

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21417 - L2 Version 1
Chandra X-Ray Center

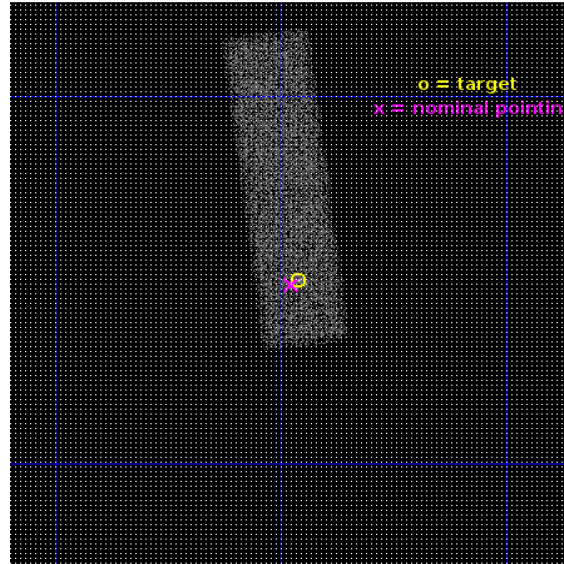
L2 Processing Date : Feb 7 2019

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1 Front

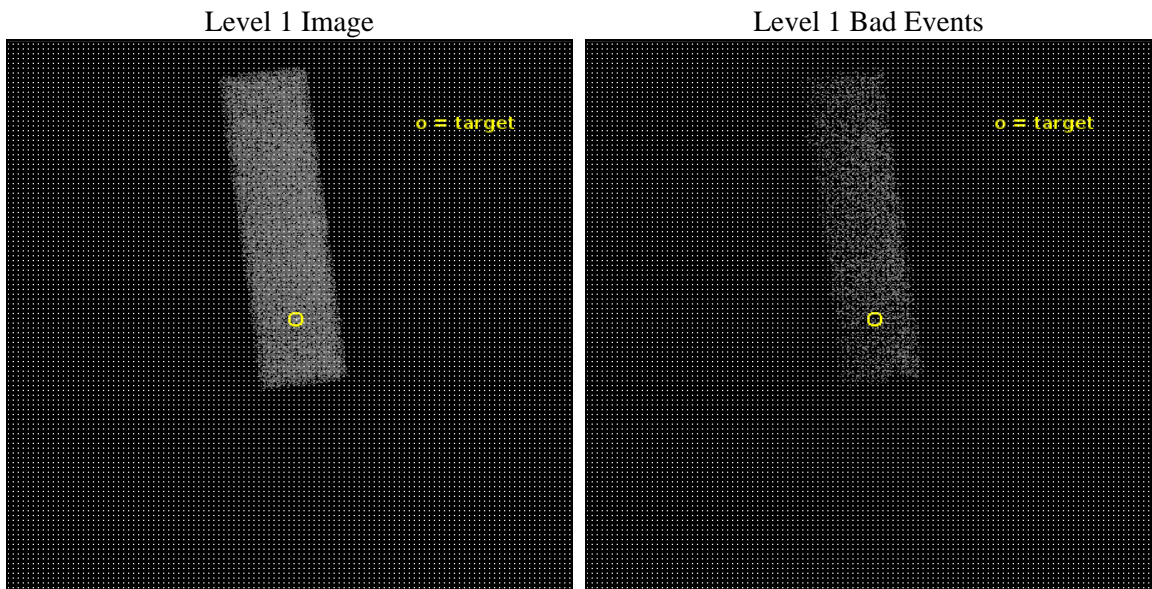
seq_num	703714	Sequence number
obs_id	21417	Observation id
title	THE TORUS AND THE HOST: Extended Hard Emission in Compton Thick AGN with NuSTAR Spectra	Proposal title
observer	Dr. Martin Elvis	Principal investigator
object	NGC424	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	17.865	Observer's specified target RA [deg]
dec_targ	-38.083333	Observer's specified target Dec [deg]
ra_nom	17.869073236895	Nominal RA [deg]
dec_nom	-38.085509019175	Nominal Dec [deg]
roll_nom	262.59040705253	Nominal Roll [deg]
revision	1	Processing version of data
ontime	16060.532779336	Sum of GTIs [s]
livetime	15276.831332004	Livetime [s]
ontime7	16060.532779336	Sum of GTIs [s]
l2events	18846	Number of level 2 events



2 OBI

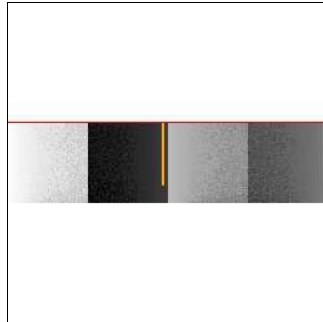
2.1 OBI

2.1.1 Images



2.1.2 Bias

Chip 7



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	16000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	16060.532779336	Sum of GTIs [s]
caldsver	4.8.2	 	ontime7	16060.532779336	Sum of GTIs [s]
date	2019-02-07T20:33:31	Date and time of file creation	l1events	40461	Number of level 1 events
revision	1	Processing version of data			

