

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22244 - L2 Version 1
Chandra X-Ray Center

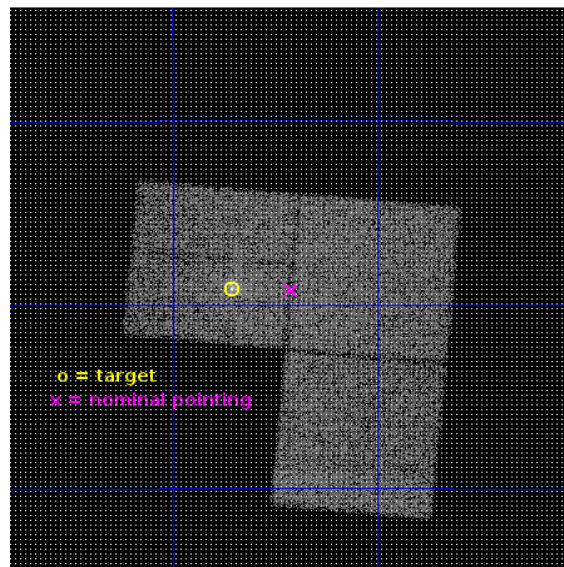
L2 Processing Date : Jun 4 2019

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1 Front

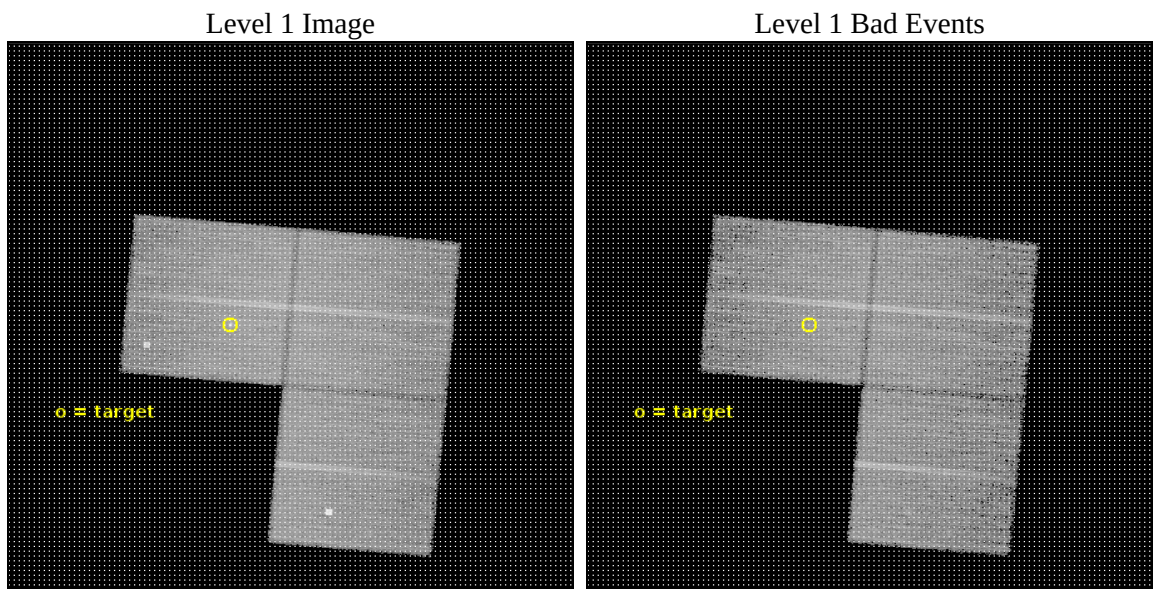
seq_num	502999	Sequence number
obs_id	22244	Observation id
title	The Answer is Blowing in the Wind: Jet Sweepback in Three PWNe	Pro
observer	Roger Romani	Principal investigator
object	PSR J1709-4429	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	257.427724	Observer's specified target RA [deg]
dec_targ	-44.485585	Observer's specified target Dec [deg]
ra_nom	257.3550644427	Nominal RA [deg]
dec_nom	-44.486513509232	Nominal Dec [deg]
roll_nom	5.1577209633629	Nominal Roll [deg]
revision	1	Processing version of data
ontime	30128.486023784	Sum of GTIs [s]
livetime	29734.835173614	Livetime [s]
ontime1	30128.444983721	Sum of GTIs [s]
ontime2	30128.486023784	Sum of GTIs [s]
ontime3	30128.527063727	Sum of GTIs [s]
l2events	80307	Number of level 2 events



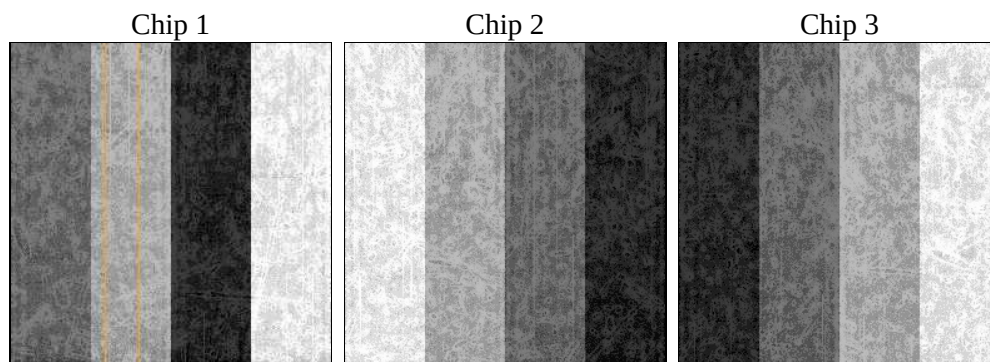
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	30128.486023784	Sum of GTIs [s]
caldsver	4.8.3	 	ontime1	30128.444983721	Sum of GTIs [s]
date	2019-06-04T13:22:31	Date and time of file creation	ontime2	30128.486023784	Sum of GTIs [s]
revision	1	Processing version of data	ontime3	30128.527063727	Sum of GTIs [s]
			l1events	691634	Number of level 1 events

2.1.4 Events

	ccd 1	ccd 2	ccd 3
level 1 events	220930	240119	230585
rejected events	184930	205255	200329
rejected %	83%	85%	86%

