

V&V Reference Report

L2 ASCDS Version : 10.8

Observation 22654 - L2 Version 1
Chandra X-Ray Center

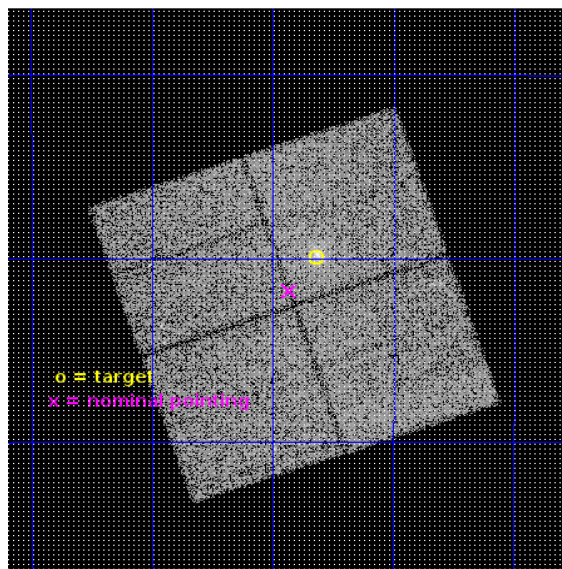
L2 Processing Date : Sep 21 2019

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

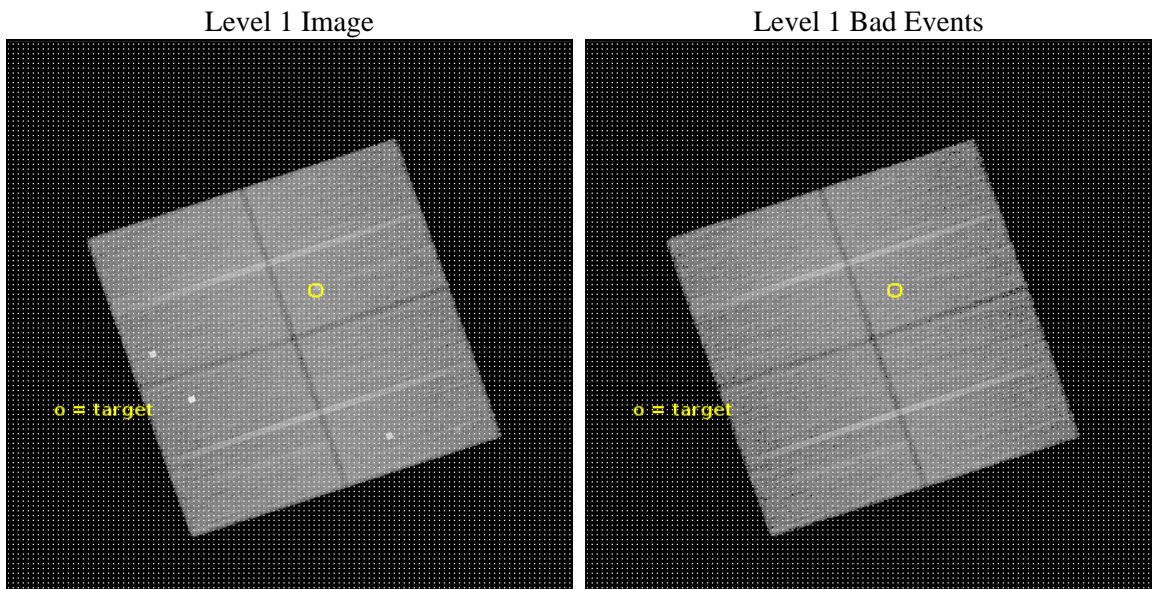
seq_num	801883	Sequence number
obs_id	22654	Observation id
title	Observing the Rarest Clusters at $z>1$ with Chandra	Proposal title
observer	Michael McDonald	Principal investigator
object	SPT-CLJ2317-3239	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	349.455	Observer's specified target RA [deg]
dec_targ	-32.6656	Observer's specified target Dec [deg]
ra_nom	349.48297184017	Nominal RA [deg]
dec_nom	-32.696034777697	Nominal Dec [deg]
roll_nom	341.22379762861	Nominal Roll [deg]
revision	1	Processing version of data
ontime	38988.618219376	Sum of GTIs [s]
livetime	38479.203219336	Livetime [s]
ontime0	38994.900300026	Sum of GTIs [s]
ontime1	38991.759229779	Sum of GTIs [s]
ontime2	38985.477049232	Sum of GTIs [s]
ontime3	38988.618219376	Sum of GTIs [s]
l2events	112493	Number of level 2 events



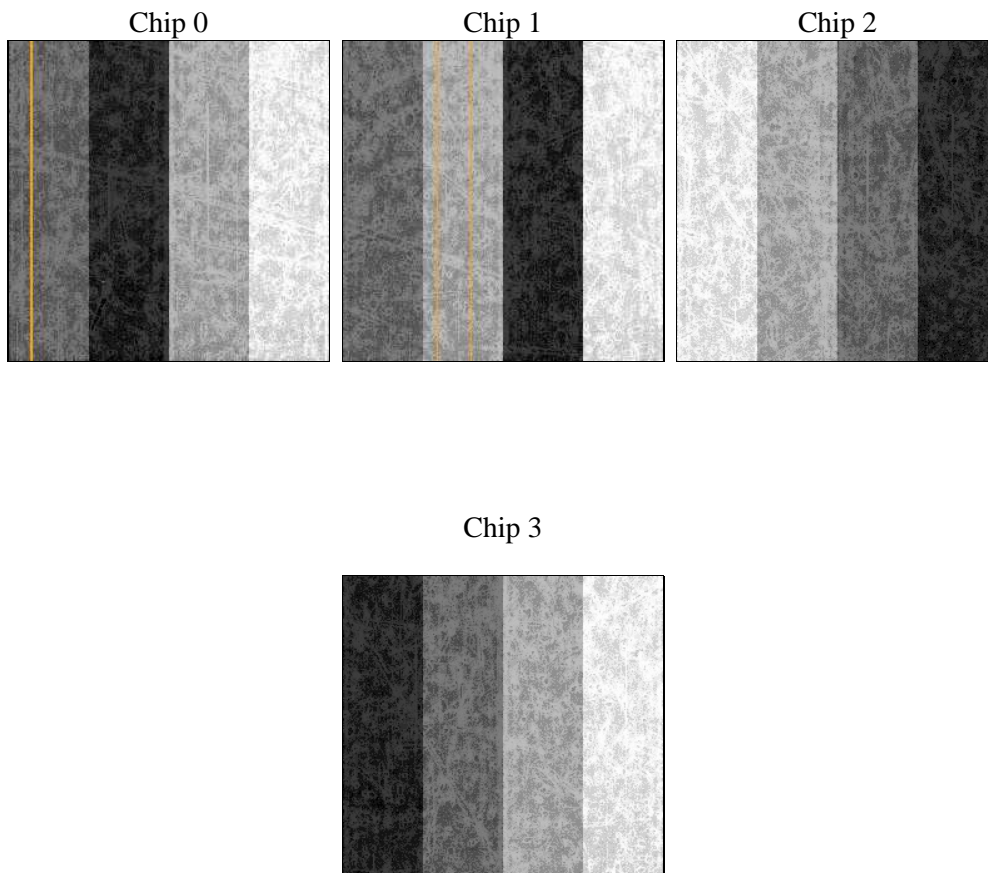
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	38917.000000	[s] Scheduled observation exposure time
ascdsver	10.8	Processing system revision	ontime	38988.618219376	Sum of GTIs [s]
caldsver	4.8.4.1	 	ontime0	38994.900300026	Sum of GTIs [s]
date	2019-09-21T05:05:17	Date and time of file creation	ontime1	38991.759229779	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	38985.477049232	Sum of GTIs [s]
			ontime3	38988.618219376	Sum of GTIs [s]
			l1events	1203666	Number of level 1 events

