

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22081 - L2 Version 1
Chandra X-Ray Center

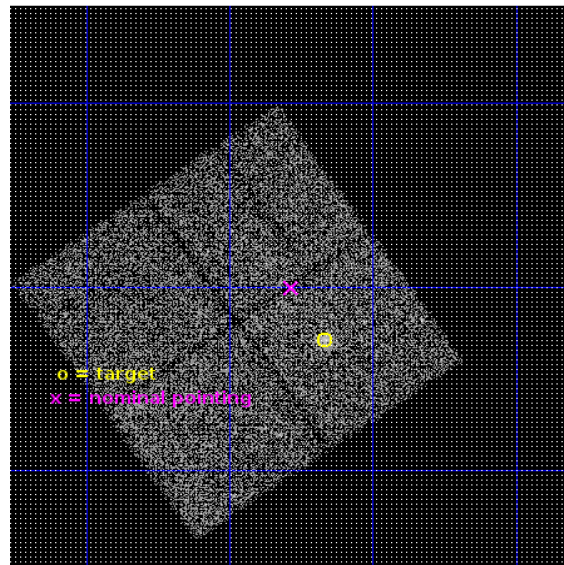
L2 Processing Date : Feb 5 2019

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1 Front

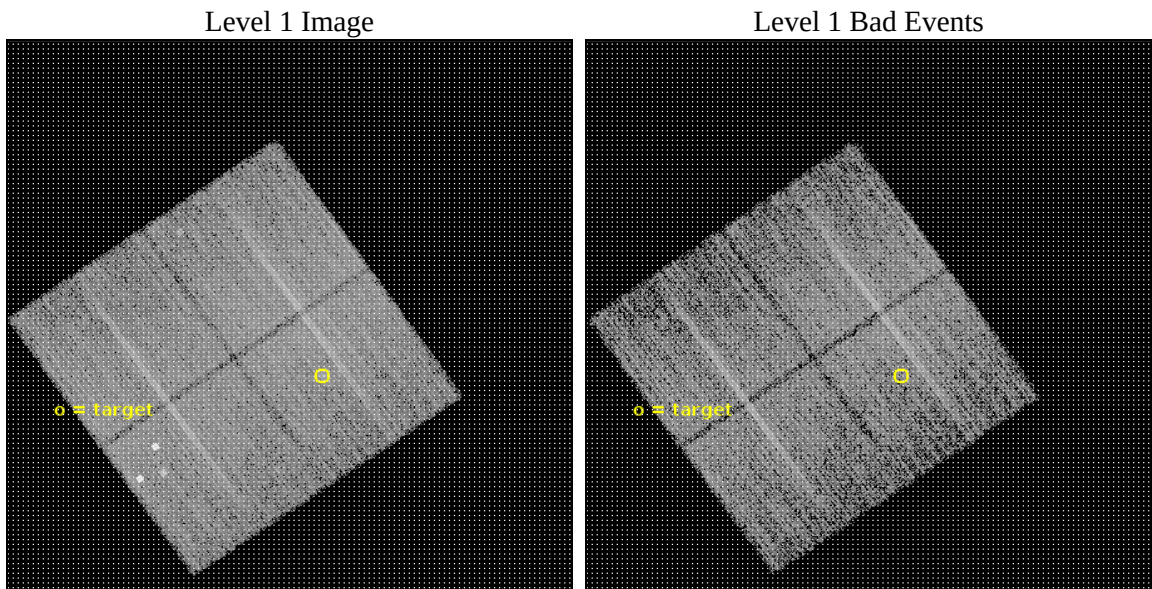
seq_num	801766	Sequence number
obs_id	22081	Observation id
title	The Chandra Strong Lens Sample: Revealing Baryonic Physics In Strong Lensing Selected Clusters	Proposal title
observer	Matthew Bayliss	Principal investigator
object	SDSSJ1050+0017	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	162.666667	Observer's specified target RA [deg]
dec_targ	0.285	Observer's specified target Dec [deg]
ra_nom	162.69599472157	Nominal RA [deg]
dec_nom	0.33231878582226	Nominal Dec [deg]
roll_nom	55.208509623488	Nominal Roll [deg]
revision	1	Processing version of data
ontime	12790.214058995	Sum of GTIs [s]
livetime	12623.100496296	Livetime [s]
ontime0	12790.090939045	Sum of GTIs [s]
ontime1	12790.131978989	Sum of GTIs [s]
ontime2	12790.173019052	Sum of GTIs [s]
ontime3	12790.214058995	Sum of GTIs [s]
l2events	36686	Number of level 2 events



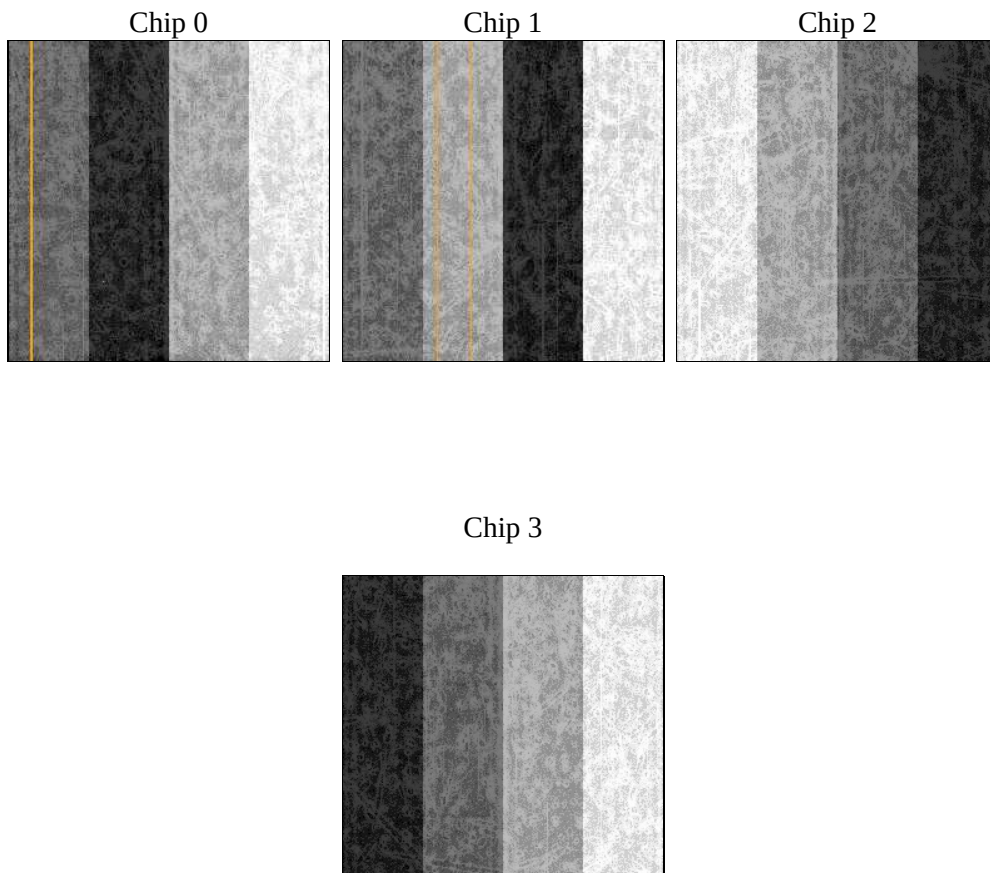
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	12711.269000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	12790.214058995	Sum of GTIs [s]
caldbver	4.8.2	 	ontime0	12790.090939045	Sum of GTIs [s]
date	2019-02-06T00:38:39	Date and time of file creation	ontime1	12790.131978989	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	12790.173019052	Sum of GTIs [s]
			ontime3	12790.214058995	Sum of GTIs [s]
			l1events	391692	Number of level 1 events

2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	92380	100891	100659	97762
rejected events	81861	80866	89828	86804
rejected %	88%	80%	89%	88%