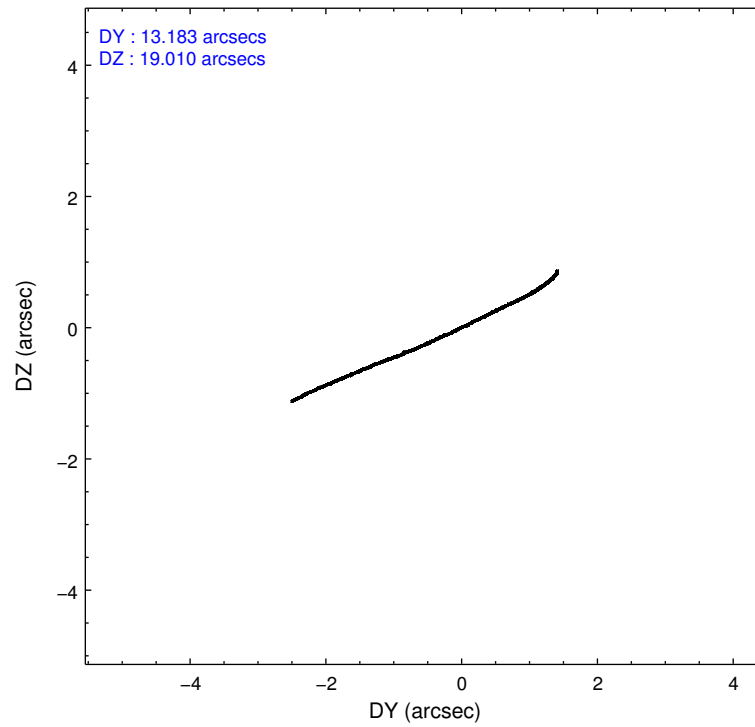
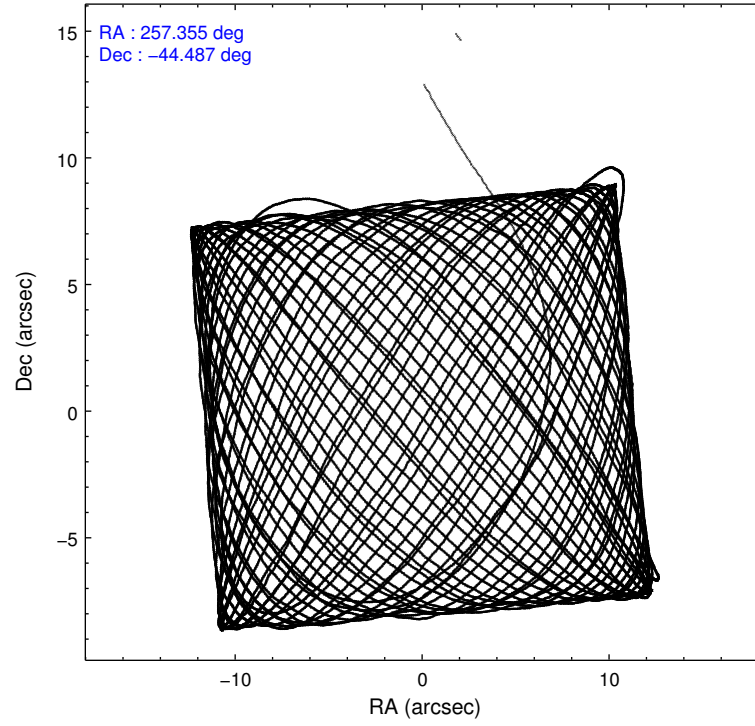
	ccd 1	ccd 2	ccd 3
grade 0 events	16631	17298	13507
	7%	7%	5%
grade 1 events	150	206	144
	0%	0%	0%
grade 2 events	7534	6870	5973
	3%	2%	2%
grade 3 events	2651	2732	2768
	1%	1%	1%
grade 4 events	2511	2699	2612
	1%	1%	1%
grade 5 events	9689	8928	10546
	4%	3%	4%
grade 6 events	6675	5270	5398
	3%	2%	2%
grade 7 events	175089	196116	189637
	79%	81%	82%

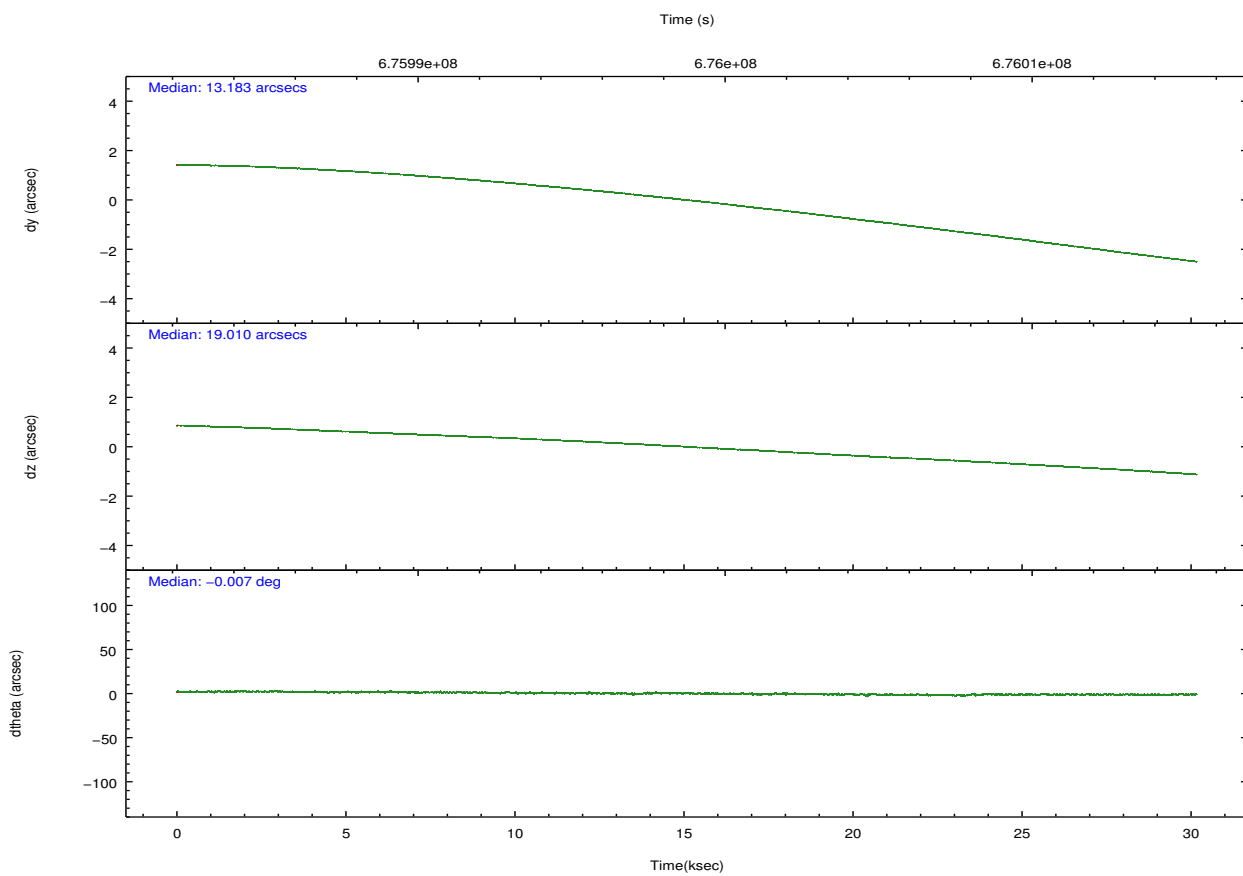
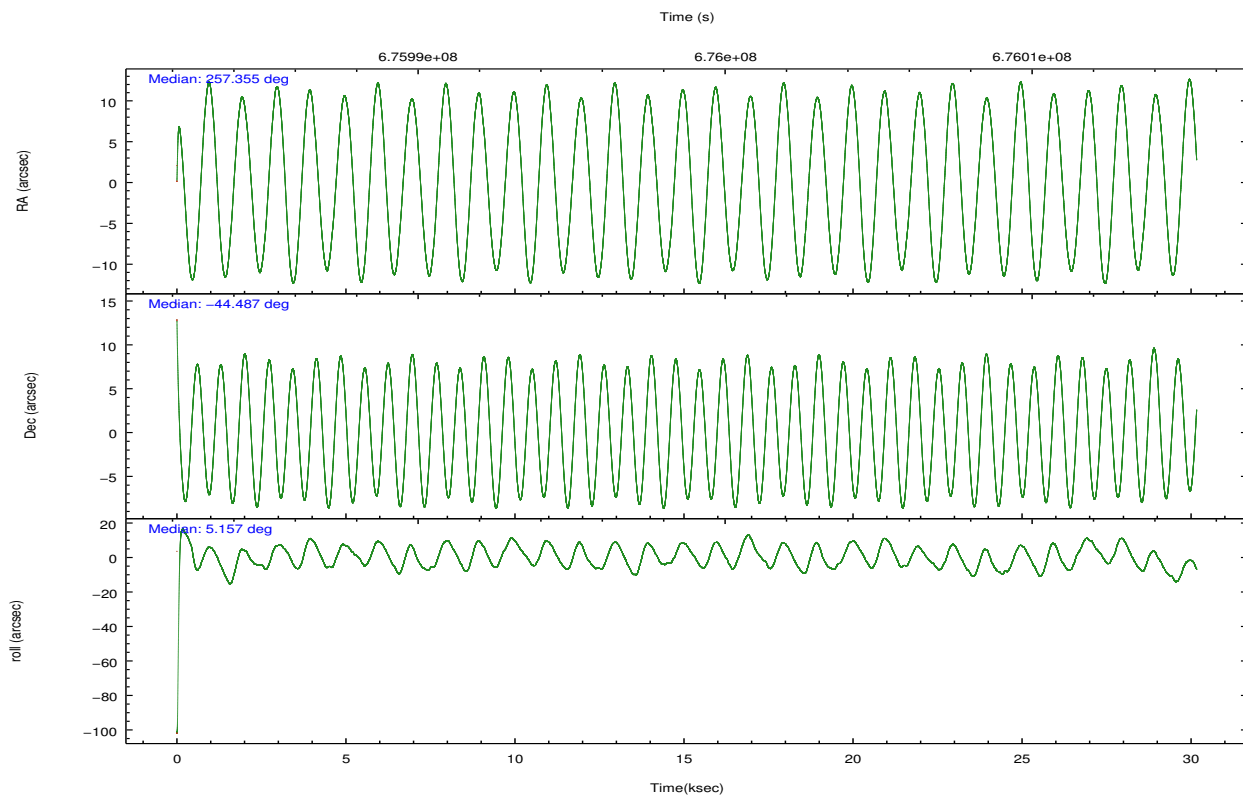
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-123	ACIS-123
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	257.323502	257.3550644427011
[deg] Pointing Dec	-44.502481	-44.48651350923226
[deg] Pointing Roll	4.926963	5.157720963362894
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-226.279963	-226.2858628250985
[mm] SIM translation stage offset	-7.3125	-7.306590177831225
[s] Observation start time (MET)	675983846.184000	675982118.5323499
Observation start date	2019-06-03T21:16:17	2019-06-03T20:48:38
[s] Observation end time (MET)	676013846.184000	676014958.50932
Observation end date	2019-06-04T05:36:17	2019-06-04T05:55:58
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	O1	N
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	N	N
CCD S3 on	N	N
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	1	1
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect



