

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21453 - L2 Version 1
Chandra X-Ray Center

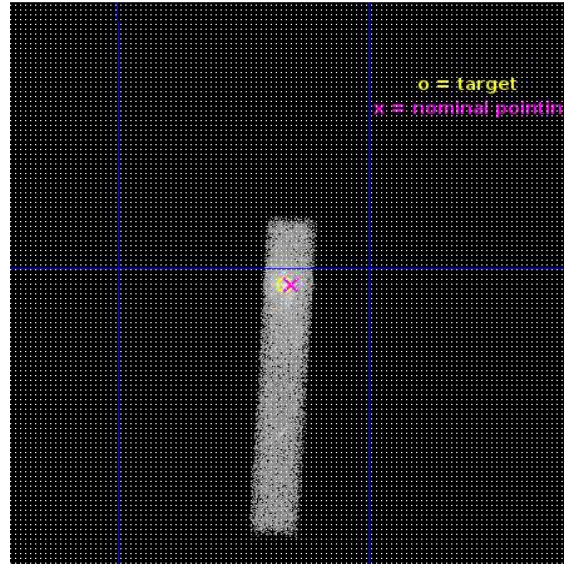
L2 Processing Date : Mar 29 2019

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1 Front

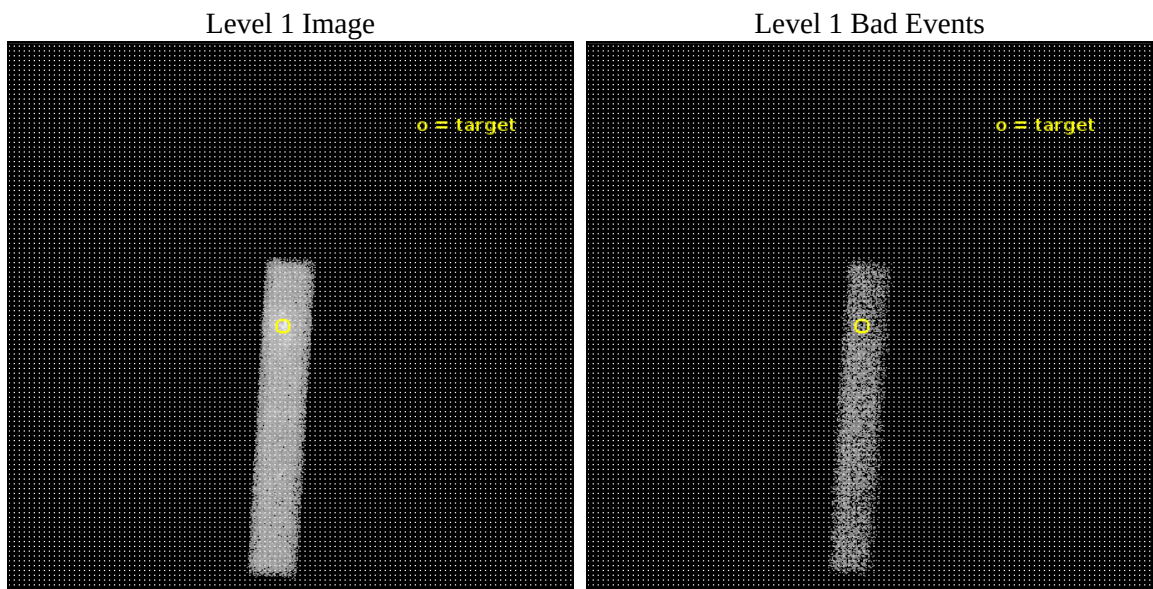
seq_num	703750	Sequence number
obs_id	21453	Observation id
title	Event Horizon Dynamics: Joint Chandra/EHT Imaging of Sgr A* and M87	
observer	Daryl Haggard	Principal investigator
object	Sgr A*	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	266.416667	Observer's specified target RA [deg]
dec_targ	-29.007833	Observer's specified target Dec [deg]
ra_nom	266.41325131797	Nominal RA [deg]
dec_nom	-29.007355783668	Nominal Dec [deg]
roll_nom	93.15497187532	Nominal Roll [deg]
revision	1	Processing version of data
ontime	33068.798028827	Sum of GTIs [s]
livetime	29991.654297866	Livetime [s]
ontime7	33068.798028827	Sum of GTIs [s]
l2events	34454	Number of level 2 events



2 OBI

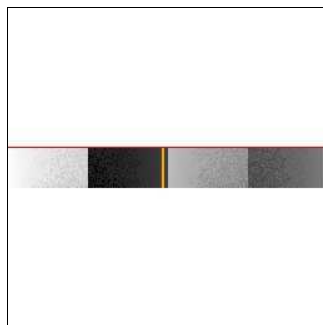
2.1 OBI

2.1.1 Images



2.1.2 Bias

Chip 7



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	33000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	33068.798028827	Sum of GTIs [s]
caldsver	4.8.2	 	ontime7	33068.798028827	Sum of GTIs [s]
date	2019-03-30T02:58:13	Date and time of file creation	l1events	57919	Number of level 1 events
revision	1	Processing version of data			

2.1.4 Events

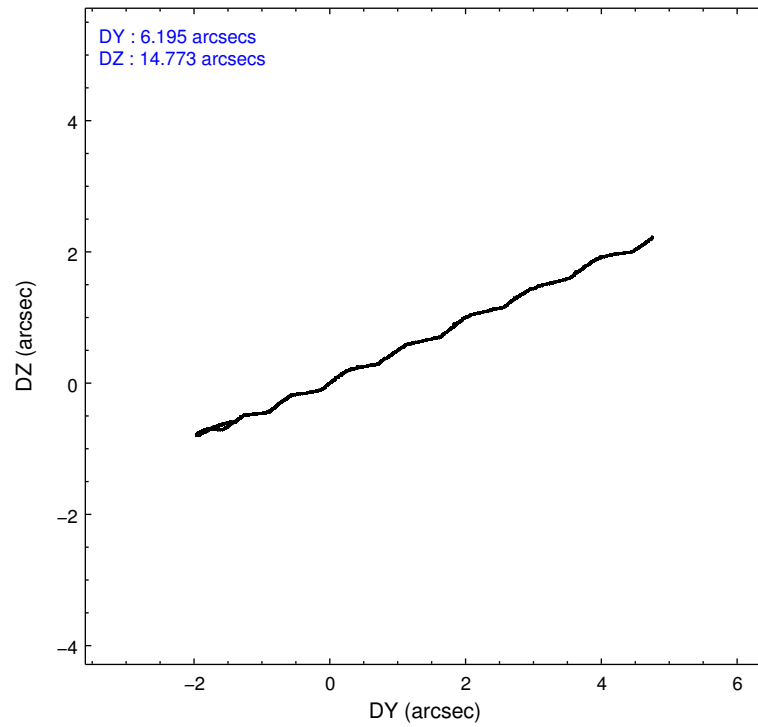
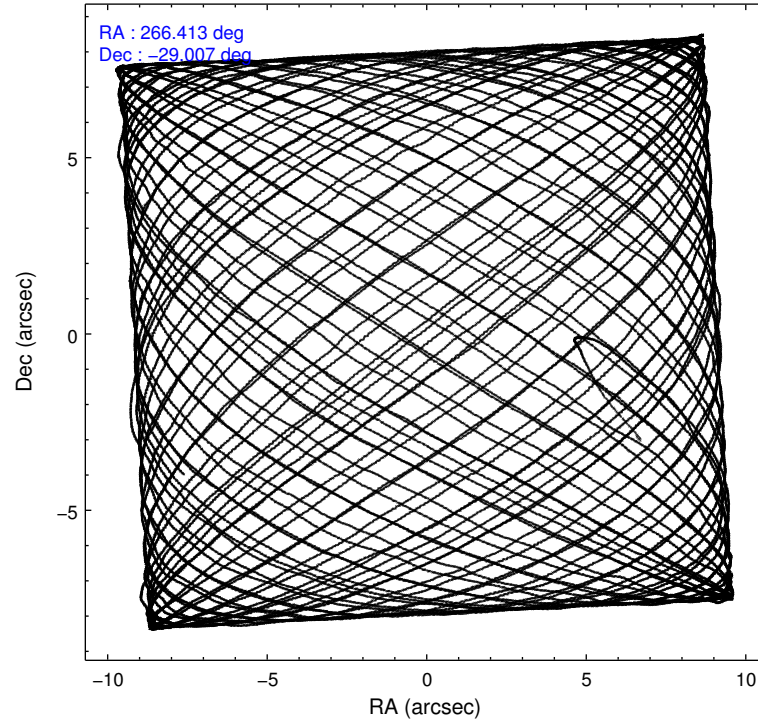
	ccd 7
level 1 events	57919
rejected events	22397
rejected %	38%