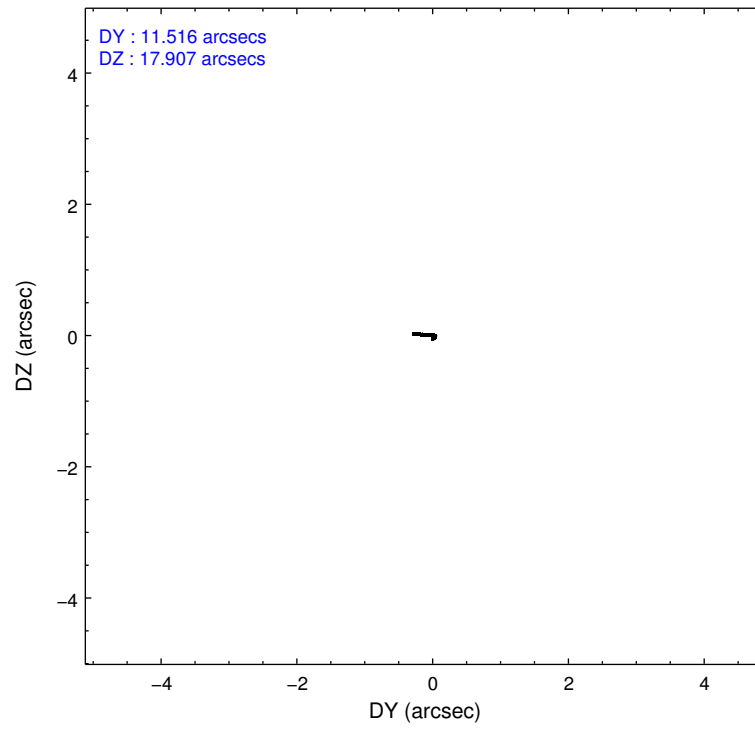
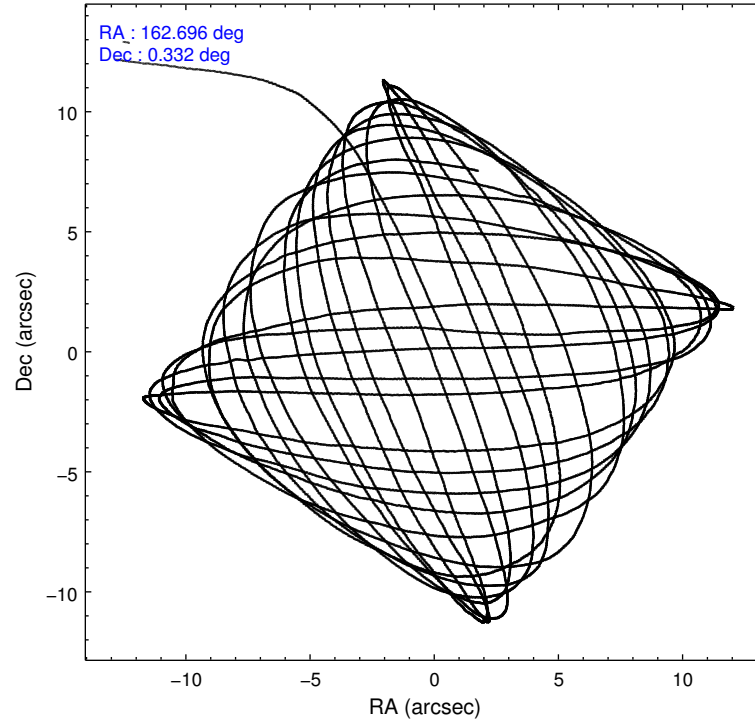
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	3457	8255	4105	4198
	3%	8%	4%	4%
grade 1 events	45	85	52	79
	0%	0%	0%	0%
grade 2 events	2543	6724	2437	2382
	2%	6%	2%	2%
grade 3 events	1125	1063	1046	1087
	1%	1%	1%	1%
grade 4 events	968	1064	1074	1032
	1%	1%	1%	1%
grade 5 events	3955	4030	3936	4538
	4%	3%	3%	4%
grade 6 events	2428	2924	2171	2260
	2%	2%	2%	2%
grade 7 events	77859	76746	85838	82186
	84%	76%	85%	84%

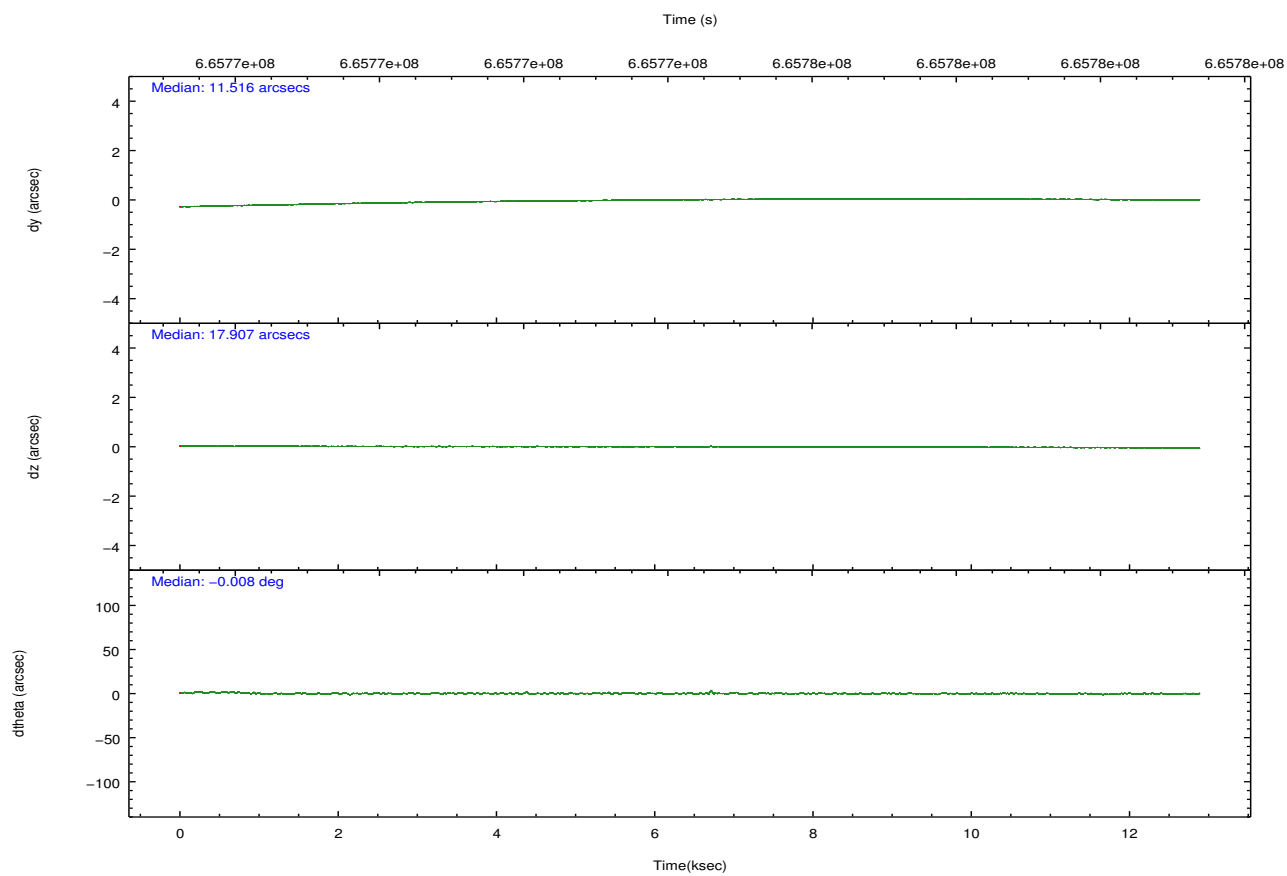
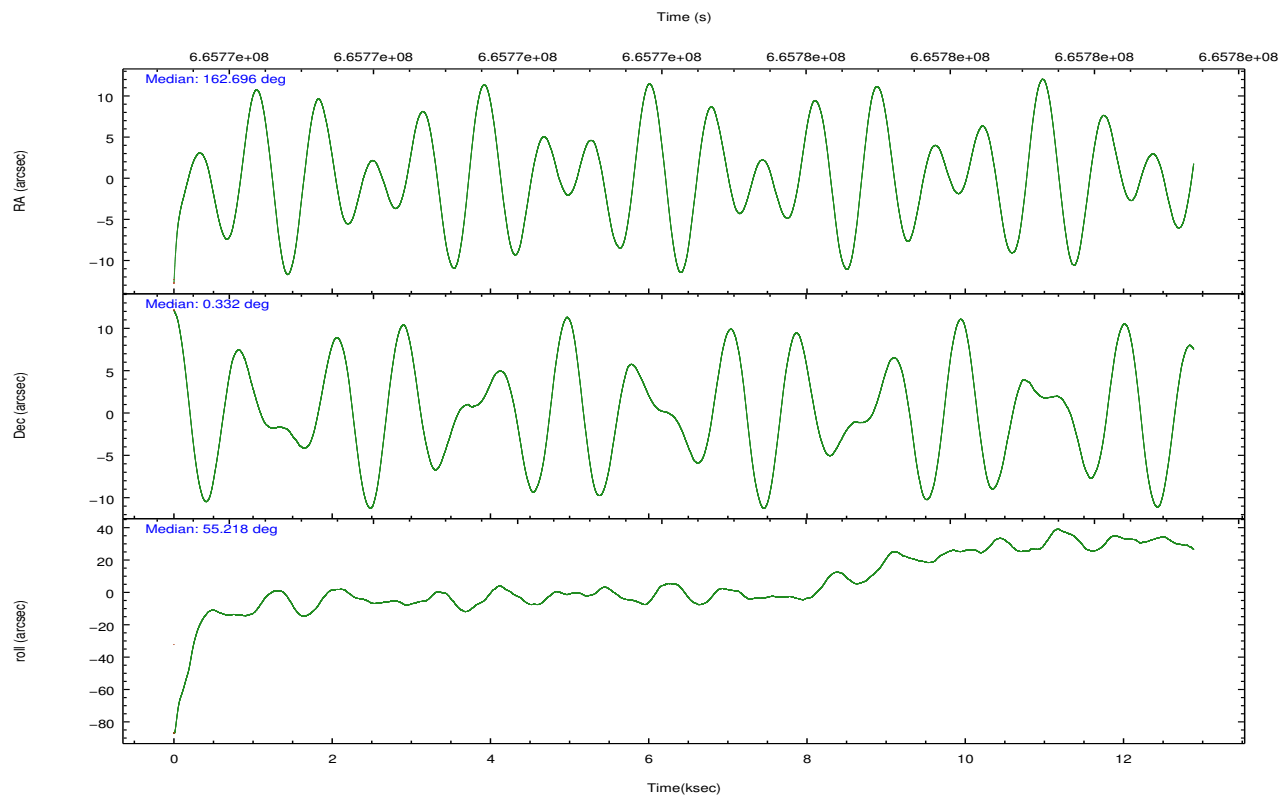
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-0123	ACIS-0123
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	162.693829	162.6959947215726
[deg] Pointing Dec	0.304802	0.3323187858222595
[deg] Pointing Roll	54.999853	55.20850962348801
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-225.840463	-225.8433433320239
[mm] SIM translation stage offset	-7.752	-7.749109670905796
[s] Observation start time (MET)	665768039.184000	665766894.63352
Observation start date	2019-02-05T15:32:50	2019-02-05T15:14:54
[s] Observation end time (MET)	665780750.184000	665781415.8093899
Observation end date	2019-02-05T19:04:41	2019-02-05T19:16:55
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	Y	Y
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	O1	N
CCD S3 on	O2	N
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	2	2
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



