

V&V Reference Report

L2 ASCDS Version : 10

Observation 1456 - L2 Version 6
Chandra X-Ray Center

L2 Processing Date : Jul 19 2013

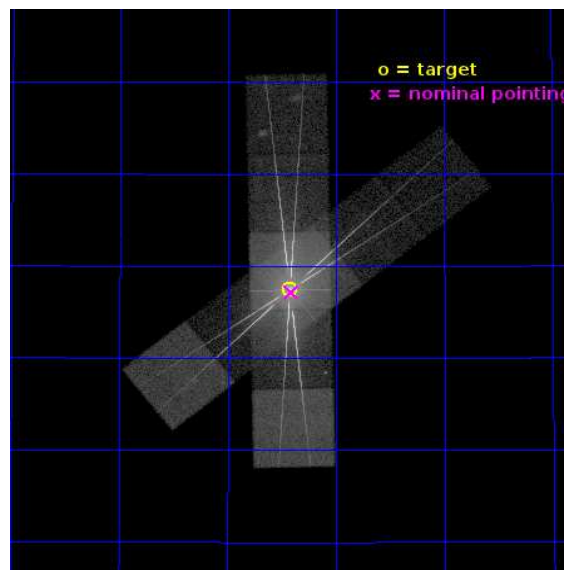
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1 Front

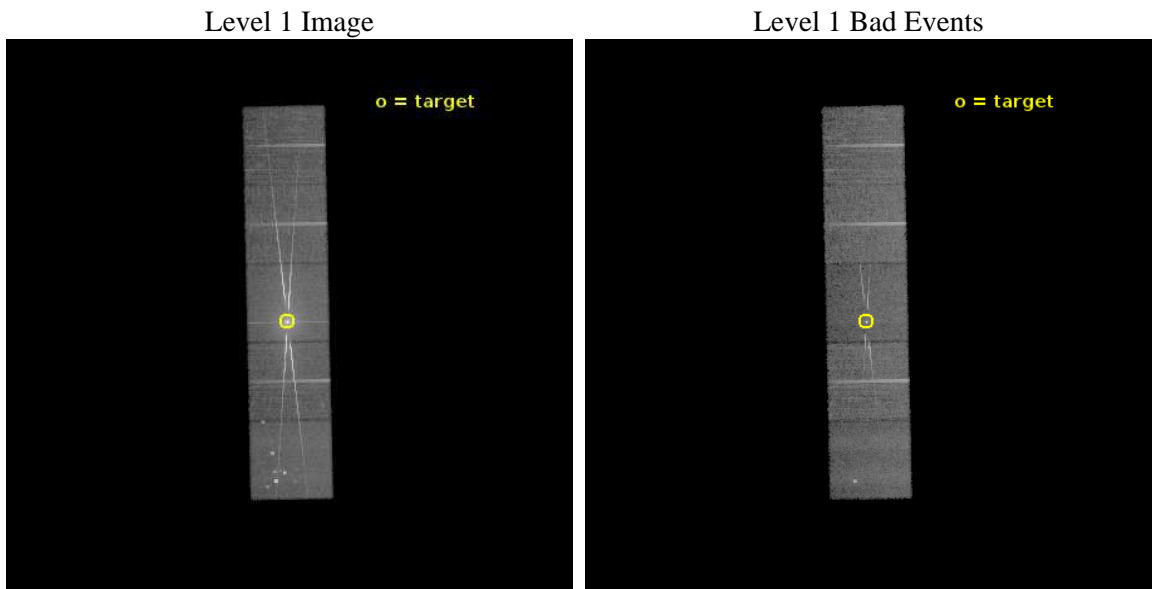
seq_num	400014	Sequence number
obs_id	1456	Observation id
title	OBSERVATIONS OF ACTIVE, COMPACT, LOW-MASS X-RAY BINARIES WITH LETGS	
observer	DR. ALBERT BRINKMAN	Principal investigator
object	CYG X-3	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	308.10625	Observer's specified target RA [deg]
dec_targ	40.957694	Observer's specified target Dec [deg]
ra_nom	308.103107	Nominal RA [deg]
dec_nom	40.952866	Nominal Dec [deg]
roll_nom	268.821531	Nominal Roll [deg]
revision	6	Processing version of data
ontime	20796.800019369	Sum of GTIs [s]
livetime	20533.458415194	Livetime [s]
ontime5	20796.800019369	Sum of GTIs [s]
ontime6	20796.800019369	Sum of GTIs [s]
ontime7	20796.800019369	Sum of GTIs [s]
ontime8	20796.800019369	Sum of GTIs [s]
ontime9	20796.800019369	Sum of GTIs [s]
l2events	663768	Number of level 2 events



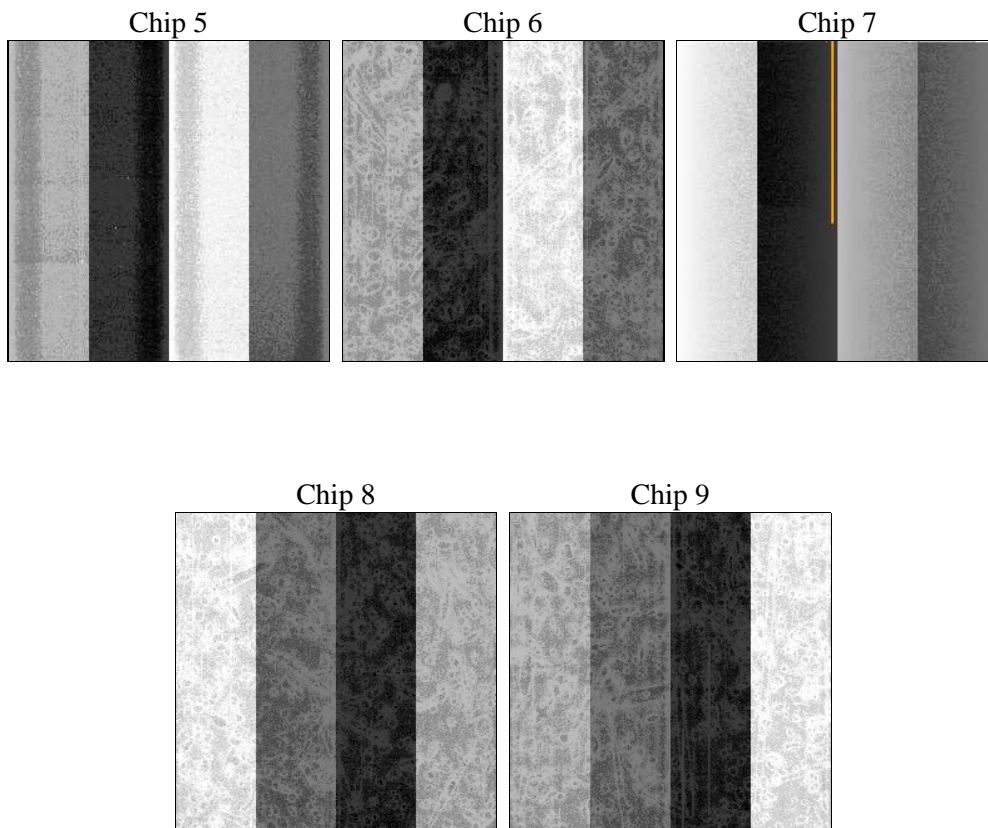
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	15920.000000	[s] Scheduled observation exposure time
ascdsver	10	Processing system revision	ontime	12272.000011429	Sum of GTIs [s]
caldbver	4.5.7	 	ontime5	12272.000011429	Sum of GTIs [s]
date	2013-07-18T23:28:45	Date and time of file creation	ontime6	12272.000011429	Sum of GTIs [s]
revision	5	Processing version of data	ontime7	12272.000011429	Sum of GTIs [s]
			ontime8	12272.000011429	Sum of GTIs [s]
			ontime9	12272.000011429	Sum of GTIs [s]
			l1events	948932	Number of level 1 events

2.1.4 Events

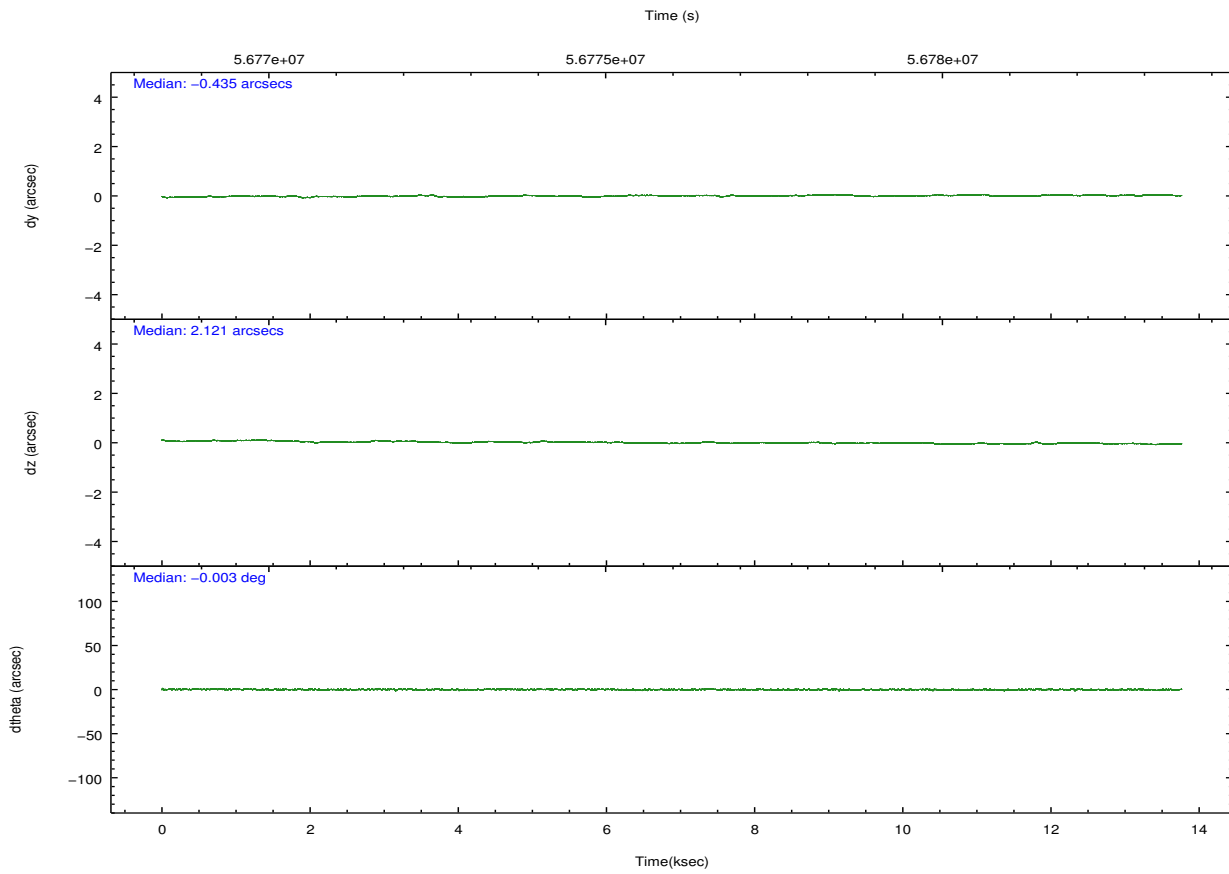
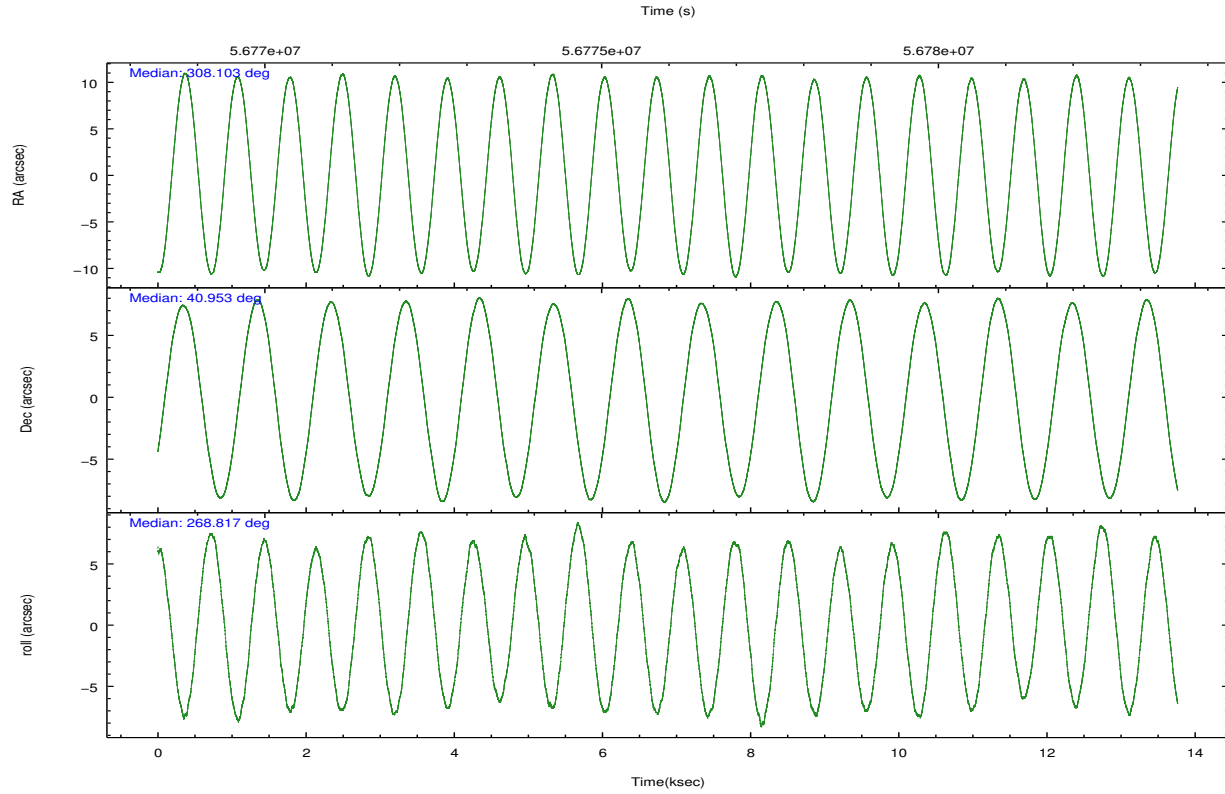
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	153143	210806	320532	152932	111519
rejected events	79408	106952	84566	108081	95071
rejected %	51%	50%	26%	70%	85%

	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	13734	33783	33065	19767	5434
	8%	16%	10%	12%	4%
grade 1 events	1231	286	427	102	21
	0%	0%	0%	0%	0%
grade 2 events	17800	51054	60965	12860	6195
	11%	24%	19%	8%	5%
grade 3 events	2694	2651	21028	2512	847
	1%	1%	6%	1%	0%
grade 4 events	2465	2632	18994	2386	859
	1%	1%	5%	1%	0%
grade 5 events	5466	3425	10448	3149	2443
	3%	1%	3%	2%	2%
grade 6 events	37065	13769	101999	7336	3114
	24%	6%	31%	4%	2%
grade 7 events	72688	103206	73606	104820	92606
	47%	48%	22%	68%	83%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-56789	ACIS-56789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	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	308.086106	308.1035474386995	Subarray requested	NONE	NONE
[deg] Pointing Dec	40.977386	40.95317413406862	Alternating exposures requested	N	N
[deg] Pointing Roll	268.676049	268.8212425354708	[s] Primary exposure time	0.000000	3.2
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.145094680475			
[mm] SIM translation stage offset	0	0.01257209746719923			
[s] Observation start time (MET)	56769255.184000	56769098.432536			
Observation start date	1999-10-20T01:13:11	1999-10-20T01:11:38			
[s] Observation end time (MET)	56785175.184000	56783740.045563			
Observation end date	1999-10-20T05:38:31	1999-10-20T05:15:40			
Read mode	TIMED	TIMED			

