

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21039 - L2 Version 1
Chandra X-Ray Center

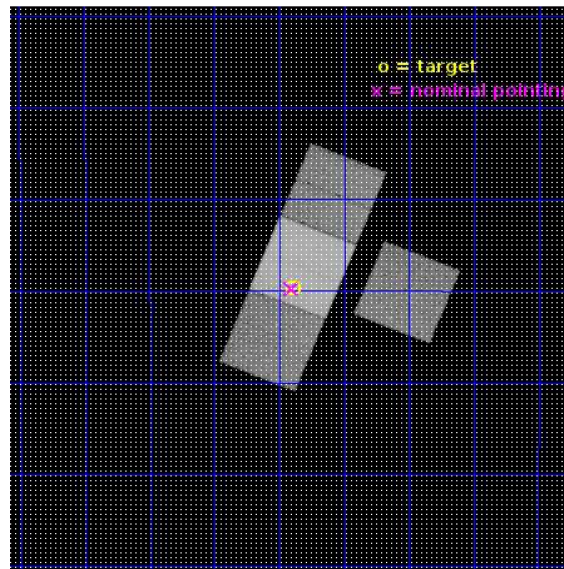
L2 Processing Date : Apr 9 2019

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1 Front

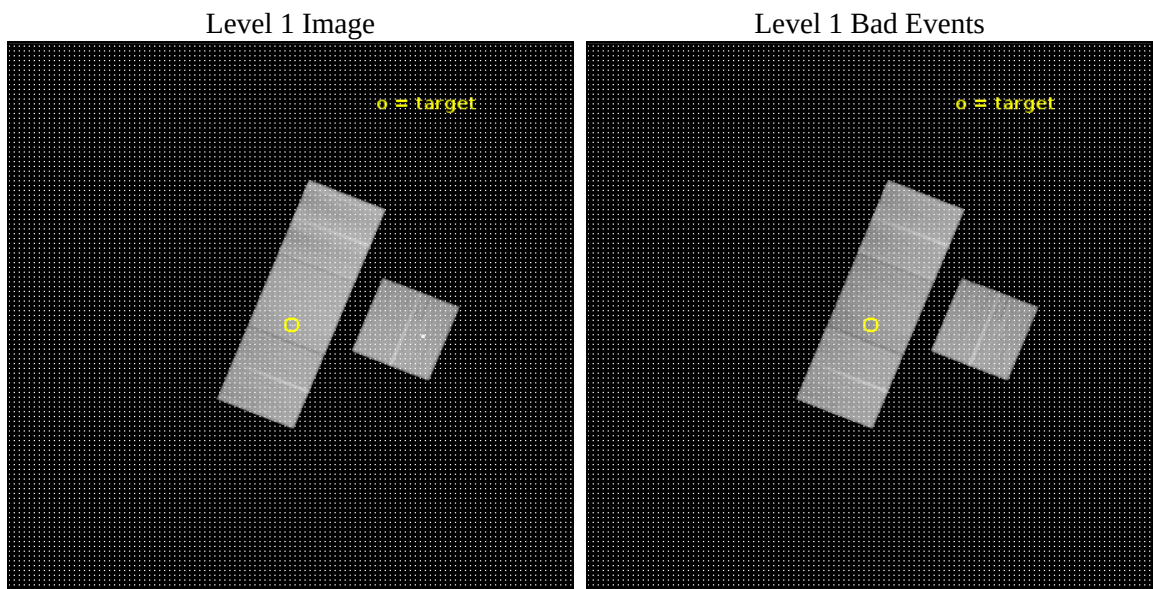
seq_num	703599	Sequence number
obs_id	21039	Observation id
title	NGC 3393: Resolving Feedback in the Narrow Line Region on 50-pc Scales	Proposal title
observer	Walter Maksym	Principal investigator
object	NGC 3393	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	162.0975	Observer's specified target RA [deg]
dec_targ	-25.162028	Observer's specified target Dec [deg]
ra_nom	162.10196273586	Nominal RA [deg]
dec_nom	-25.162500398361	Nominal Dec [deg]
roll_nom	291.94013329563	Nominal Roll [deg]
revision	1	Processing version of data
ontime	45063.681268573	Sum of GTIs [s]
livetime	44474.891097399	Livetime [s]
ontime3	45054.175948024	Sum of GTIs [s]
ontime6	45057.358068109	Sum of GTIs [s]
ontime7	45063.681268573	Sum of GTIs [s]
ontime8	45057.275988102	Sum of GTIs [s]
l2events	293164	Number of level 2 events



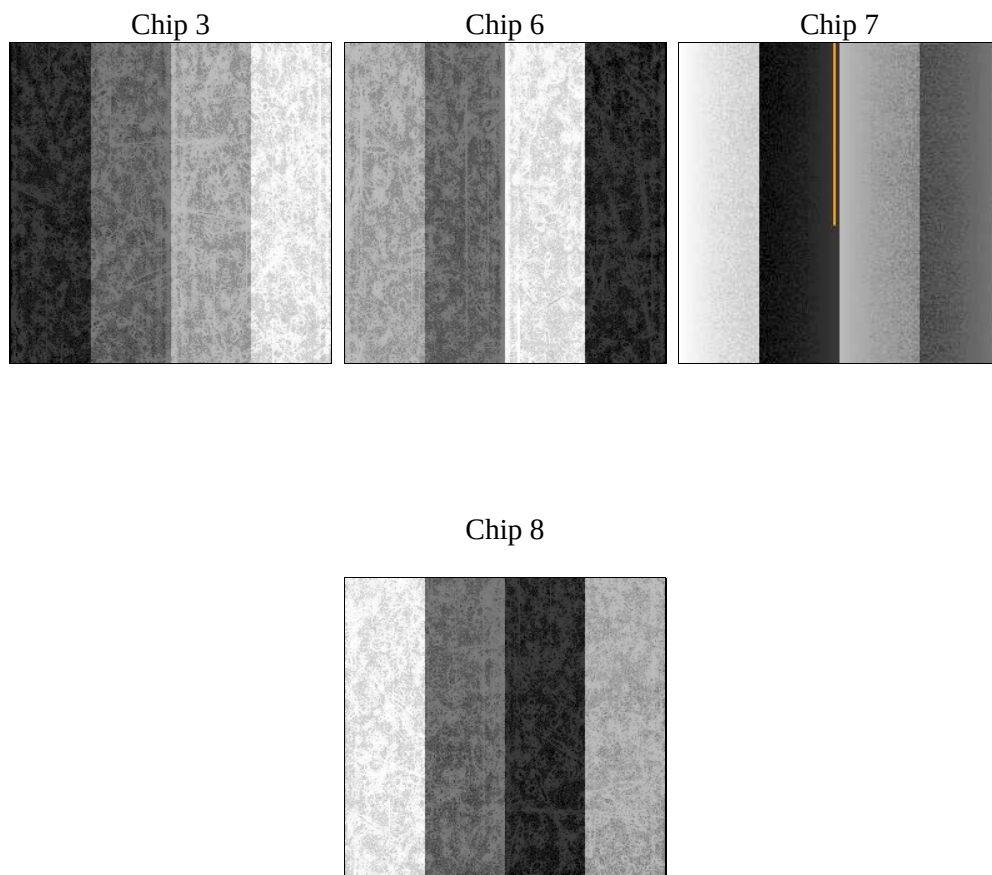
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	45000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	45063.681268573	Sum of GTIs [s]
caldbver	4.8.2	 	ontime3	45054.175948024	Sum of GTIs [s]
date	2019-04-10T01:28:10	Date and time of file creation	ontime6	45057.358068109	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	45063.681268573	Sum of GTIs [s]
			ontime8	45057.275988102	Sum of GTIs [s]
			l1events	1661386	Number of level 1 events

2.1.4 Events

	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	366205	378480	453978	462723
rejected events	318523	338591	259867	347048
rejected %	86%	89%	57%	75%

