

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22233 - L2 Version 1
Chandra X-Ray Center

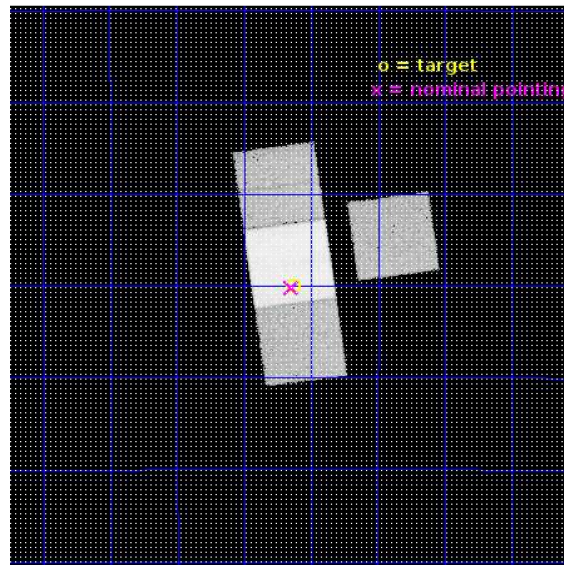
L2 Processing Date : Jun 2 2019

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1 Front

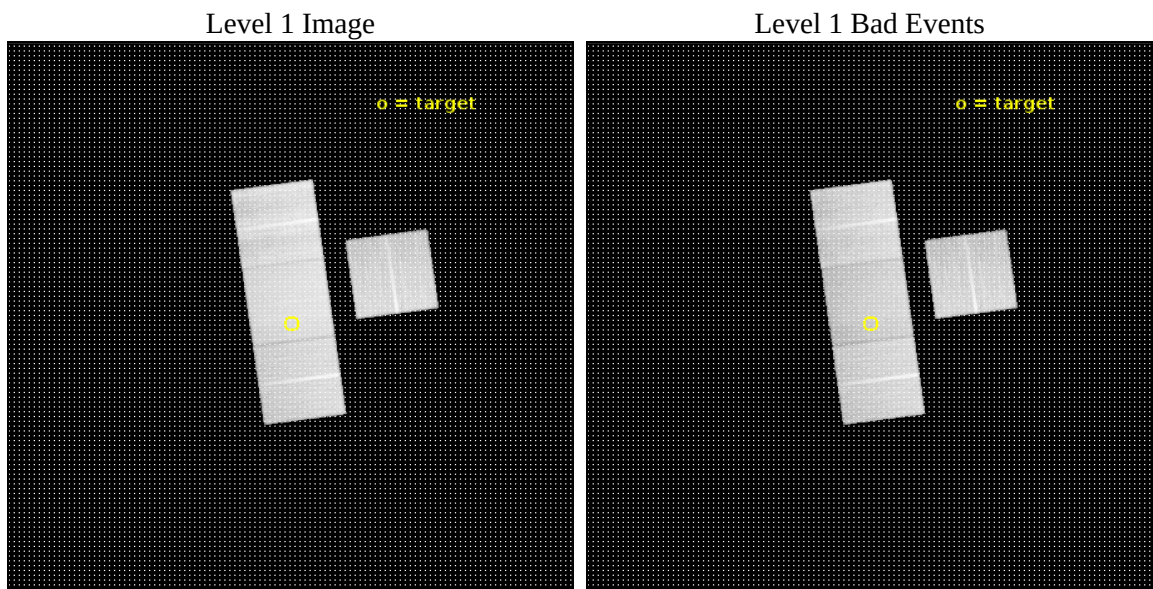
seq_num	703572	Sequence number
obs_id	22233	Observation id
title	Did the first quasars come in pairs? Chandra/ALMA synergistic observations of quasars at $z > 6$	Proposal title
observer	Eduardo Banados	Principal investigator
object	P231-20	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	231.657917	Observer's specified target RA [deg]
dec_targ	-20.833972	Observer's specified target Dec [deg]
ra_nom	231.6615521351	Nominal RA [deg]
dec_nom	-20.836739699402	Nominal Dec [deg]
roll_nom	262.15790162595	Nominal Roll [deg]
revision	1	Processing version of data
ontime	40200.167552114	Sum of GTIs [s]
livetime	39674.922768112	Livetime [s]
ontime3	40196.944401979	Sum of GTIs [s]
ontime6	40200.12651217	Sum of GTIs [s]
ontime7	40200.167552114	Sum of GTIs [s]
ontime8	40193.762301803	Sum of GTIs [s]
l2events	256297	Number of level 2 events



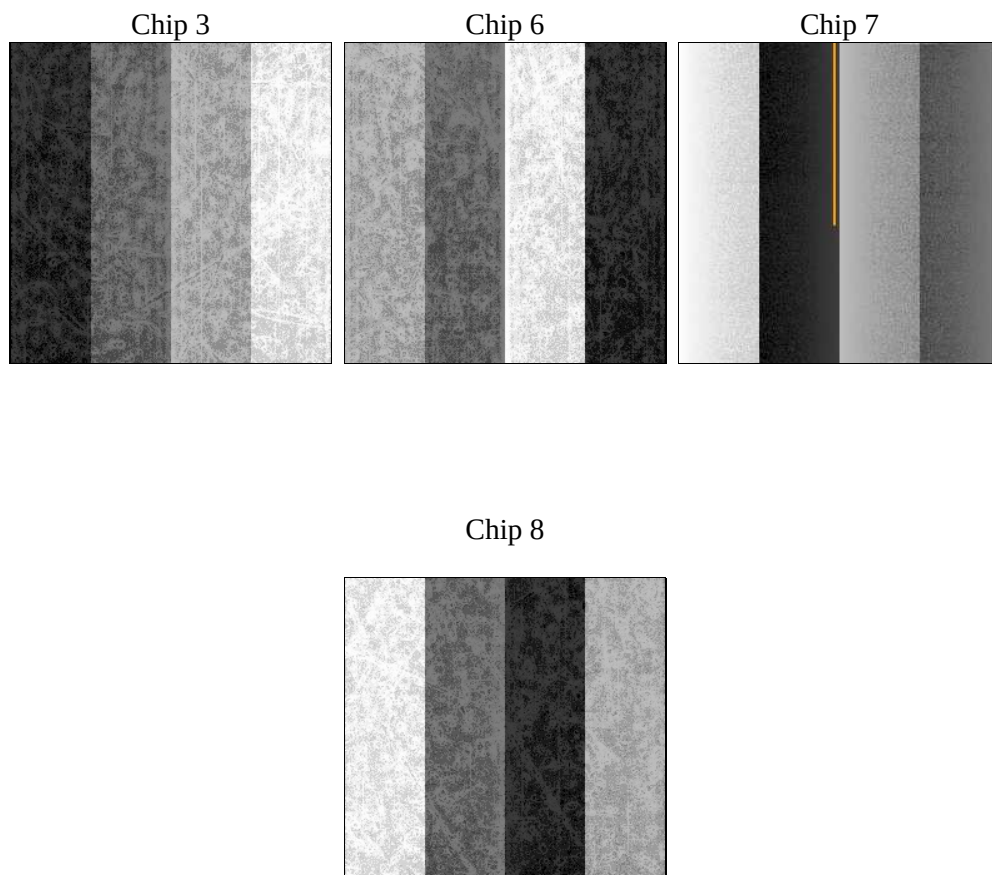
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	40136.141000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	40200.167552114	Sum of GTIs [s]
caldsver	4.8.3	 	ontime3	40196.944401979	Sum of GTIs [s]
date	2019-06-02T13:37:41	Date and time of file creation	ontime6	40200.12651217	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	40200.167552114	Sum of GTIs [s]
			ontime8	40193.762301803	Sum of GTIs [s]
			l1events	1421812	Number of level 1 events

