

V&V Reference Report

L2 ASCDS Version : 10.5.2

Observation 18053 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Jan 15 2017

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.4.5	Slot 7	13
2.5	FID Slots	14
2.5.1	Slot 0	14
2.5.2	Slot 1	15
2.5.3	Slot 2	16
A	Summary	17
A.1	Status	17
A.2	Comments	17

1 Front

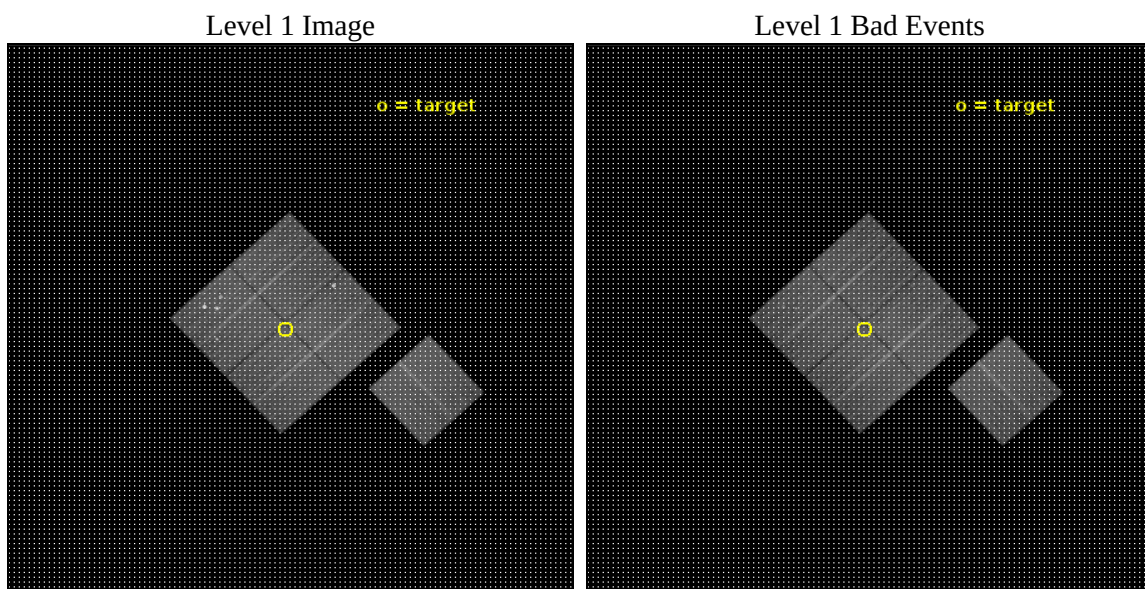
seq_num	601236	Sequence number
obs_id	18053	Observation id
title	To the Edge and Beyond: A Legacy Survey of the Grand Design Spiral M81	Proposal title
observer	Douglas Swartz	Principal investigator
object	M81 W	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	148.552917	Observer's specified target RA [deg]
dec_targ	69.026889	Observer's specified target Dec [deg]
ra_nom	148.53028172054	Nominal RA [deg]
dec_nom	69.029737134804	Nominal Dec [deg]
roll_nom	137.22983690714	Nominal Roll [deg]
revision	1	Processing version of data
ontime	29976.959150434	Sum of GTIs [s]
livetime	29585.288110417	Livetime [s]
ontime0	29980.100230694	Sum of GTIs [s]
ontime1	29973.818090439	Sum of GTIs [s]
ontime2	29973.81806016	Sum of GTIs [s]
ontime3	29976.959150434	Sum of GTIs [s]
ontime6	29980.100230694	Sum of GTIs [s]
l2events	130989	Number of level 2 events



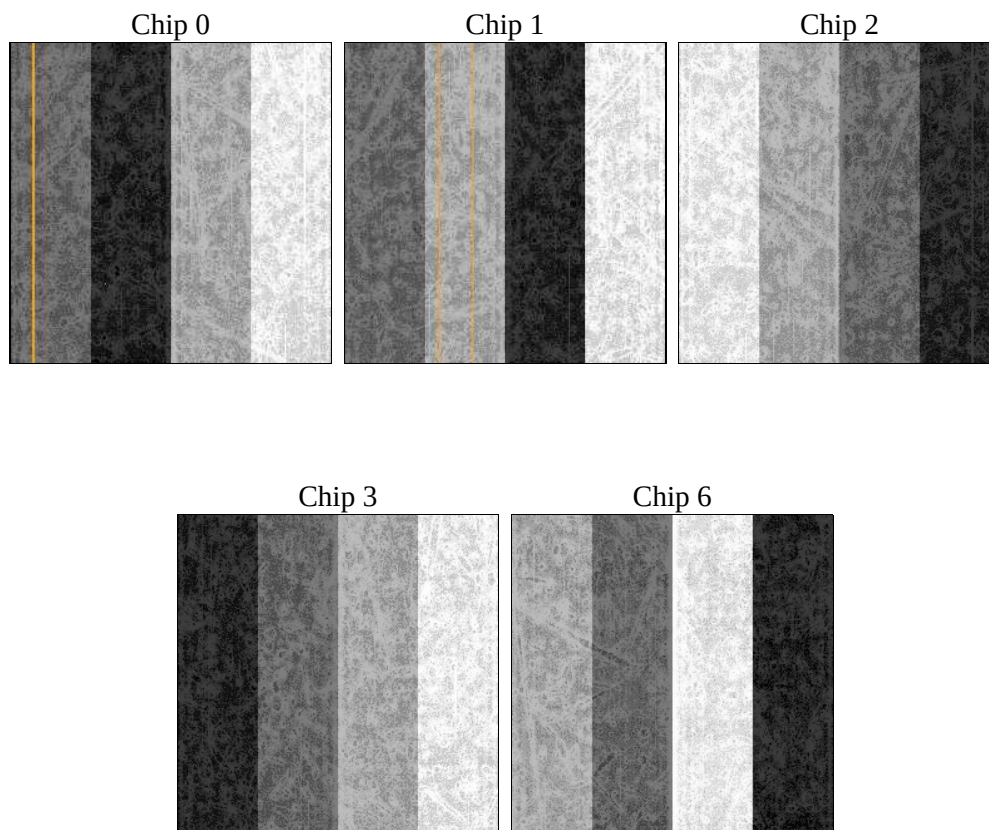
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	29924.000000	[s] Scheduled observation exposure time
ascdsver	10.5.2	Processing system revision	ontime	29976.959150434	Sum of GTIs [s]
caldsver	4.7.3	 	ontime0	29980.100230694	Sum of GTIs [s]
date	2017-01-15T22:21:18	Date and time of file creation	ontime1	29973.818090439	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	29973.81806016	Sum of GTIs [s]
			ontime3	29976.959150434	Sum of GTIs [s]
			ontime6	29980.100230694	Sum of GTIs [s]
			l1events	1192846	Number of level 1 events