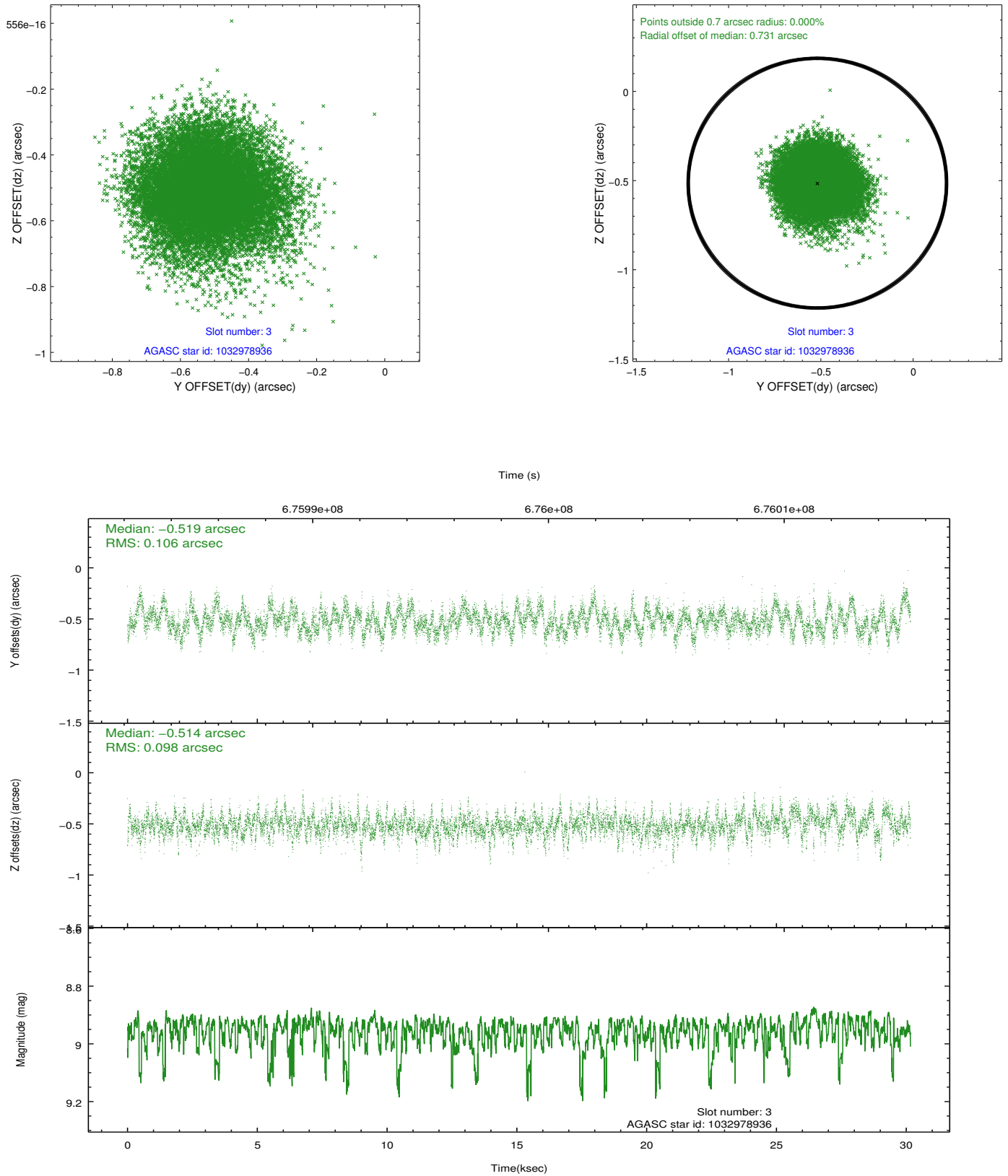


Slot Statistics

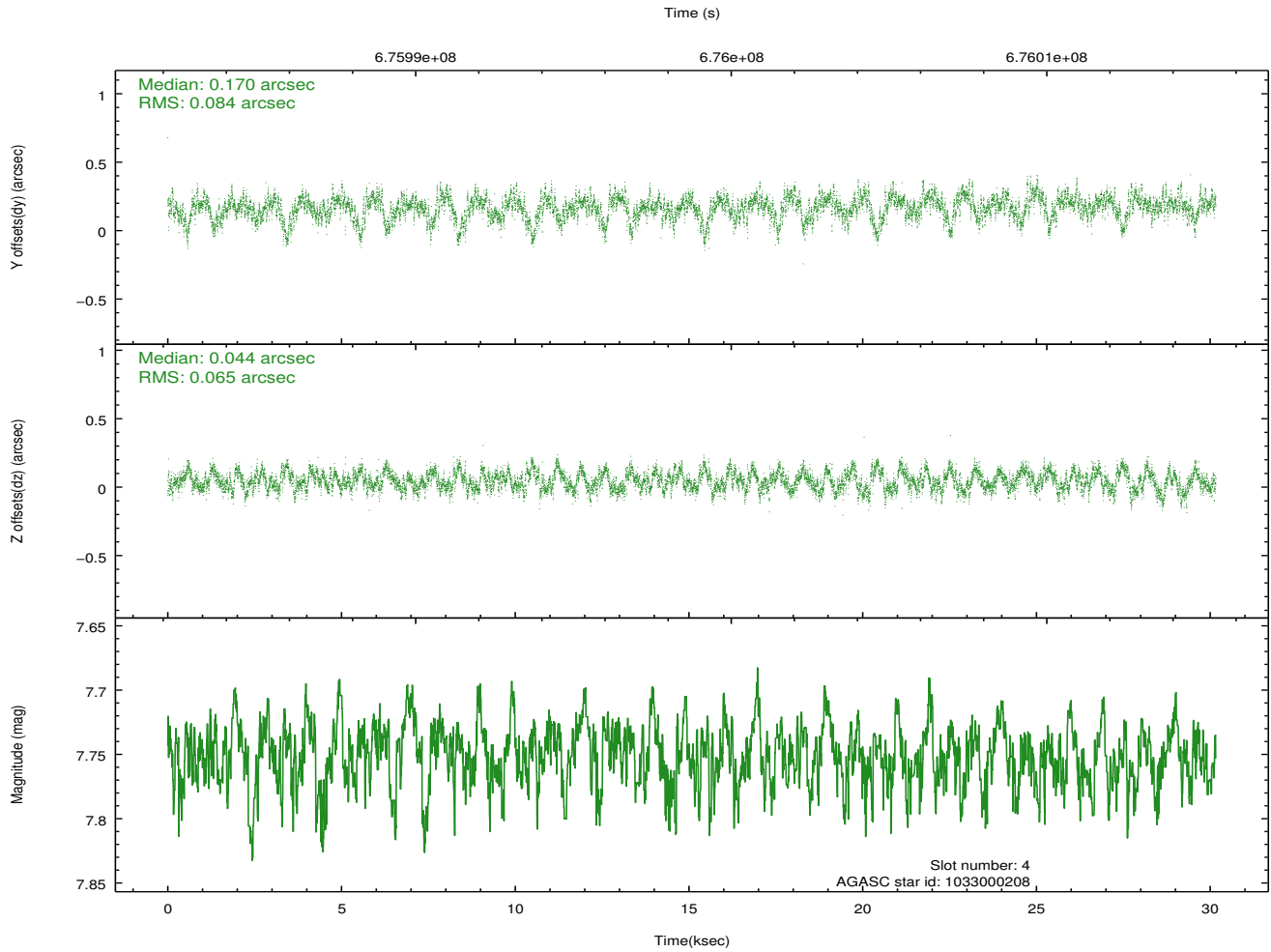
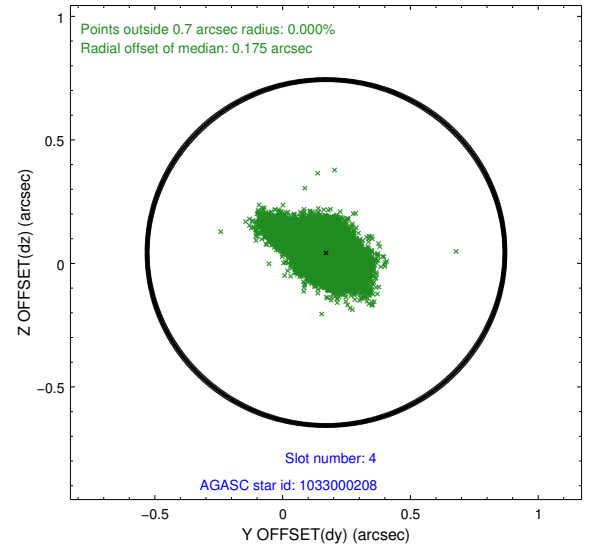
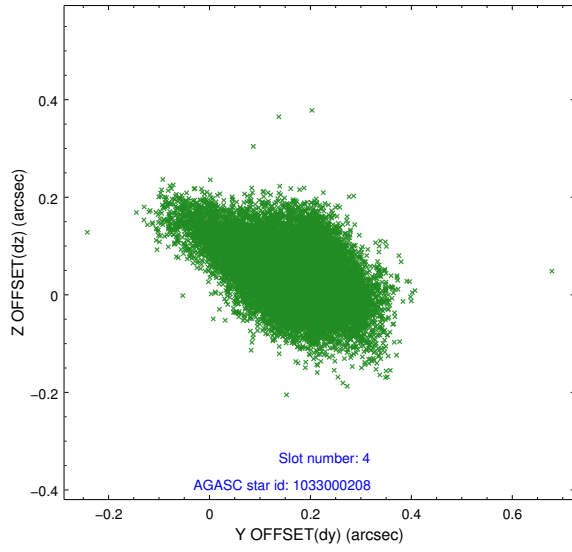
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.16	7358	1.000	0.132	-0.114	0.029	0.043	0.000000	0.000000	926.59	-992
1	FID		ACIS-I-5	7.21	7358	1.000	-0.541	0.030	0.018	0.027	0.000000	0.000000	-1822.31	904
2	FID		ACIS-I-6	7.20	7358	1.000	0.317	0.159	0.021	0.041	0.000000	0.000000	392.03	1549
3	GUIDE	used	1032978936	8.95	14691	1.000	-0.519	-0.514	0.155	0.249	257.447182	-44.360307	361.61	482
4	GUIDE	used	1033000208	7.75	14713	1.000	0.170	0.044	0.107	0.195	256.502750	-44.372681	-2063.65	637
5	GUIDE	used	1033111224	8.93	14697	1.000	-0.144	-0.259	0.186	0.304	257.844751	-44.847109	1219.35	-1354
6	GUIDE	used	1091569256	8.36	14706	1.000	0.176	0.360	0.121	0.204	257.146819	-45.037377	-611.95	-1879
7	GUIDE	used	1091578128	8.58	14709	1.000	0.317	0.382	0.125	0.202	257.198938	-45.154577	-514.97	-2311

