

V&V Reference Report

L2 ASCDS Version : 10.5.2

Observation 19287 - L2 Version 1
Chandra X-Ray Center

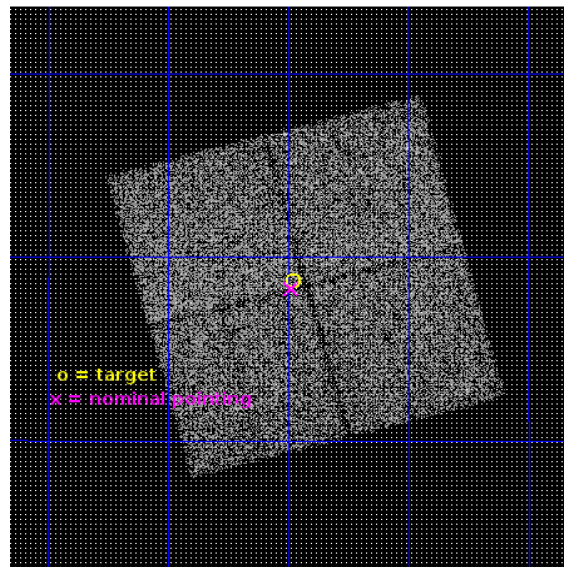
L2 Processing Date : Jan 12 2017

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1 Front

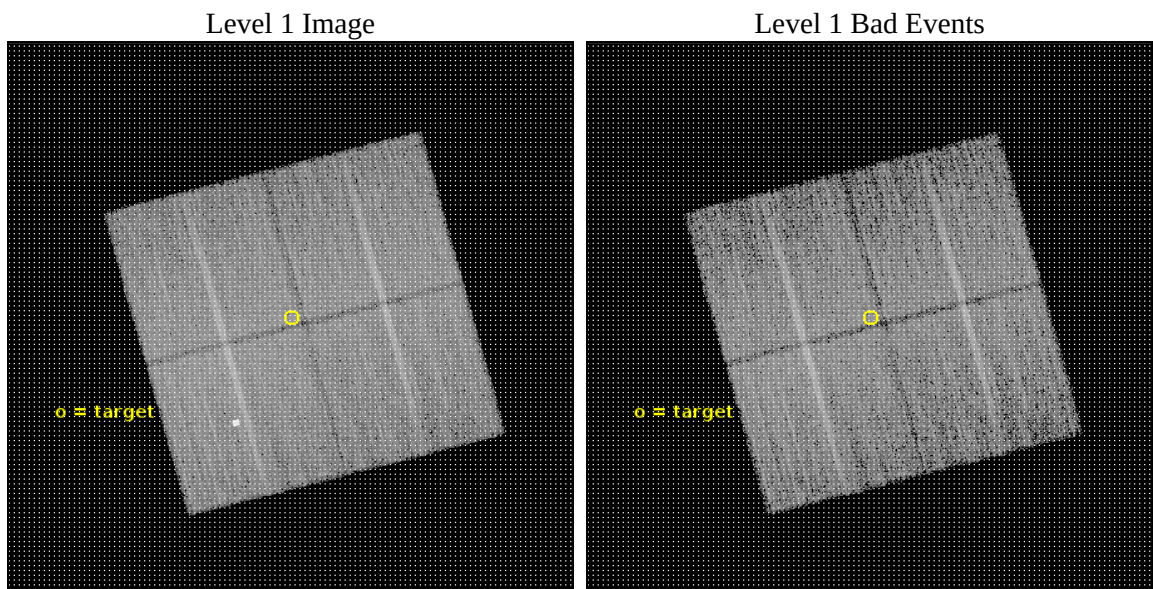
seq_num	502937	Sequence number
obs_id	19287	Observation id
title	Coordinated X-ray and Radio Observations of the Repeating Fast Radio Burst FRB 121102	Proposal title
observer	Slavko Bogdanov	Principal investigator
object	FRB 121102	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	82.994667	Observer's specified target RA [deg]
dec_targ	33.145869	Observer's specified target Dec [deg]
ra_nom	82.996558537028	Nominal RA [deg]
dec_nom	33.138221633032	Nominal Dec [deg]
roll_nom	254.95003508244	Nominal Roll [deg]
revision	1	Processing version of data
ontime	20078.315650225	Sum of GTIs [s]
livetime	19815.977674814	Livetime [s]
ontime0	20078.192530274	Sum of GTIs [s]
ontime1	20075.092469931	Sum of GTIs [s]
ontime2	20071.992429852	Sum of GTIs [s]
ontime3	20078.315650225	Sum of GTIs [s]
l2events	50208	Number of level 2 events



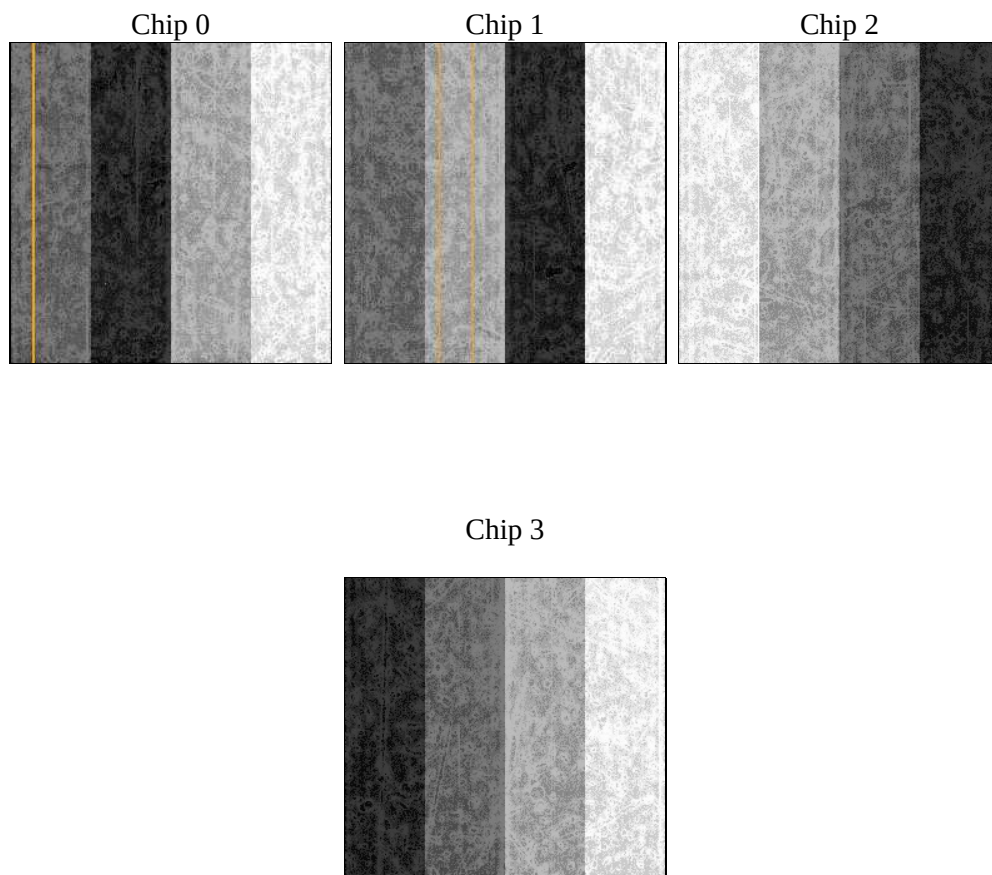
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	20000.000000	[s] Scheduled observation exposure time
ascdsver	10.5.2	Processing system revision	ontime	20078.315650225	Sum of GTIs [s]
caldsver	4.7.3	 	ontime0	20078.192530274	Sum of GTIs [s]
date	2017-01-12T16:20:11	Date and time of file creation	ontime1	20075.092469931	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	20071.992429852	Sum of GTIs [s]
			ontime3	20078.315650225	Sum of GTIs [s]
			l1events	574299	Number of level 1 events