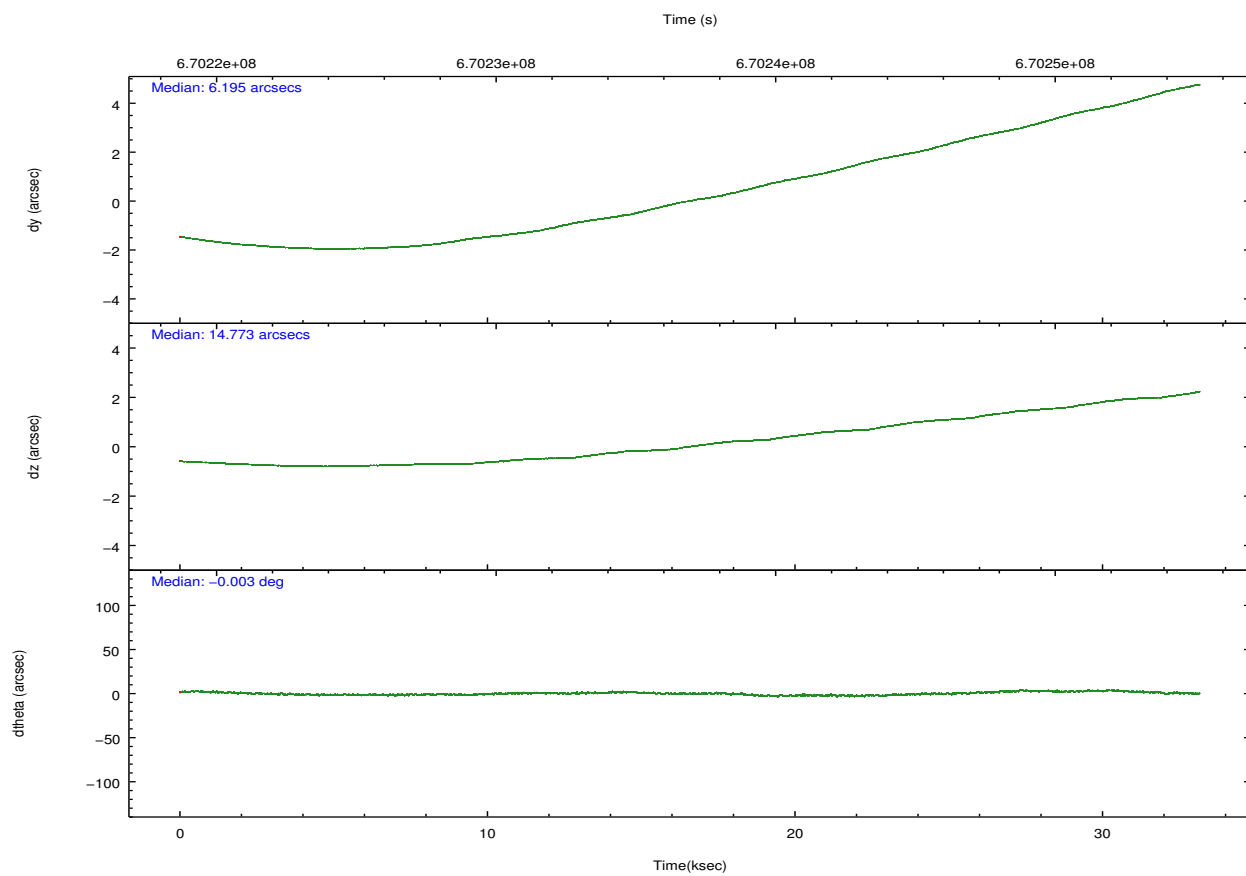
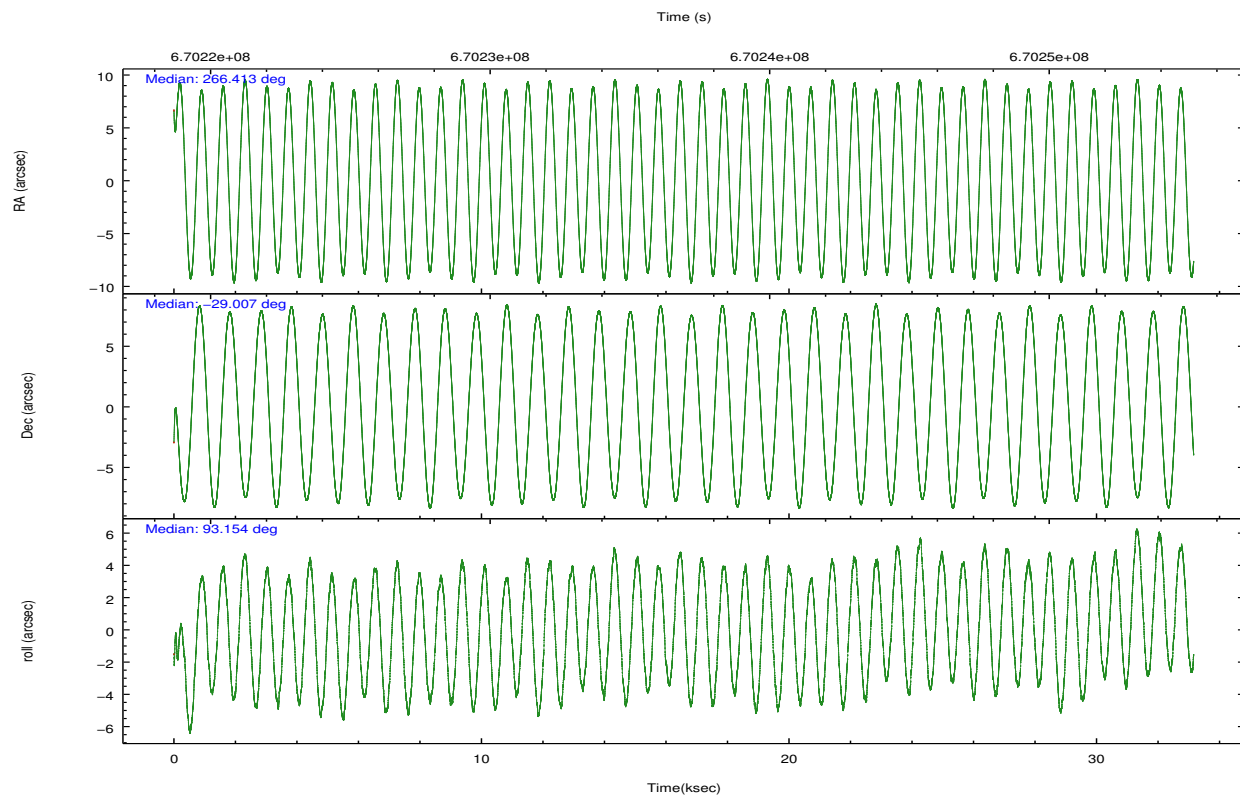
	ccd 7
grade 0 events	4897
	8%
grade 1 events	75
	0%
grade 2 events	7377
	12%
grade 3 events	4387
	7%
grade 4 events	4128
	7%
grade 5 events	4555
	7%
grade 6 events	14735
	25%
grade 7 events	17765
	30%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-7	ACIS-7	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	266.430764	266.4132513179733	Subarray requested	CUSTOM	1/8
[deg] Pointing Dec	-29.030130	-29.00735578366823	Subarray start row	449	449
[deg] Pointing Roll	93.006840	93.15497187531999	Subarray row count	128	128
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	0.4
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	670220517.184000	670219419.56218			
Observation start date	2019-03-29T04:20:48	2019-03-29T04:03:39			
[s] Observation end time (MET)	670253517.184000	670254754.38929			
Observation end date	2019-03-29T13:30:48	2019-03-29T13:52:34			
Read mode	TIMED	TIMED			