2.1.4 Events

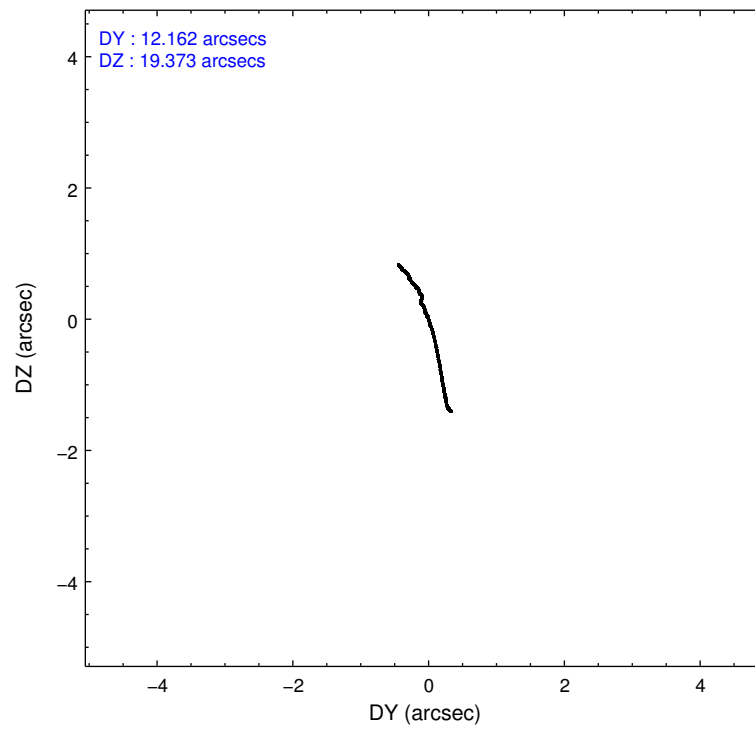
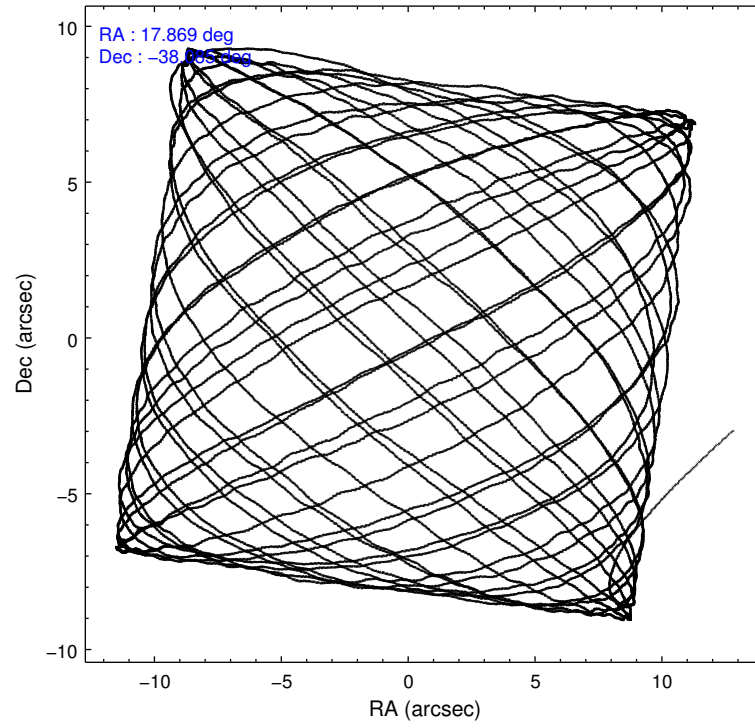
	ccd 7
level 1 events	40461
rejected events	20966
rejected %	51%

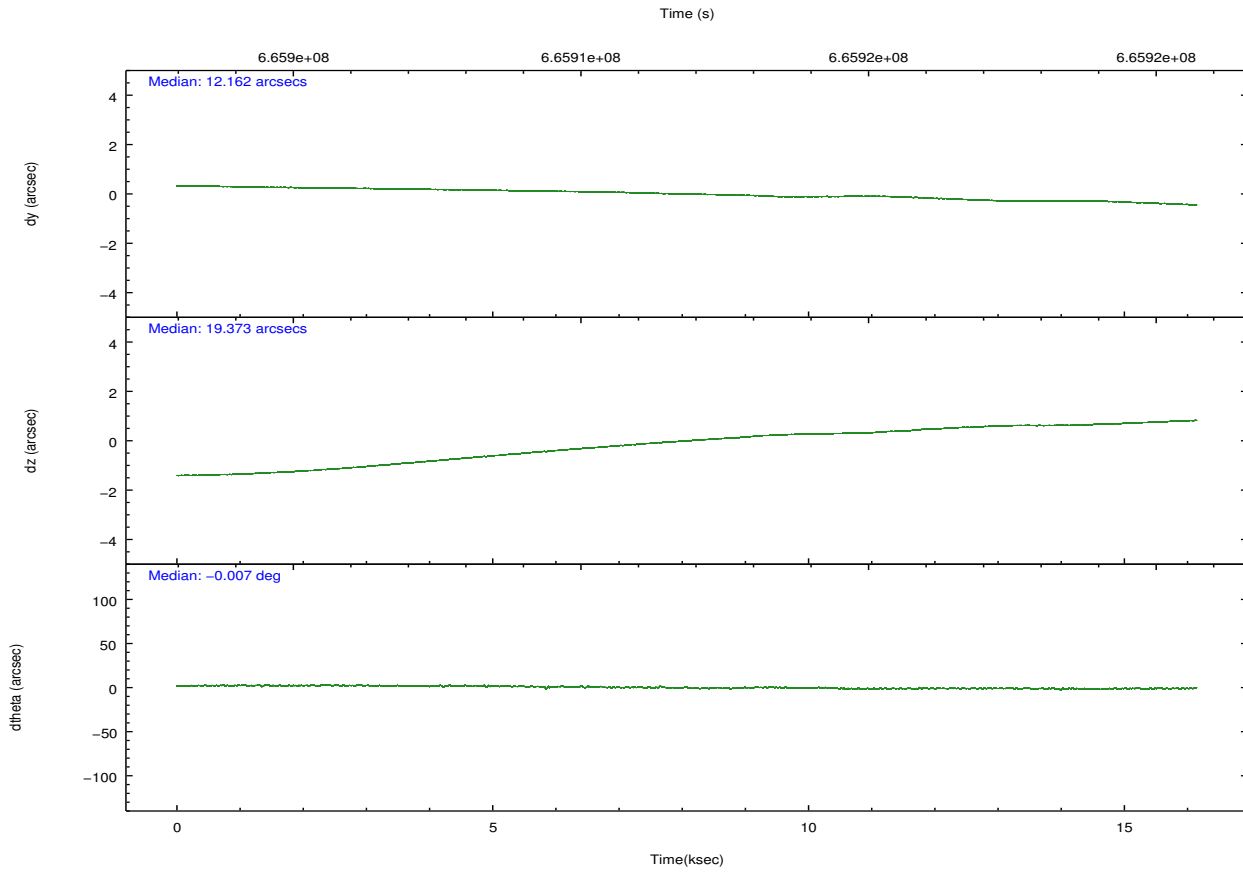
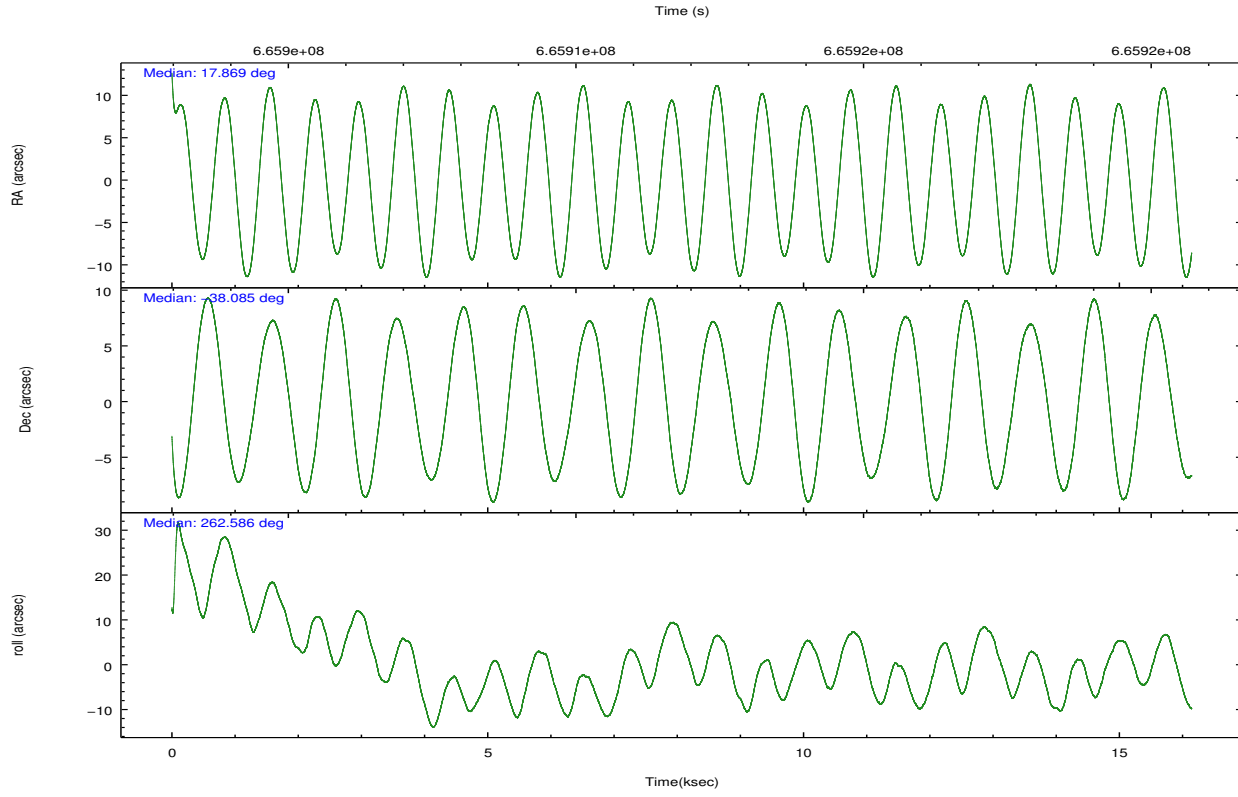
	ccd 7
grade 0 events	1978
	4%
grade 1 events	61
	0%
grade 2 events	3879
	9%
grade 3 events	2050
	5%
grade 4 events	2004
	4%
grade 5 events	3917
	9%
grade 6 events	9590
	23%
grade 7 events	16982
	41%