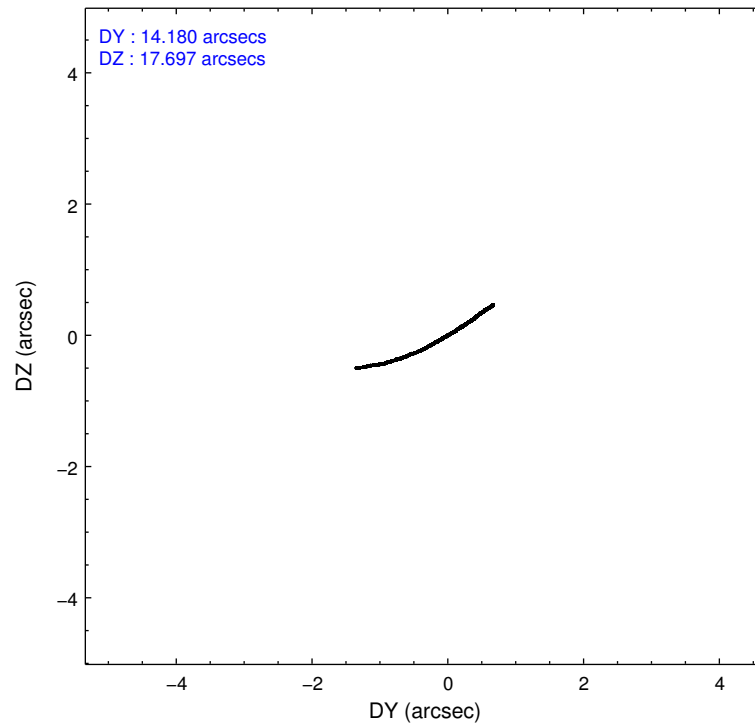
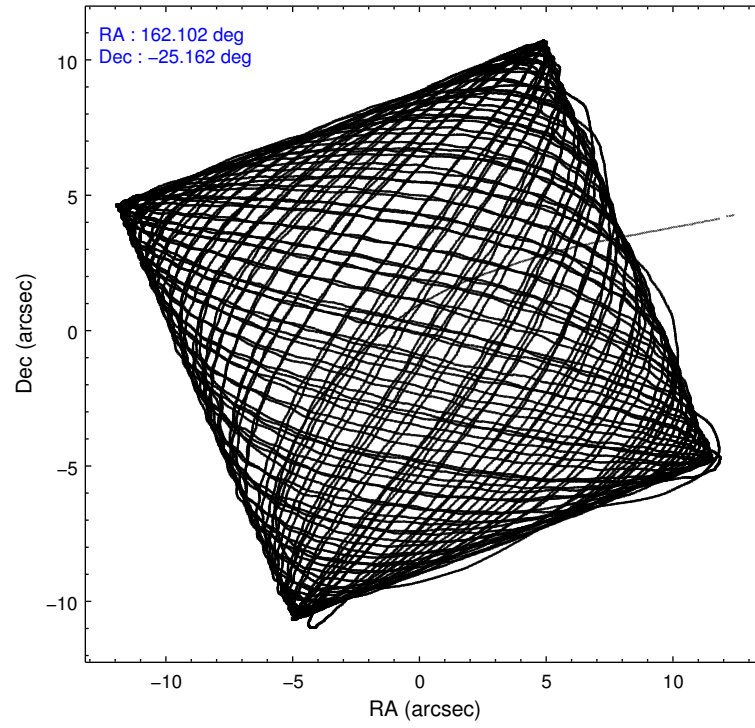
	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	24699	11674	16242	31335
	6%	3%	3%	6%
grade 1 events	293	146	701	371
	0%	0%	0%	0%
grade 2 events	7609	10660	40756	29151
	2%	2%	8%	6%
grade 3 events	3719	3368	14671	11651
	1%	0%	3%	2%
grade 4 events	3607	3421	14633	10955
	0%	0%	3%	2%
grade 5 events	15347	14676	43425	23986
	4%	3%	9%	5%
grade 6 events	8050	10767	107816	32593
	2%	2%	23%	7%
grade 7 events	302881	323768	215734	322681
	82%	85%	47%	69%