2.1.4 Events

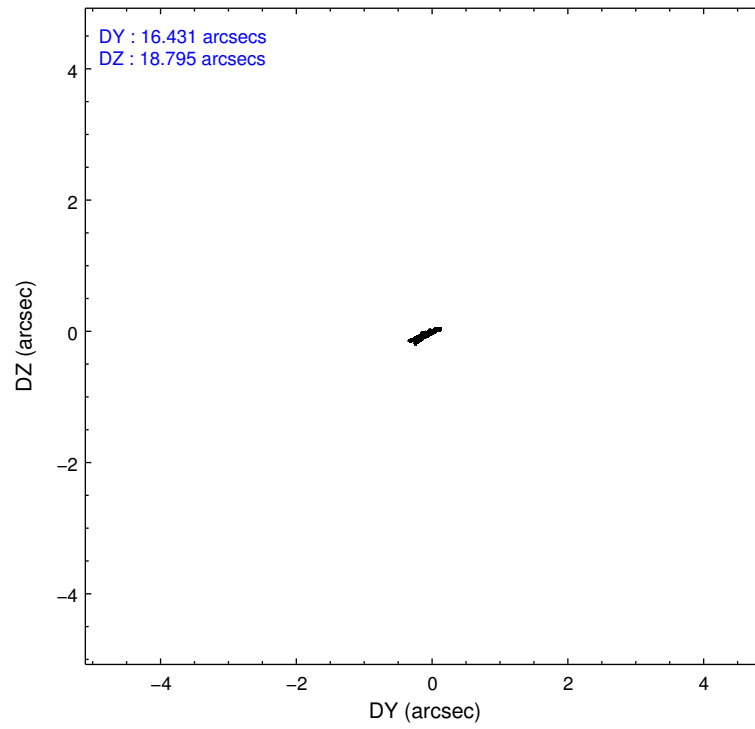
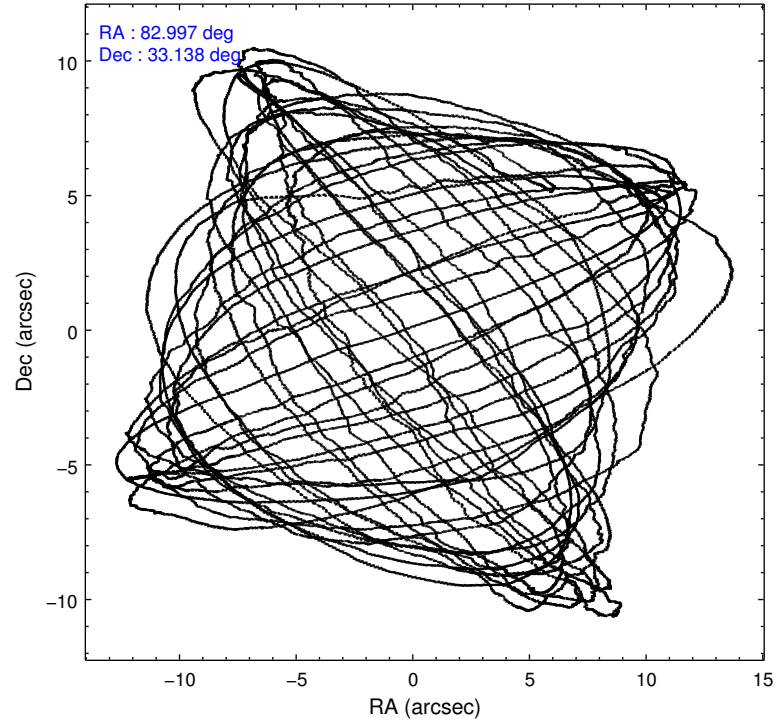
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	135161	135445	160871	142822
rejected events	119995	119587	140357	128410
rejected %	88%	88%	87%	89%

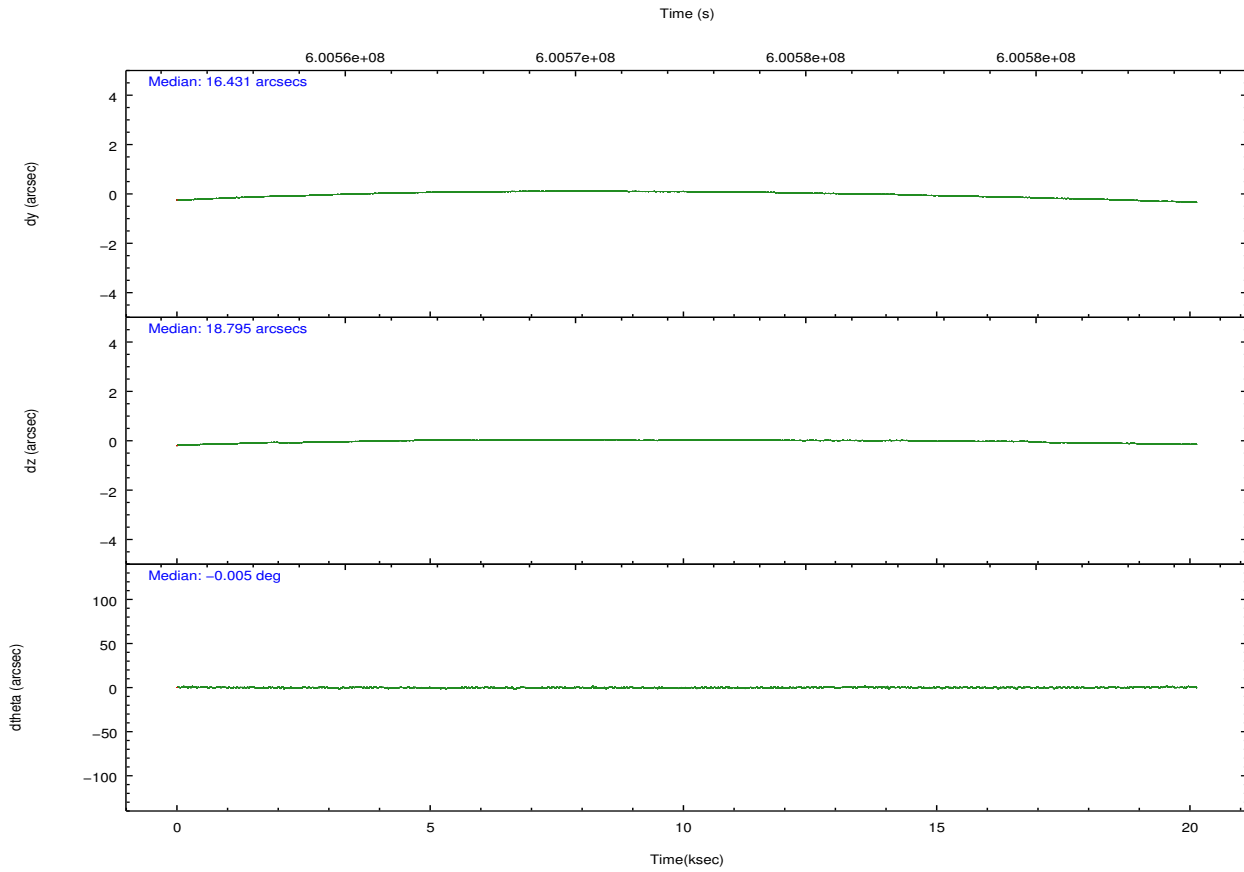
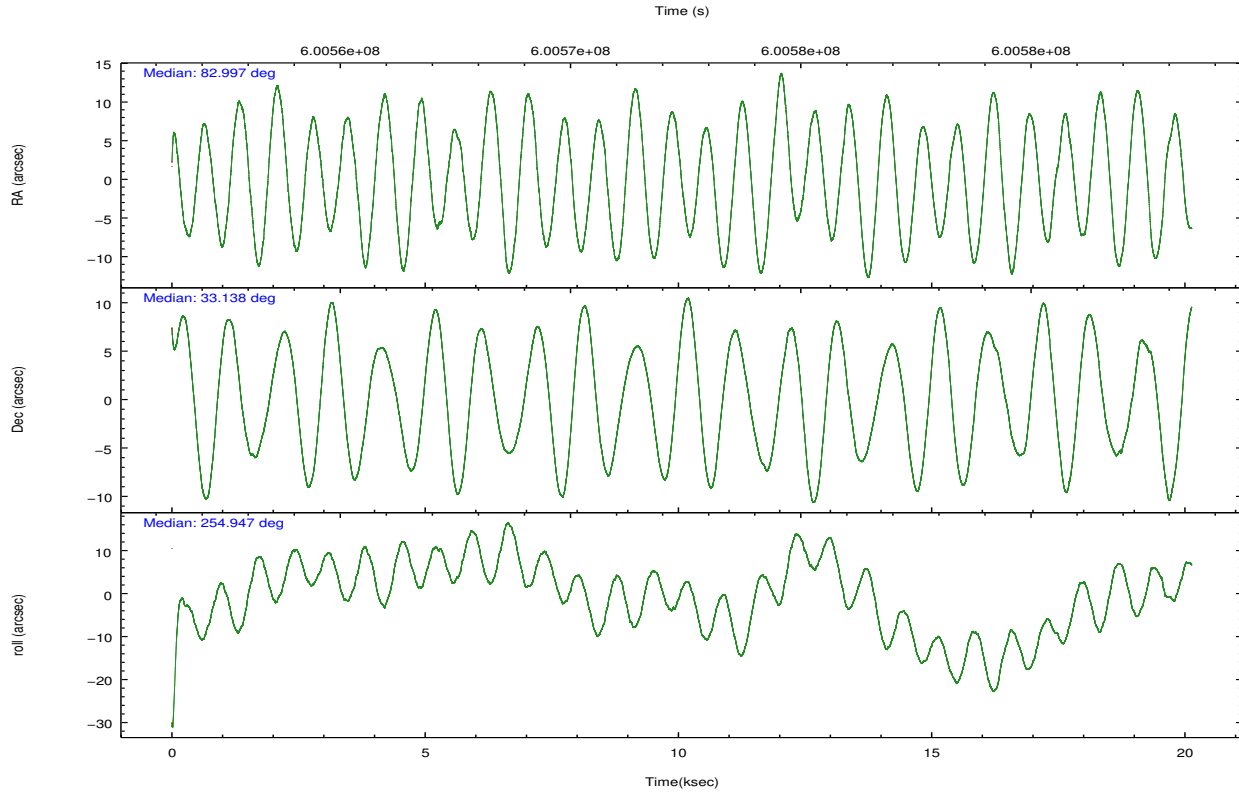
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	5049	4773	11090	4944
	3%	3%	6%	3%
grade 1 events	70	60	102	80
	0%	0%	0%	0%
grade 2 events	3778	4058	3431	3132
	2%	2%	2%	2%
grade 3 events	1569	1503	1528	1528
	1%	1%	0%	1%
grade 4 events	1378	1495	1495	1573
	1%	1%	0%	1%
grade 5 events	5564	5707	5350	6725
	4%	4%	3%	4%
grade 6 events	3400	4035	2976	3240
	2%	2%	1%	2%
grade 7 events	114353	113814	134899	121600
	84%	84%	83%	85%