2.3 Aspect



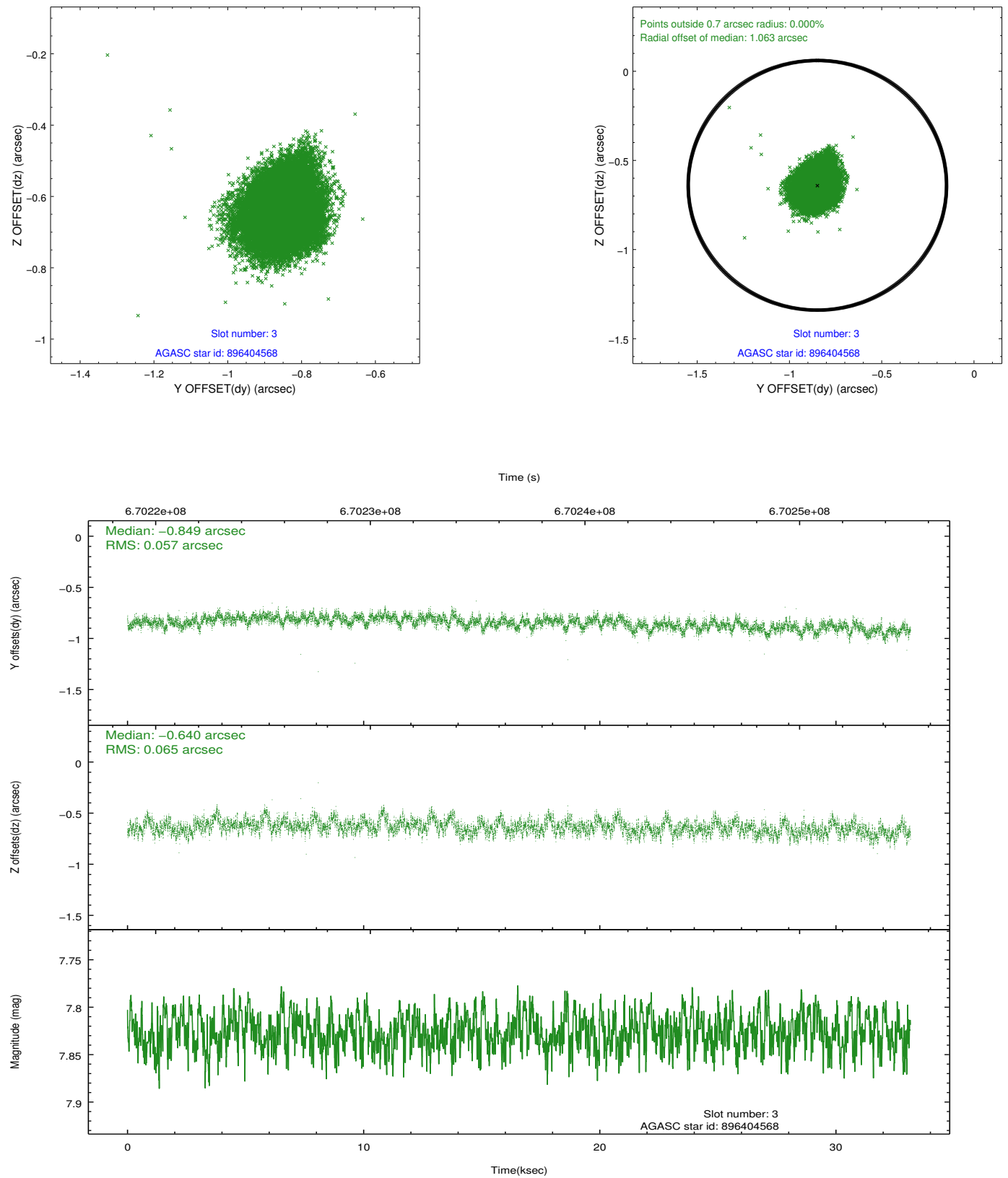


Slot Statistics

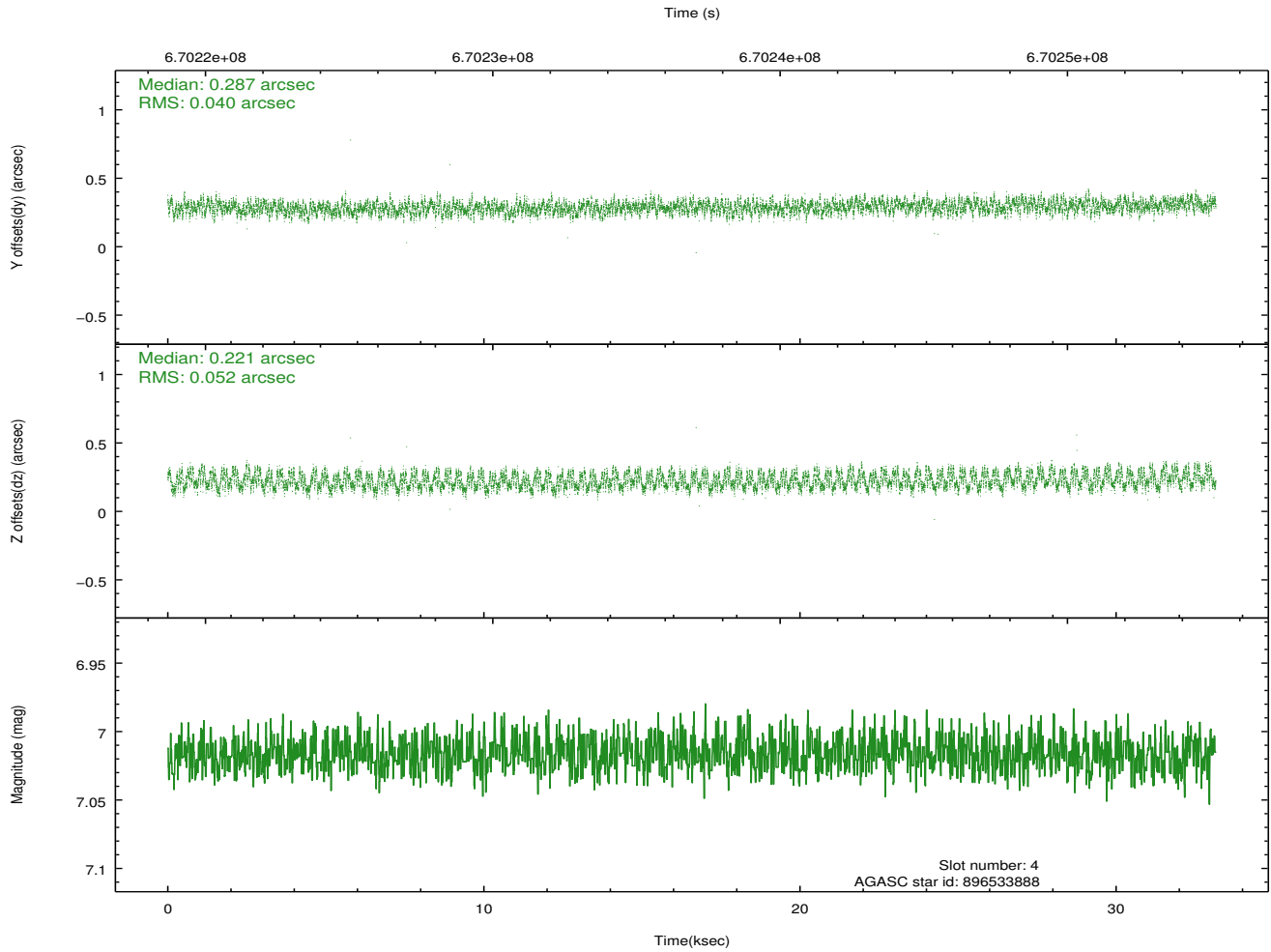
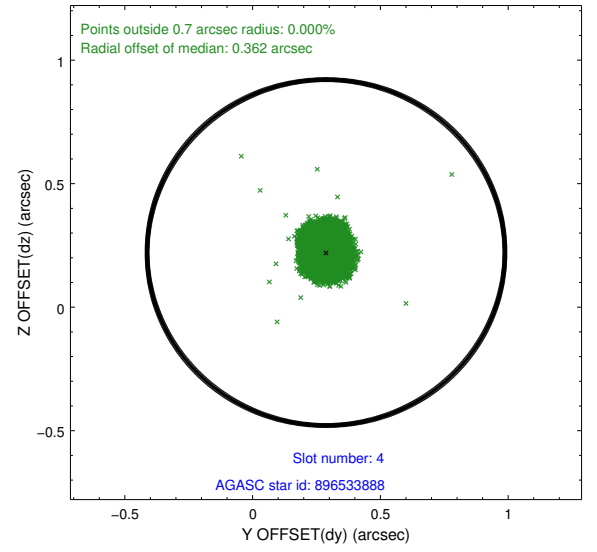
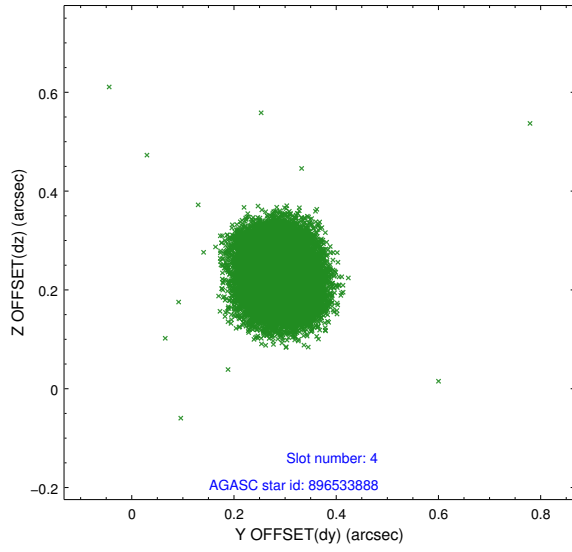
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-1	7.18	8088	1.000	0.190	0.047	0.034	0.060	0.000000	0.000000	936.76	-1732
1	FID		ACIS-S-2	7.08	8088	1.000	-0.277	-0.138	0.021	0.046	0.000000	0.000000	-759.58	-1736
2	FID		ACIS-S-6	7.35	8086	1.000	0.066	0.088	0.032	0.048	0.000000	0.000000	402.36	809
3	GUIDE	used	896404568	7.83	16170	1.000	-0.849	-0.640	0.092	0.146	265.687293	-28.431080	2269.12	2237
4	GUIDE	used	896533888	7.02	16175	1.000	0.287	0.221	0.072	0.107	266.666434	-29.392757	-1342.73	-669
5	GUIDE	used	896537176	8.00	16165	1.000	-0.097	0.033	0.074	0.120	266.498272	-28.678259	1253.49	-279
6	GUIDE	used	896537776	7.49	16174	1.000	0.367	0.242	0.070	0.116	266.655684	-29.665673	-2321.75	-582
7	GUIDE	used	896541360	7.69	16171	1.000	0.292	0.138	0.080	0.127	266.684478	-29.453744	-1565.14	-713

