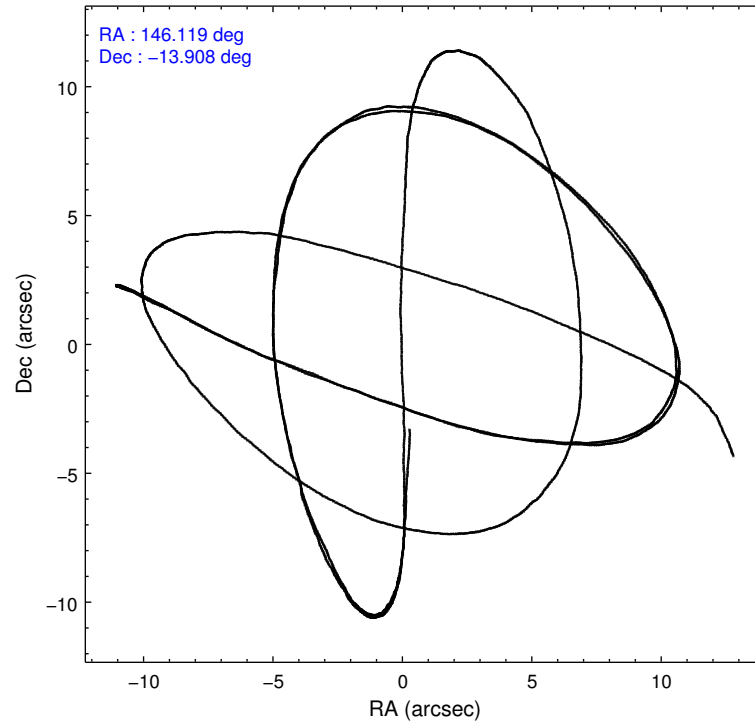
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	32376	29314	30736	35884	35047
rejected events	28524	26608	26890	20734	25970
rejected %	88%	90%	87%	57%	74%

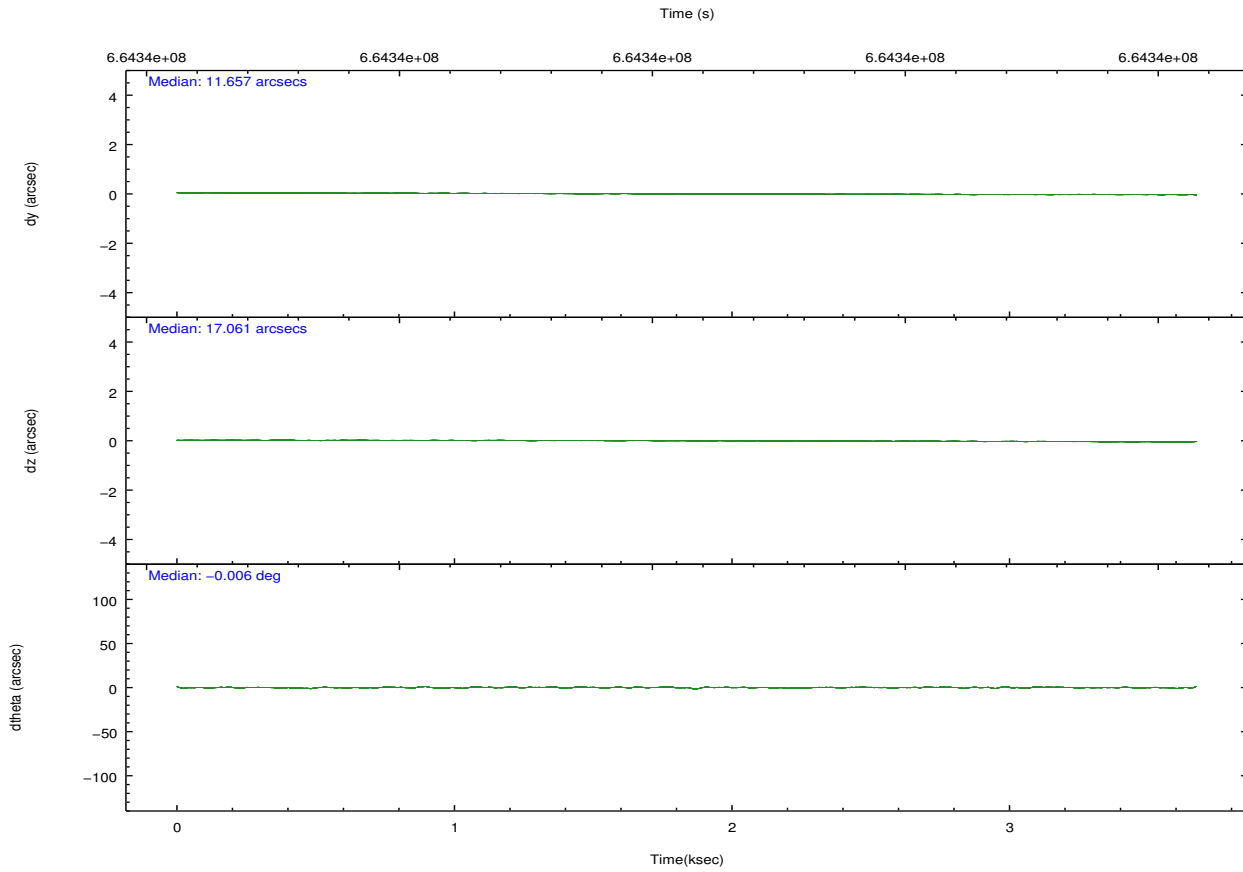
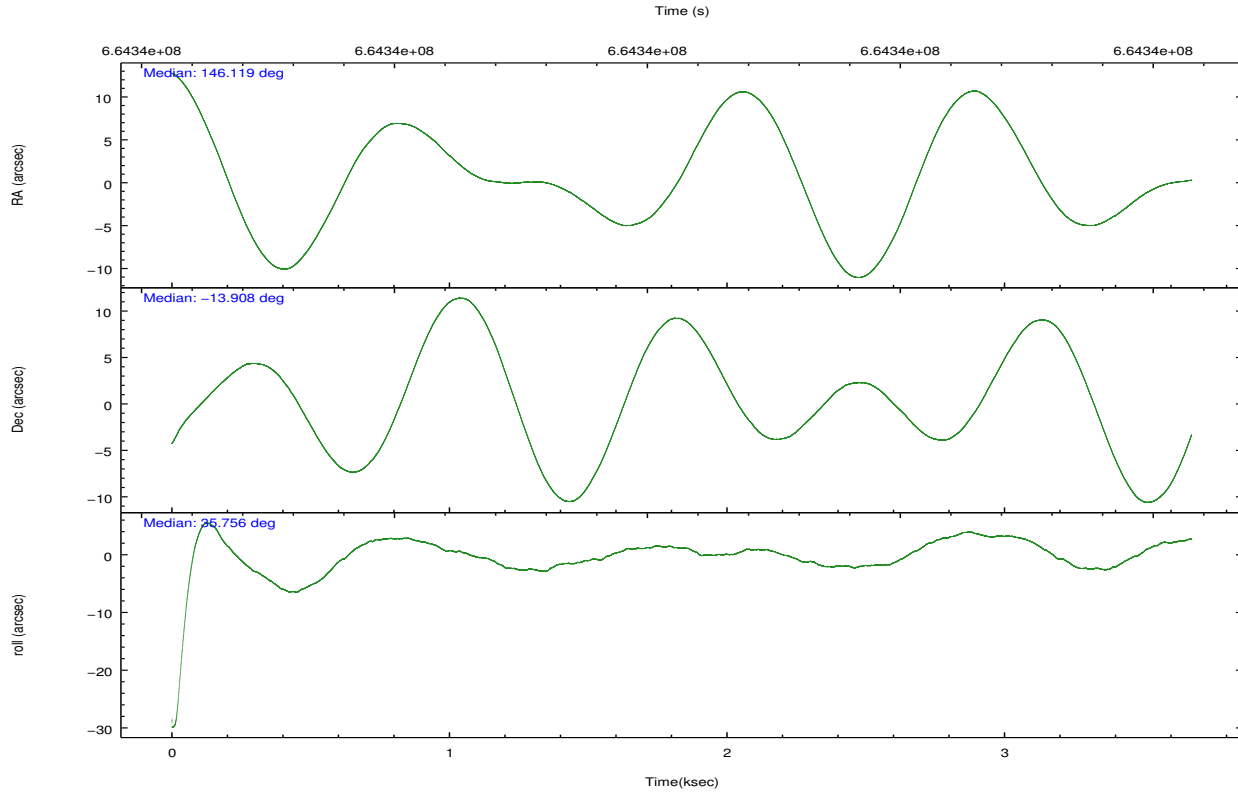
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	963	941	1360	1195	2604
	2%	3%	4%	3%	7%
grade 1 events	16	15	12	50	29
	0%	0%	0%	0%	0%
grade 2 events	1723	605	1014	3122	2202
	5%	2%	3%	8%	6%
grade 3 events	234	266	243	1247	950
	0%	0%	0%	3%	2%
grade 4 events	299	263	288	1164	868
	0%	0%	0%	3%	2%
grade 5 events	981	1193	1131	3440	1735
	3%	4%	3%	9%	4%
grade 6 events	634	638	944	8431	2472
	1%	2%	3%	23%	7%
grade 7 events	27526	25393	25744	17235	24187
	85%	86%	83%	48%	69%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-23678	ACIS-23678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	146.108391	146.1195800144686	CCD I2 on	O1	Y
[deg] Pointing Dec	-13.933155	-13.90807125967795	CCD I3 on	O2	Y
[deg] Pointing Roll	35.603984	35.76317182807777	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	N	N
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	664341497.184000	664340223.69829	CCD S5 on	N	N
Observation start date	2019-01-20T03:17:08	2019-01-20T02:57:03	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	664344997.184000	664345947.81113	On-chip summing requested	N	N
Observation end date	2019-01-20T04:15:28	2019-01-20T04:32:27	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