2.1.4 Events

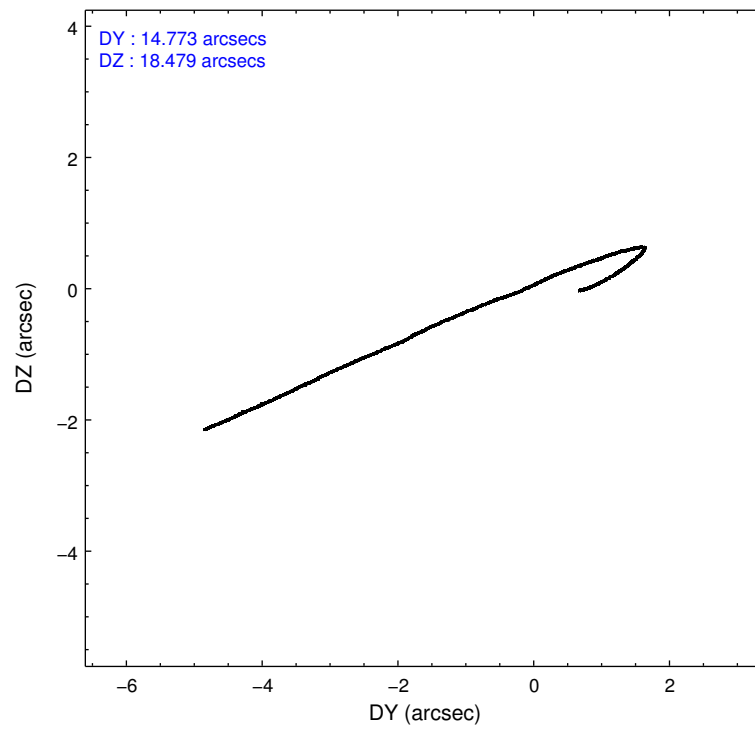
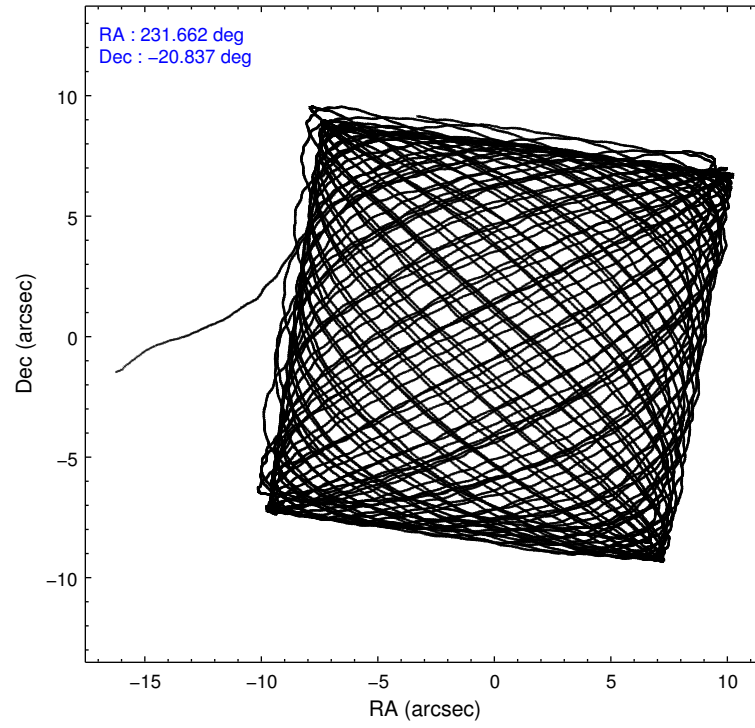
	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	304246	321119	396972	399475
rejected events	273754	286170	227146	299605
rejected %	89%	89%	57%	74%

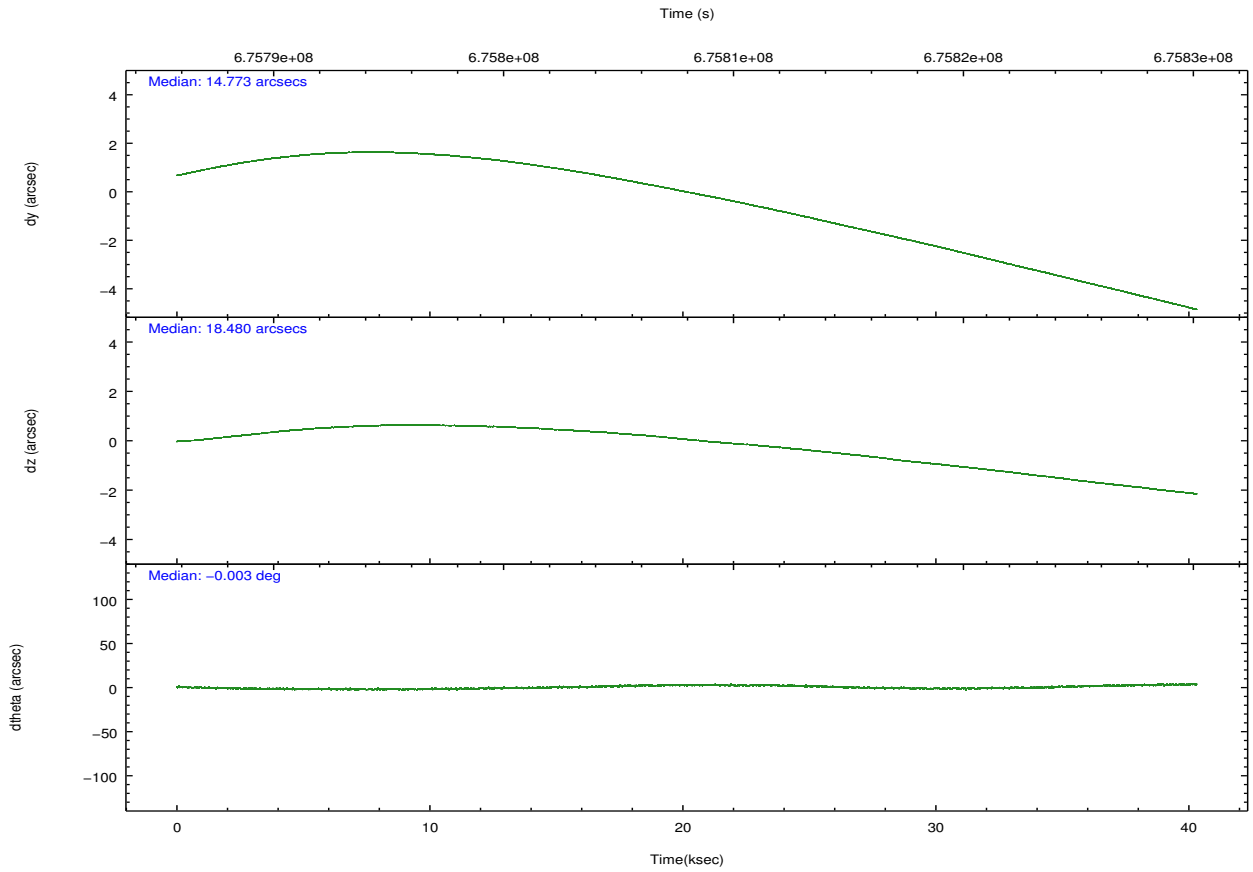
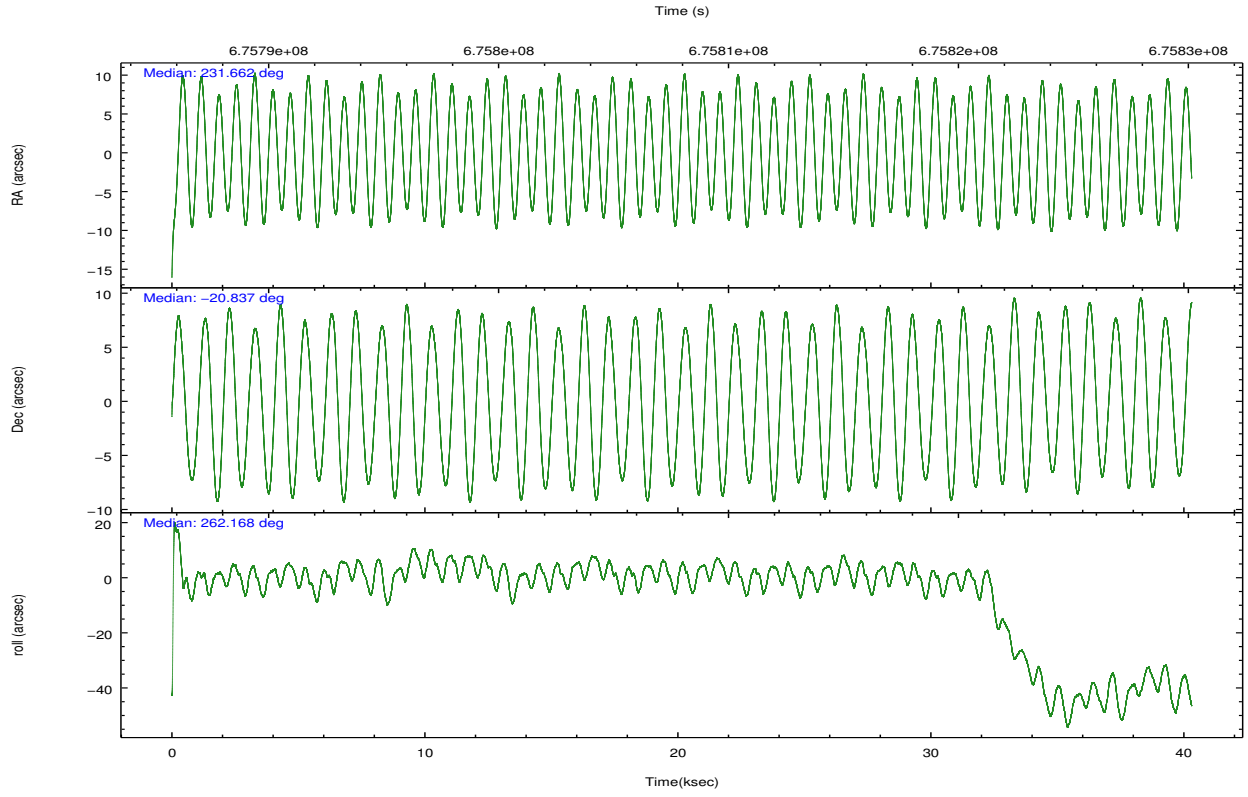
	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	10349	10359	13818	27300
	3%	3%	3%	6%
grade 1 events	150	156	583	285
	0%	0%	0%	0%
grade 2 events	6913	9338	35701	25154
	2%	2%	8%	6%
grade 3 events	3105	3051	13047	9893
	1%	0%	3%	2%
grade 4 events	3216	2941	12810	9098
	1%	0%	3%	2%
grade 5 events	13604	12968	37910	20912
	4%	4%	9%	5%
grade 6 events	6913	9267	94482	28456
	2%	2%	23%	7%
grade 7 events	259996	273039	188621	278377
	85%	85%	47%	69%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-3678	ACIS-3678	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	231.650117	231.6615521351004	CCD I2 on	O1	N
[deg] Pointing Dec	-20.811466	-20.83673969940213	CCD I3 on	Y	Y
[deg] Pointing Roll	261.997231	262.1579016259527	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)	675787977.184000	675787057.94566	CCD S5 on	N	N
Observation start date	2019-06-01T14:51:48	2019-06-01T14:37:37	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	675828113.184000	675829203.38569	On-chip summing requested	N	N
Observation end date	2019-06-02T02:00:44	2019-06-02T02:20:03	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