2.4 Star Slots

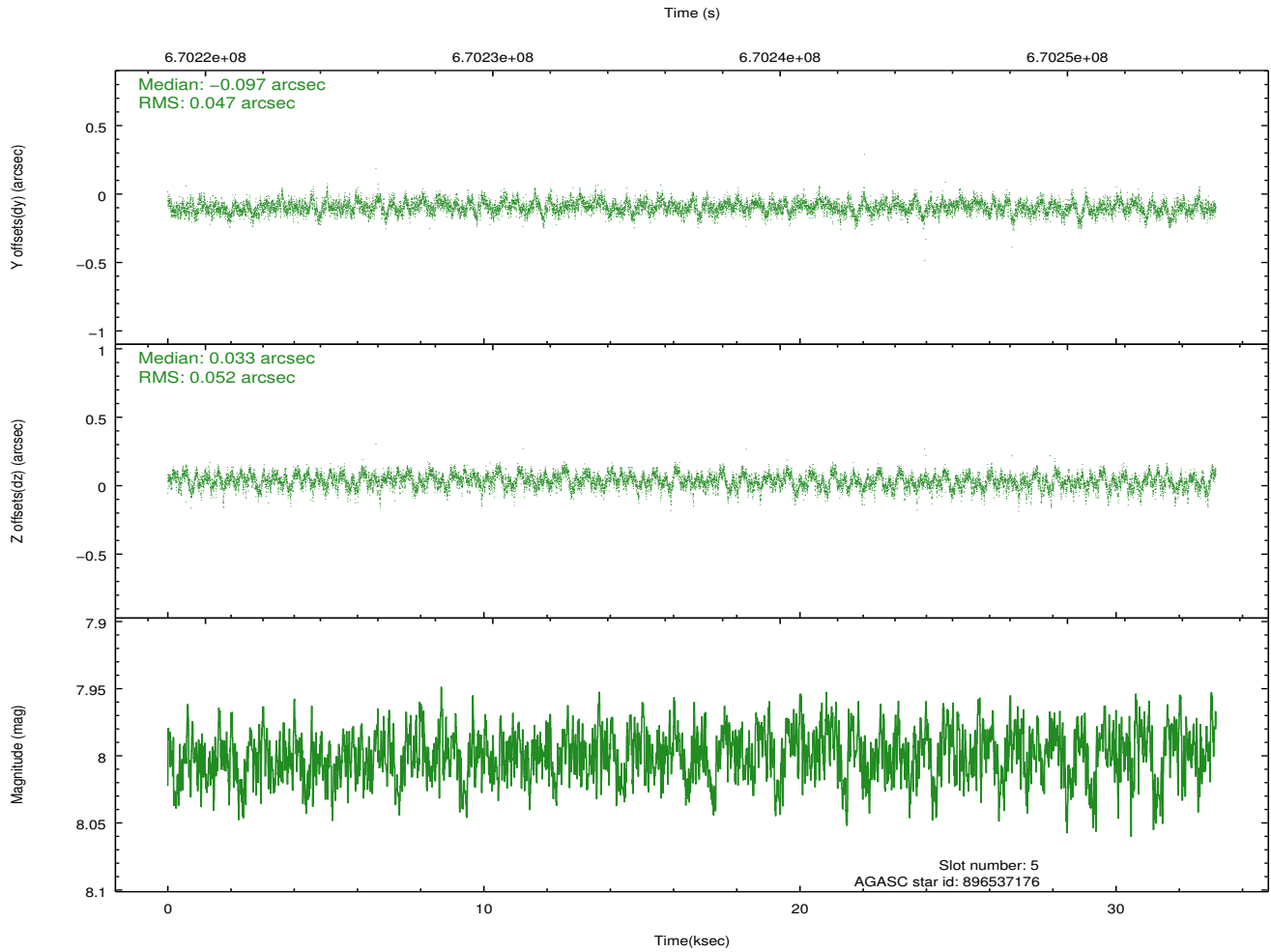
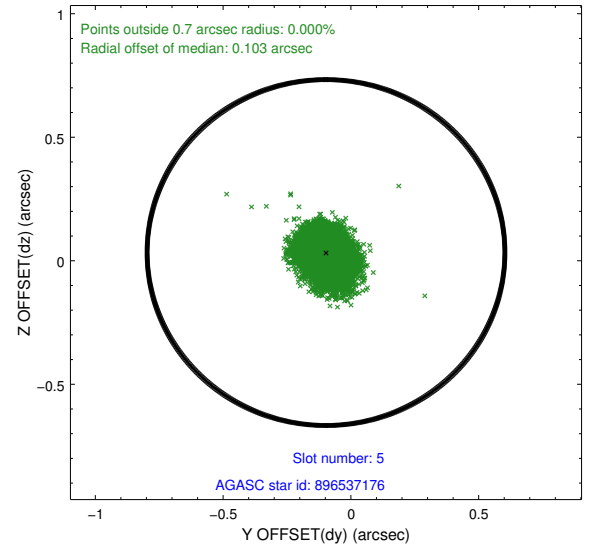
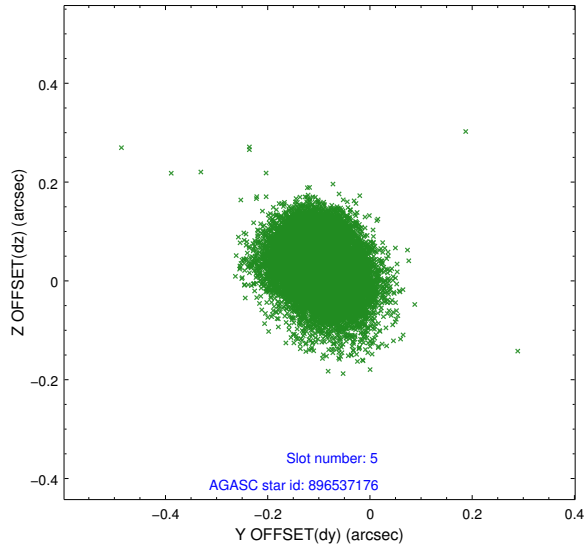
2.4.1 Slot 3