2.1.4 Events

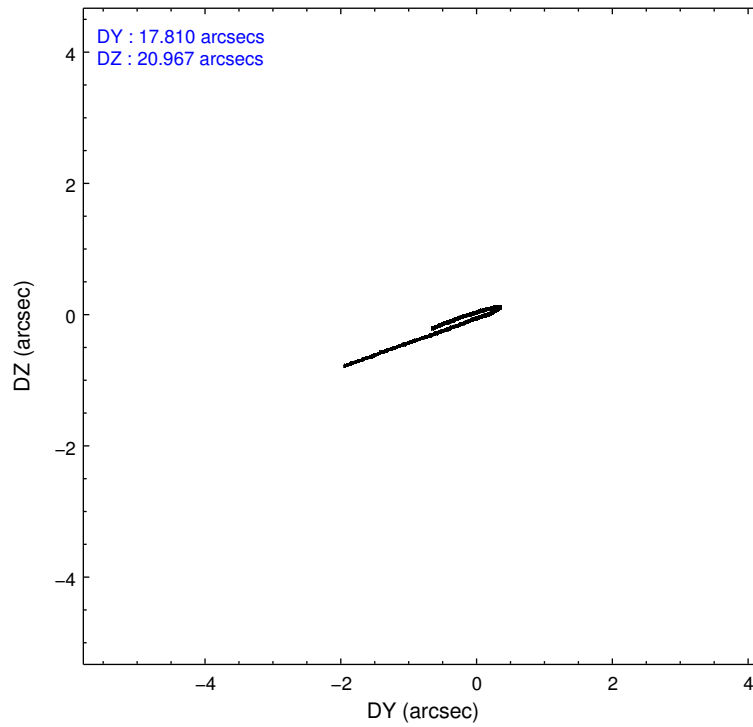
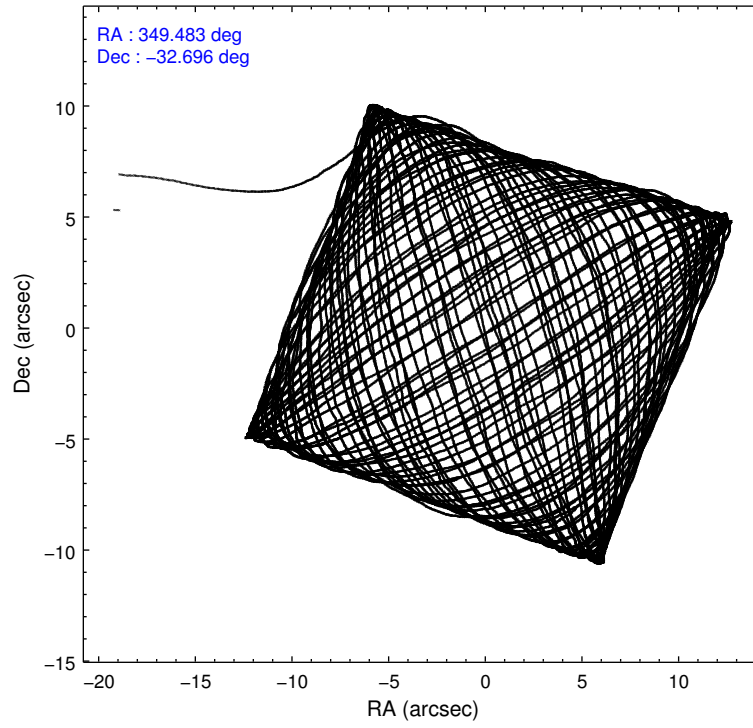
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	291951	292716	321884	297115
rejected events	247164	252566	284001	263755
rejected %	84%	86%	88%	88%

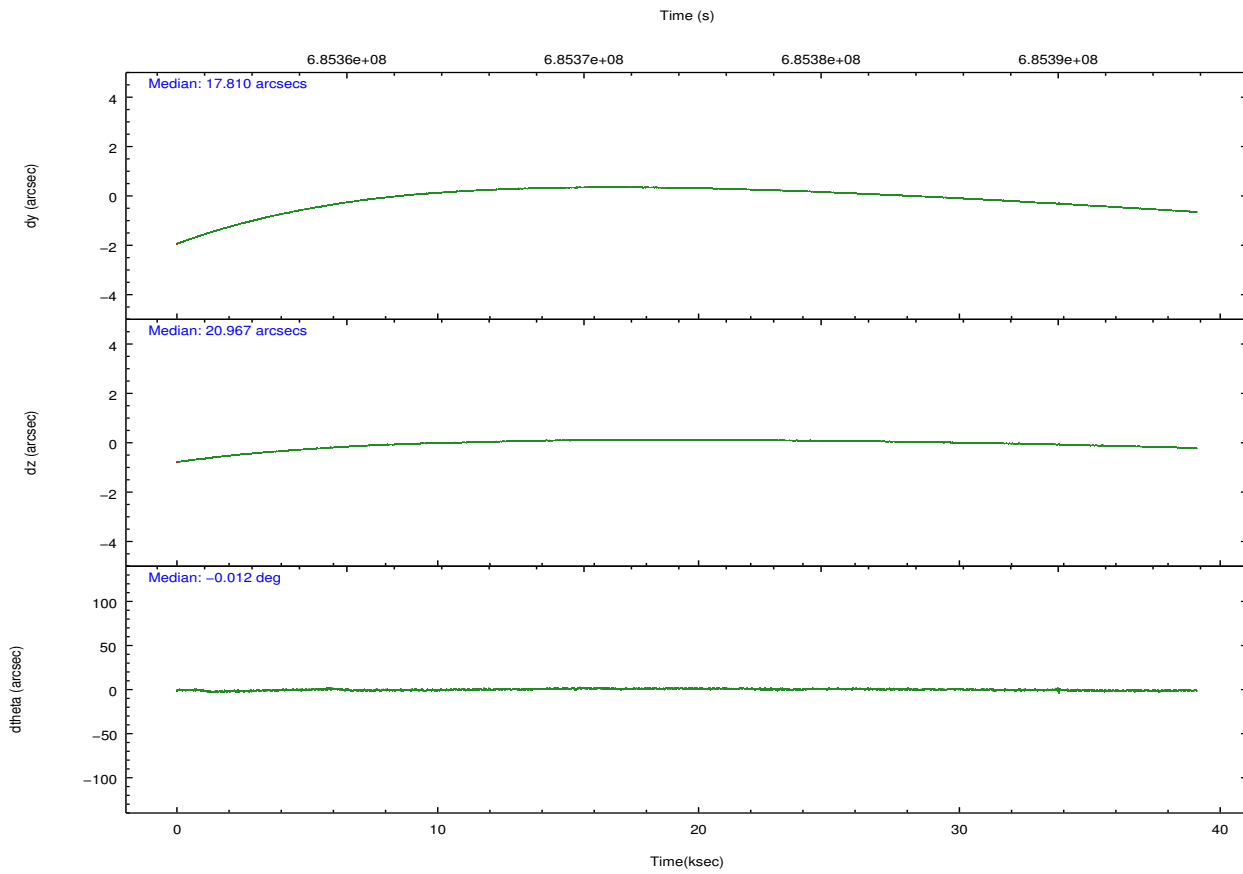
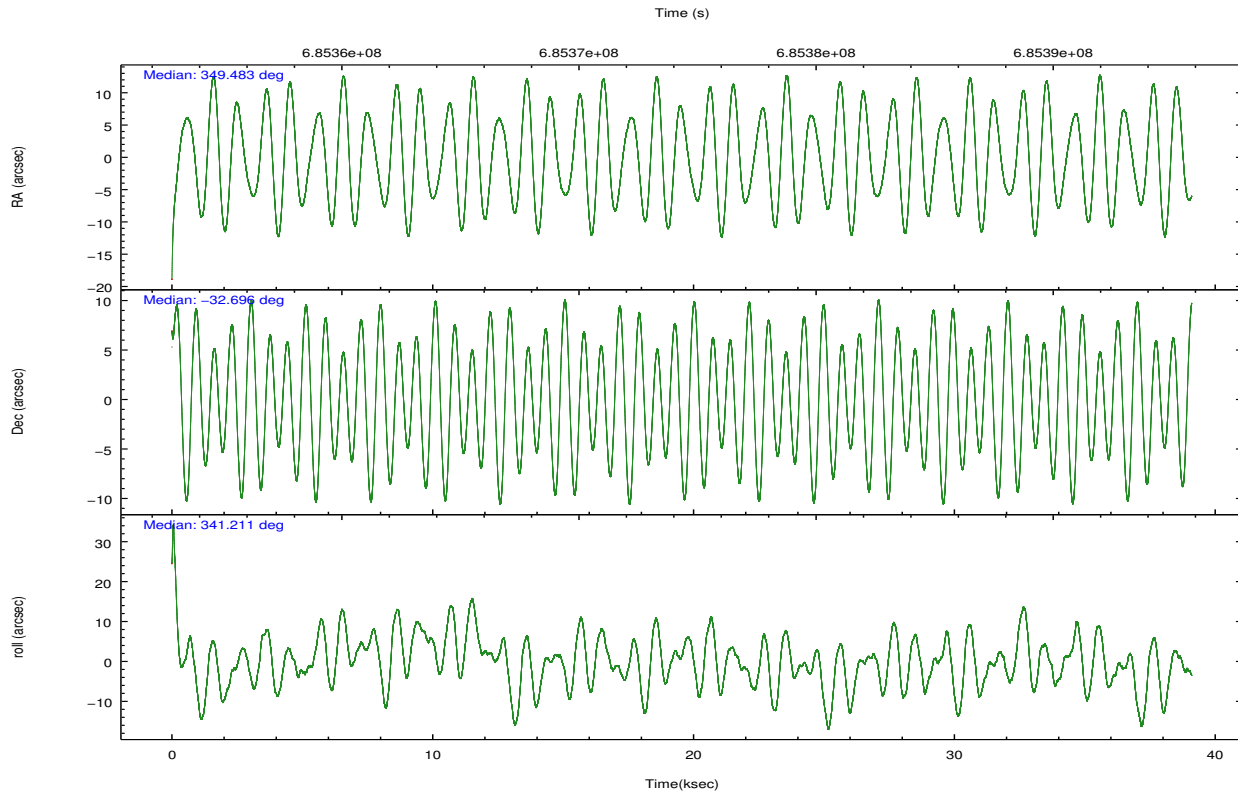
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	10445	15606	17057	12469
	3%	5%	5%	4%
grade 1 events	149	164	191	144
	0%	0%	0%	0%
grade 2 events	8558	9544	7855	7175
	2%	3%	2%	2%
grade 3 events	13253	3016	3115	3330
	4%	1%	0%	1%
grade 4 events	4921	3089	3153	3332
	1%	1%	0%	1%
grade 5 events	12384	12602	12013	13500
	4%	4%	3%	4%
grade 6 events	7613	8899	6704	7055
	2%	3%	2%	2%
grade 7 events	234628	239796	271796	250110
	80%	81%	84%	84%