2.3 Aspect

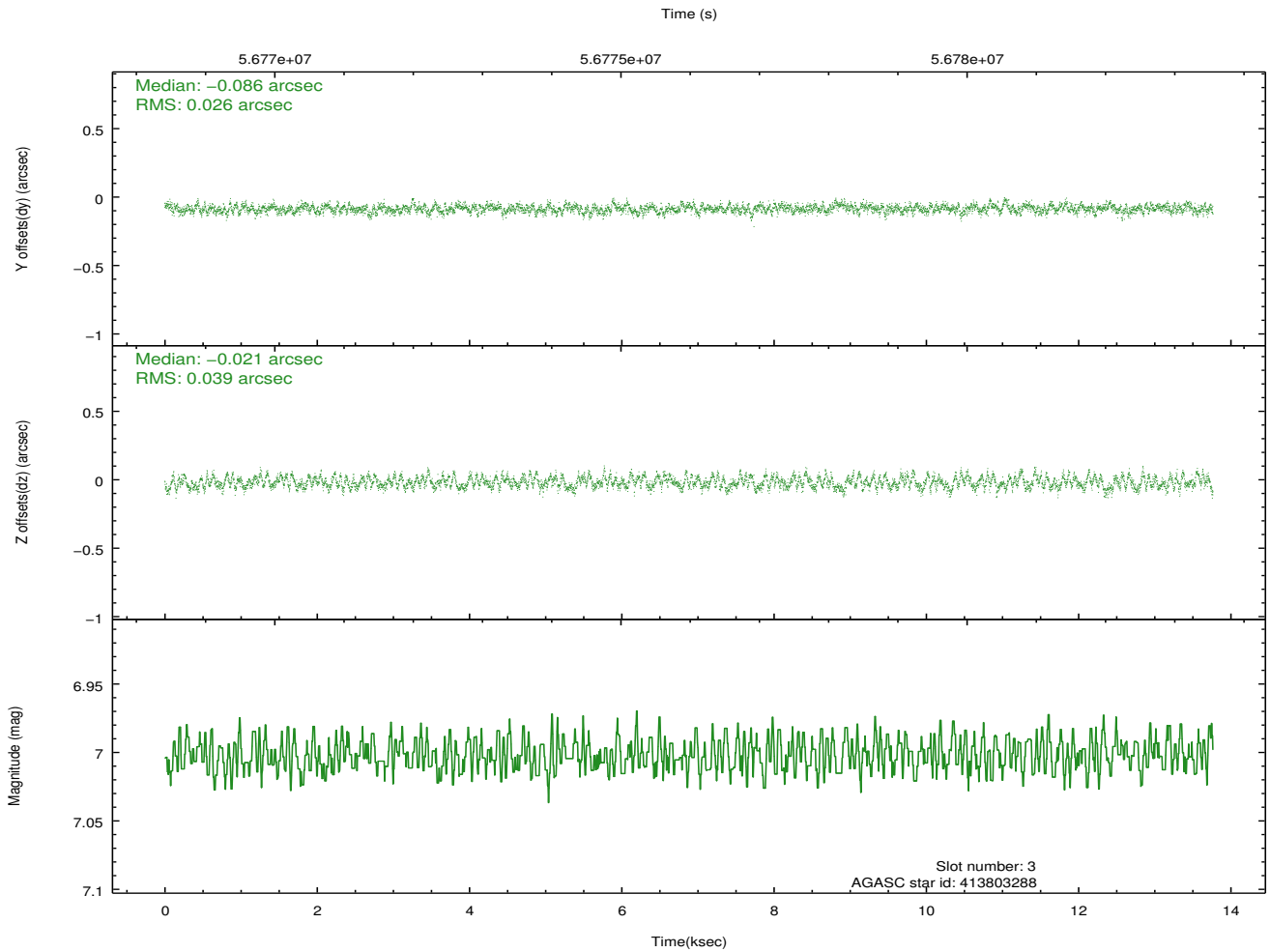
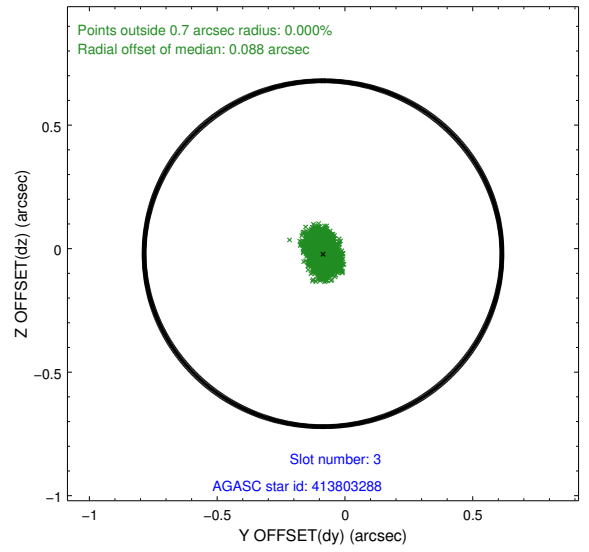
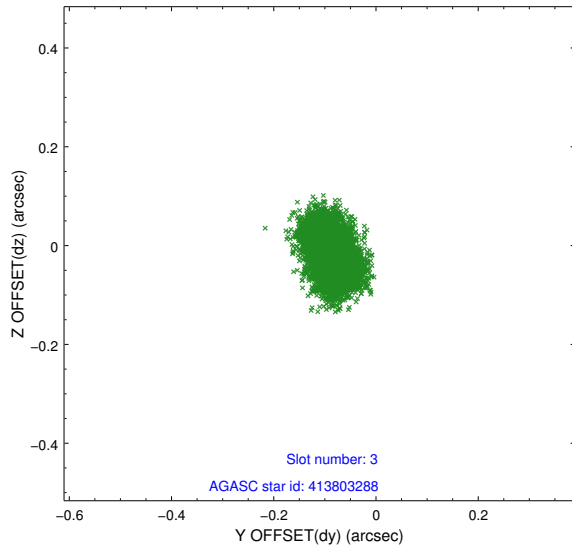


Slot Statistics

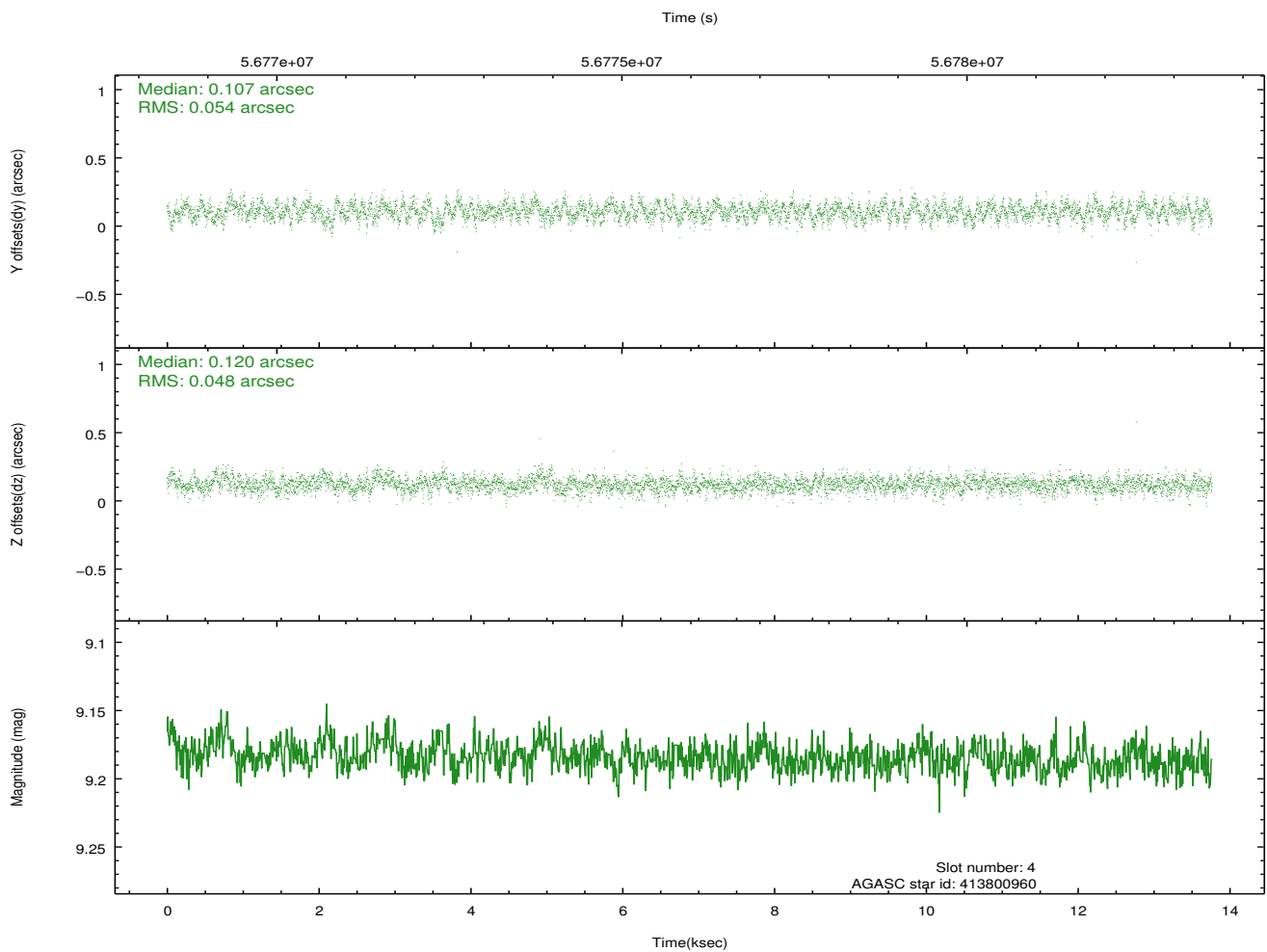
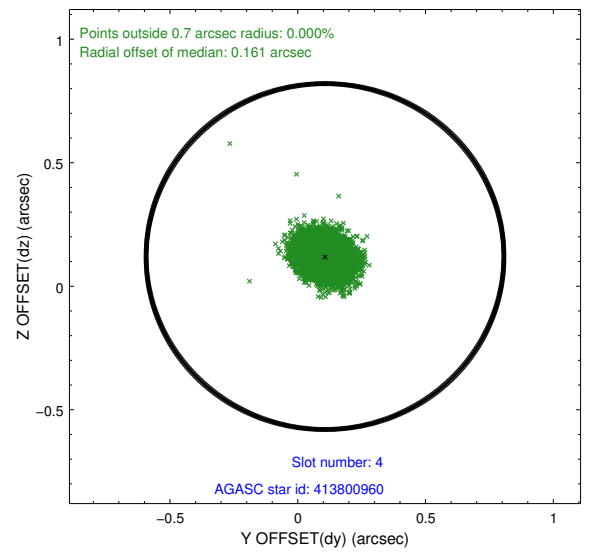
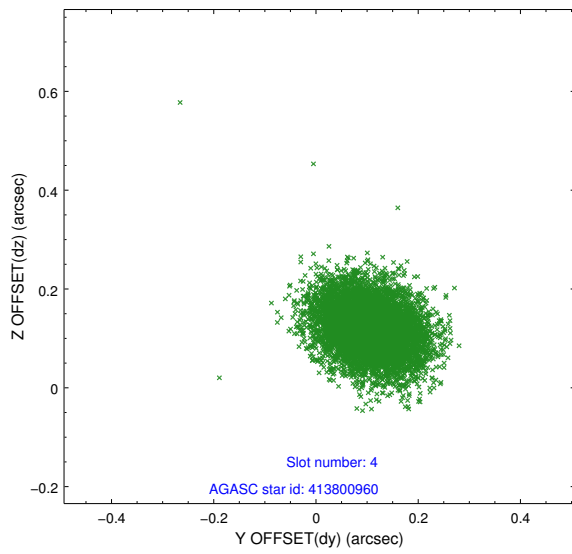
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.12	6714	0.002	0.005	0.007	0.012	0.000000	0.000000	-752.15	-1723.04
1	FID	ACIS-S-4	7.21	6716	0.054	-0.002	0.006	0.011	0.000000	0.000000	2161.18	185.28
2	FID	ACIS-S-5	7.24	6716	-0.087	0.006	0.007	0.011	0.000000	0.000000	-1804.92	179.15
3	GUIDE	413803288	7.00	6716	-0.086	-0.021	0.050	0.080	307.629978	40.506899	1719.66	-1208.55
4	GUIDE	413800960	9.18	6713	0.107	0.120	0.076	0.124	308.602491	40.622889	1240.09	1440.54
5	GUIDE	414323760	9.21	6712	-0.076	0.032	0.084	0.133	308.535475	41.616504	-2330.56	1156.48
6	GUIDE	414326208	9.92	6711	-0.027	-0.016	0.115	0.179	308.548887	41.510502	-1950.60	1203.34
7	GUIDE	413679760	9.75	6704	0.076	-0.114	0.109	0.180	307.206437	40.648998	1226.10	-2374.38

2.4 Star Slots

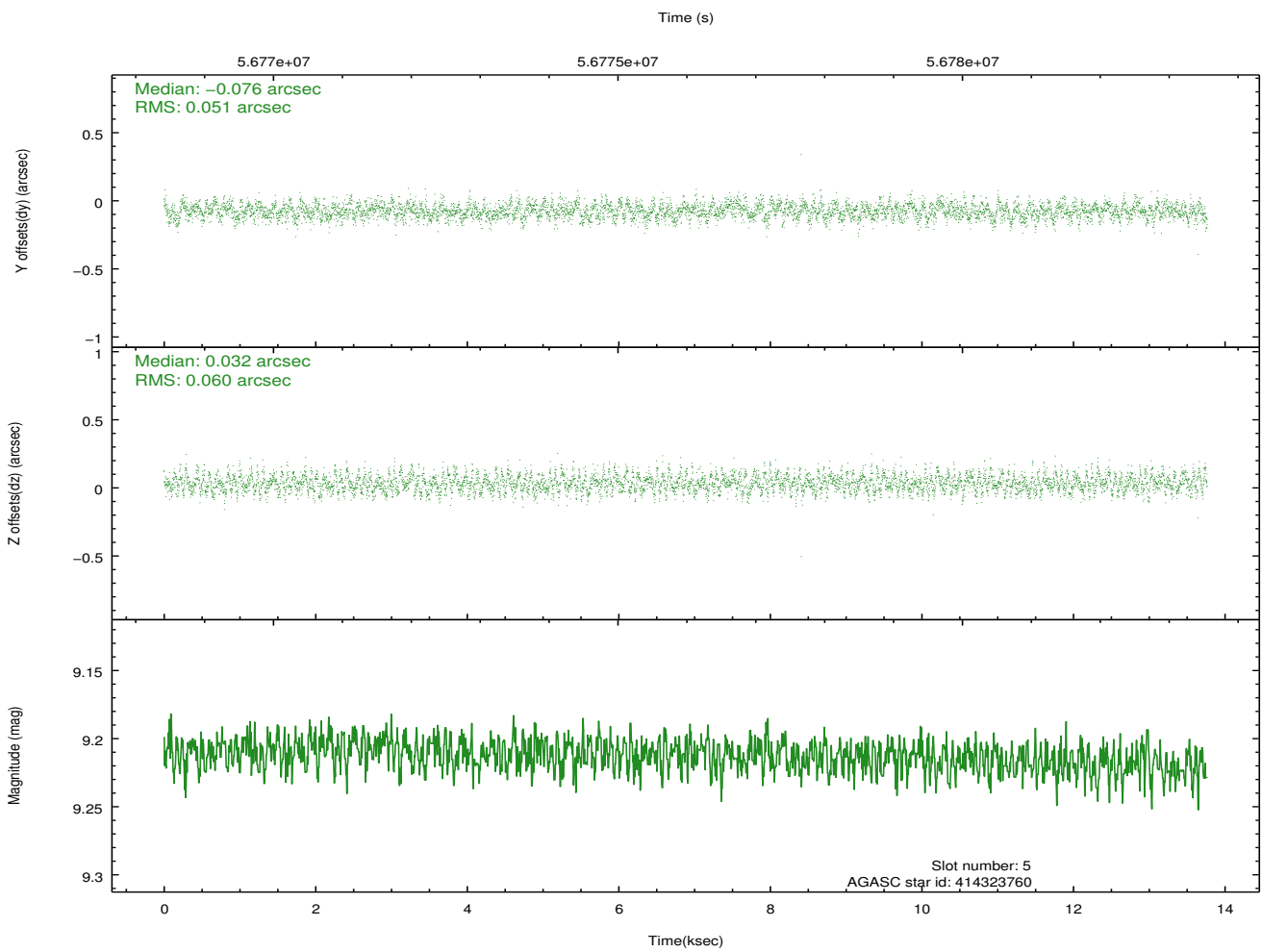
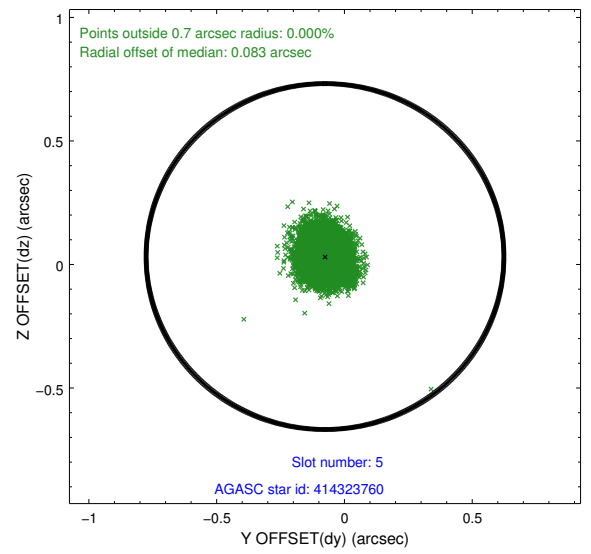
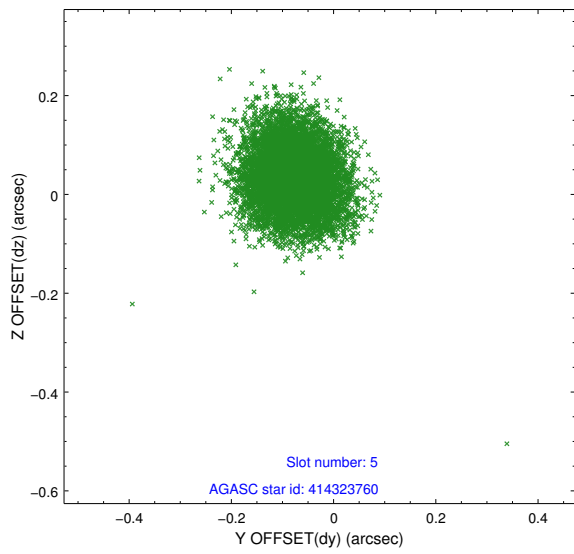
2.4.1 Slot 3