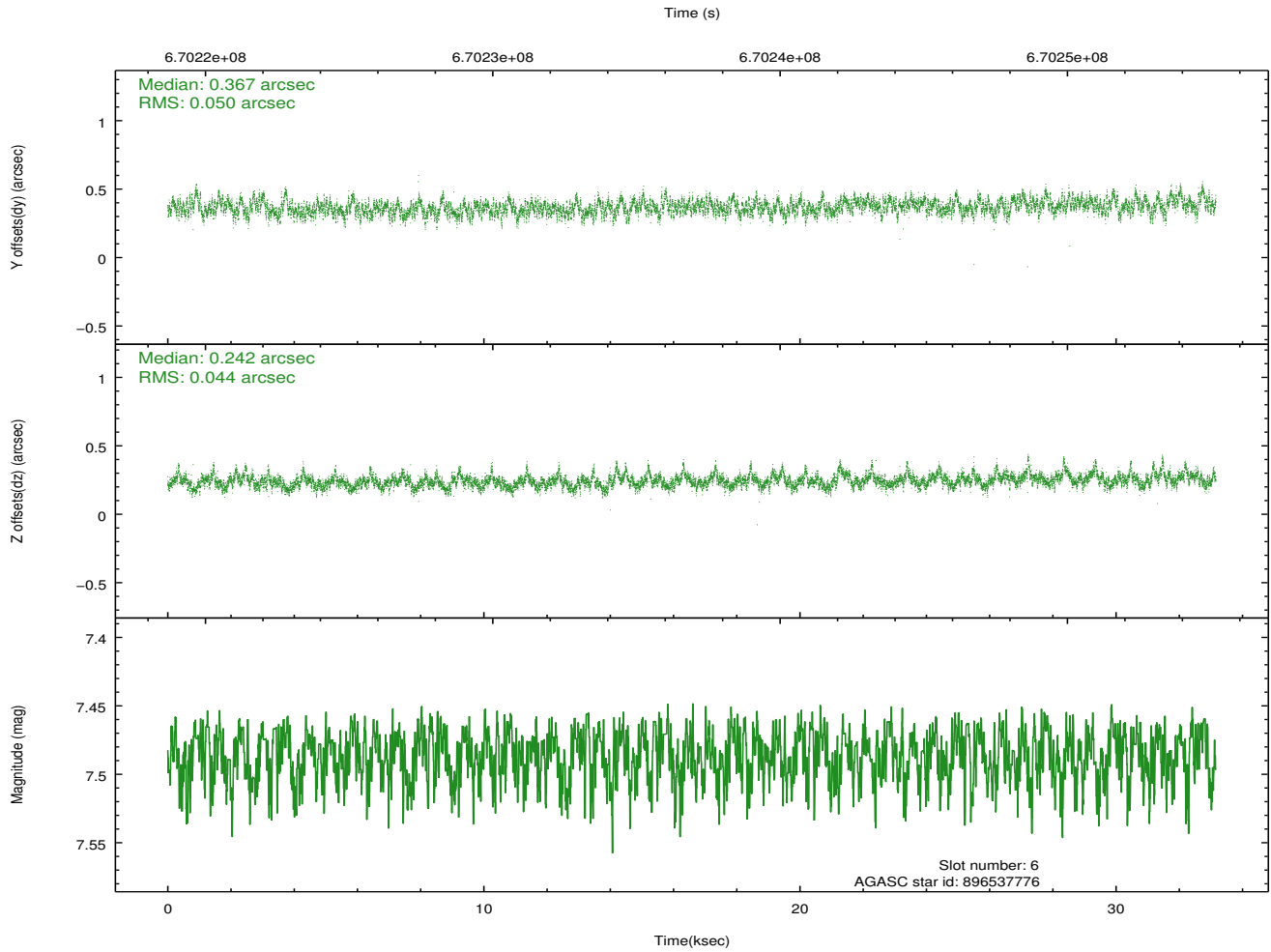
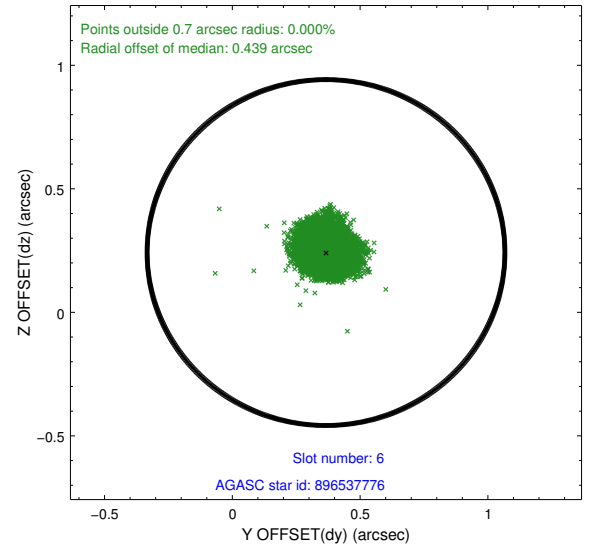
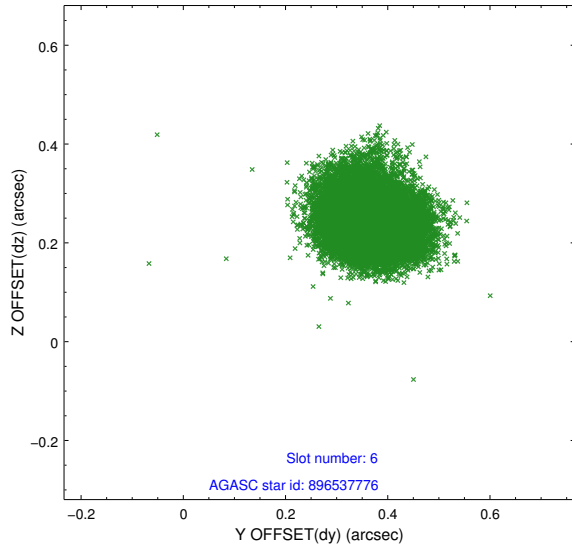
2.4.2 Slot 4