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	349.450834	349.4829718401738	CCD I2 on	Y	Y
[deg] Pointing Dec	-32.701513	-32.69603477769716	CCD I3 on	Y	Y
[deg] Pointing Roll	340.997743	341.2237976286094	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)	685354940.184000	685353805.30801	CCD S5 on	N	N
Observation start date	2019-09-20T08:21:11	2019-09-20T08:03:25	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	685393857.184000	685394966.23549	On-chip summing requested	N	N
Observation end date	2019-09-20T19:09:48	2019-09-20T19:29:26	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect





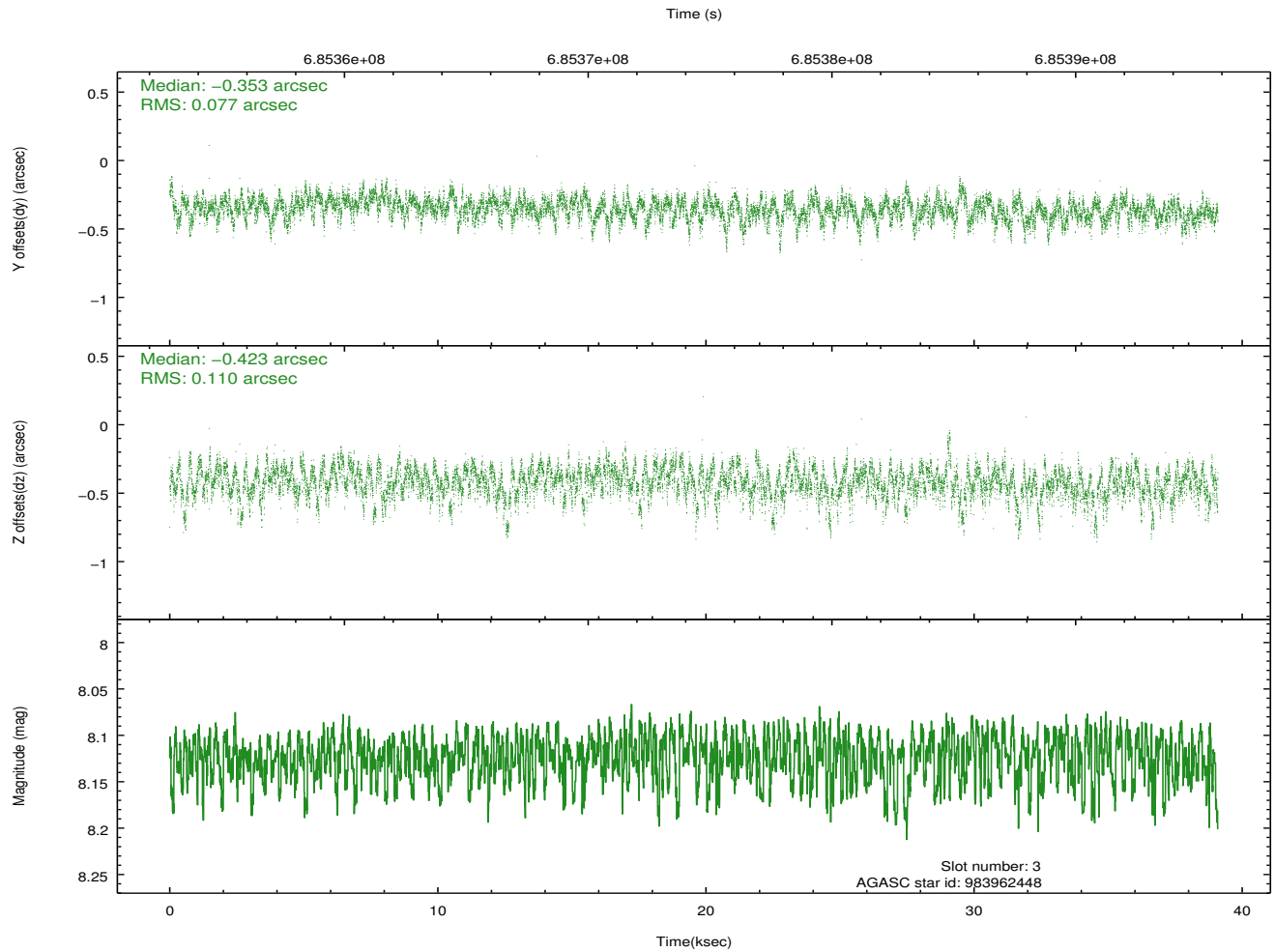
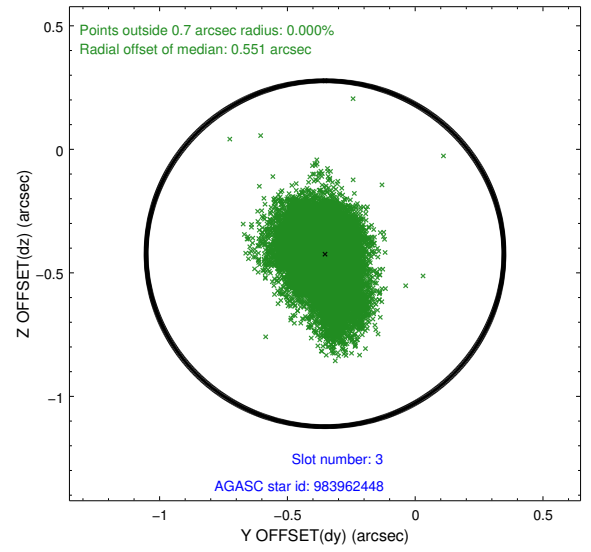
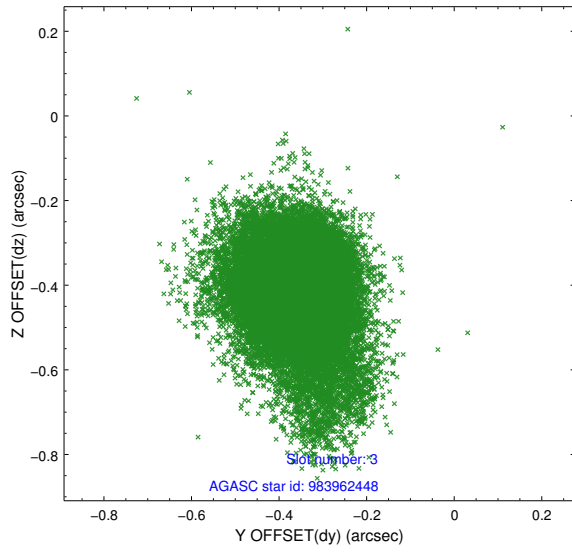
Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-I-1	7.28	9537	1.000	0.252	-0.170	0.012	0.024	0.000000	0.000000	922.11	-844
1	FID		ACIS-I-5	7.25	9535	1.000	-0.313	0.220	0.012	0.024	0.000000	0.000000	-1826.87	1052
2	BAD		ACIS-I-6	7.27	9003	1.000	0.638	0.223	0.027	0.094	0.000000	0.000000	387.52	1697
3	GUIDE	used	983962448	8.12	19060	1.000	-0.353	-0.423	0.136	0.244	349.544688	-32.067581	-472.40	2250
4	GUIDE	used	984354640	9.68	18945	1.000	0.311	0.805	0.342	0.553	348.543799	-33.053861	-2164.53	-2102
5	GUIDE	used	984354952	9.07	18987	1.000	-0.220	-0.402	0.213	0.330	349.982241	-32.587616	1391.88	908
6	GUIDE	used	984355056	9.30	19037	1.000	0.098	-0.104	0.219	0.365	349.917973	-33.224211	1944.31	-1324
7	GUIDE	used	984356688	8.88	19043	1.000	0.163	0.130	0.220	0.349	349.452747	-33.435773	867.49	-2496