2.4 Star Slots

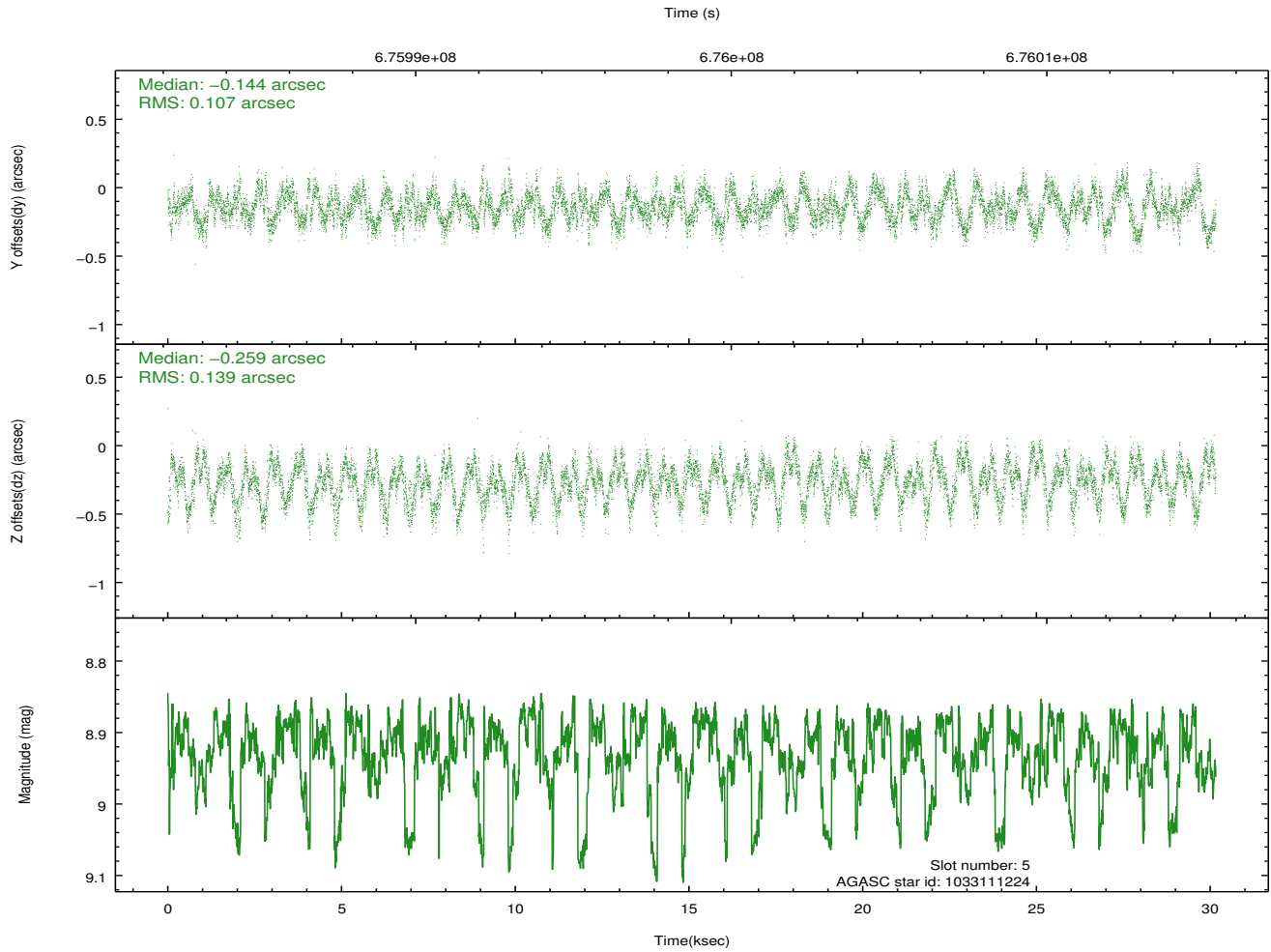
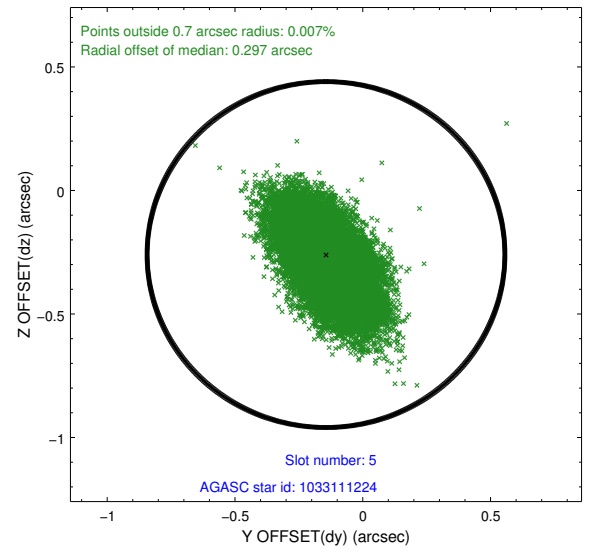
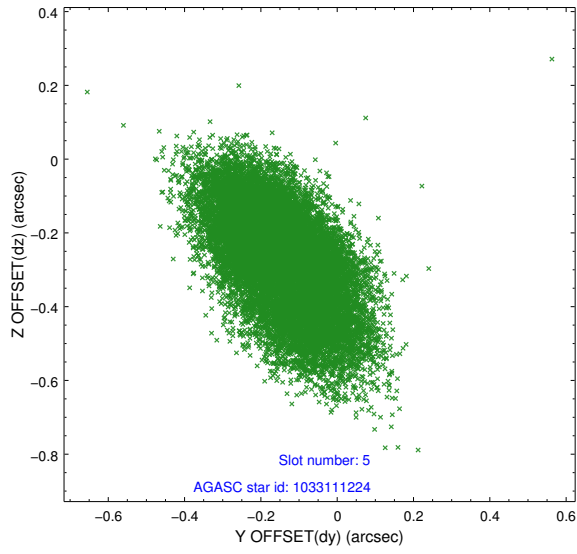
