

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21470 - L2 Version 1
Chandra X-Ray Center

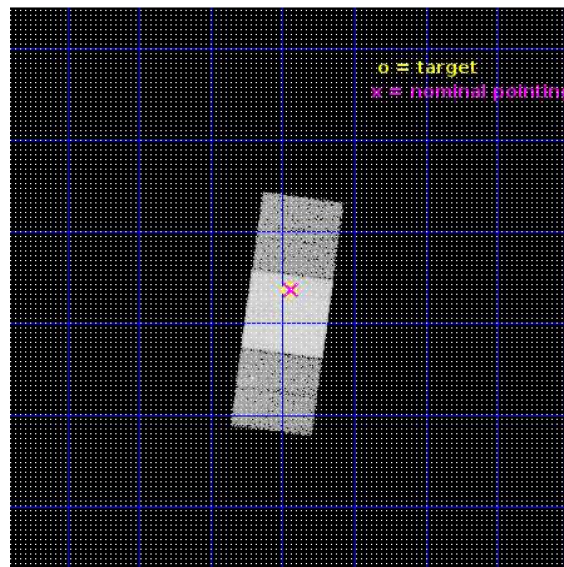
L2 Processing Date : Mar 27 2019

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1 Front

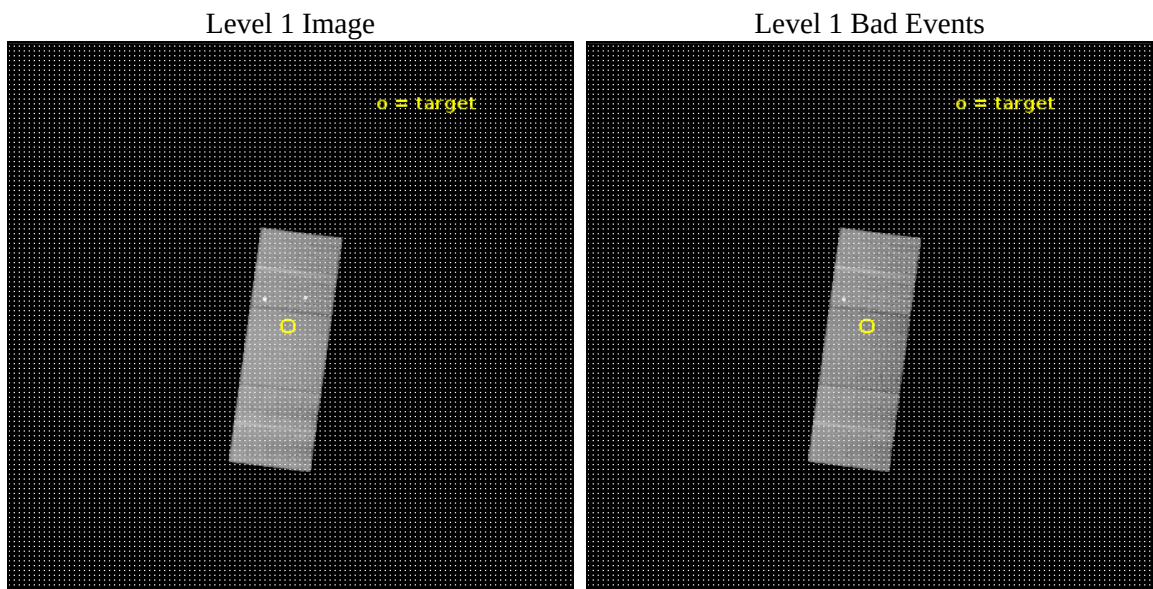
seq_num	703766	Sequence number
obs_id	21470	Observation id
title	RUNAWAY TIDAL CAPTURE IN NUCLEAR STAR CLUSTERS AS A FORMATION PATHWAY FOR MASSIVE BLACK HOLES	Proposal title
observer	Vivienne Baldassare	Principal investigator
object	UGC 09215	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	215.863333	Observer's specified target RA [deg]
dec_targ	1.726222	Observer's specified target Dec [deg]
ra_nom	215.85948869552	Nominal RA [deg]
dec_nom	1.7277603696951	Nominal Dec [deg]
roll_nom	97.523543414773	Nominal Roll [deg]
revision	1	Processing version of data
ontime	19108.375369072	Sum of GTIs [s]
livetime	18858.710377494	Livetime [s]
ontime6	19105.193238735	Sum of GTIs [s]
ontime7	19108.375369072	Sum of GTIs [s]
ontime8	19098.87003839	Sum of GTIs [s]
l2events	108348	Number of level 2 events



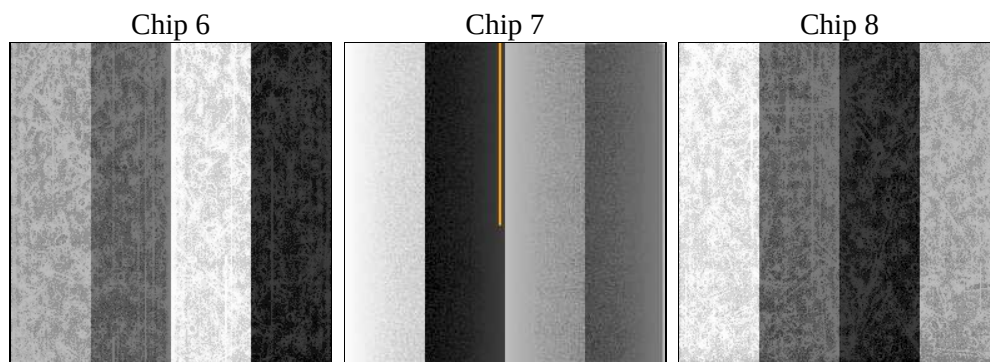
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	19000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	19108.375369072	Sum of GTIs [s]
caldsver	4.8.2	 	ontime6	19105.193238735	Sum of GTIs [s]
date	2019-03-27T14:02:24	Date and time of file creation	ontime7	19108.375369072	Sum of GTIs [s]
revision	1	Processing version of data	ontime8	19098.87003839	Sum of GTIs [s]
			l1events	555765	Number of level 1 events