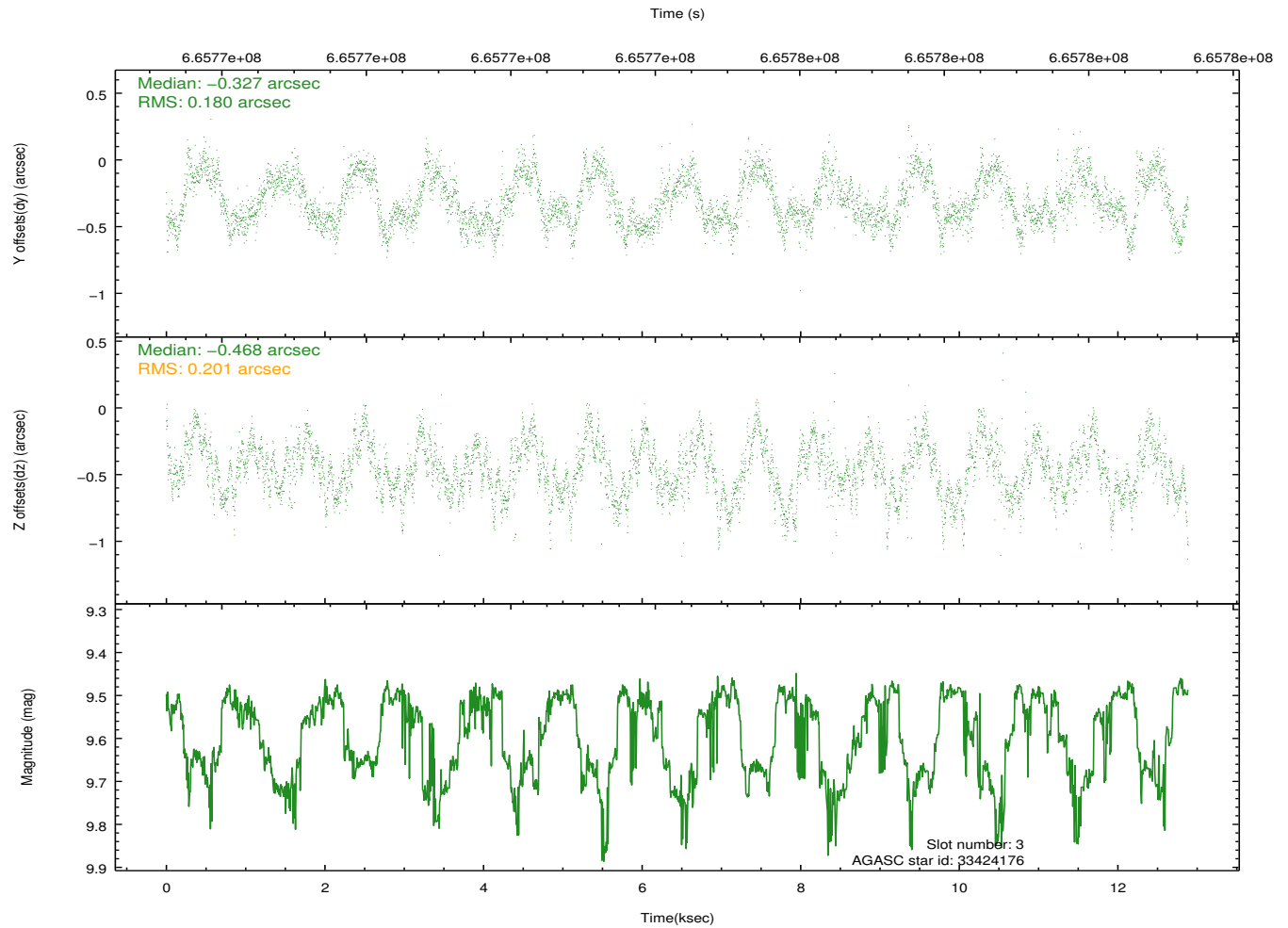
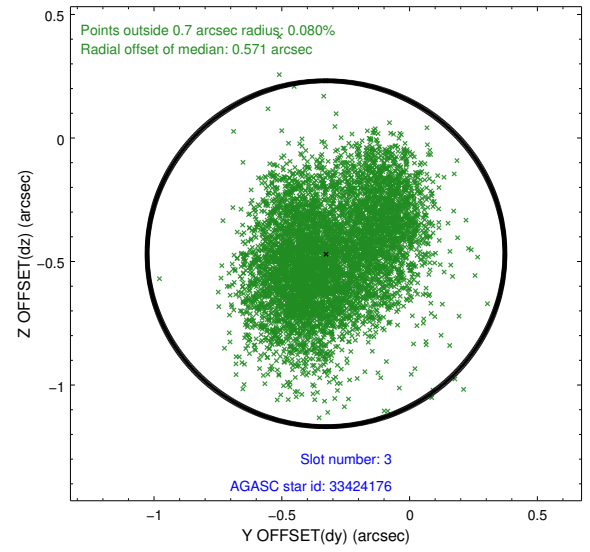
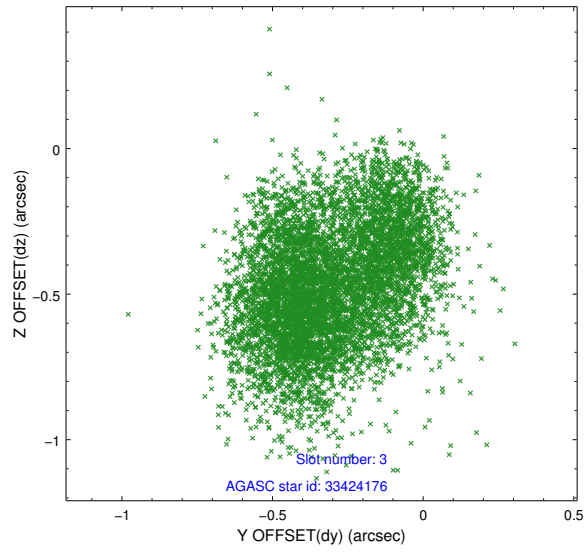