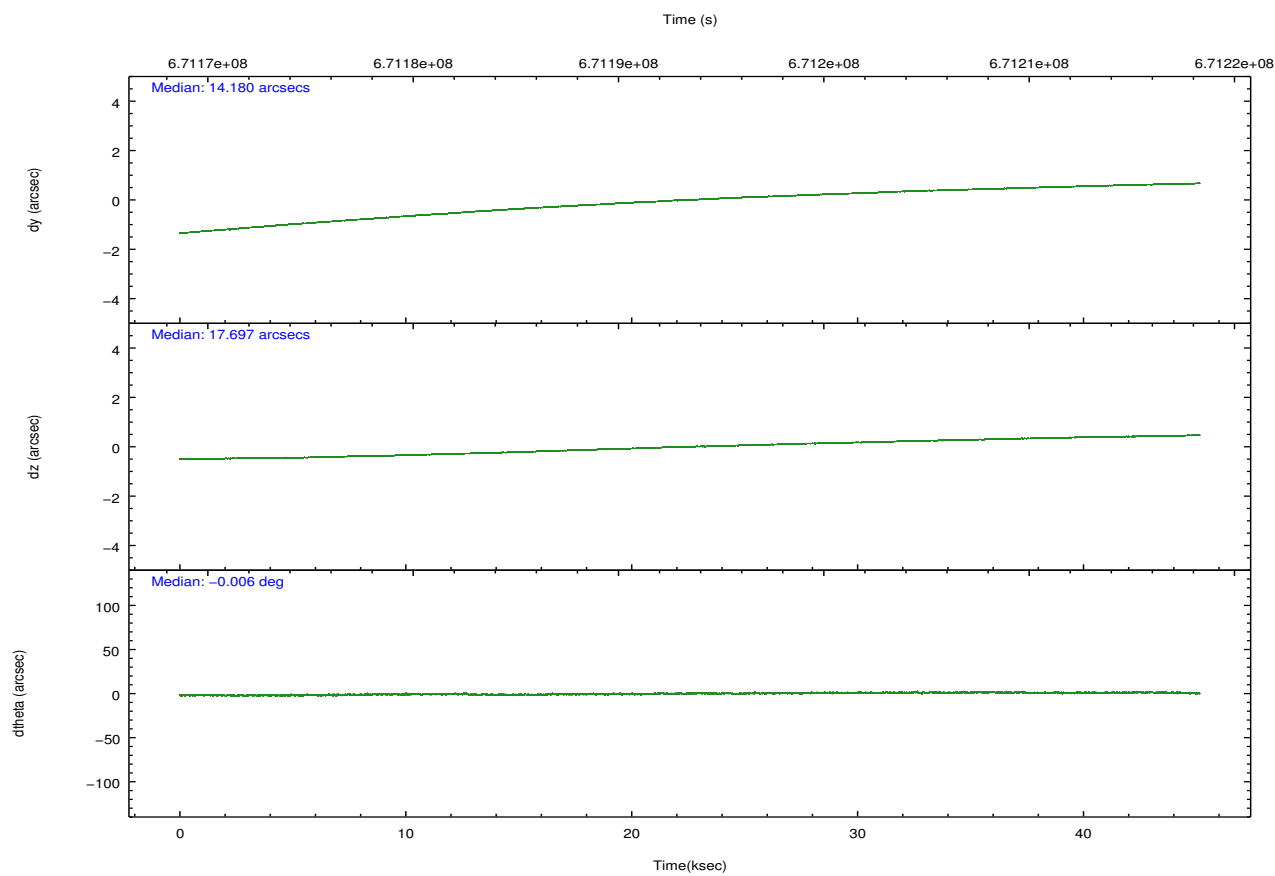
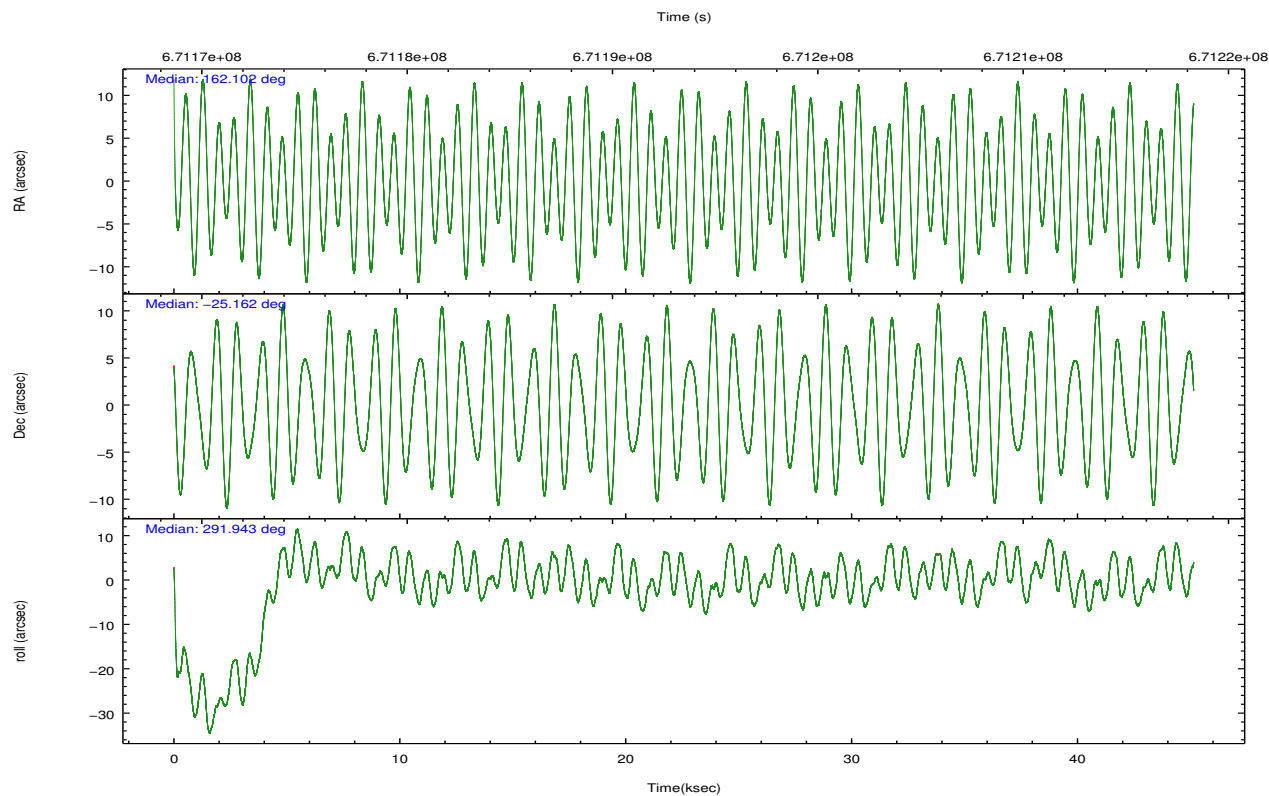
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-3678	ACIS-3678
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	162.077853	162.101962735859
[deg] Pointing Dec	-25.145863	-25.16250039836074
[deg] Pointing Roll	291.773249	291.9401332956321
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	671171030.184000	671169524.9190201
Observation start date	2019-04-09T04:22:41	2019-04-09T03:58:44
[s] Observation end time (MET)	671216030.184000	671216993.69686
Observation end date	2019-04-09T16:52:41	2019-04-09T17:09:53
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	N	N
CCD I1 on	N	N
CCD I2 on	O2	N
CCD I3 on	O3	Y
CCD S0 on	N	N
CCD S1 on	O1	N
CCD S2 on	O5	Y
CCD S3 on	Y	Y
CCD S4 on	O4	Y
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



