

V&V Reference Report

L2 ASCDS Version : 10.7

Observation 21957 - L2 Version 1
Chandra X-Ray Center

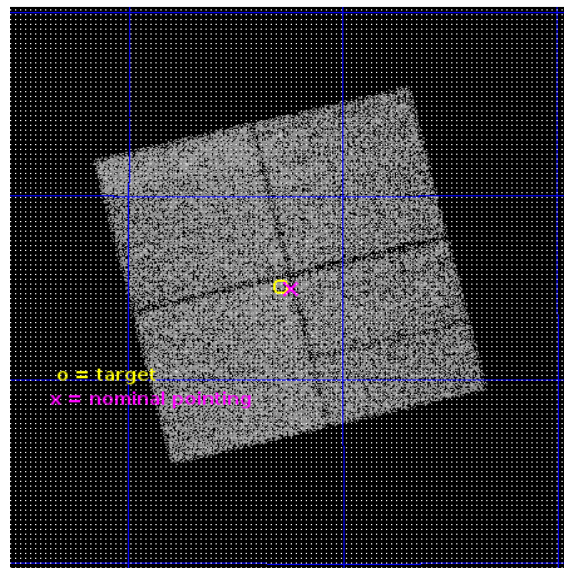
L2 Processing Date : Nov 7 2018

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1 Front

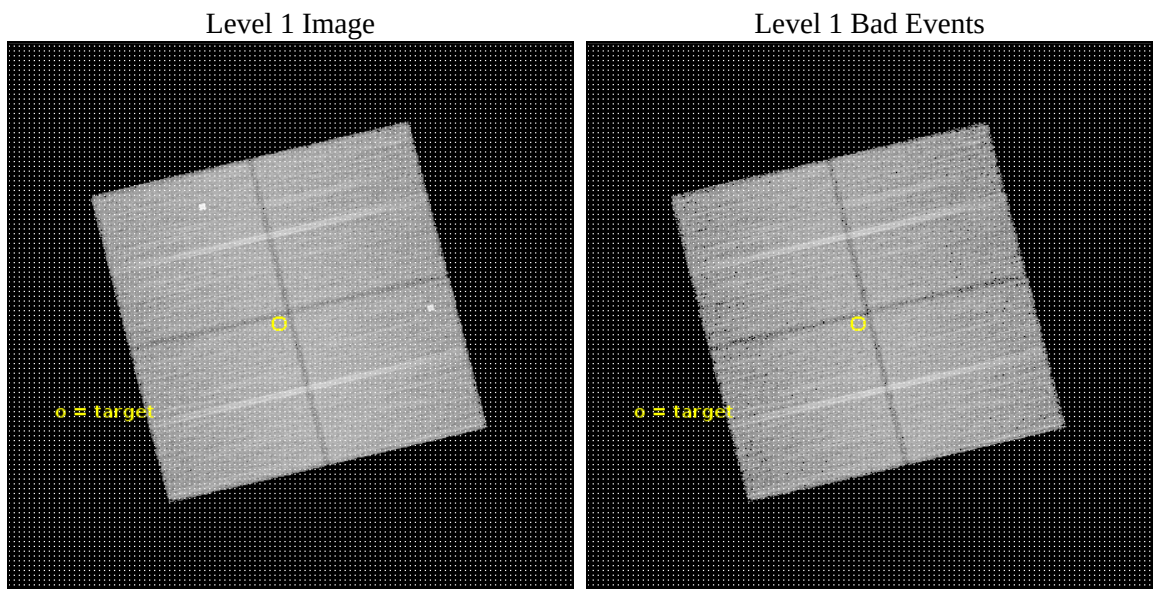
seq_num	801812	Sequence number
obs_id	21957	Observation id
title	Is there an enormous cold front at the virial radius of the Perseus cluster?	Proposal title
observer	Stephen Walker	Principal investigator
object	Perseus_west_cf_1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	48.322083	Observer's specified target RA [deg]
dec_targ	41.584861	Observer's specified target Dec [deg]
ra_nom	48.309749231216	Nominal RA [deg]
dec_nom	41.582660874957	Nominal Dec [deg]
roll_nom	166.21687567268	Nominal Roll [deg]
revision	1	Processing version of data
ontime	34075.159171939	Sum of GTIs [s]
livetime	33629.94213159	Livetime [s]
ontime0	34075.159241915	Sum of GTIs [s]
ontime1	34075.159272075	Sum of GTIs [s]
ontime2	34075.159181952	Sum of GTIs [s]
ontime3	34075.159171939	Sum of GTIs [s]
l2events	97205	Number of level 2 events



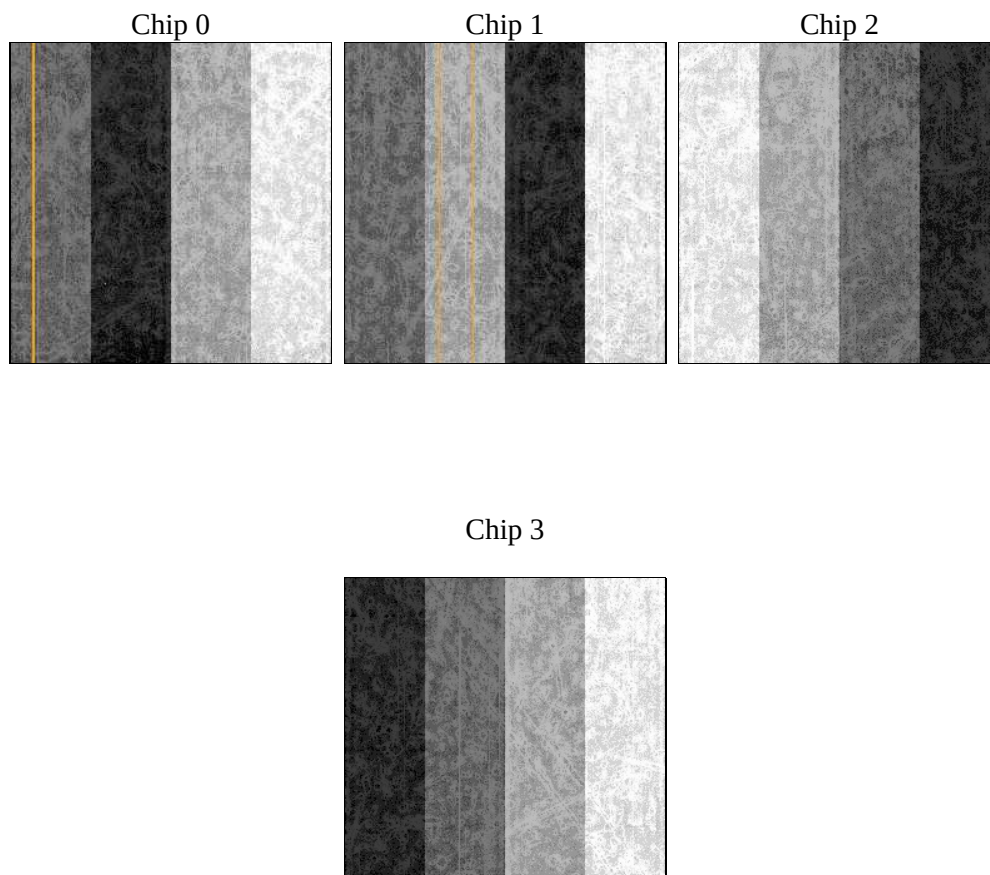
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	34000.000000	[s] Scheduled observation exposure time
ascdsver	10.7	Processing system revision	ontime	34075.159171939	Sum of GTIs [s]
caldsver	4.8.0.1	 	ontime0	34075.159241915	Sum of GTIs [s]
date	2018-11-08T02:21:21	Date and time of file creation	ontime1	34075.159272075	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	34075.159181952	Sum of GTIs [s]
			ontime3	34075.159171939	Sum of GTIs [s]
			l1events	995989	Number of level 1 events