Slot Statistics

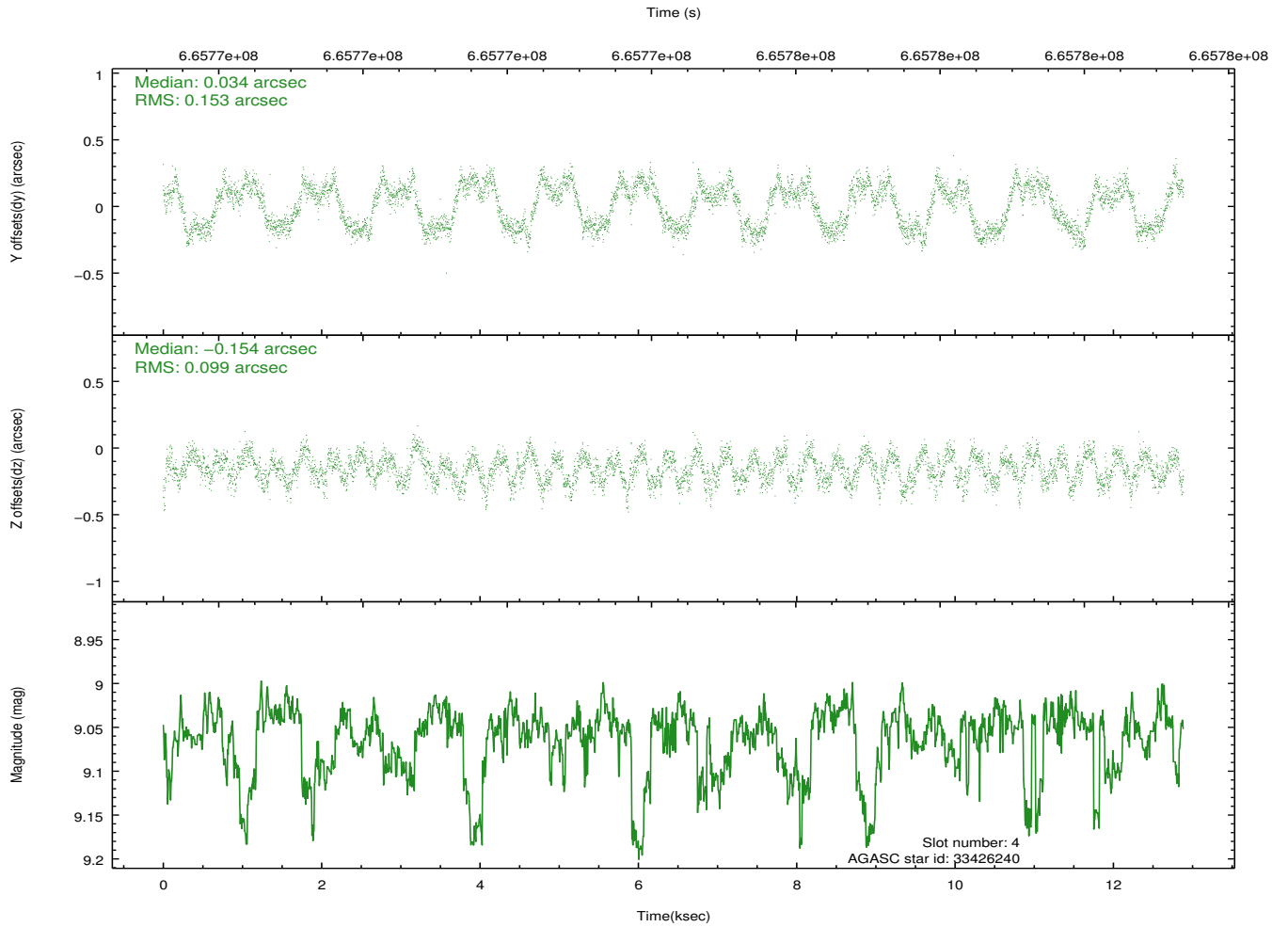
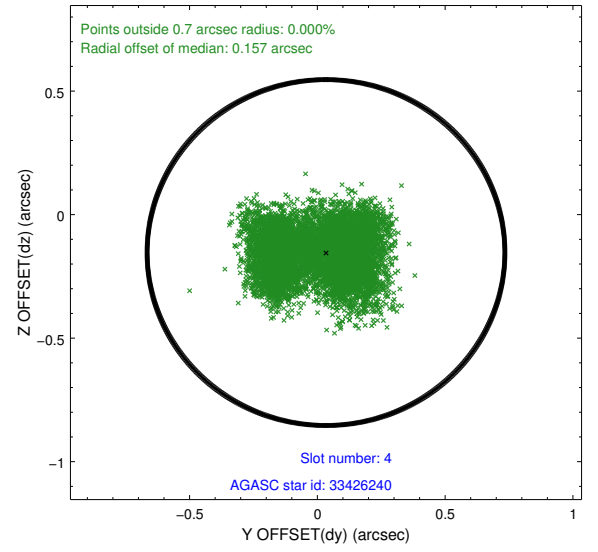
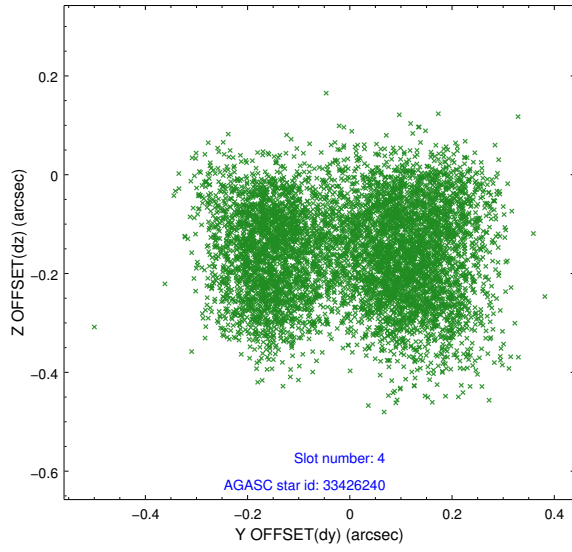
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.24	3144	1.000	0.165	-0.139	0.007	0.015	0.000000	0.000000	928.21	-1000
1	FID		ACIS-I-5	7.21	3143	1.000	-0.513	0.069	0.009	0.016	0.000000	0.000000	-1820.56	896
2	FID		ACIS-I-6	7.27	3143	1.000	0.256	0.141	0.009	0.016	0.000000	0.000000	393.17	1541
3	GUIDE	used	33424176	9.59	6213	1.000	-0.327	-0.468	0.292	0.450	162.799259	0.674933	1309.44	453
4	GUIDE	used	33426240	9.06	6280	1.000	0.034	-0.154	0.203	0.291	162.557877	0.354342	-133.59	503
5	GUIDE	used	33427280	9.60	6269	1.000	0.107	0.488	0.251	0.414	163.217983	0.156200	644.85	-1849
6	GUIDE	used	33431896	8.51	6283	1.000	-0.399	-0.369	0.156	0.241	162.788560	0.786057	1615.46	713
7	GUIDE	used	644090024	9.43	6273	1.000	0.586	0.512	0.195	0.330	162.874148	-0.483818	-1952.29	-2158