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	82.987936	82.99655853702789	Subarray requested	NONE	NONE
[deg] Pointing Dec	33.164861	33.13822163303178	Alternating exposures requested	N	N
[deg] Pointing Roll	254.746079	254.9500350824429	[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)	600562459.184000	600561202.58058			
Observation start date	2017-01-11T22:53:10	2017-01-11T22:33:22			
[s] Observation end time (MET)	600582459.184000	600583483.00687			
Observation end date	2017-01-12T04:26:30	2017-01-12T04:44:43			
Read mode	TIMED	TIMED			

2.3 Aspect



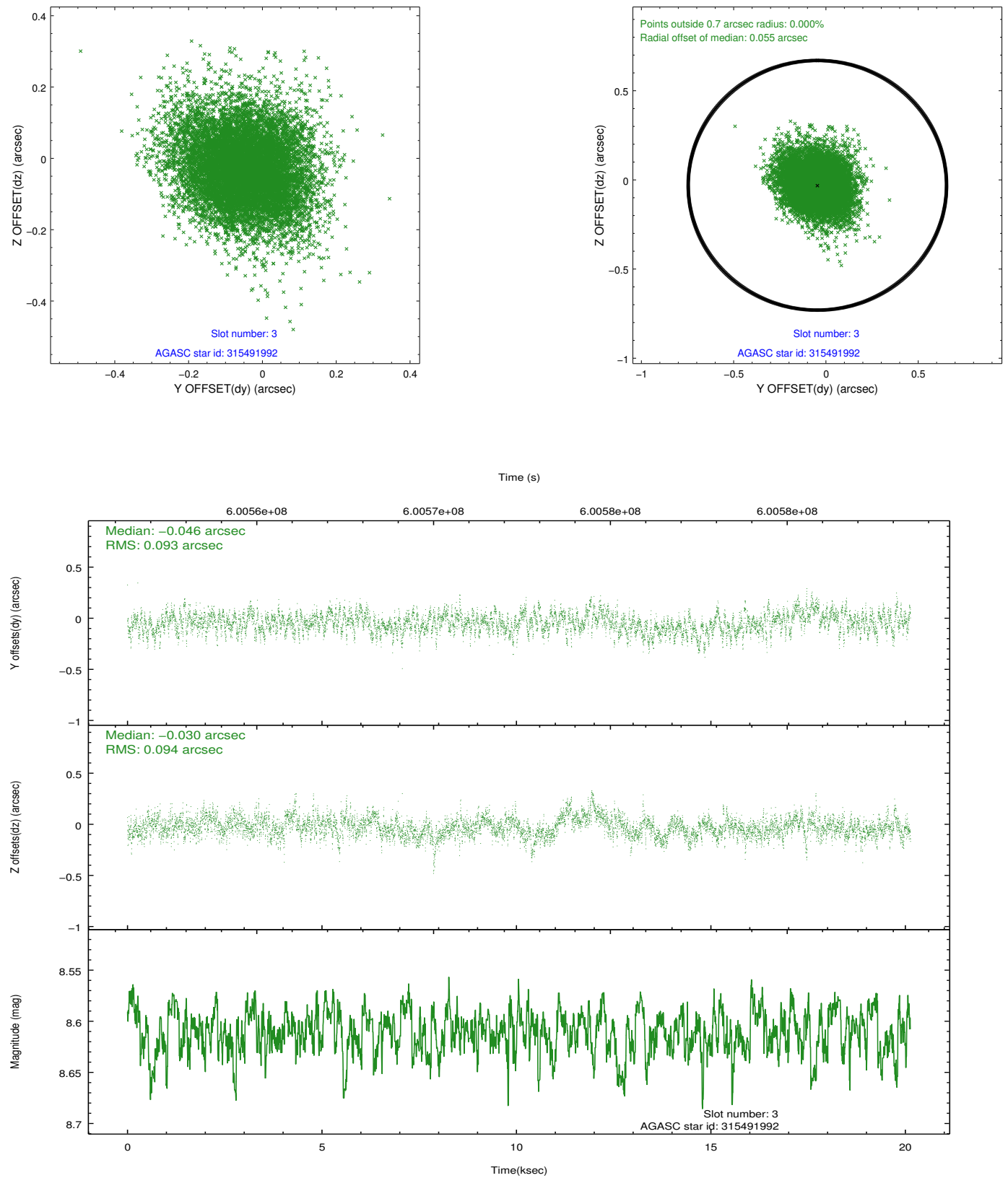


Slot Statistics

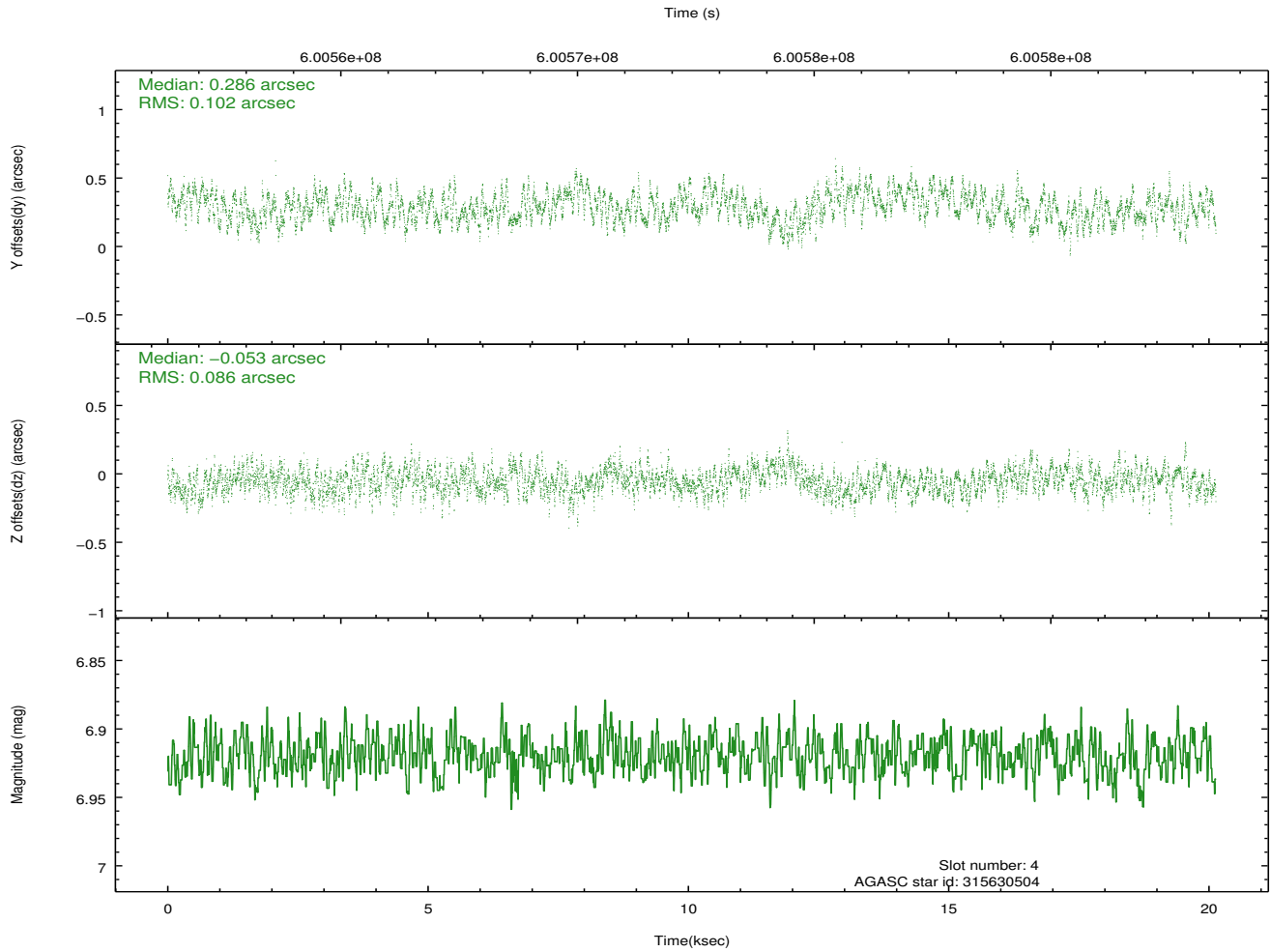
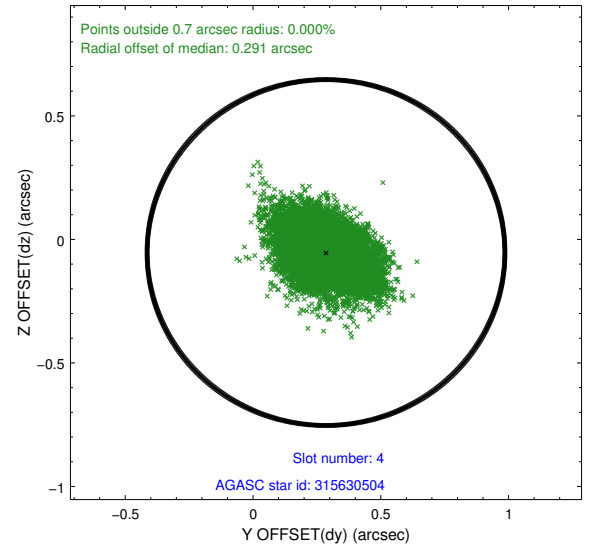
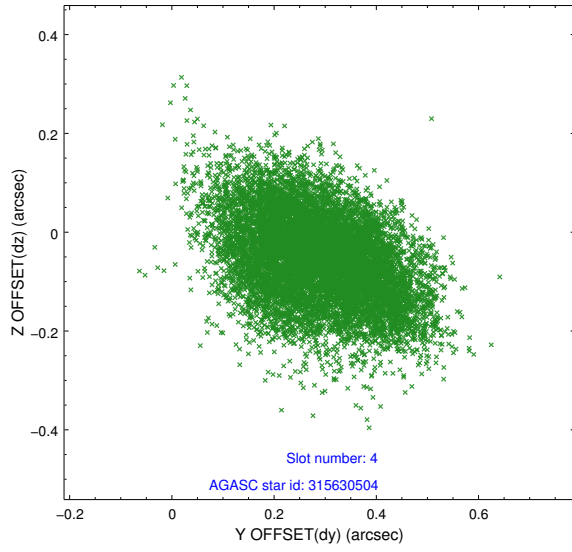
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.28	4911	0.069	-0.009	0.008	0.016	0.000000	0.000000	923.14	-842.43
1	FID		ACIS-I-5	7.28	4911	-0.394	0.025	0.008	0.015	0.000000	0.000000	-1825.43	1054.84
2	FID		ACIS-I-6	7.30	4909	0.234	0.055	0.010	0.020	0.000000	0.000000	388.50	1699.71
3	GUIDE	used	315491992	8.61	9820	-0.046	-0.030	0.138	0.234	82.146527	32.866006	1698.91	-2172.77
4	GUIDE	used	315630504	6.92	9820	0.286	-0.053	0.143	0.229	83.364178	32.801184	962.64	1442.39
5	GUIDE	used	315634784	8.07	9819	-0.418	-0.102	0.107	0.181	83.284491	33.444890	-1207.83	594.35
6	GUIDE	used	315506288	8.75	9807	0.097	0.049	0.125	0.206	82.411457	33.467951	-600.49	-1957.68
7	GUIDE	used	315506864	8.85	9811	0.084	0.136	0.100	0.175	82.414572	33.451761	-546.52	-1933.79