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	17.855248	17.86907323689528	Subarray requested	CUSTOM	1/4
[deg] Pointing Dec	-38.060296	-38.08550901917485	Subarray start row	385	385
[deg] Pointing Roll	262.425267	262.5904070525322	Subarray row count	256	256
[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	0.8
[mm] SIM translation stage pos	-190.132523	-190.1425803651734			
[mm] SIM translation stage offset	0	0.01005778216563158			
[s] Observation start time (MET)	665903905.184000	665902626.67913			
Observation start date	2019-02-07T05:17:16	2019-02-07T04:57:06			
[s] Observation end time (MET)	665919905.184000	665920542.1427			
Observation end date	2019-02-07T09:43:56	2019-02-07T09:55:42			
Read mode	TIMED	TIMED			

2.3 Aspect



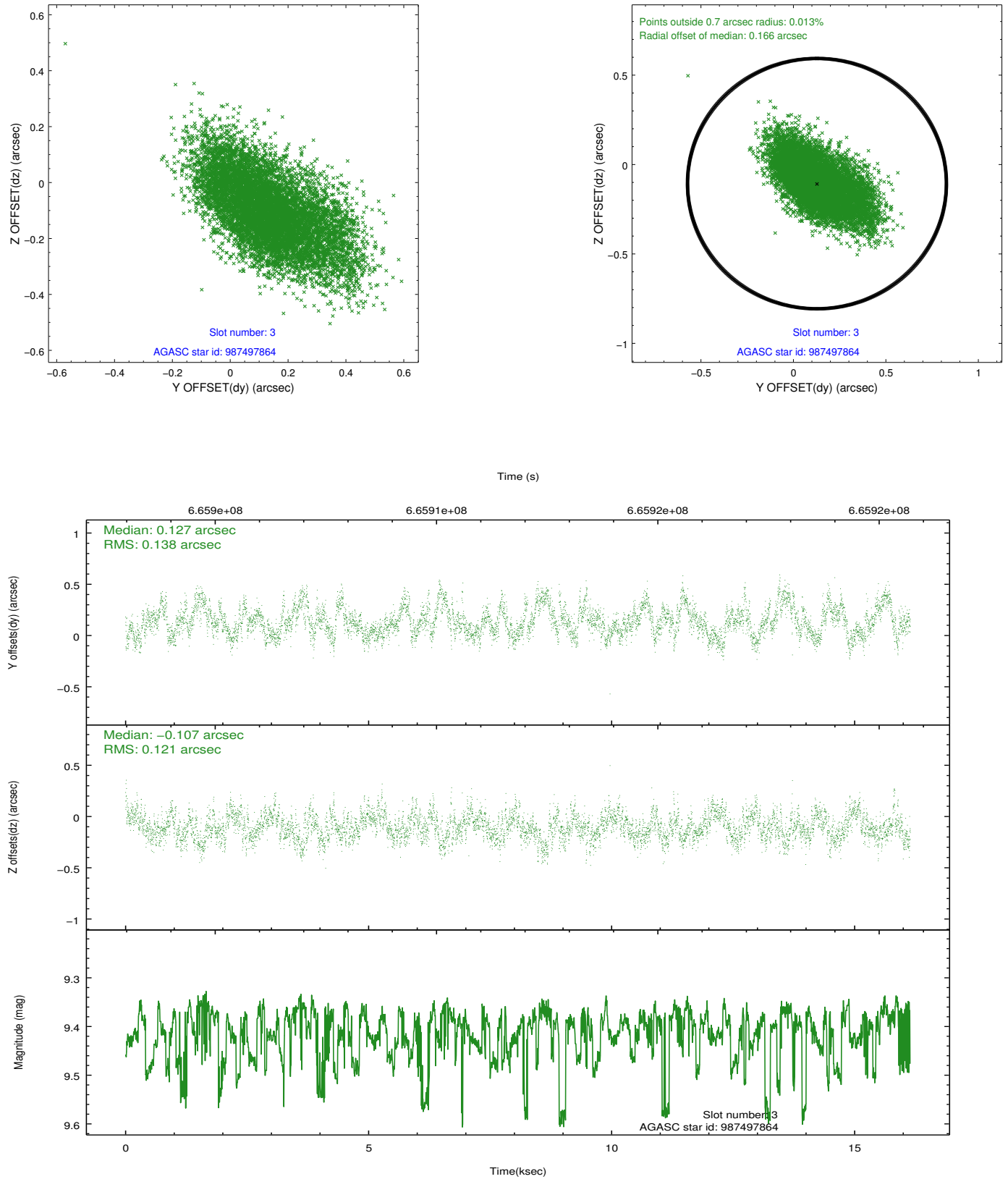


Slot Statistics

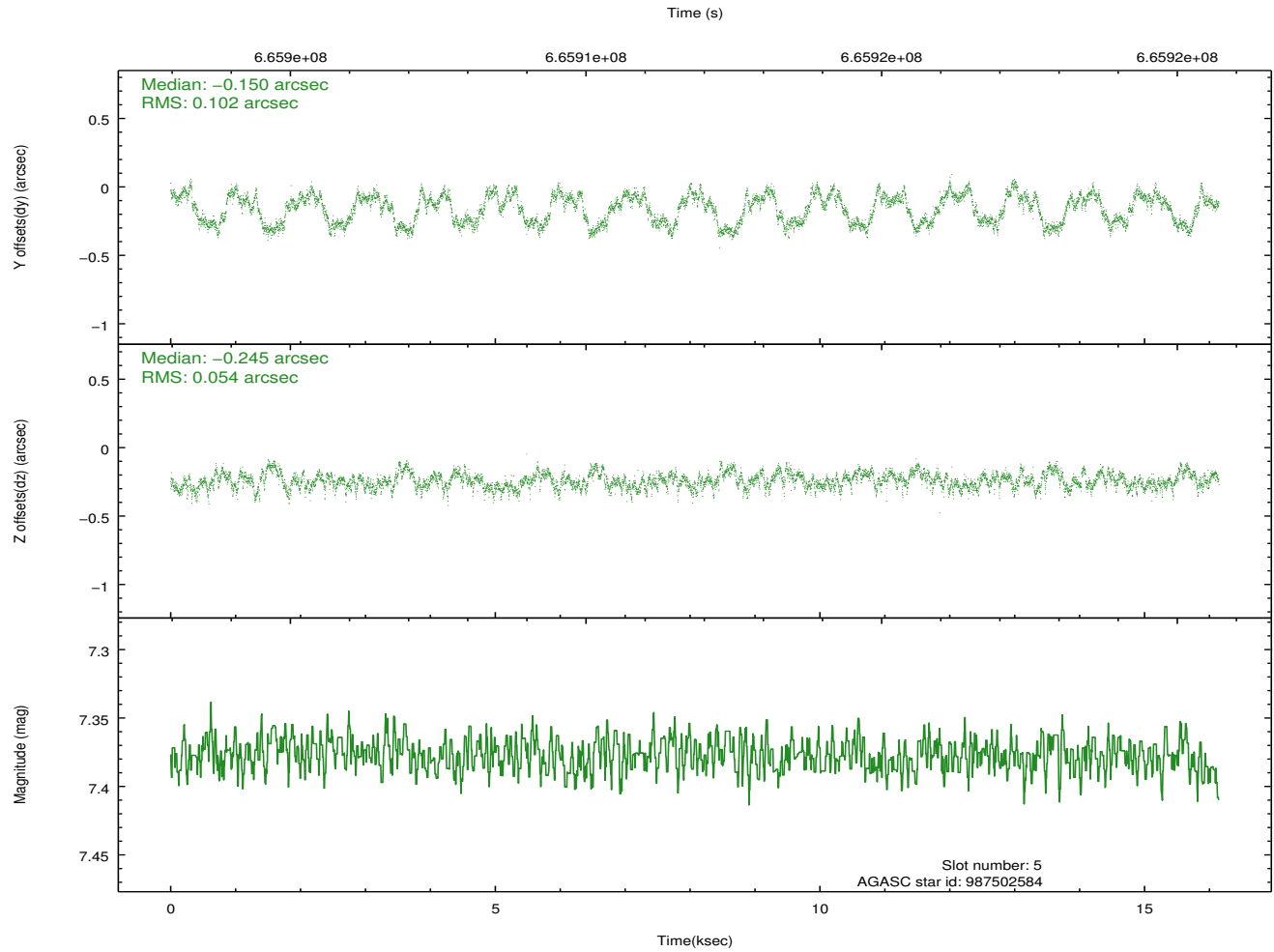