2.1.4 Events

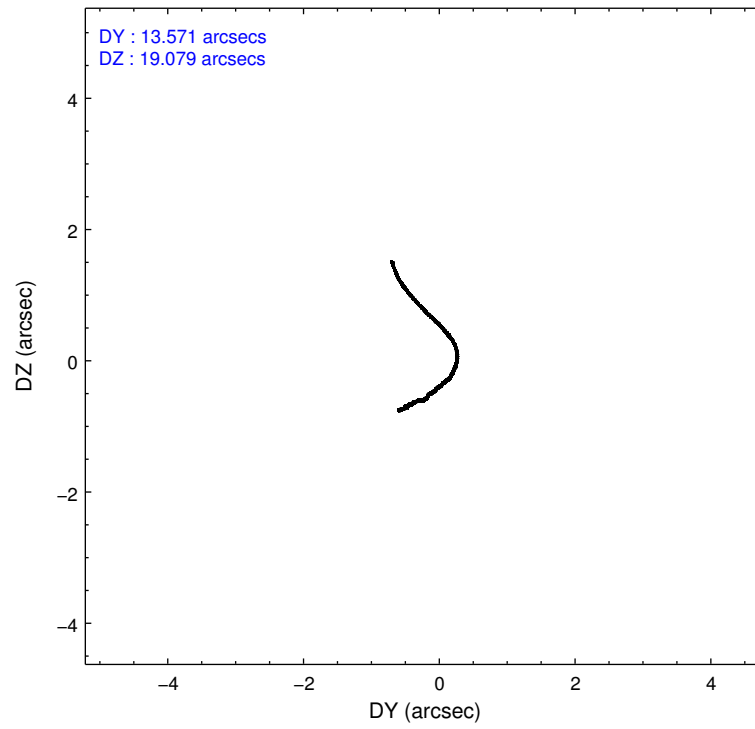
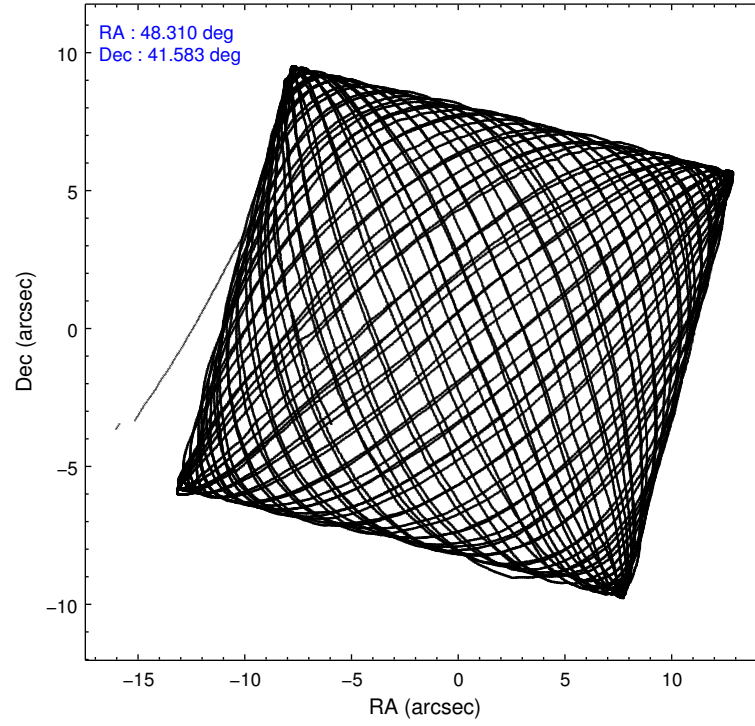
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	233526	249401	262549	250513
rejected events	204755	213656	232086	222656
rejected %	87%	85%	88%	88%

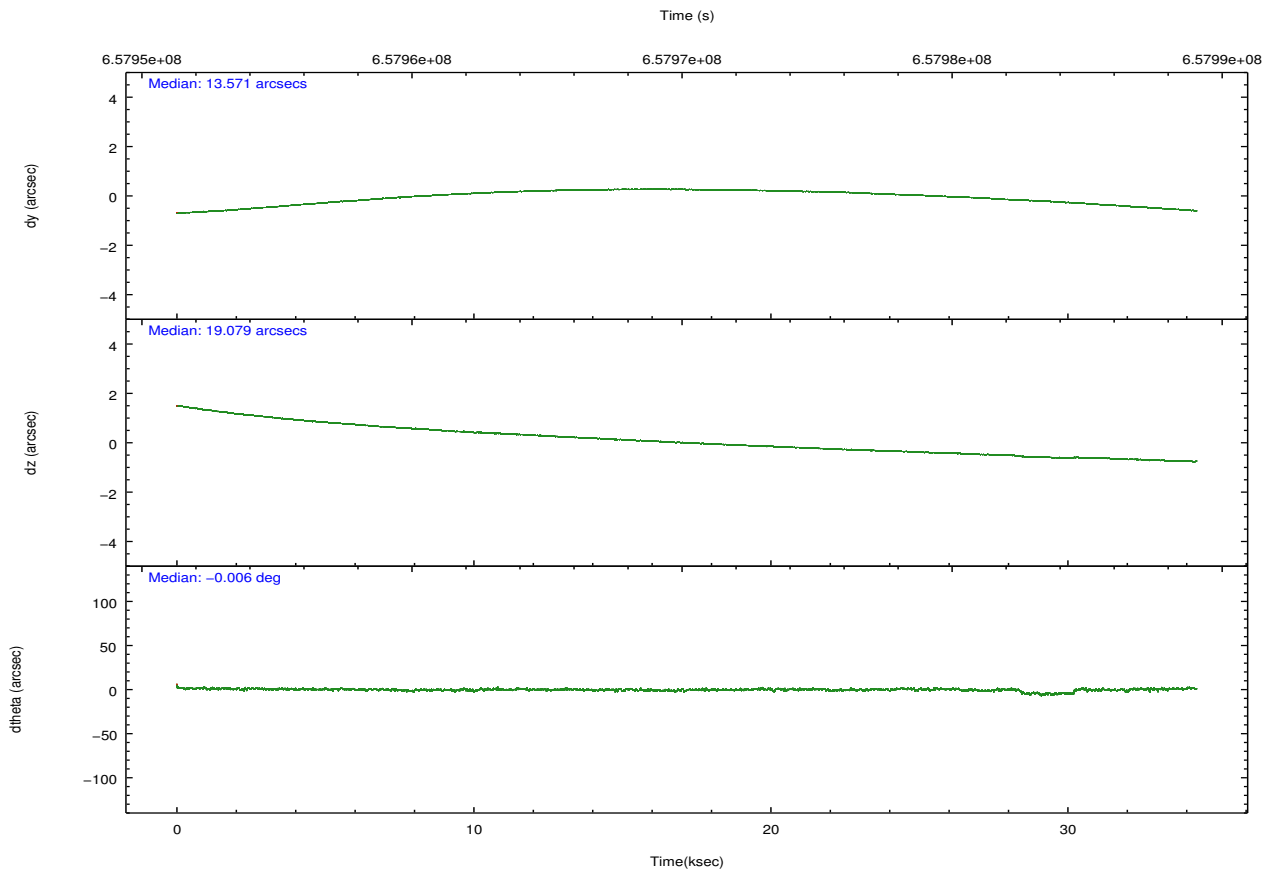
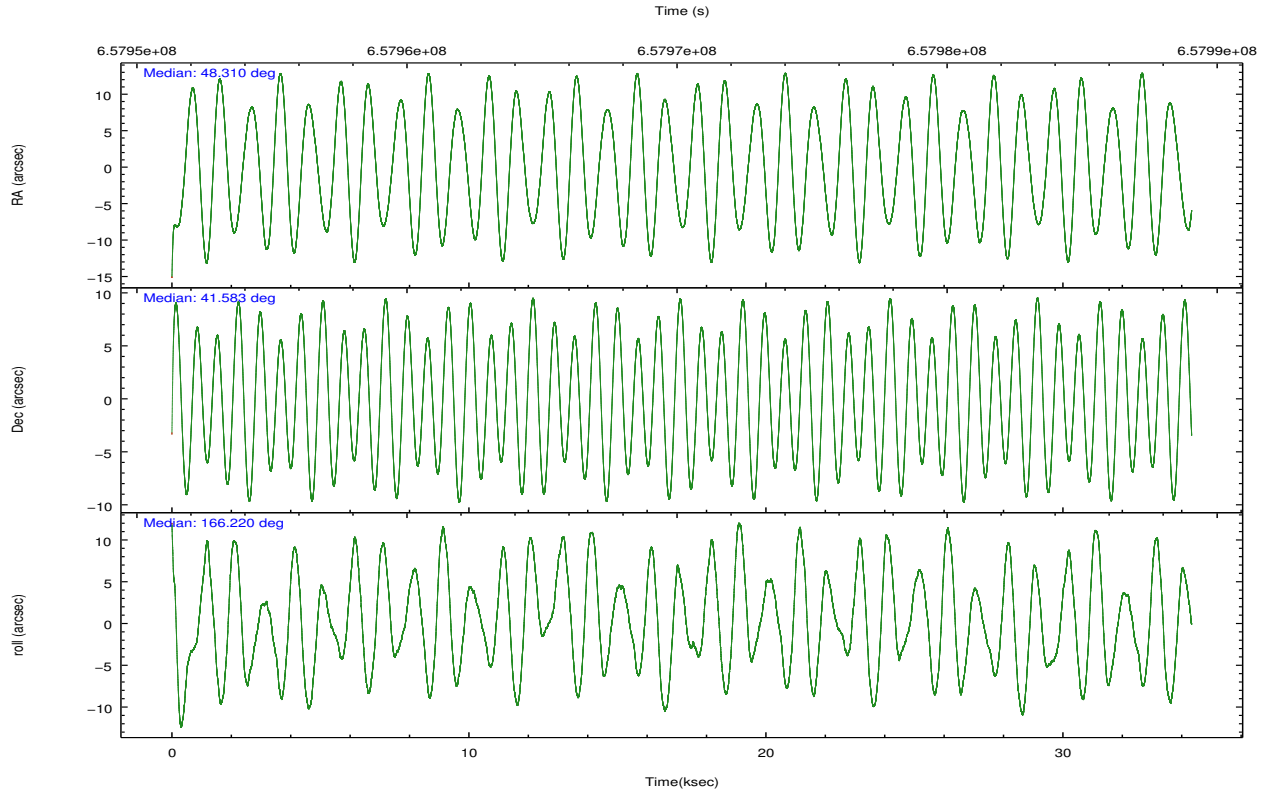
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	9966	14996	12765	10031
	4%	6%	4%	4%
grade 1 events	118	182	176	131
	0%	0%	0%	0%
grade 2 events	7186	7836	6757	6106
	3%	3%	2%	2%
grade 3 events	2915	2904	2658	2858
	1%	1%	1%	1%
grade 4 events	2644	2844	2840	2913
	1%	1%	1%	1%
grade 5 events	10767	10971	10007	11992
	4%	4%	3%	4%
grade 6 events	6060	7171	5446	5959
	2%	2%	2%	2%
grade 7 events	193870	202497	221900	210523
	83%	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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	48.345172	48.30974923121569	Subarray requested	NONE	NONE
[deg] Pointing Dec	41.590439	41.5826608749571	Alternating exposures requested	N	N
[deg] Pointing Roll	165.984673	166.2168756726833	[s] Primary exposure time	0.000000	3.1
[mm] SIM focus pos	-0.782348	-0.7809083437167272			
[mm] SIM defocus	0	0.001439871863259334			
[mm] SIM translation stage pos	-233.592463	-233.5874344608287			
[mm] SIM translation stage offset	0	-0.005018542100998502			
[s] Observation start time (MET)	657953342.184000	657952466.36743			
Observation start date	2018-11-07T04:47:53	2018-11-07T04:34:26			
[s] Observation end time (MET)	657987342.184000	657987947.25704			
Observation end date	2018-11-07T14:14:33	2018-11-07T14:25:47			
Read mode	TIMED	TIMED			