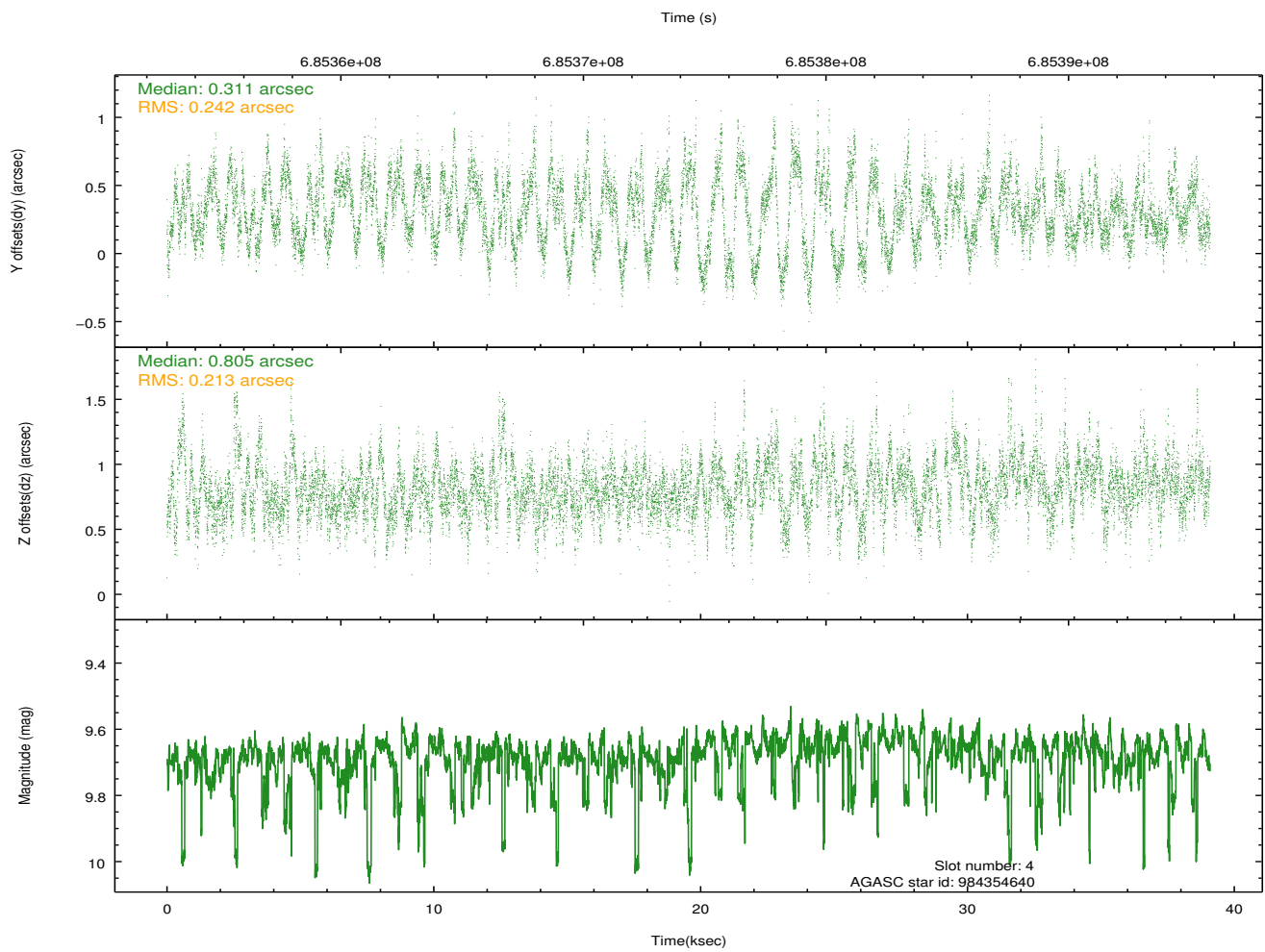
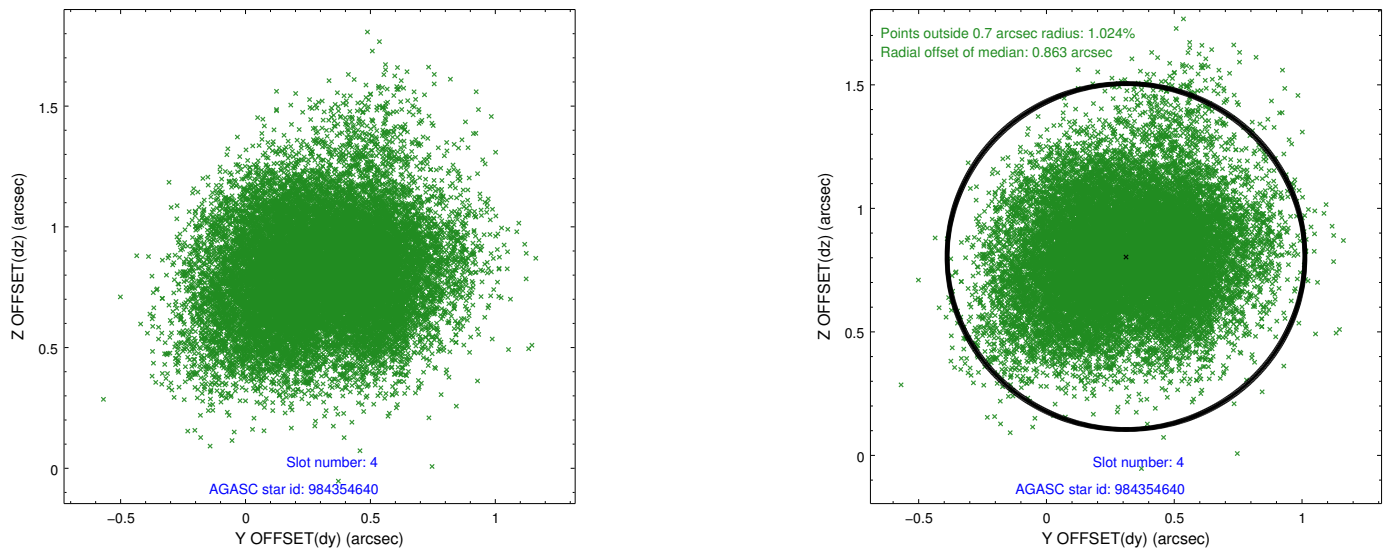
∞

