

V&V Reference Report

L2 ASCDS Version : 10.4

Observation 17385 - L2 Version 1
Chandra X-Ray Center

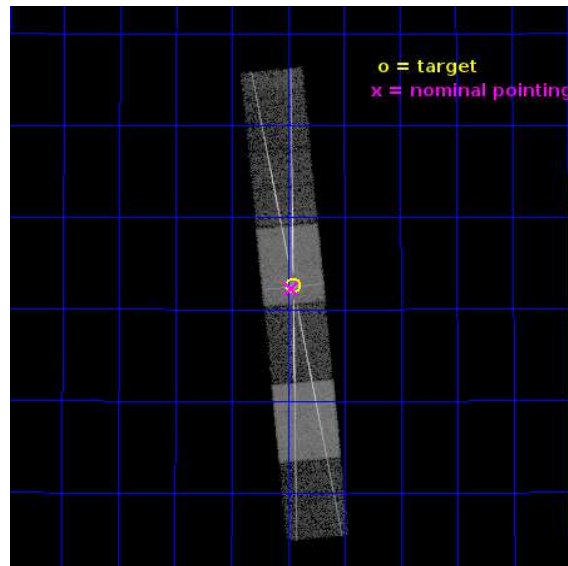
L2 Processing Date : Jul 1 2015

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1 Front

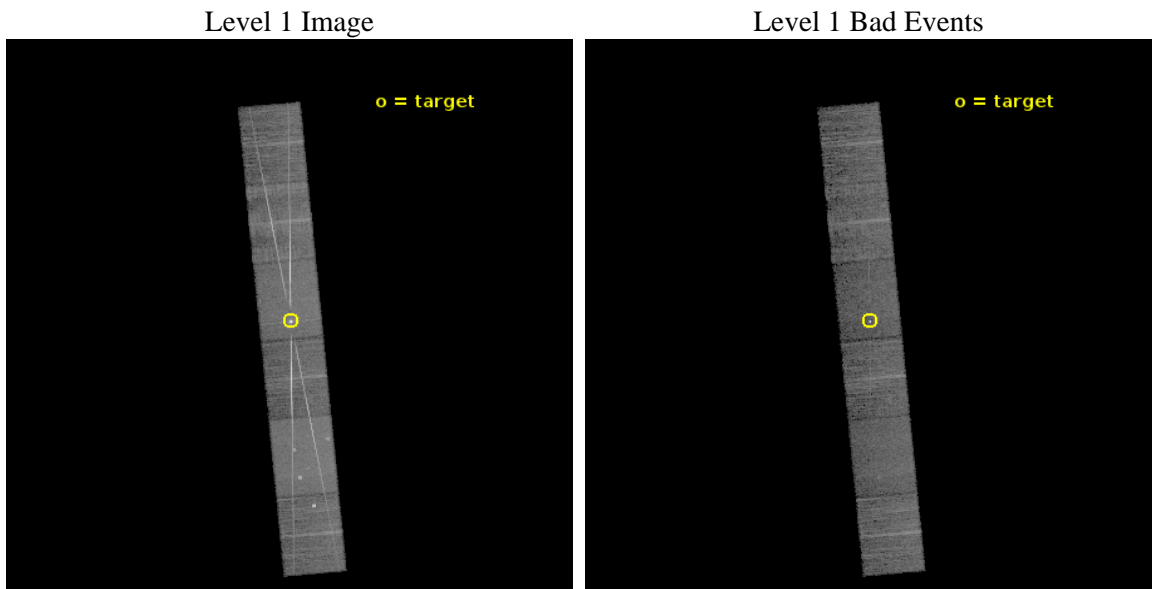
seq_num	790276	Sequence number
obs_id	17385	Observation id
title	AO-16 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11715457432	Nominal RA [deg]
dec_nom	38.204232752748	Nominal Dec [deg]
roll_nom	264.56306783295	Nominal Roll [deg]
revision	1	Processing version of data
ontime	15032.5	Sum of GTIs [s]
livetime	14789.71208639	Livetime [s]
ontime4	15032.5	Sum of GTIs [s]
ontime5	15032.473128676	Sum of GTIs [s]
ontime6	15032.432088733	Sum of GTIs [s]
ontime7	15032.5	Sum of GTIs [s]
ontime8	15032.39104867	Sum of GTIs [s]
ontime9	15032.350008726	Sum of GTIs [s]
l2events	212915	Number of level 2 events