2.1.4 Events

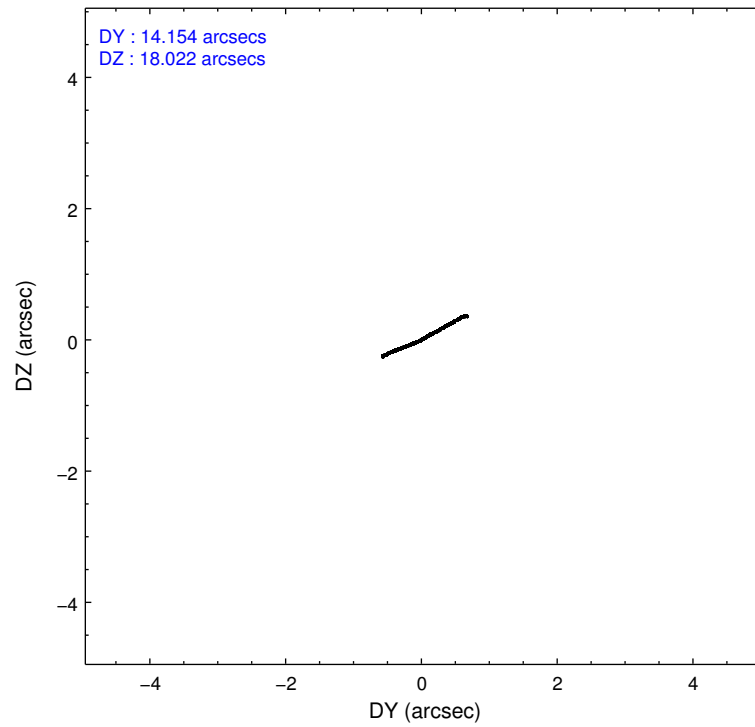
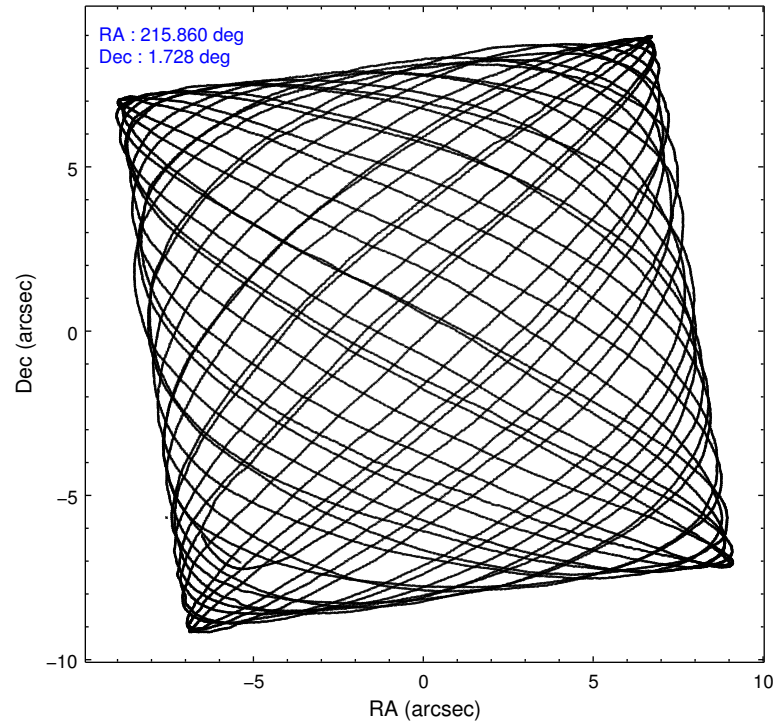
	ccd 6	ccd 7	ccd 8
level 1 events	175060	188841	191864
rejected events	147209	107822	144336
rejected %	84%	57%	75%

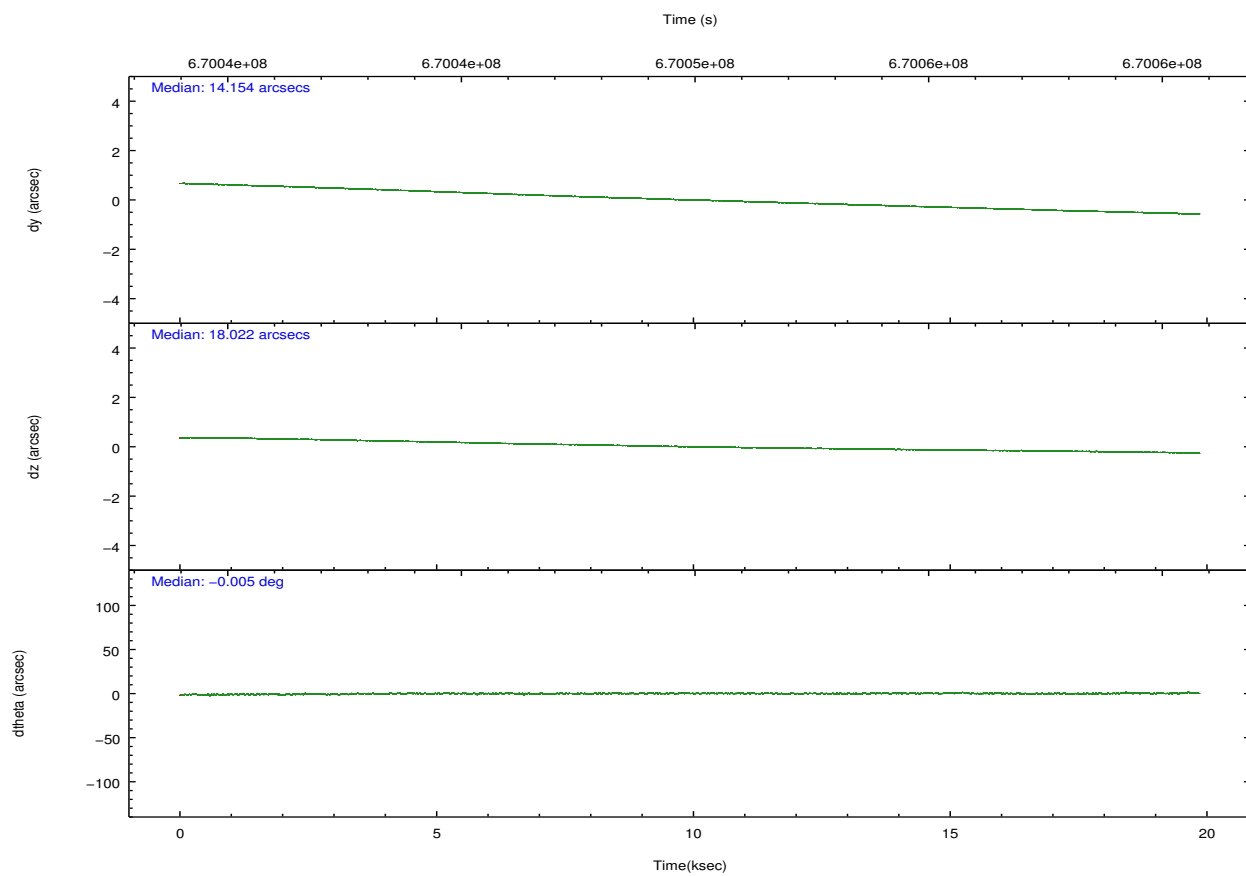
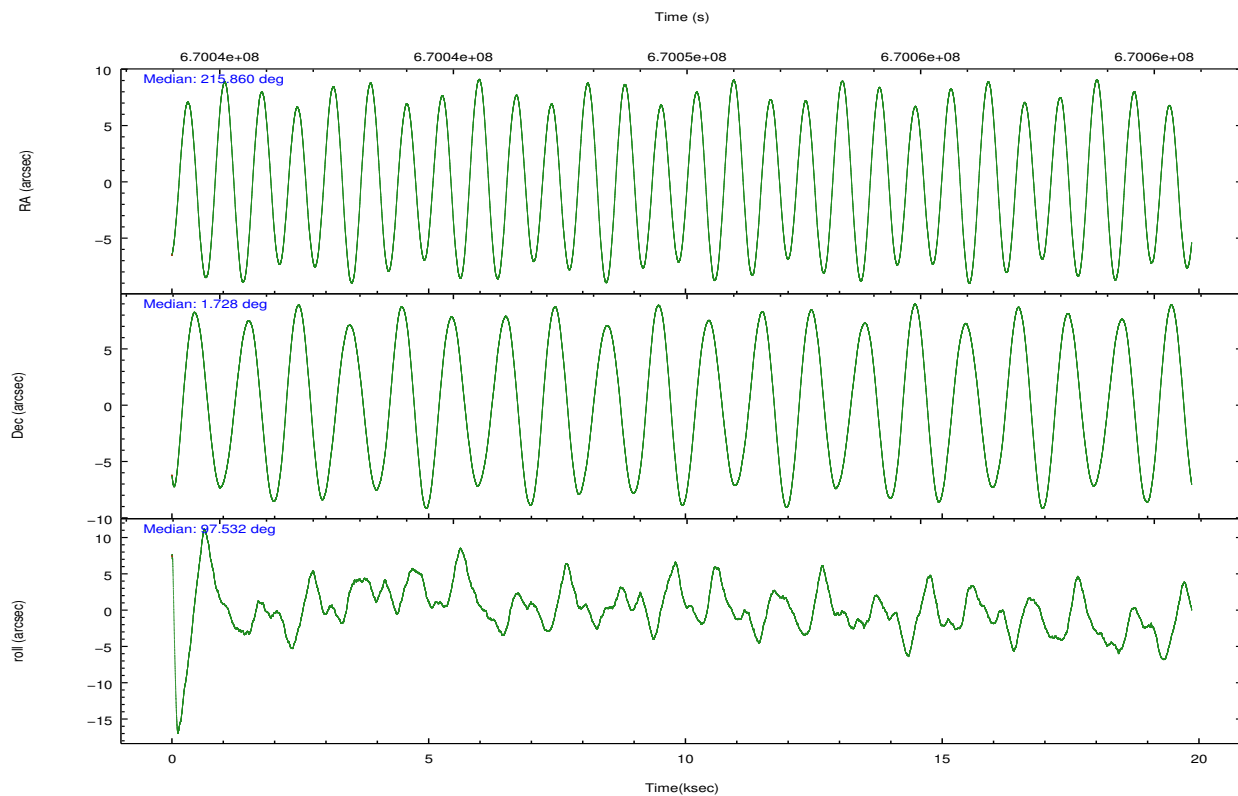
	ccd 6	ccd 7	ccd 8
grade 0 events	15820	6538	12844
	9%	3%	6%
grade 1 events	5781	288	134
	3%	0%	0%
grade 2 events	4617	16980	12018
	2%	8%	6%
grade 3 events	1353	6267	4751
	0%	3%	2%
grade 4 events	1327	6049	4384
	0%	3%	2%
grade 5 events	6025	17878	9703
	3%	9%	5%
grade 6 events	4742	45207	13550
	2%	23%	7%
grade 7 events	135395	89634	134480
	77%	47%	70%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-678	ACIS-678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	215.876513	215.8594886955196	CCD I2 on	N	N
[deg] Pointing Dec	1.706200	1.727760369695118	CCD I3 on	N	N
[deg] Pointing Roll	97.366382	97.5235434147728	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	N	N
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	O1	Y
[s] Observation start time (MET)	670040812.184000	670039641.21393	CCD S5 on	N	N
Observation start date	2019-03-27T02:25:43	2019-03-27T02:07:21	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	670059812.184000	670060605.54019	On-chip summing requested	N	N
Observation end date	2019-03-27T07:42:23	2019-03-27T07:56:45	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