2.3 Aspect



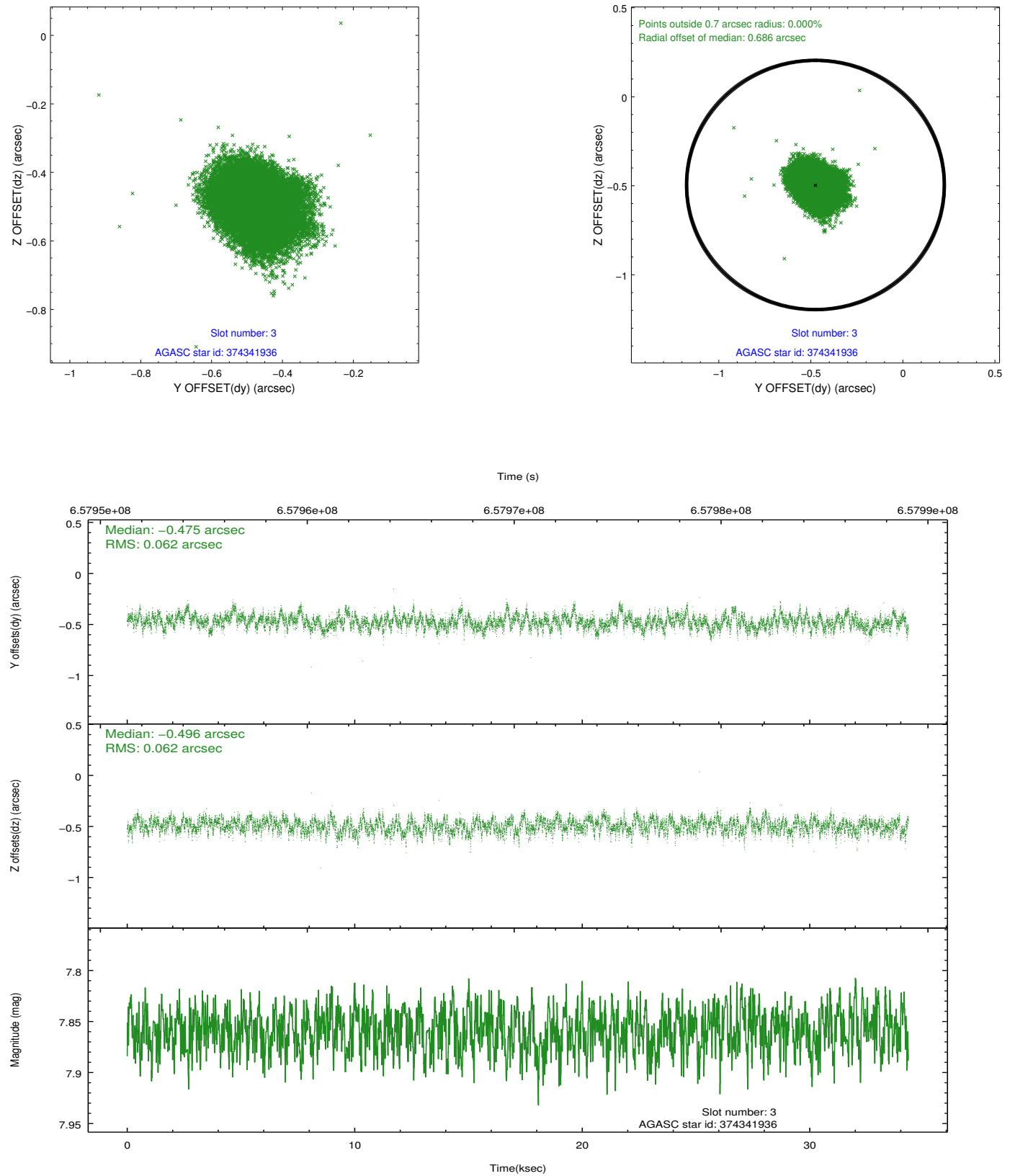


Slot Statistics

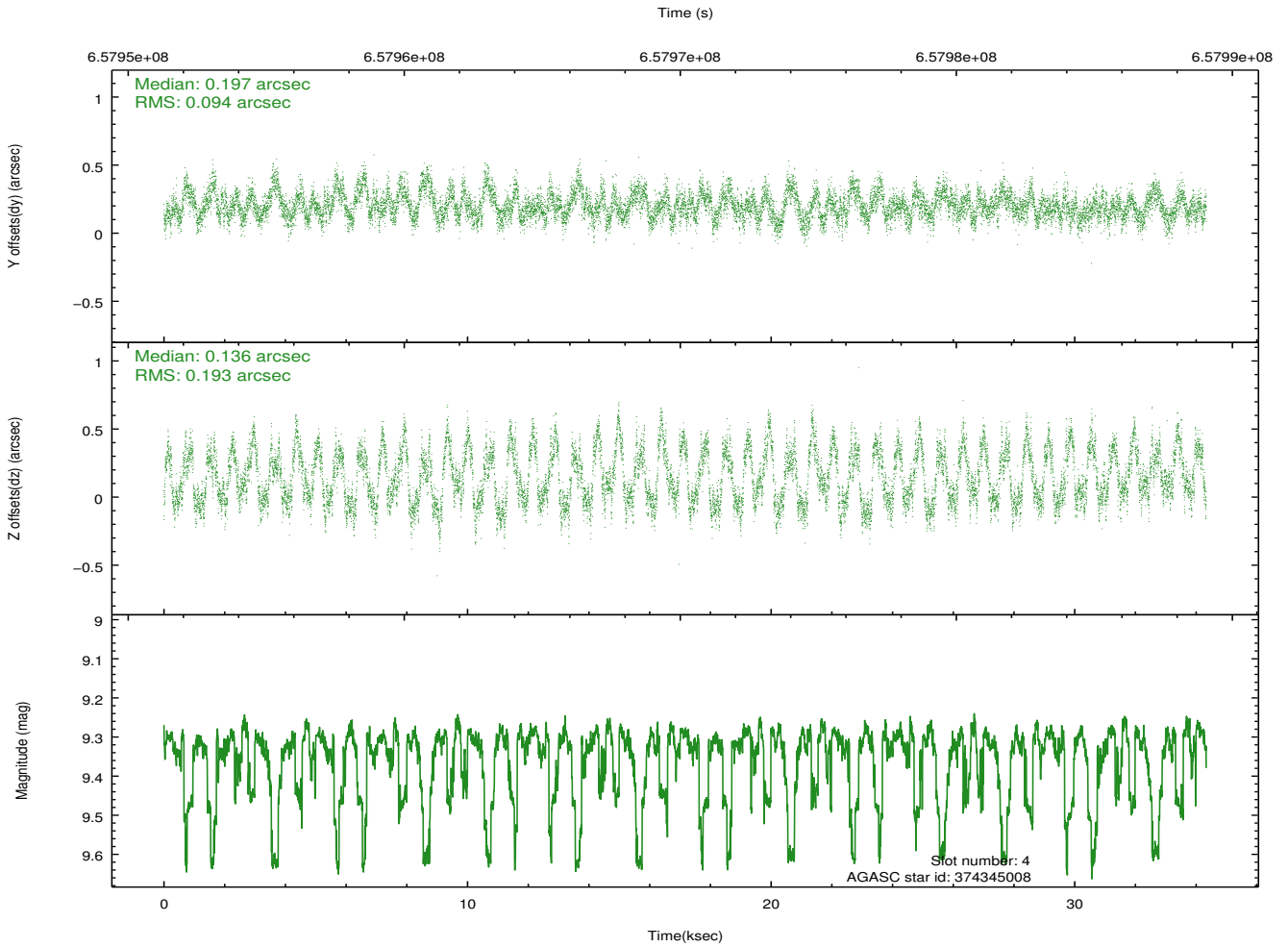
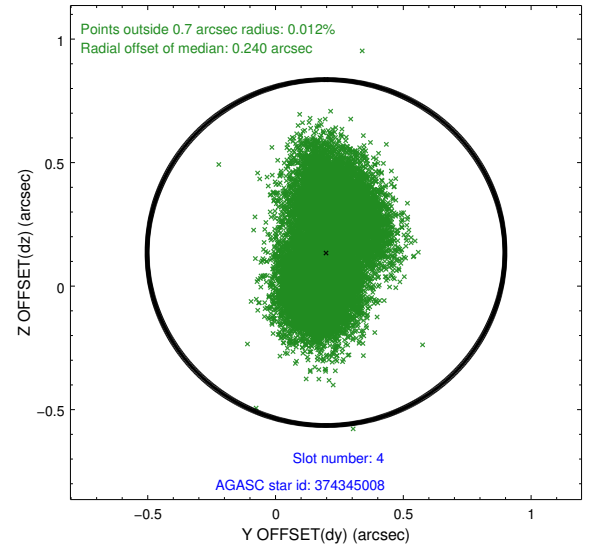
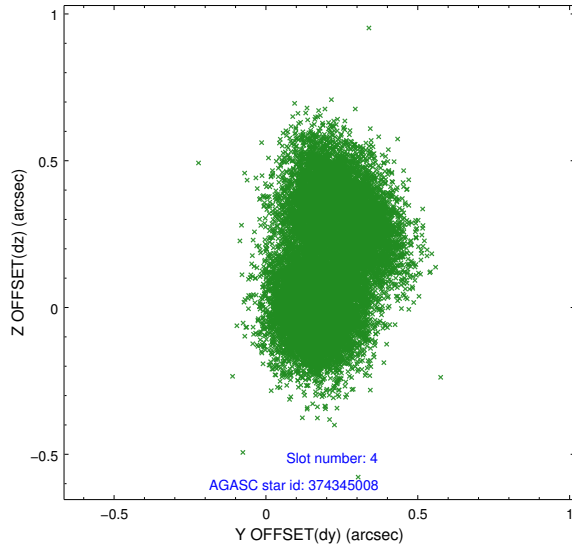
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-2	7.10	8374	1.000	-0.390	-0.081	0.022	0.041	0.000000	0.000000	-768.51	-849
1	FID		ACIS-I-4	7.17	8373	1.000	0.796	0.220	0.029	0.048	0.000000	0.000000	2146.59	1057
2	FID		ACIS-I-5	7.19	8372	1.000	-0.504	-0.070	0.016	0.025	0.000000	0.000000	-1822.51	1054
3	GUIDE	used	374341936	7.86	16743	1.000	-0.475	-0.496	0.094	0.147	47.693096	41.597853	1711.52	393
4	GUIDE	used	374345008	9.33	16728	1.000	0.197	0.136	0.231	0.353	48.768668	41.619367	-1080.08	-377
5	GUIDE	used	374353904	8.32	16742	1.000	-0.396	-0.275	0.180	0.258	48.175092	41.439059	313.04	640
6	GUIDE	used	374359480	8.72	16731	1.000	0.149	0.083	0.125	0.221	48.054064	42.164482	1254.78	-1817
7	GUIDE	used	374358688	9.24	16723	1.000	0.518	0.541	0.186	0.285	49.259903	42.100043	-1922.35	-2382