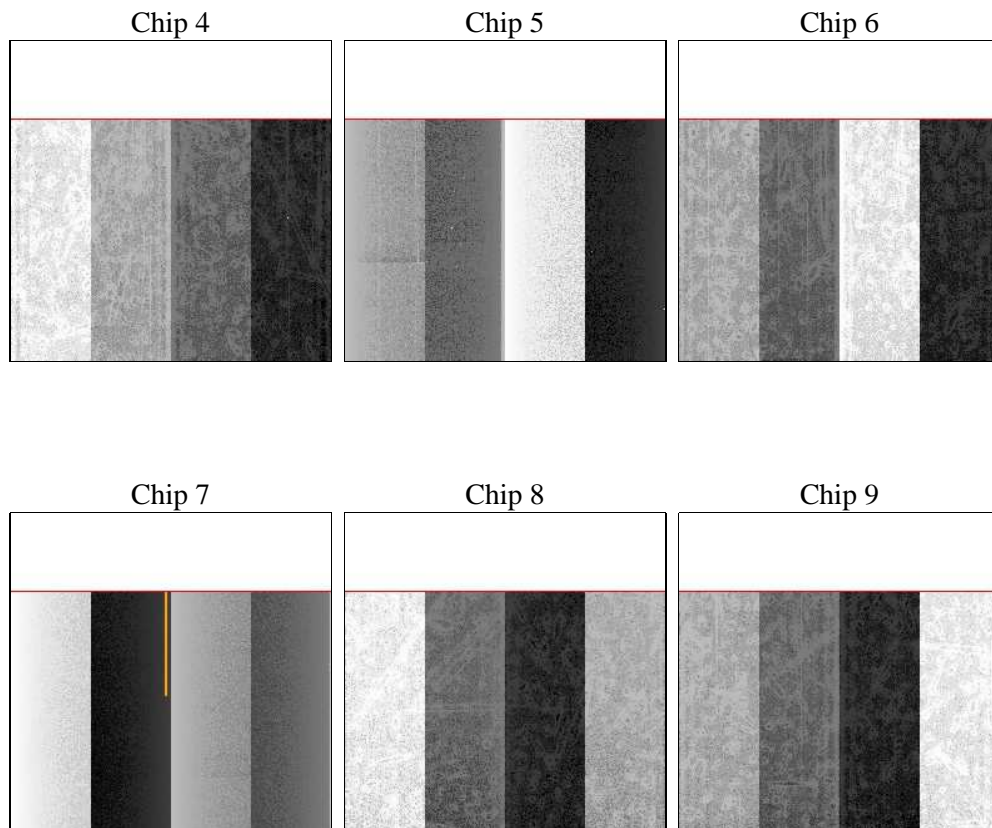
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ascdsver	10.4	Processing system revision	ontime	15032.5	Sum of GTIs [s]
caldsver	4.6.7	 	ontime4	15032.5	Sum of GTIs [s]
date	2015-07-01T15:26:27	Date and time of file creation	ontime5	15032.473128676	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	15032.432088733	Sum of GTIs [s]
			ontime7	15032.5	Sum of GTIs [s]
			ontime8	15032.39104867	Sum of GTIs [s]
			ontime9	15032.350008726	Sum of GTIs [s]
			l1events	550684	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			ra_pos	(4114.52, 4120.14)	Grade sky pixel position

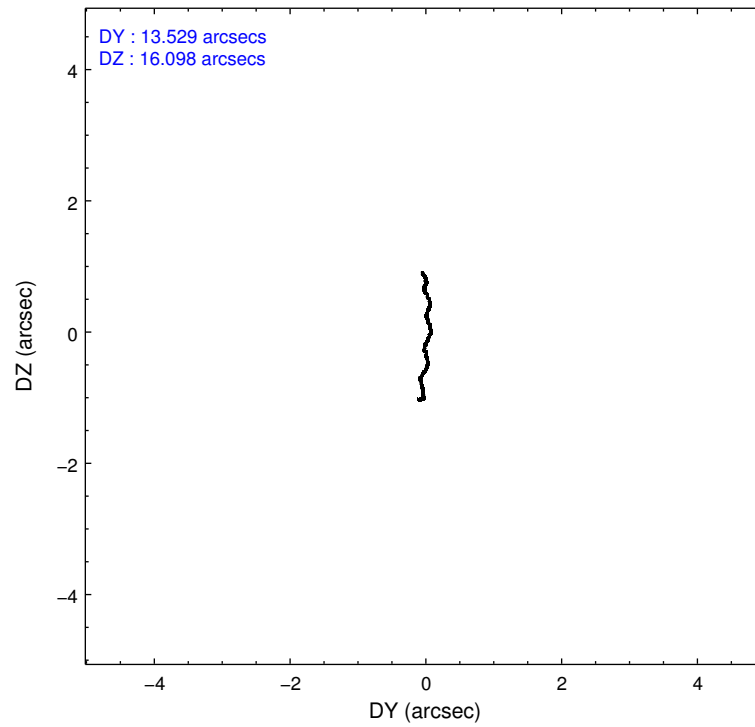
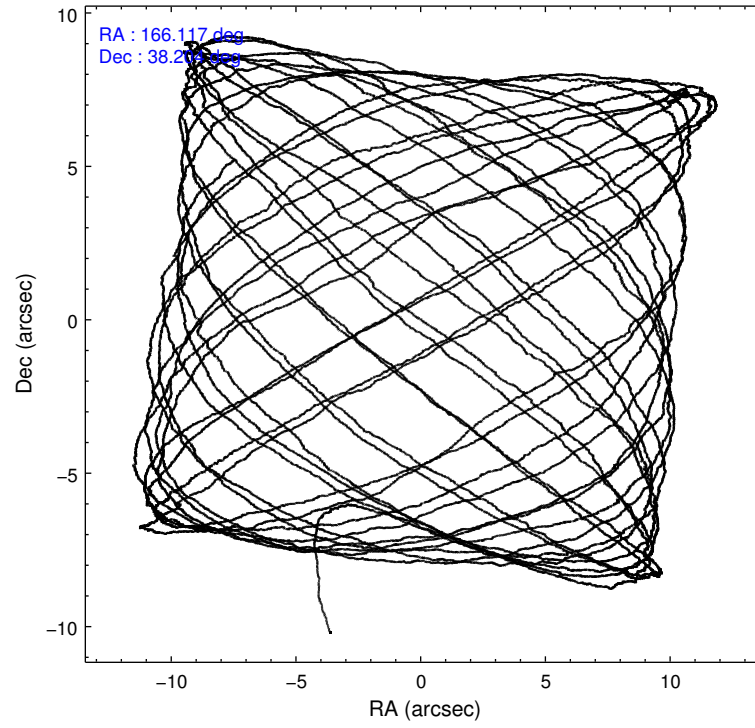
2.1.4 Events