2.4 Star Slots

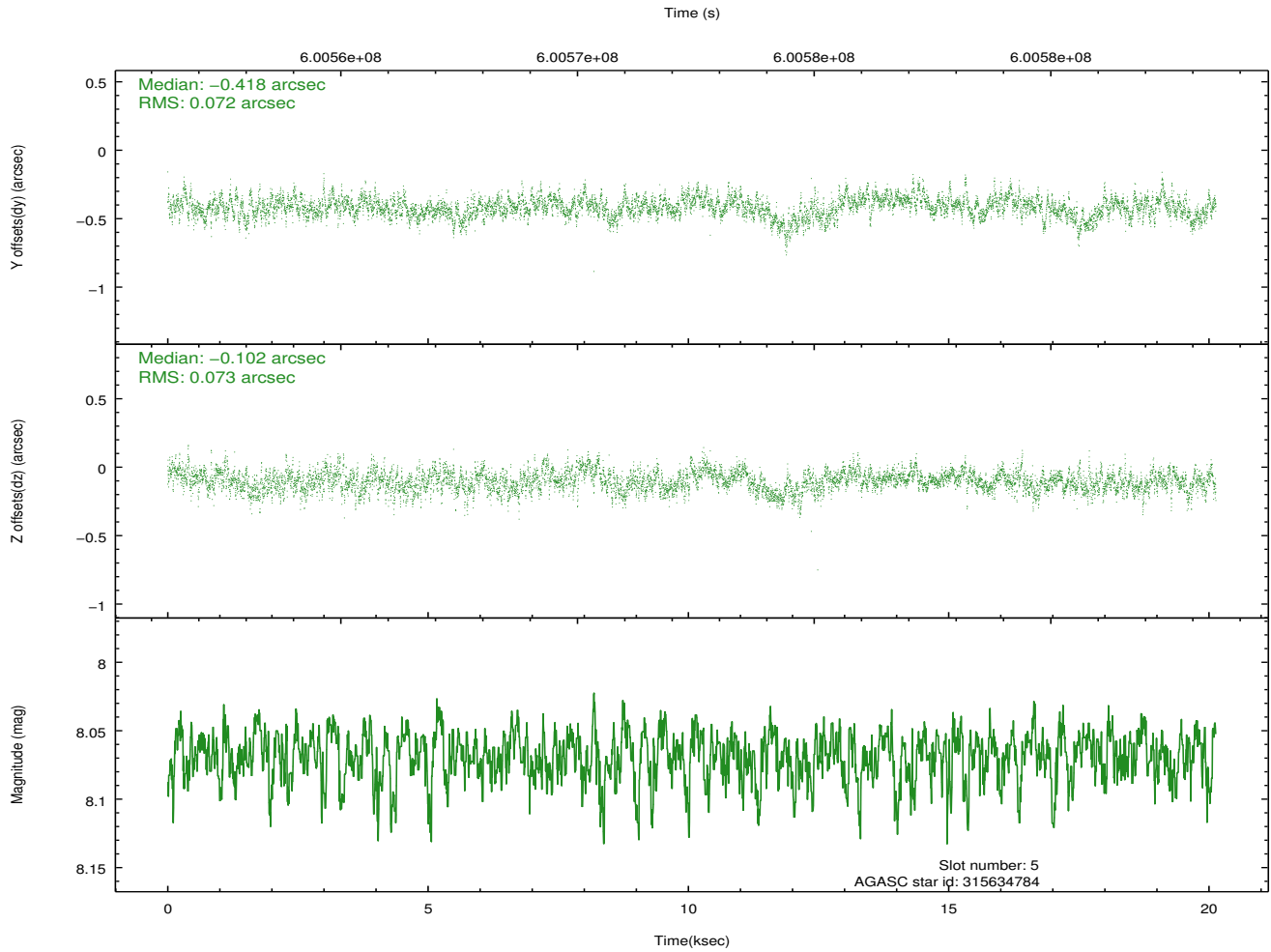
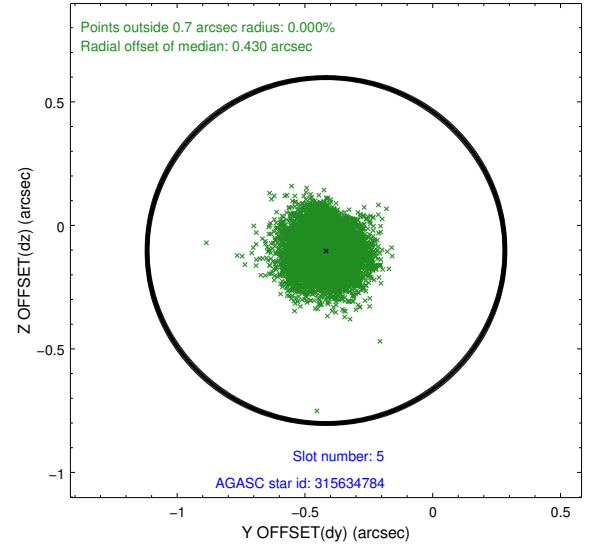
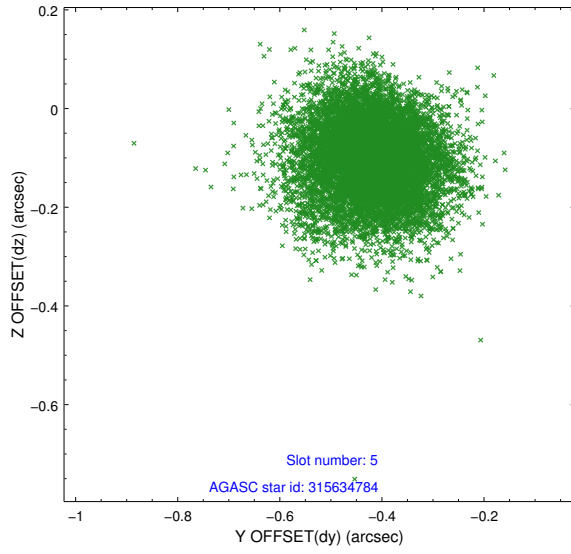
2.4.1 Slot 3