2.1.4 Events

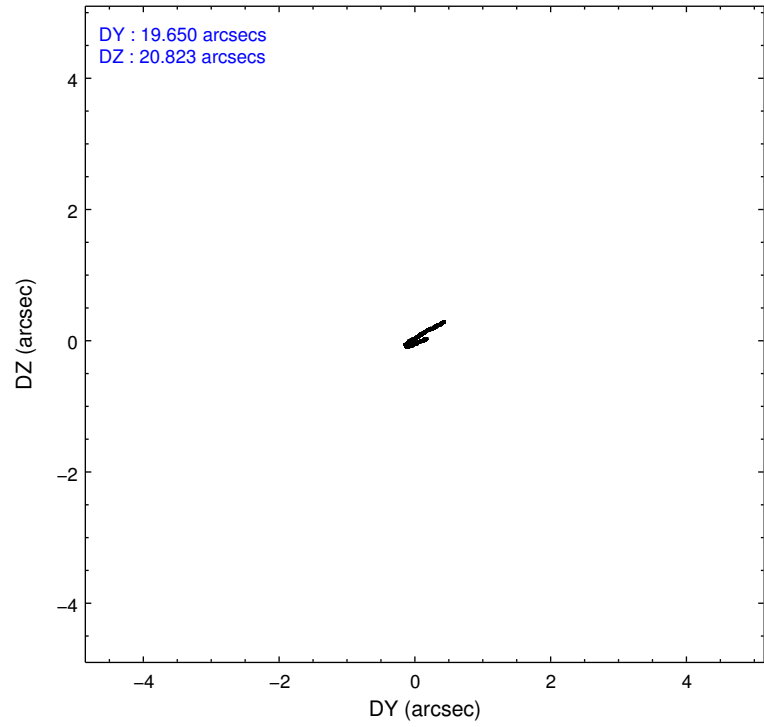
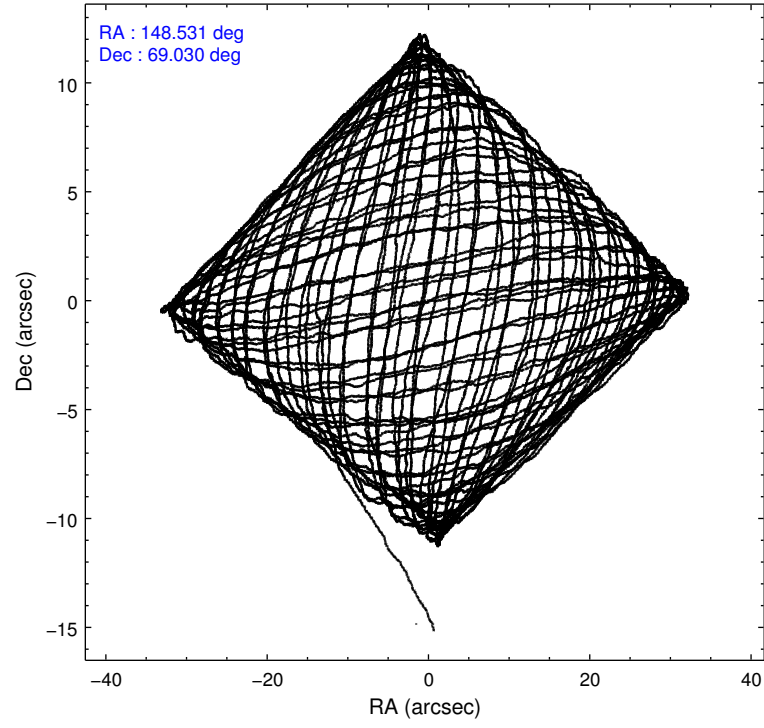
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	206463	284306	248056	222021	232000
rejected events	182989	191458	210509	199855	208266
rejected %	88%	67%	84%	90%	89%

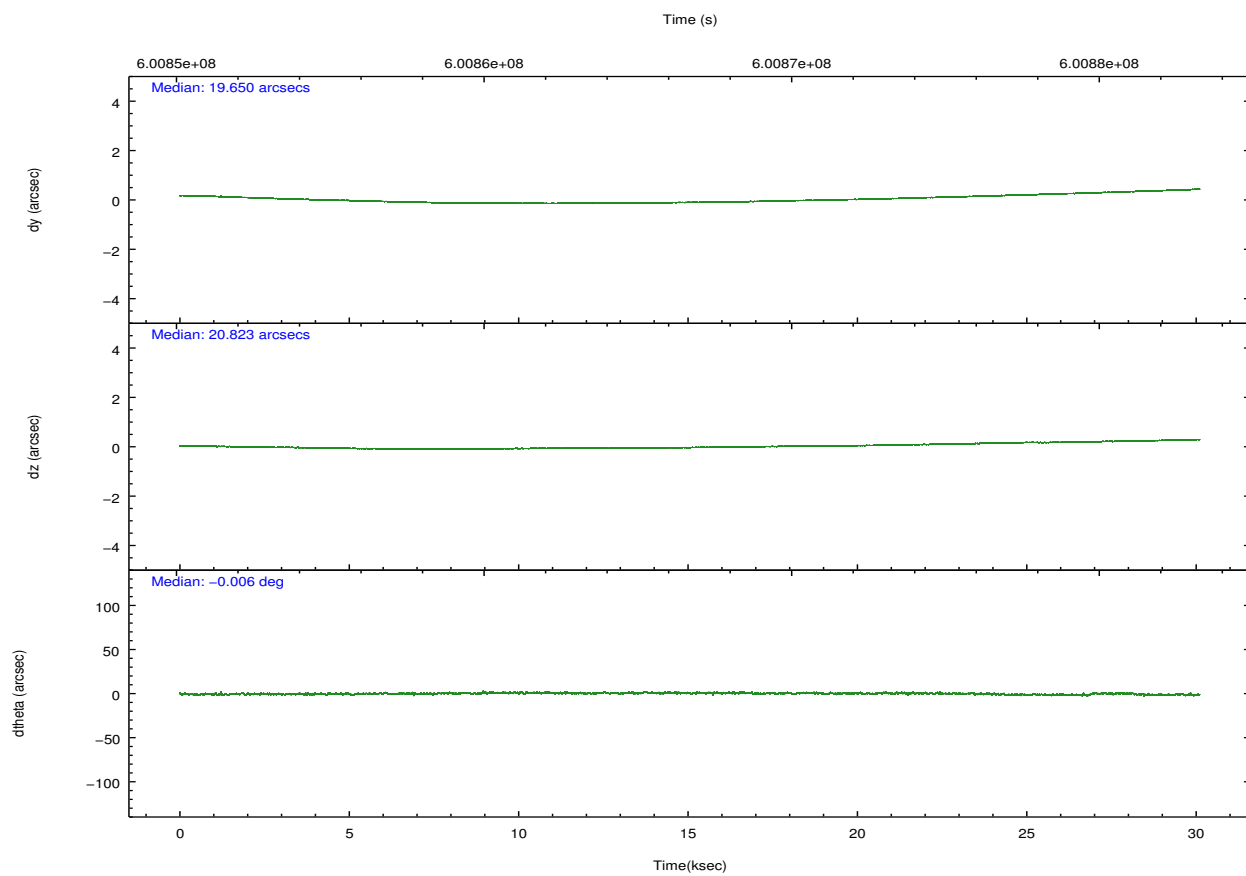
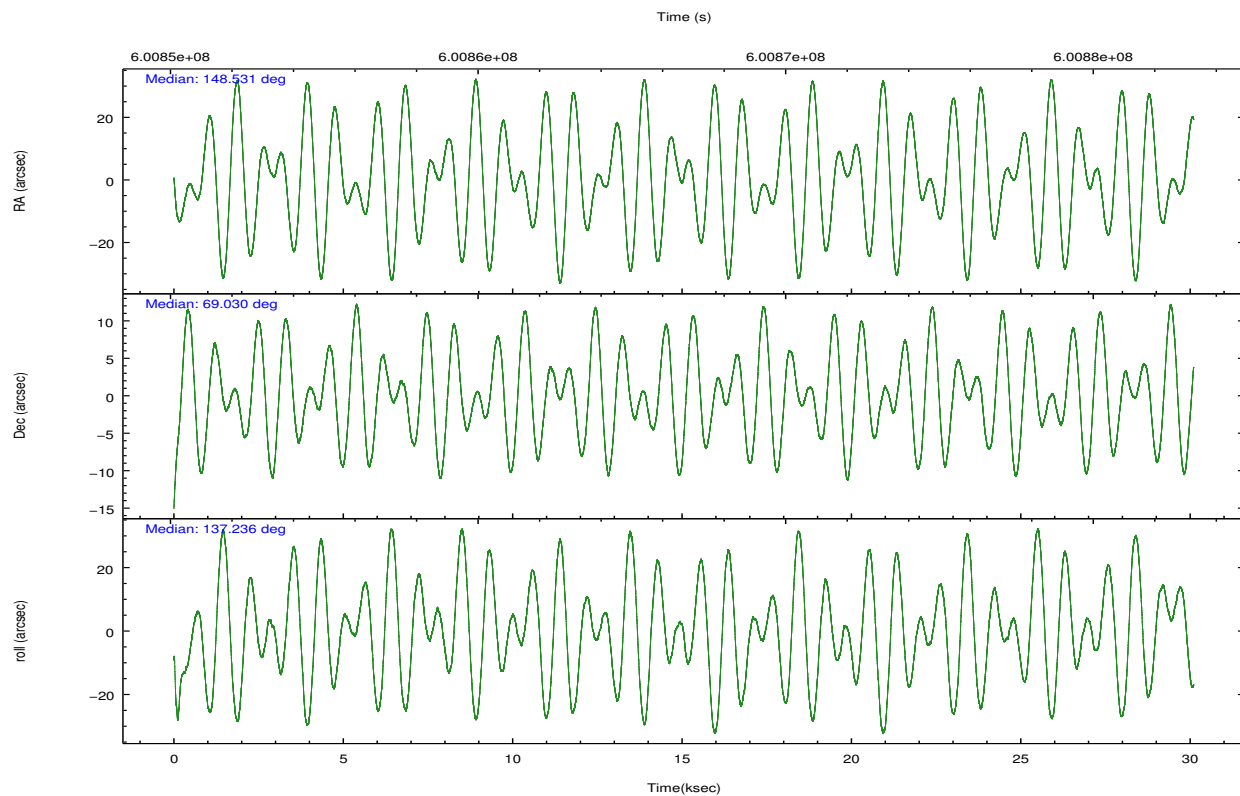
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	8121	67044	23147	7646	7106
	3%	23%	9%	3%	3%
grade 1 events	115	1255	182	100	83
	0%	0%	0%	0%	0%
grade 2 events	5733	10983	5160	4835	6183
	2%	3%	2%	2%	2%
grade 3 events	2363	3687	2287	2325	2182
	1%	1%	0%	1%	0%
grade 4 events	2119	3693	2336	2434	2104
	1%	1%	0%	1%	0%
grade 5 events	8618	9609	8251	9883	9125
	4%	3%	3%	4%	3%
grade 6 events	5141	7448	4624	4929	6160
	2%	2%	1%	2%	2%
grade 7 events	174253	180587	202069	189869	199057
	84%	63%	81%	85%	85%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01236	ACIS-01236	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	148.605560	148.5302817205383	CCD I2 on	Y	Y
[deg] Pointing Dec	69.023720	69.02973713480418	CCD I3 on	Y	Y
[deg] Pointing Roll	136.950846	137.2298369071393	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	Y
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	600851822.184000	600850352.02232	CCD S5 on	N	N
Observation start date	2017-01-15T07:15:53	2017-01-15T06:52:32	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	600881746.184000	600882265.39916	On-chip summing requested	N	N
Observation end date	2017-01-15T15:34:37	2017-01-15T15:44:25	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