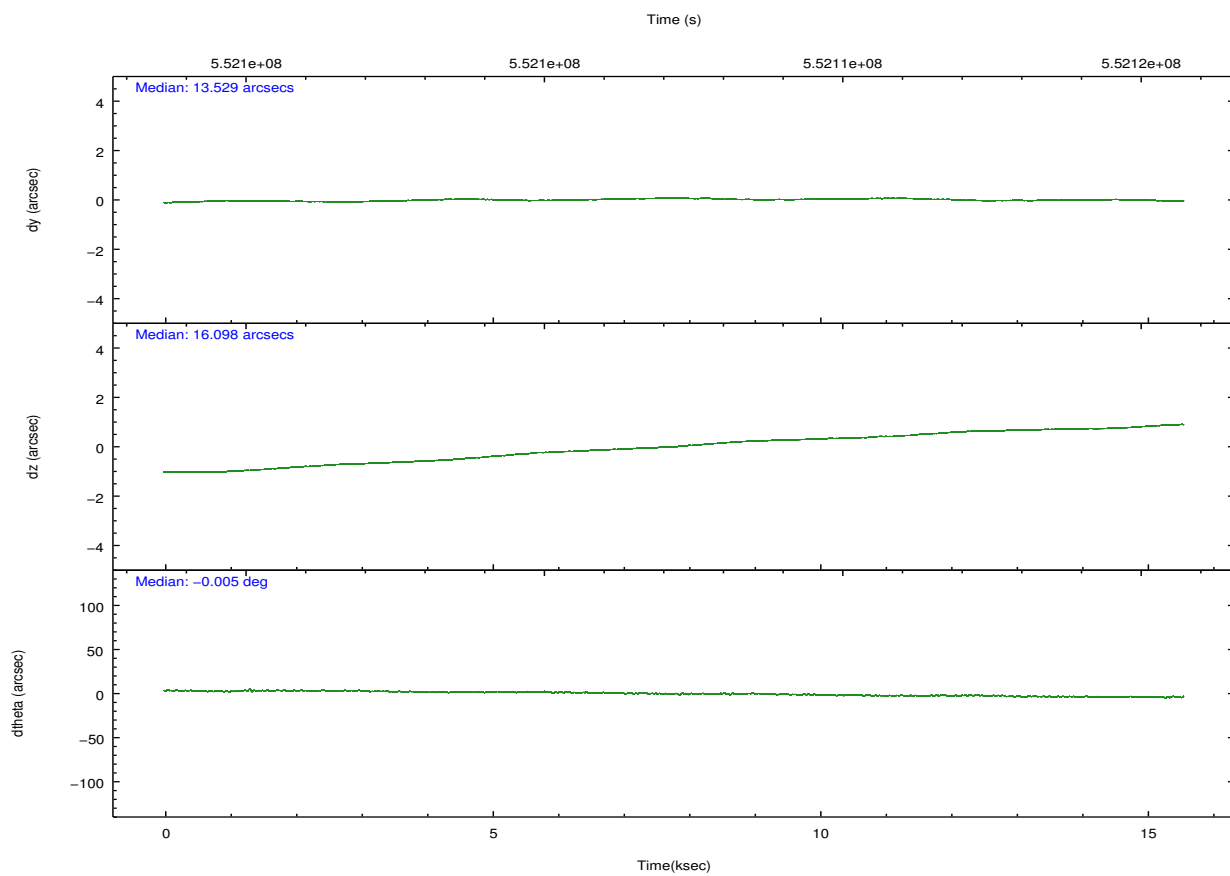
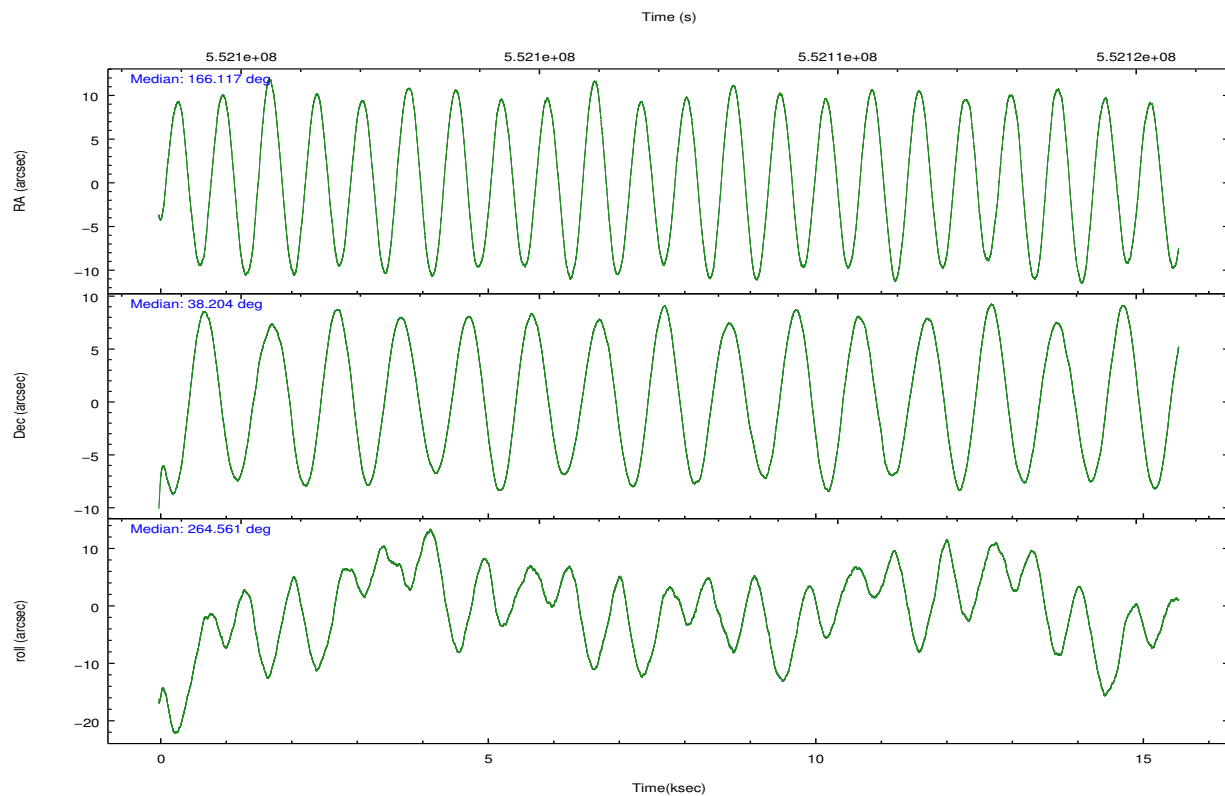
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	70988	106752	97726	116211	97746	61261	grade 0 events	7805	9676	33748	12547	24210	6273
rejected events	58110	48189	51696	45427	55590	49442		10%	9%	34%	10%	24%	10%
rejected %	81%	45%	52%	39%	56%	80%	grade 1 events	59	299	184	289	108	39
								0%	0%	0%	0%	0%	0%
							grade 2 events	2113	17573	5810	16461	6789	2033
								2%	16%	5%	14%	6%	3%
							grade 3 events	894	2816	2026	7004	2601	931
								1%	2%	2%	6%	2%	1%
							grade 4 events	788	2721	2011	7022	2538	930
								1%	2%	2%	6%	2%	1%
							grade 5 events	2945	7028	2979	8706	4288	3287
								4%	6%	3%	7%	4%	5%
							grade 6 events	1282	25790	2442	27762	6021	1655
								1%	24%	2%	23%	6%	2%
							grade 7 events	55102	40849	48526	36420	51191	46113
								77%	38%	49%	31%	52%	75%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-456789	ACIS-456789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	166.102211	166.1171545743197	CCD I2 on	N	N
[deg] Pointing Dec	38.229081	38.2042327527483	CCD I3 on	N	N
[deg] Pointing Roll	264.415691	264.563067832948	CCD S0 on	O1	Y
[s] Window start time (MET)	549504067.184000	549504067.184000	CCD S1 on	Y	Y
[s] Window stop time (MET)	557366468.184000	557366468.184000	CCD S2 on	Y	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S3 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S4 on	Y	Y
[mm] SIM translation stage pos	-187.132523	-187.1254020033014	CCD S5 on	Y	Y
[mm] SIM translation stage offset	-3	-3.007120579706367	Number of optional ACIS chips dropped	0	0
[s] Observation start time (MET)	552099752.184000	552098598.9528	On-chip summing requested	N	N
Observation start date	2015-07-01T01:01:24	2015-07-01T00:43:18	Subarray requested	CUSTOM	CUSTOM
[s] Observation end time (MET)	552114752.184000	552115186.52873	Subarray start row	1	1
Observation end date	2015-07-01T05:11:24	2015-07-01T05:19:46	Subarray row count	774	774
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	2.5