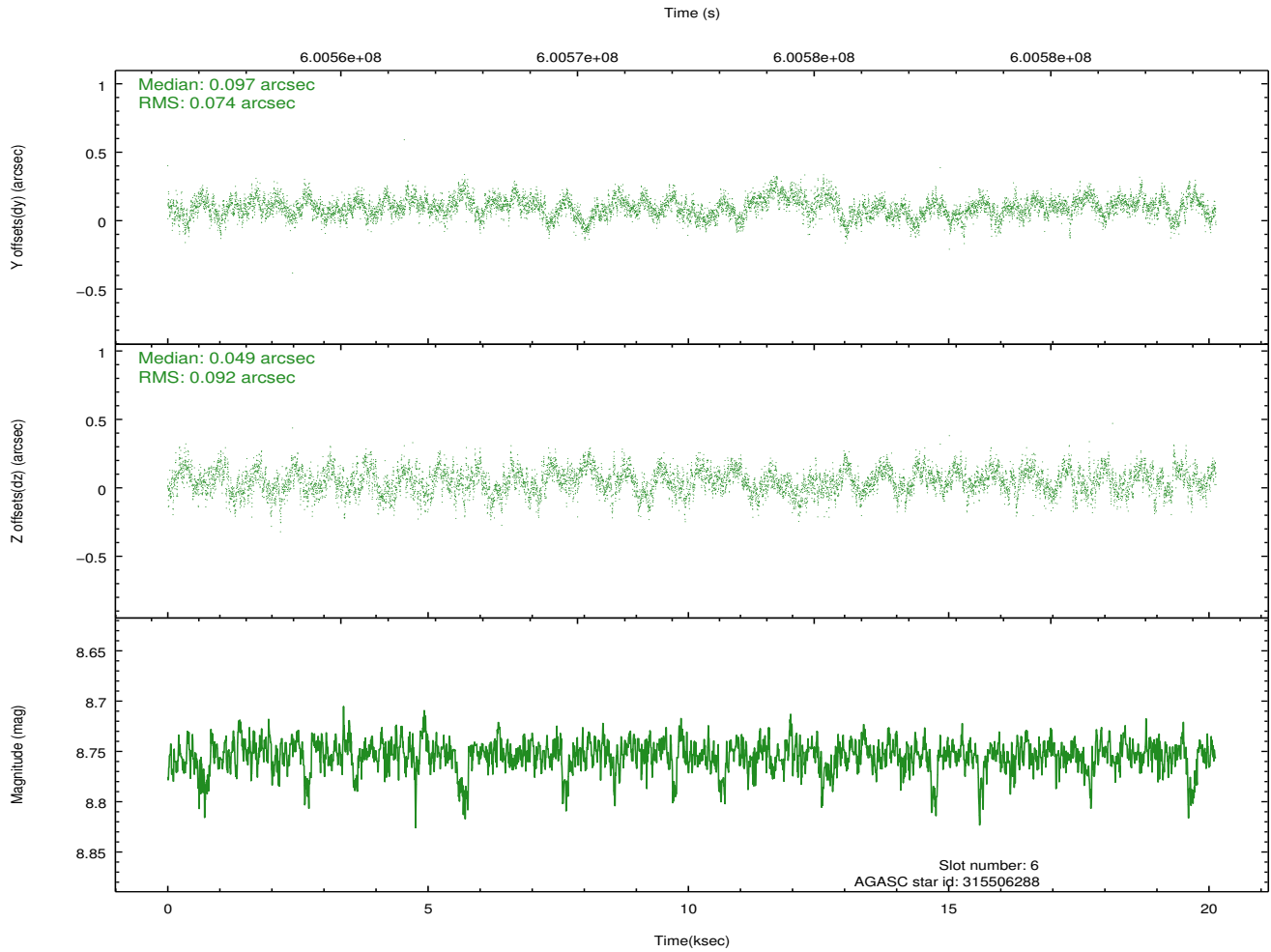
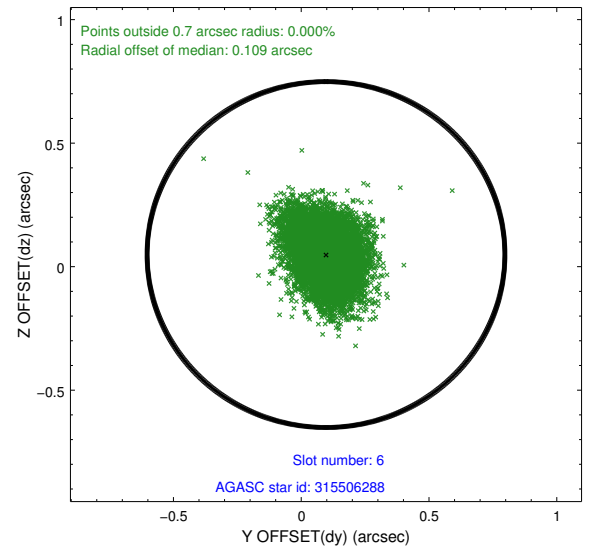
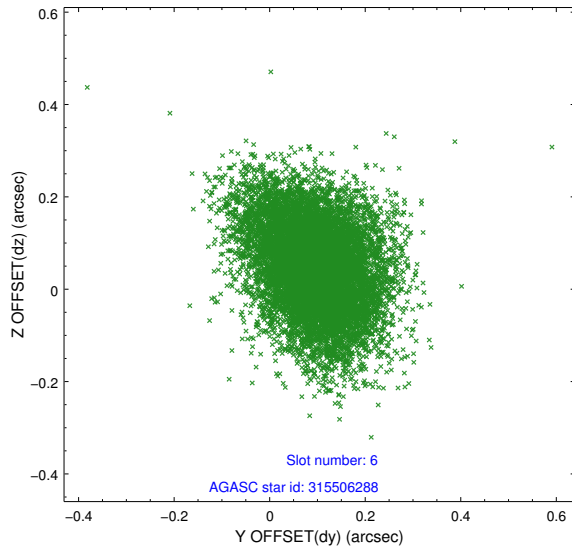
2.4.2 Slot 4