2.4 Star Slots

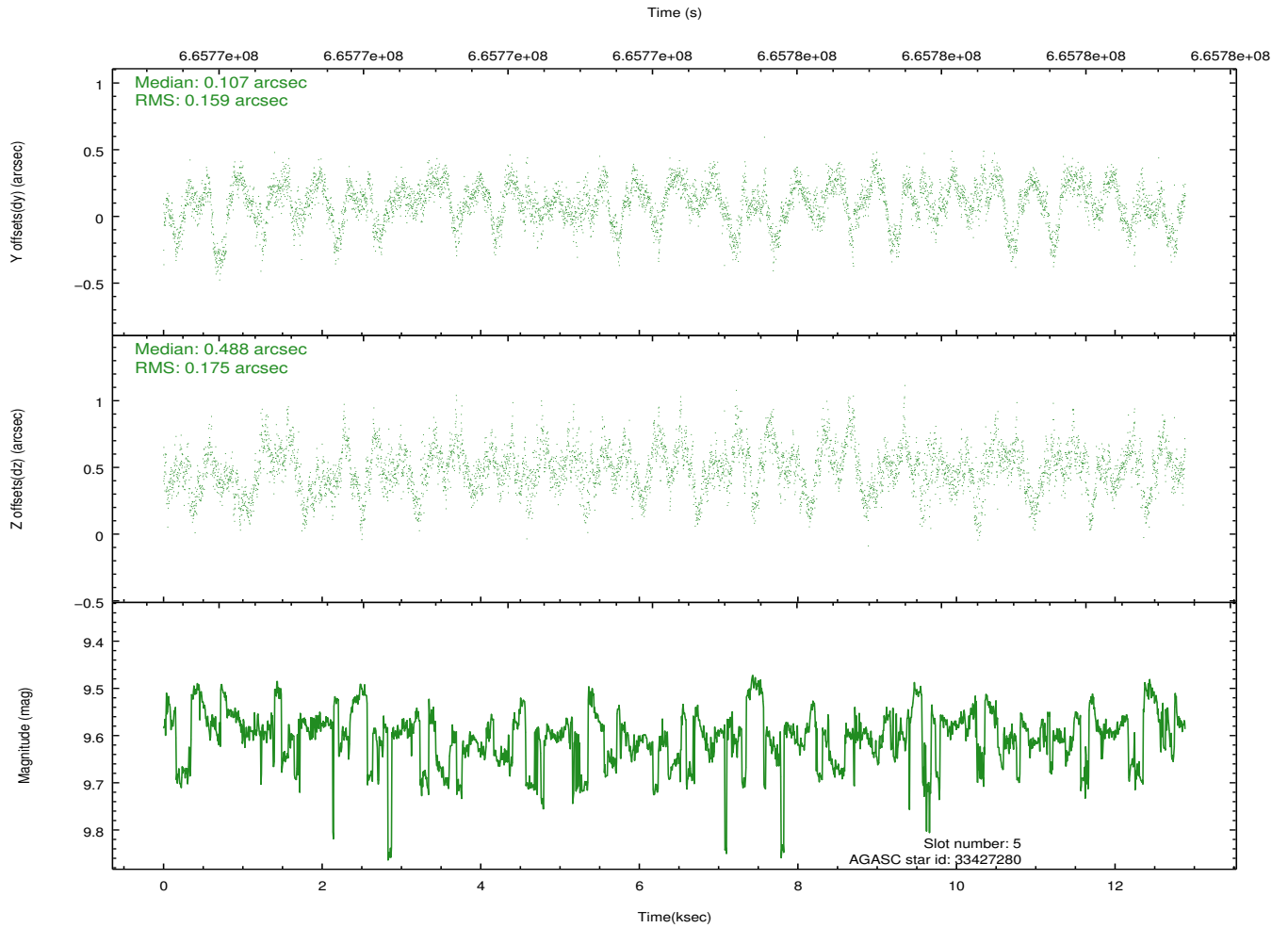
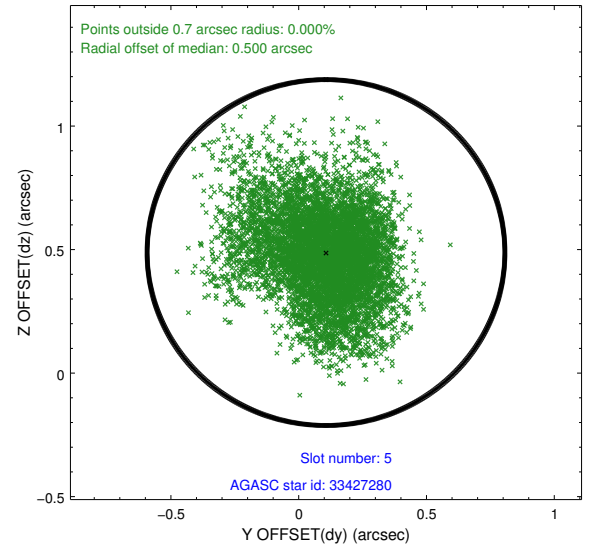
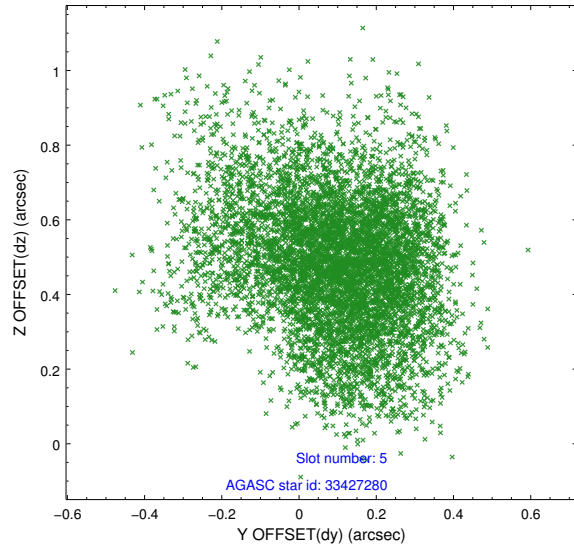
2.4.1 Slot 3