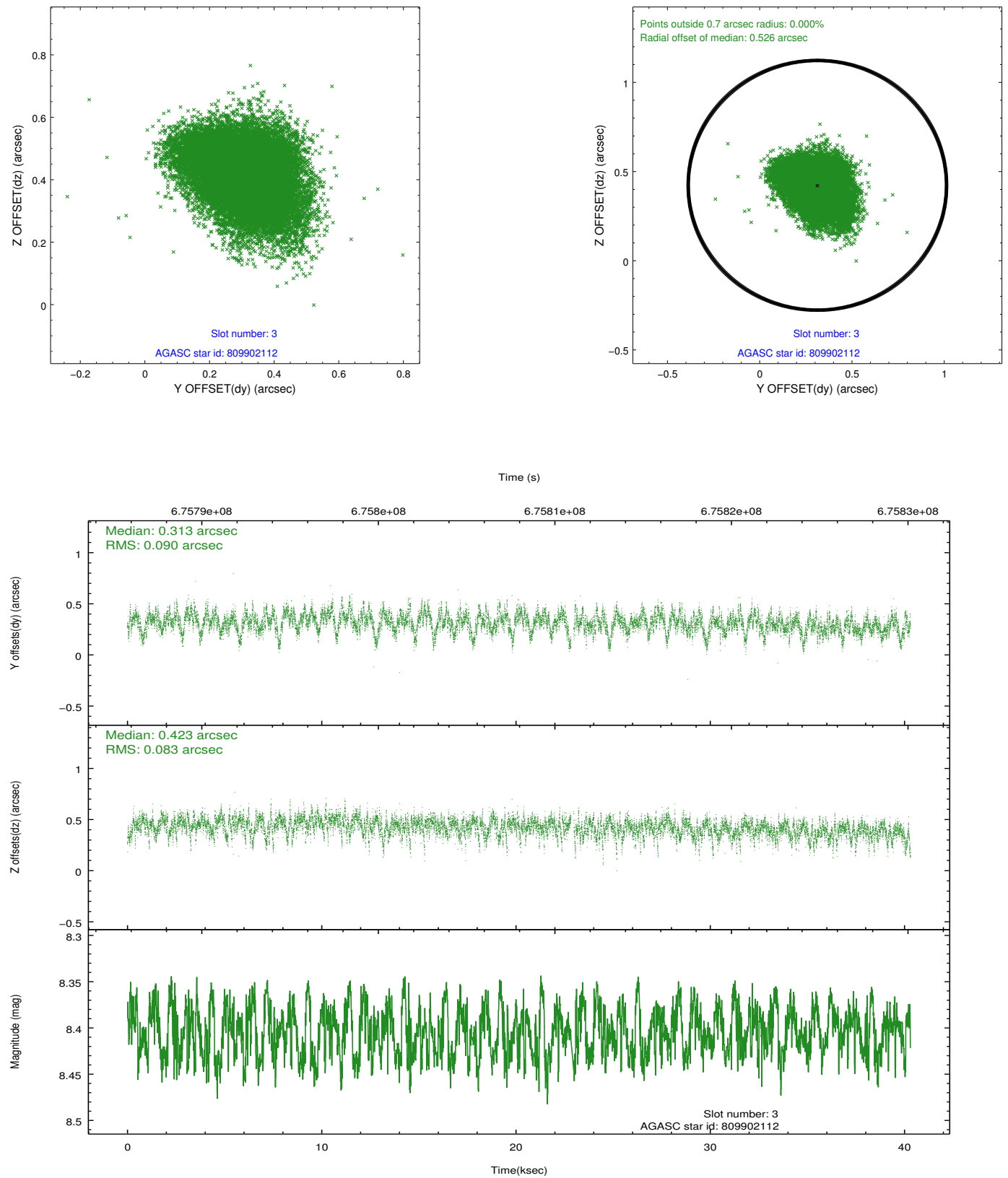


Slot Statistics

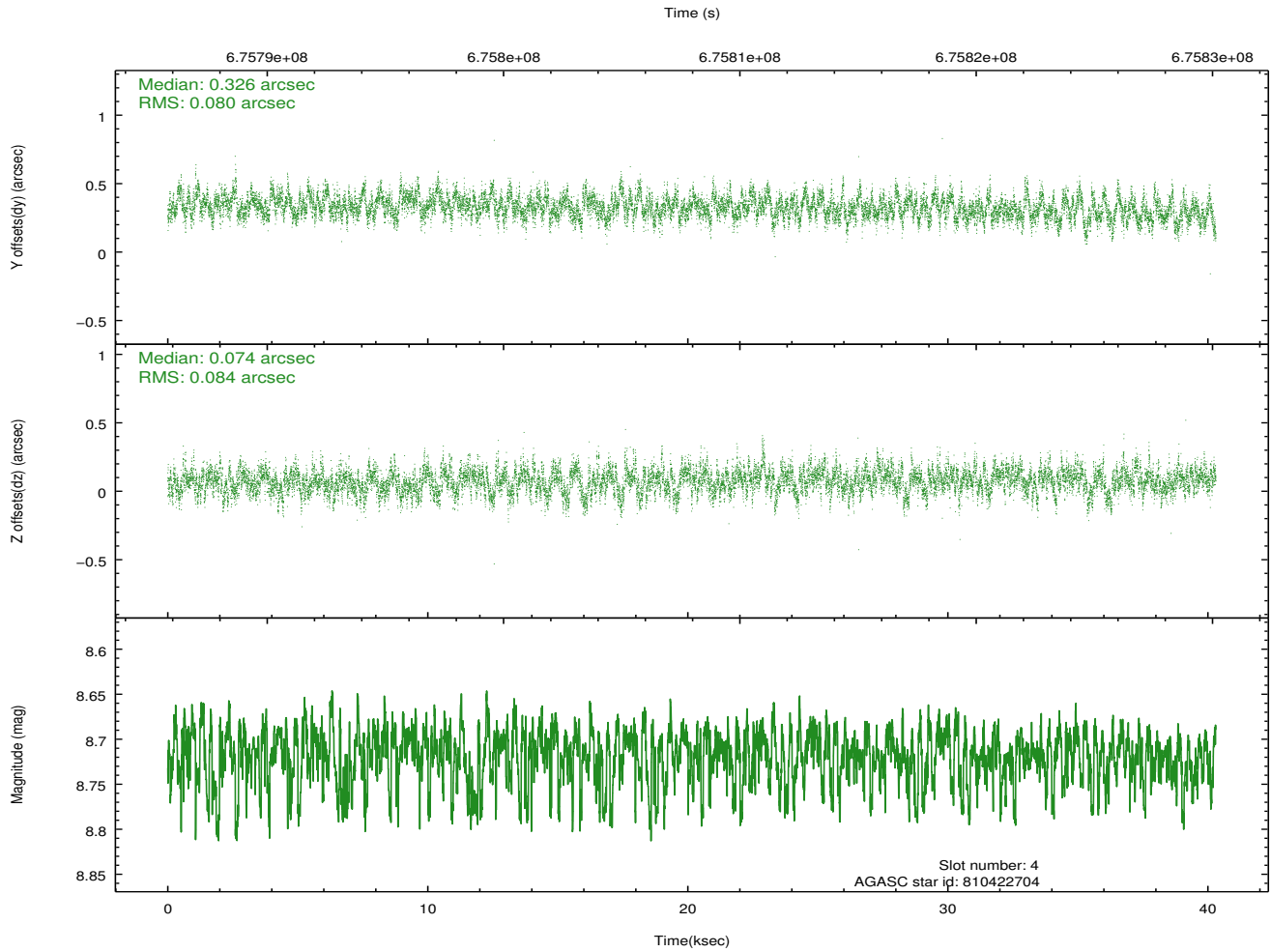
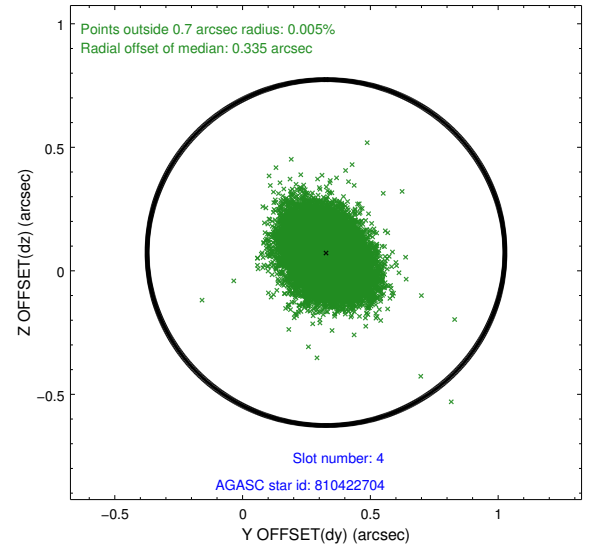
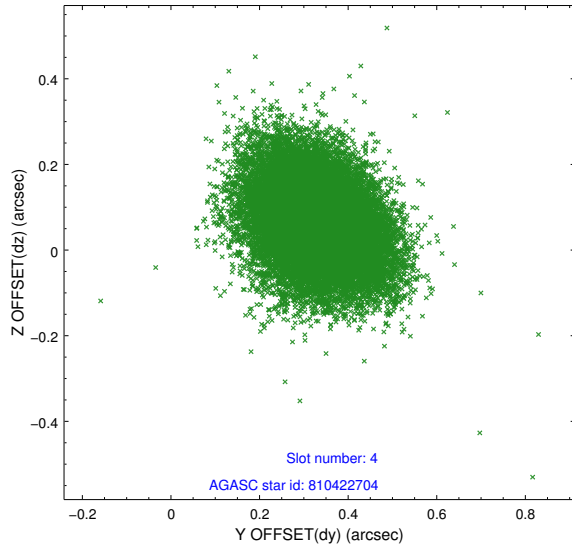
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.10	9831	1.000	-0.483	-0.331	0.037	0.092	0.000000	0.000000	-767.62	-1739
1	FID		ACIS-S-4	7.23	9832	1.000	0.514	0.282	0.039	0.077	0.000000	0.000000	2146.66	169
2	FID		ACIS-S-6	7.37	9831	1.000	-0.061	0.054	0.014	0.026	0.000000	0.000000	394.84	806
3	GUIDE	used	809902112	8.40	19581	1.000	0.313	0.423	0.128	0.218	231.645523	-20.497925	-1115.34	-172
4	GUIDE	used	810422704	8.72	19638	1.000	0.326	0.074	0.122	0.203	231.775902	-20.741055	-308.18	383
5	GUIDE	used	810423632	6.79	19660	1.000	0.069	0.101	0.102	0.160	231.522346	-21.380235	2086.93	-140
6	GUIDE	used	812128128	6.99	19660	1.000	-0.368	-0.373	0.095	0.158	232.077647	-21.209568	1220.93	1620
7	GUIDE	used	812134616	9.69	19401	1.000	-0.357	-0.227	0.233	0.376	232.079719	-21.377780	1819.88	1709