2.3 Aspect



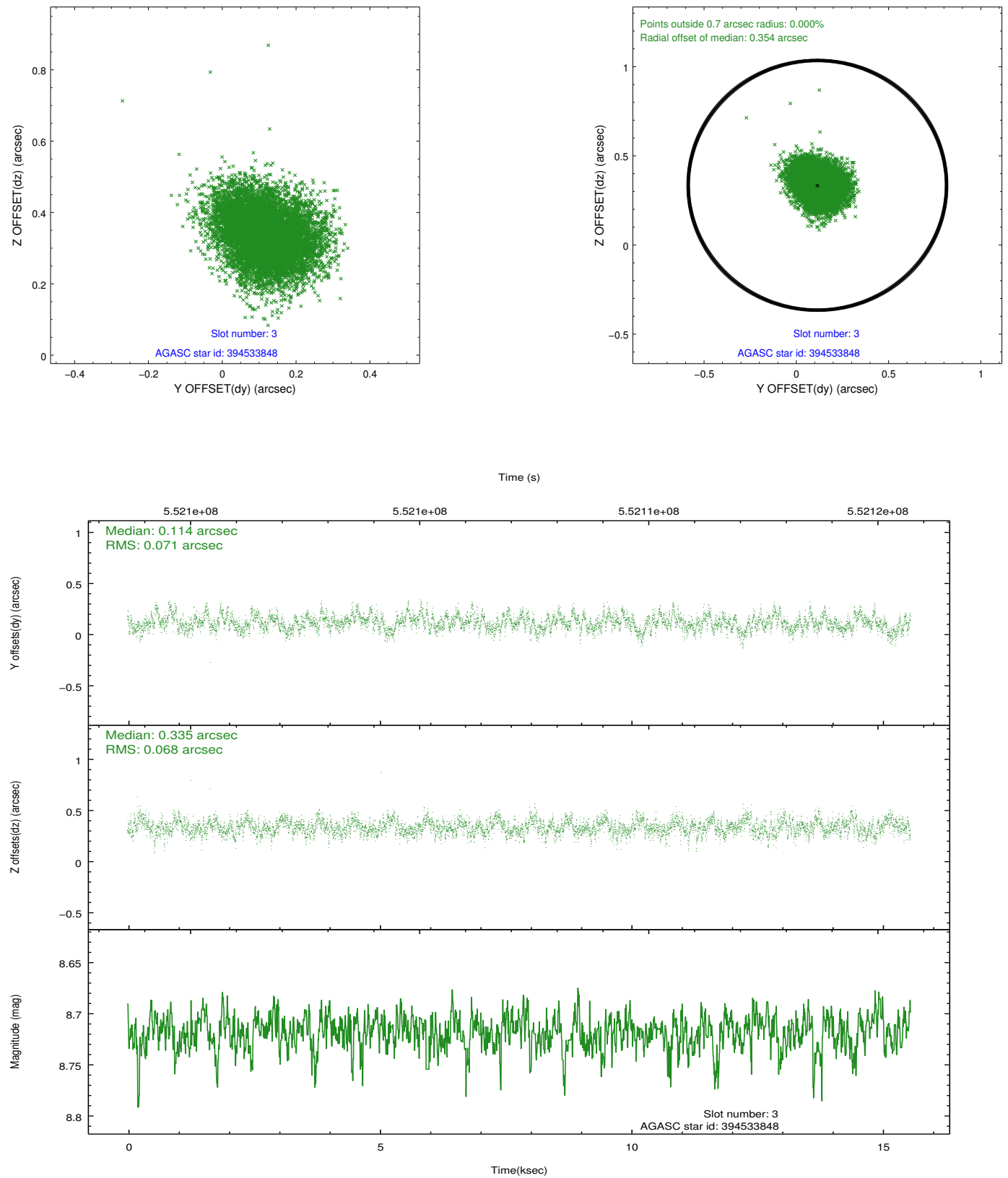


Slot Statistics

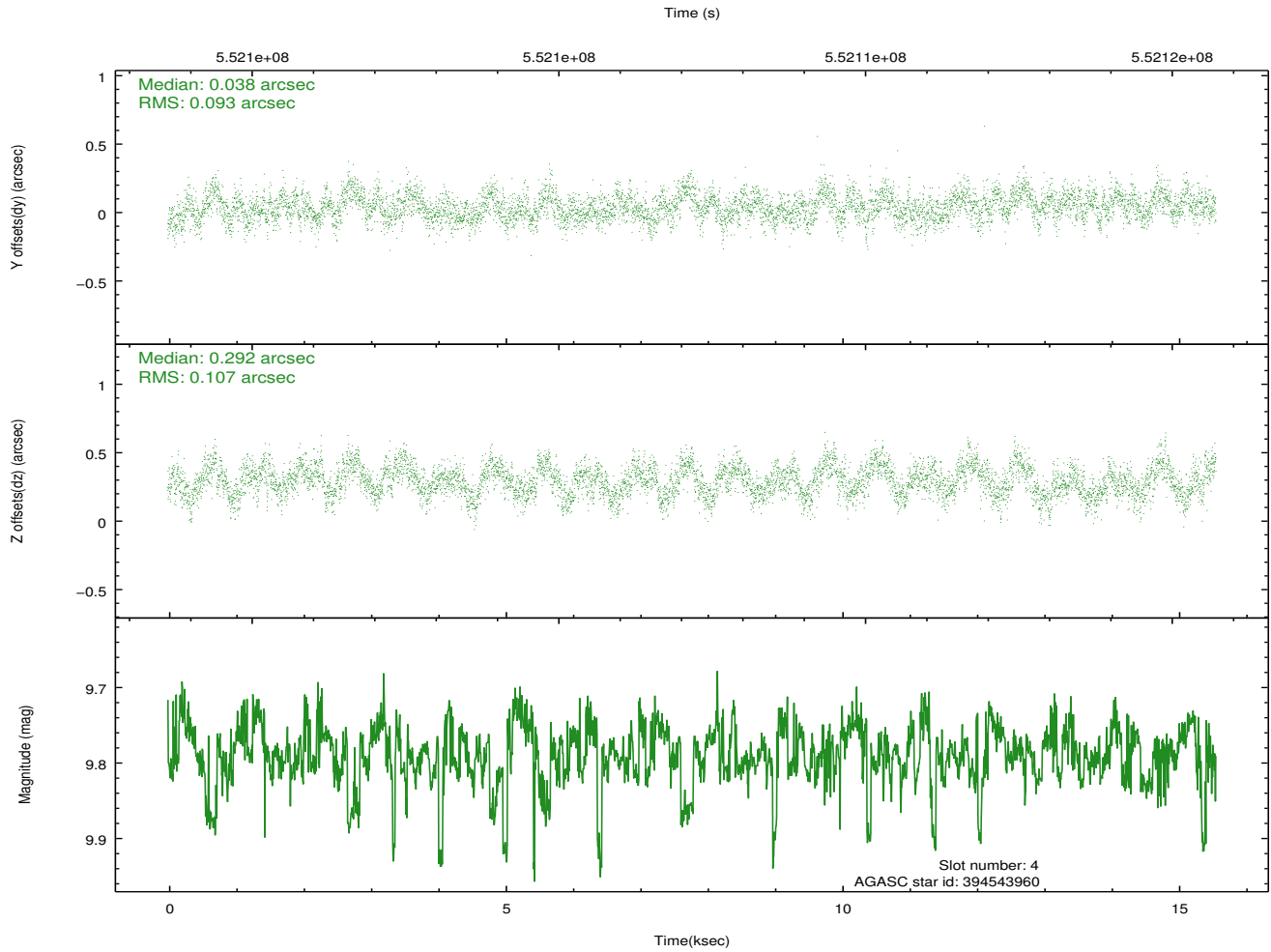
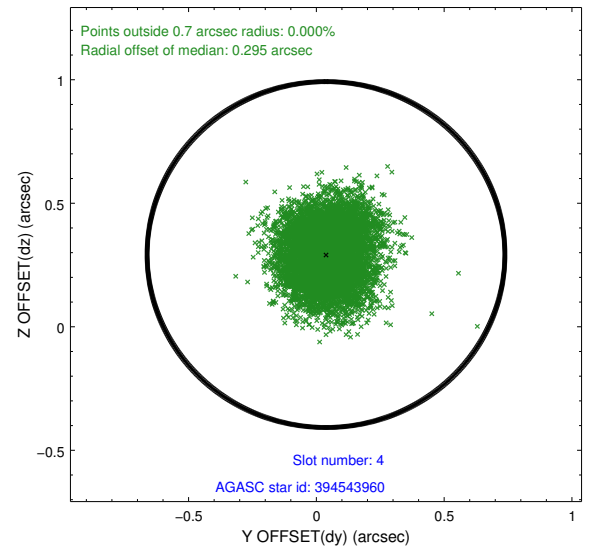
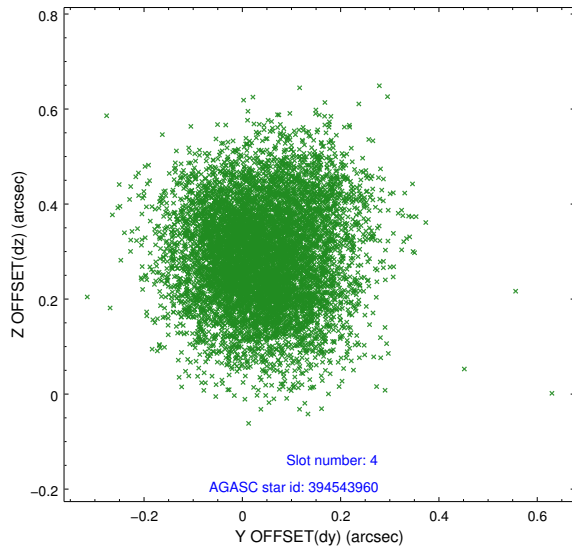
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	7.11	3797	0.060	0.039	0.020	0.027	0.000000	0.000000	929.84	-1795.16
1	FID		ACIS-S-4	7.11	3797	0.213	-0.051	0.010	0.017	0.000000	0.000000	2147.56	108.60
2	FID		ACIS-S-5	7.15	3796	-0.300	0.023	0.020	0.030	0.000000	0.000000	-1819.02	102.58
3	GUIDE	used	394533848	8.72	7593	0.114	0.335	0.105	0.170	166.382906	38.276007	-246.73	768.08
4	GUIDE	used	394543960	9.79	7584	0.038	0.292	0.153	0.241	165.802757	37.787371	1664.34	-692.79
5	GUIDE	used	394546712	6.58	7595	-0.200	0.327	0.078	0.128	166.451462	38.394357	-689.41	921.80
6	GUIDE	used	394546720	6.40	7595	0.124	-1.096	0.107	0.171	166.130115	38.241361	-51.51	73.32
7	GUIDE	used	394530152	7.50	7591	-0.085	0.141	0.092	0.156	166.075805	38.868252	-2282.84	-297.46