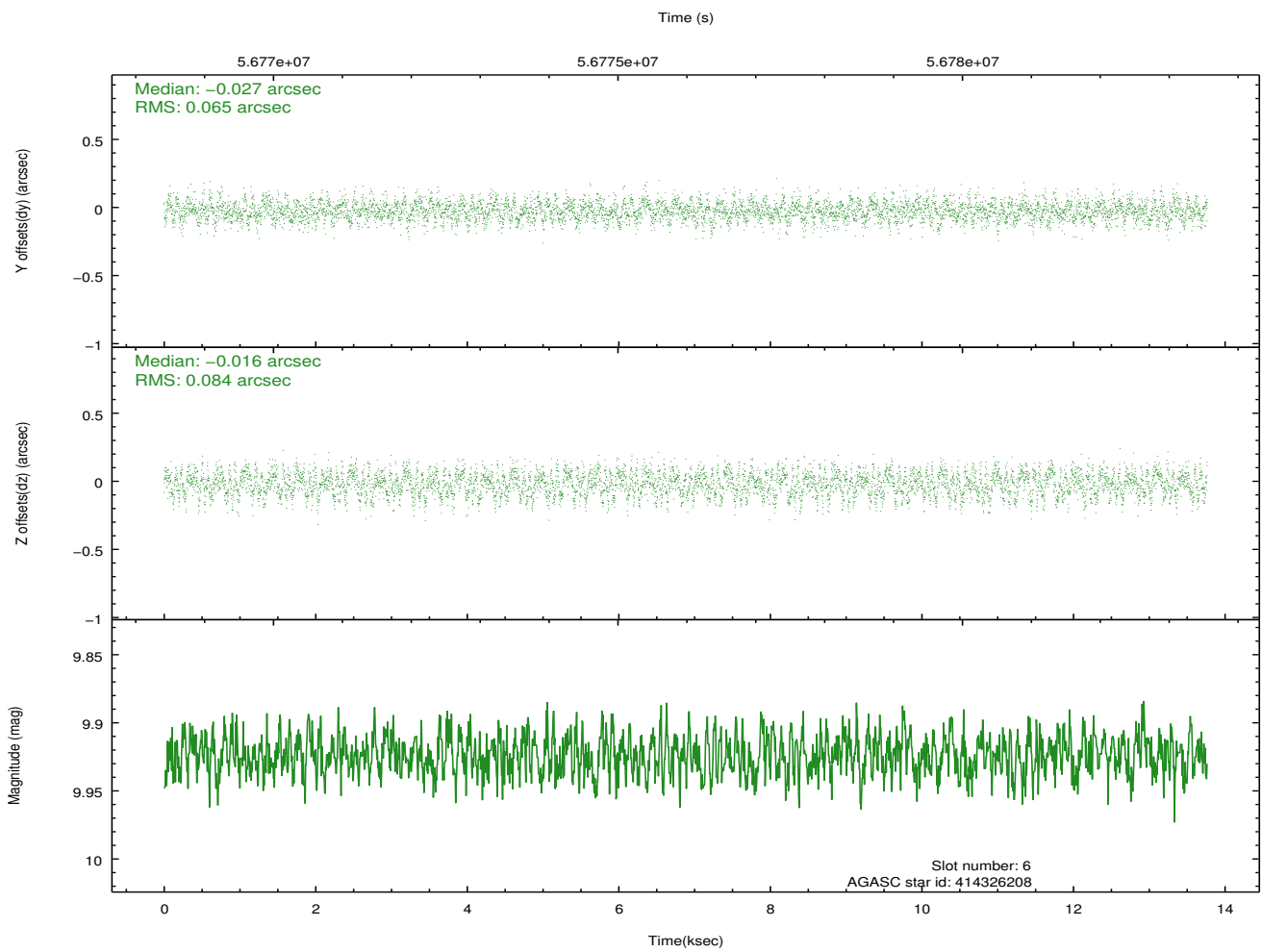
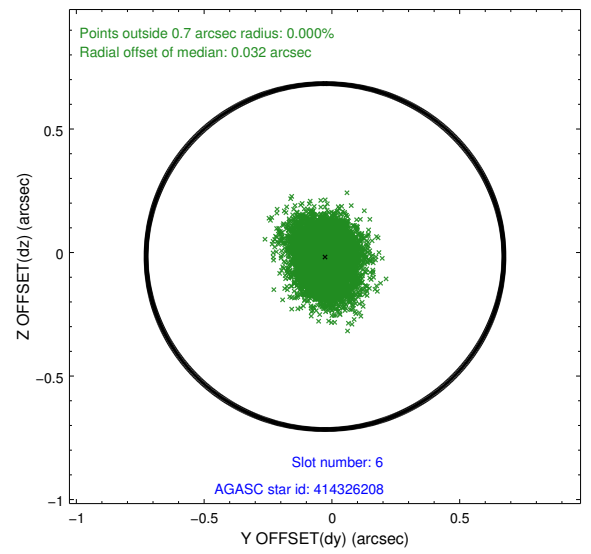
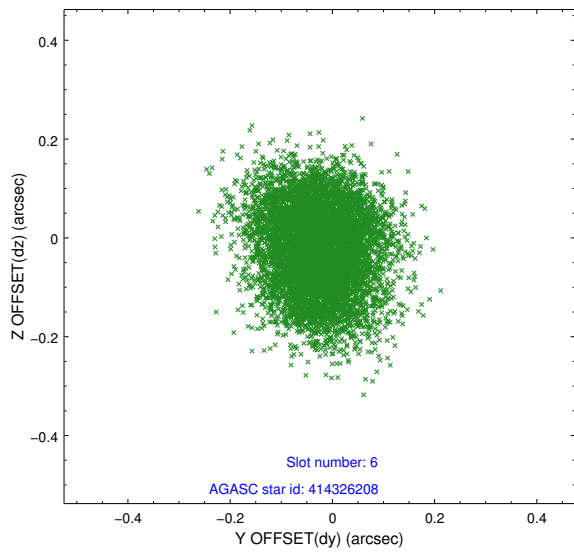
2.4.2 Slot 4



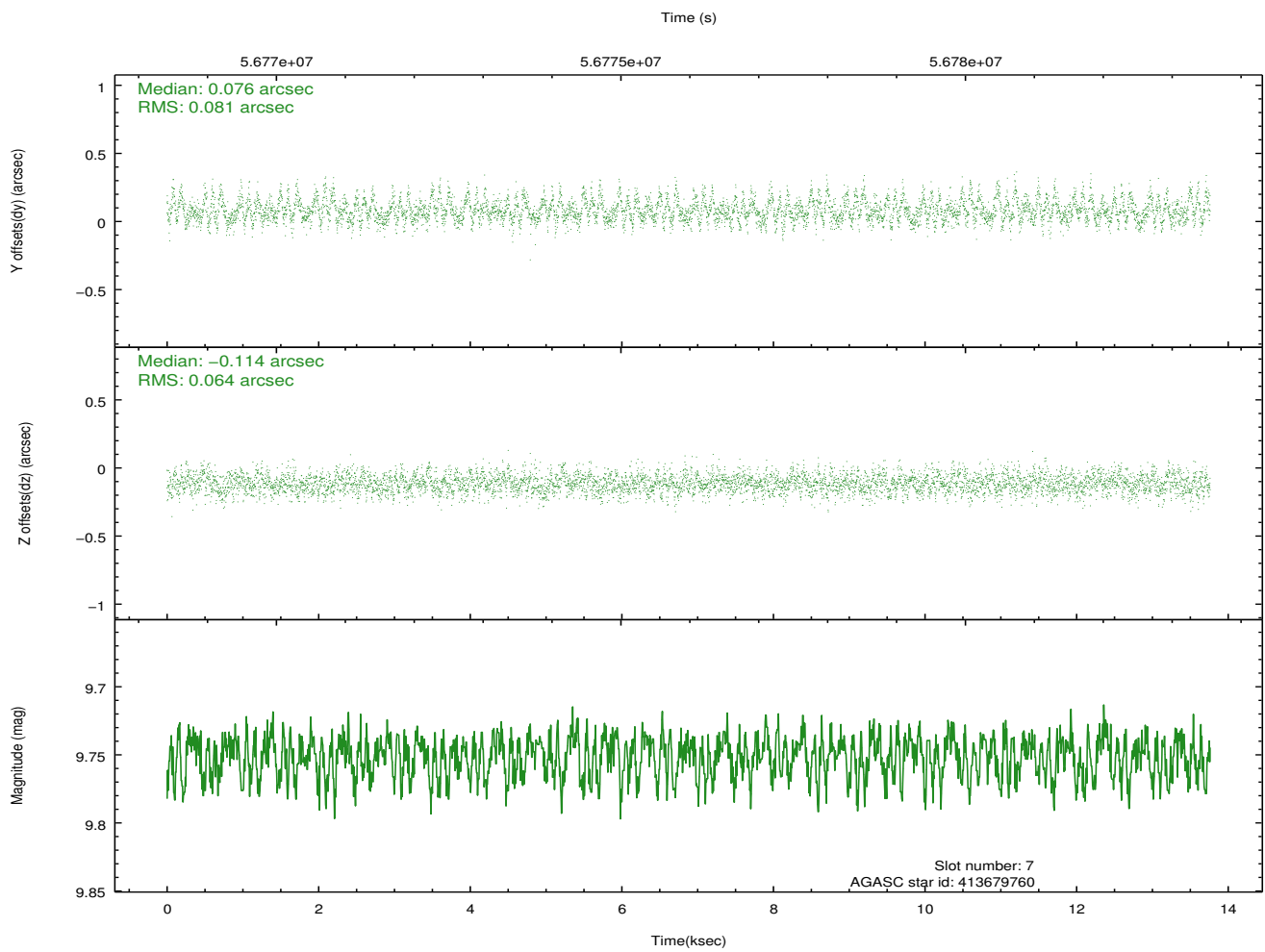
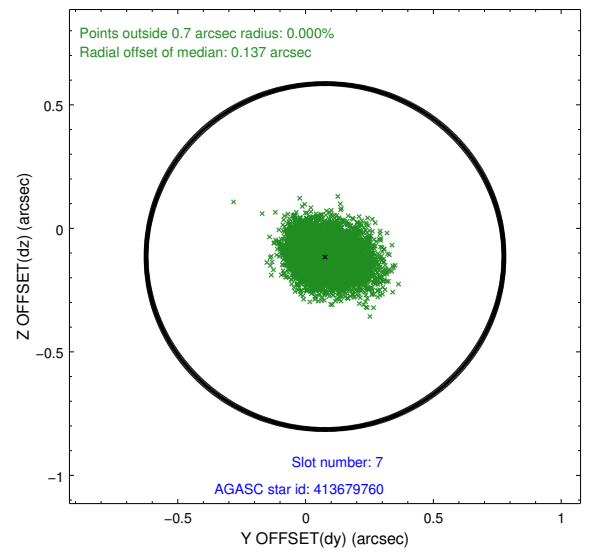
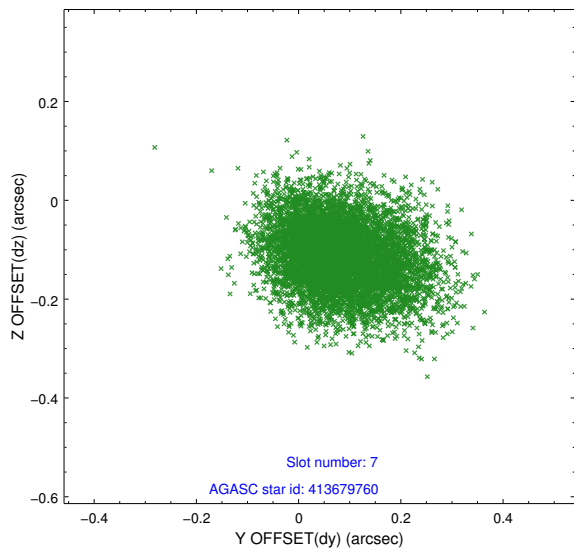
2.4.3 Slot 5



2.4.4 Slot 6

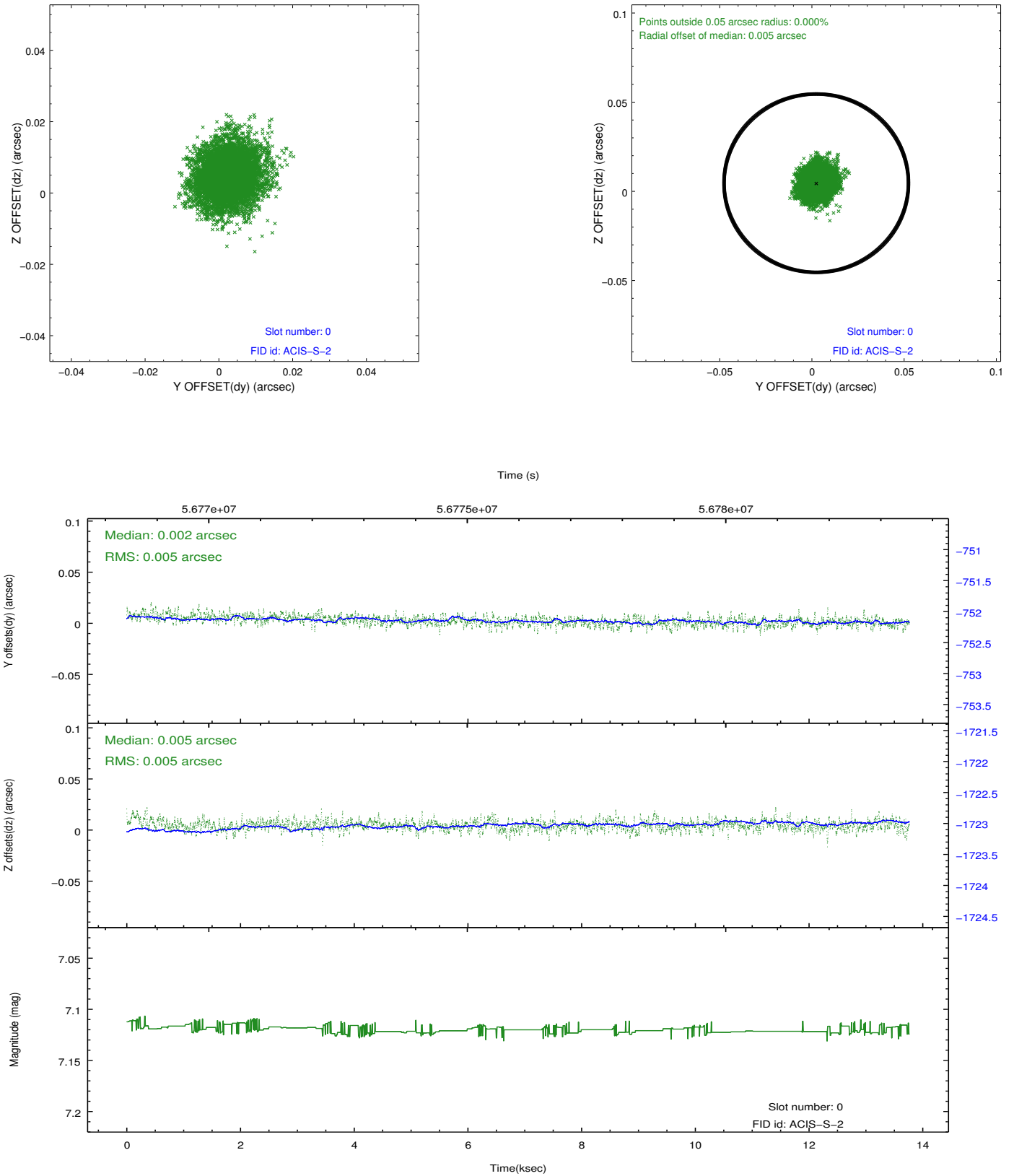


2.4.5 Slot 7

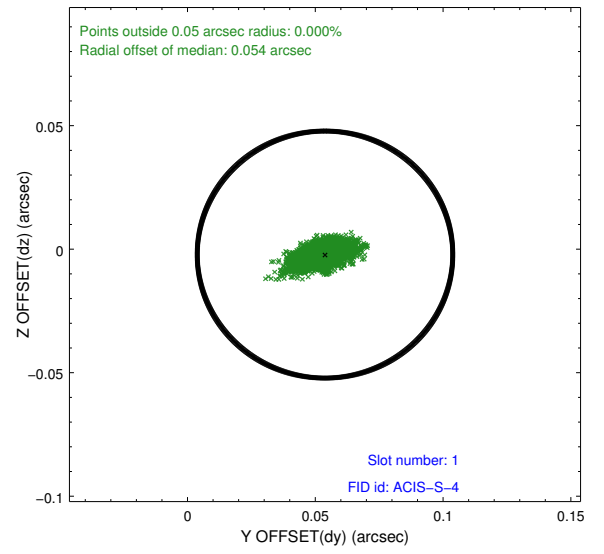
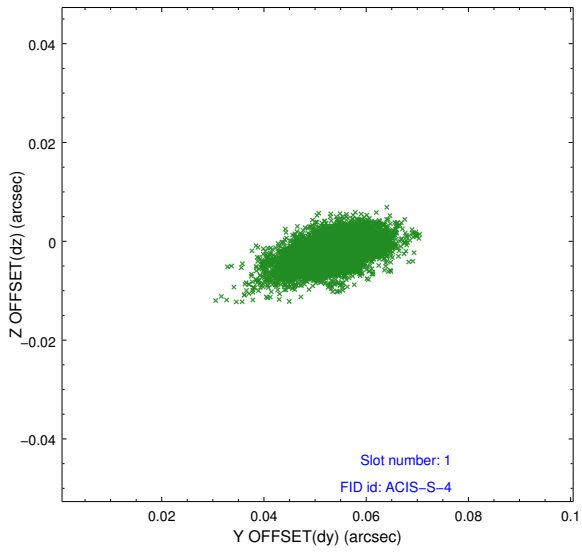