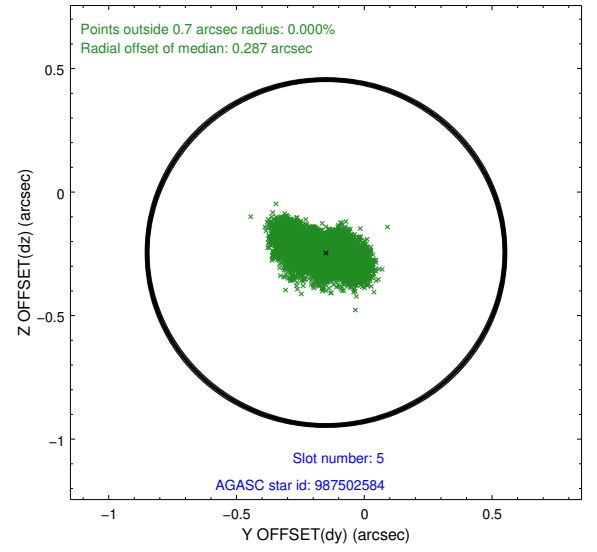
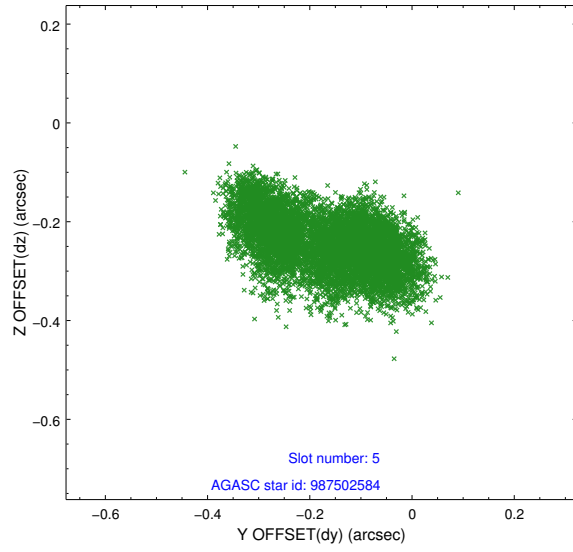
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.15	3938	1.000	-0.280	-0.174	0.042	0.060	0.000000	0.000000	-765.24	-1740
1	FID		ACIS-S-4	7.28	3937	1.000	0.730	0.182	0.016	0.033	0.000000	0.000000	2148.83	167
2	FID		ACIS-S-5	7.26	3938	1.000	-0.488	0.000	0.050	0.063	0.000000	0.000000	-1818.03	161
3	GUIDE	used	987497864	9.41	7864	1.000	0.127	-0.107	0.194	0.328	17.119729	-38.374545	1403.10	-1906
4	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
5	GUIDE	used	987502584	7.38	7875	1.000	-0.150	-0.245	0.125	0.193	18.019725	-37.942381	-481.73	407
6	GUIDE	used	987505000	6.27	7877	1.000	-0.270	-0.193	0.107	0.178	18.189307	-37.856480	-850.39	846
7	GUIDE	used	917636240	9.33	7853	1.000	0.291	0.545	0.145	0.245	17.295522	-37.339630	-2355.25	-1928