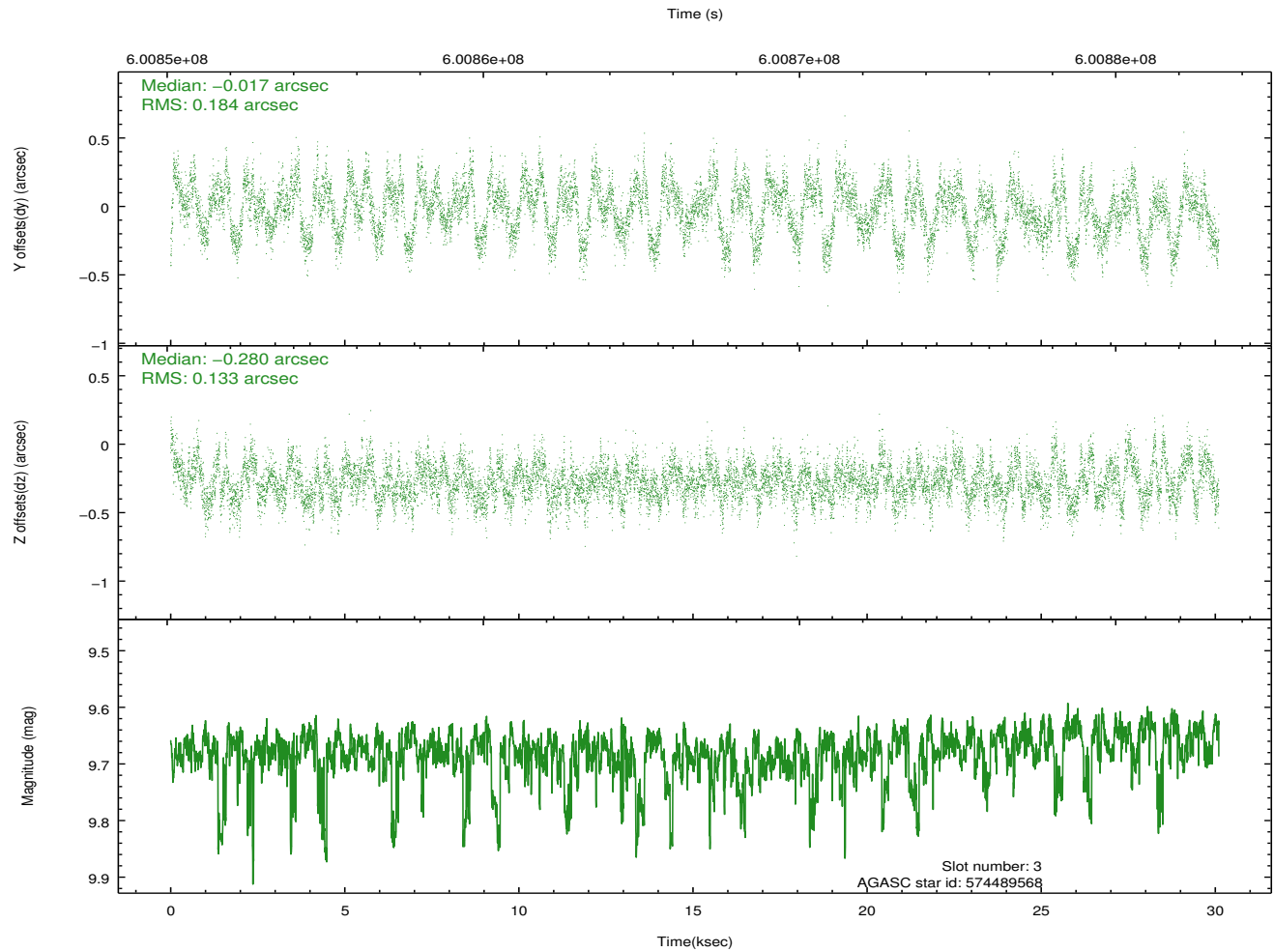
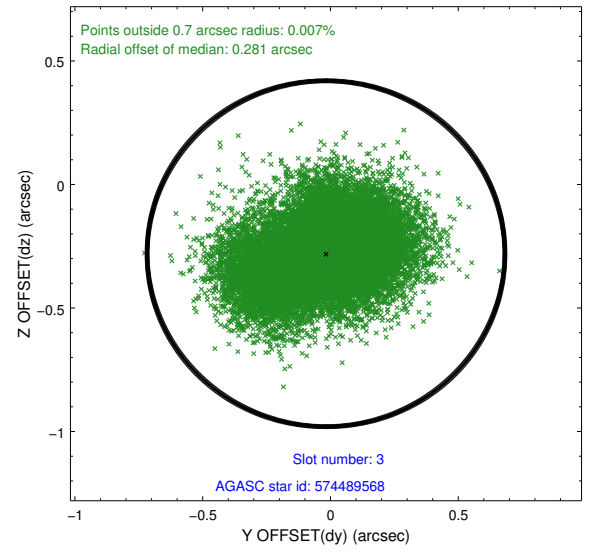
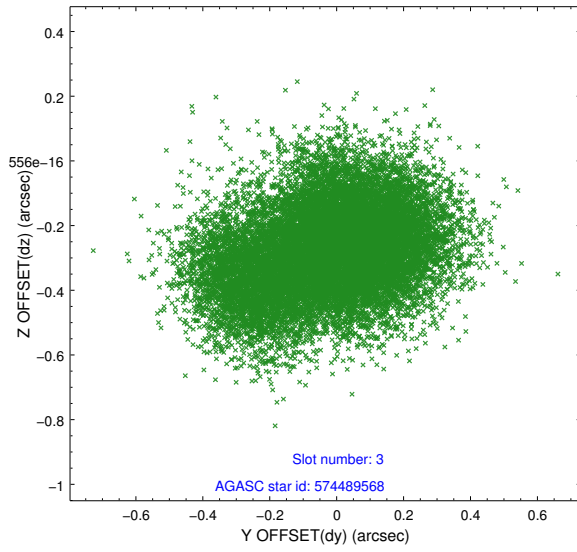