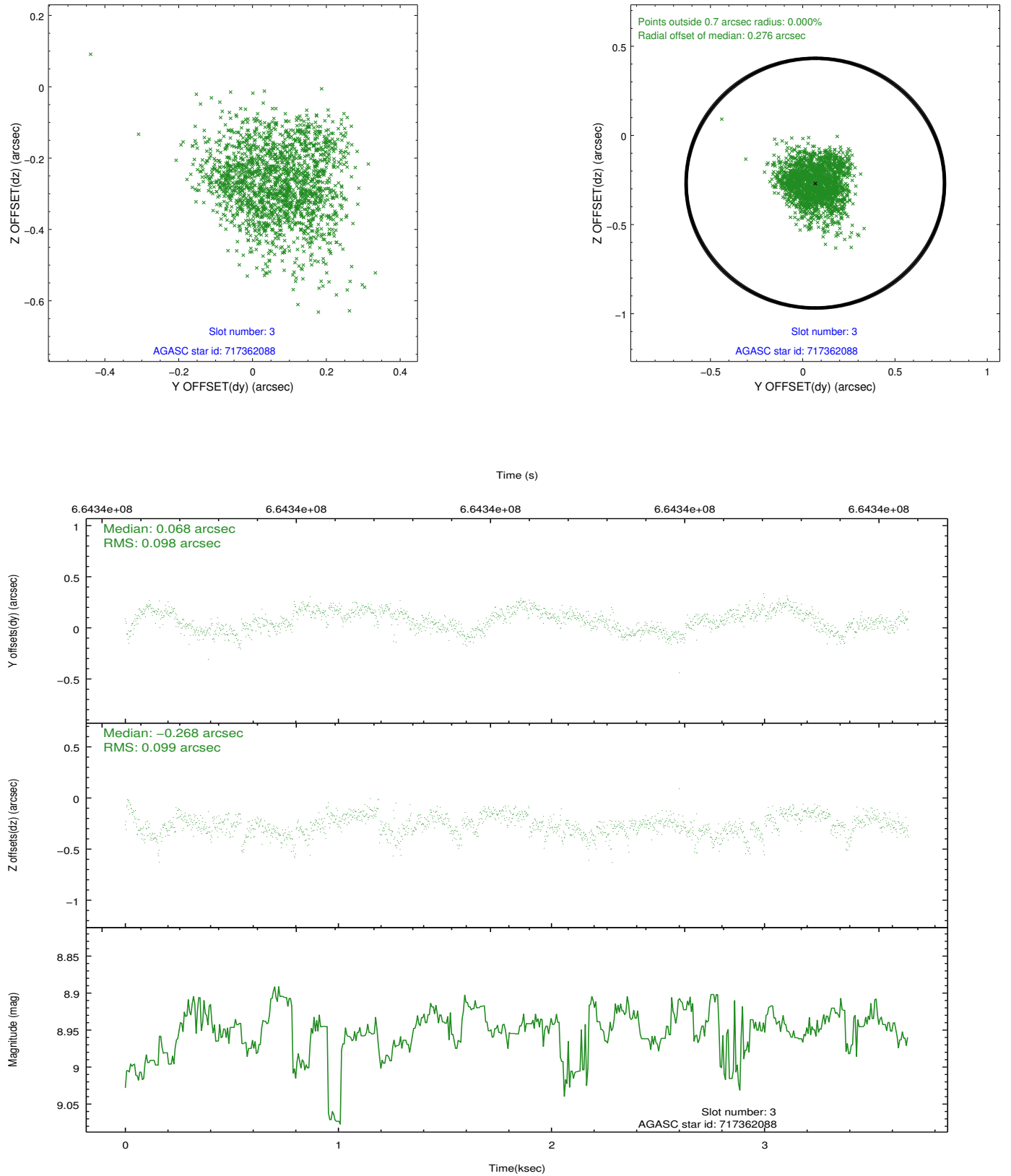


Slot Statistics

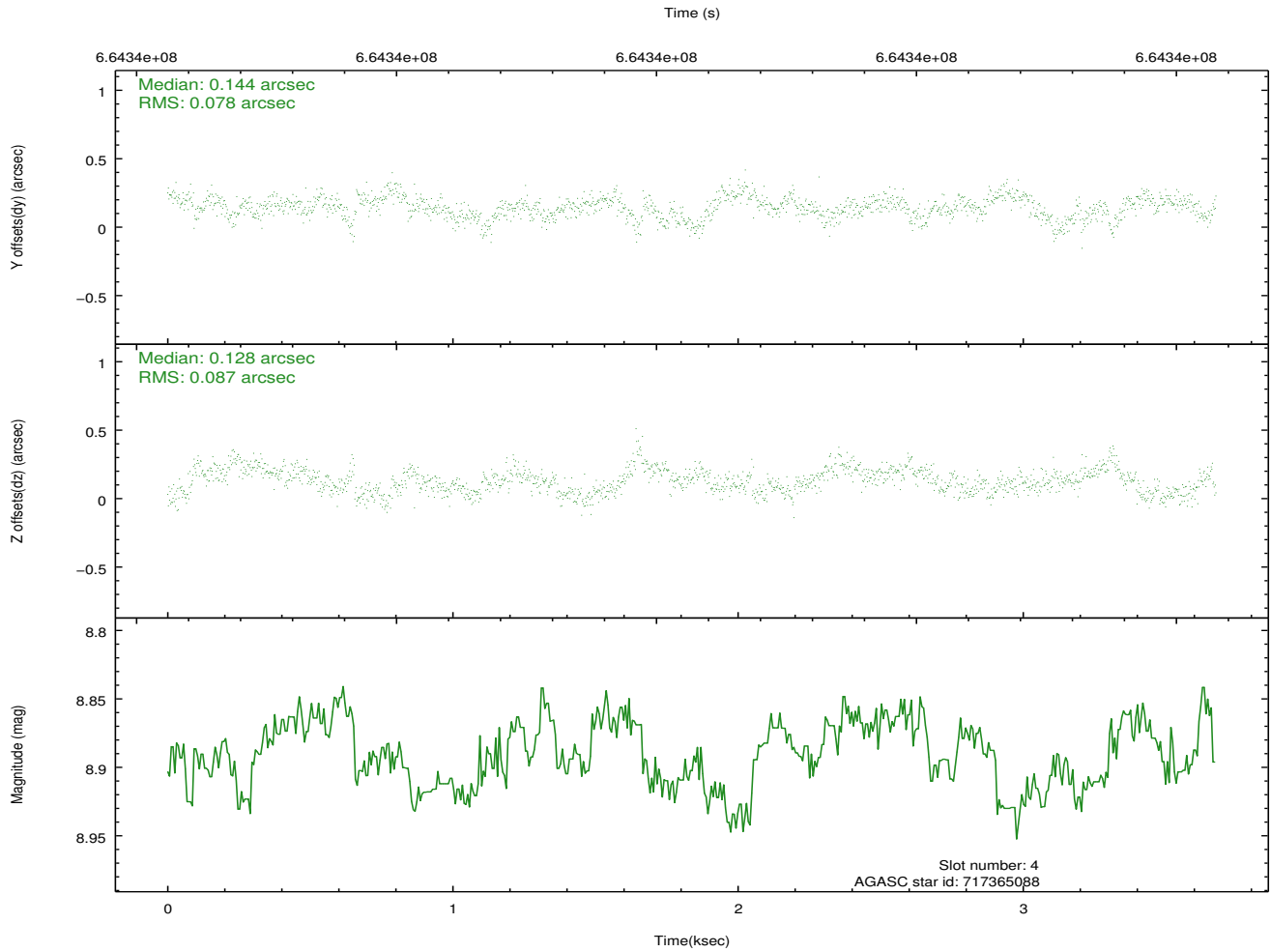
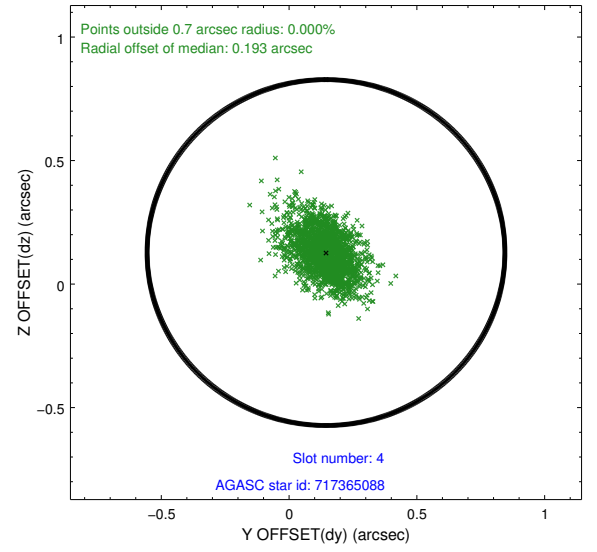
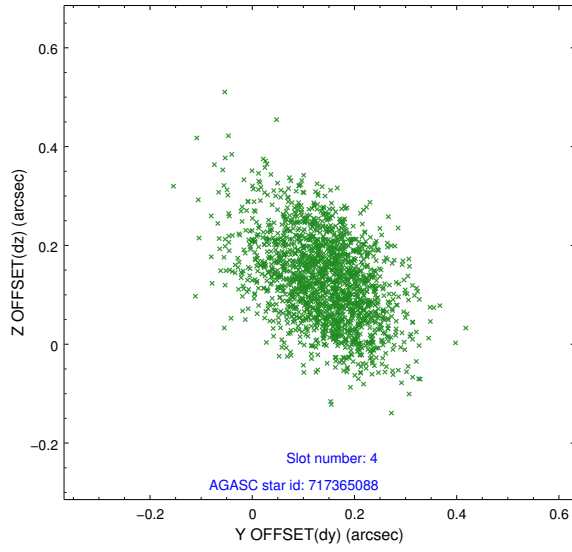
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.17	897	1.000	-0.264	-0.196	0.007	0.012	0.000000	0.000000	-764.74	-1738
1	FID		ACIS-S-4	7.32	897	1.000	0.699	0.180	0.006	0.012	0.000000	0.000000	2148.65	168
2	FID		ACIS-S-5	7.29	897	1.000	-0.466	0.025	0.008	0.013	0.000000	0.000000	-1815.66	163
3	GUIDE	used	717362088	8.95	1794	1.000	0.068	-0.268	0.148	0.231	145.456142	-13.684374	-1335.30	2054
4	GUIDE	used	717365088	8.89	1794	1.000	0.144	0.128	0.123	0.206	145.368914	-13.961049	-2161.29	1420
5	GUIDE	used	719068024	7.71	1794	1.000	-0.112	-0.149	0.117	0.201	145.876734	-13.695740	-162.37	1166
6	GUIDE	used	719068736	8.39	1793	1.000	0.055	0.036	0.092	0.148	145.771829	-13.899196	-885.23	784
7	GUIDE	used	719072032	7.76	1793	1.000	-0.152	0.259	0.083	0.142	146.772063	-14.036413	1666.21	-1653