2.4 Star Slots

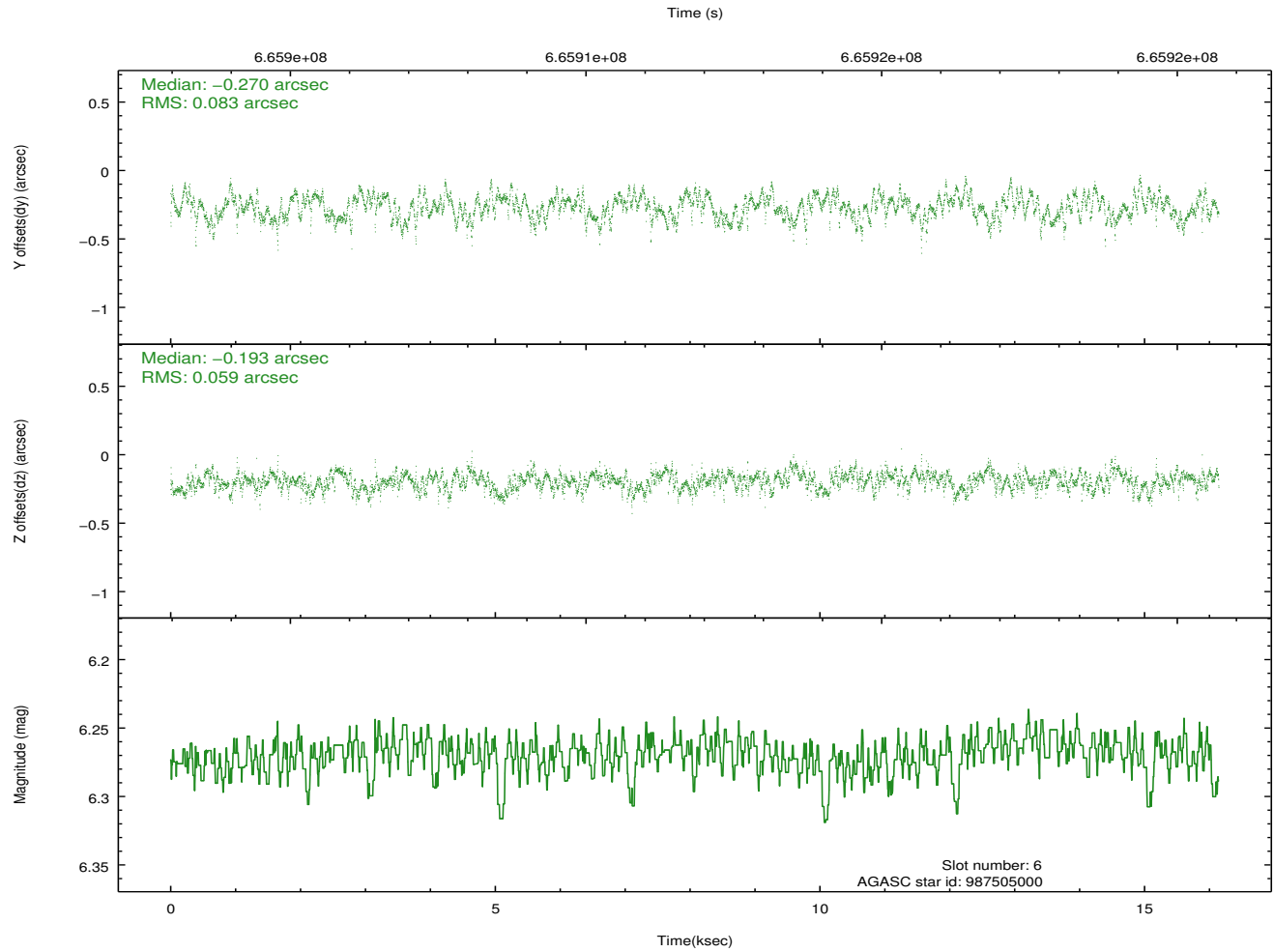
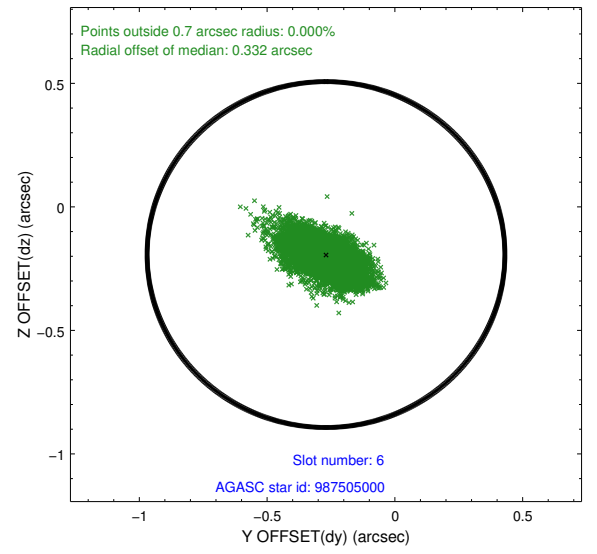
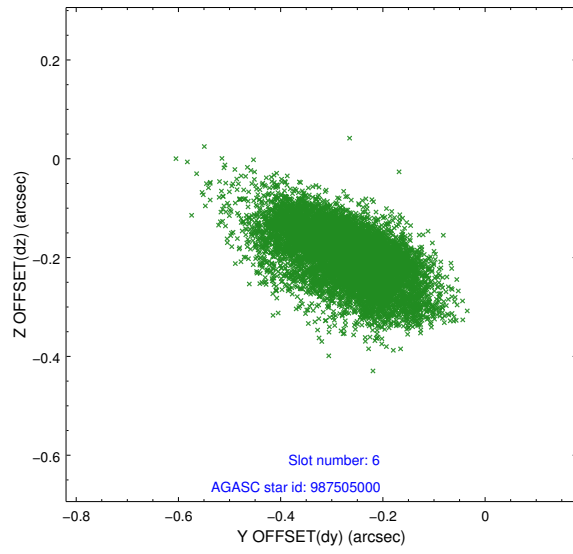
2.4.1 Slot 3