2.4 Star Slots

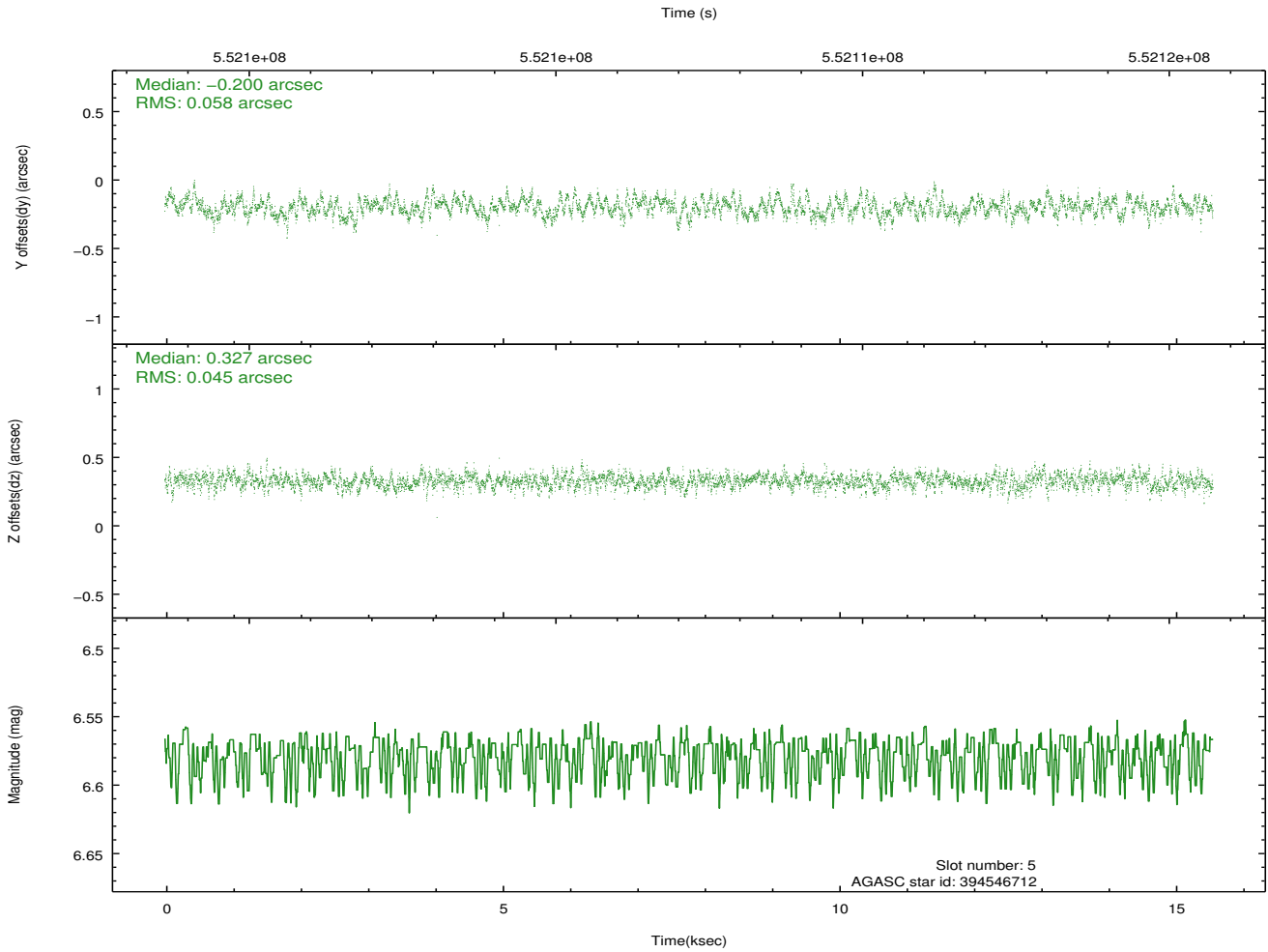
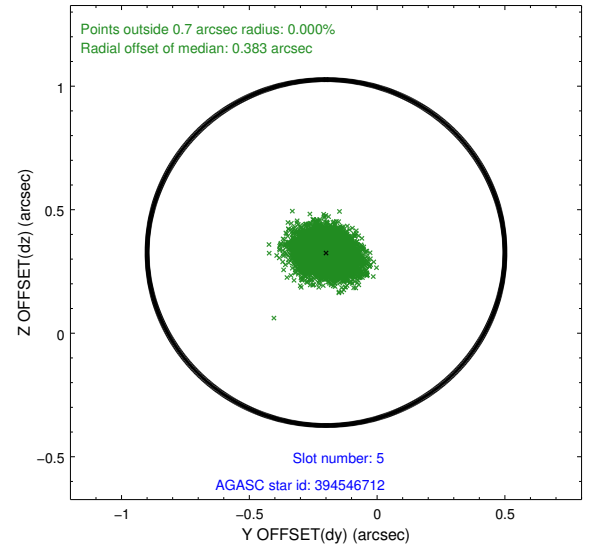
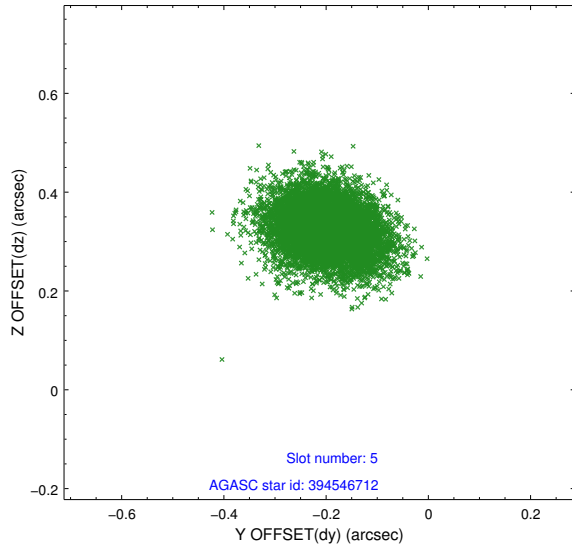
2.4.1 Slot 3