2.5 FID Slots

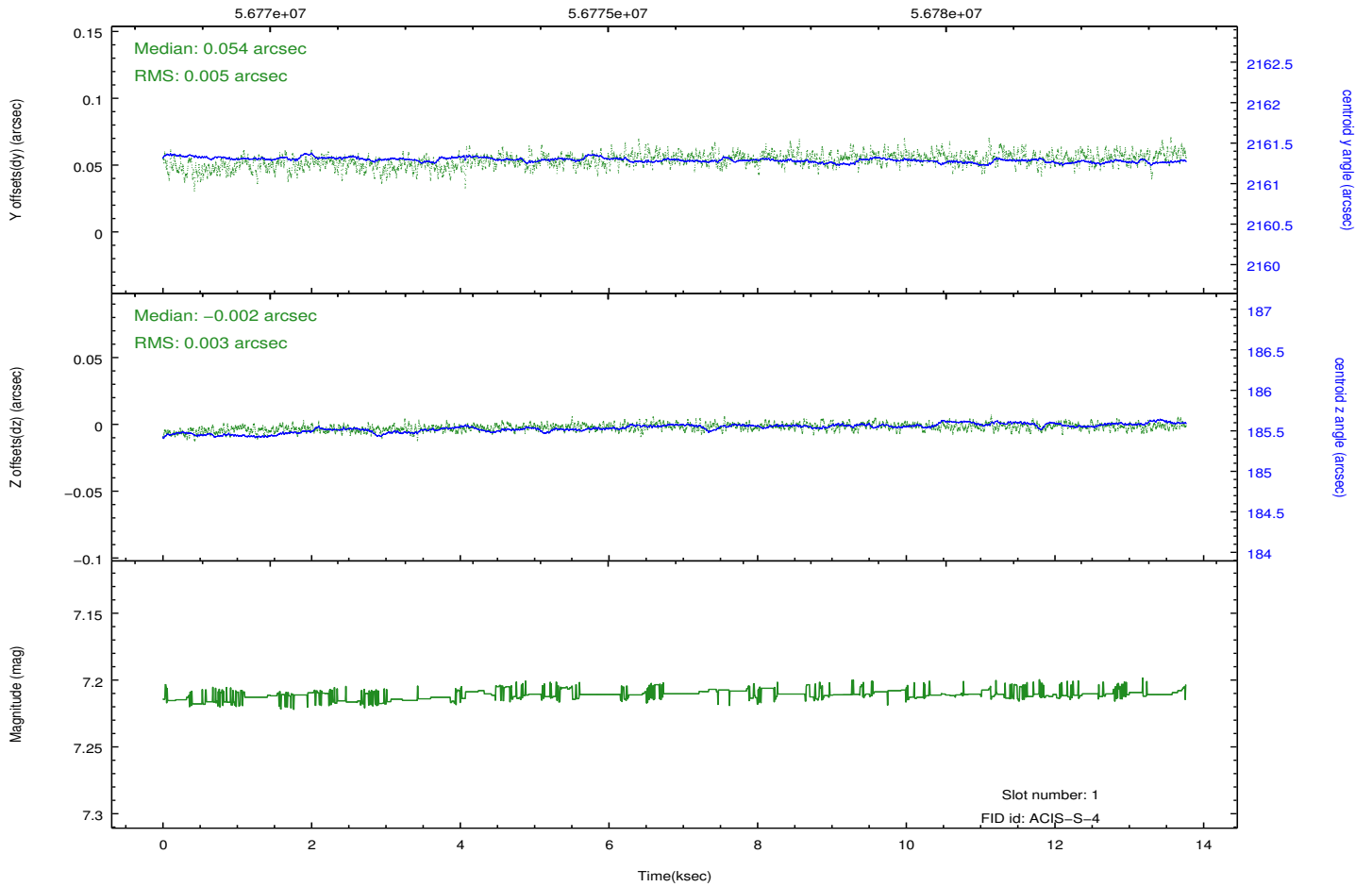
2.5.1 Slot 0



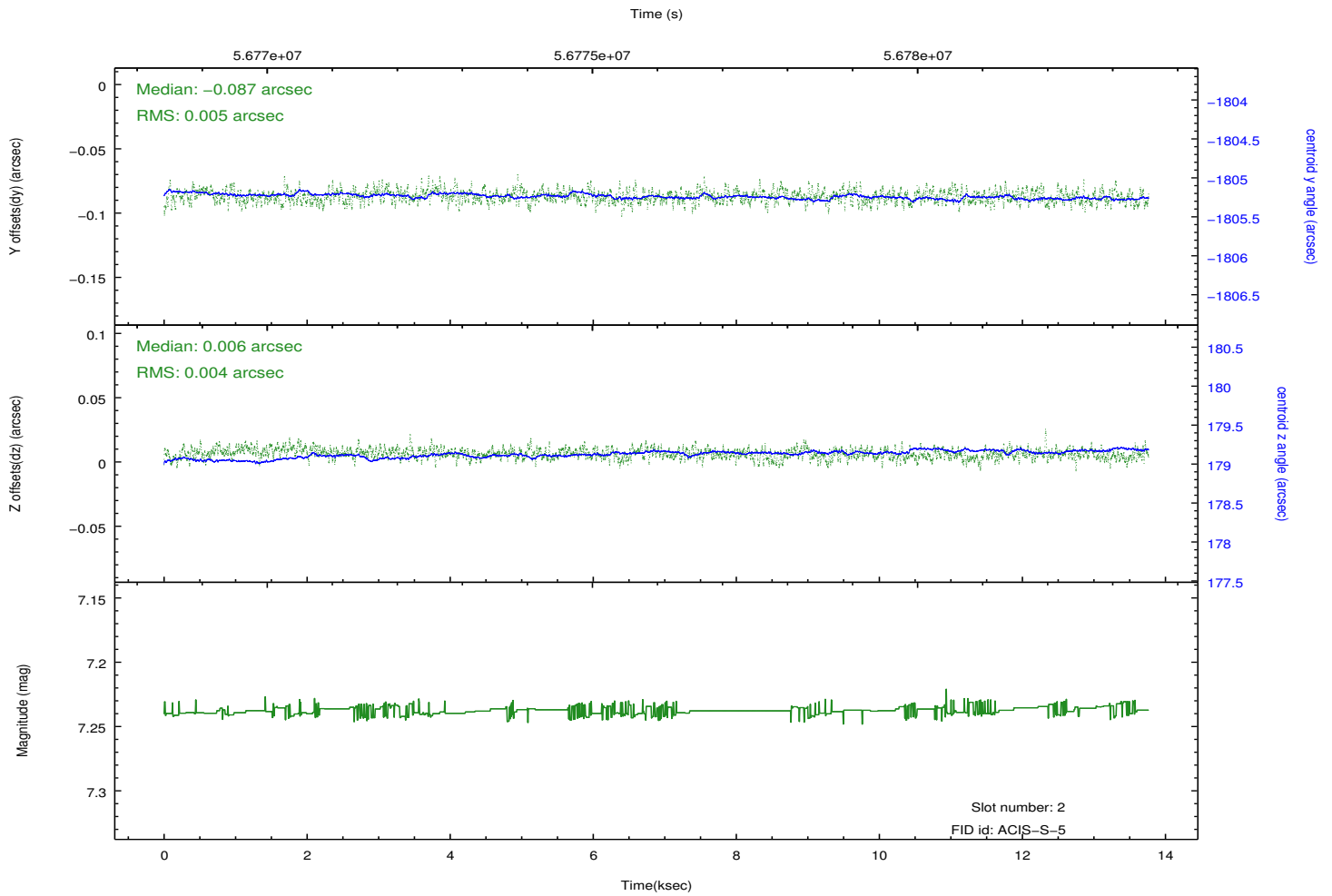
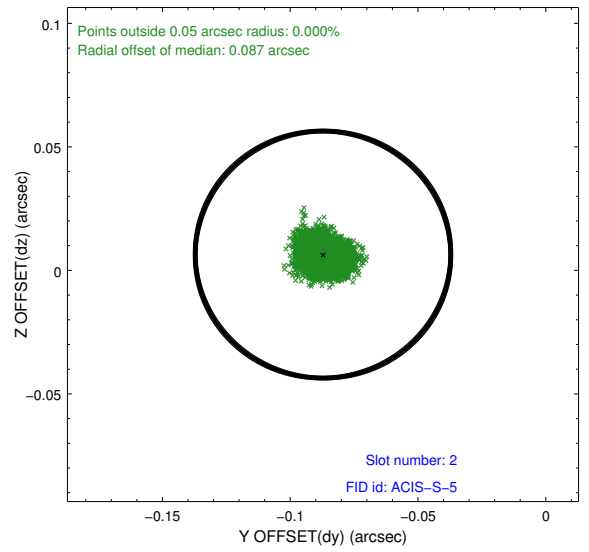
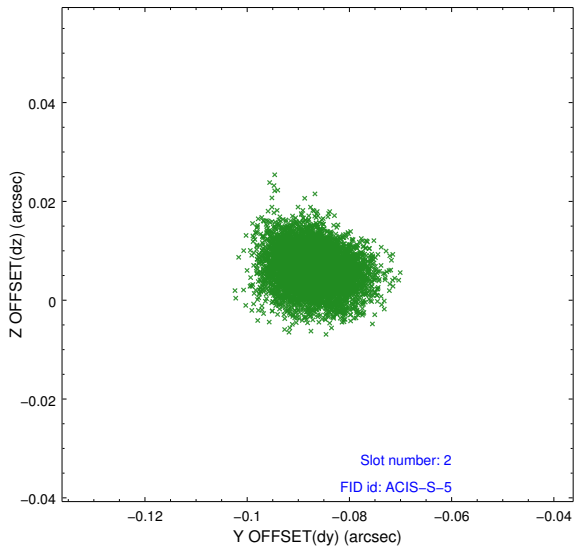
2.5.2 Slot 1



Time (s)



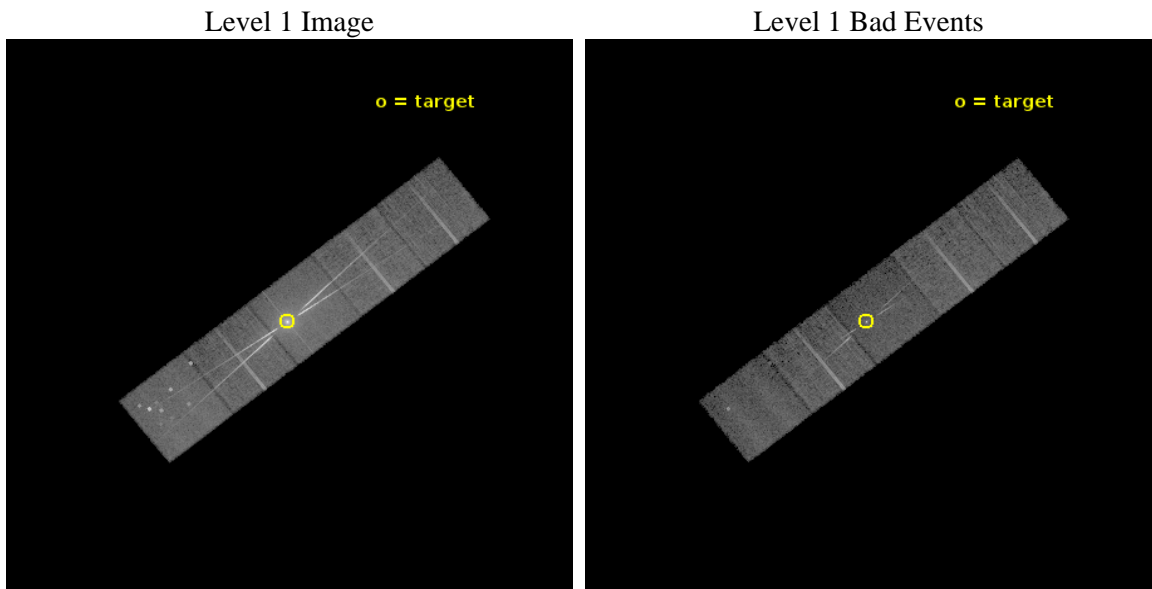
2.5.3 Slot 2



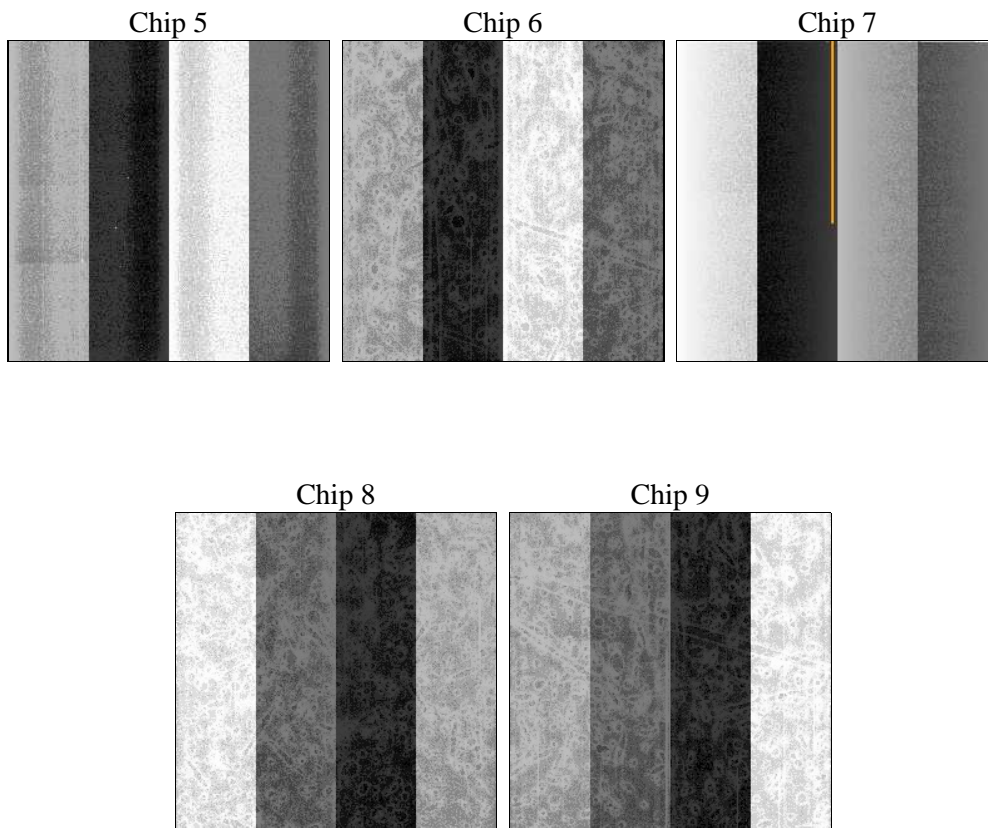
3 OBI

3.1 OBI

3.1.1 Images



3.1.2 Bias



3.1.3 Parameters

obi_num	2	Obi number	sched_exp_time	8759.000000	[s] Scheduled observation exposure time
ascdsver	10	Processing system revision	ontime	8524.8000079393	Sum of GTIs [s]
caldbver	4.5.7	 	ontime5	8524.8000079393	Sum of GTIs [s]
date	2013-07-18T23:27:28	Date and time of file creation	ontime6	8524.8000079393	Sum of GTIs [s]
revision	5	Processing version of data	ontime7	8524.8000079393	Sum of GTIs [s]
			ontime8	8524.8000079393	Sum of GTIs [s]
			ontime9	8524.8000079393	Sum of GTIs [s]
			l1events	559334	Number of level 1 events

3.1.4 Events

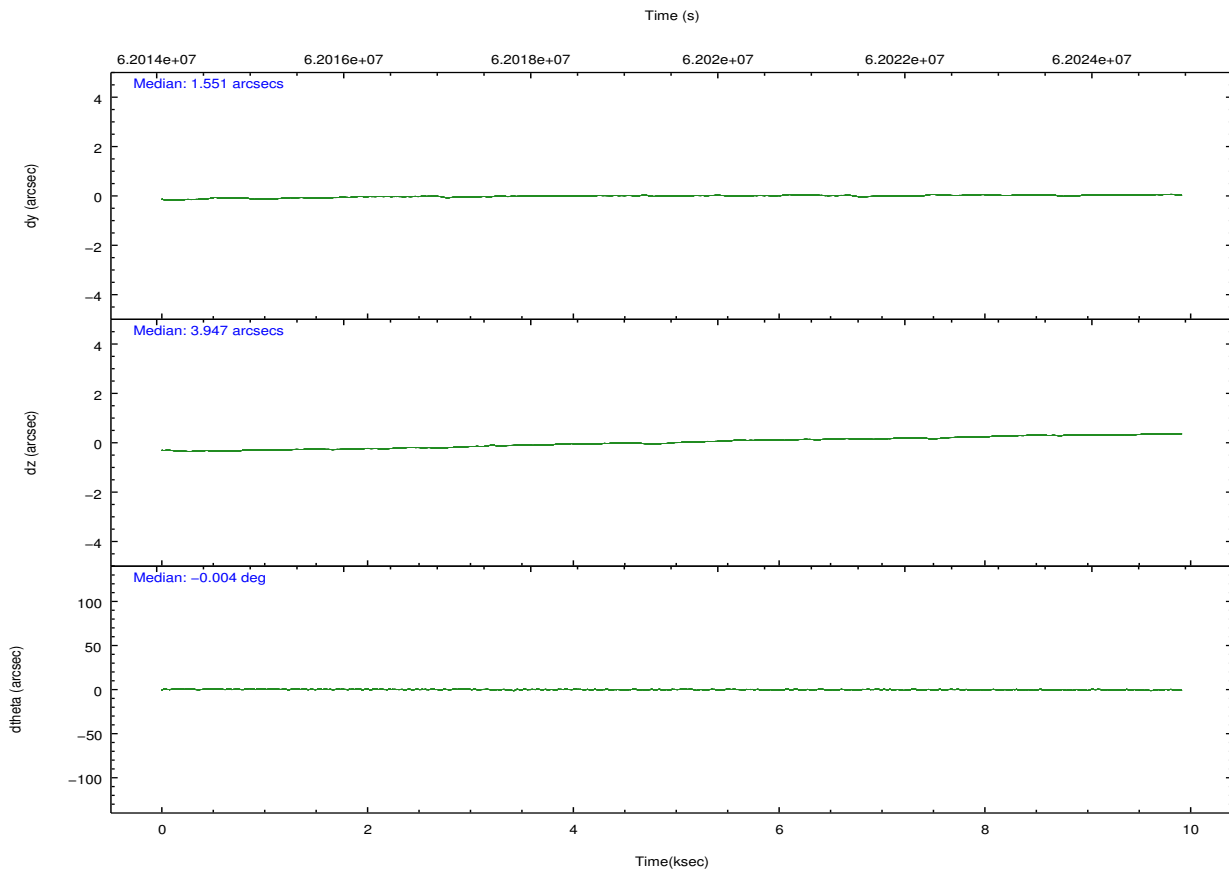
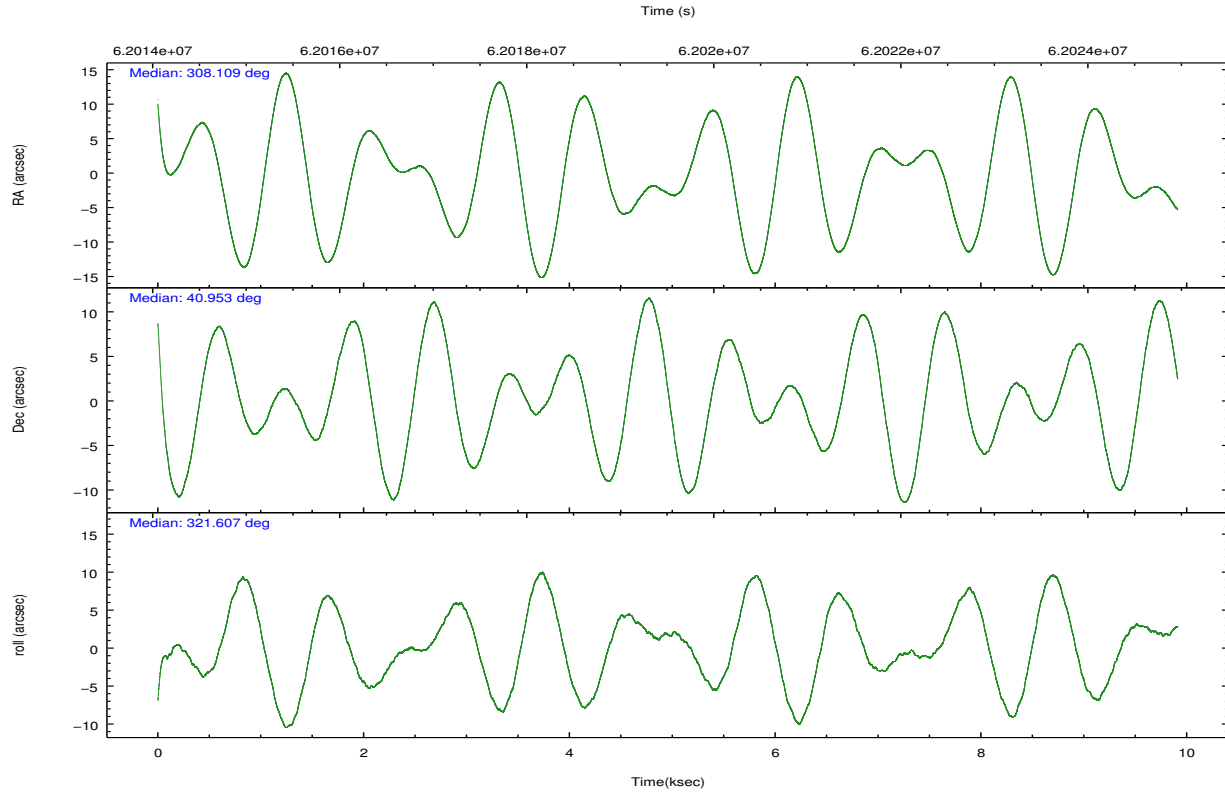
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	99814	118455	169128	97769	74168
rejected events	53259	70434	53111	74767	65474
rejected %	53%	59%	31%	76%	88%