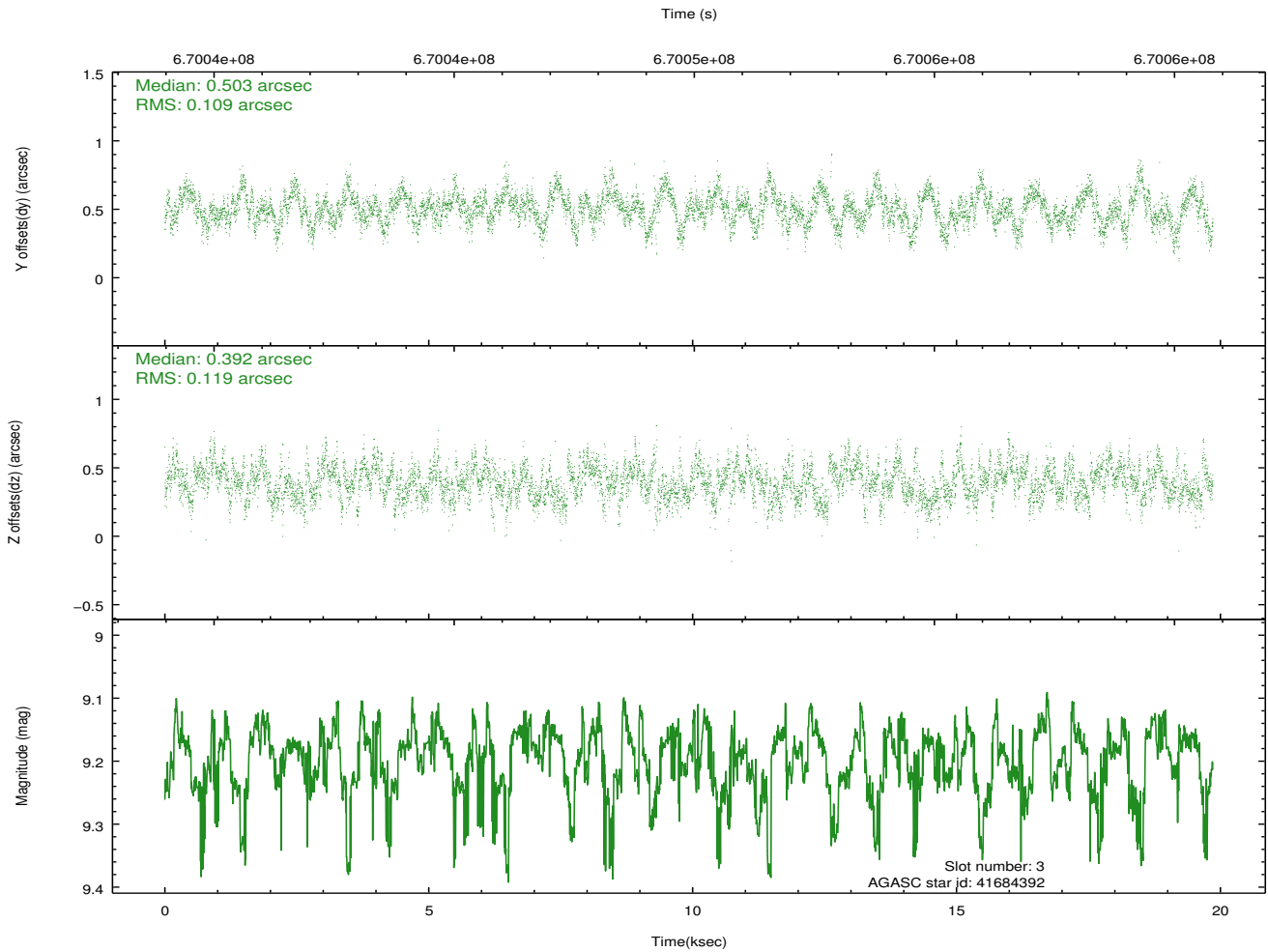
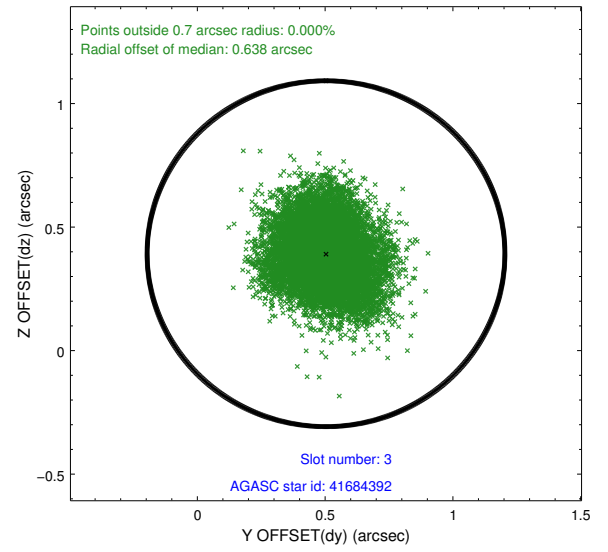
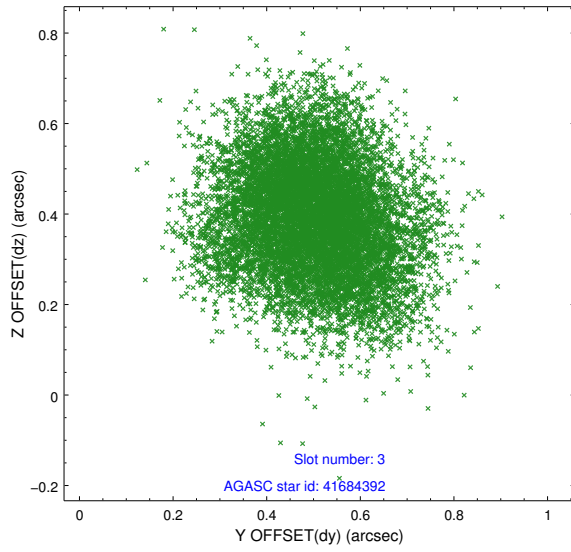