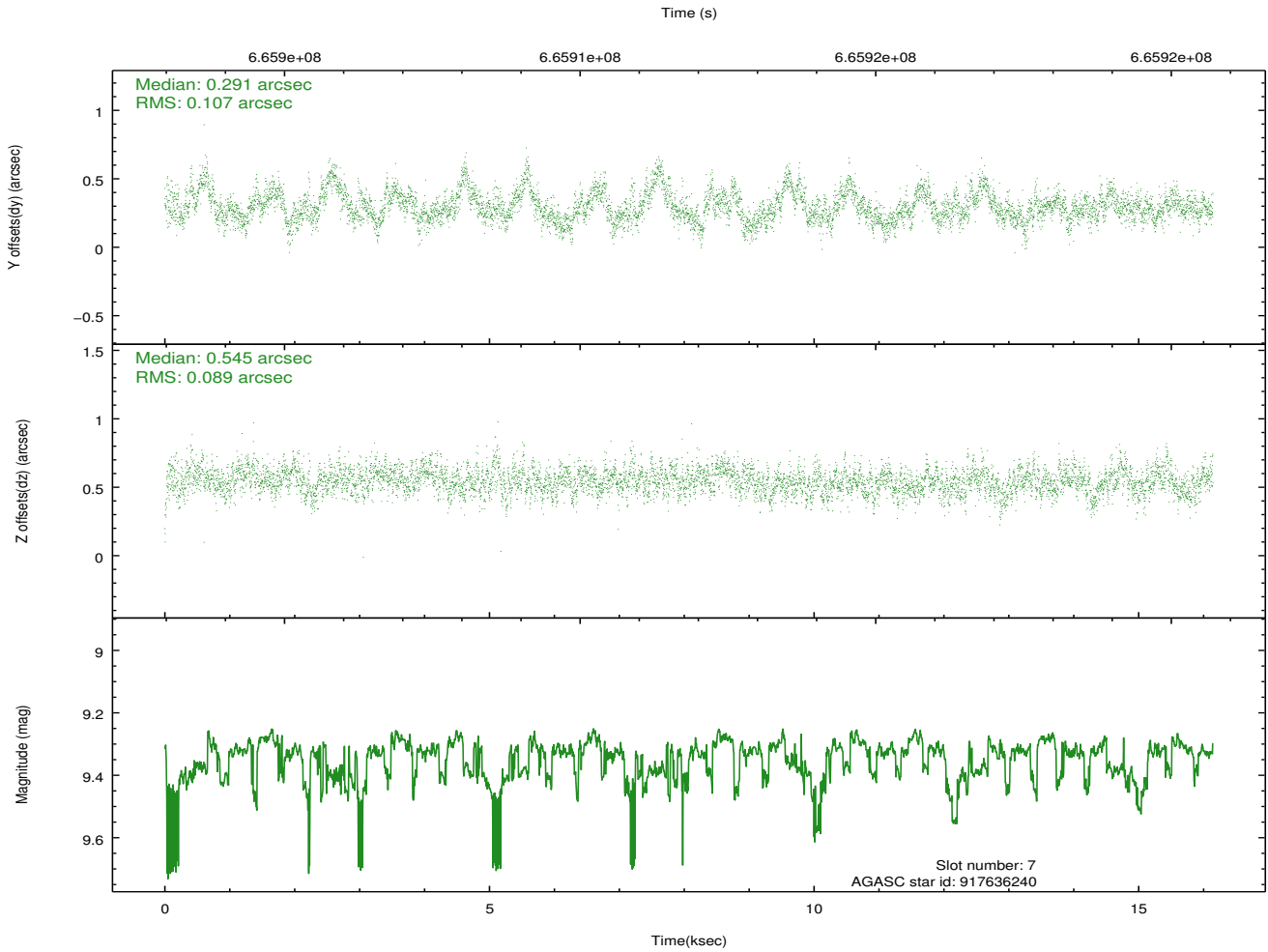
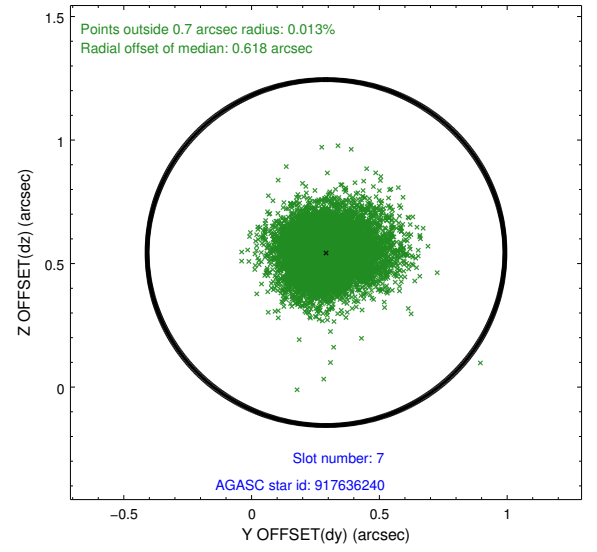
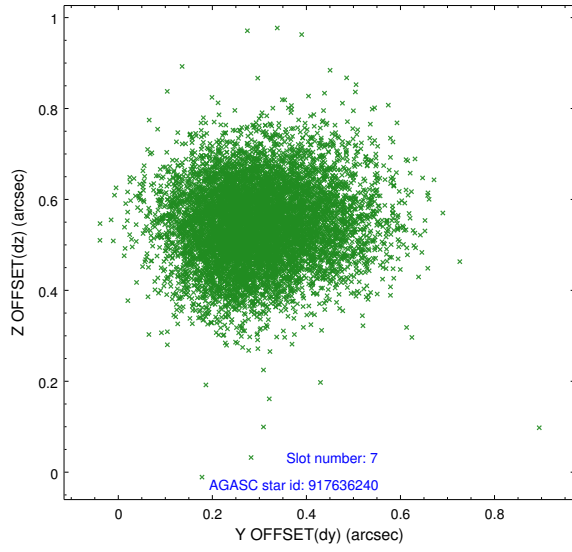
2.4.2 Slot 5