2.4 Star Slots

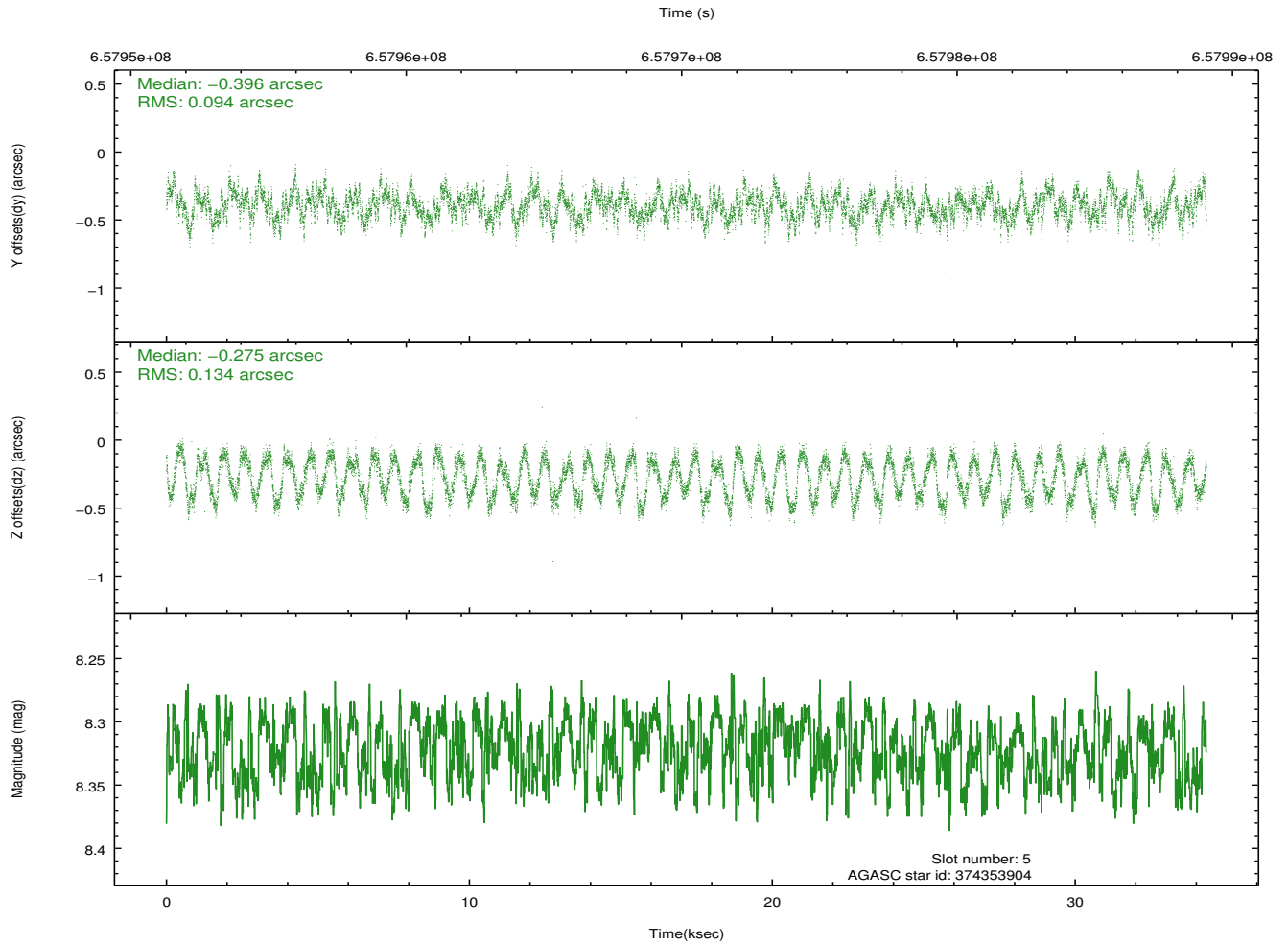
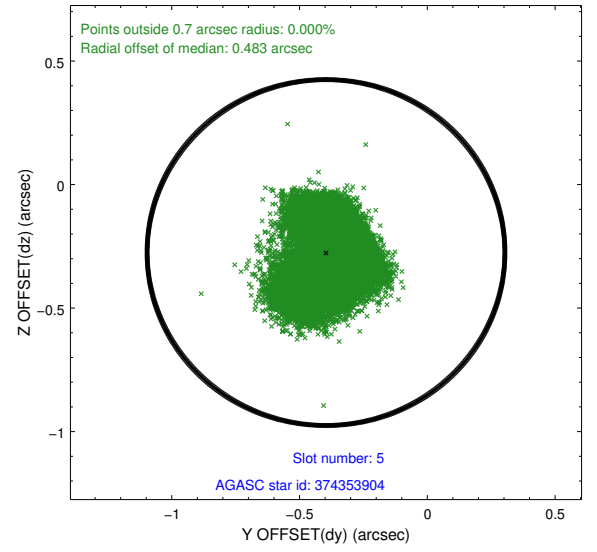
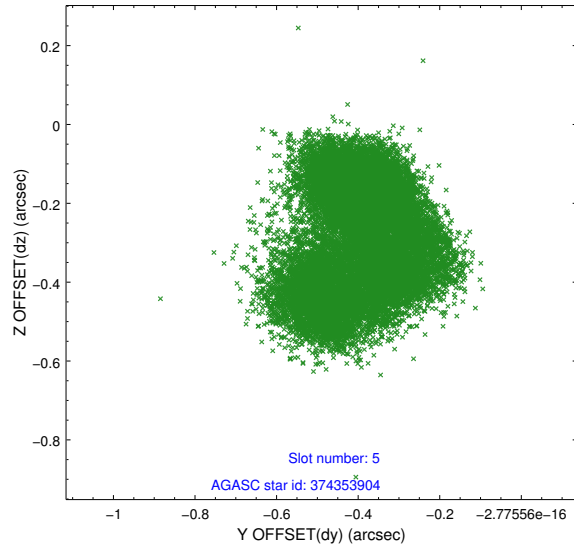
2.4.1 Slot 3



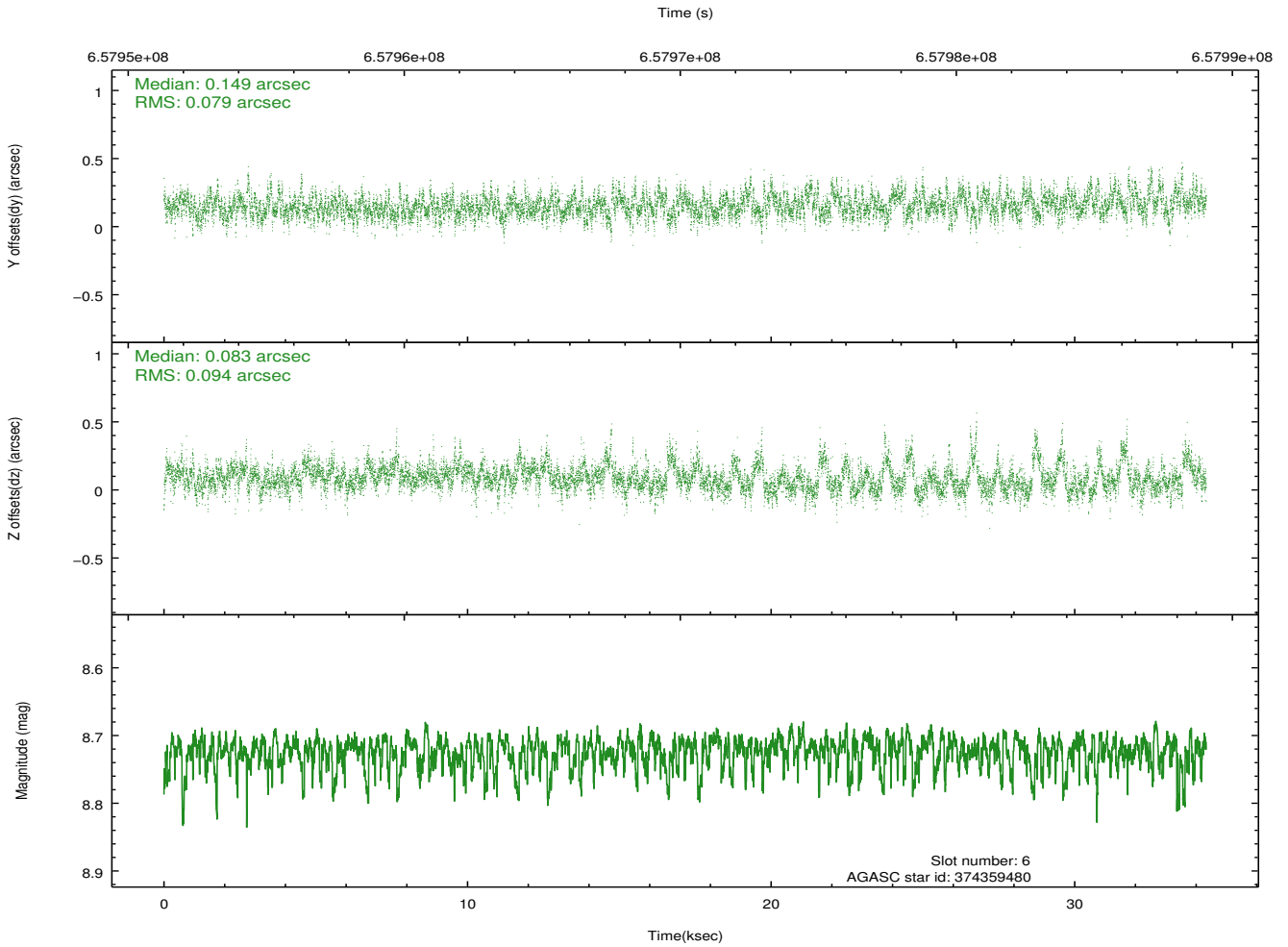
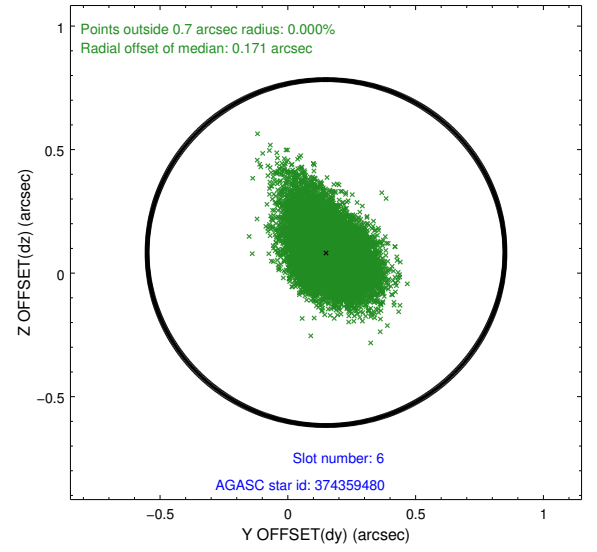
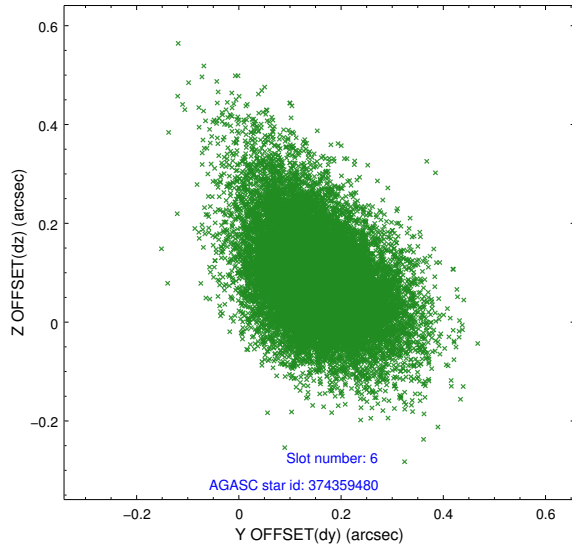
2.4.2 Slot 4