2.4.1 Slot 3



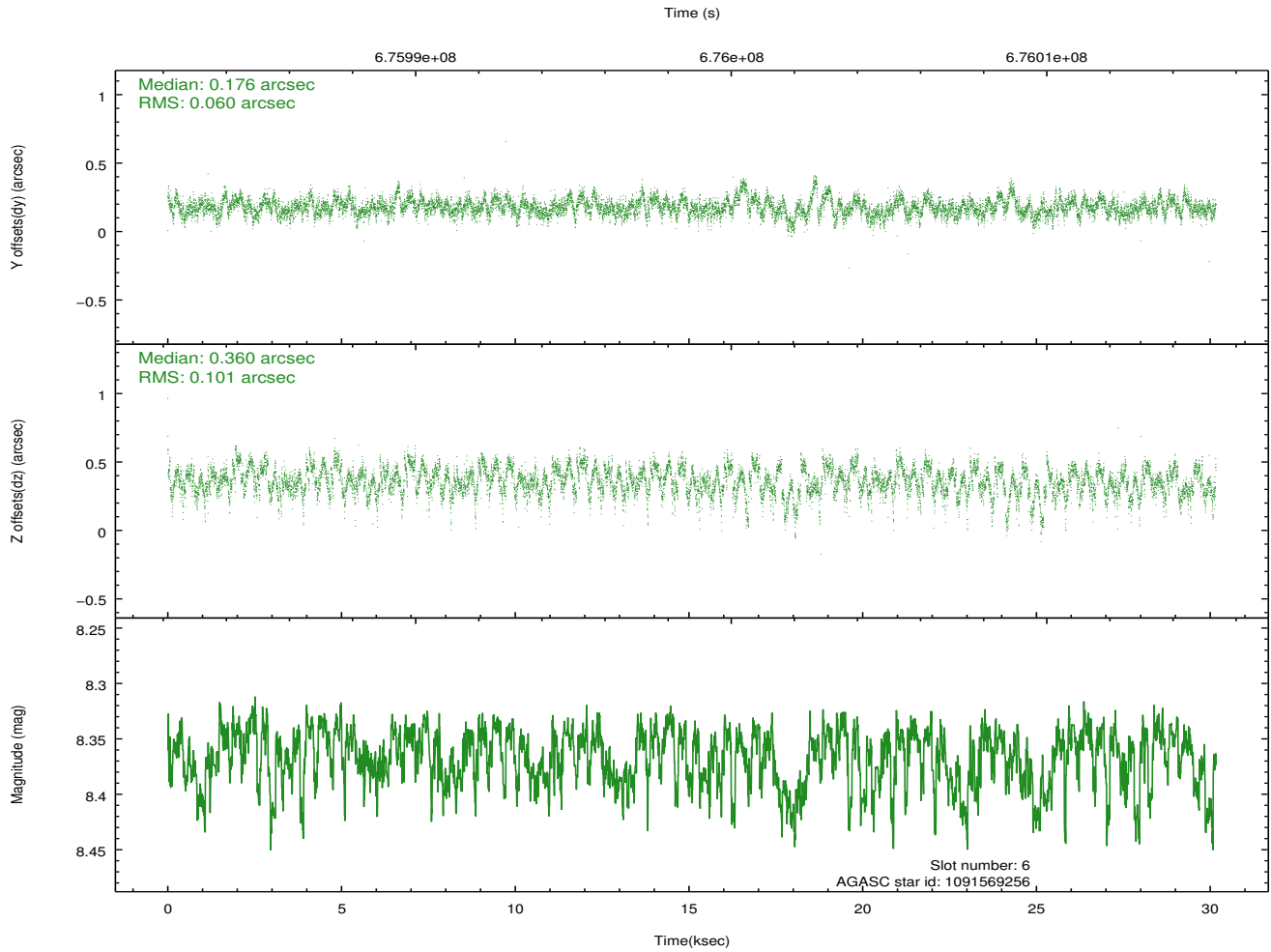
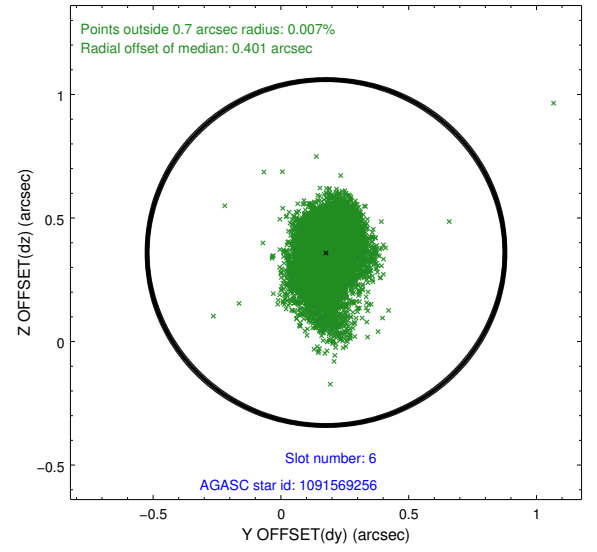
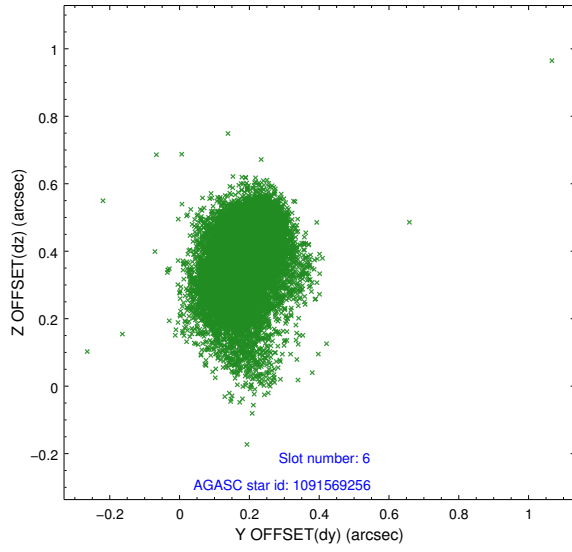
2.4.2 Slot 4