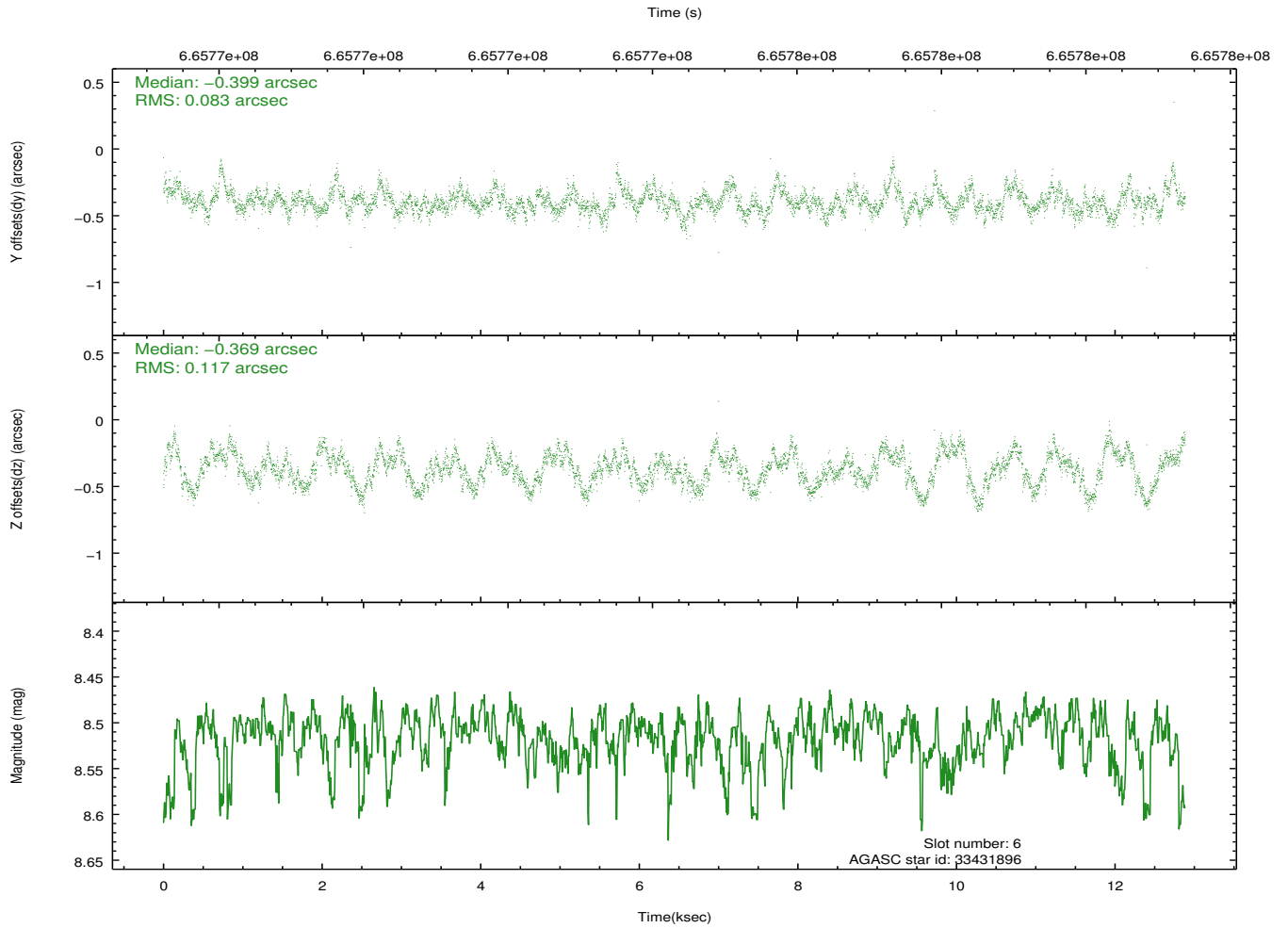
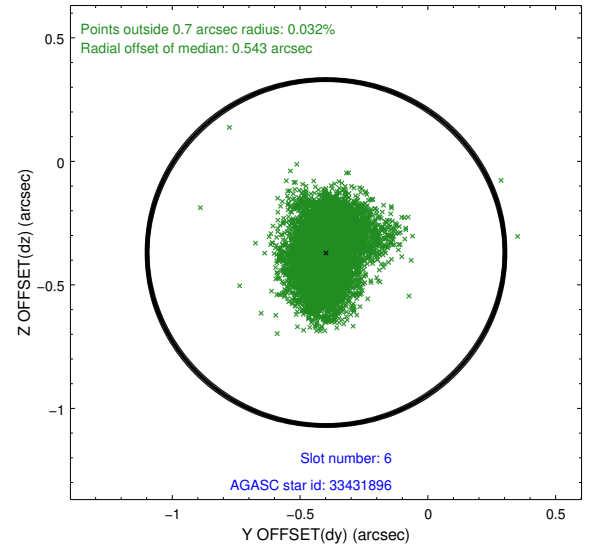
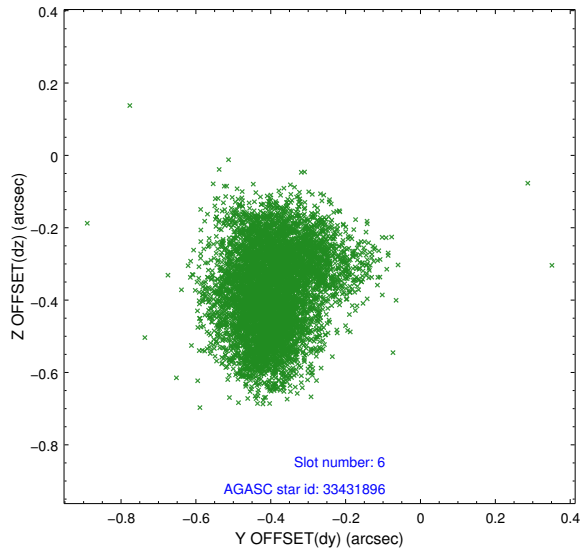
2.4.2 Slot 4



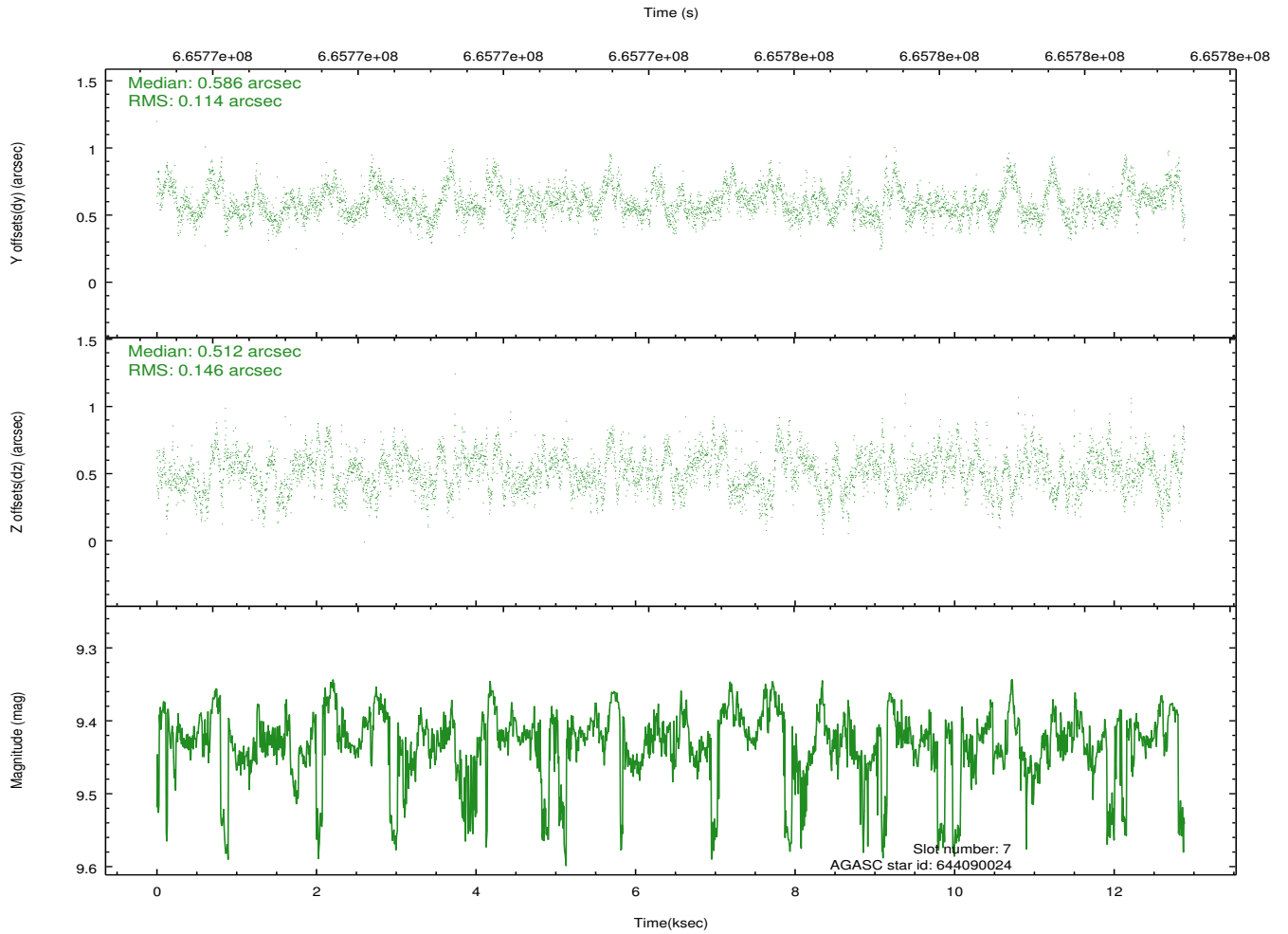
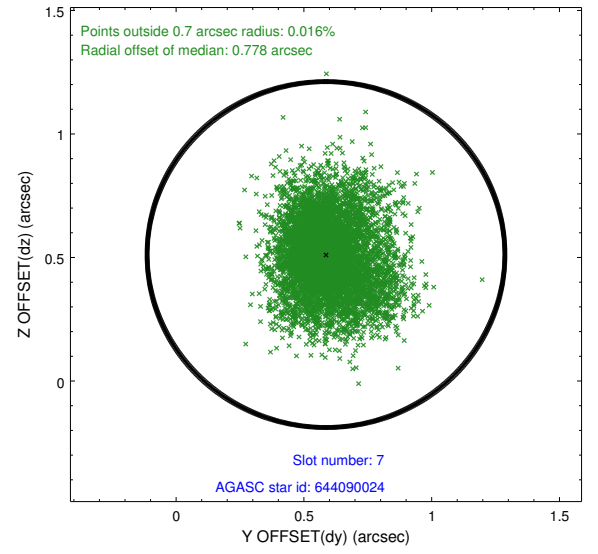
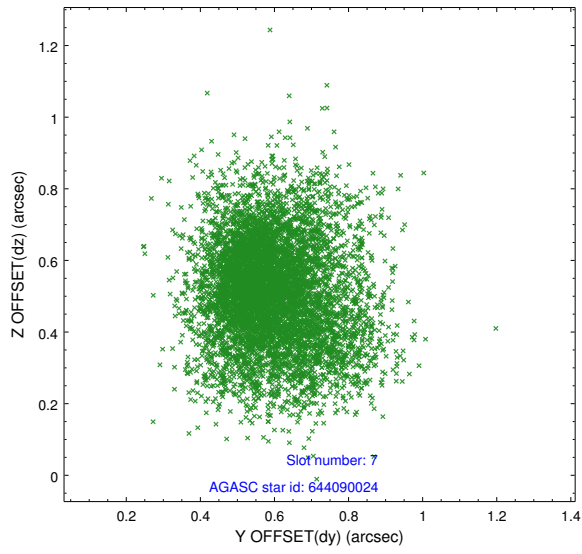
2.4.3 Slot 5