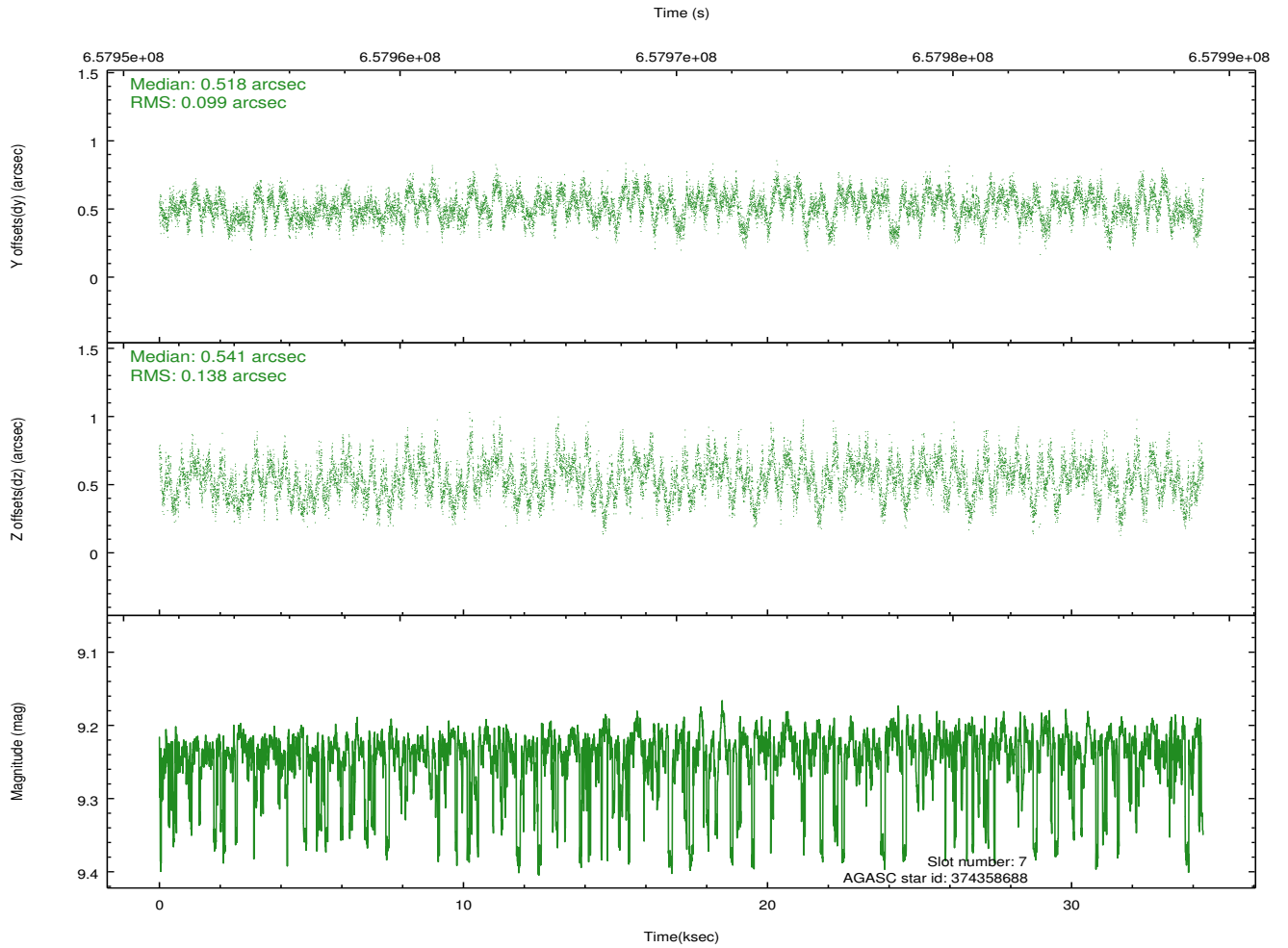
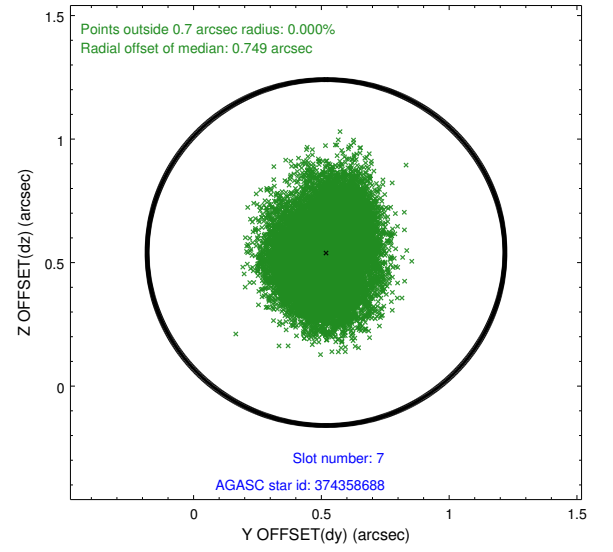
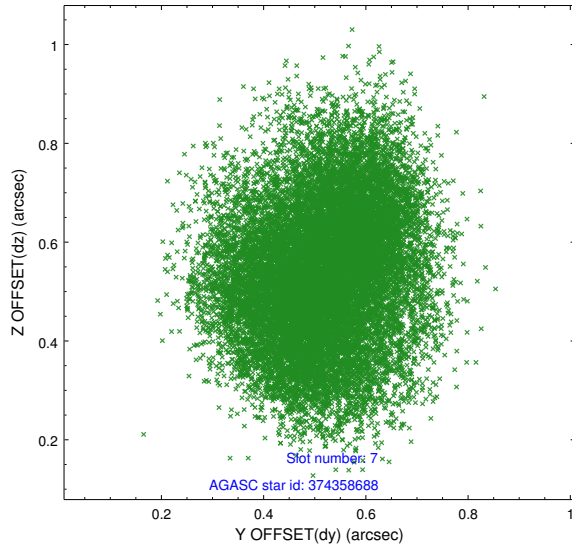
2.4.3 Slot 5