2.4 Star Slots

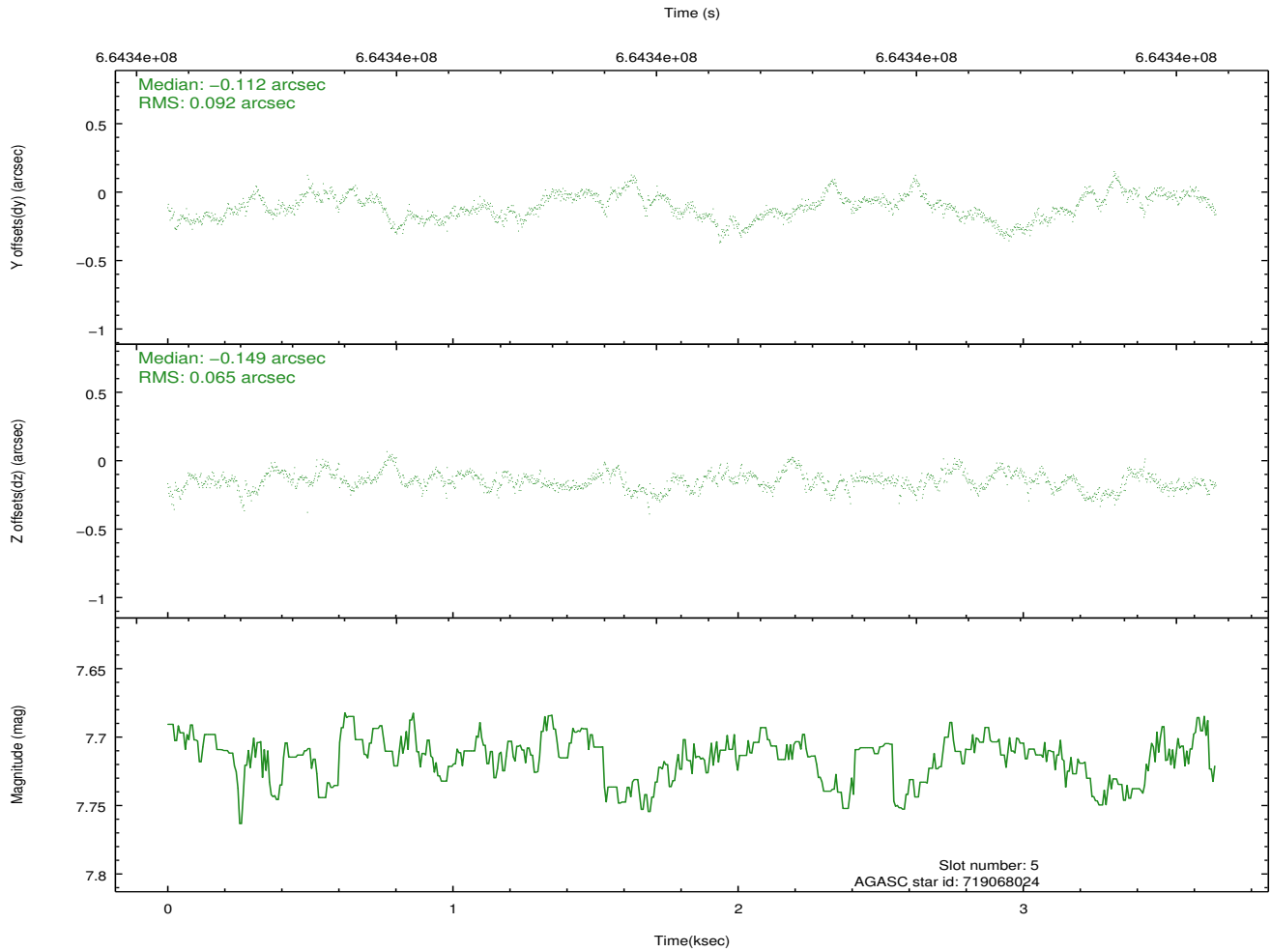
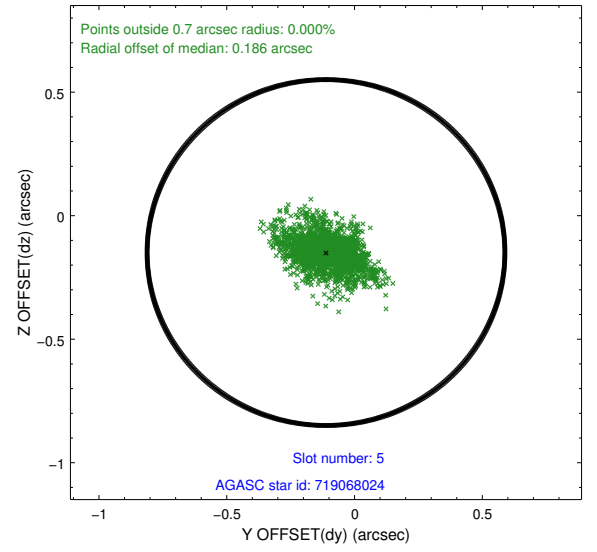
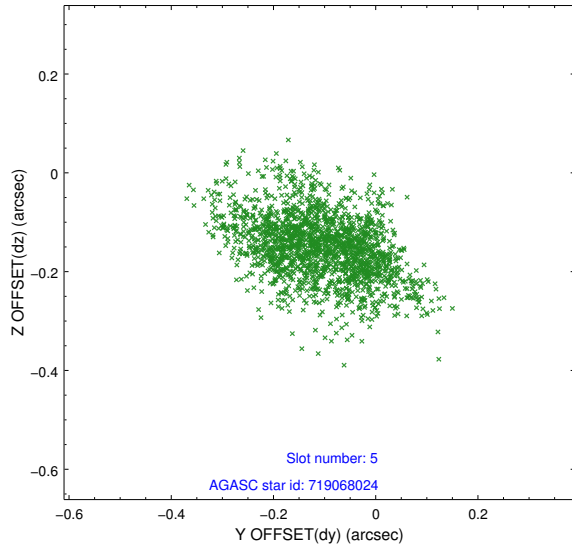
2.4.1 Slot 3