2.4.4 Slot 6

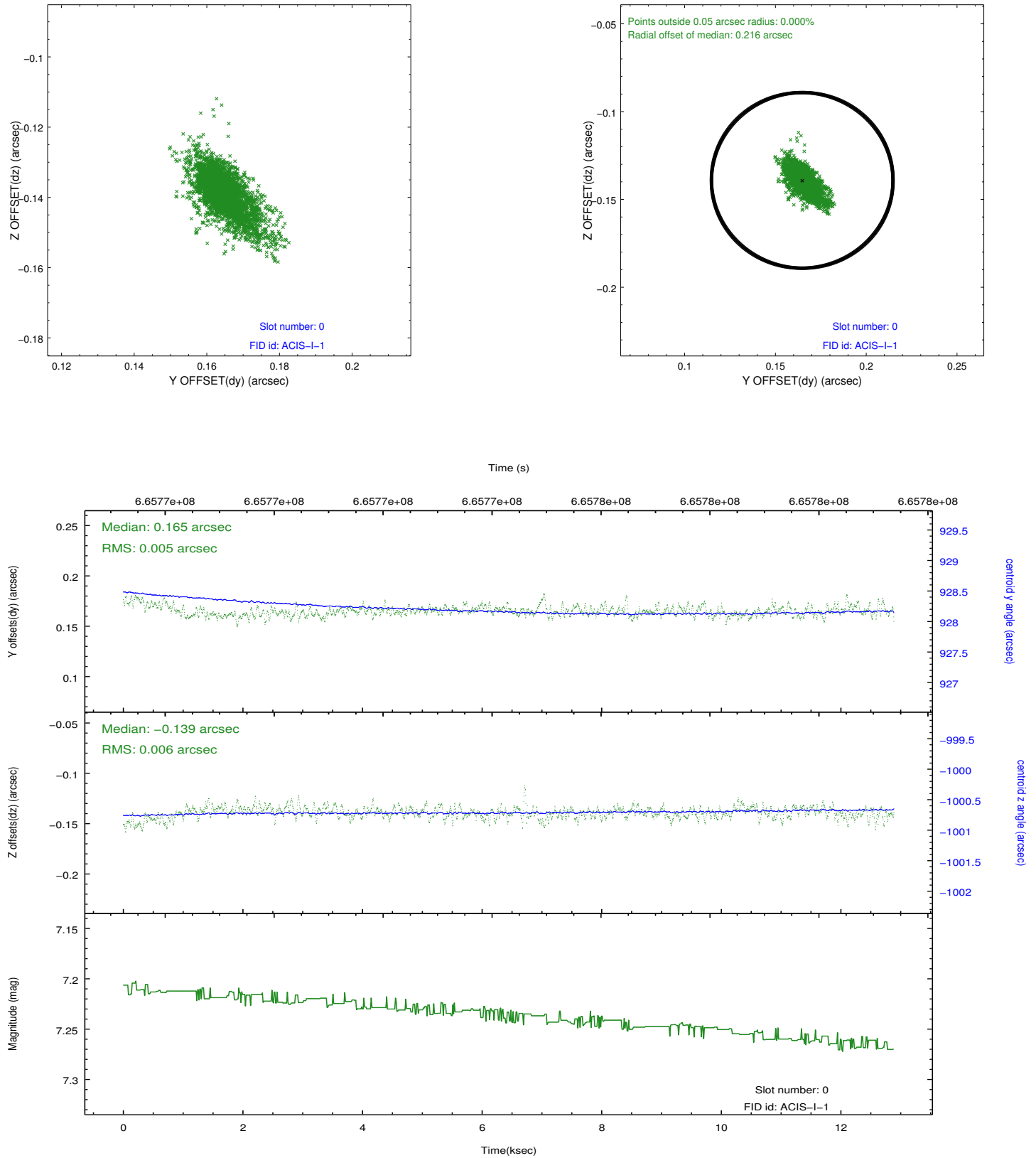


2.4.5 Slot 7

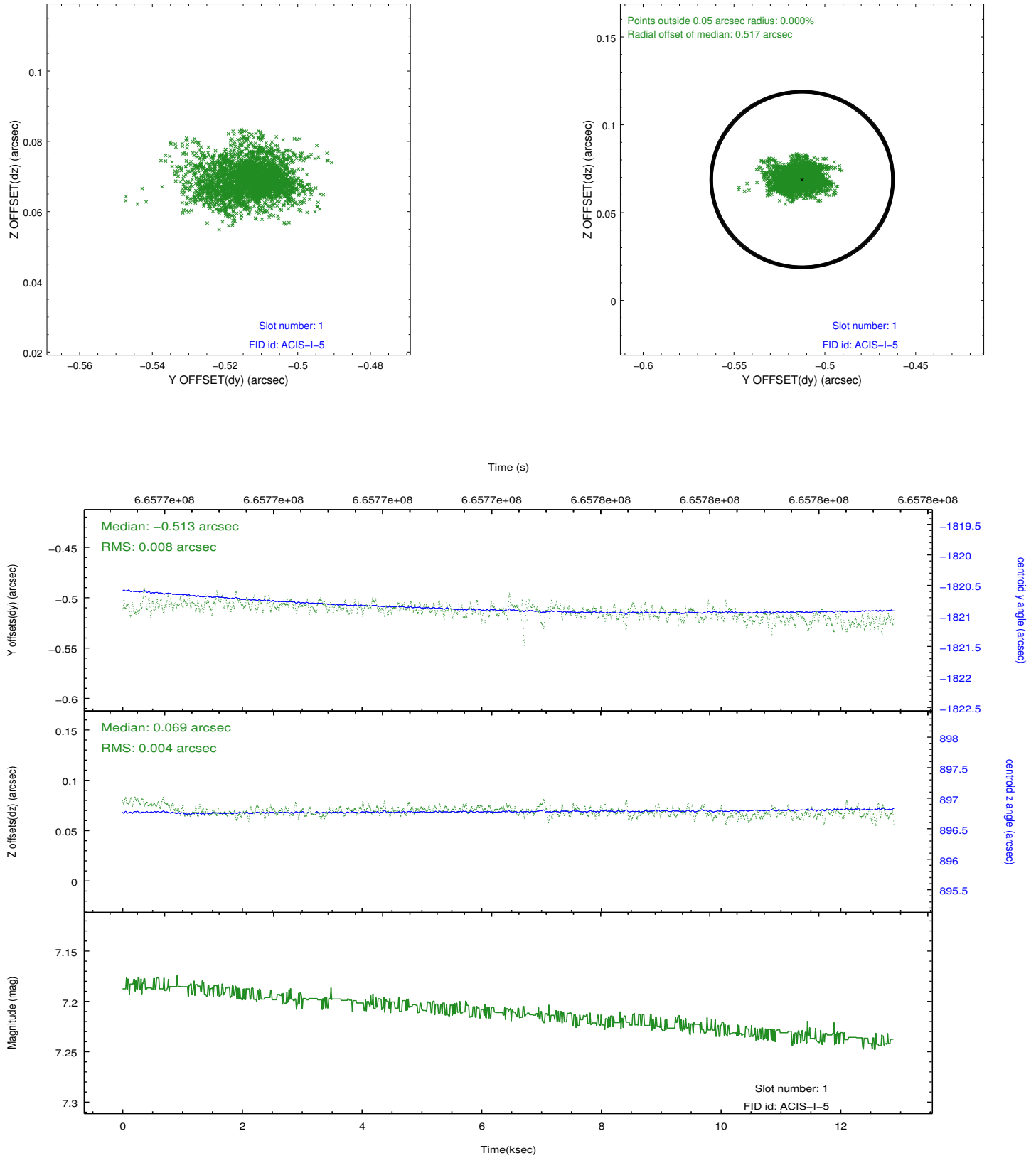


2.5 FID Slots

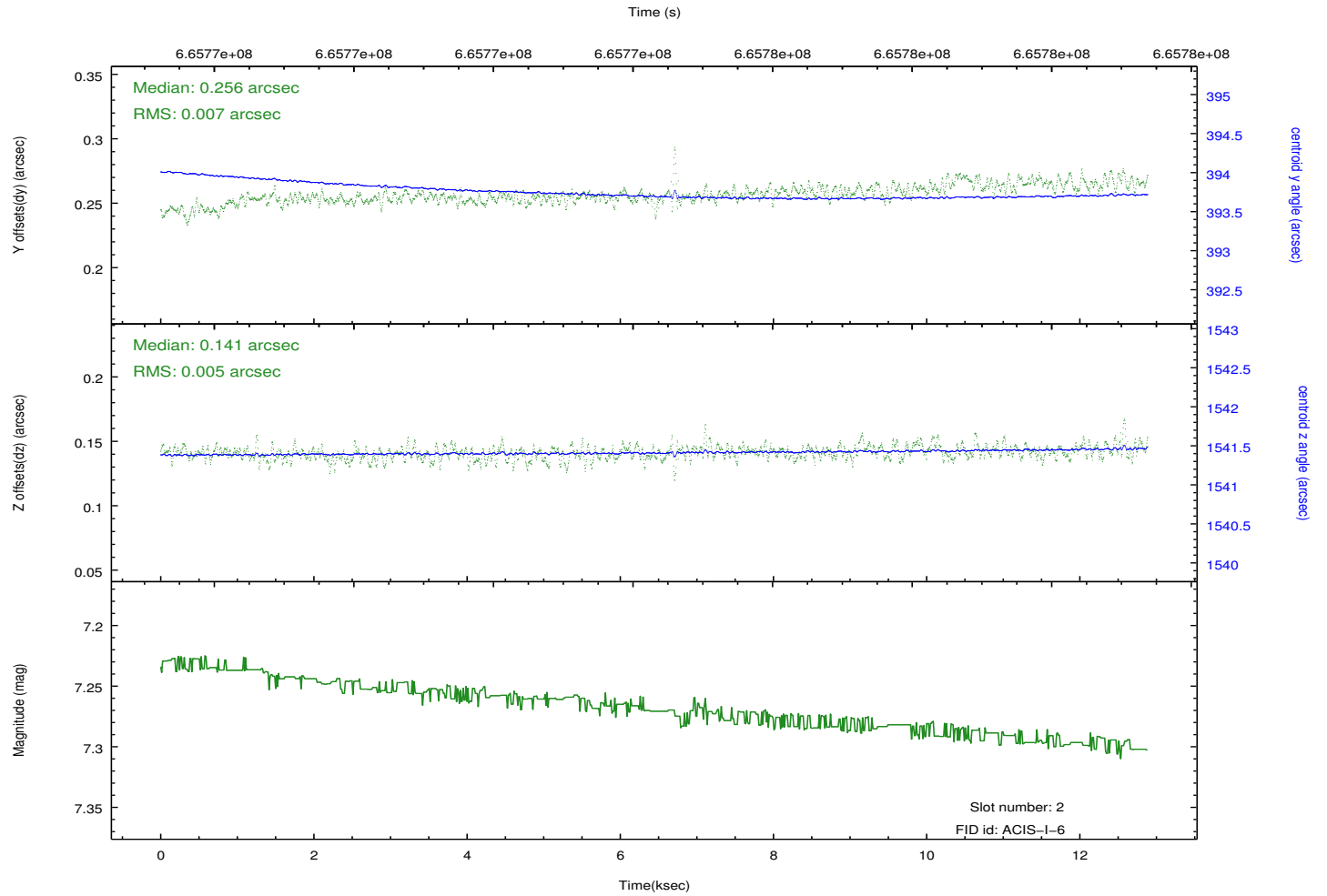
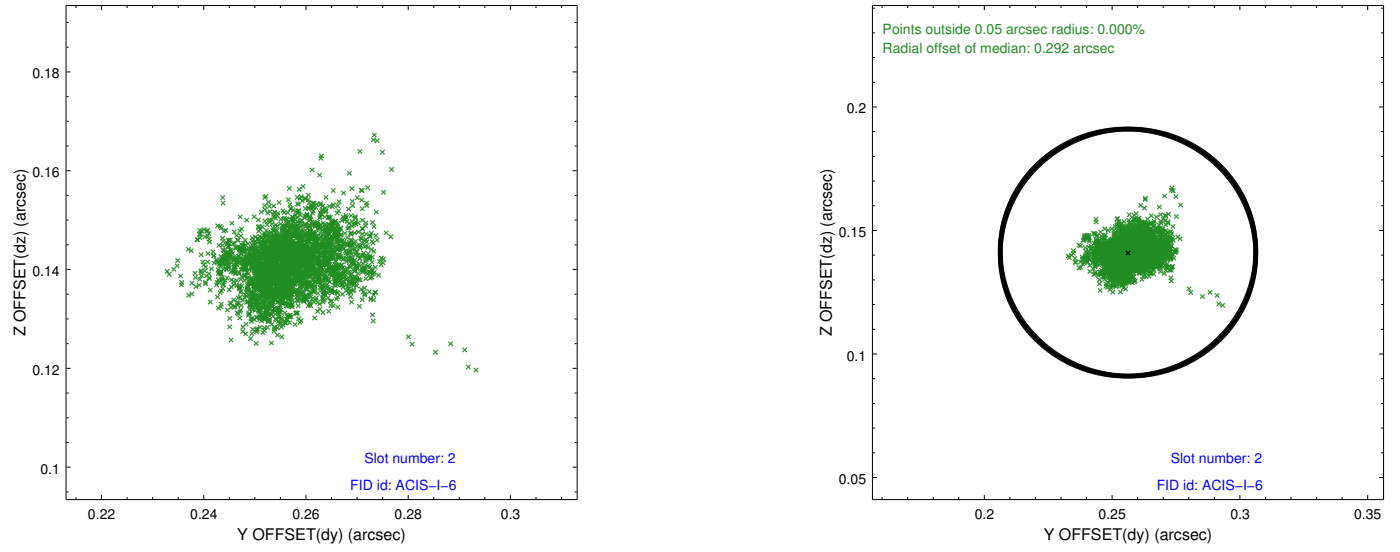
2.5.1 Slot 0



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)	2019.02.05
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	12.790214058995

A.2 Comments

Joint proposal with HST.

Two optional chips were 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/A_CIS_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.