2.4.4 Slot 6

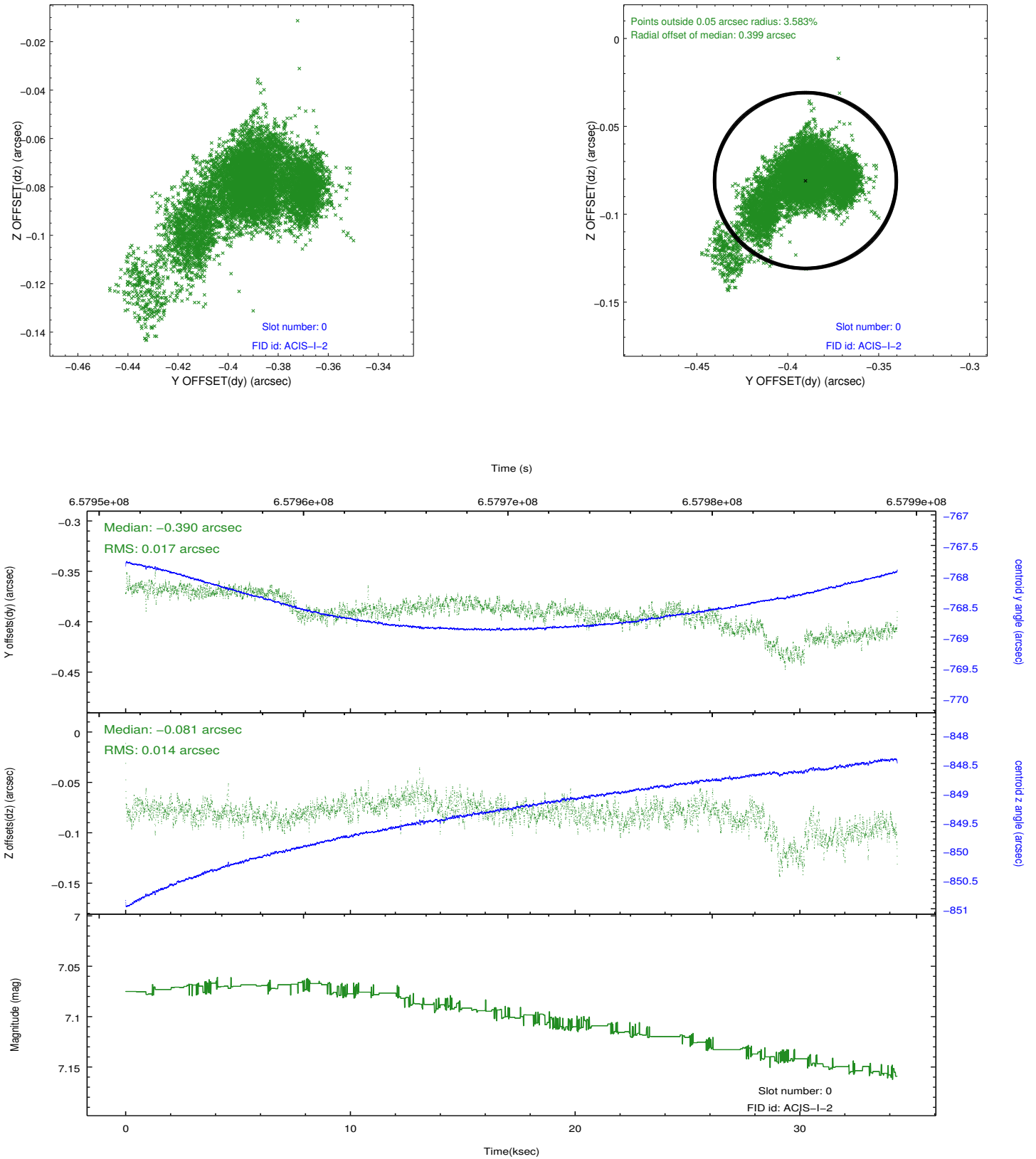


2.4.5 Slot 7

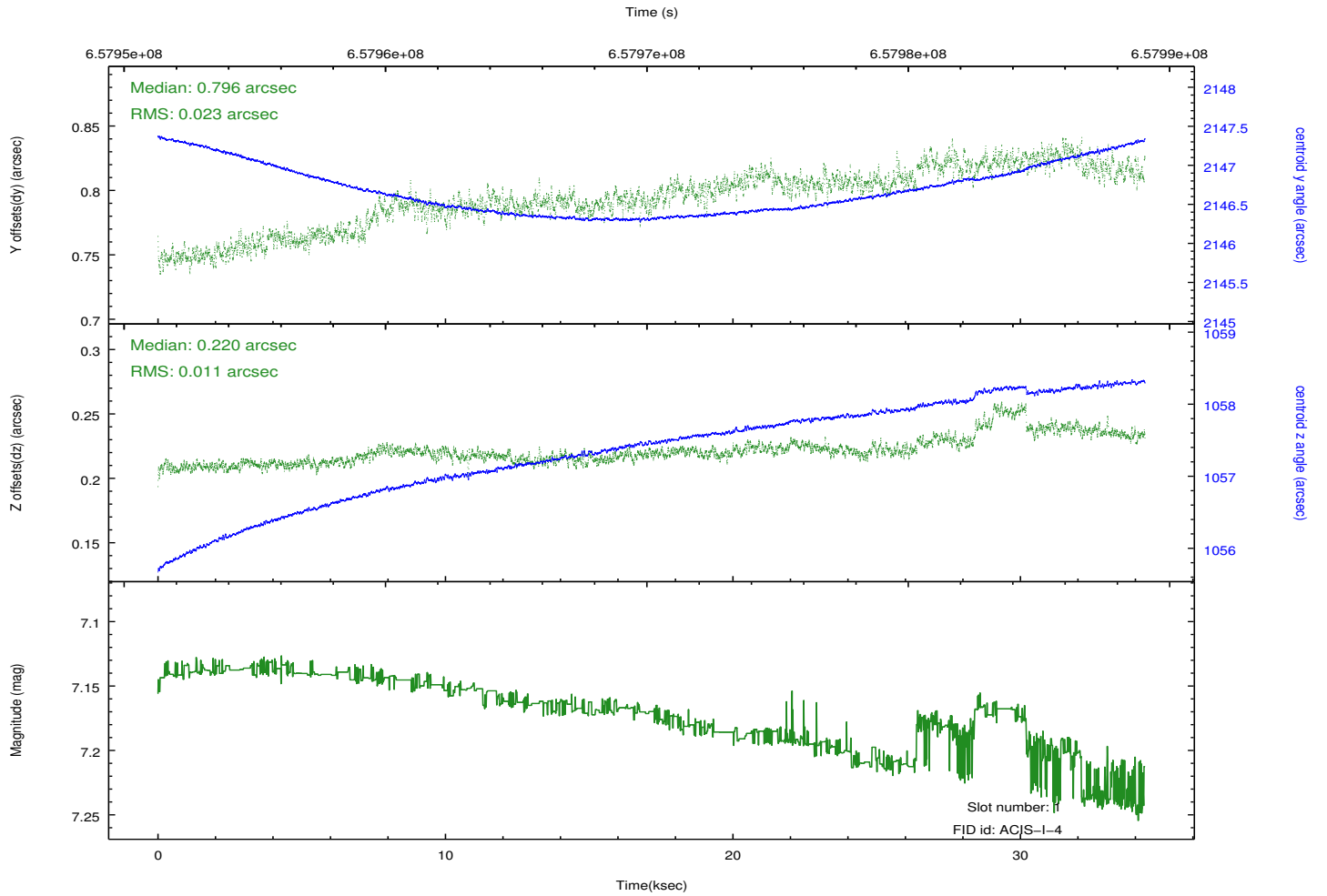
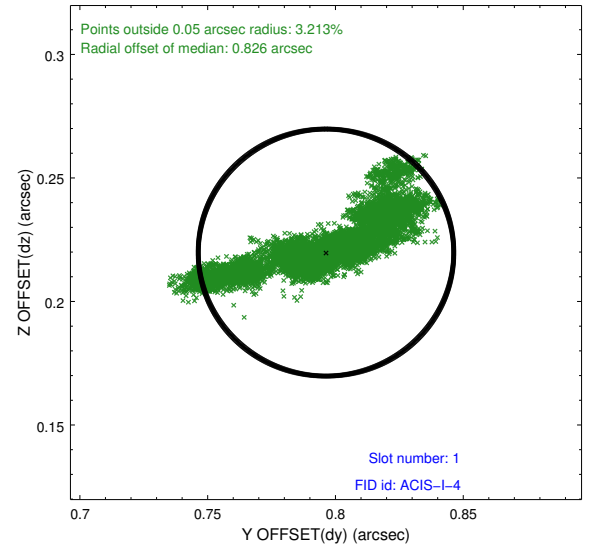
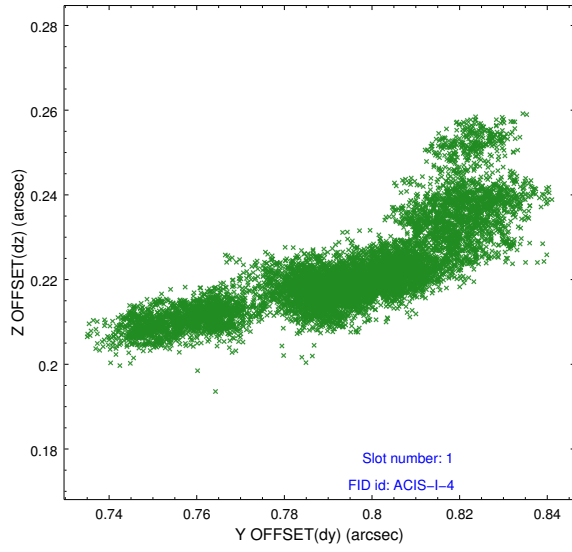