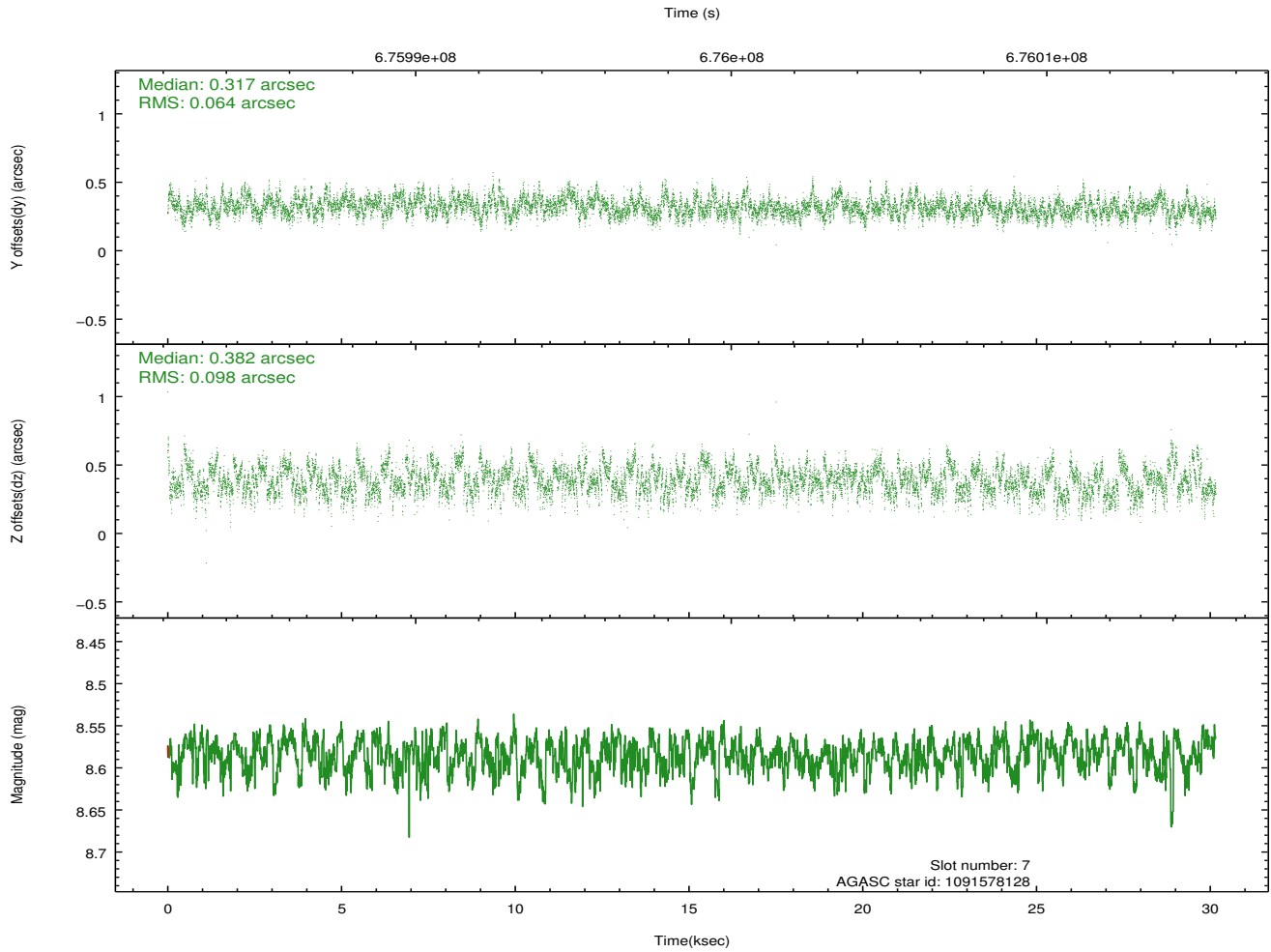
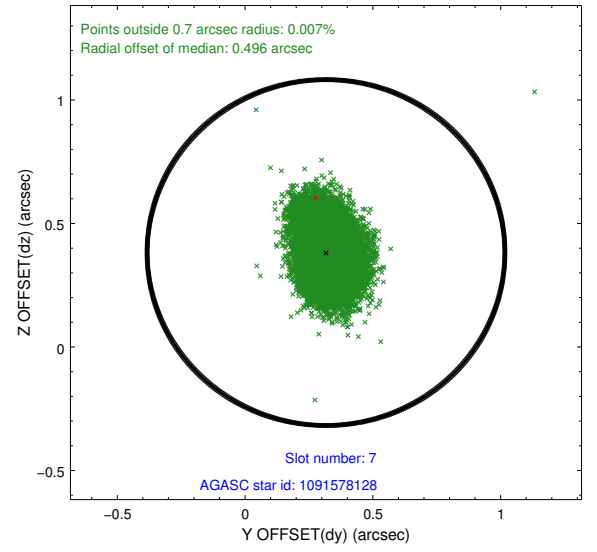
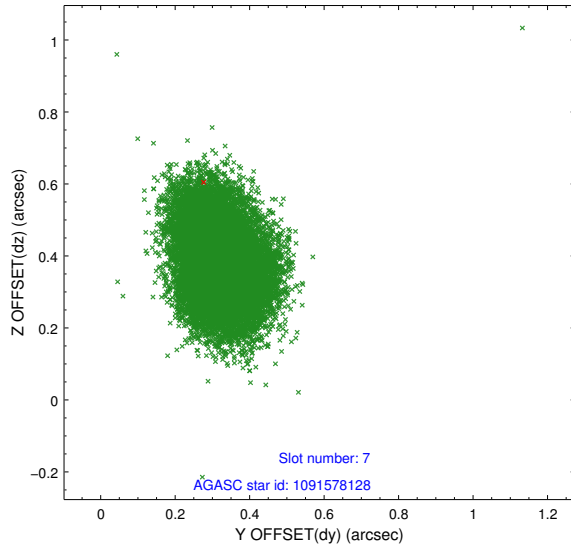
2.4.3 Slot 5