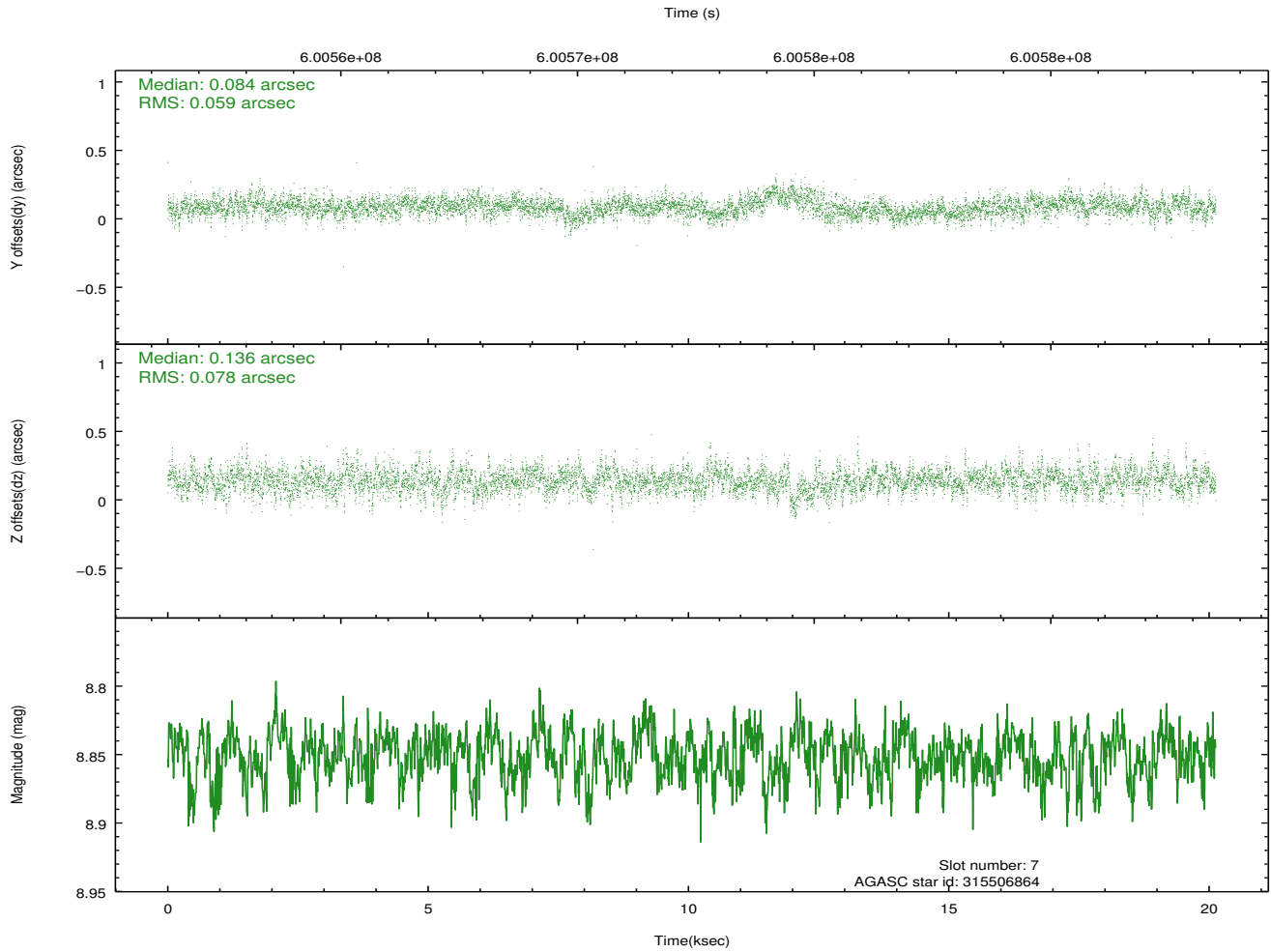
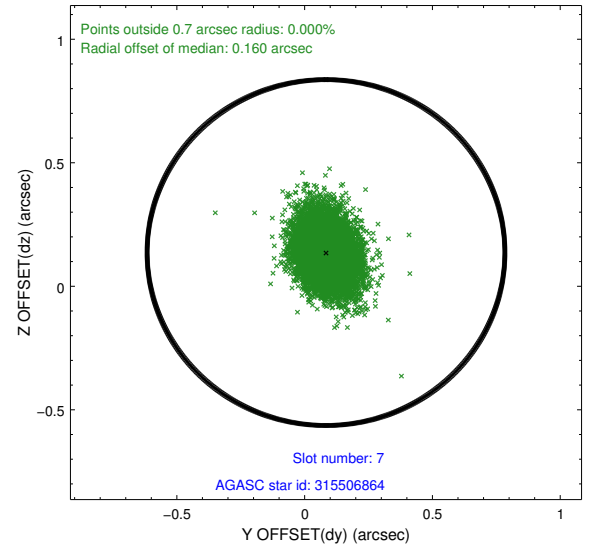
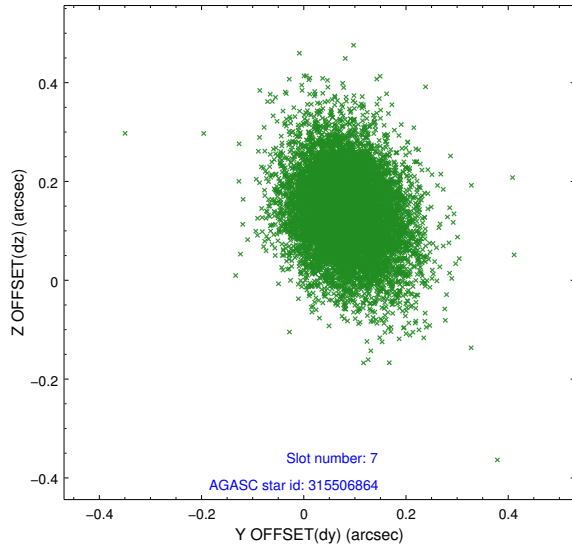
2.4.3 Slot 5