2.4 Star Slots

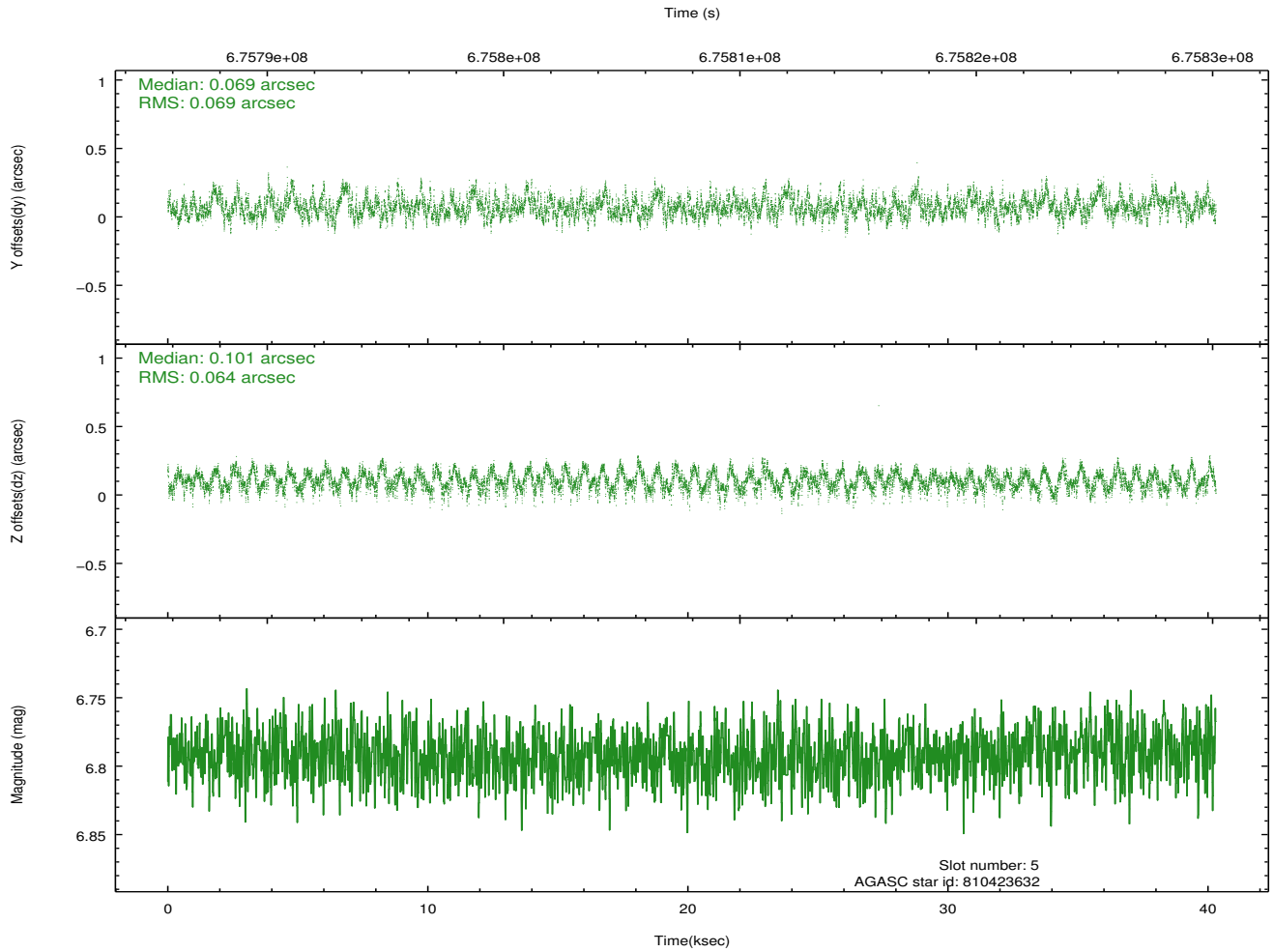
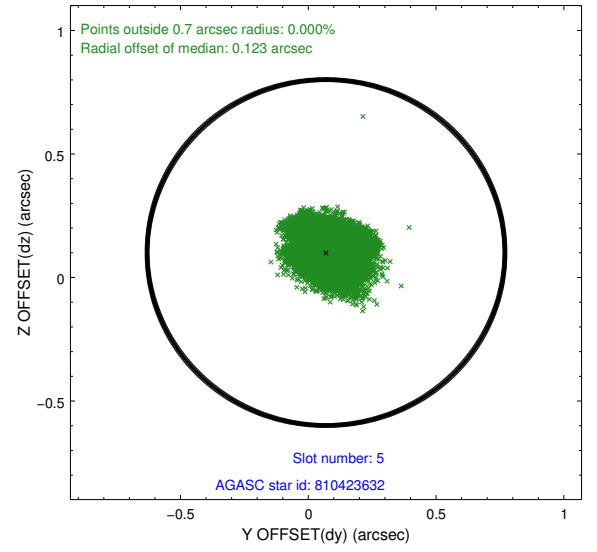
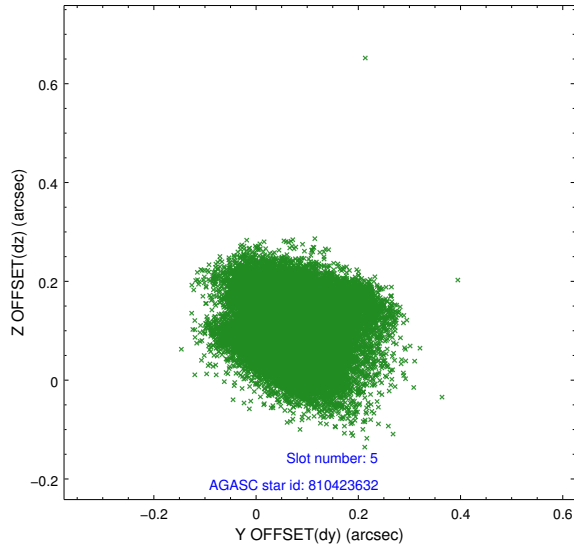
2.4.1 Slot 3