2.4 Star Slots

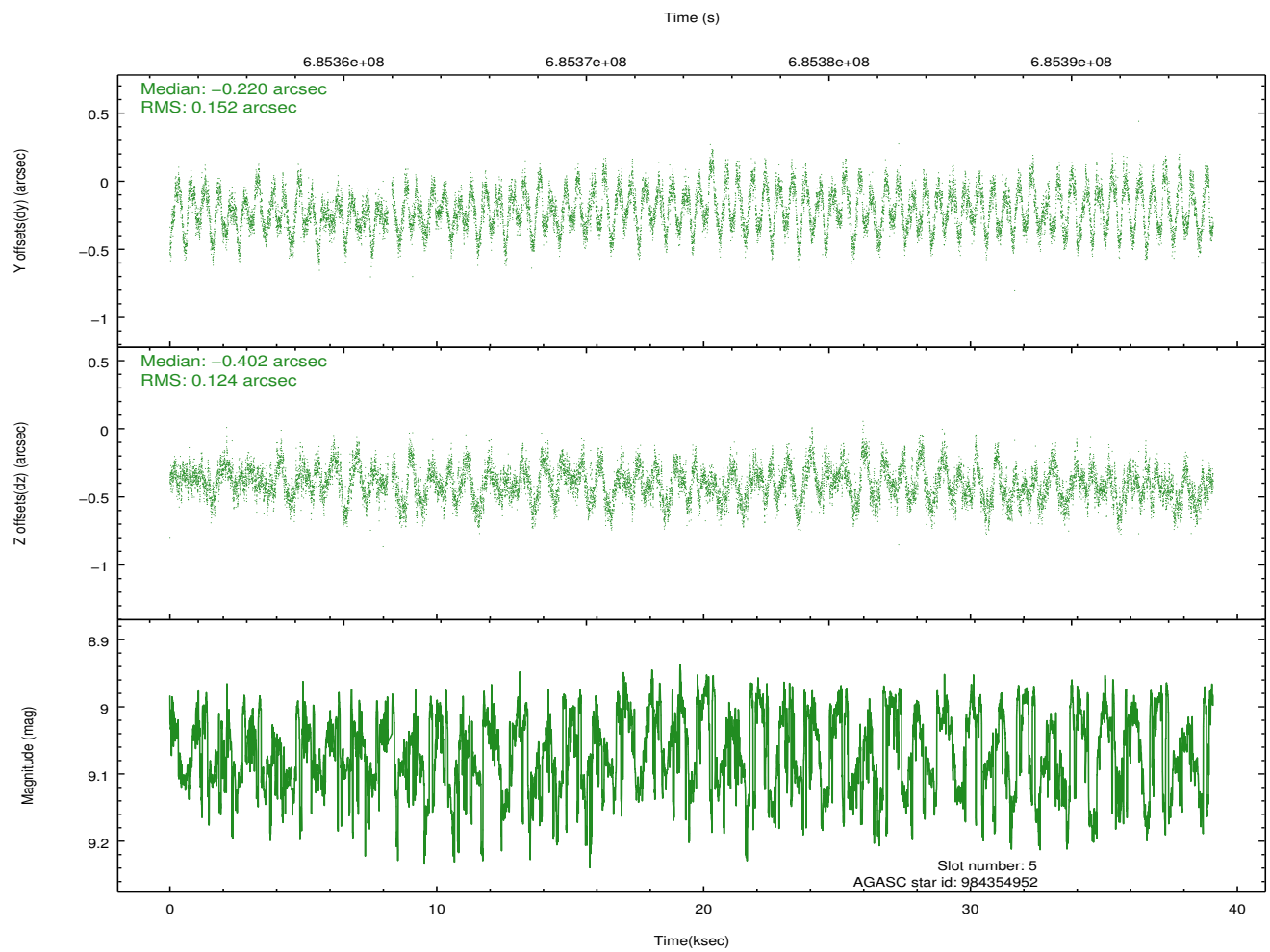
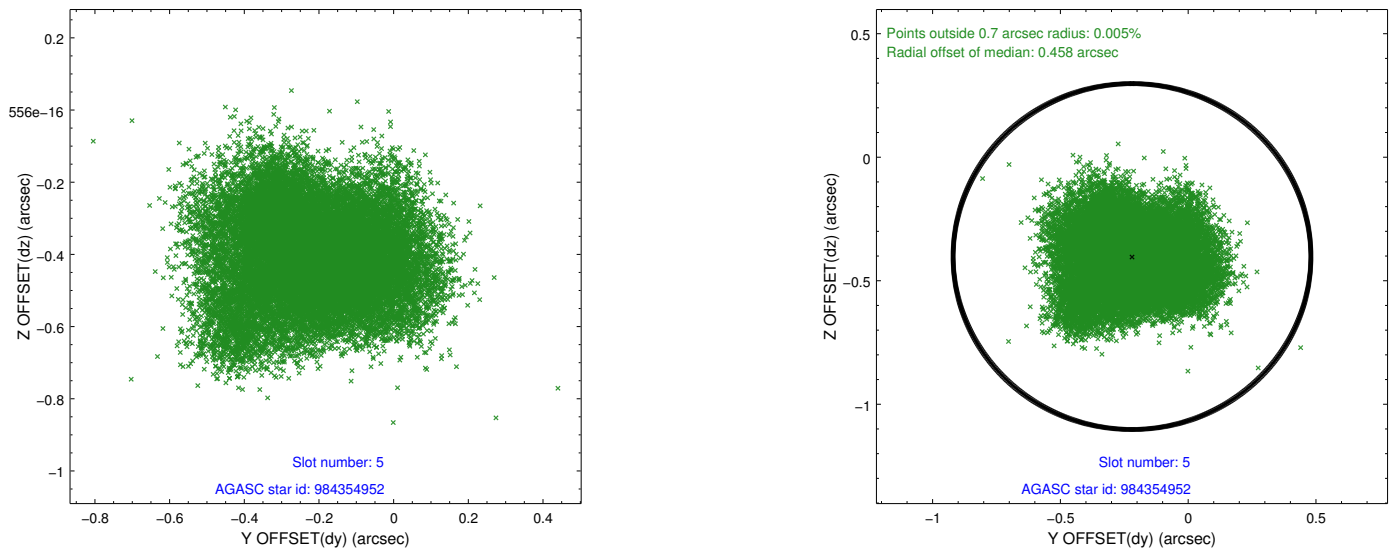
2.4.1 Slot 3



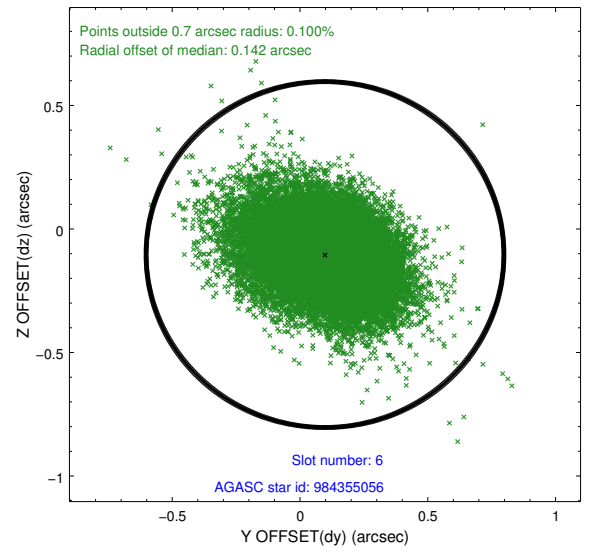
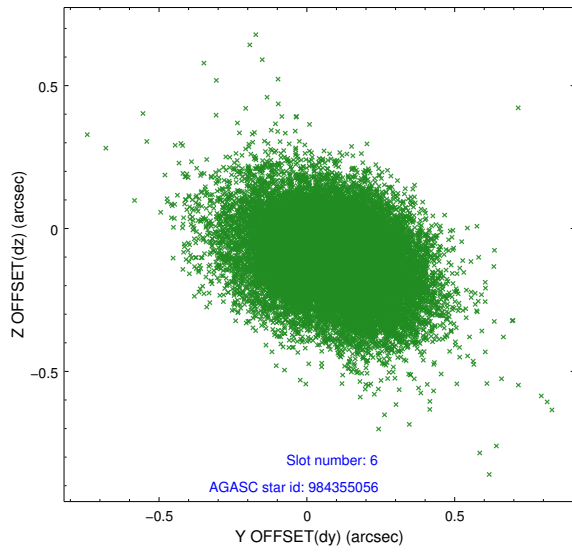
2.4.2 Slot 4



2.4.3 Slot 5



2.4.4 Slot 6



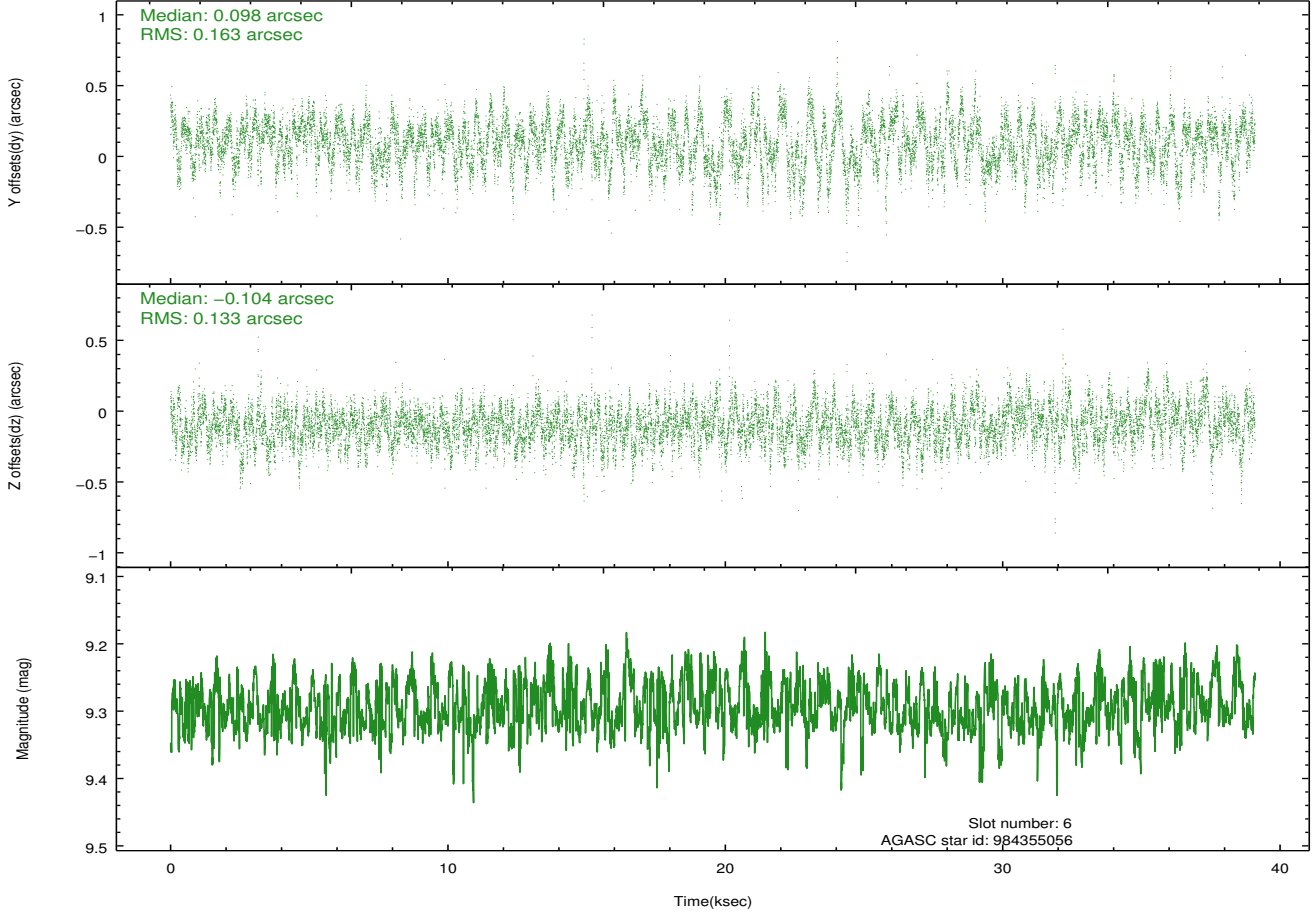
Time (s)