Slot Statistics

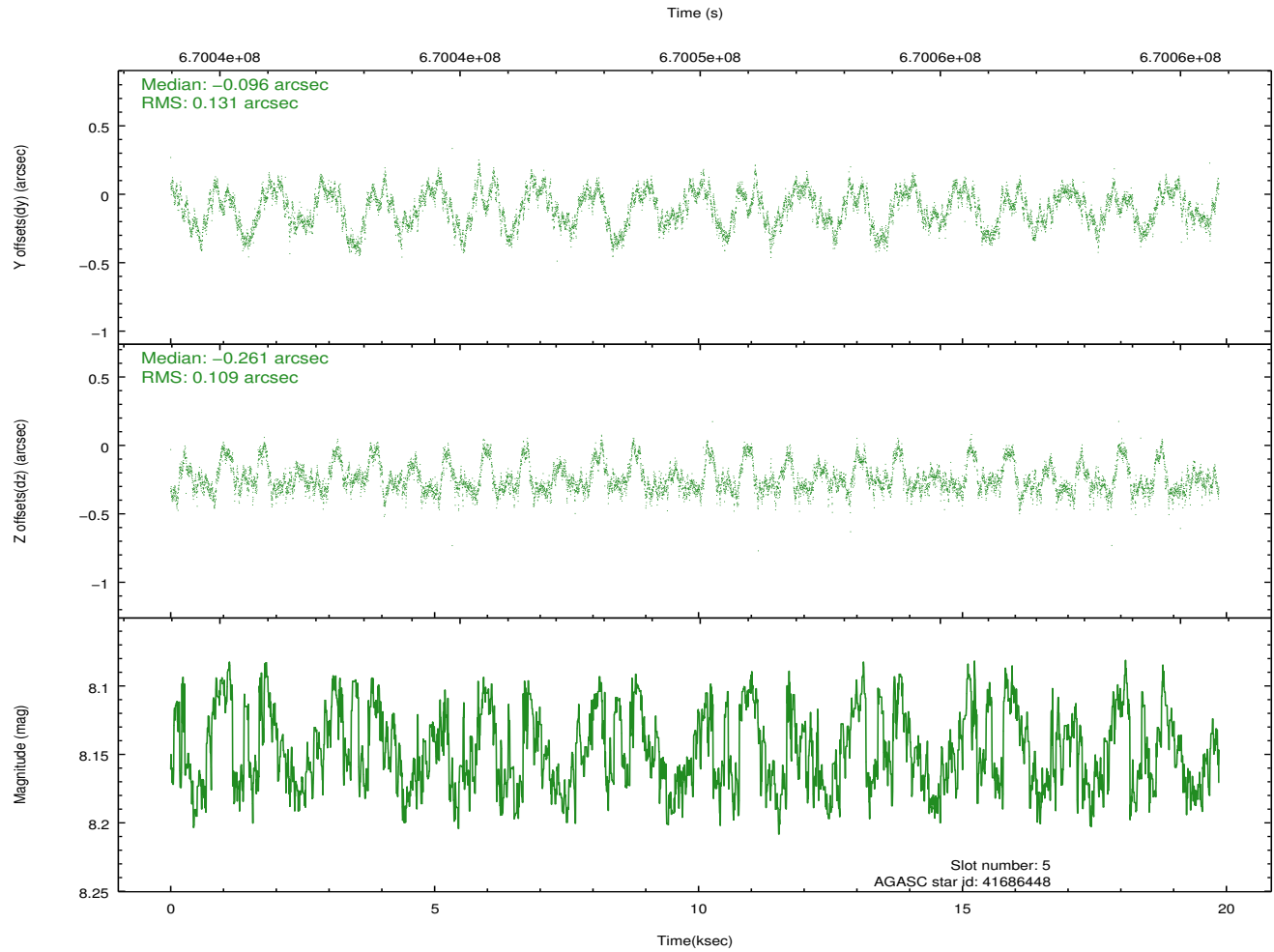
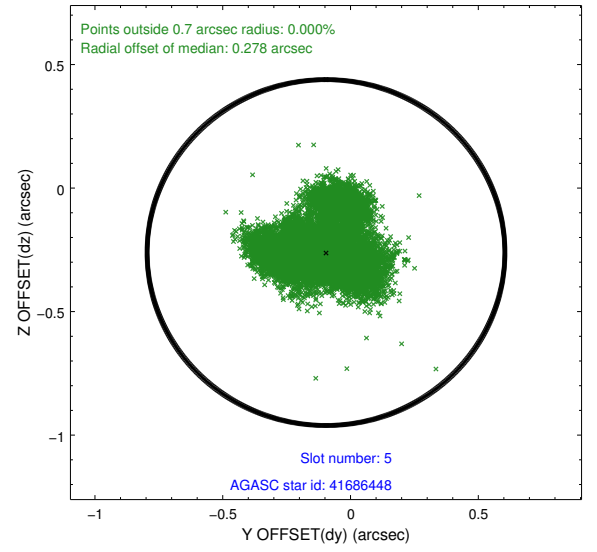
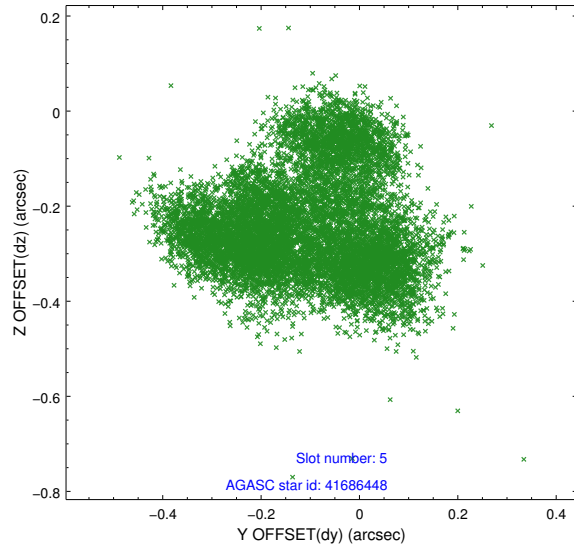
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-3	7.40	4844	1.000	-0.193	-0.198	0.010	0.015	0.000000	0.000000	45.93	-1868
1	FID		ACIS-S-4	7.27	4841	1.000	0.747	0.194	0.008	0.015	0.000000	0.000000	2146.98	169
2	FID		ACIS-S-5	7.24	4844	1.000	-0.583	0.013	0.010	0.016	0.000000	0.000000	-1820.31	162
3	GUIDE	used	41684392	9.19	9660	1.000	0.503	0.392	0.175	0.275	216.346348	1.539102	-812.67	-1598
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	41686448	8.15	9682	1.000	-0.096	-0.261	0.191	0.267	215.691999	1.668753	-48.42	677
6	GUIDE	used	41689000	8.93	9681	1.000	-0.069	0.178	0.180	0.274	216.113081	1.947583	753.11	-954
7	GUIDE	used	41689808	9.24	9676	1.000	-0.326	-0.333	0.171	0.273	215.816289	2.225689	1882.74	-24