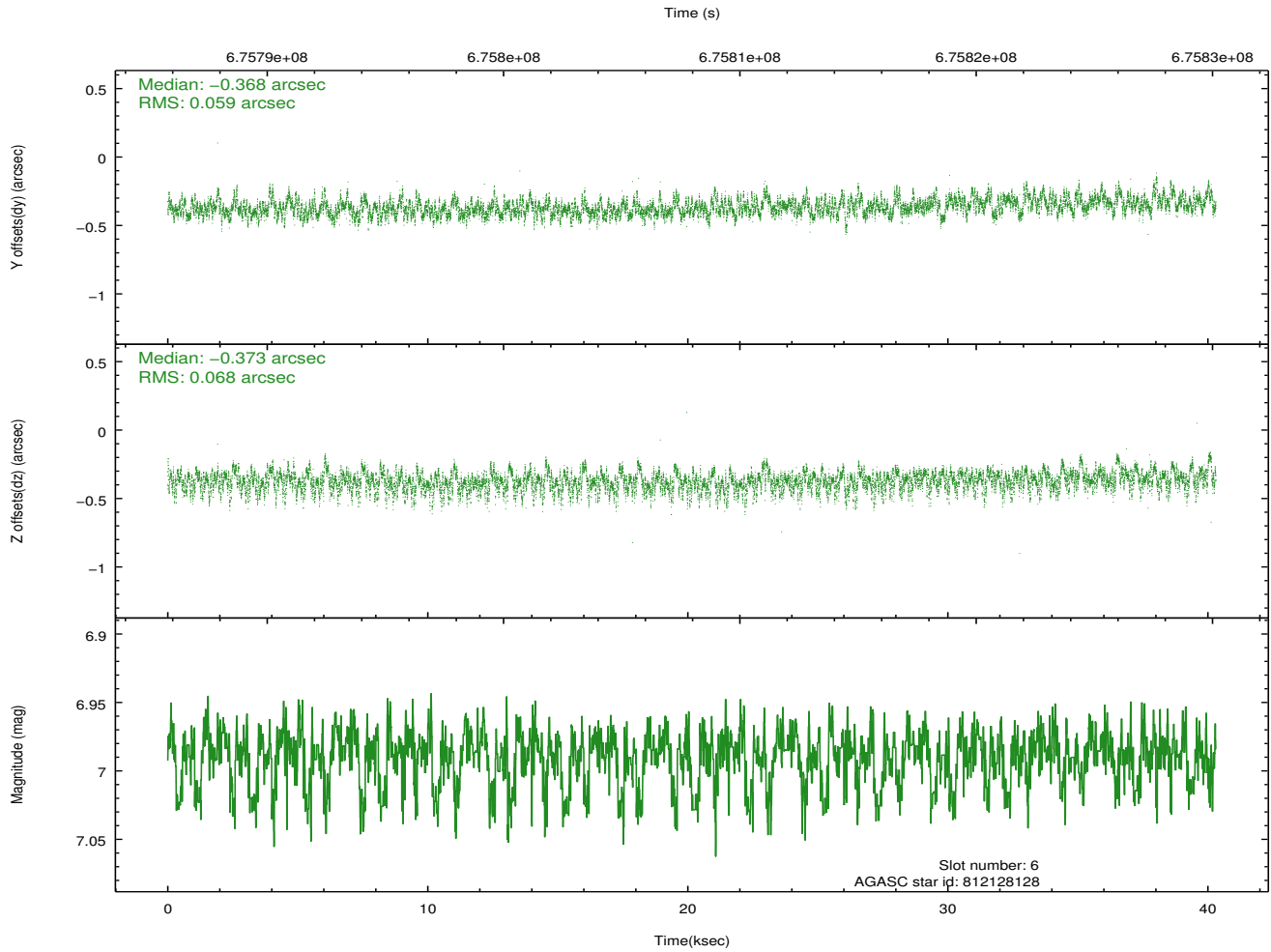
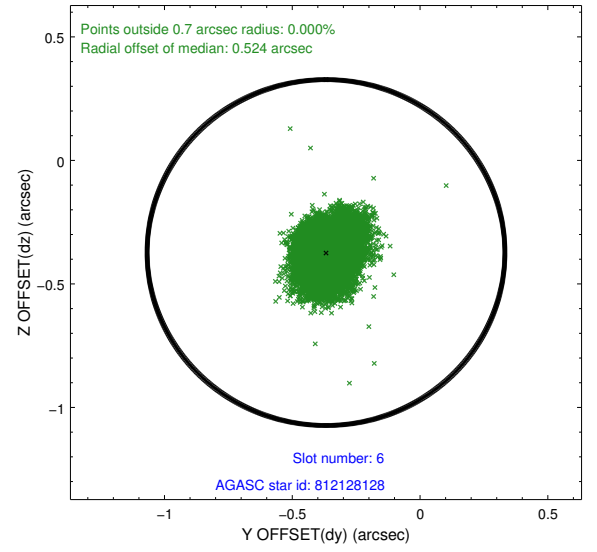
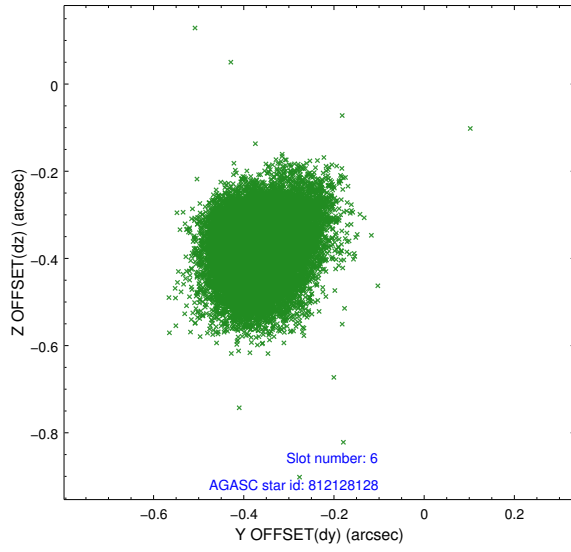
2.4.2 Slot 4