Slot Statistics

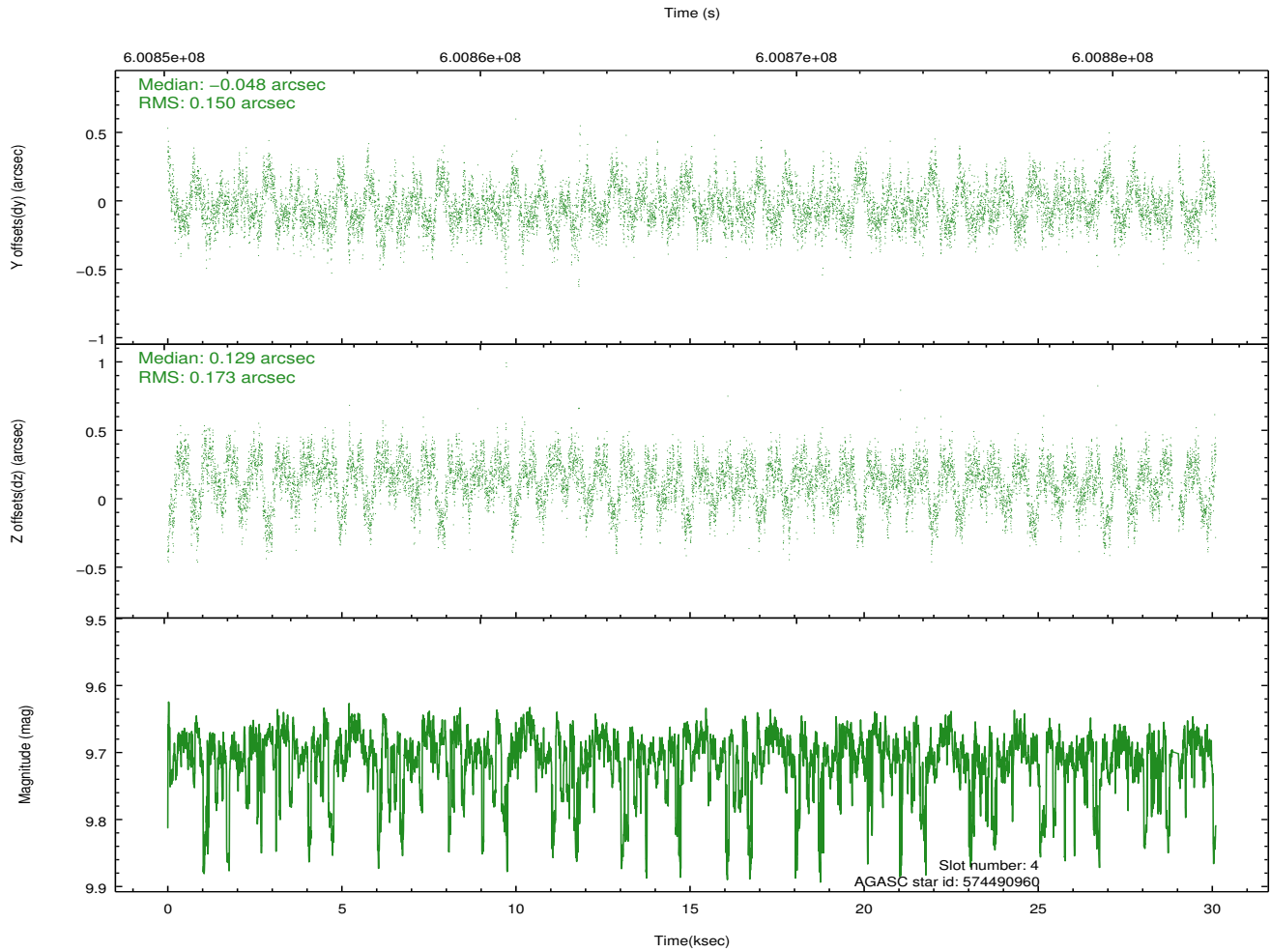
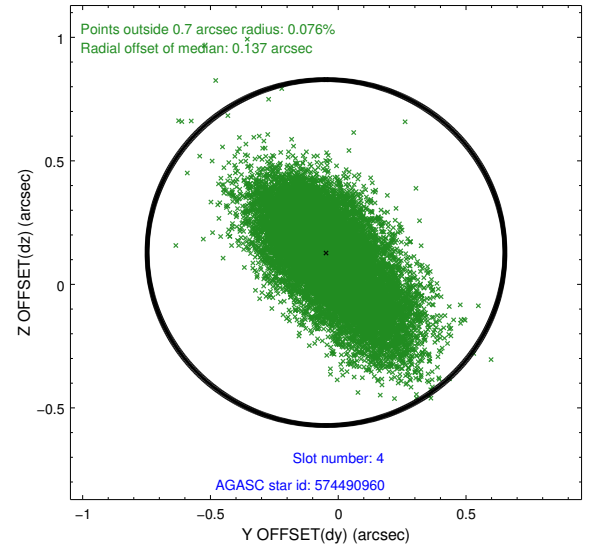
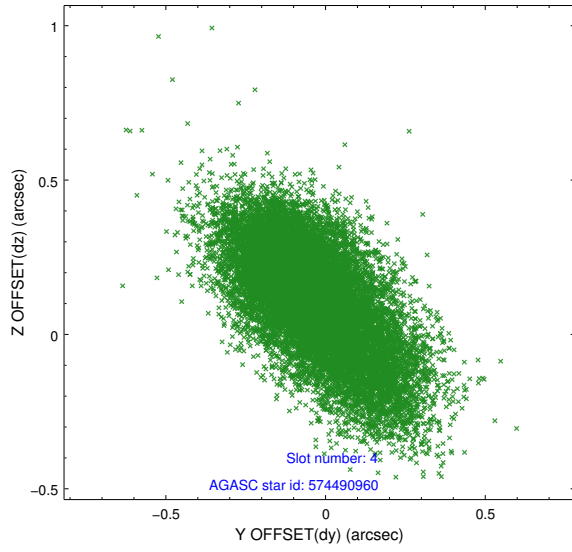
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.31	7342	-0.052	-0.146	0.010	0.019	0.000000	0.000000	919.65	-844.69
1	FID		ACIS-I-4	7.22	7343	0.457	0.150	0.008	0.016	0.000000	0.000000	2140.11	1055.46
2	FID		ACIS-I-5	7.30	7342	-0.503	0.067	0.008	0.014	0.000000	0.000000	-1828.84	1053.04
3	GUIDE	used	574489568	9.68	14659	-0.017	-0.280	0.247	0.385	147.223974	69.438157	2309.04	87.38
4	GUIDE	used	574490960	9.70	14541	-0.048	0.129	0.234	0.418	148.185918	69.658768	1946.16	-1312.77
5	GUIDE	used	574491184	9.03	14669	-0.046	0.112	0.169	0.279	148.582453	69.768699	1852.42	-1940.25
6	GUIDE	used	574491280	9.26	14664	0.061	0.154	0.184	0.294	148.611567	69.450135	1043.49	-1124.17
7	GUIDE	used	574490584	9.49	14656	0.033	-0.101	0.230	0.344	148.421828	68.168920	-1920.48	2415.51