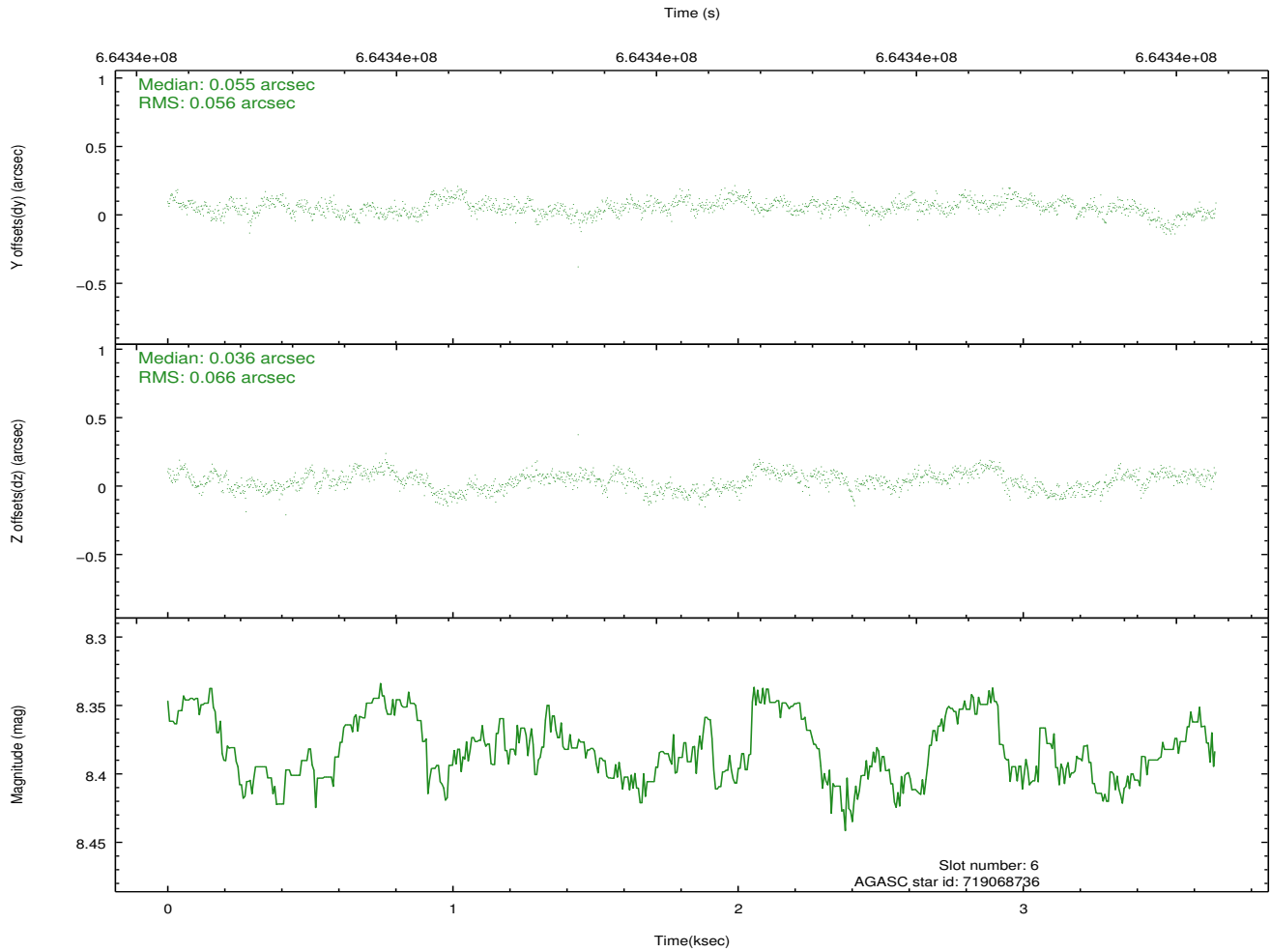
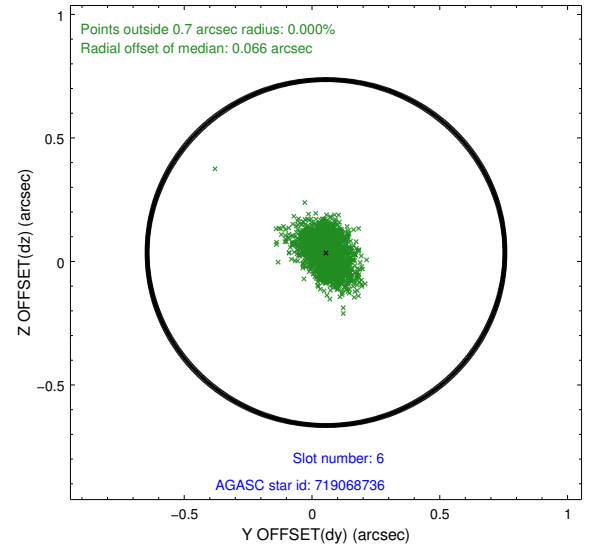
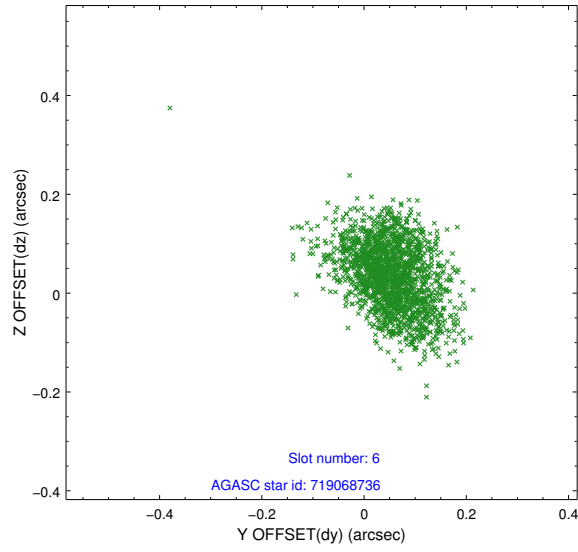
2.4.2 Slot 4