2.4.3 Slot 6

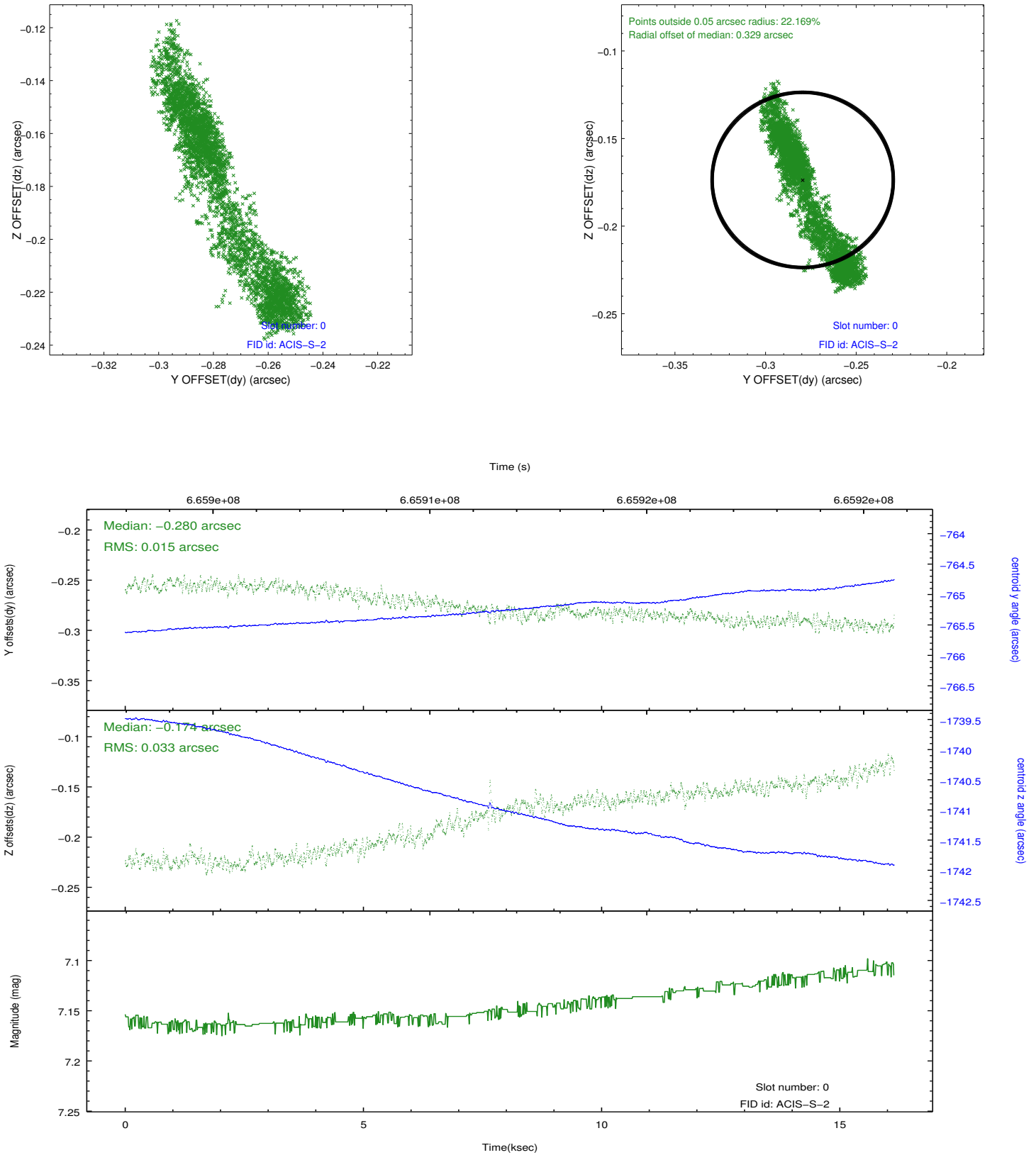


2.4.4 Slot 7

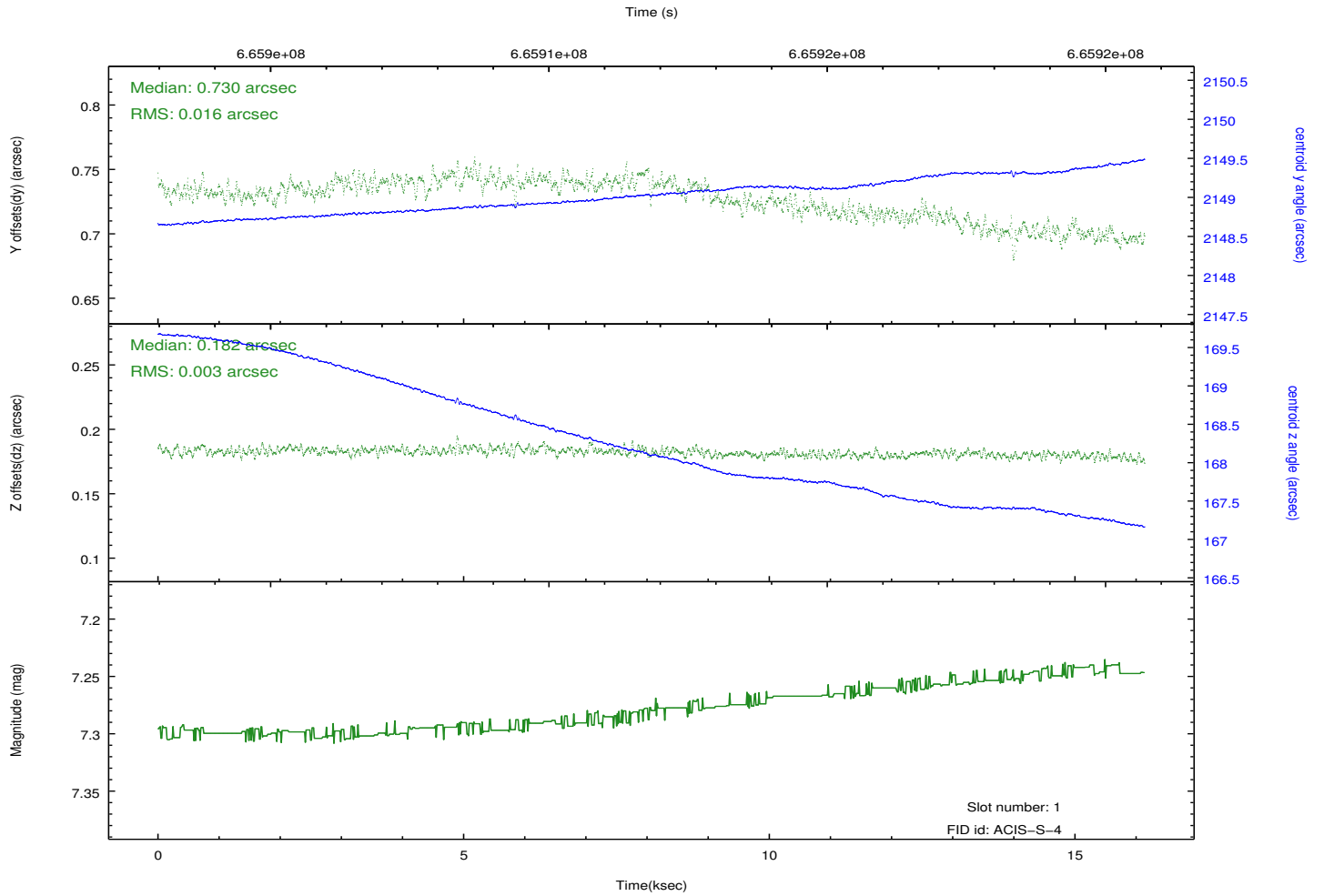
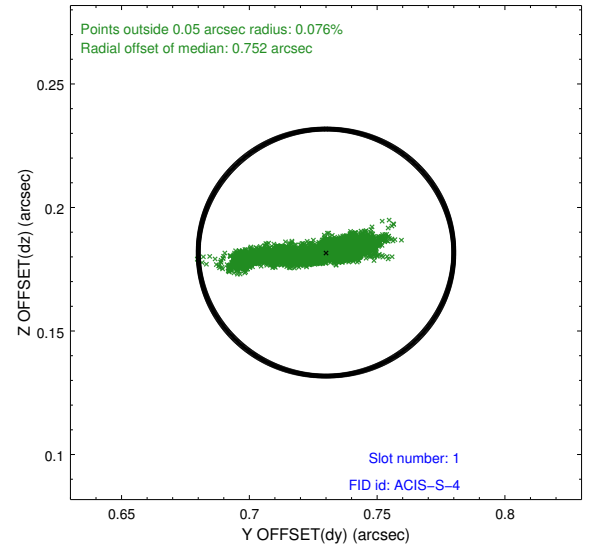
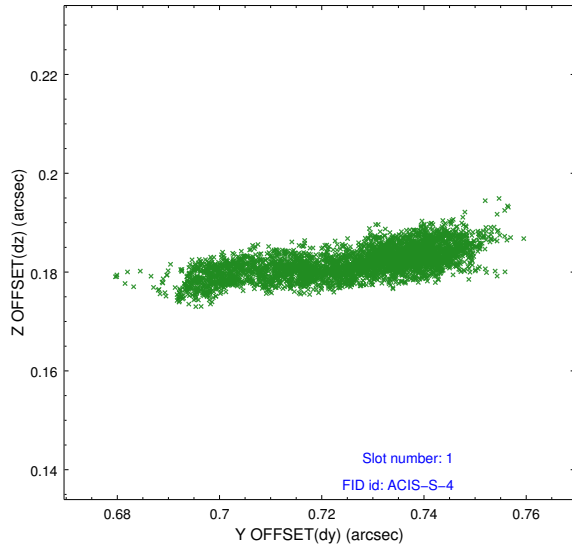