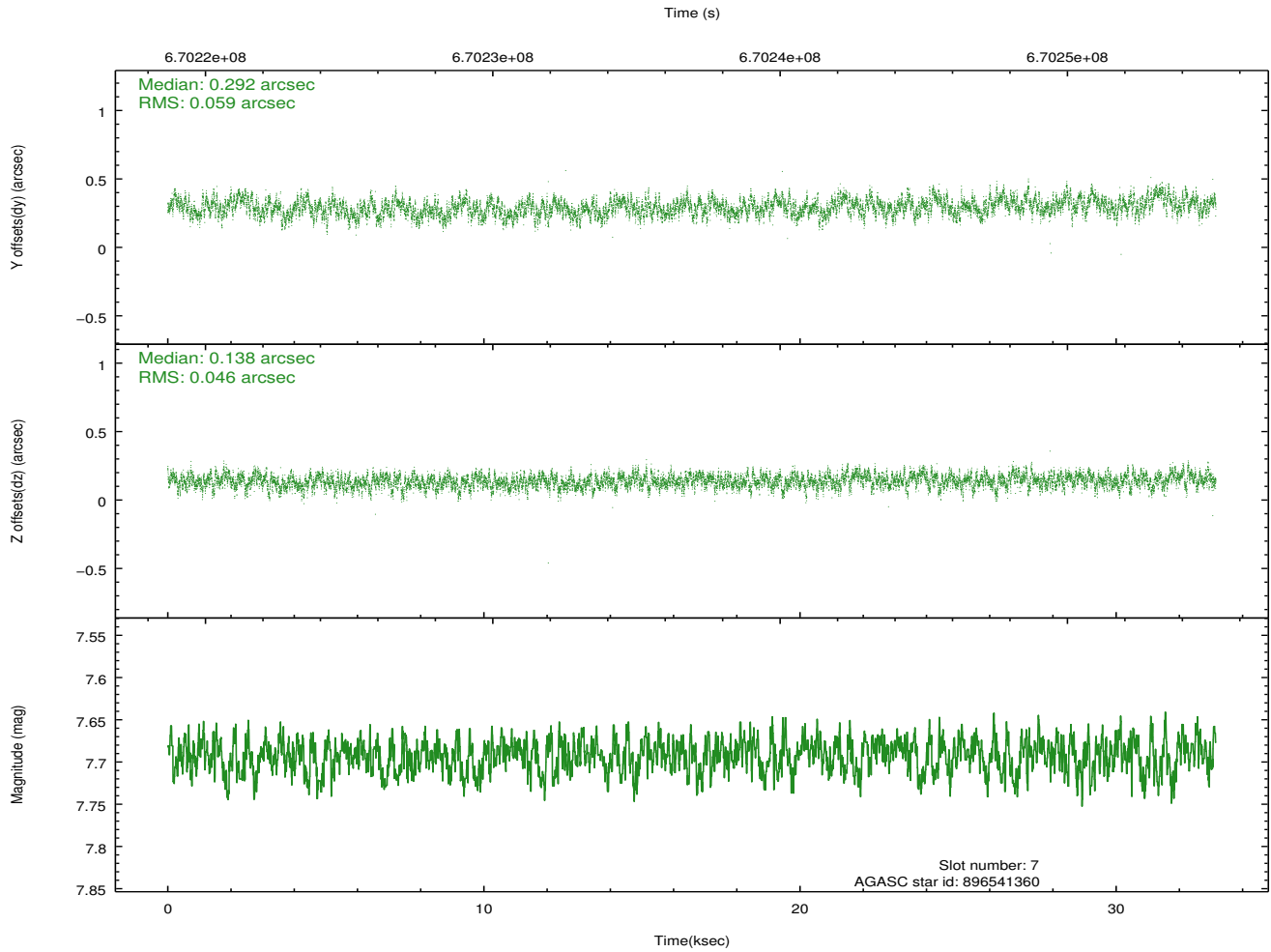
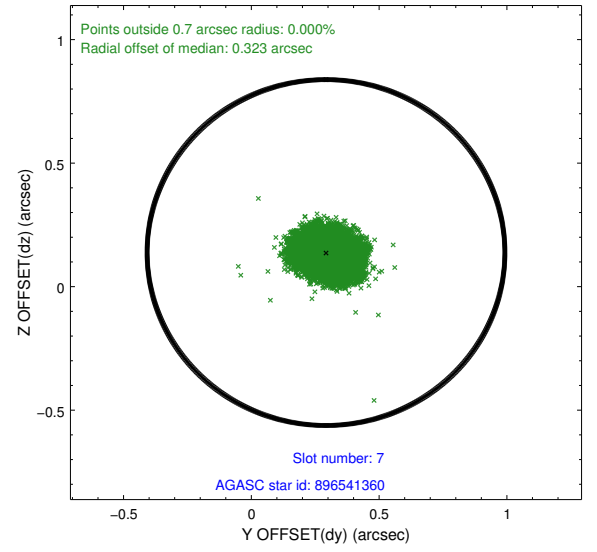
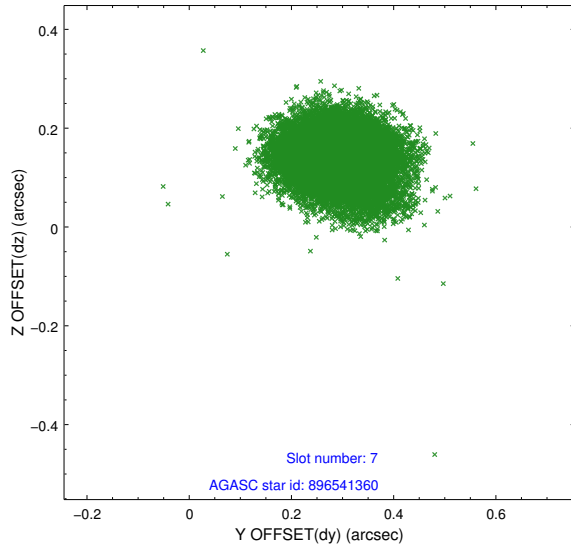
2.4.3 Slot 5