	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	8743	13959	16204	8451	2083
	8%	11%	9%	8%	2%
grade 1 events	661	95	207	42	16
	0%	0%	0%	0%	0%
grade 2 events	10709	24344	29692	7010	3515
	10%	20%	17%	7%	4%
grade 3 events	1585	1300	9812	1494	483
	1%	1%	5%	1%	0%
grade 4 events	1507	1245	9372	1362	464
	1%	1%	5%	1%	0%
grade 5 events	3509	2055	6214	2103	1549
	3%	1%	3%	2%	2%
grade 6 events	24048	7211	51034	4698	2158
	24%	6%	30%	4%	2%
grade 7 events	49052	68246	46593	72609	63900
	49%	57%	27%	74%	86%

3.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-56789	ACIS-56789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	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	308.073305	308.1093899985721	Subarray requested	NONE	NONE
[deg] Pointing Dec	40.957488	40.95341416196652	Alternating exposures requested	N	N
[deg] Pointing Roll	321.481014	321.6139867183393	[s] Primary exposure time	0.000000	3.2
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	62015051.184000	62013968.784553			
Observation start date	1999-12-19T18:23:07	1999-12-19T18:06:08			
[s] Observation end time (MET)	62023810.184000	62025163.322458			
Observation end date	1999-12-19T20:49:06	1999-12-19T21:12:43			
Read mode	TIMED	TIMED			

3.3 Aspect

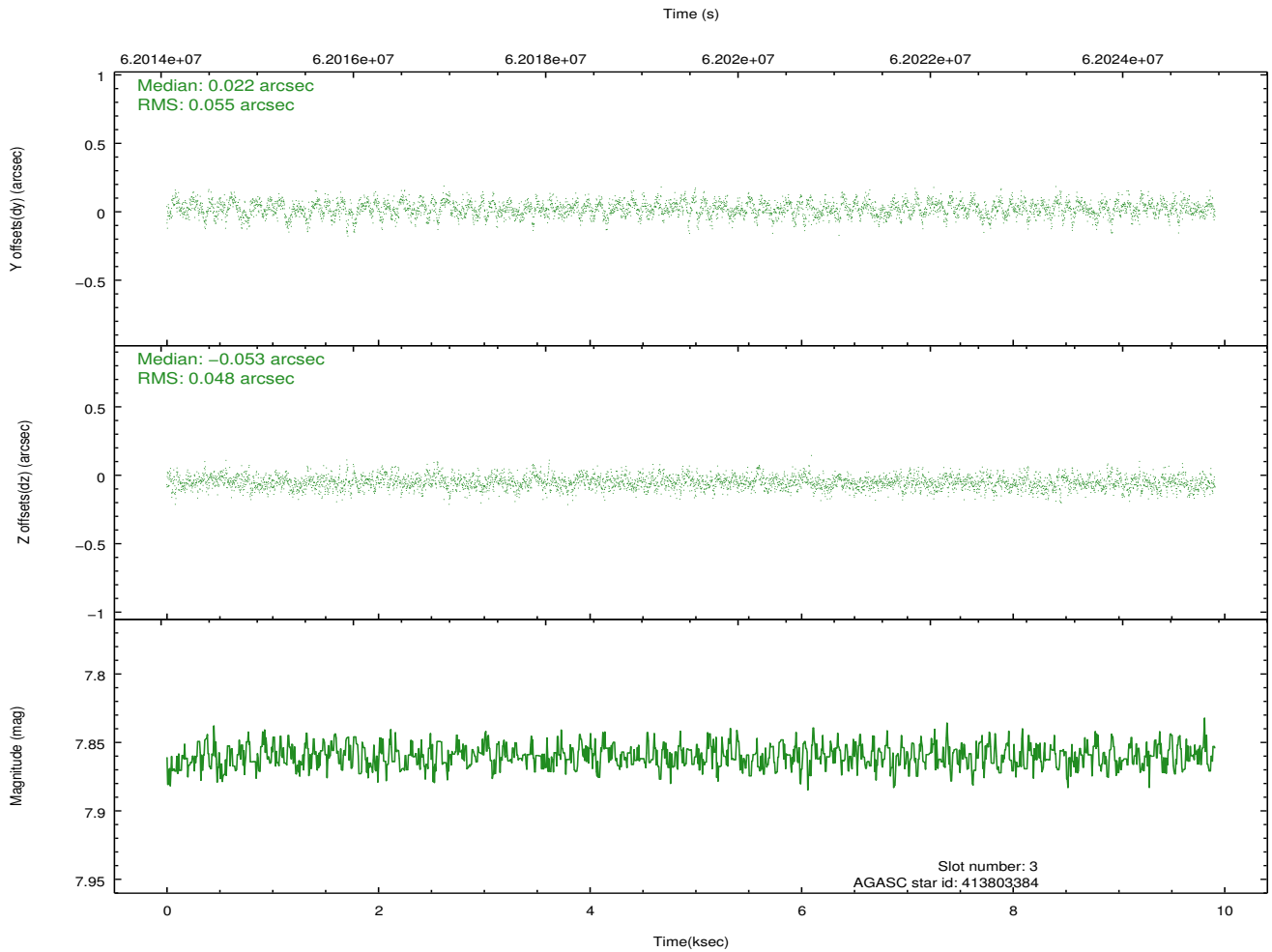
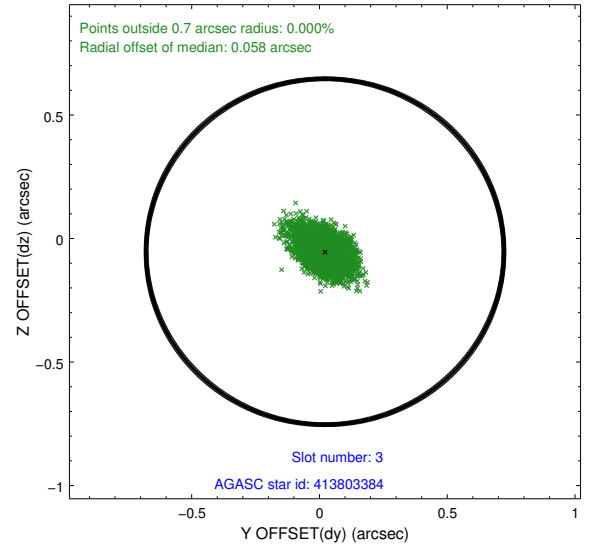
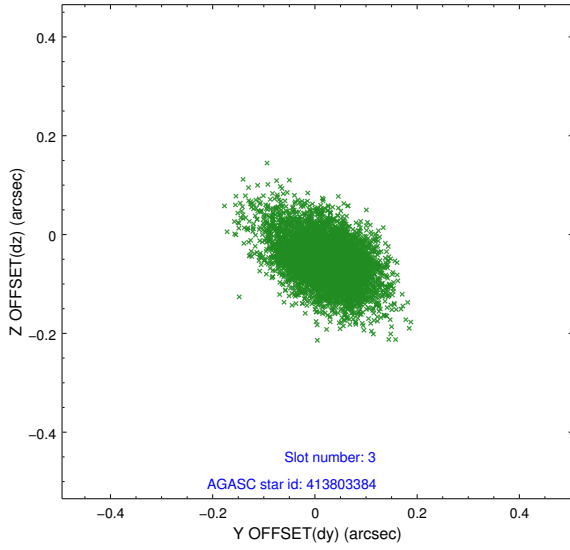


Slot Statistics

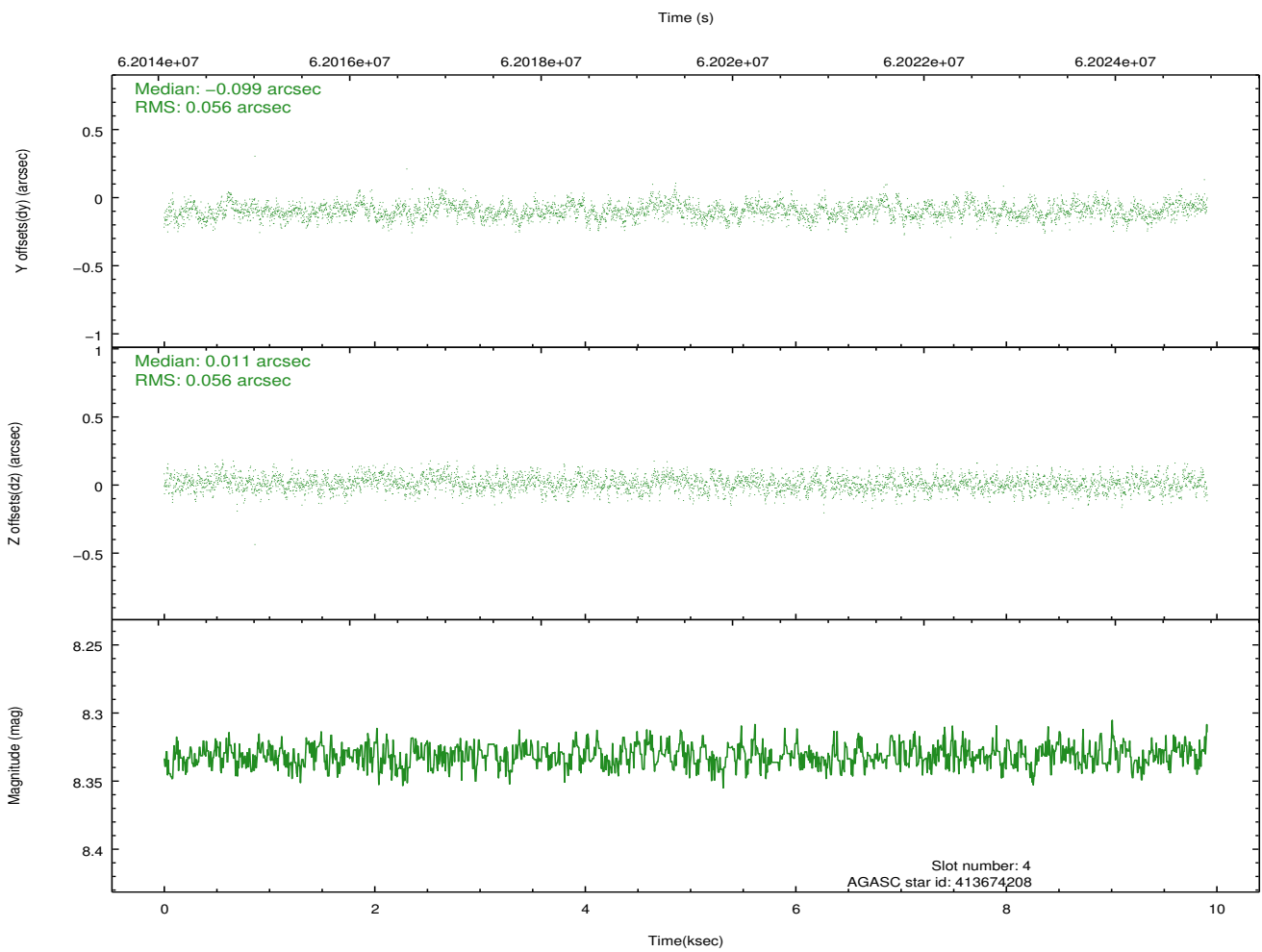
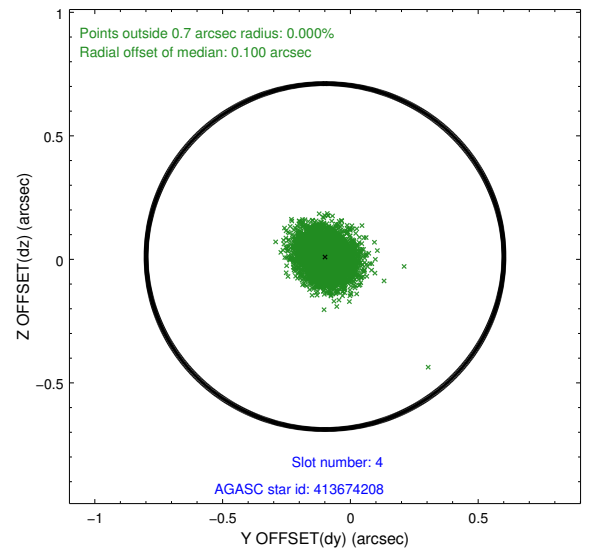
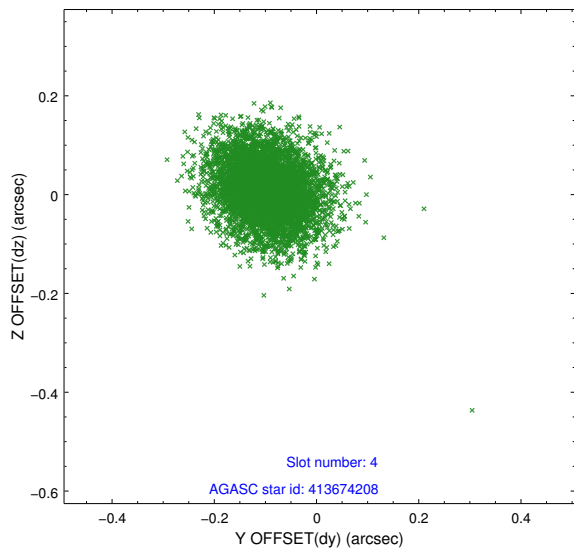
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.12	6714	0.002	0.005	0.007	0.012	0.000000	0.000000	-752.15	-1723.04
1	FID	ACIS-S-4	7.21	6716	0.054	-0.002	0.006	0.011	0.000000	0.000000	2161.18	185.28
2	FID	ACIS-S-5	7.24	6716	-0.087	0.006	0.007	0.011	0.000000	0.000000	-1804.92	179.15
3	GUIDE	413803288	7.00	6716	-0.086	-0.021	0.050	0.080	307.629978	40.506899	1719.66	-1208.55
4	GUIDE	413800960	9.18	6713	0.107	0.120	0.076	0.124	308.602491	40.622889	1240.09	1440.54
5	GUIDE	414323760	9.21	6712	-0.076	0.032	0.084	0.133	308.535475	41.616504	-2330.56	1156.48
6	GUIDE	414326208	9.92	6711	-0.027	-0.016	0.115	0.179	308.548887	41.510502	-1950.60	1203.34
7	GUIDE	413679760	9.75	6704	0.076	-0.114	0.109	0.180	307.206437	40.648998	1226.10	-2374.38

3.4 Star Slots

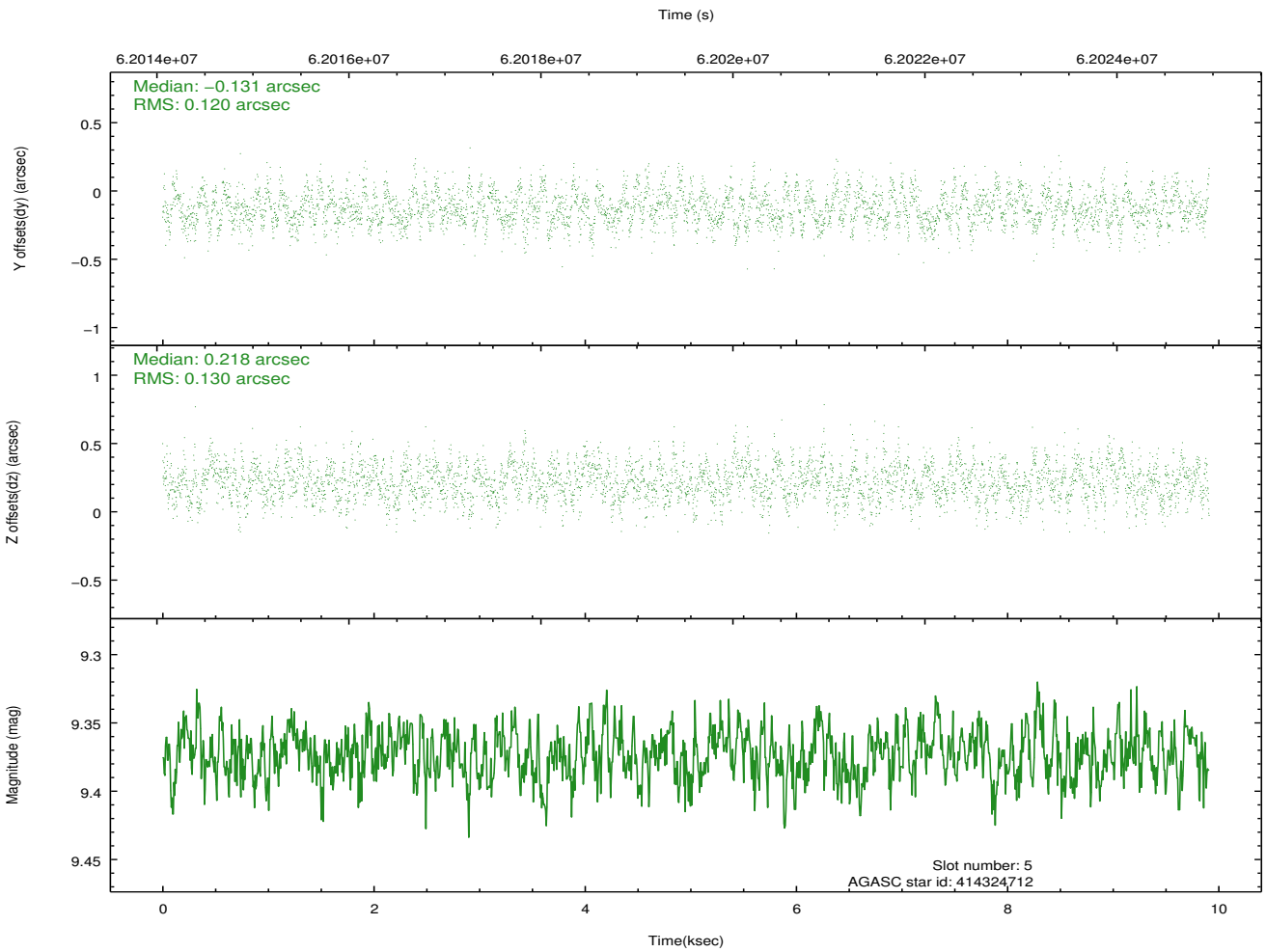
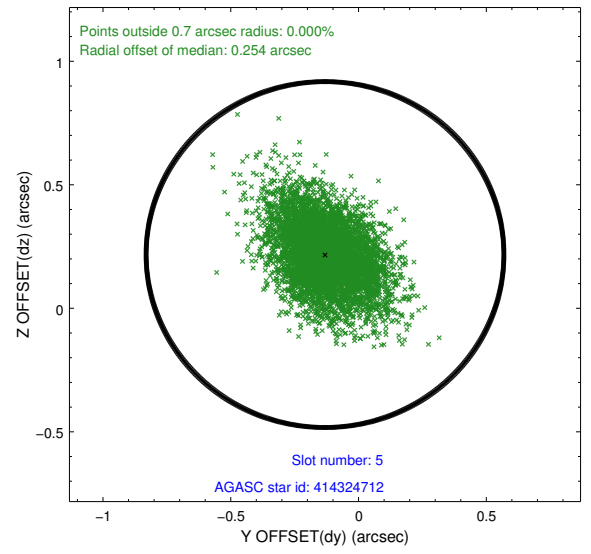
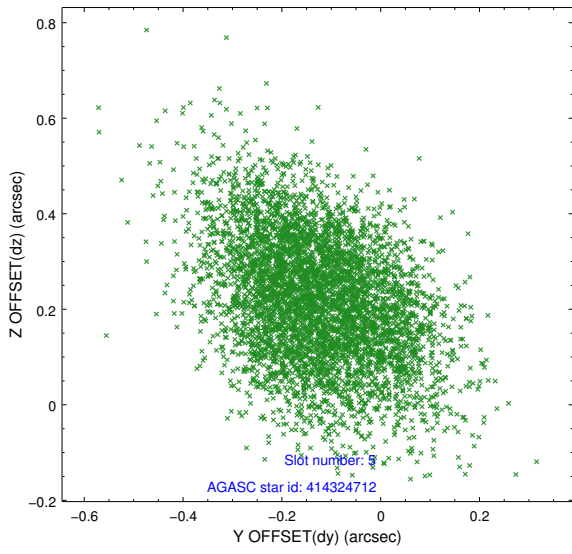
3.4.1 Slot 3