6.8536e+08

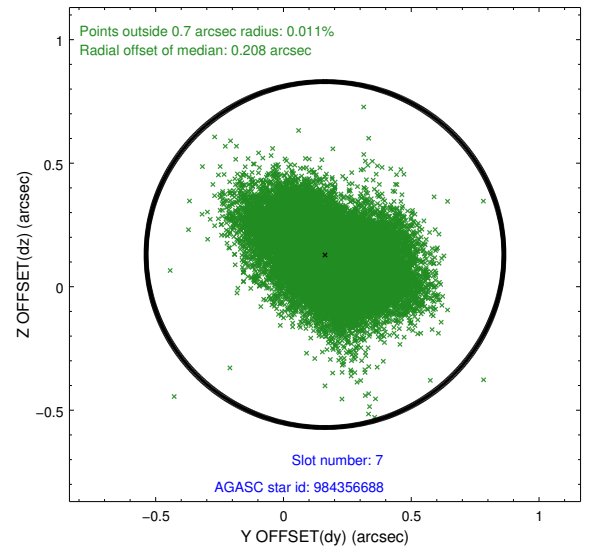
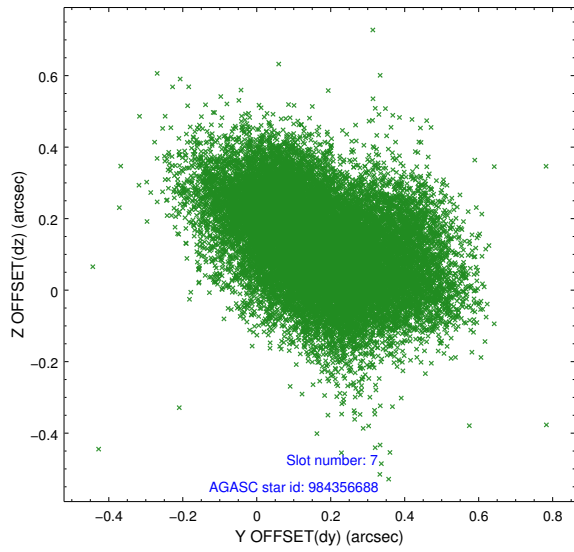
6.8537e+08