2.4 Star Slots

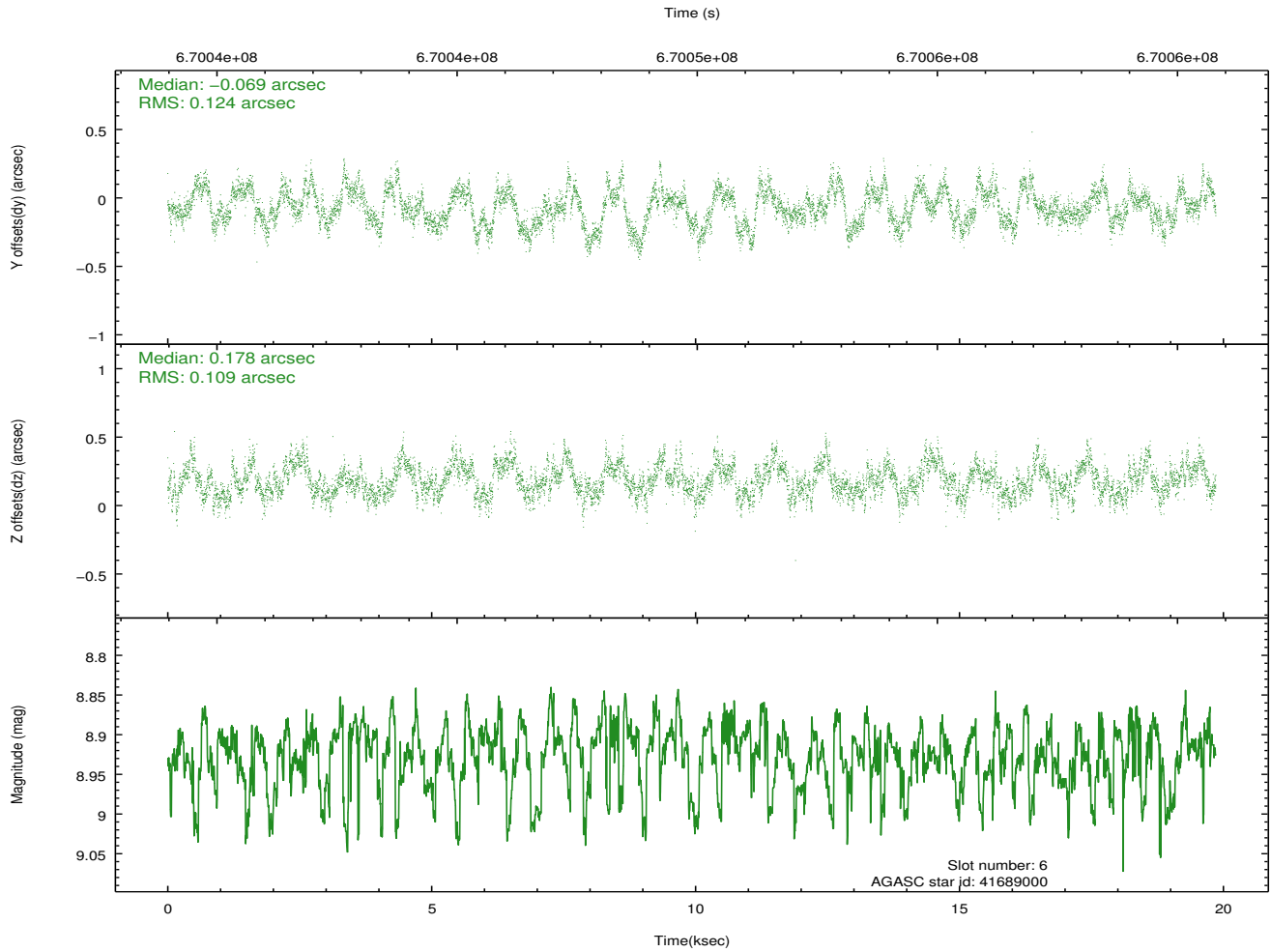
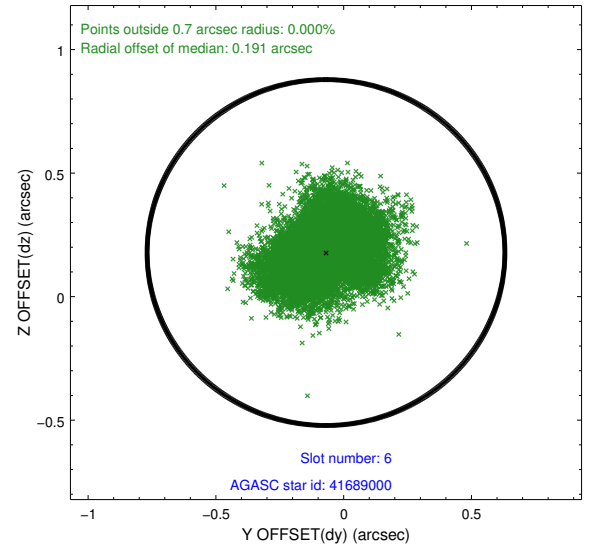
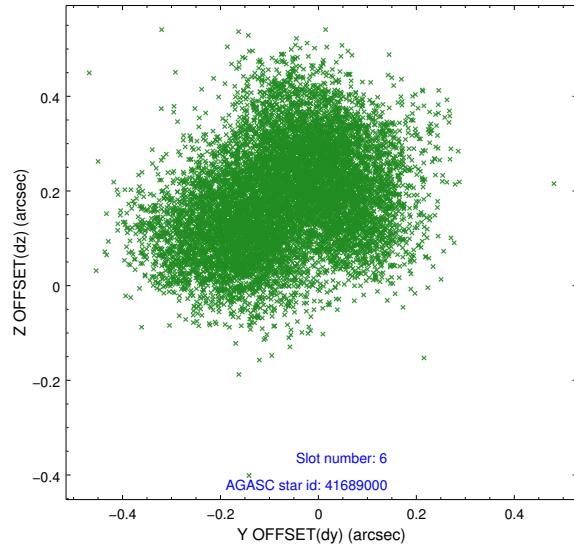
2.4.1 Slot 3