2.4.4 Slot 6

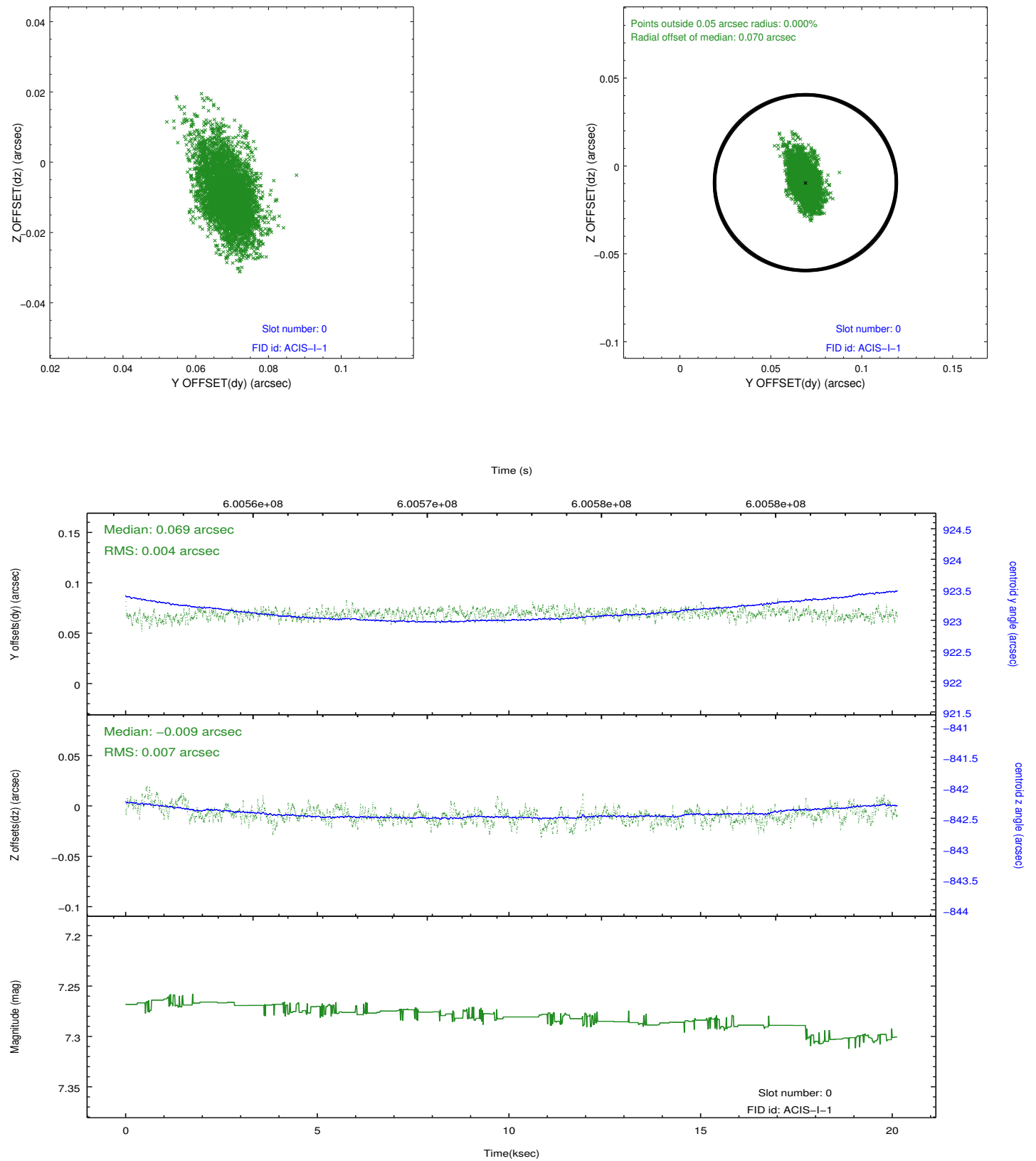


2.4.5 Slot 7

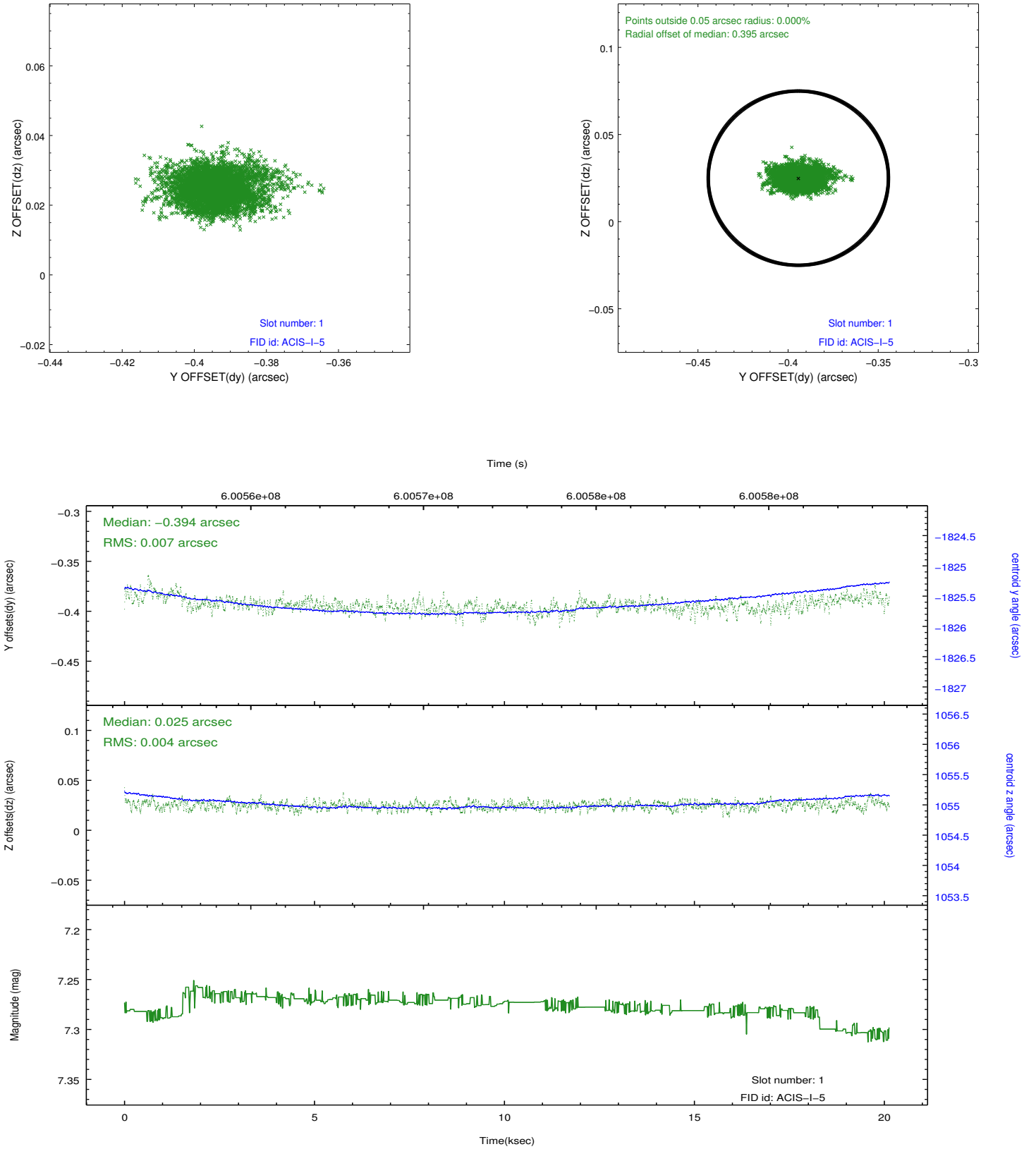


2.5 FID Slots

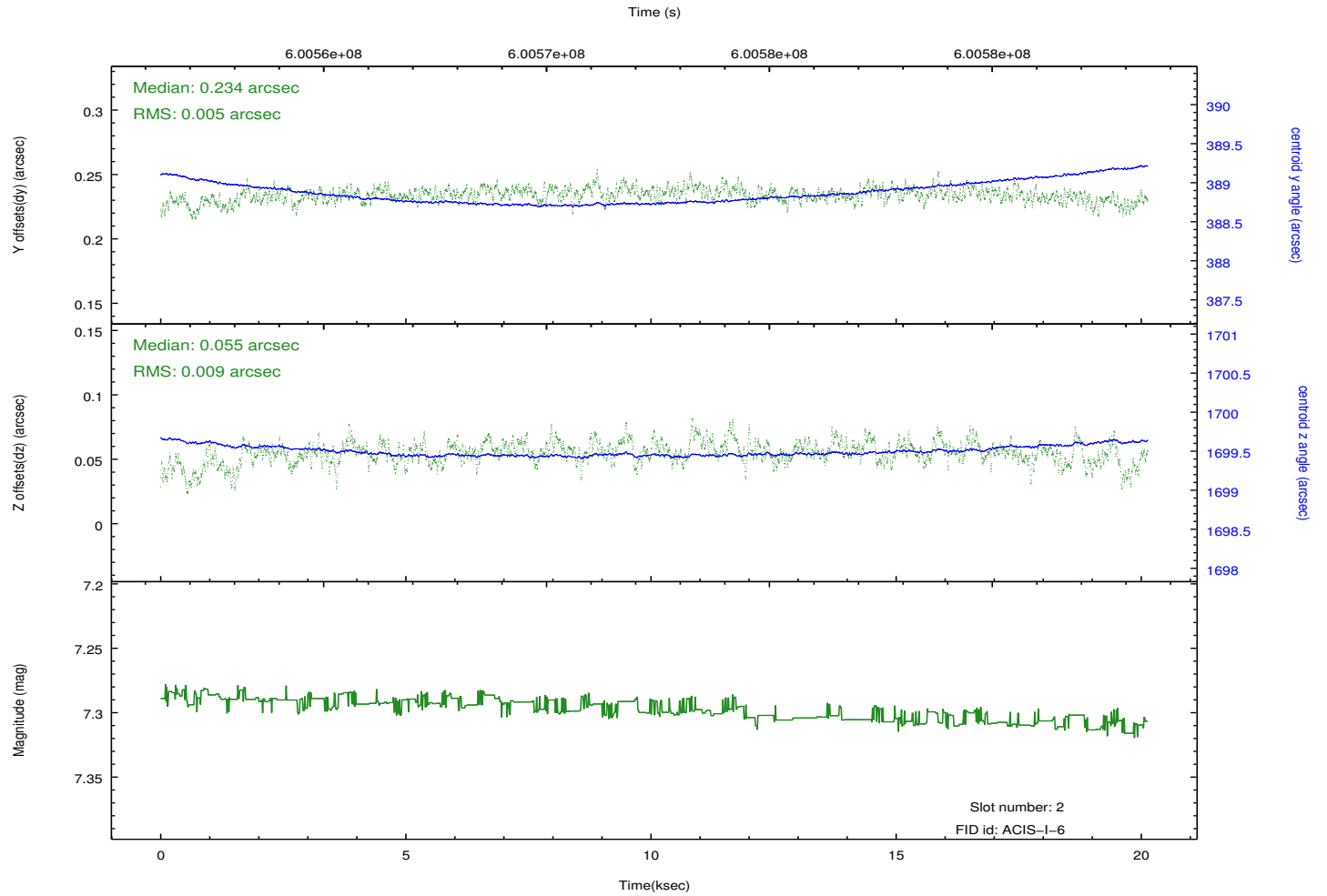
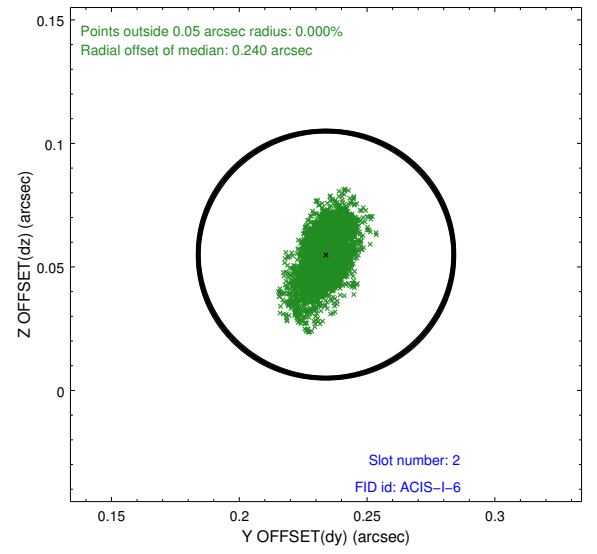
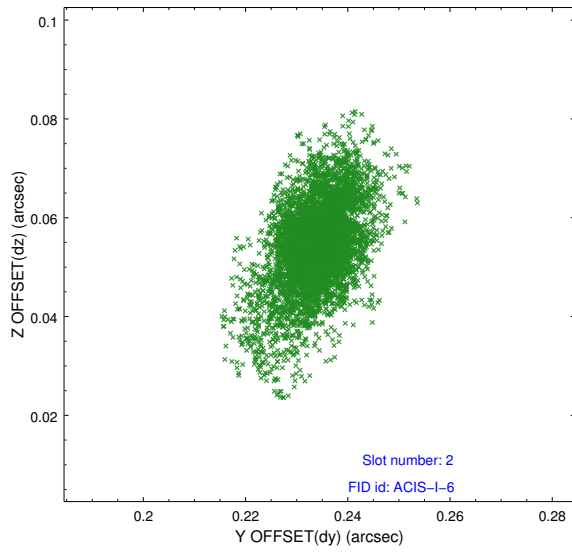
2.5.1 Slot 0



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)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	20.078315650225

A.2 Comments

Joint proposal with NRAO.

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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.