2.4 Star Slots

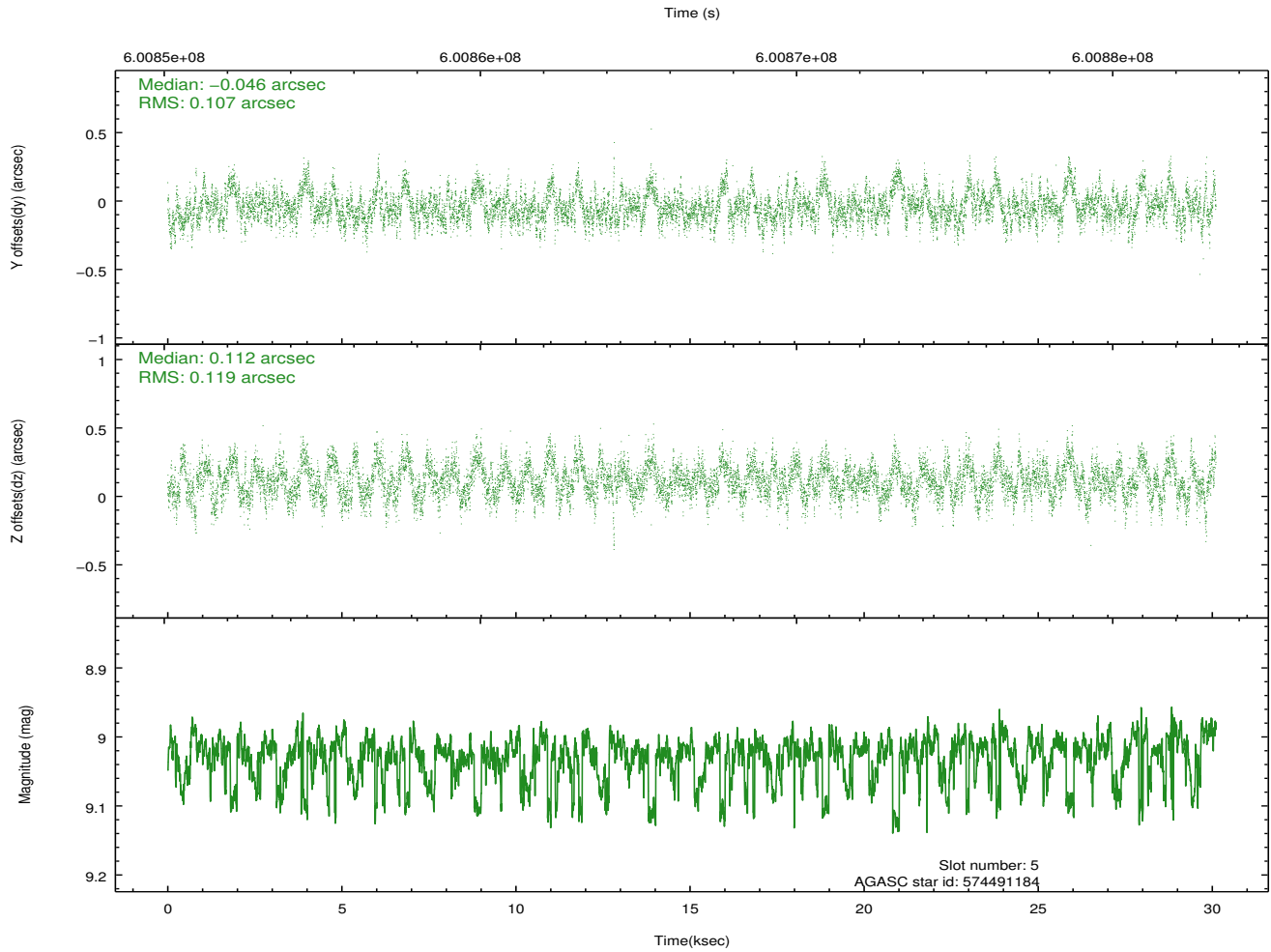
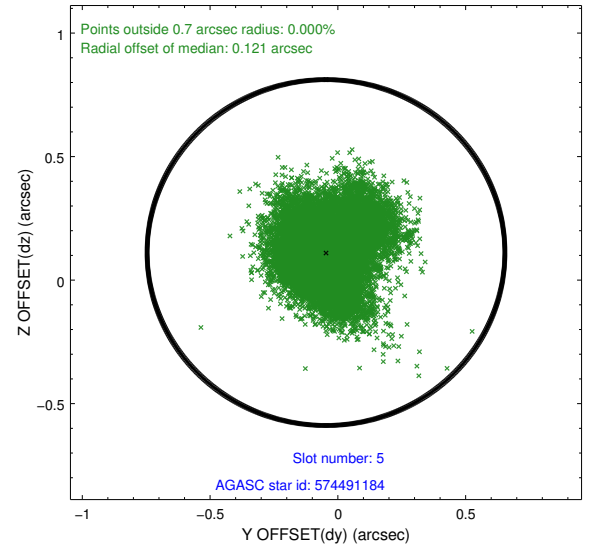
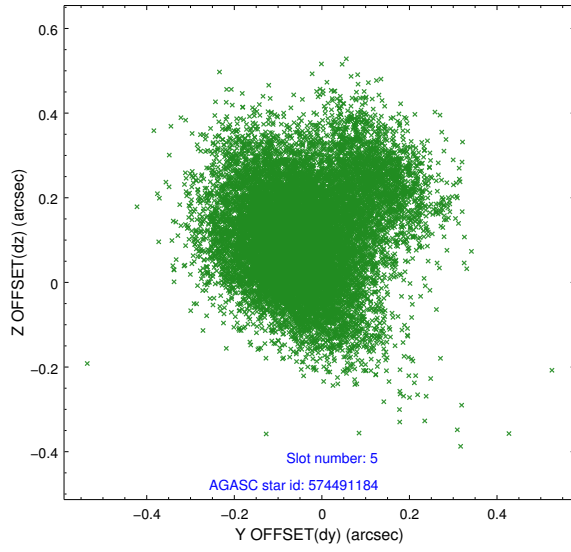
2.4.1 Slot 3