2.4.4 Slot 6

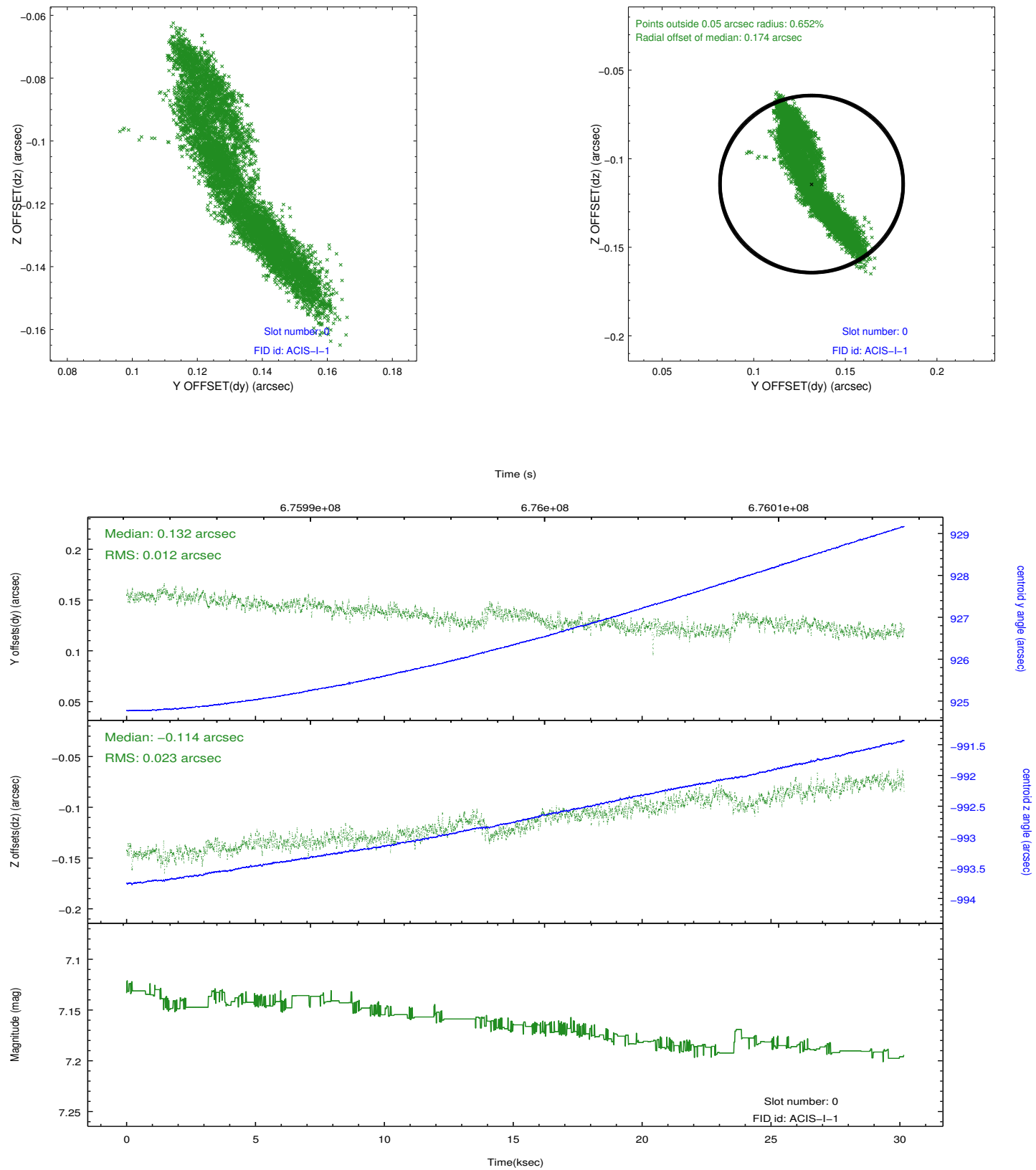


2.4.5 Slot 7

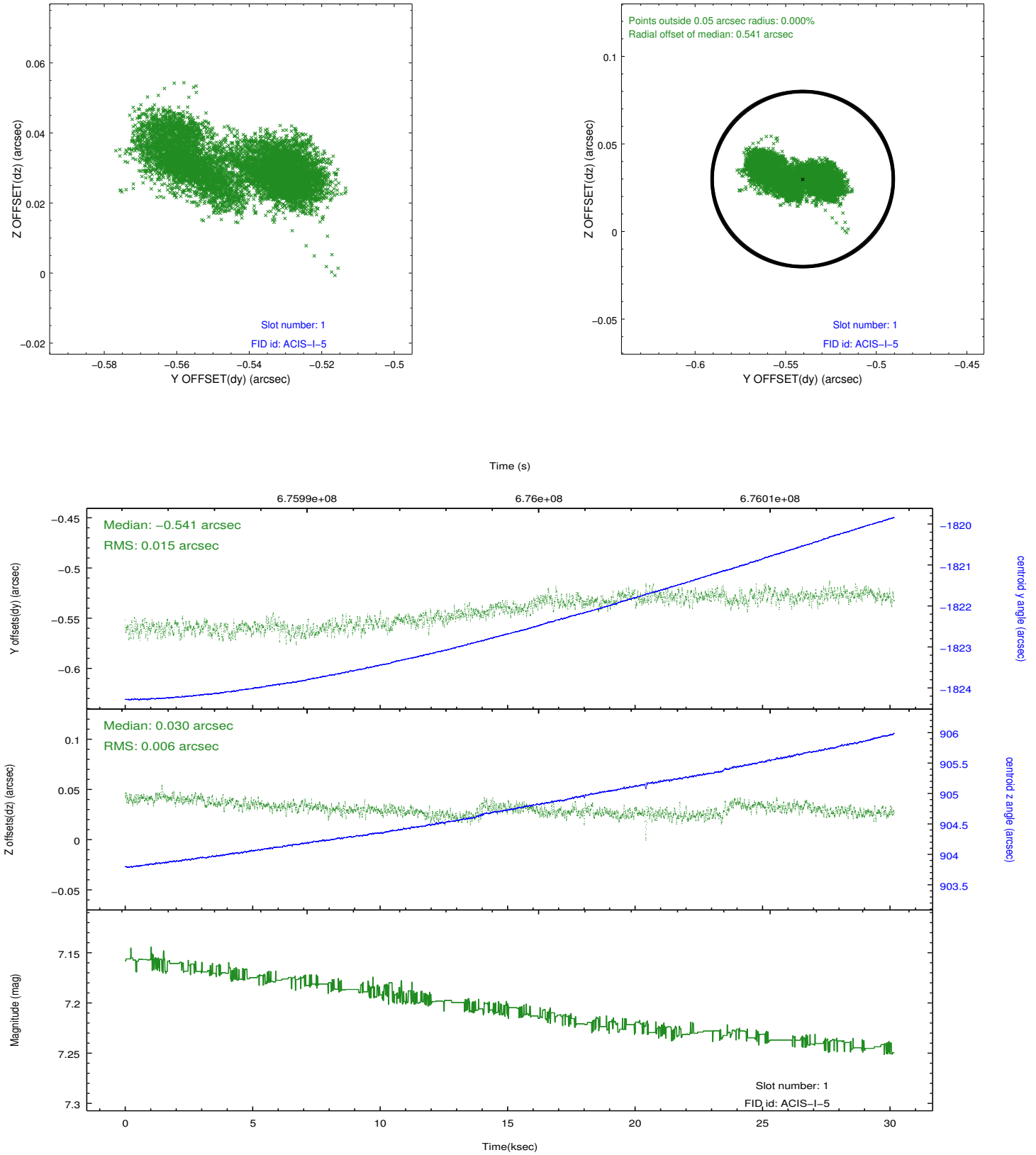


2.5 FID Slots

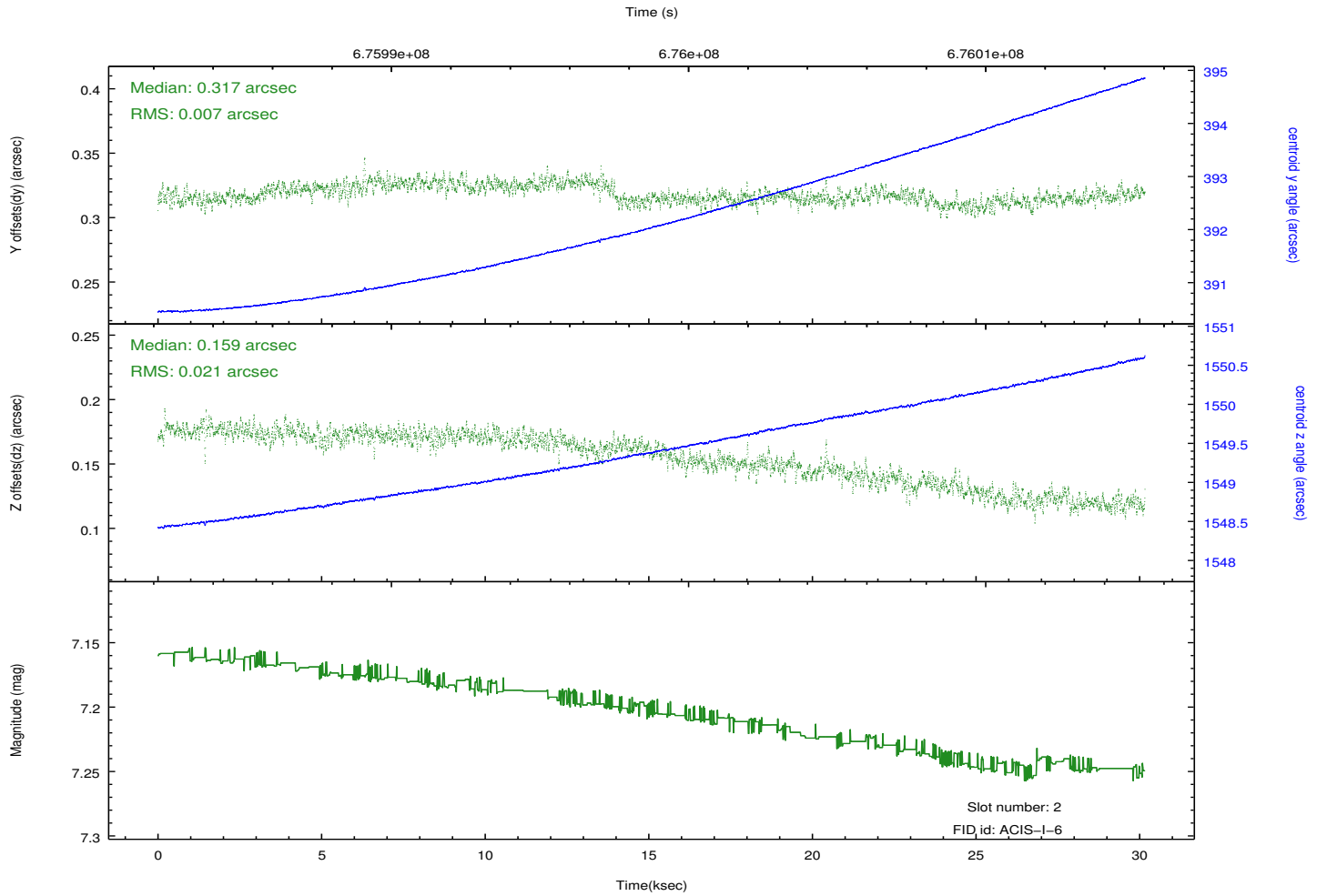
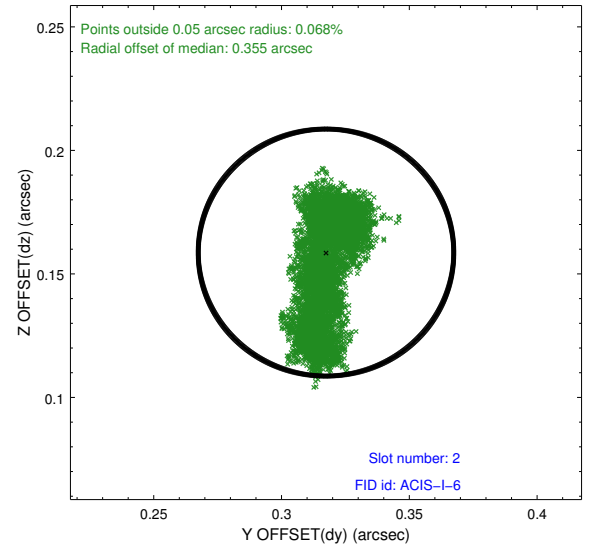
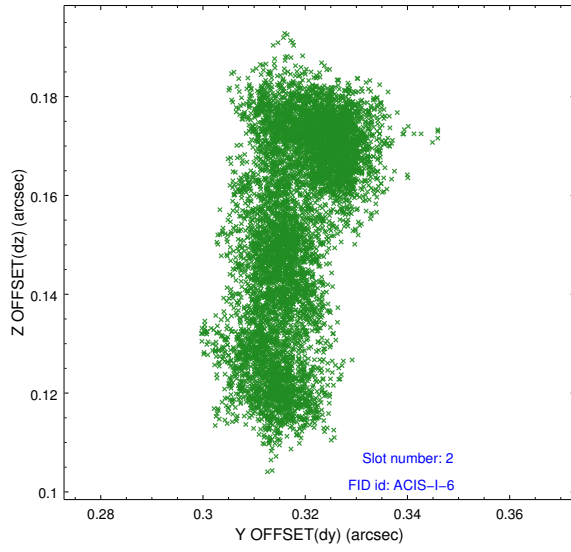
2.5.1 Slot 0



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)	2019.06.04
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.128486023784

A.2 Comments

One optional chip was dropped.

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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/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.