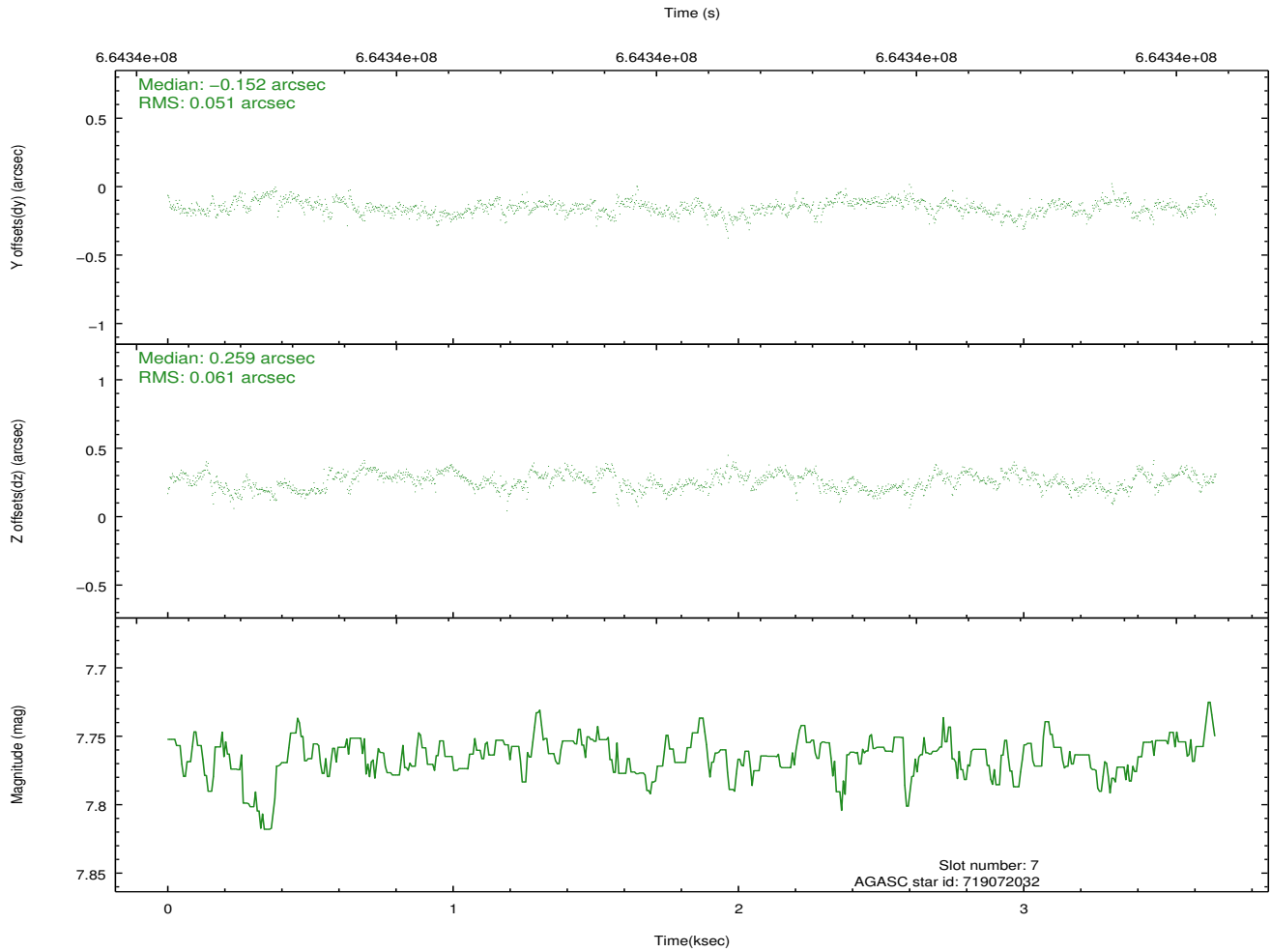
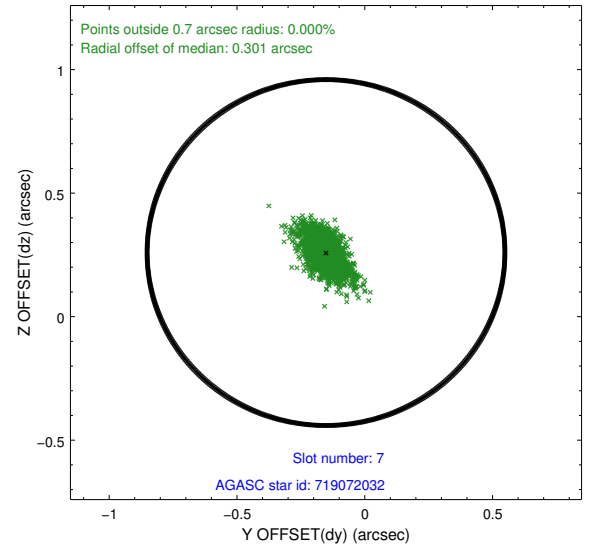
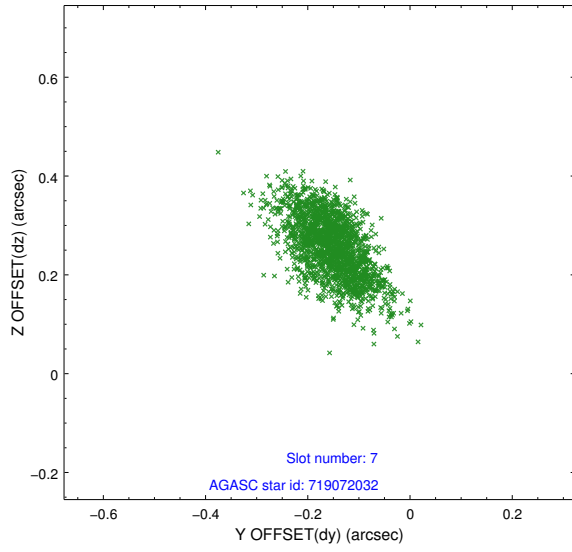
2.4.3 Slot 5