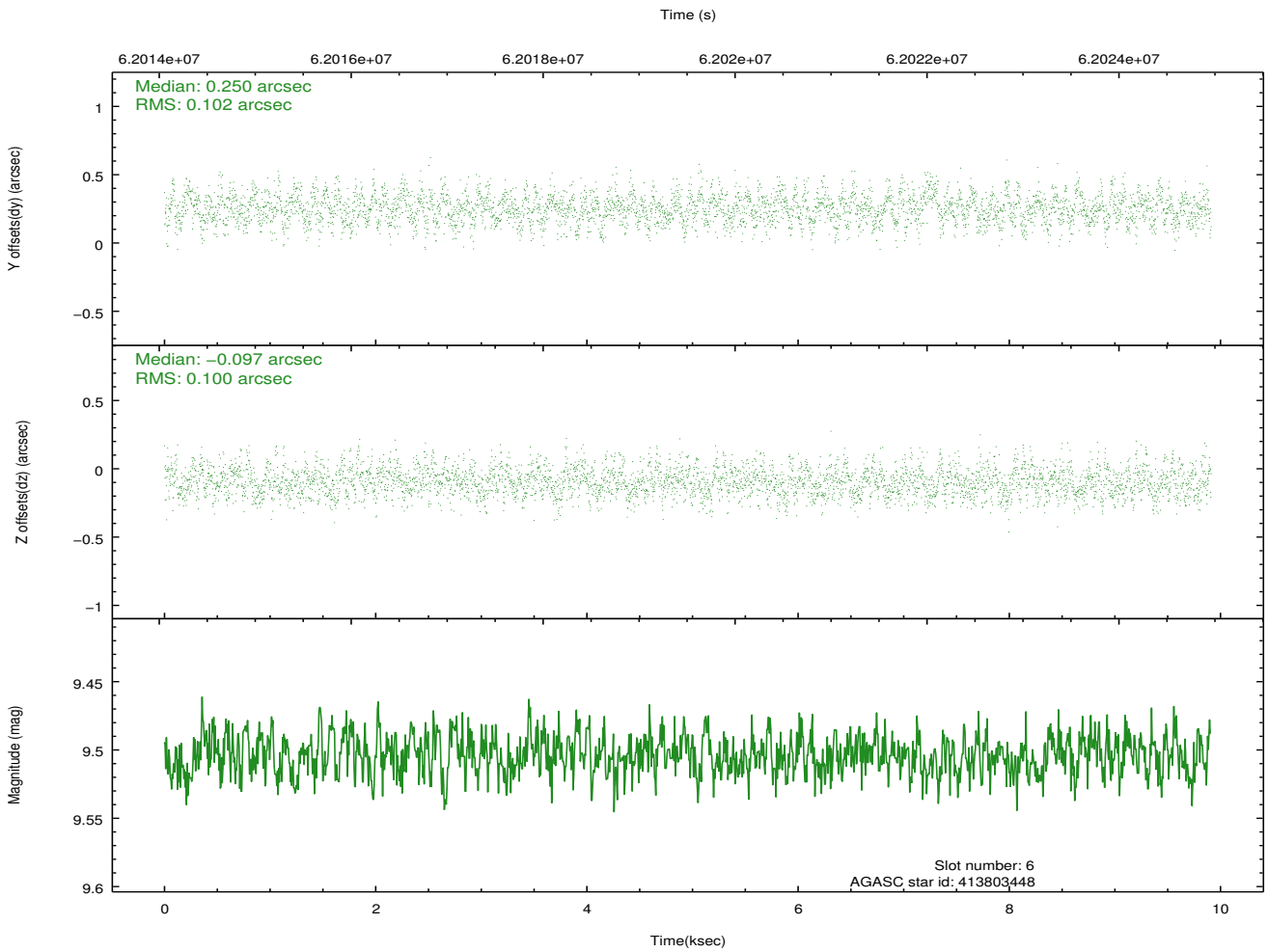
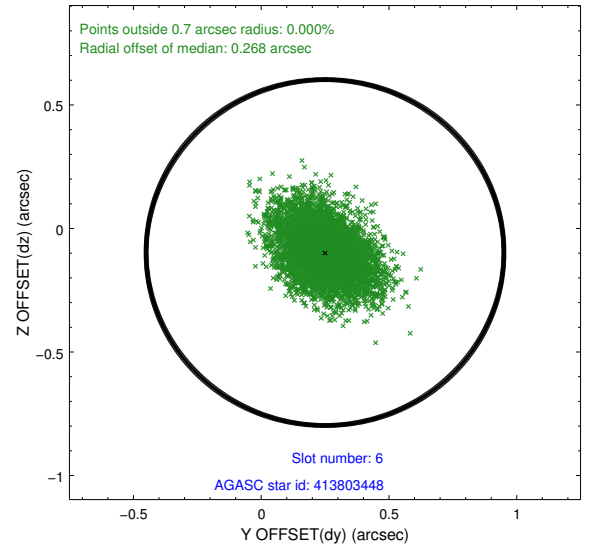
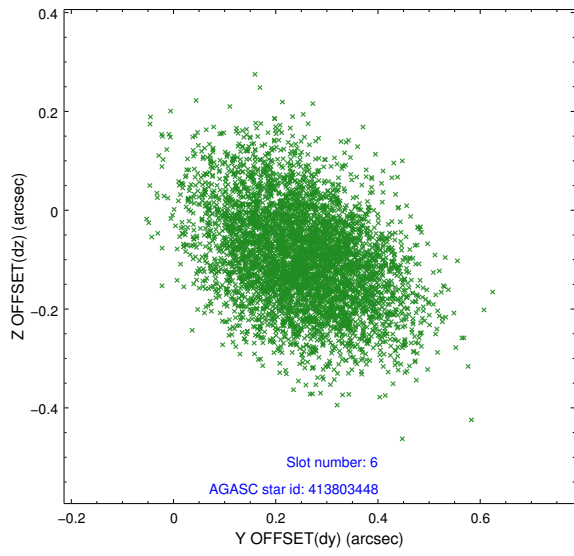
3.4.2 Slot 4



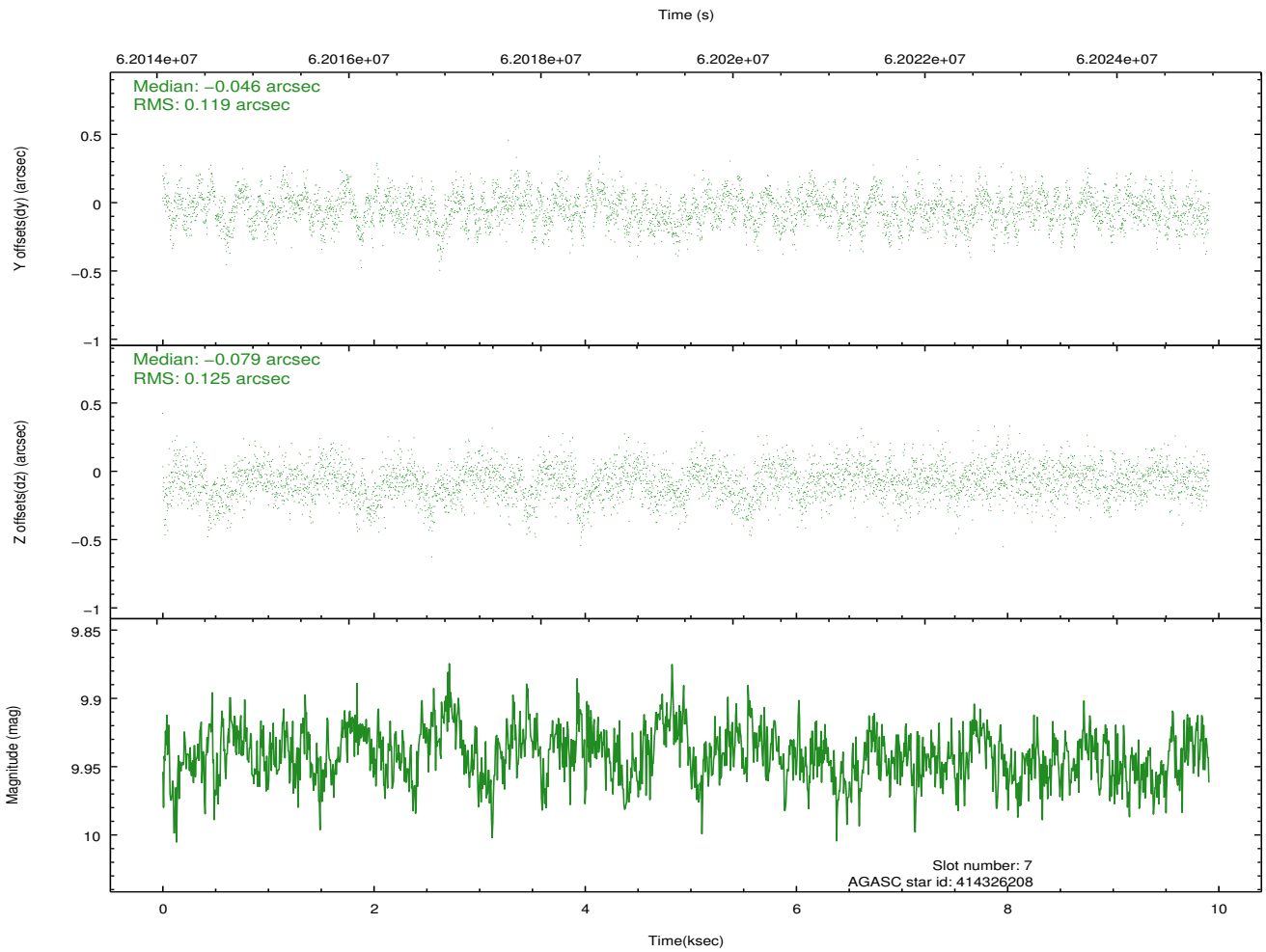
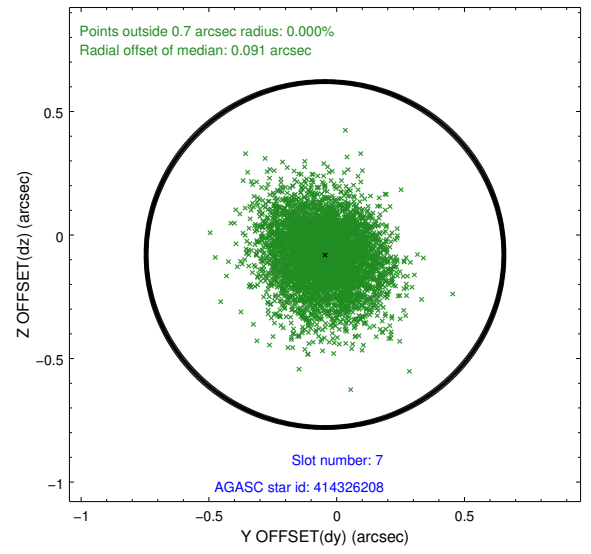
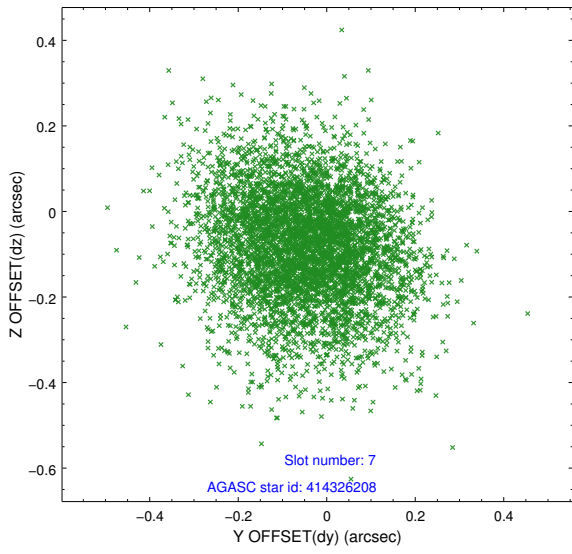
3.4.3 Slot 5



3.4.4 Slot 6

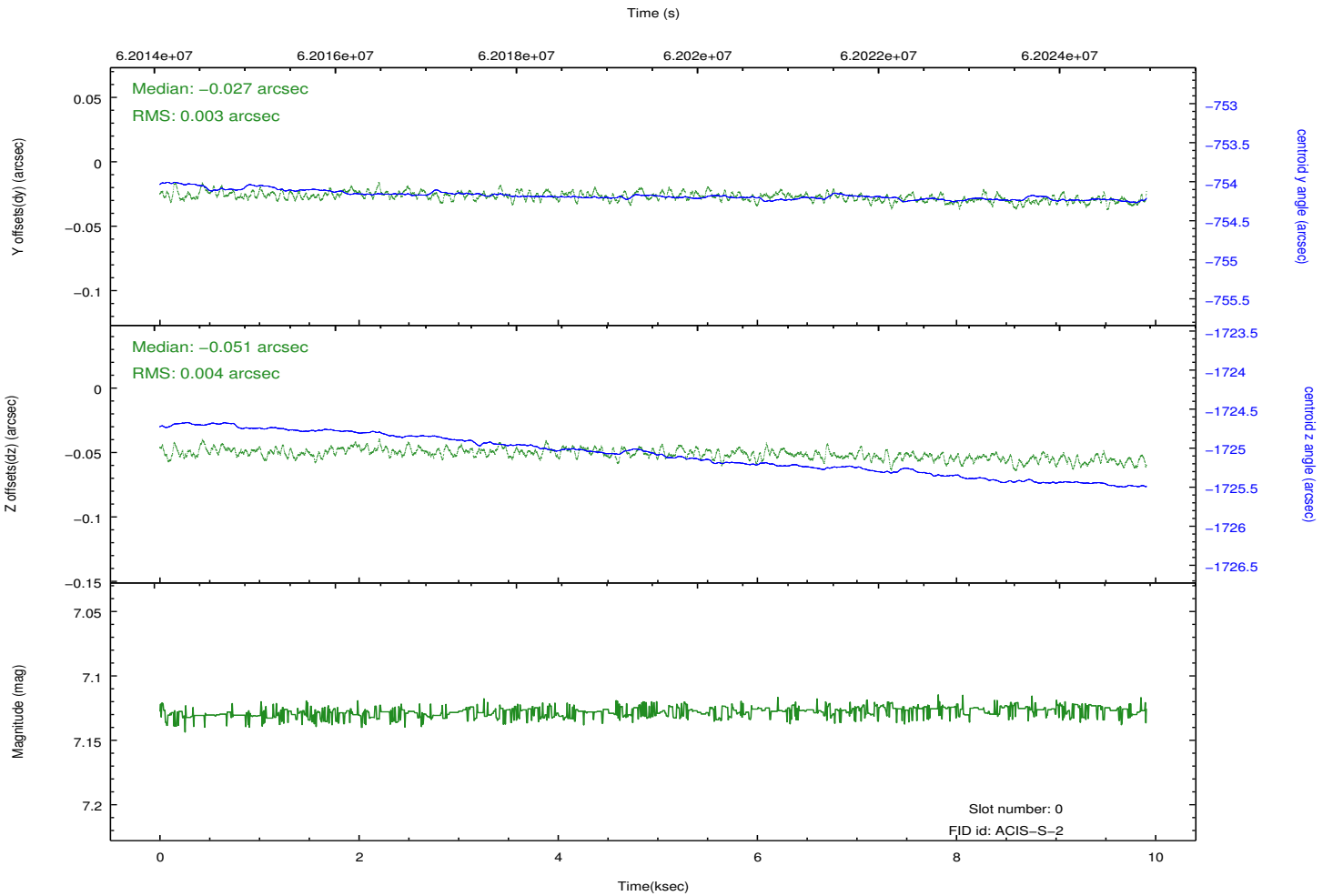
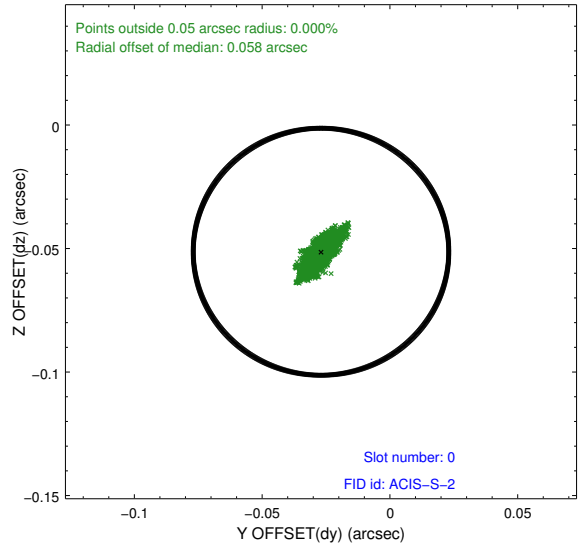
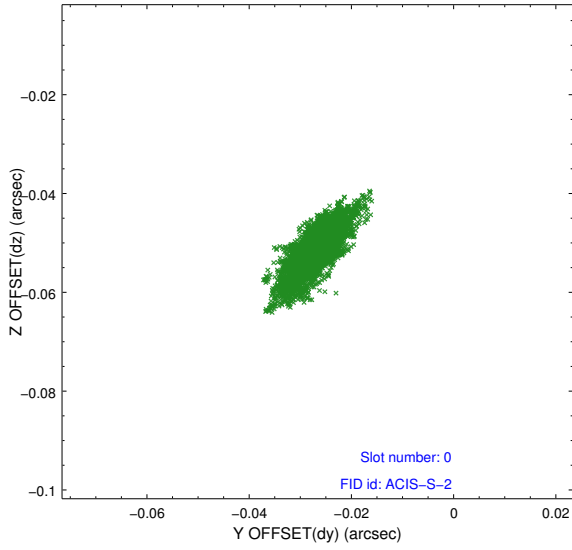