2.5 FID Slots

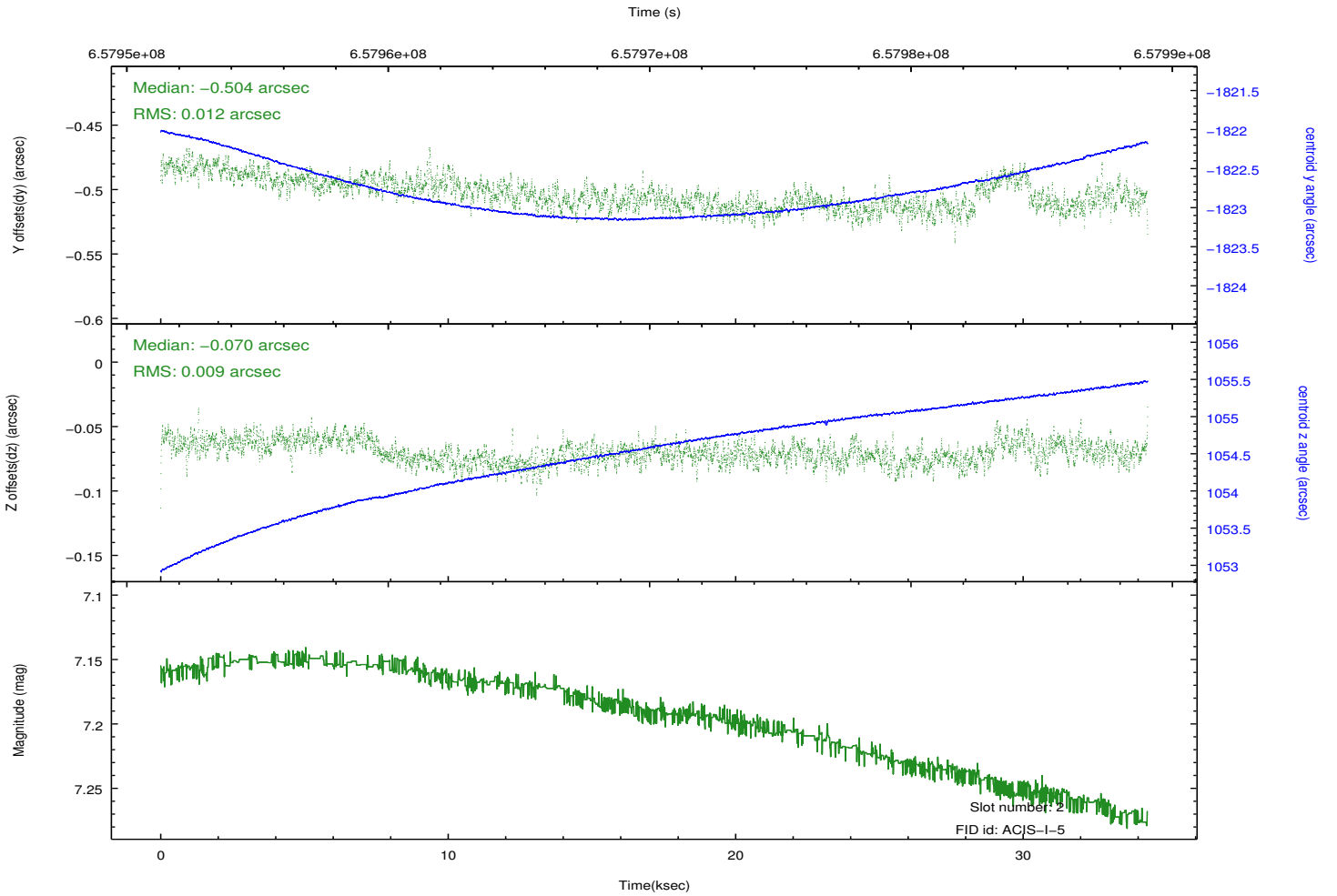
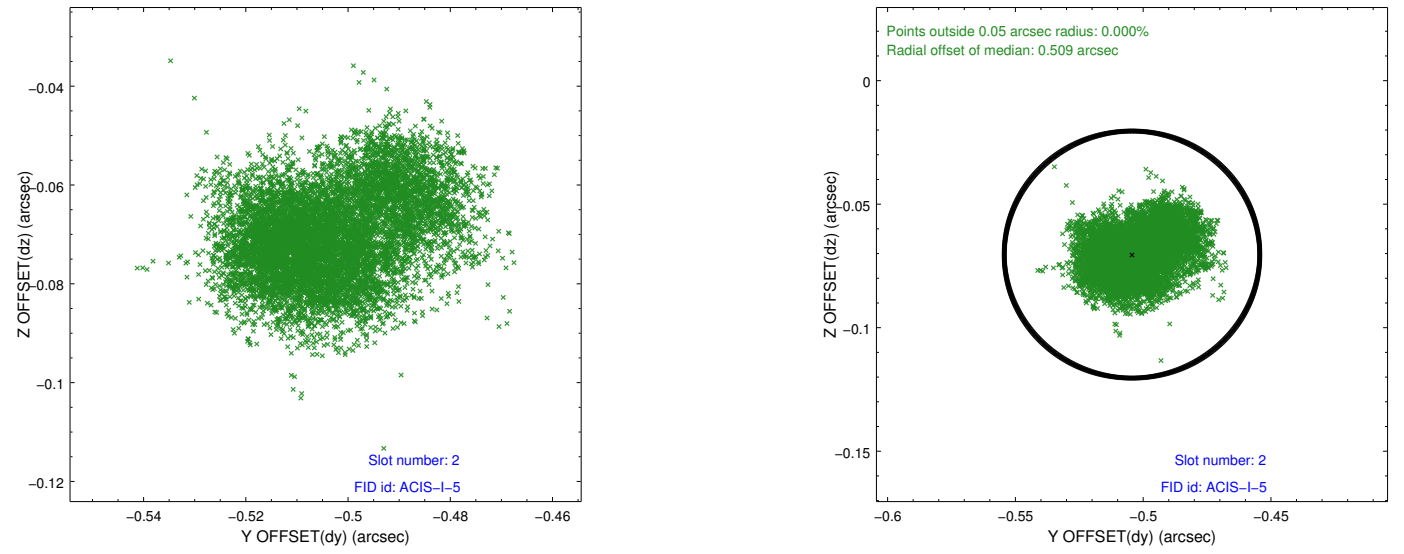
2.5.1 Slot 0



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)	2018.11.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	34.075159171939

A.2 Comments

The ACIS focal plane temperature is warmer than -114.0 C degrees during the interval 657985349.62 - 657987333.62 (MET s) of this observation. 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.