2.4.4 Slot 6

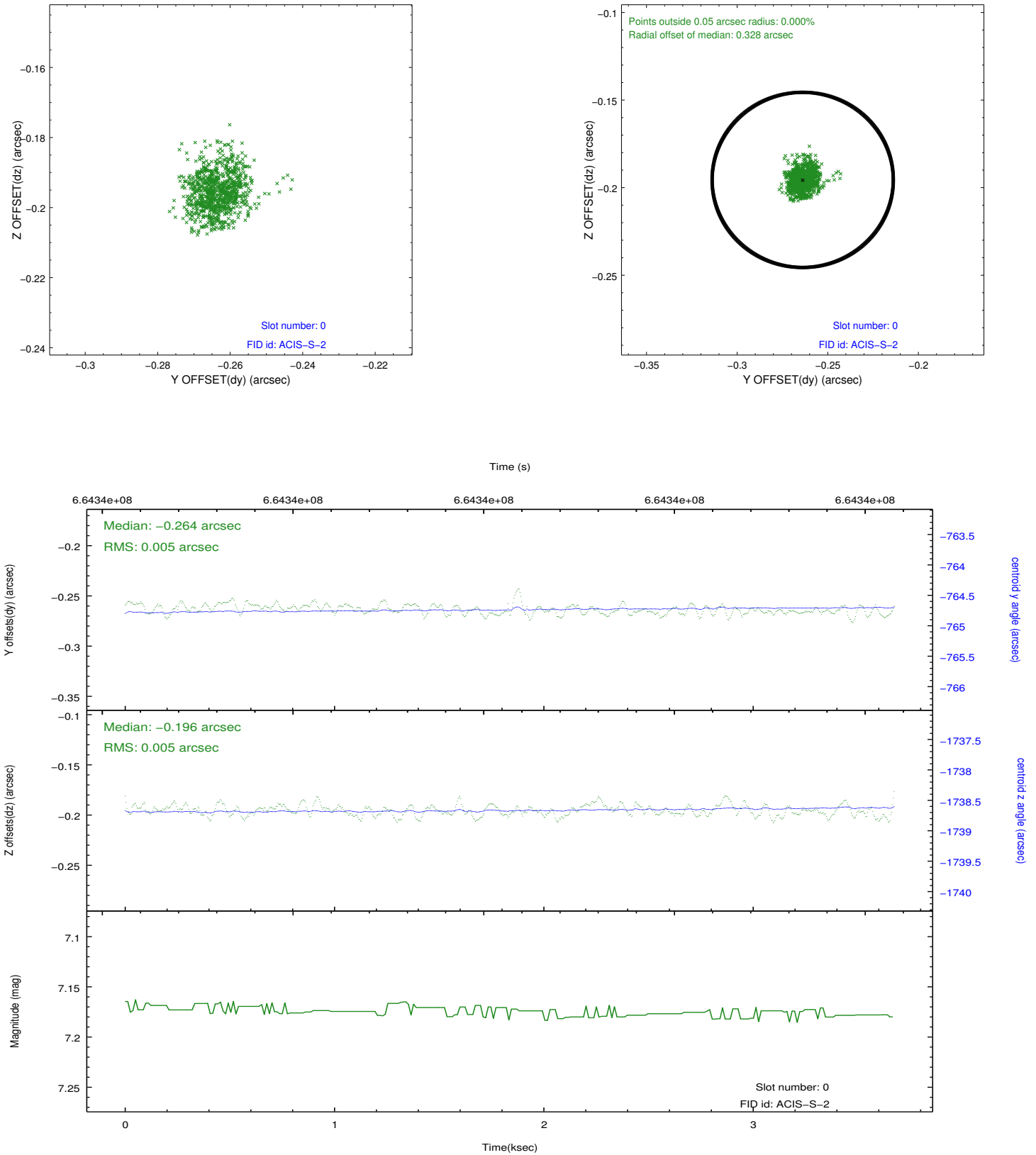


2.4.5 Slot 7

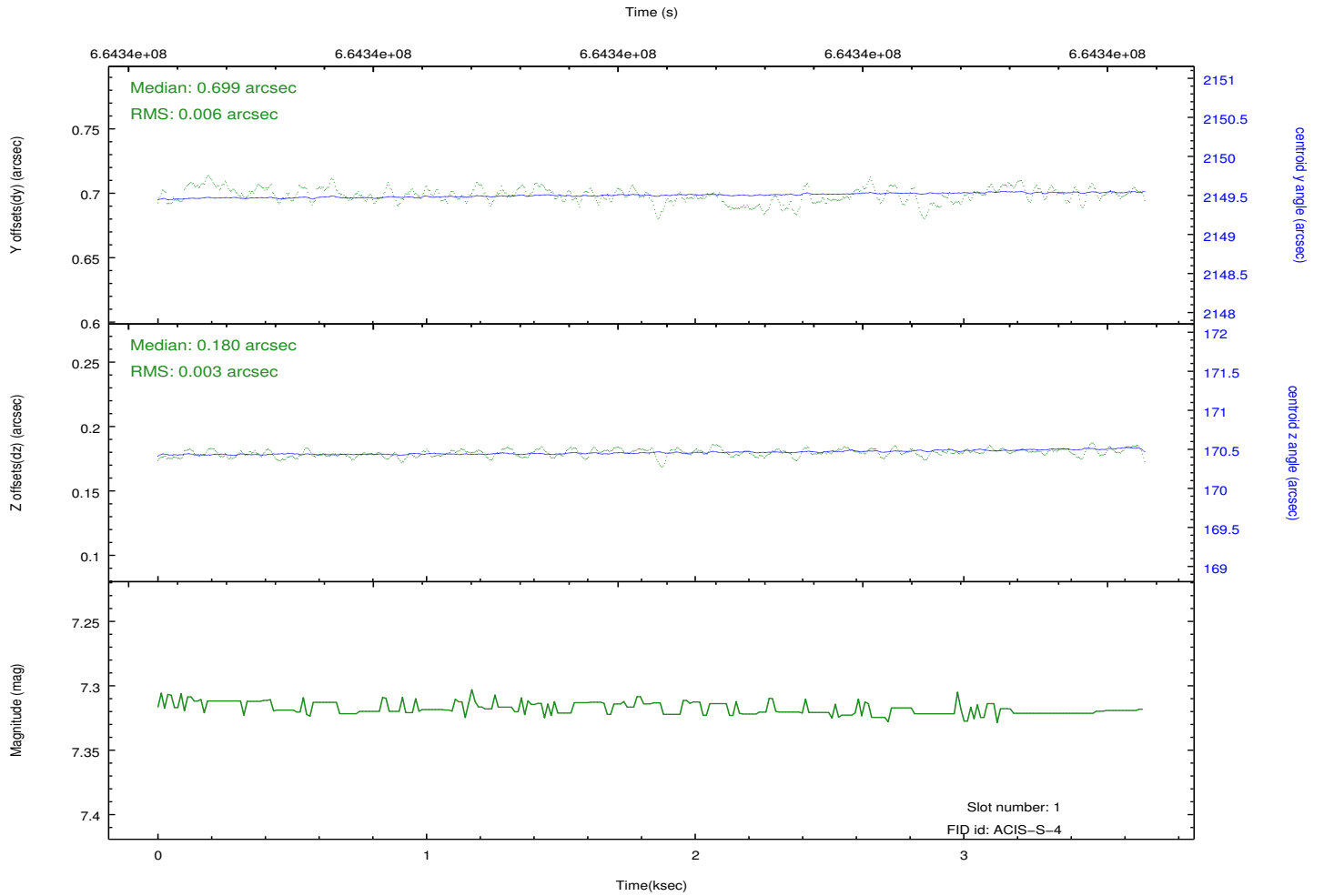
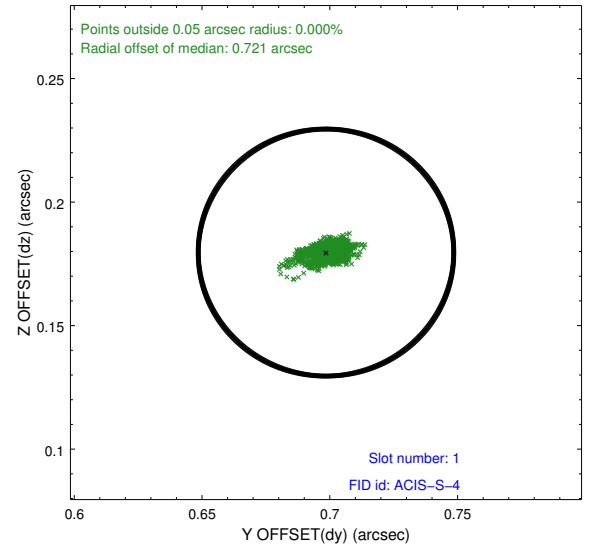
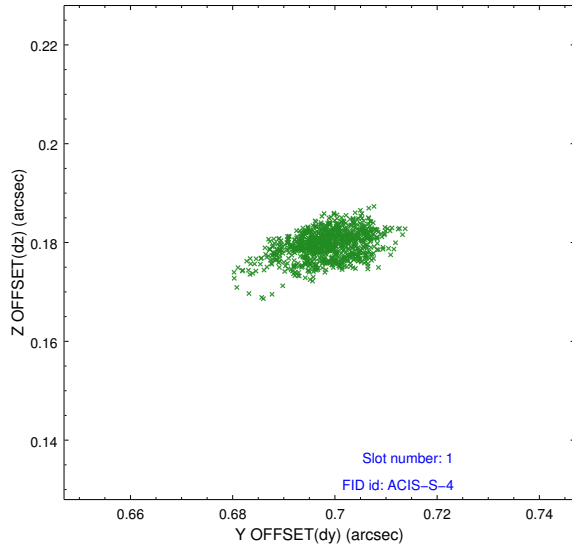