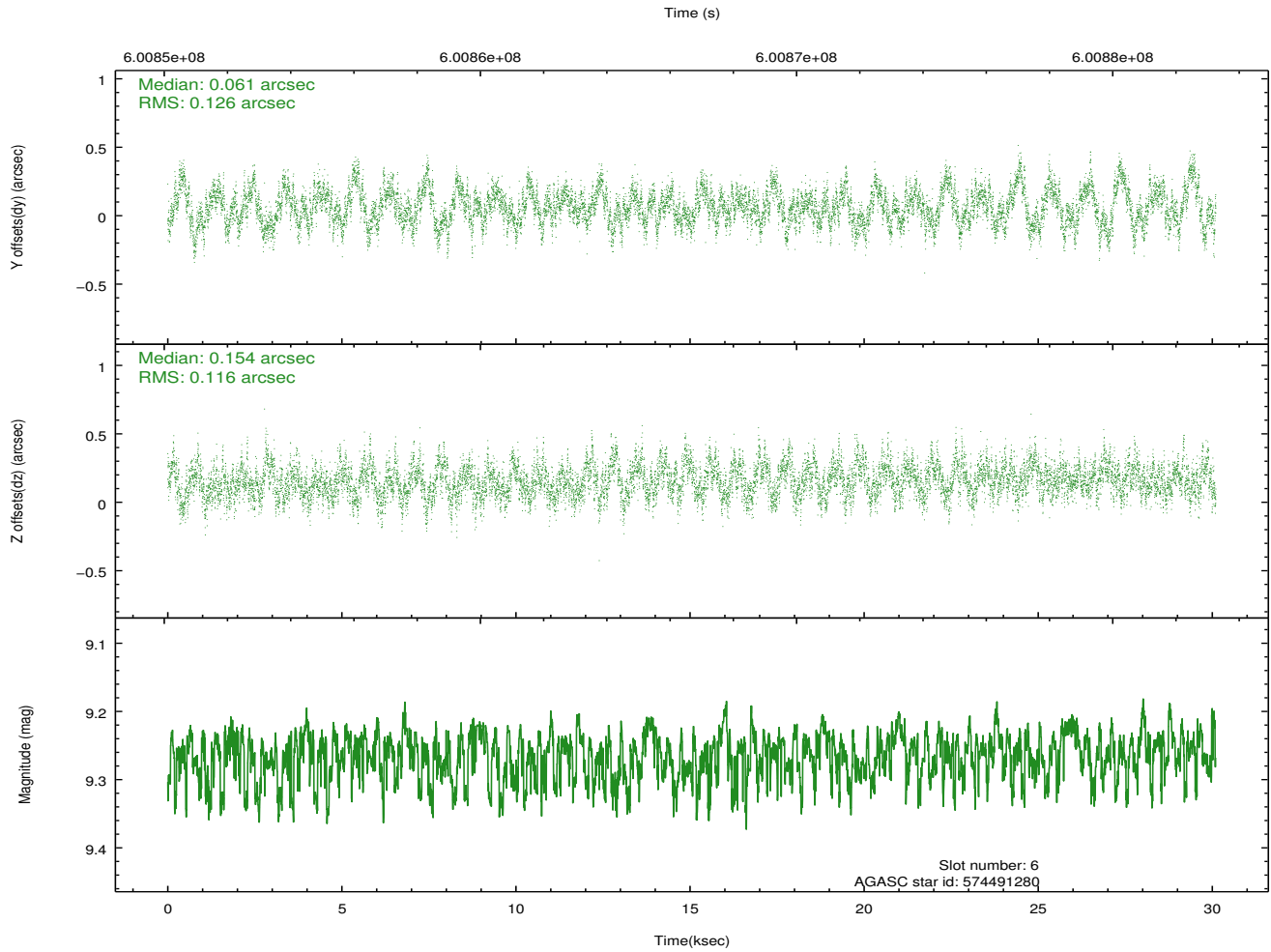
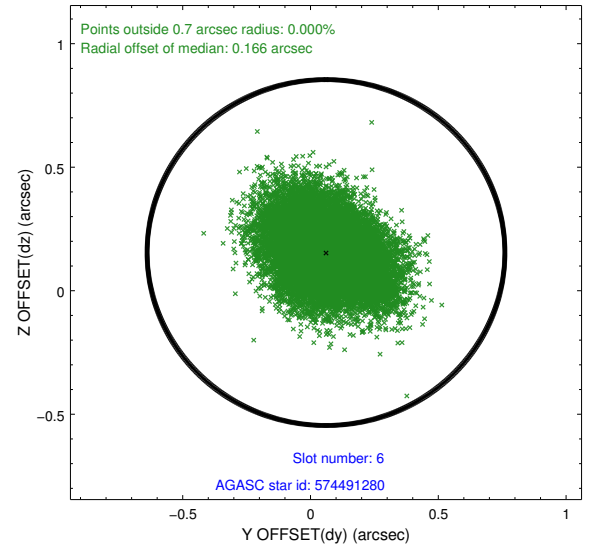
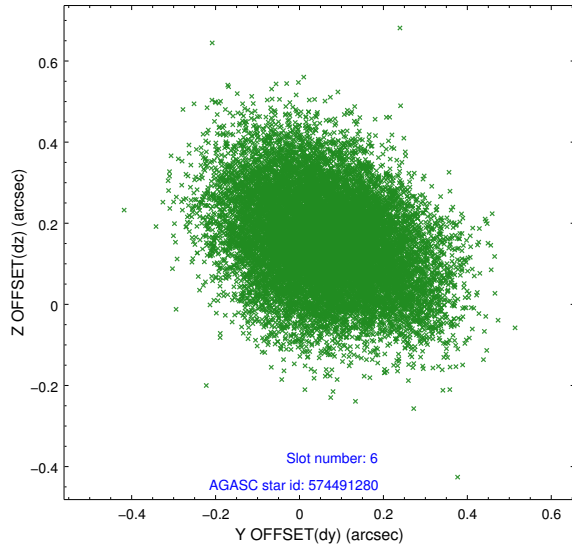
2.4.2 Slot 4



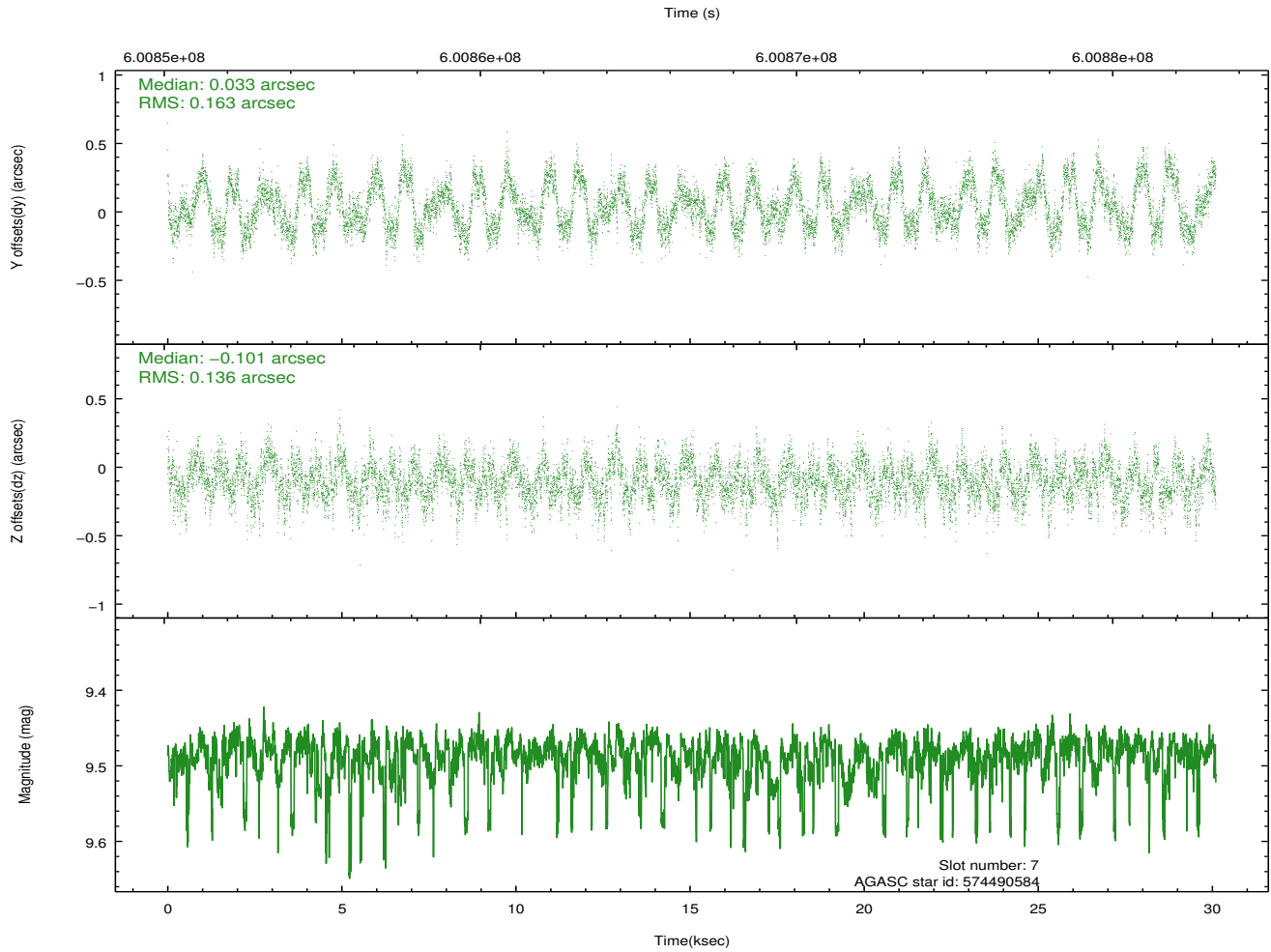
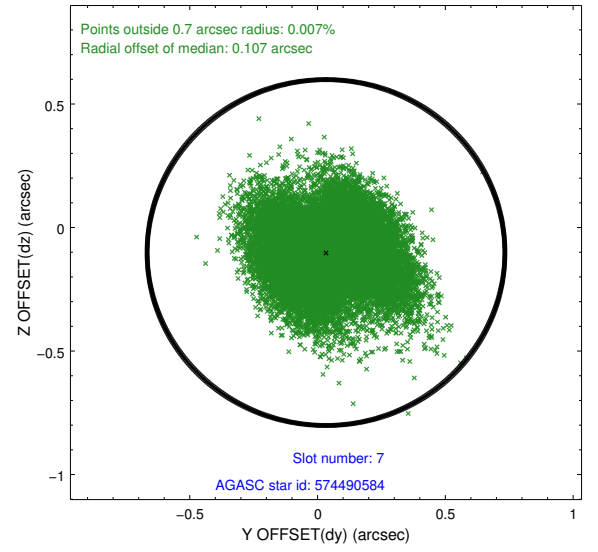
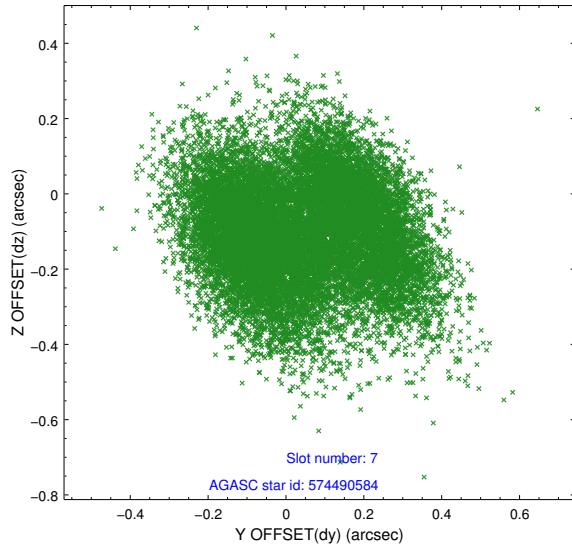
2.4.3 Slot 5