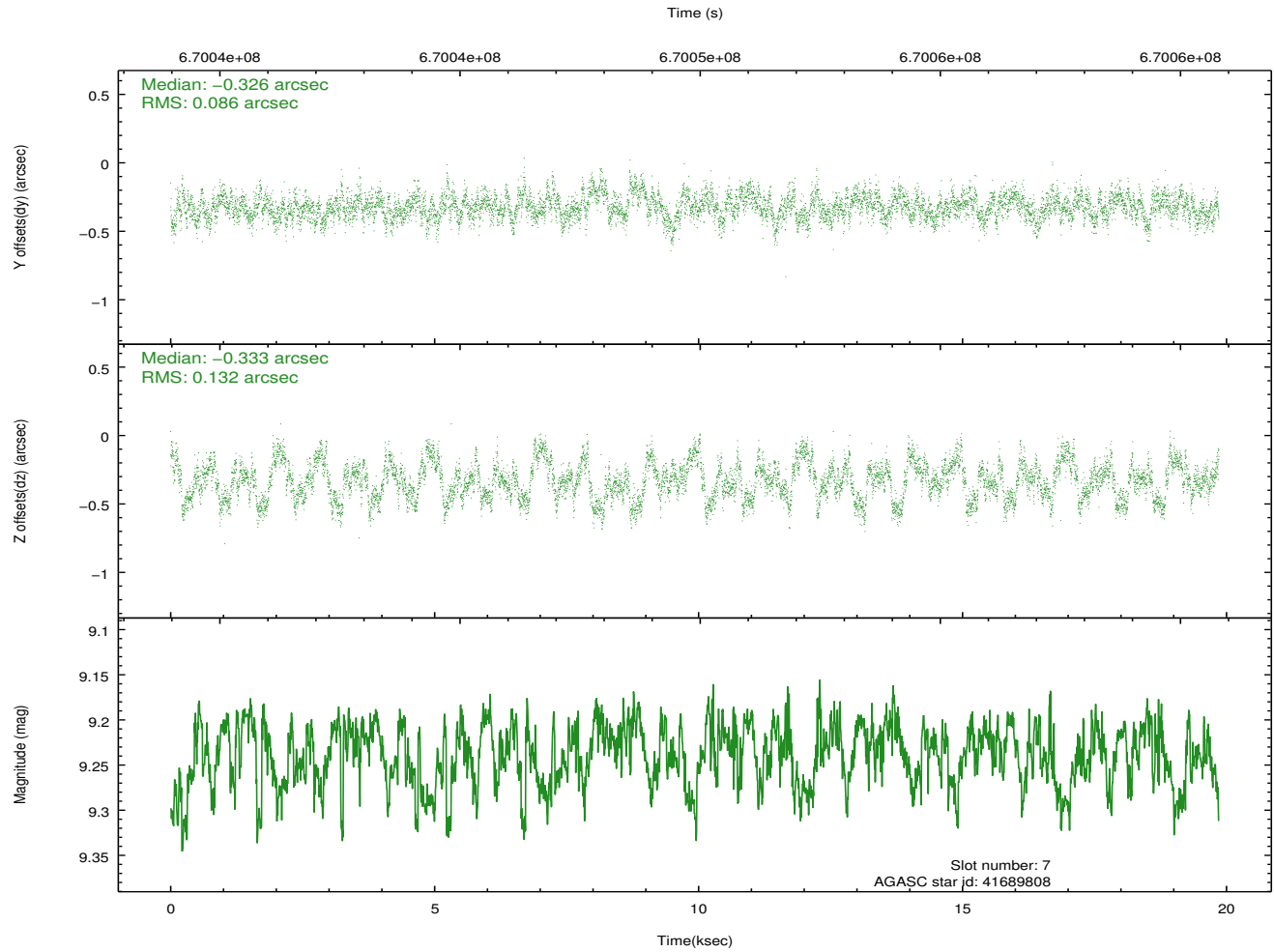
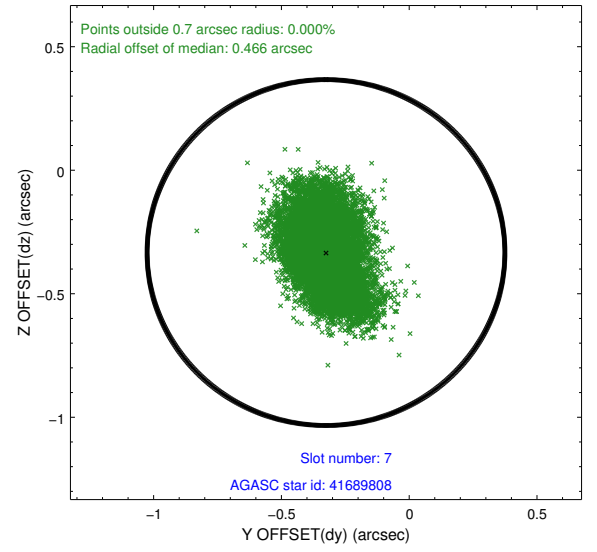
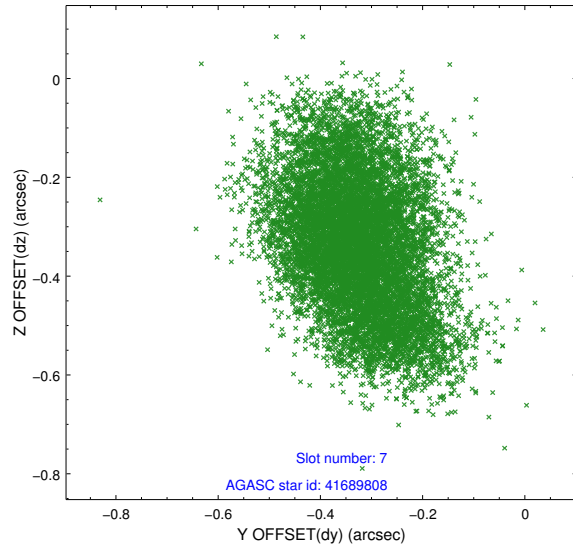
2.4.2 Slot 5