6.8538e+08

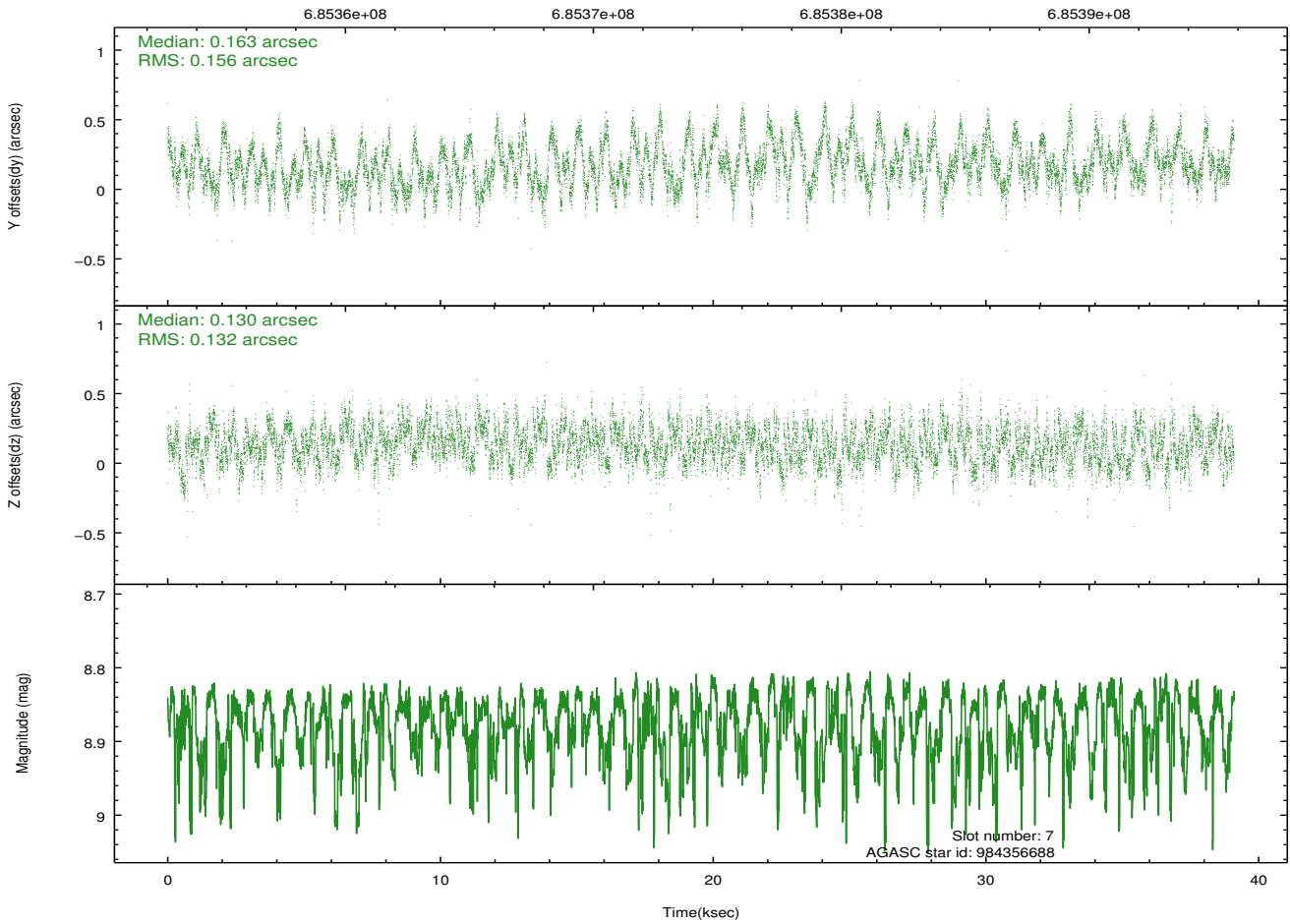
6.8539e+08



2.4.5 Slot 7

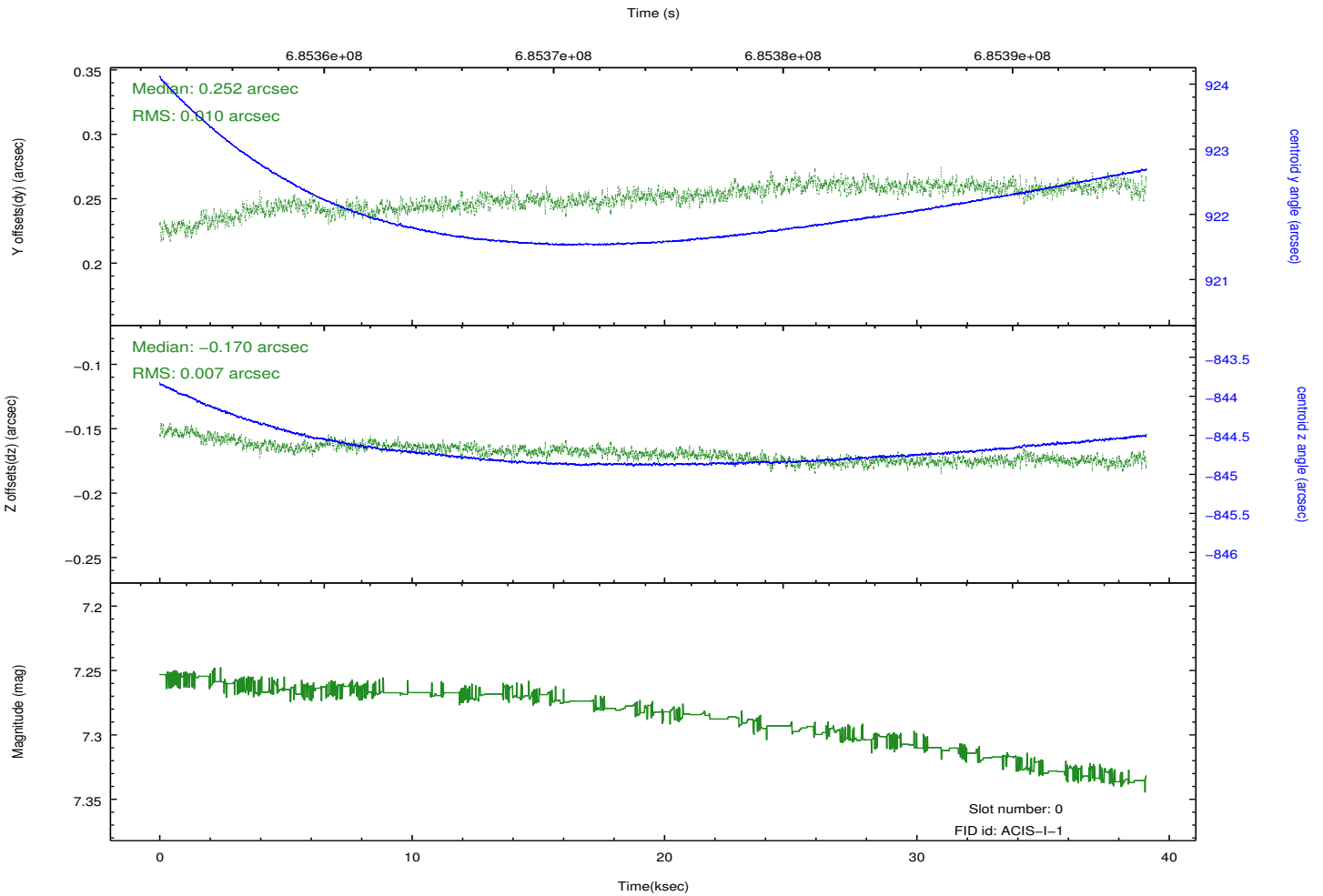
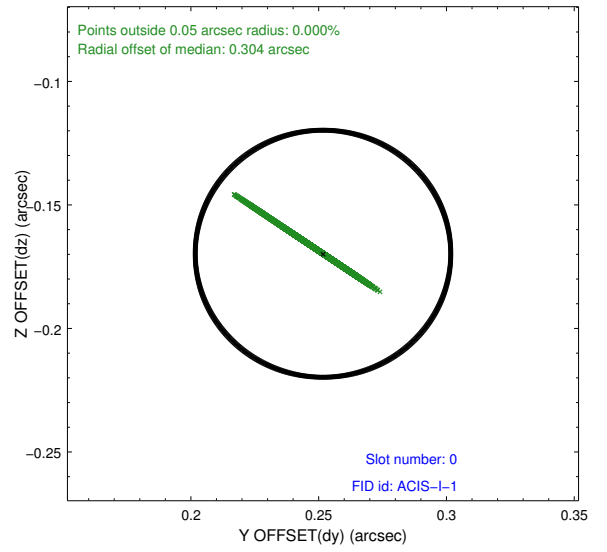
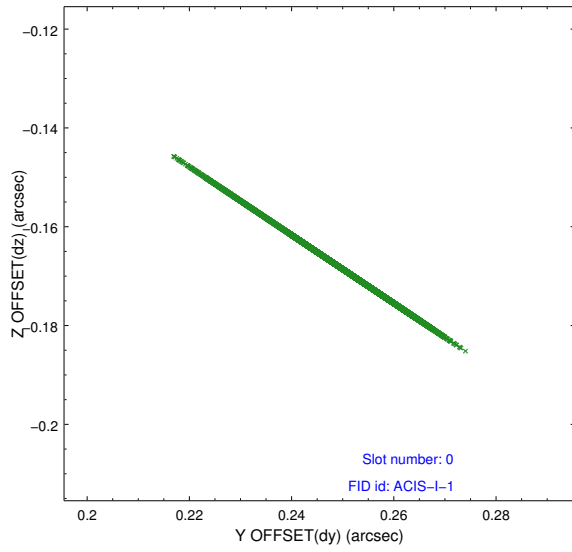


Time (s)

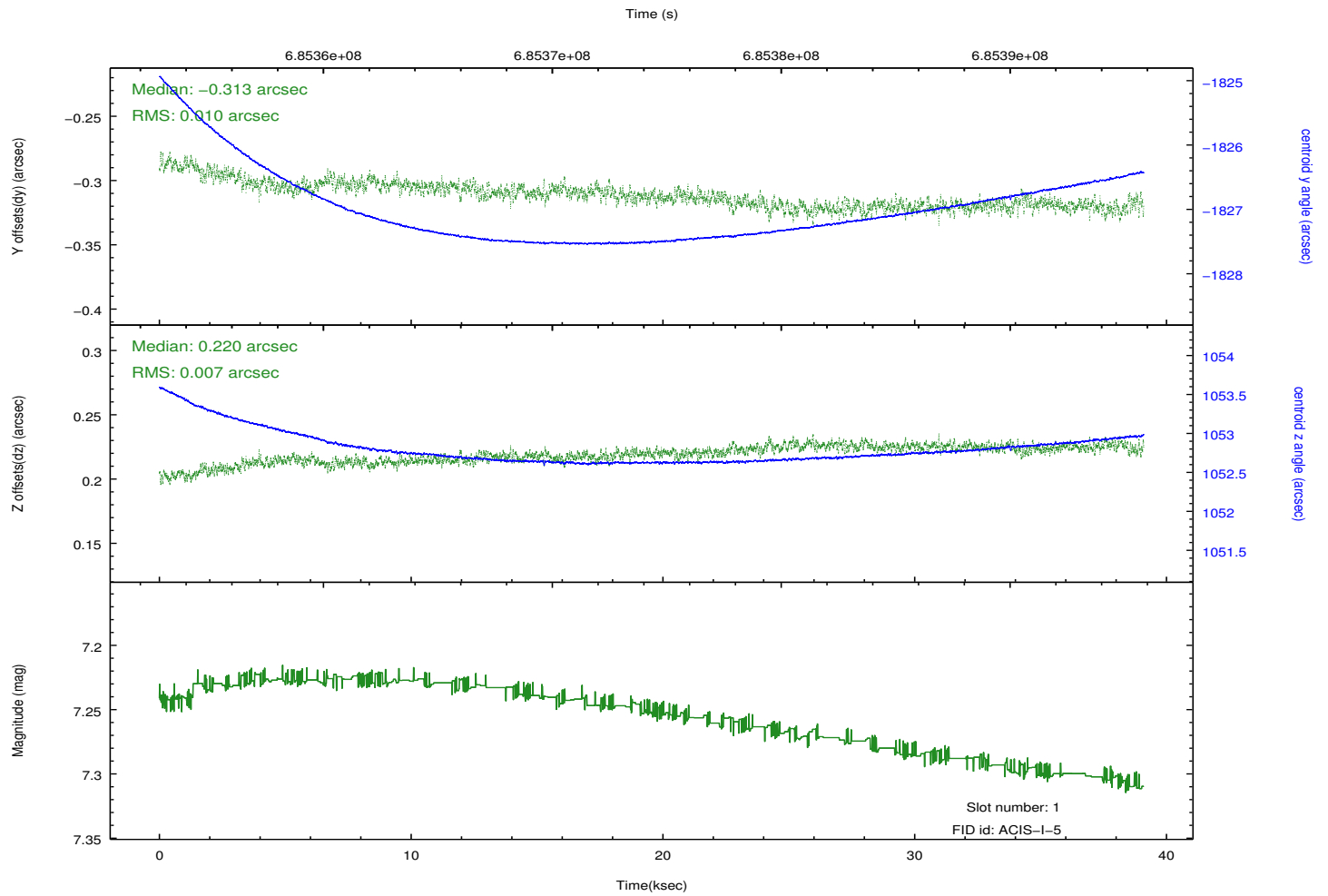
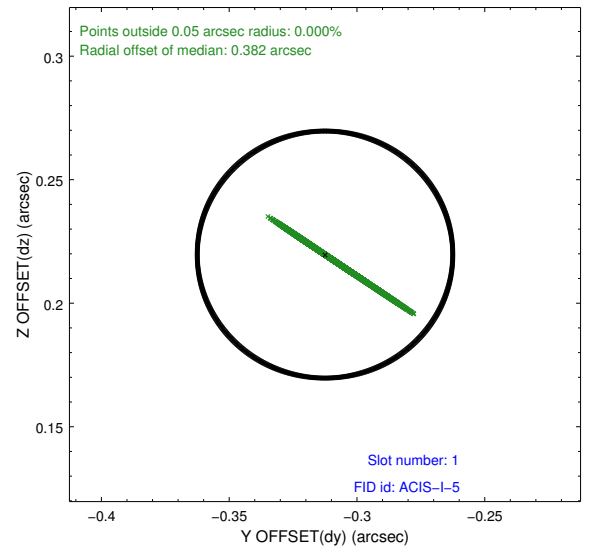
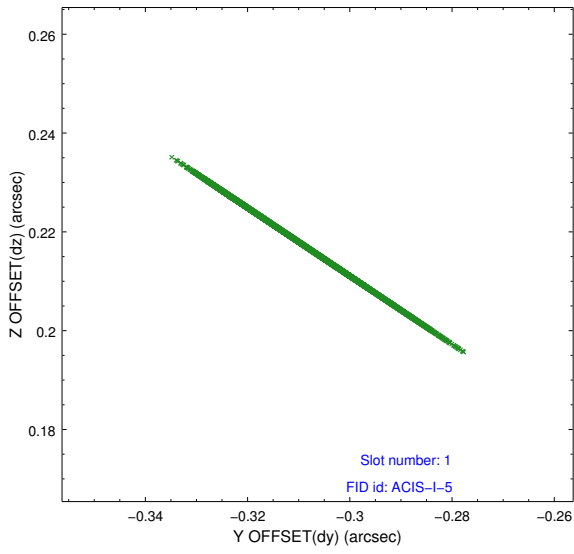