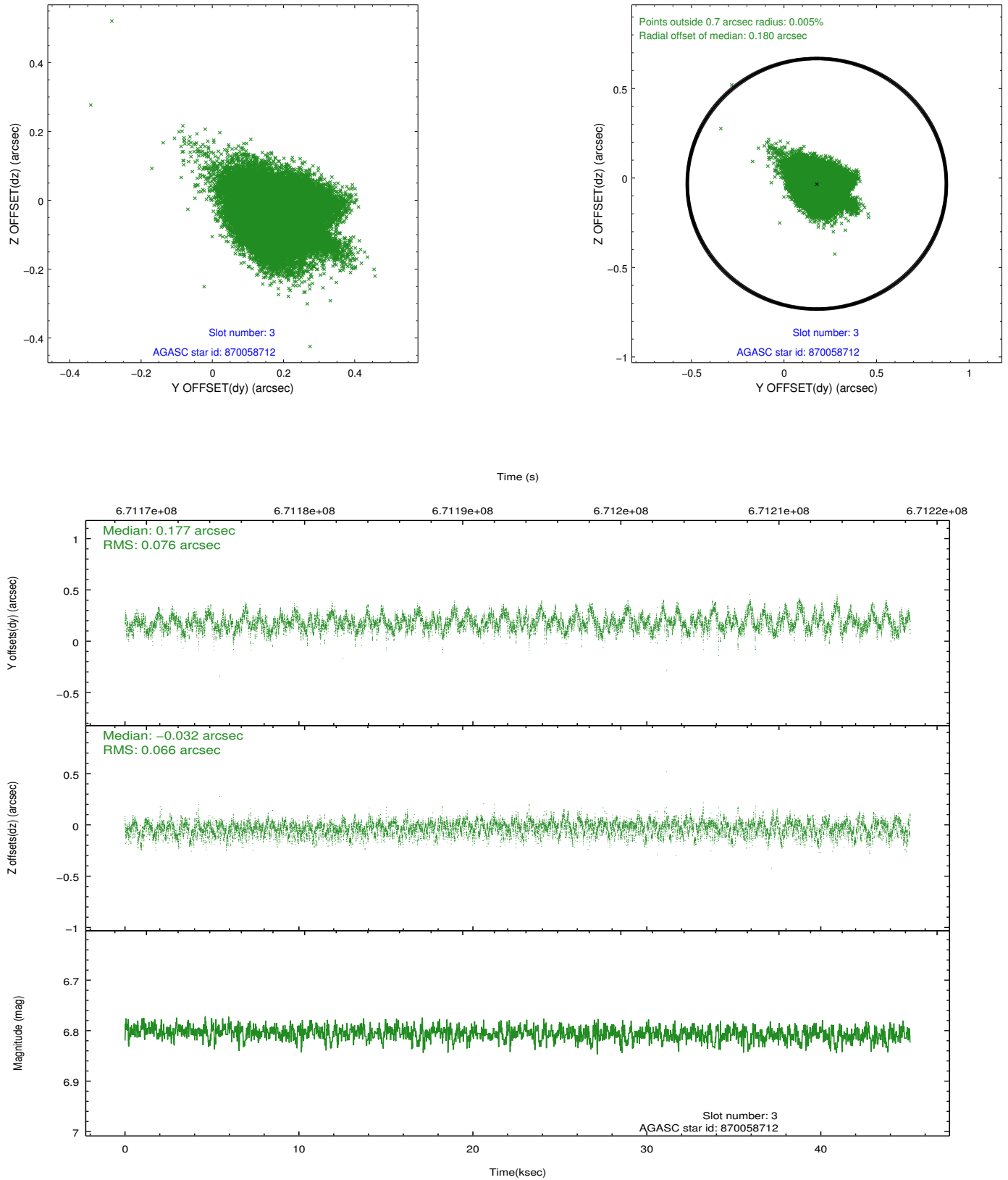


Slot Statistics

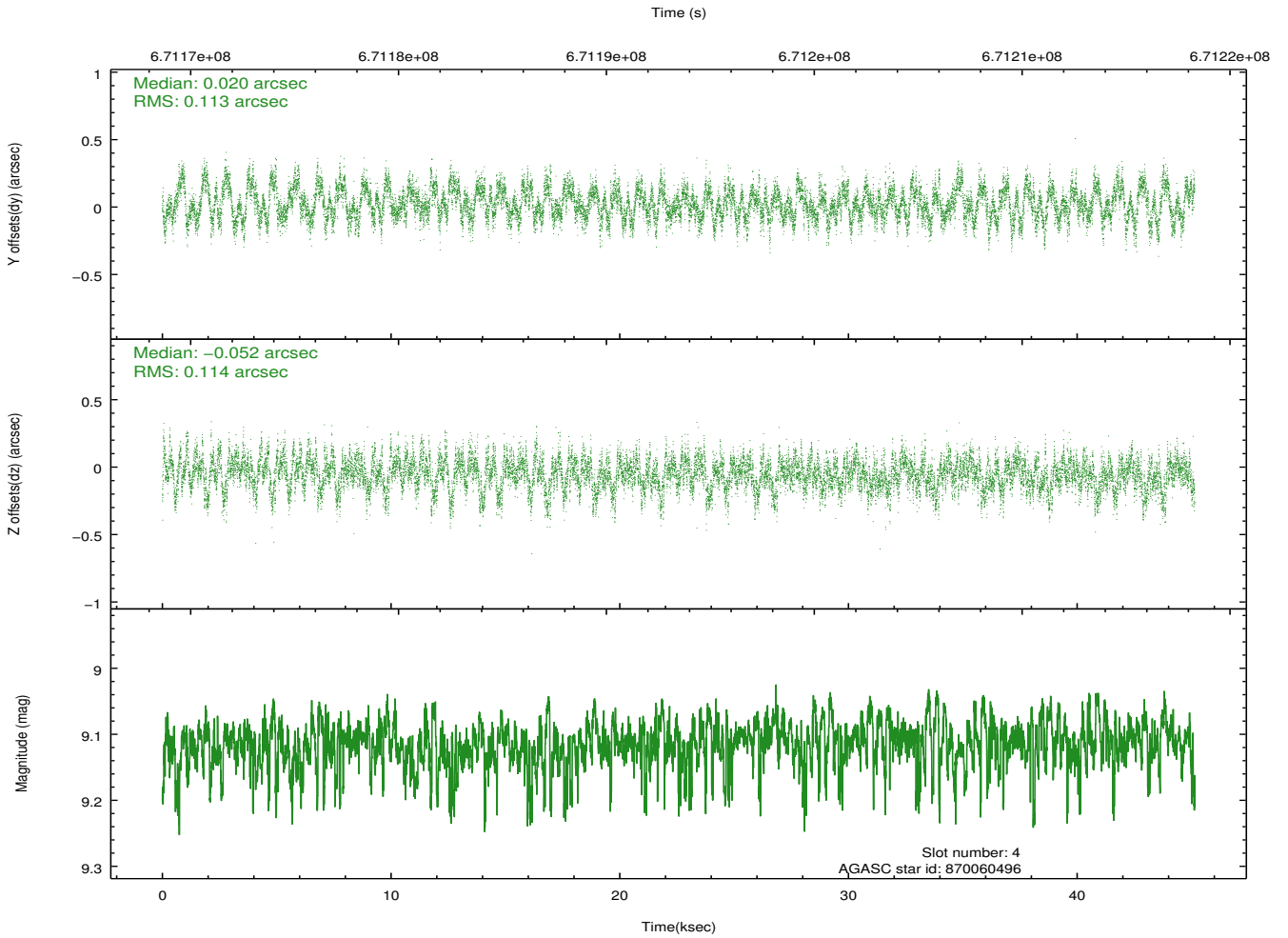
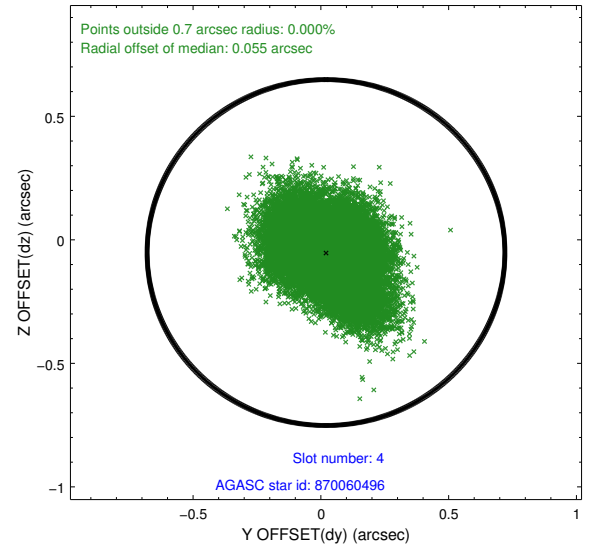
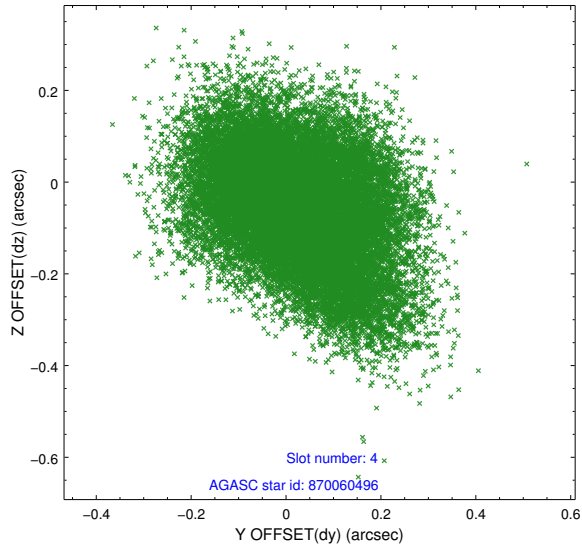
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.11	11011	1.000	-0.284	-0.224	0.038	0.069	0.000000	0.000000	-767.23	-1739
1	FID		ACIS-S-4	7.23	11011	1.000	0.786	0.197	0.043	0.081	0.000000	0.000000	2147.05	169
2	FID		ACIS-S-5	7.21	11010	1.000	-0.533	0.036	0.021	0.045	0.000000	0.000000	-1820.39	163
3	GUIDE	used	870058712	6.81	22018	1.000	0.177	-0.032	0.106	0.171	161.694136	-25.533829	837.08	-1676
4	GUIDE	used	870060496	9.11	21997	1.000	0.020	-0.052	0.170	0.279	161.870891	-25.437384	727.08	-1014
5	GUIDE	used	870062656	9.31	21976	1.000	-0.528	-0.446	0.217	0.377	162.630130	-24.979833	116.92	1893
6	GUIDE	used	870063952	8.29	22005	1.000	0.127	0.341	0.172	0.257	161.785917	-24.549213	-2347.47	-90
7	GUIDE	used	870065008	8.94	22003	1.000	0.184	0.212	0.187	0.317	161.653761	-24.585489	-2384.49	-544