2.5 FID Slots

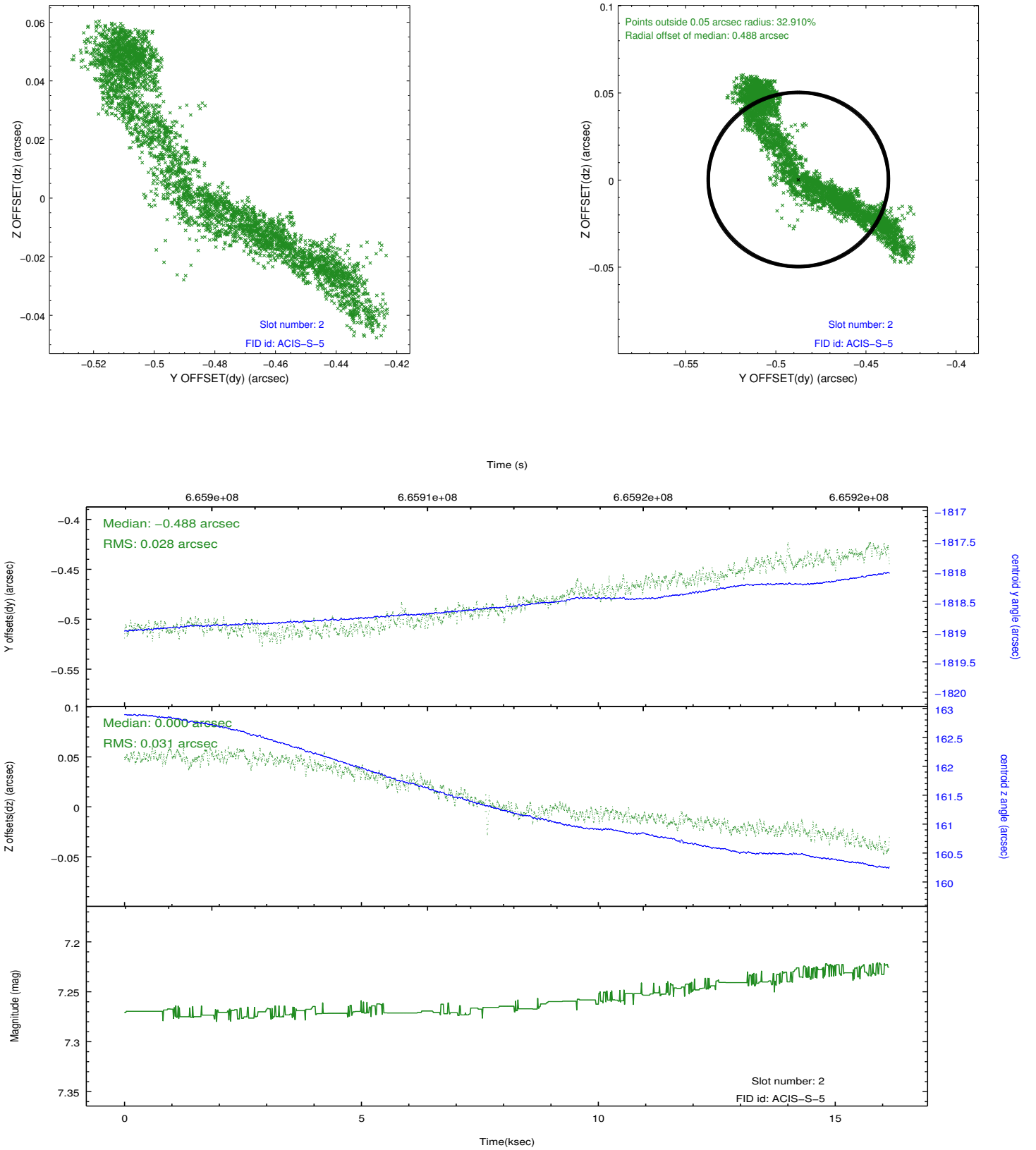
2.5.1 Slot 0



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)	2019.02.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	16.060532779336

A.2 Comments

Joint proposal with NuSTAR.

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The guide star in slot 4 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

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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.