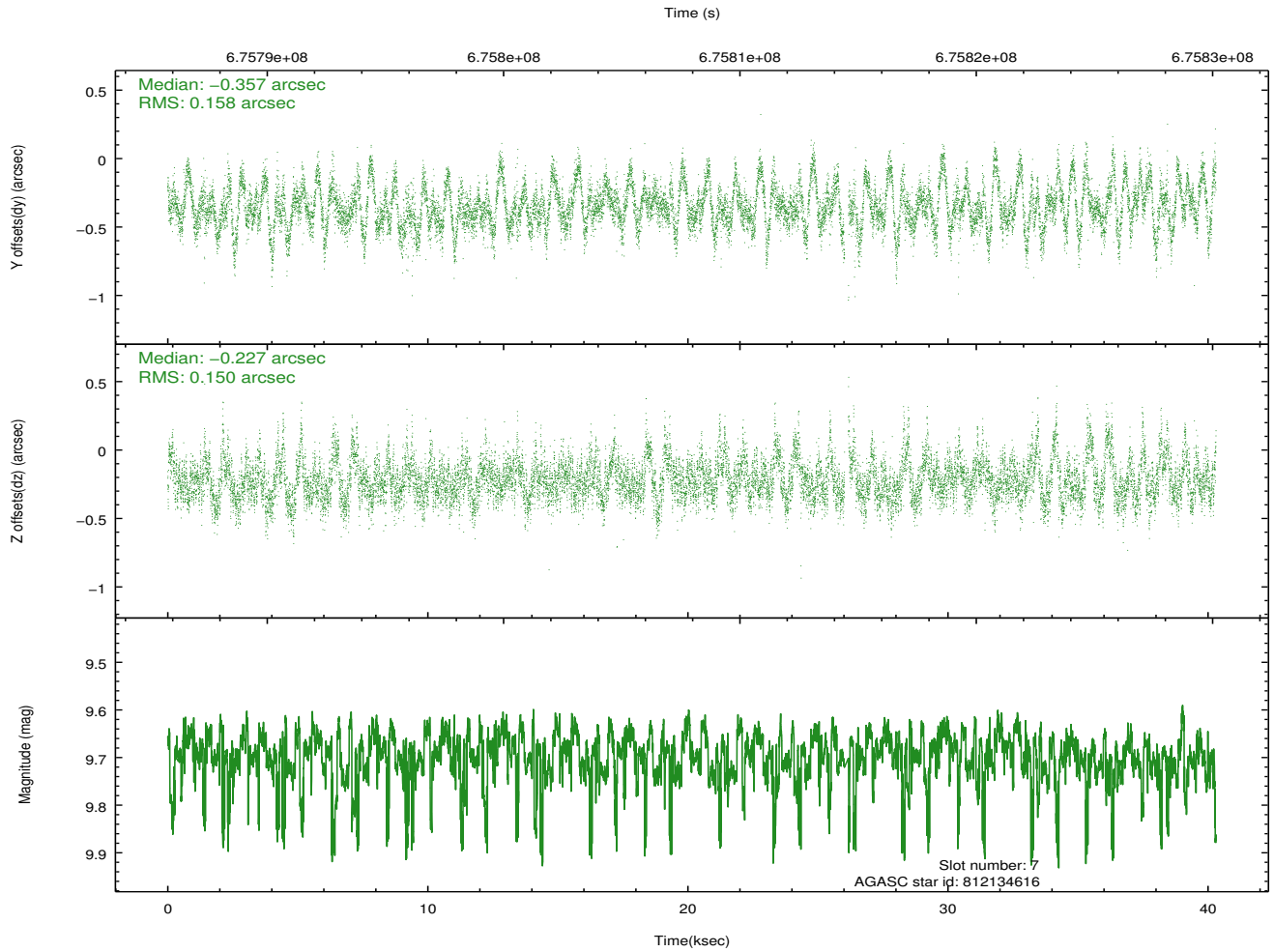
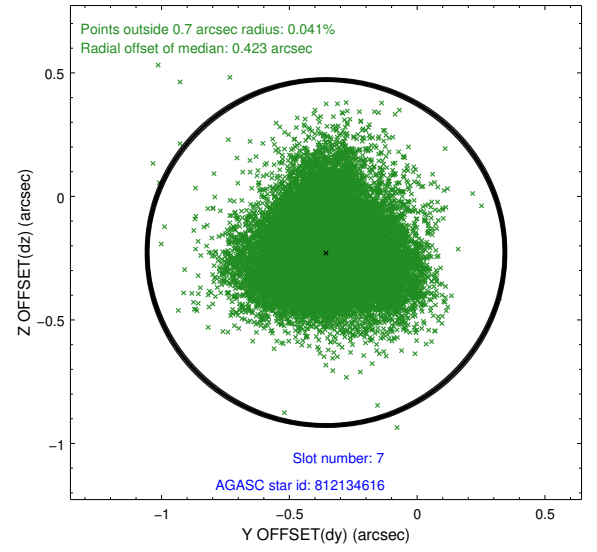
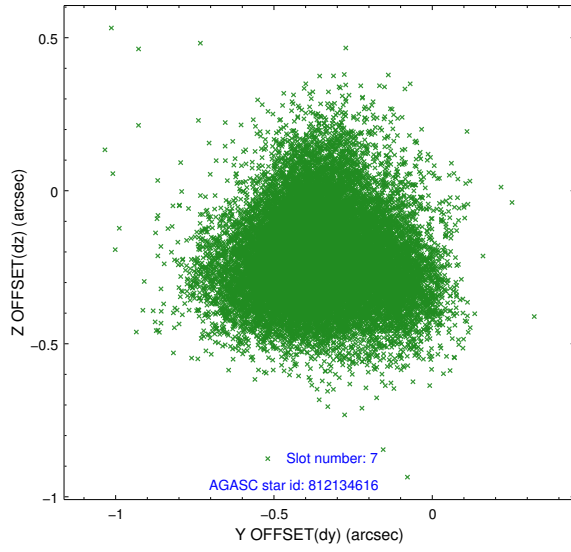
2.4.3 Slot 5