2.4 Star Slots

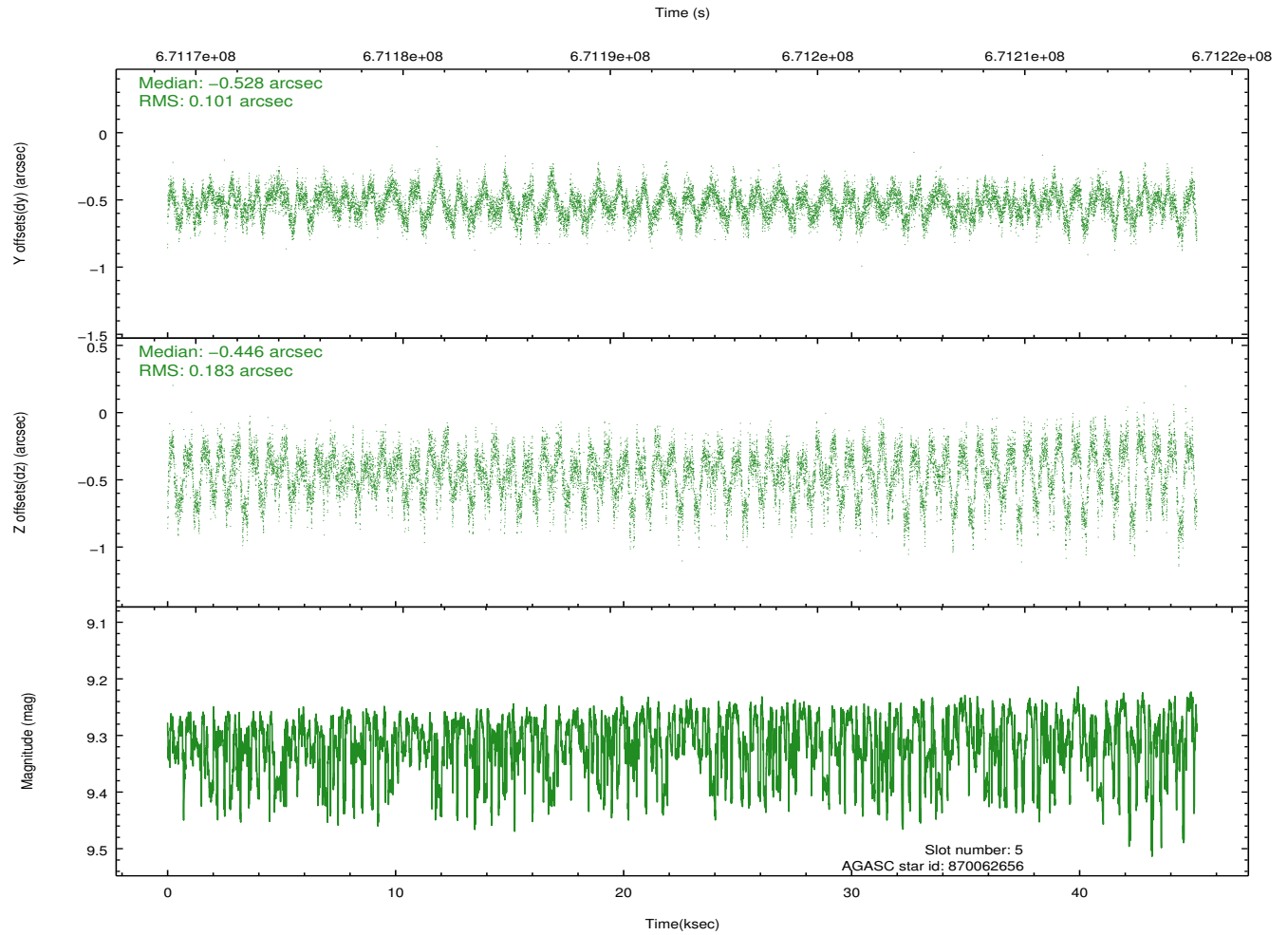
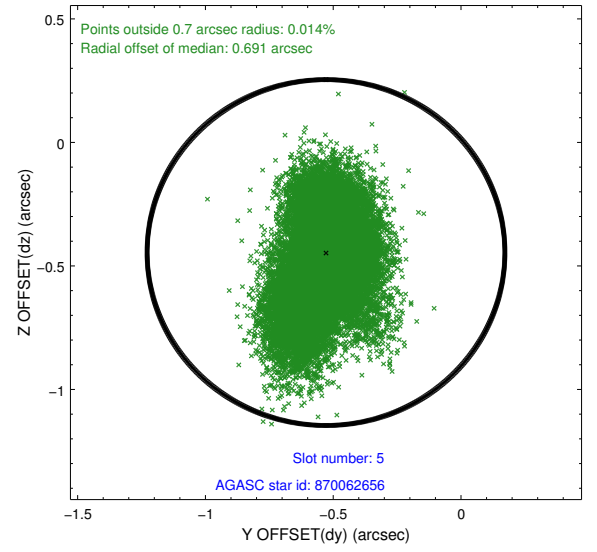
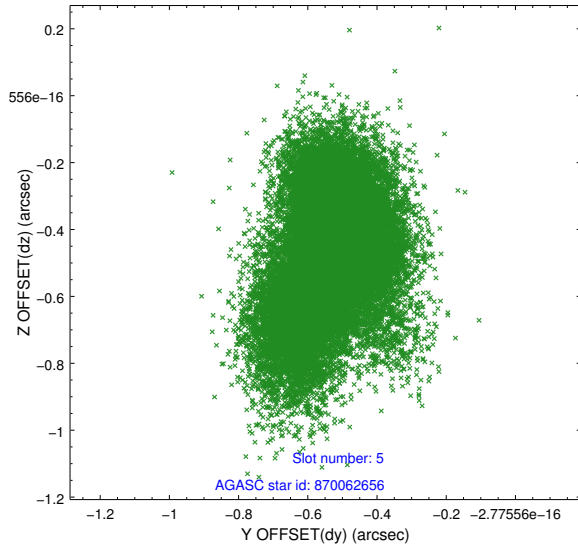
2.4.1 Slot 3