2.5 FID Slots

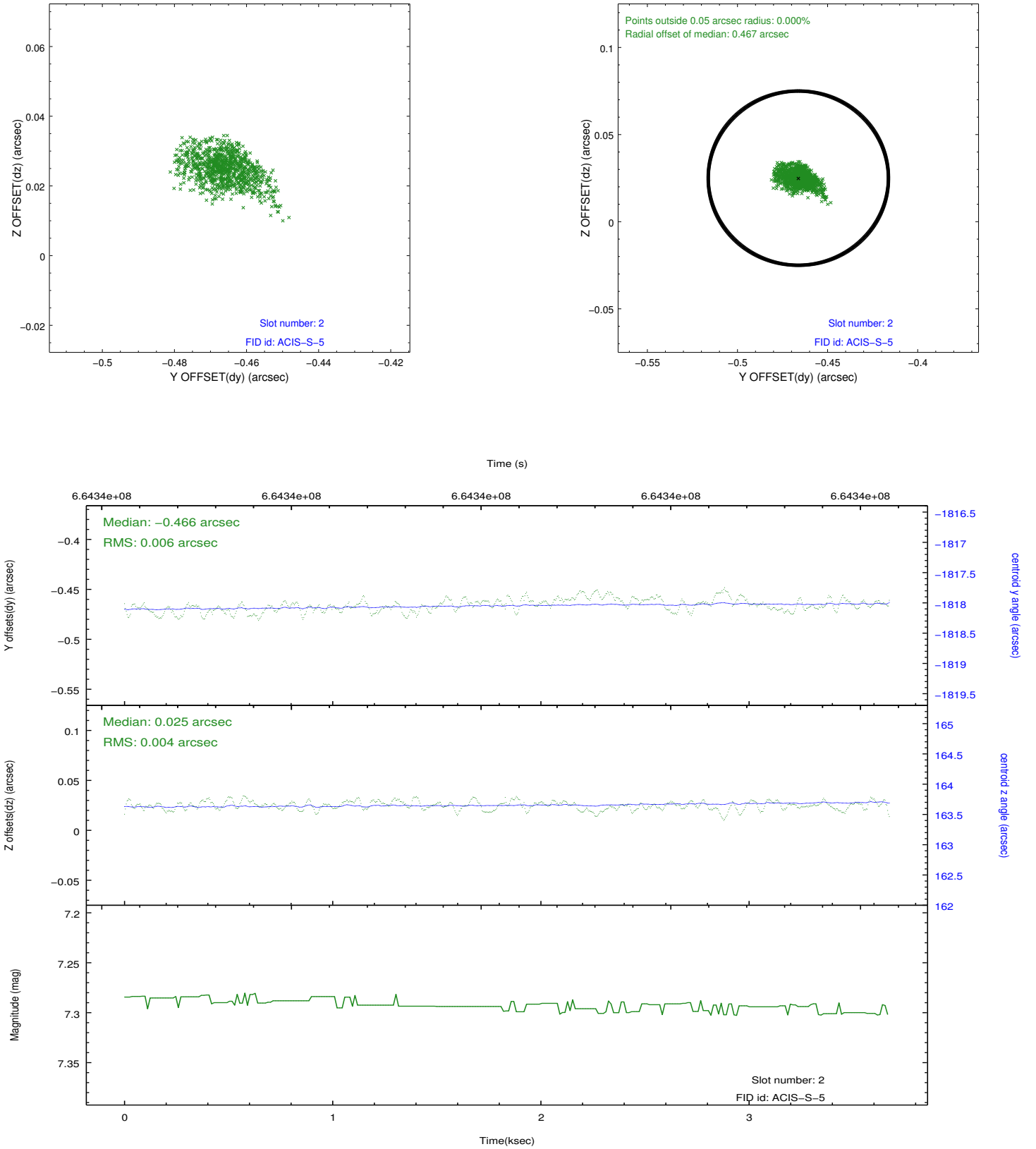
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.01.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	3.5512837810516

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.