3.4.5 Slot 7

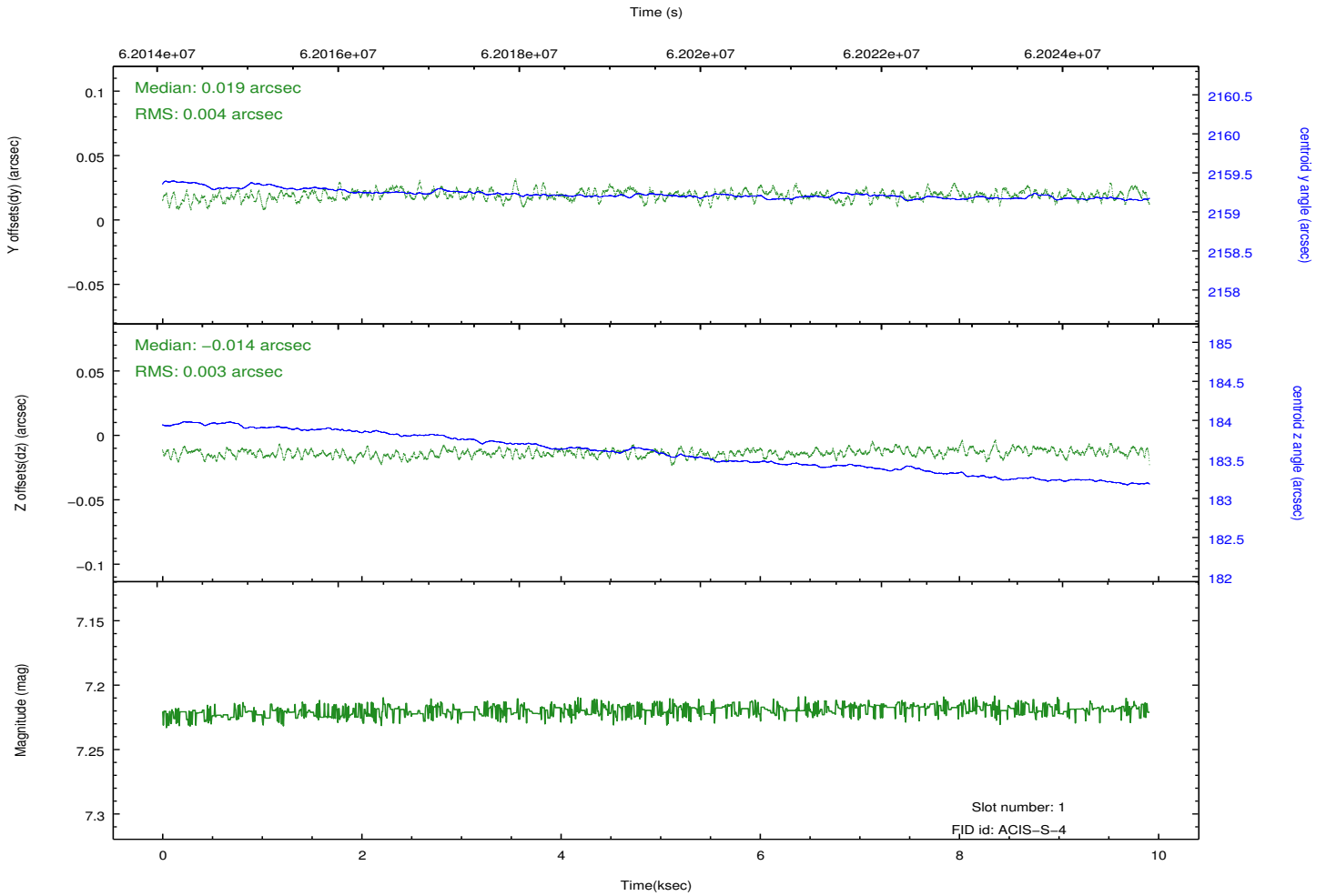
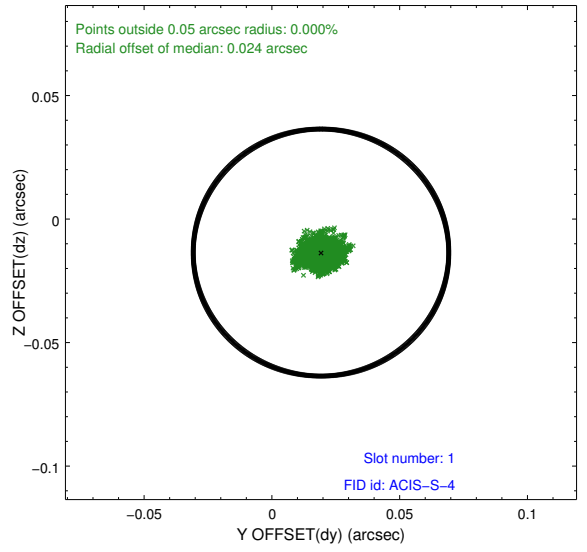
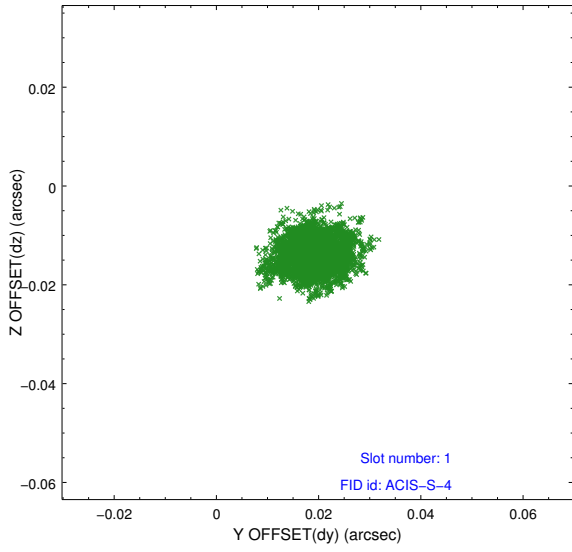


3.5 FID Slots

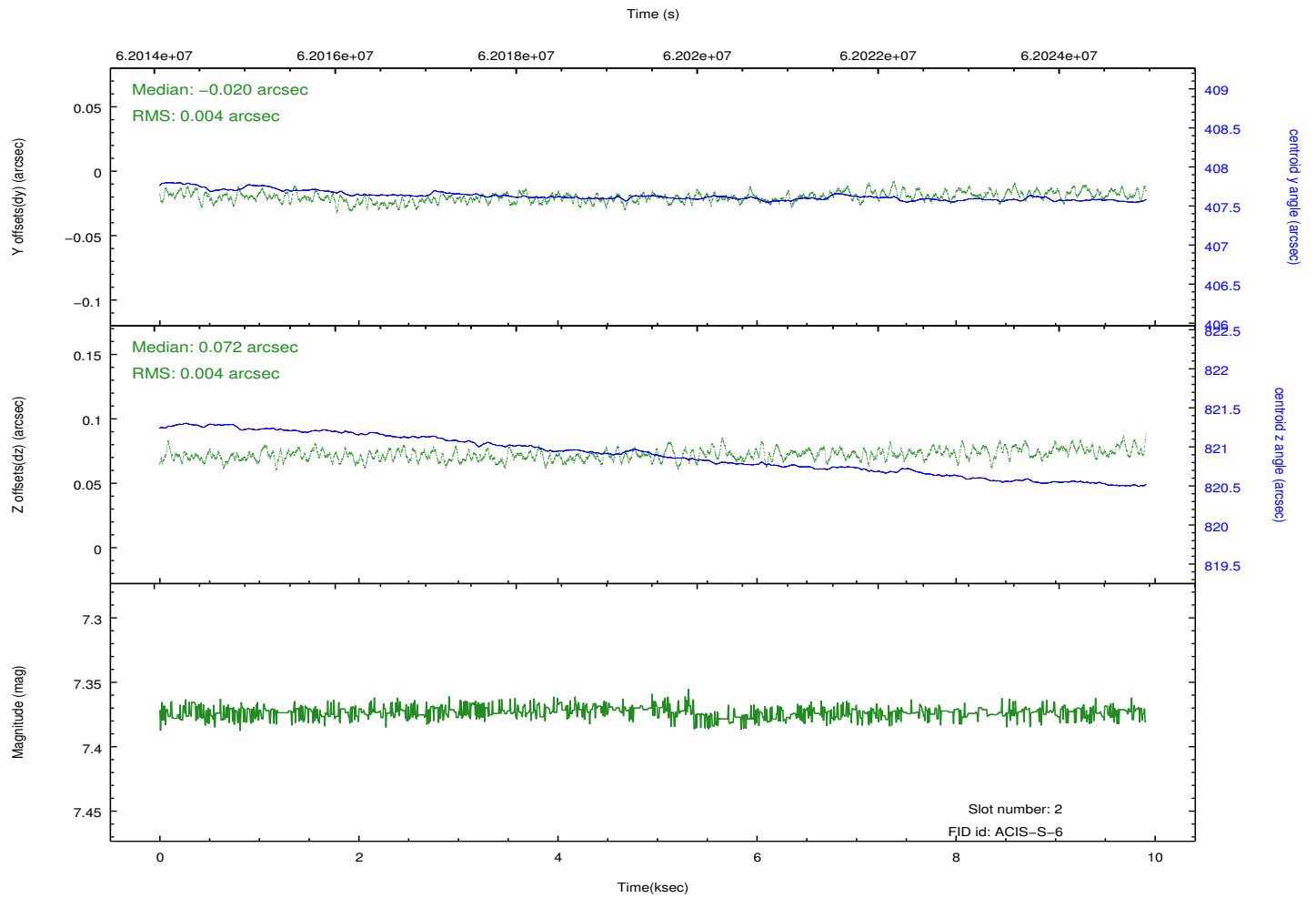
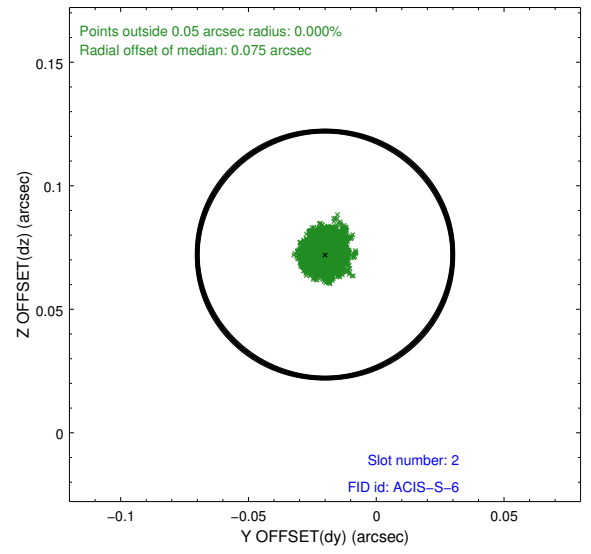
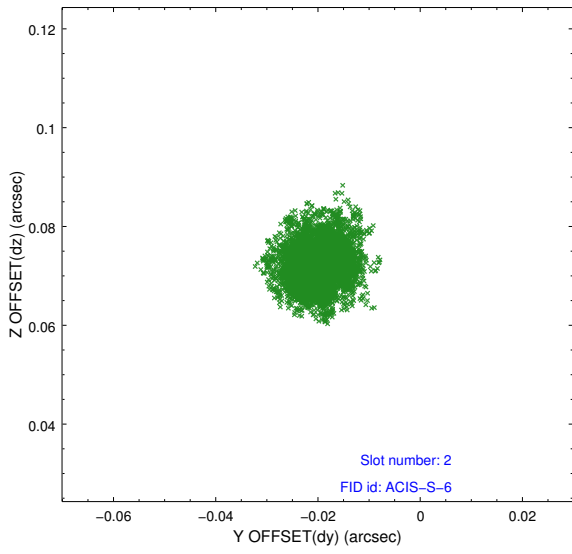
3.5.1 Slot 0



3.5.2 Slot 1

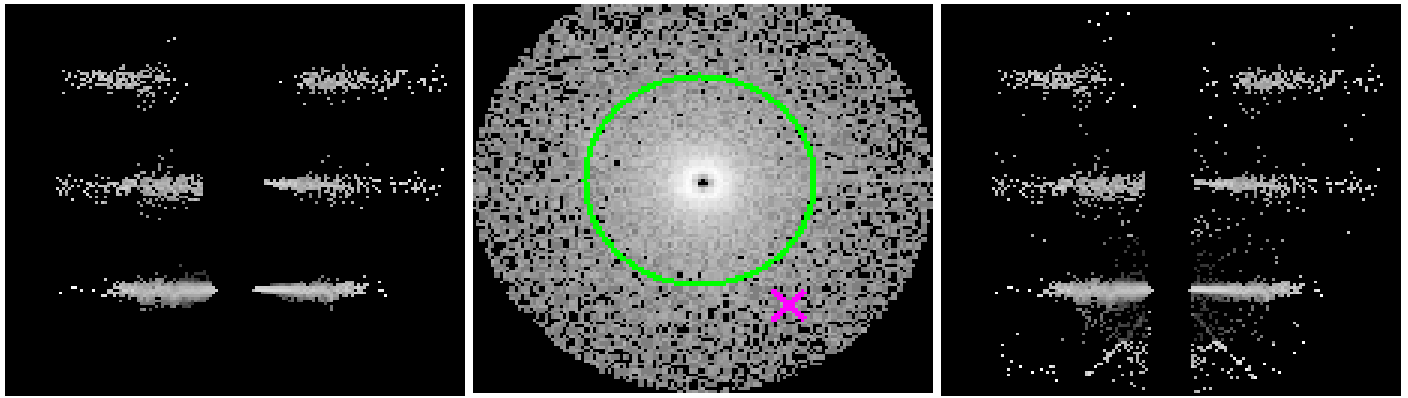


3.5.3 Slot 2



4 Gratings

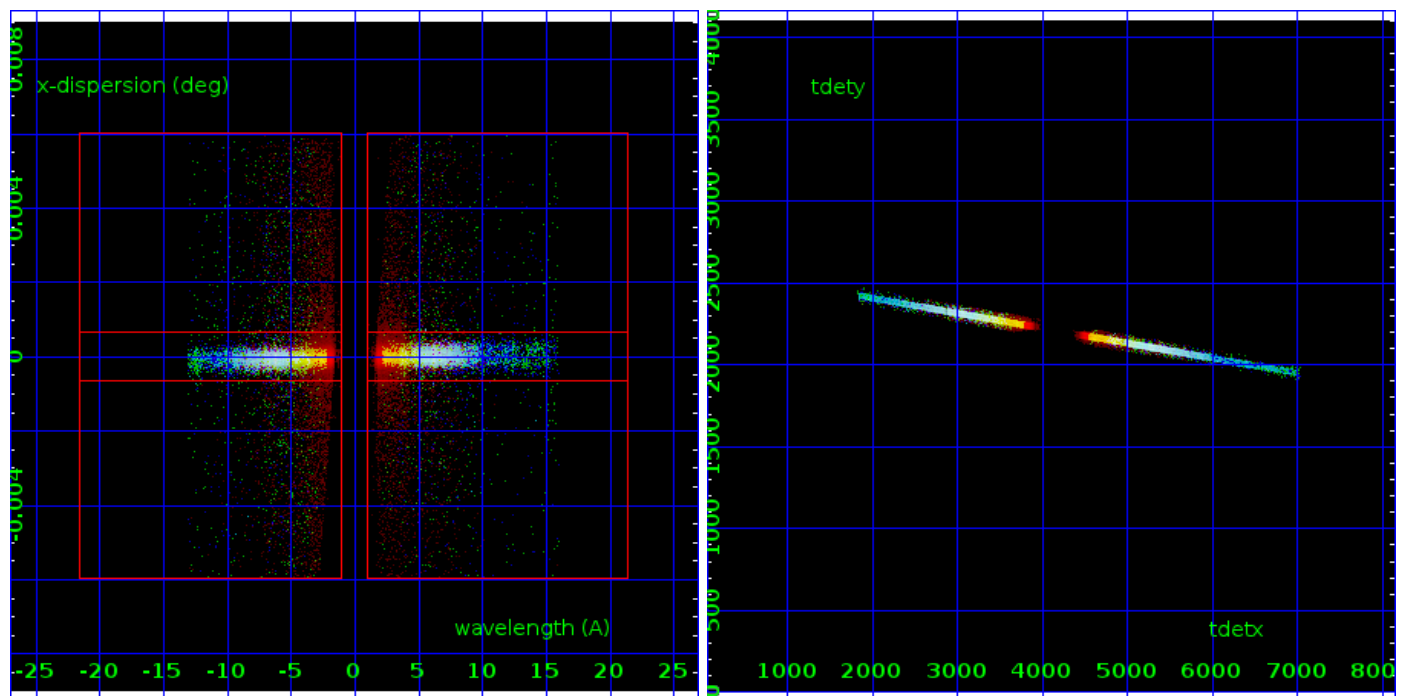
4.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