2.4.4 Slot 6

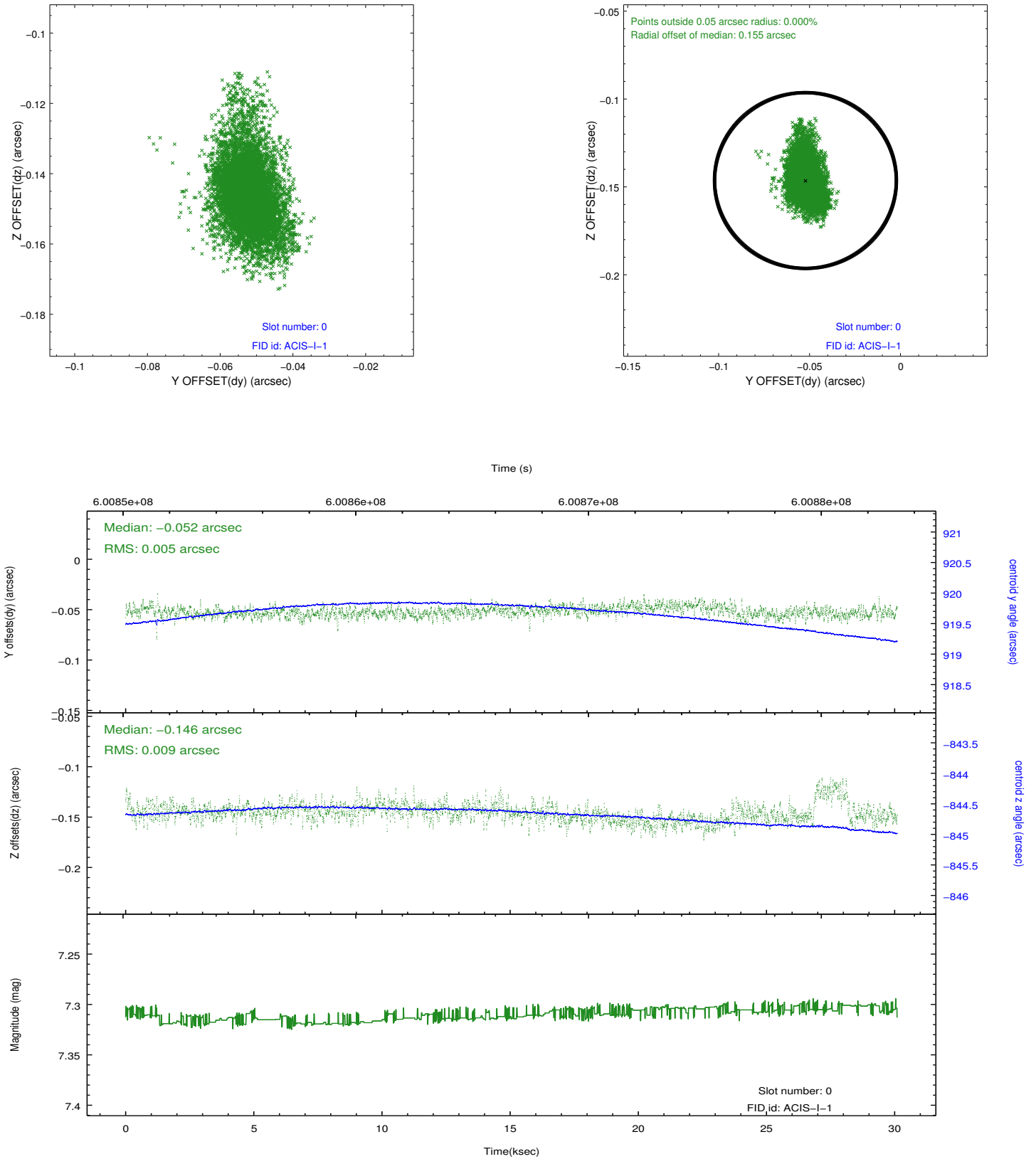


2.4.5 Slot 7

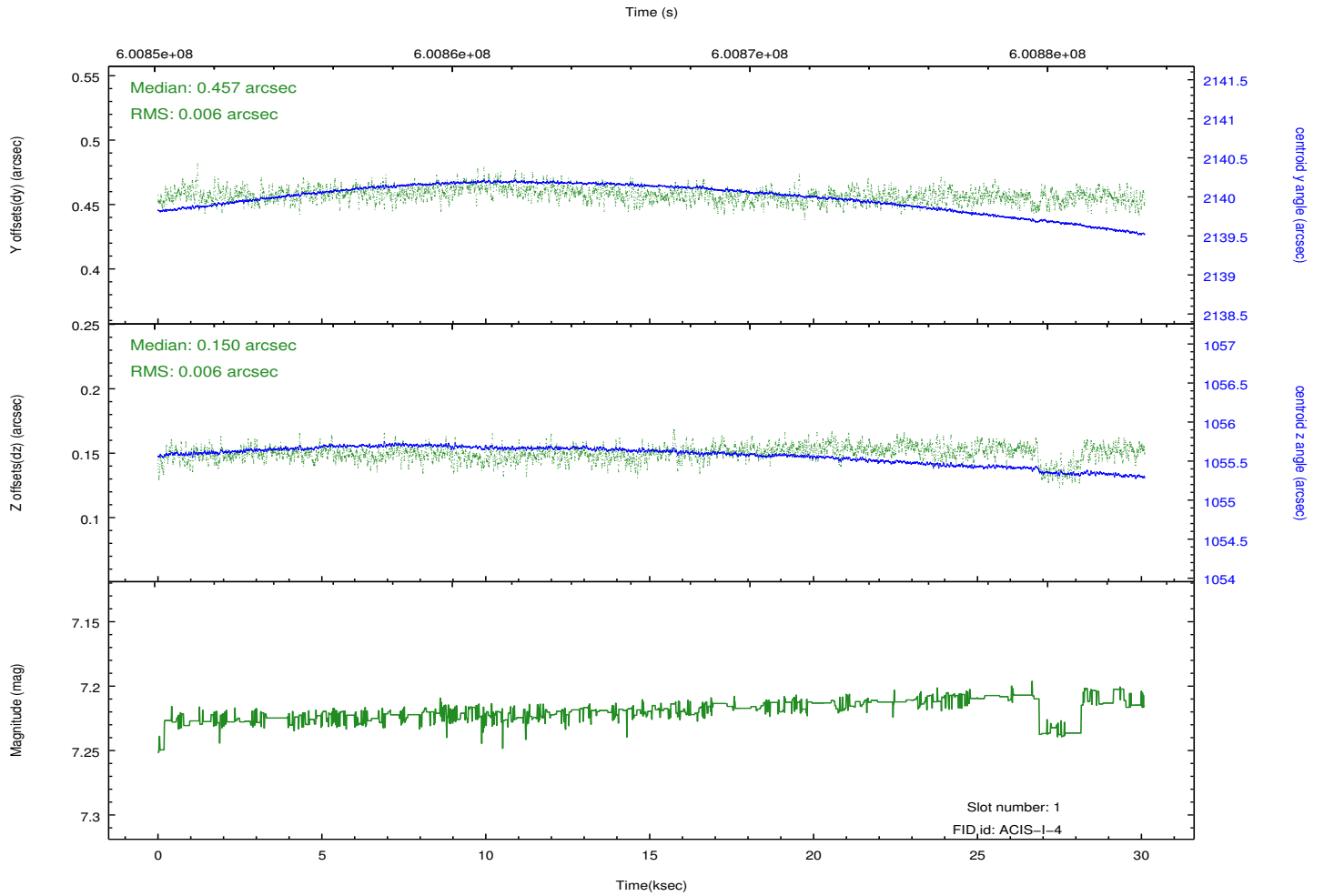
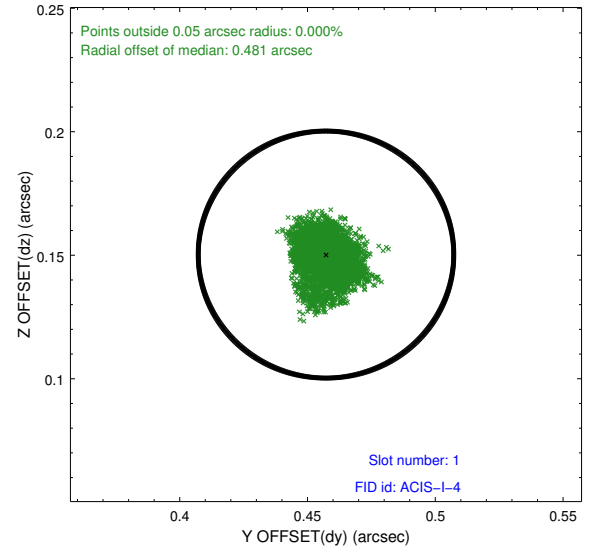
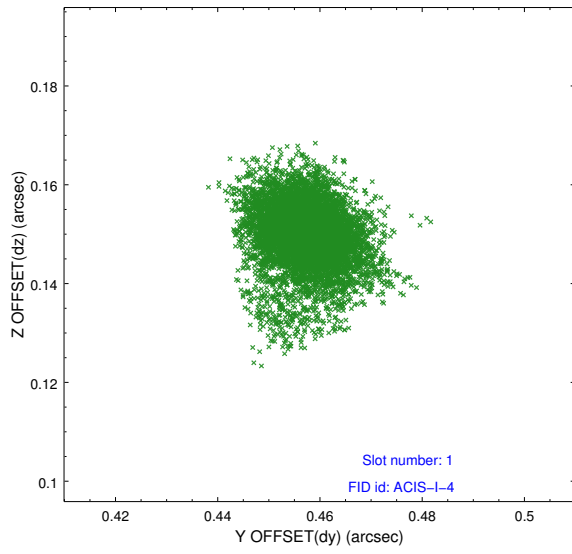