2.4.4 Slot 6

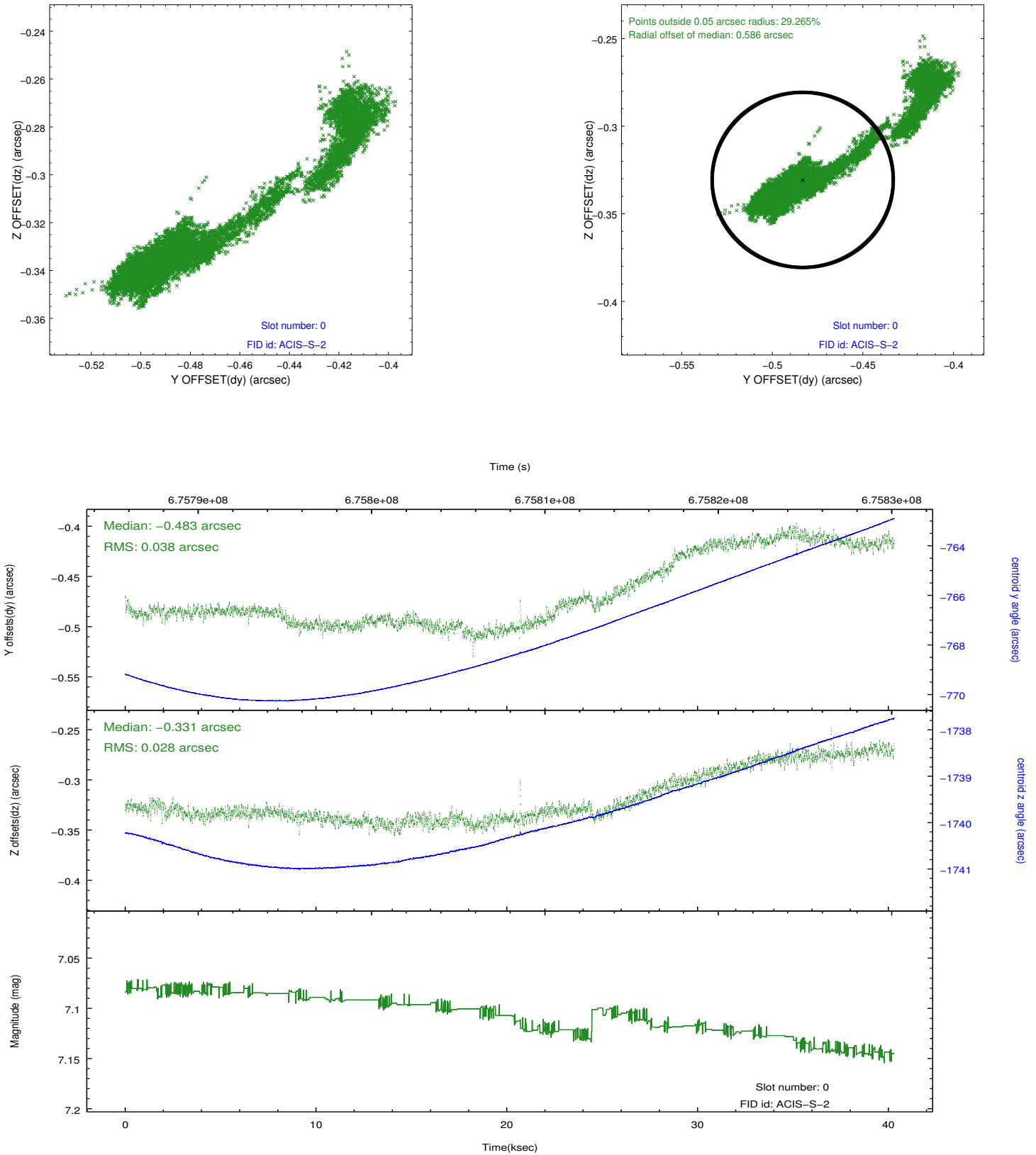


2.4.5 Slot 7

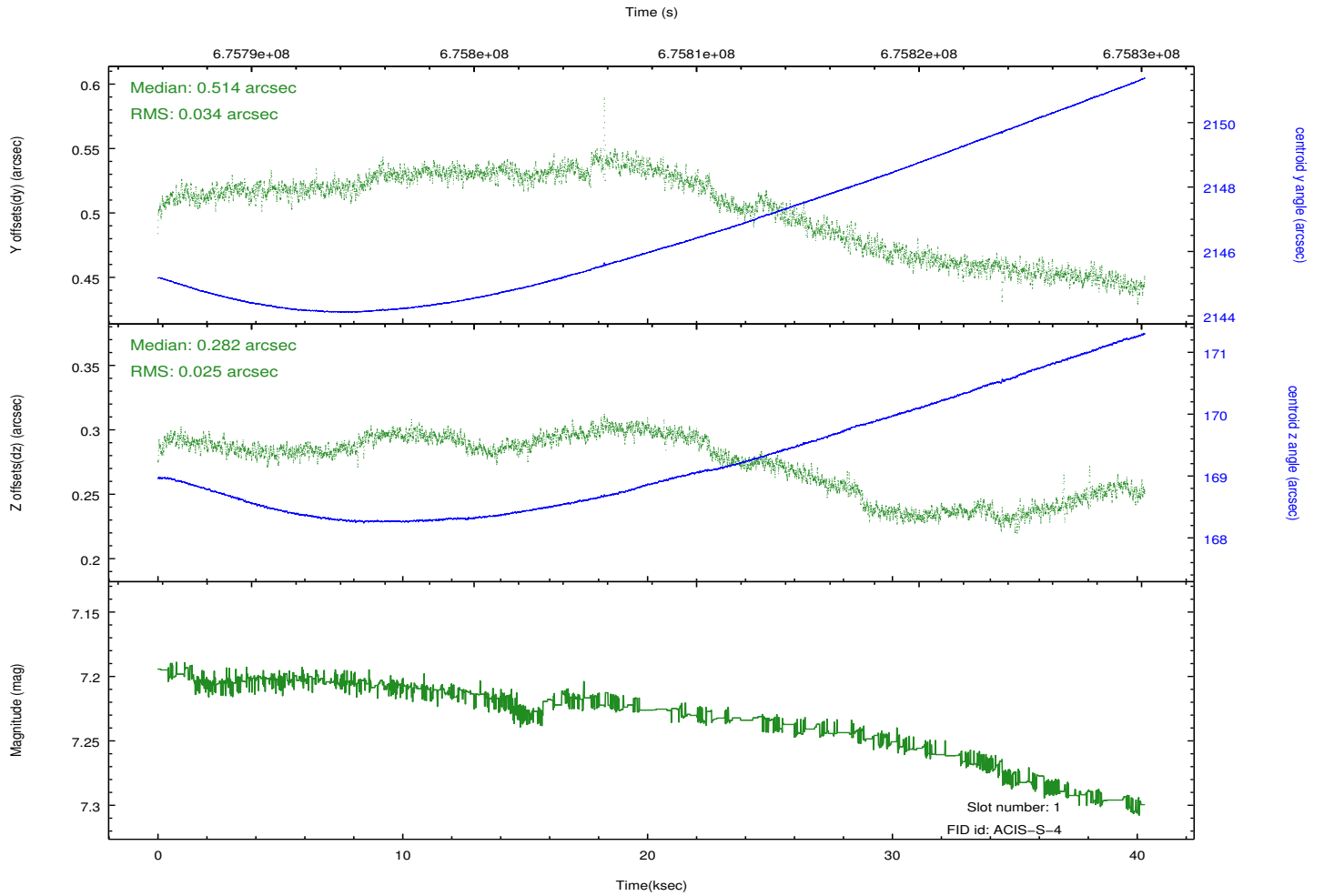
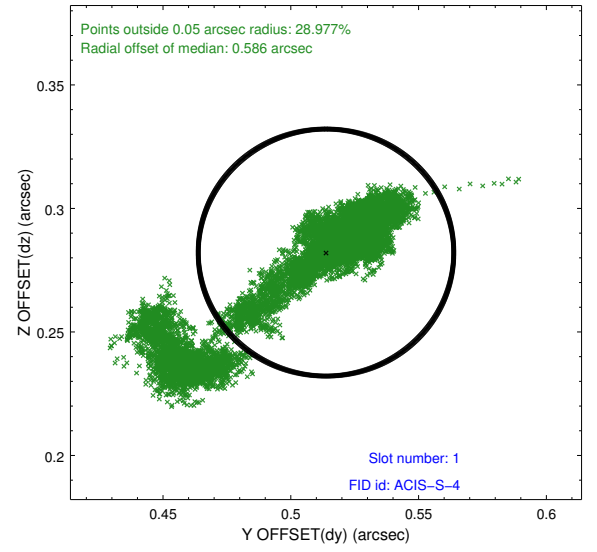
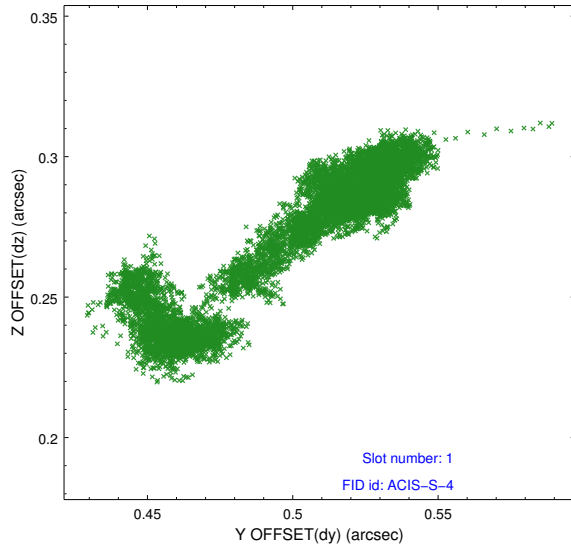


2.5 FID Slots