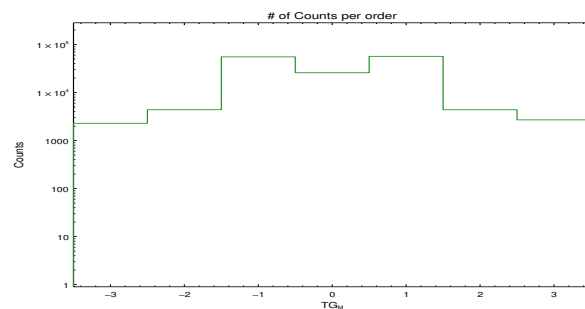
HEG Order Sort ALL

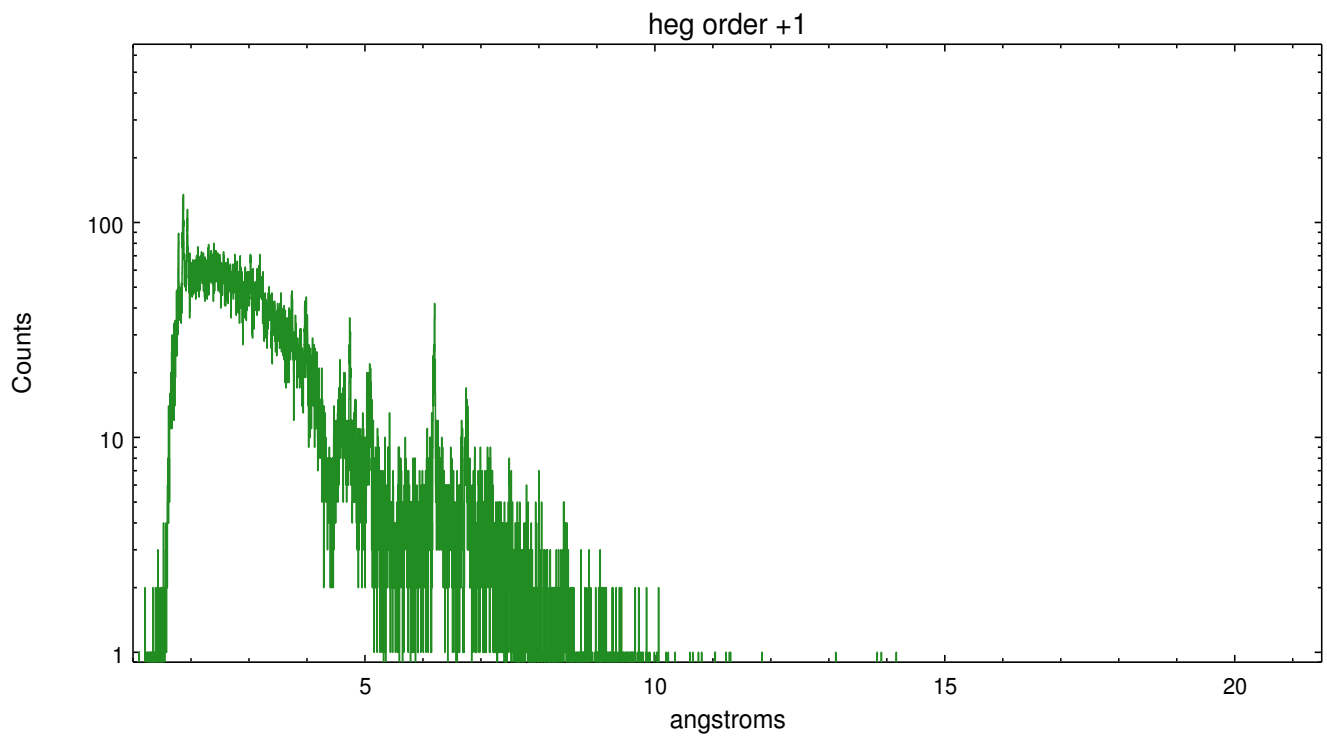
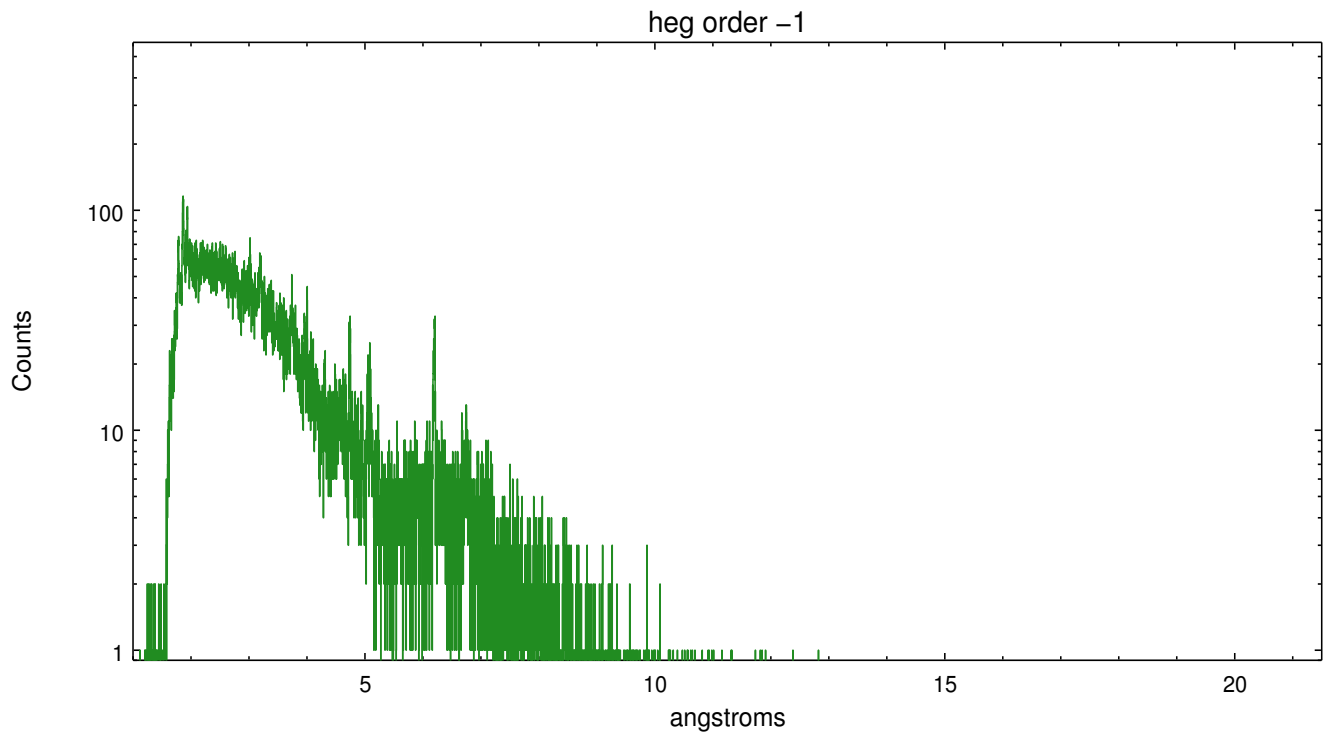


Spot Image HEG

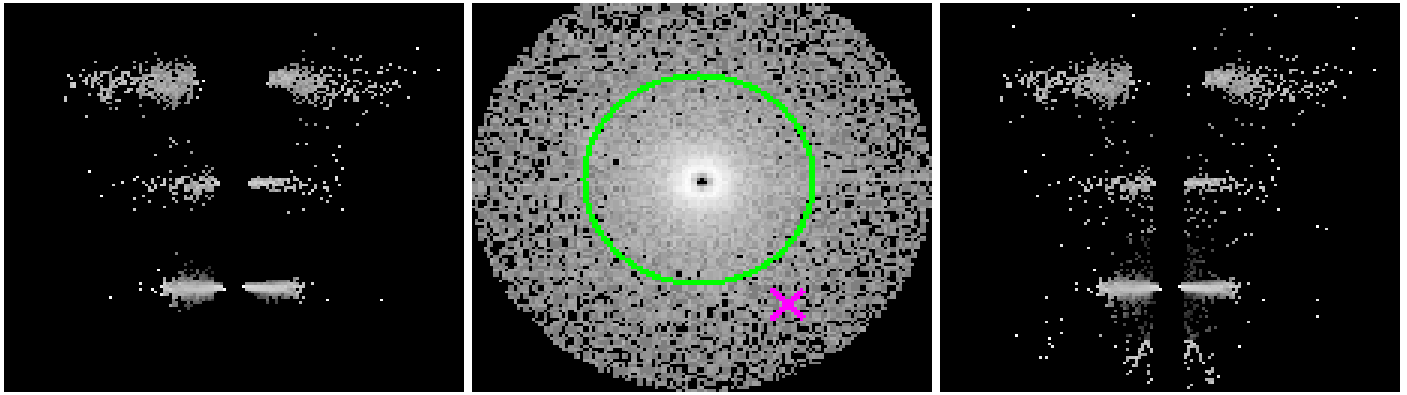
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2288	4387	55353	25829	56727	4379	2696





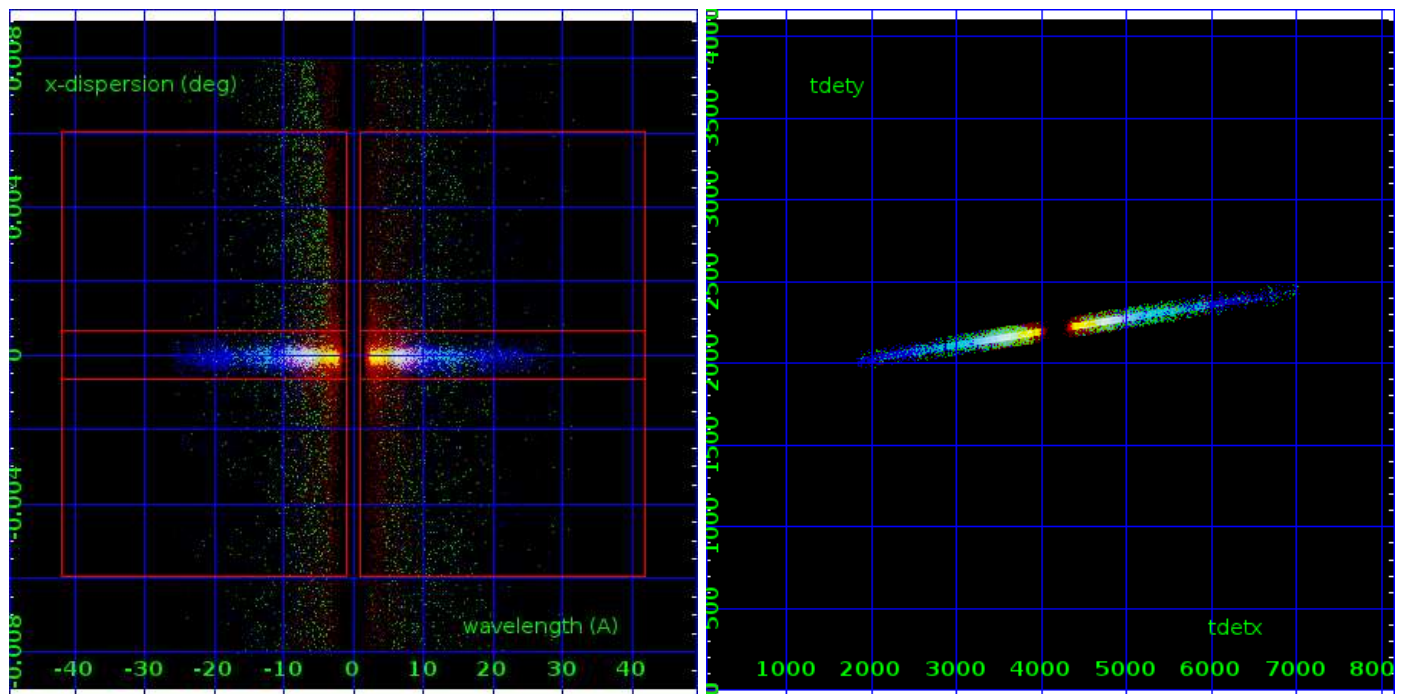
4.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

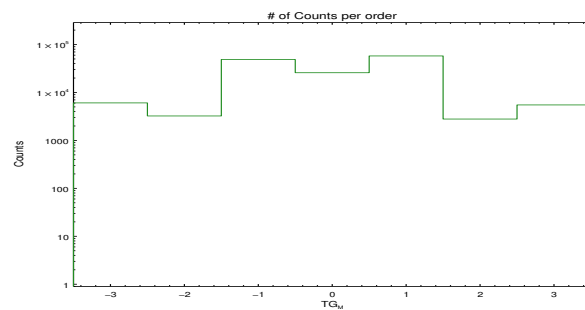
MEG Order Sort ALL



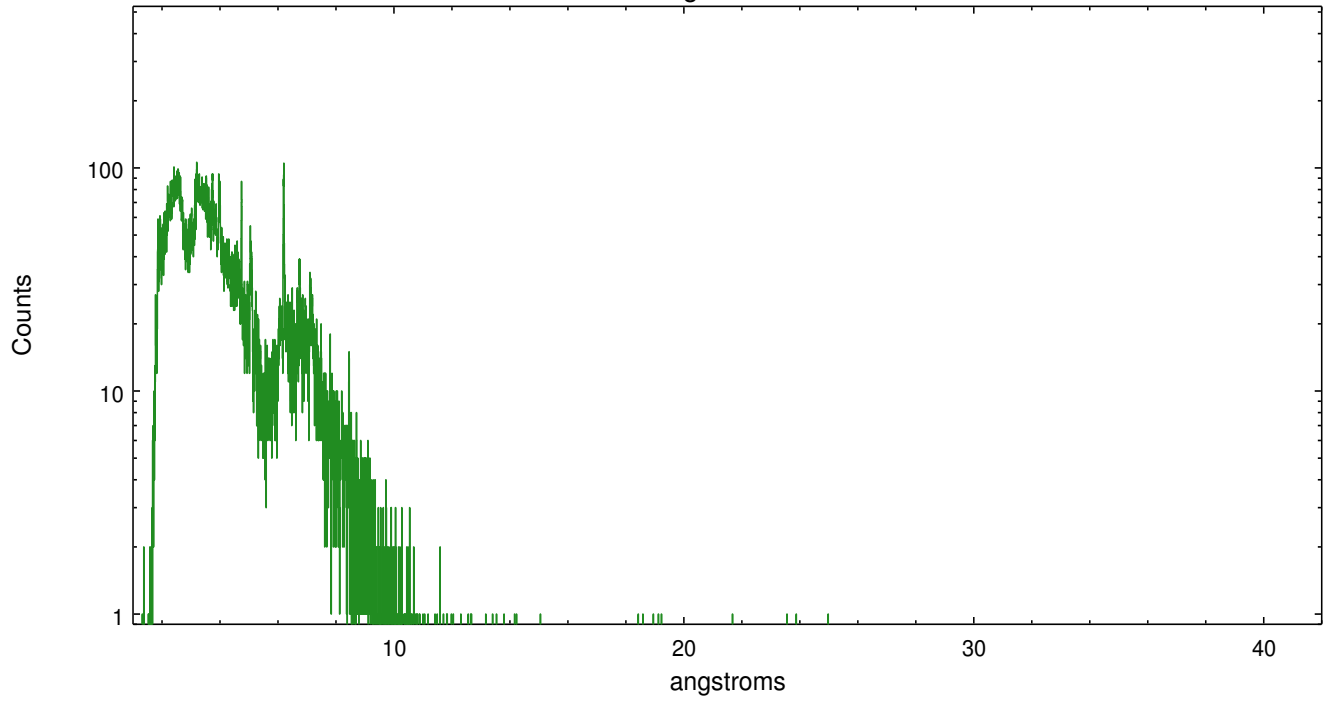
Spot Image MEG

Full Detector MEG

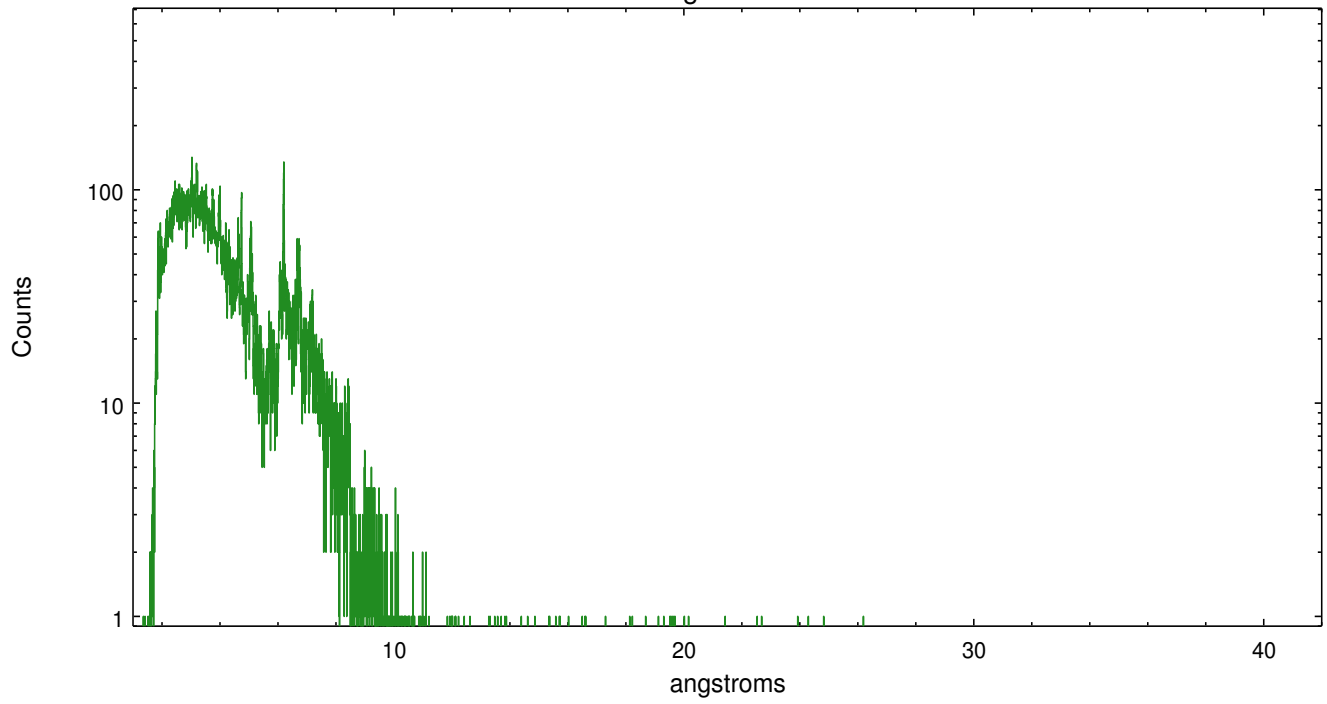
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	6063	3237	48720	25829	57827	2790	5499



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.07.23
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.803

A.2 Comments

WARNING: This is a multi-obi gratings observation which will require special handling by the investigator. While the Level 2 data products for each of the two obi's have been combined in this processing, this is not the best method for pursuing analysis. Each obi should be treated as a separate observation so that the responses are appropriate for each observation. TGCat intends to provide these separate products in the near future.

===

For the data products associated with this current processing: ===(1.) roll_nom will be the same for both obi's. If analysis software is used on these products that uses roll_nom in calculations, the investigator needs to modify the obi=2 roll_nom value either manually or with a header correction, ===(2.) Ideally, each obi should be considered a separate observation and processed separately from Level 1.5. The responses will be different for the 2 obi's, and additionally (and more importantly) the object was in different states for these 2 obi's. The dispersed spectral data should only be combined after extracting the spectra individually from level 1 and deriving individual arfs and rmfs. If the 2 obi's are treated as separate observations and run through Level 2 in CIAO separately, (1) above does not apply. ===(3.) Both obis are piled up in the zeroth order and have significant readout streaks. The zeroth order for obi=0 was found successfully with the tool tg_findzo, which calculates the point of intersection of the readout streak and the meg arm. However, because tg_findzo uses the keyword roll_nom, it failed to find the correct zeroth order for obi=2. Nevertheless, if one uses the same coordinates for the zeroth order as obi=0, the zeroth order position for obi=2 is within the tolerance. ===(4.) The evt2 and pha2 were merged over obis in this processing. Generation of responses, necessary for analysis, will require use of the individual OBI files. OBI 0 and OBI 2 should be processed with zeroth order sky coordinates of (x=4073.015, y=4131.956) manually inserted in the processing.

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Note: Spectral arms are also piled up at the hard X-ray region.

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In this version of the processing, the Special Processing Comment in the gratings L1.5 log gives the incorrect zeroth order coordinates. The coordinates stated in this V&V report are accurate for this processing.