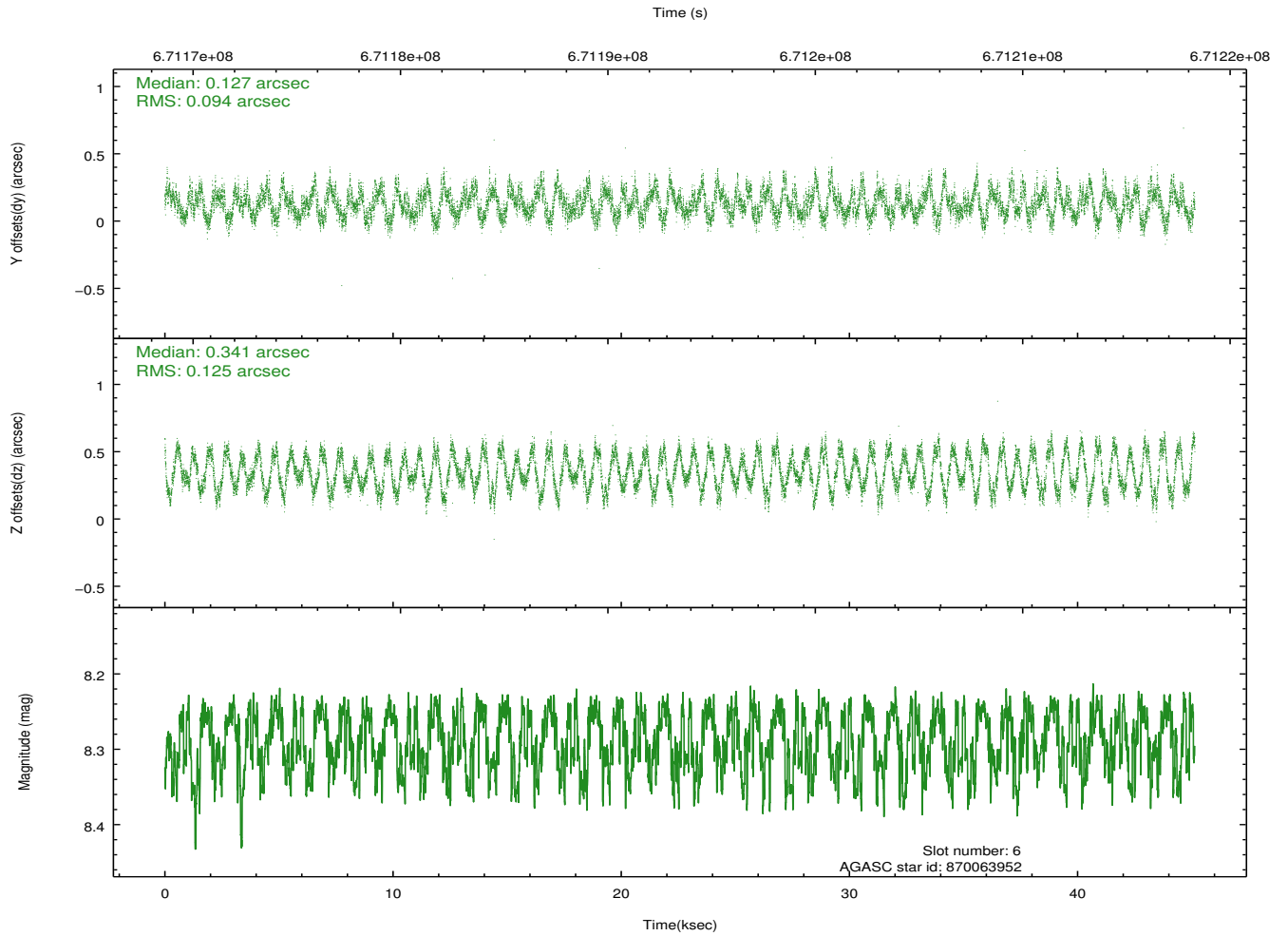
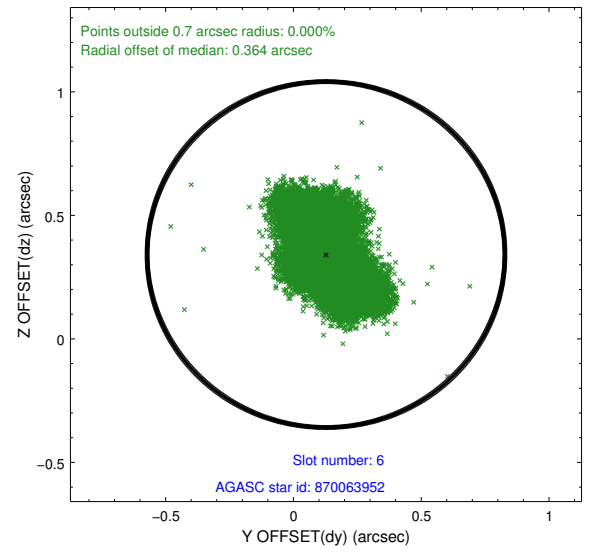
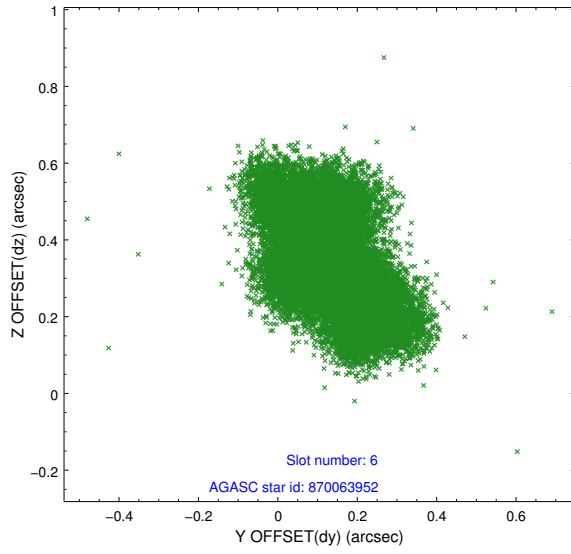
2.4.2 Slot 4



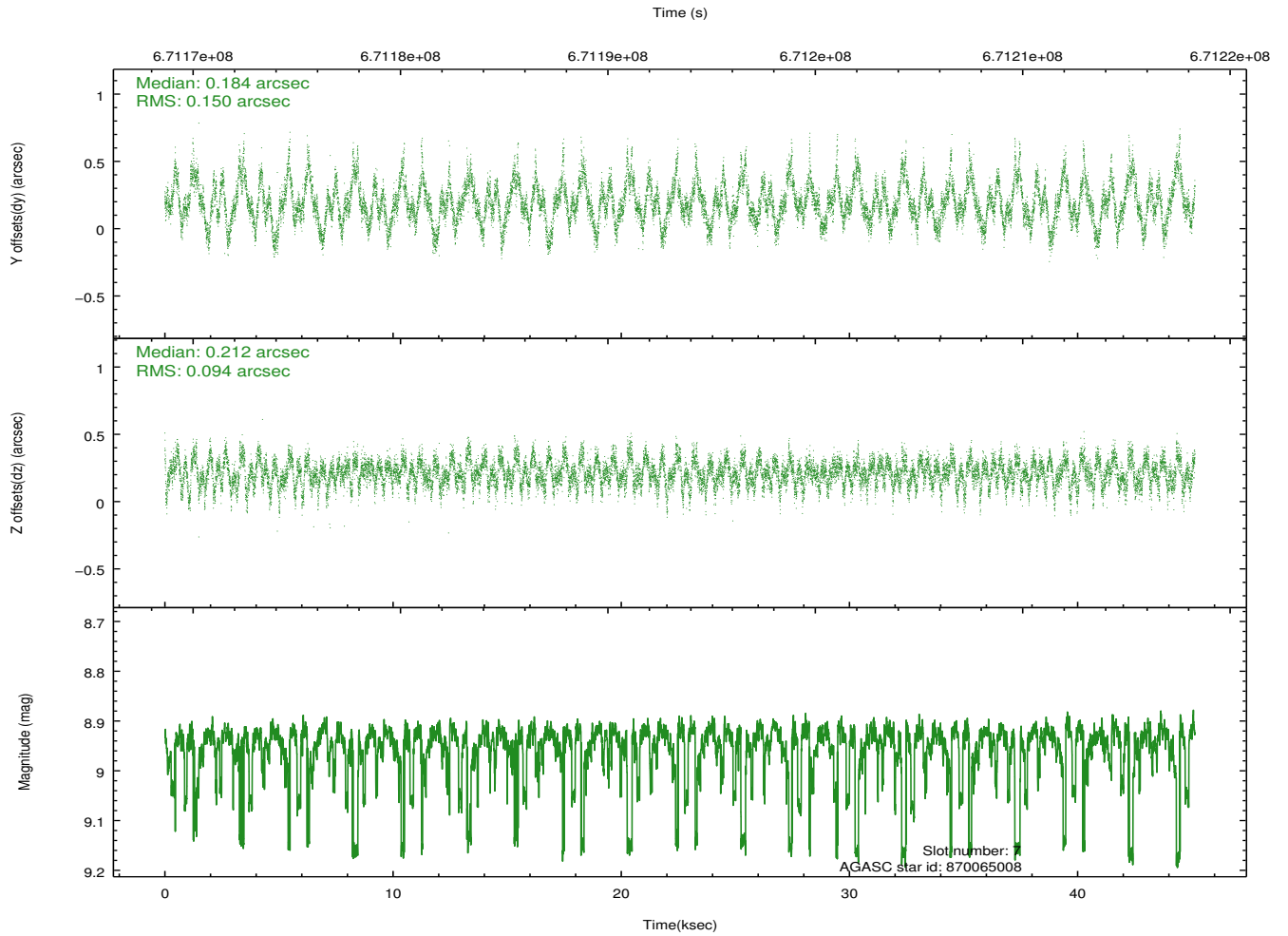
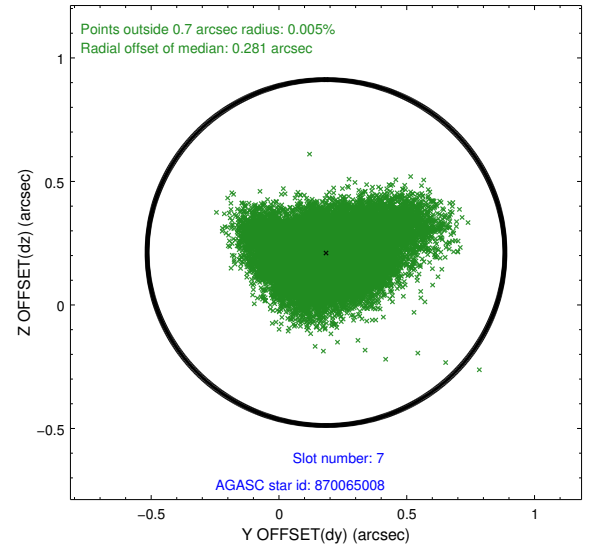
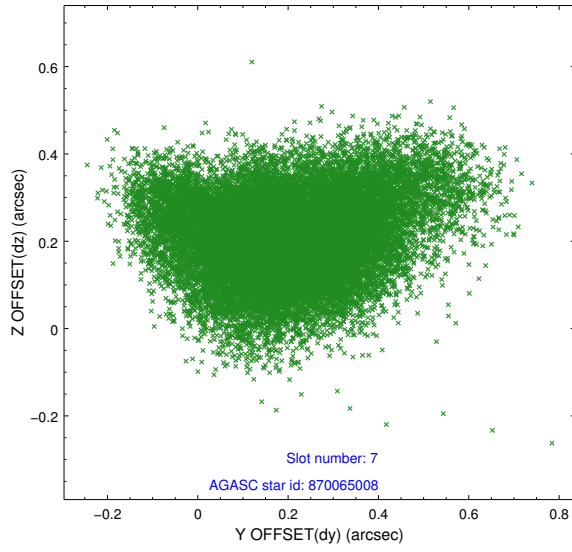
2.4.3 Slot 5