2.4.3 Slot 6

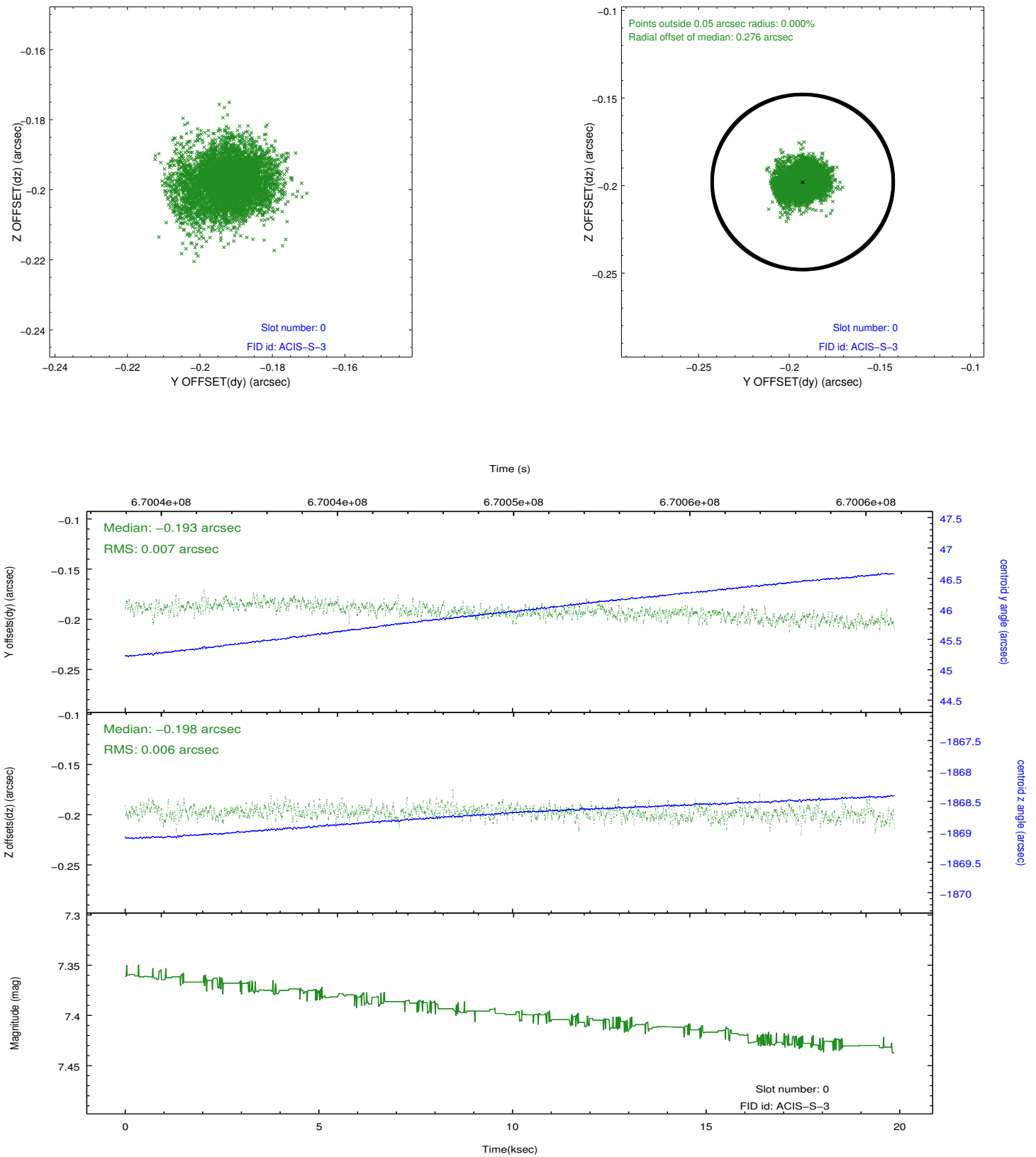


2.4.4 Slot 7

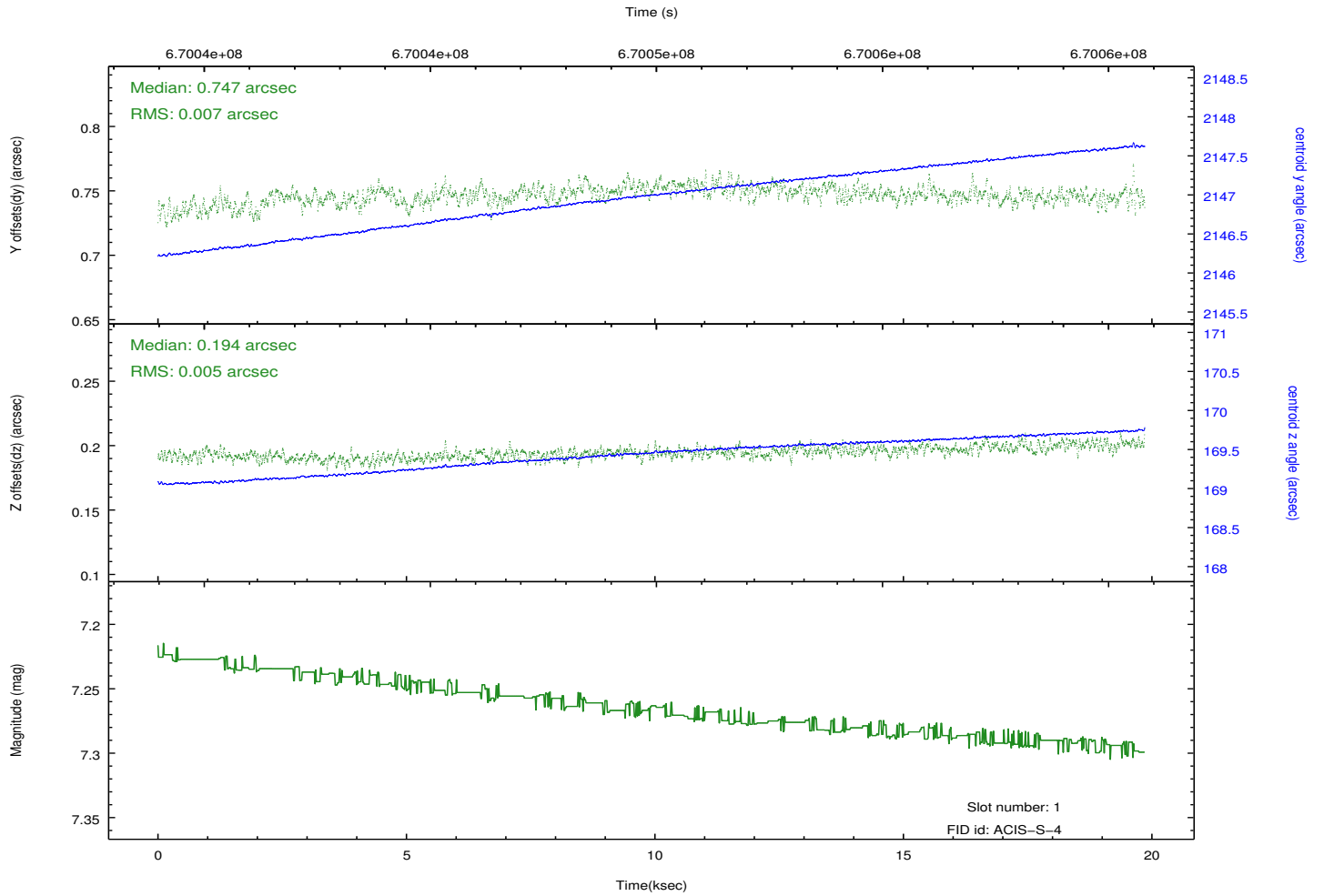
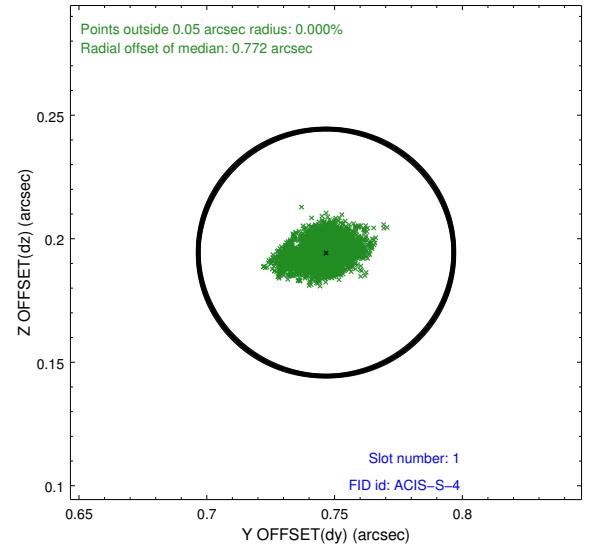
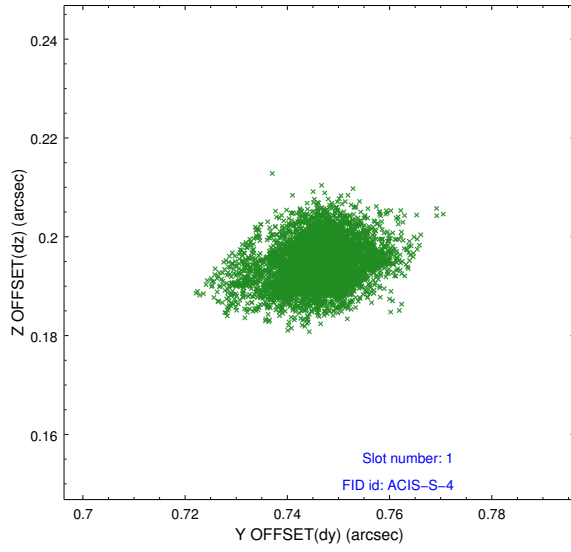


2.5 FID Slots

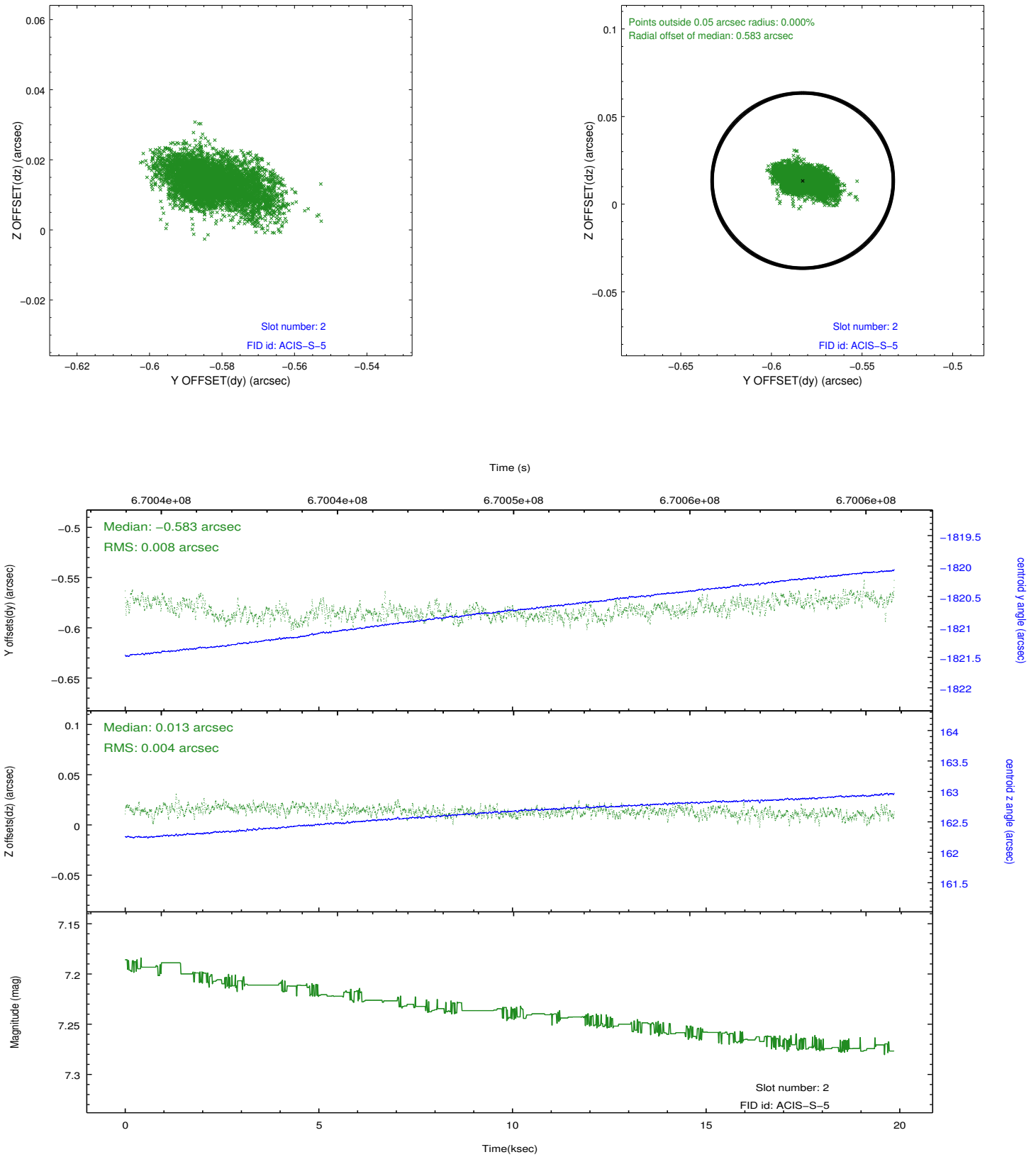
2.5.1 Slot 0



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)	2019.03.27
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	19.108375369072

A.2 Comments

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.