2.5 FID Slots

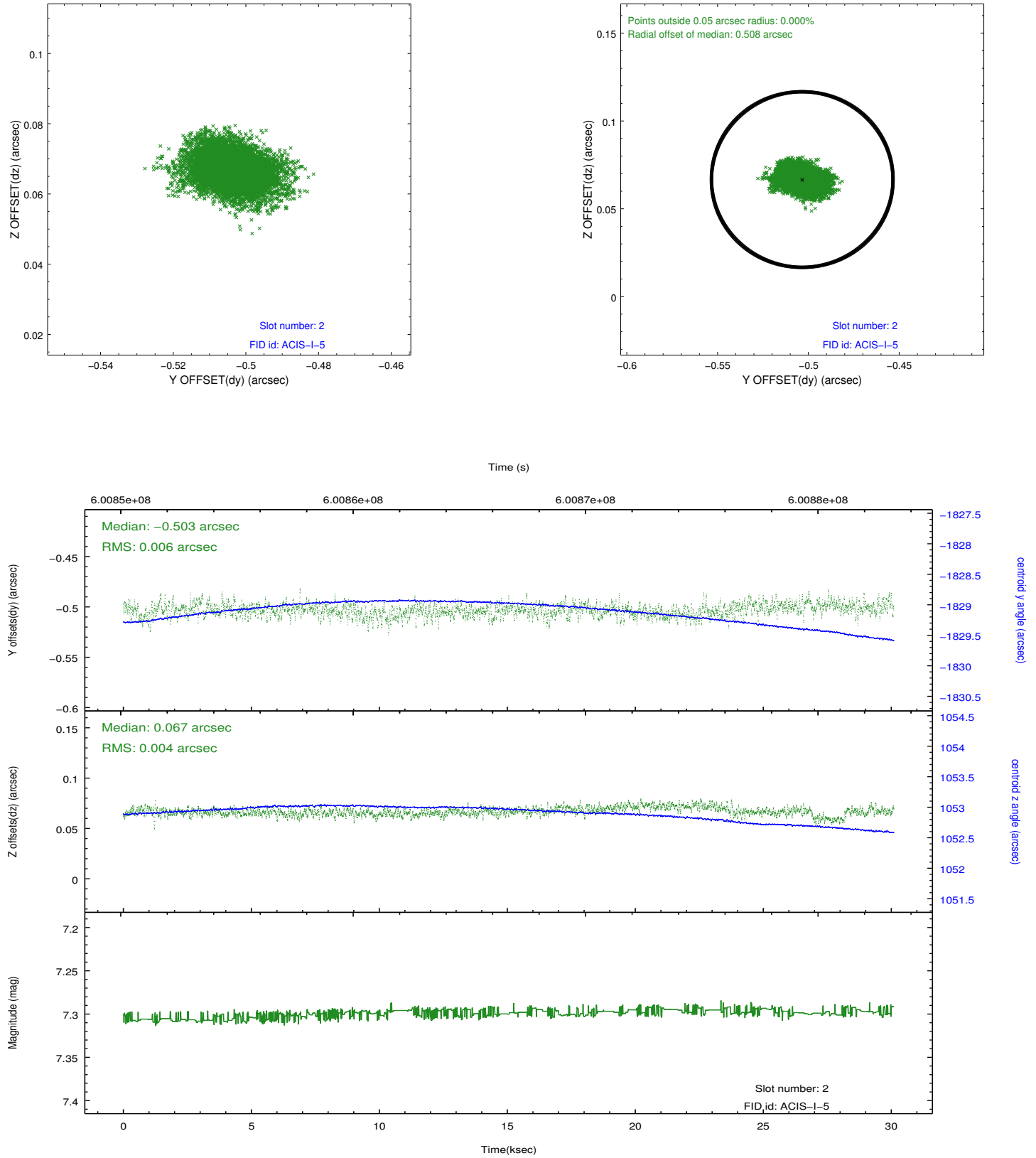
2.5.1 Slot 0



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	29.976959150434

A.2 Comments

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.