2.4.4 Slot 6

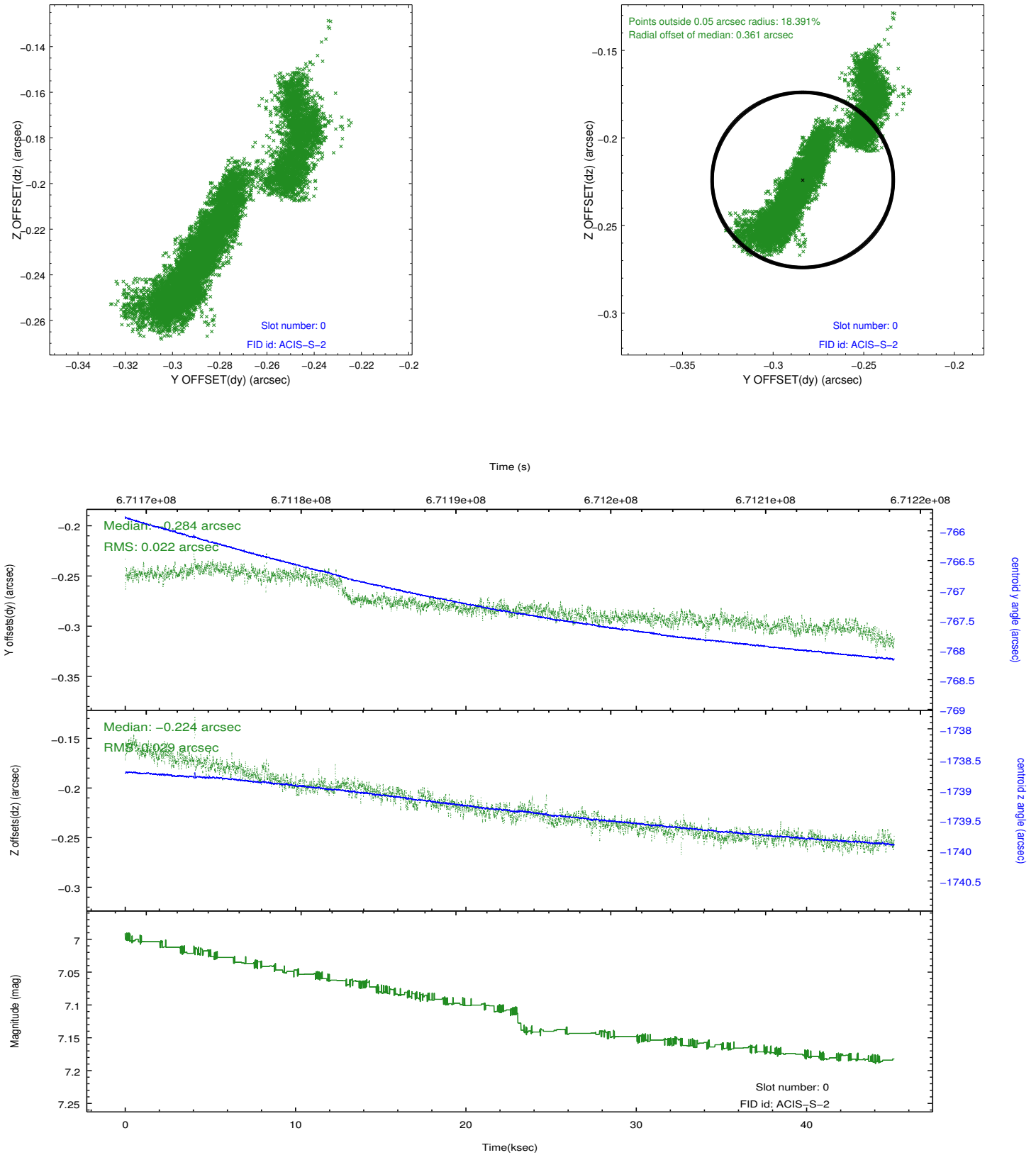


2.4.5 Slot 7

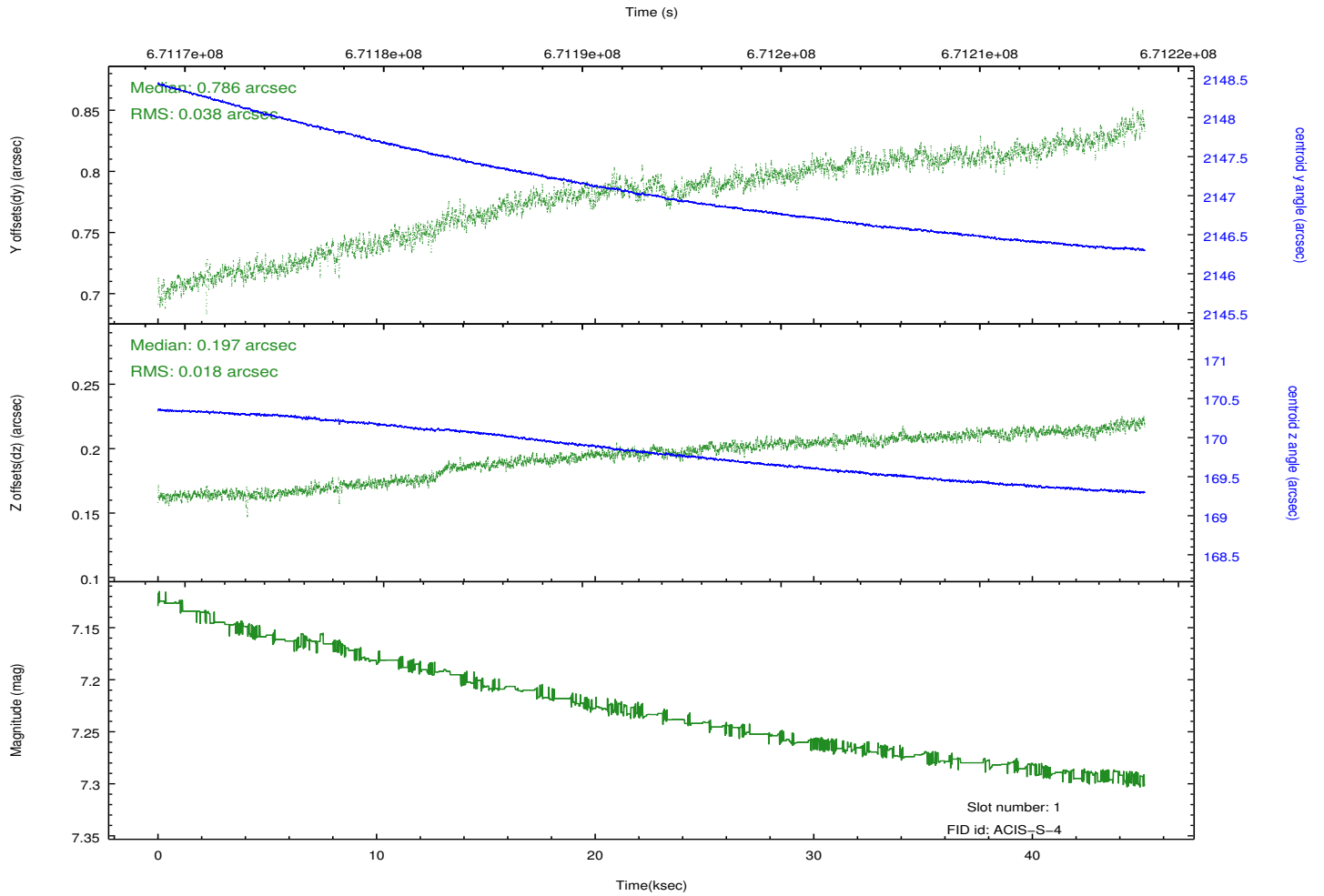
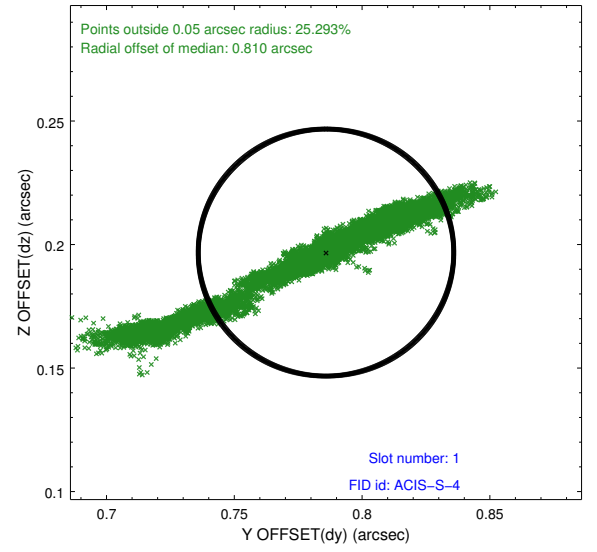
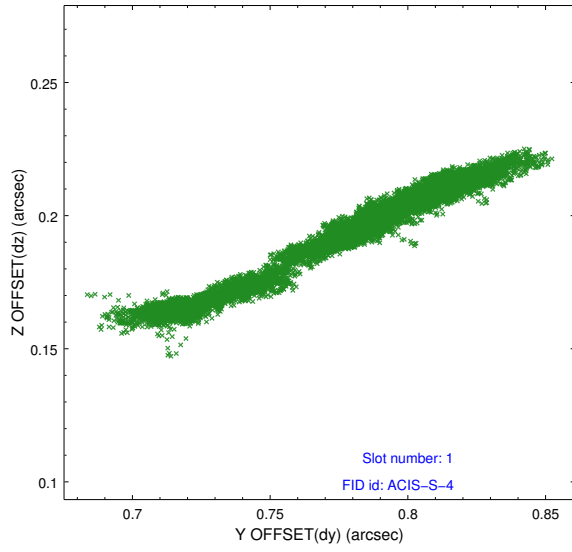


2.5 FID Slots

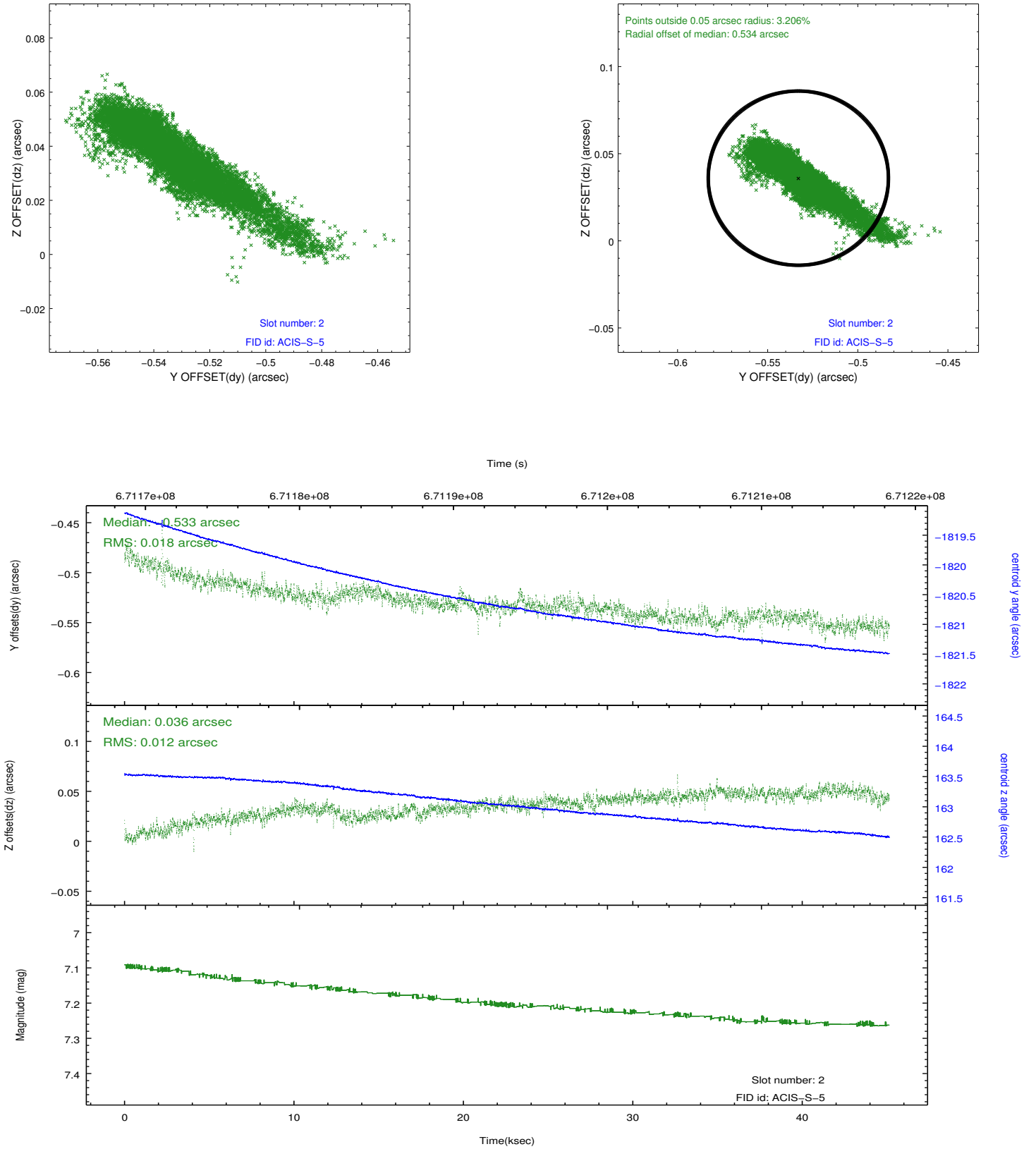
2.5.1 Slot 0



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)	2019.04.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	45.063681268573

A.2 Comments

The focal plane temperature is warmer than -112.0 C during the interval 671211999.57 - 671216020.27 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the back-illuminated chips. The focal plane temperature is warmer than -112.0 C during the interval 671218132.95 - 671223985.75 (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.