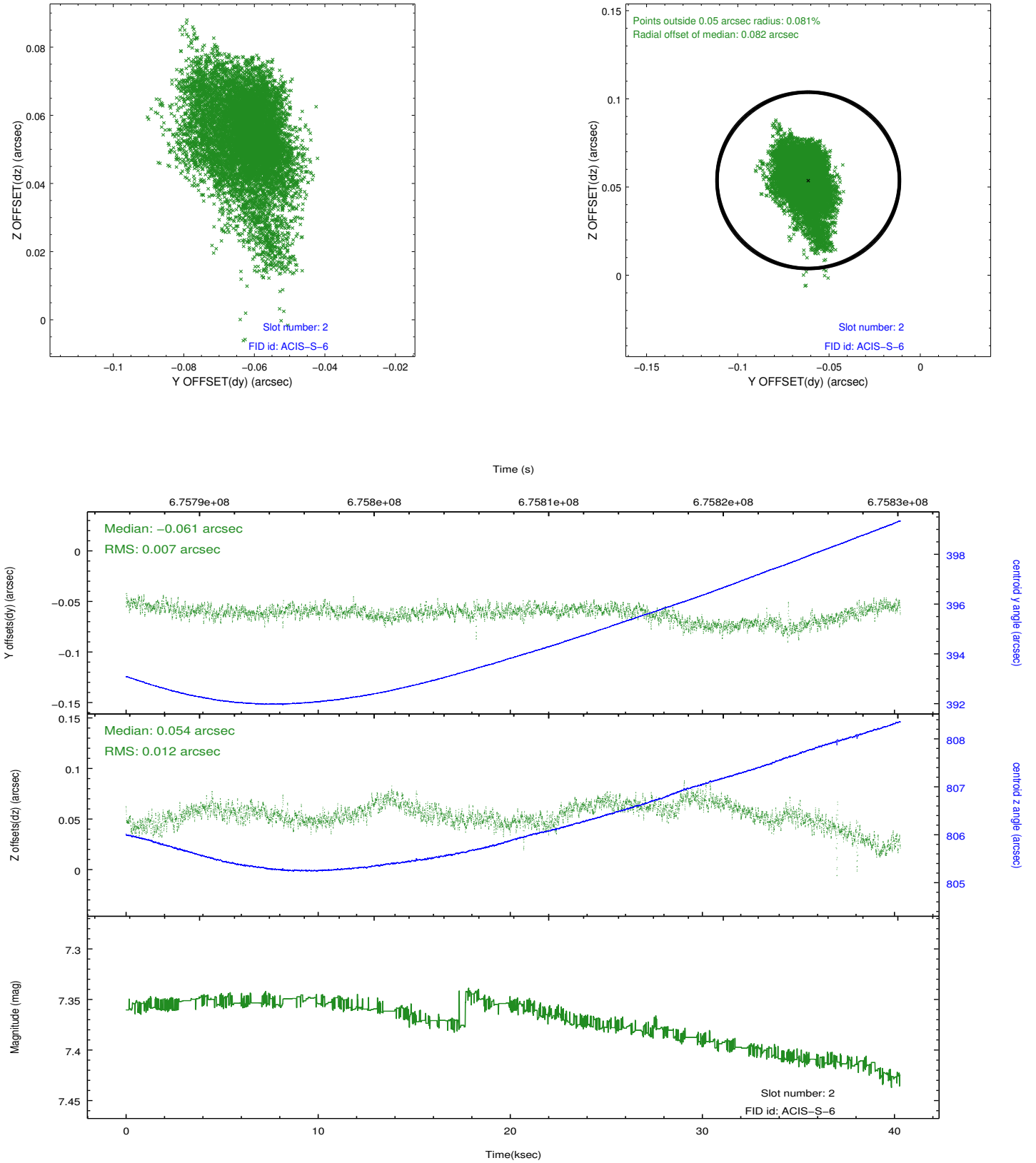
2.5.1 Slot 0



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)	2019.06.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	40.200167552114

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.