2.5 FID Slots

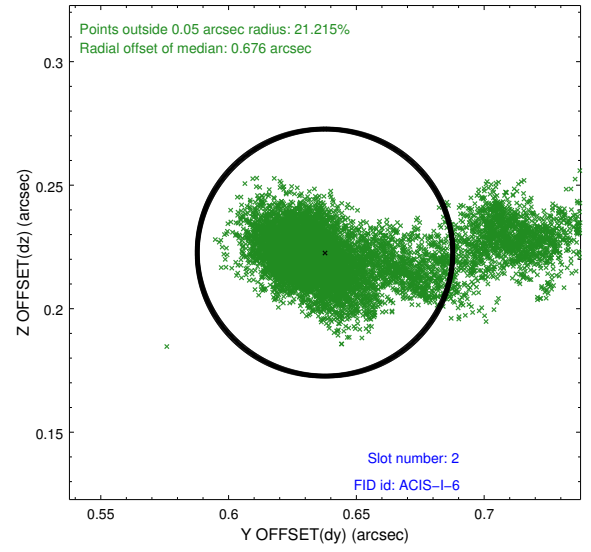
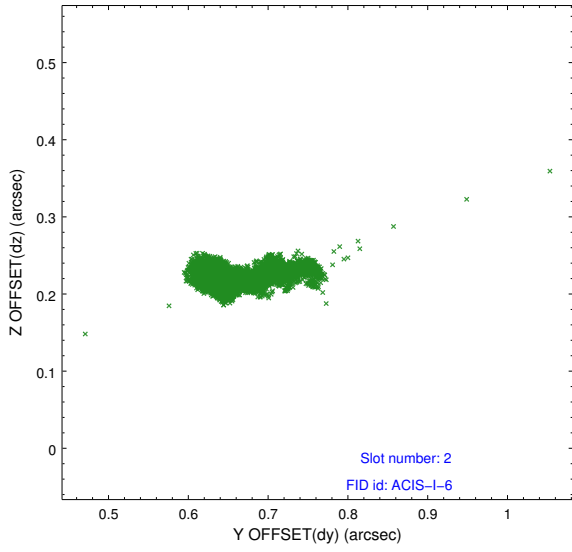
2.5.1 Slot 0



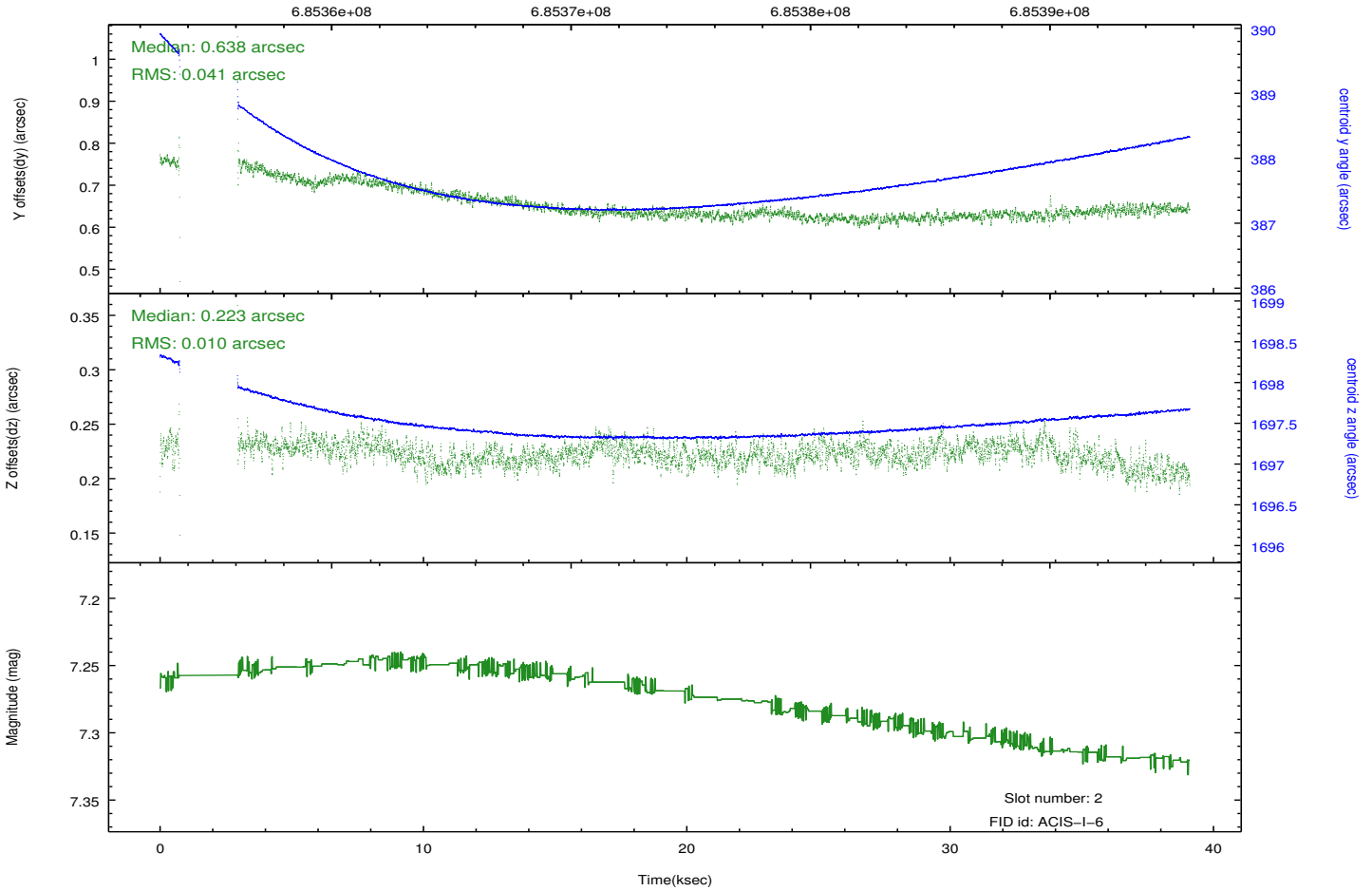
2.5.2 Slot 1



2.5.3 Slot 2



Time (s)



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2020.04.02
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	38.988618219376

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., -112.0 C for ACIS-I).

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.