2.4.4 Slot 6

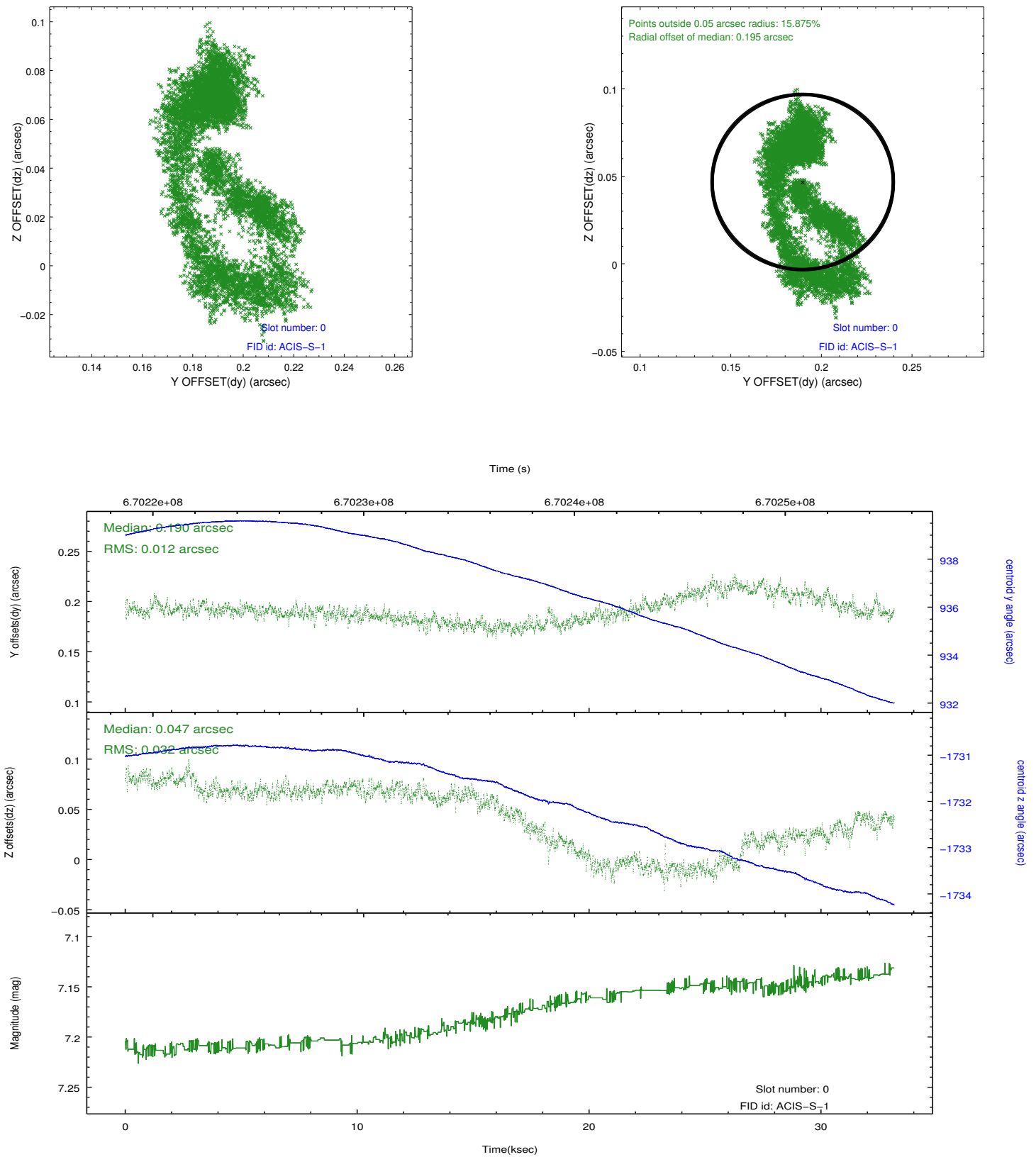


2.4.5 Slot 7

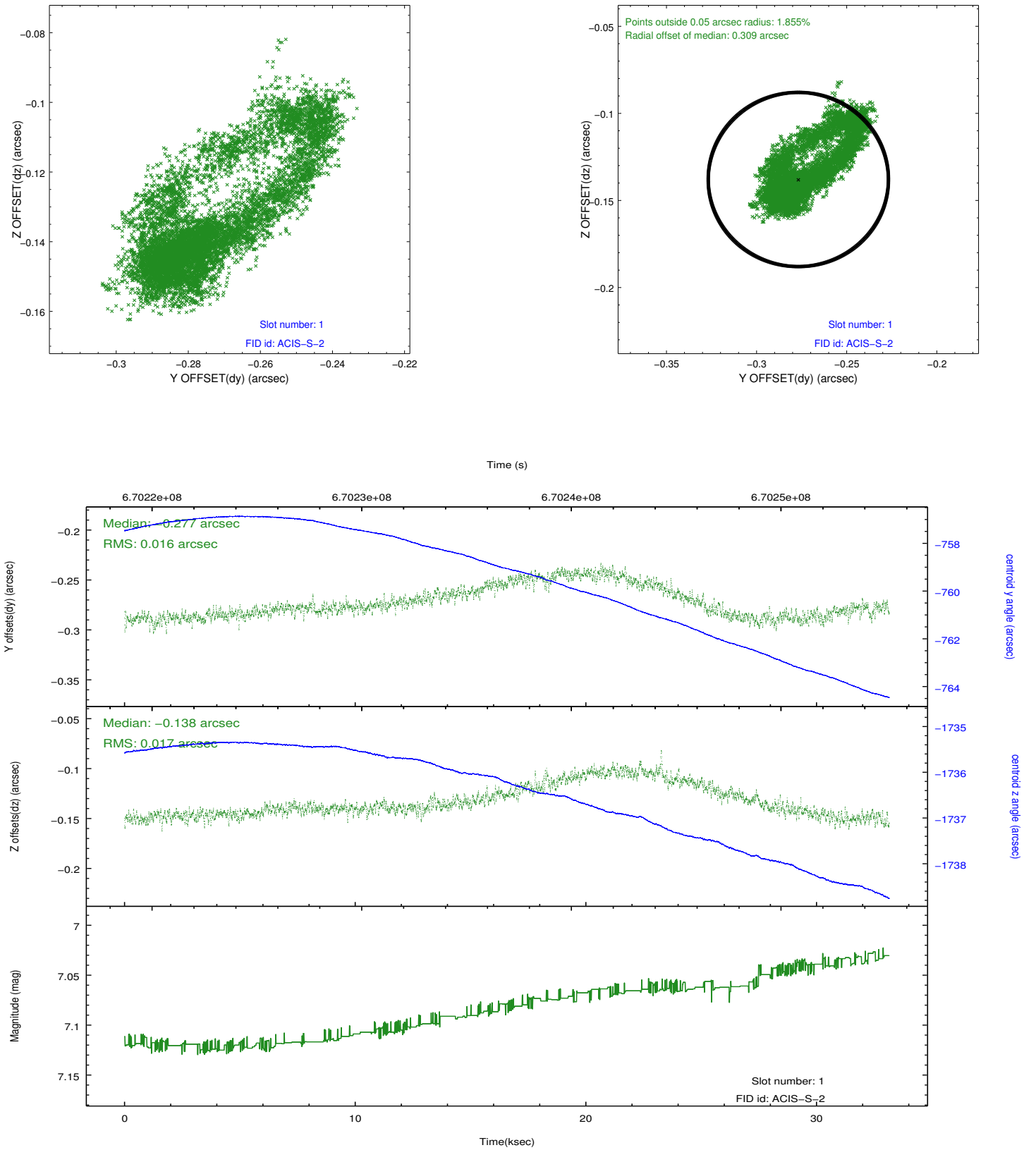


2.5 FID Slots

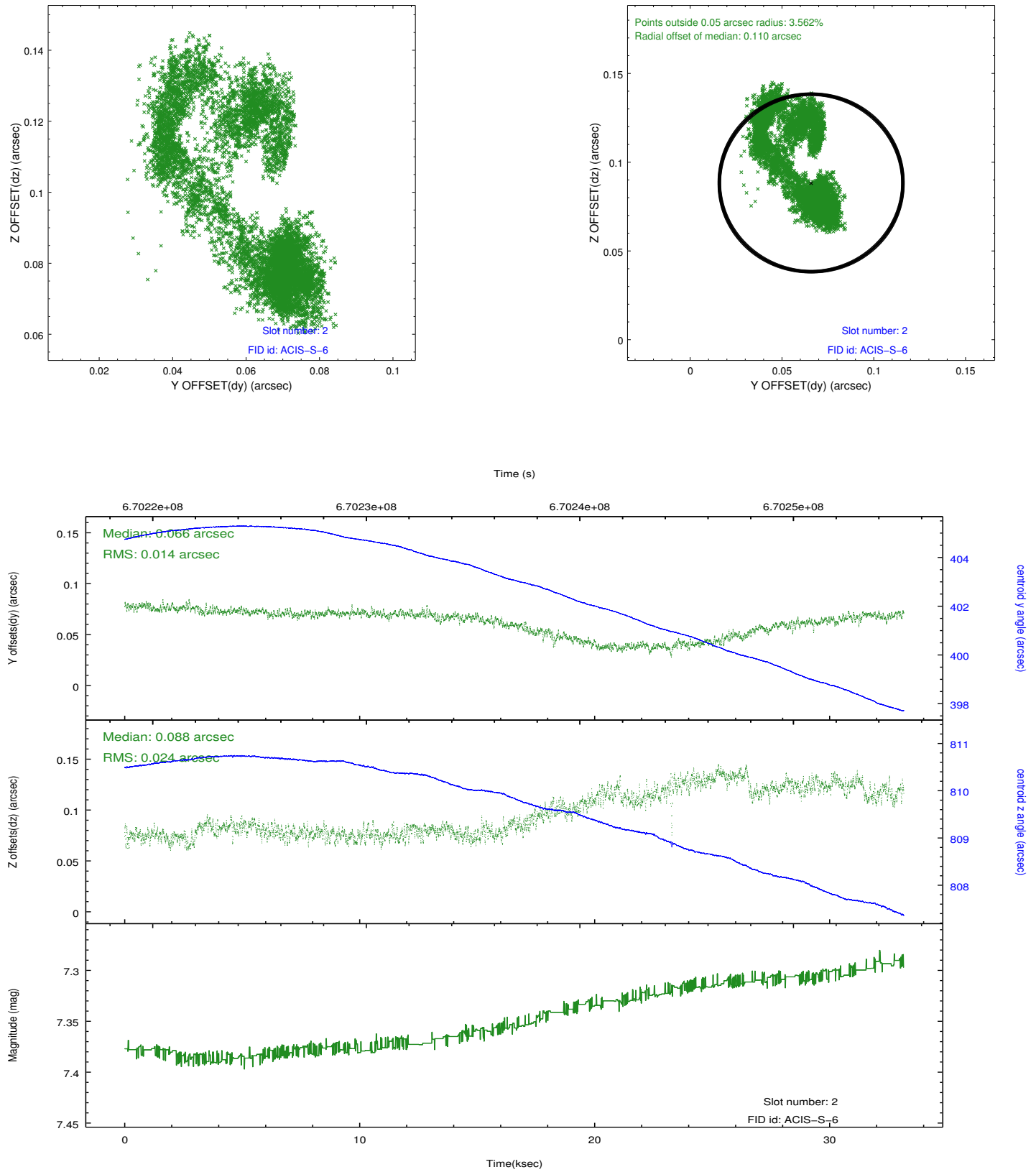
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.04.01
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	33.068798028827

A.2 Comments

The focal plane temperature is warmer than -112.0 C during the interval 670220448.16 - 670222849.36 (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.