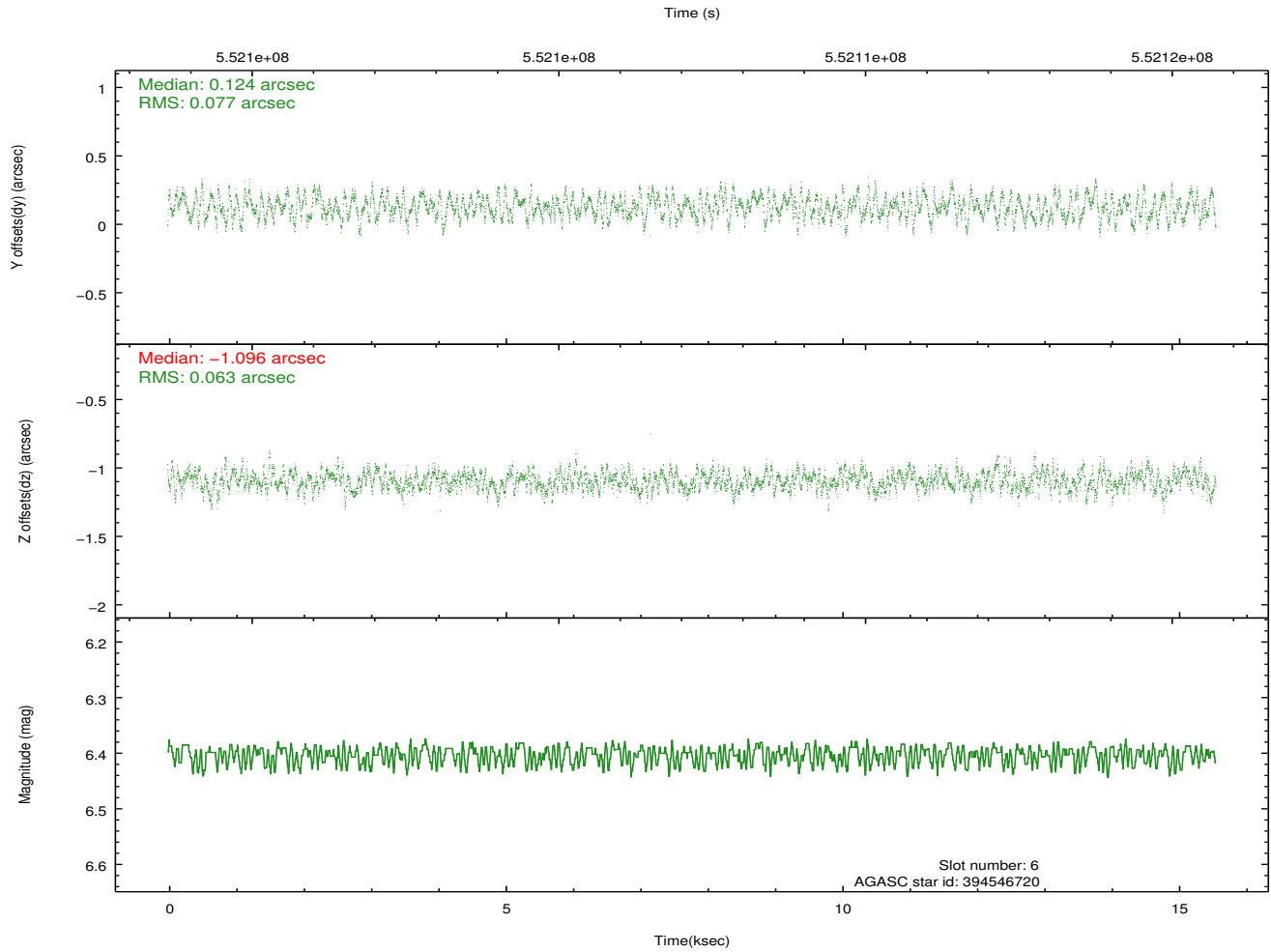
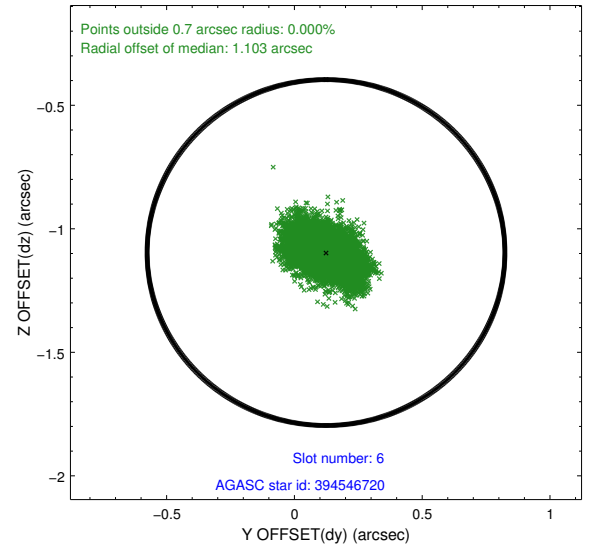
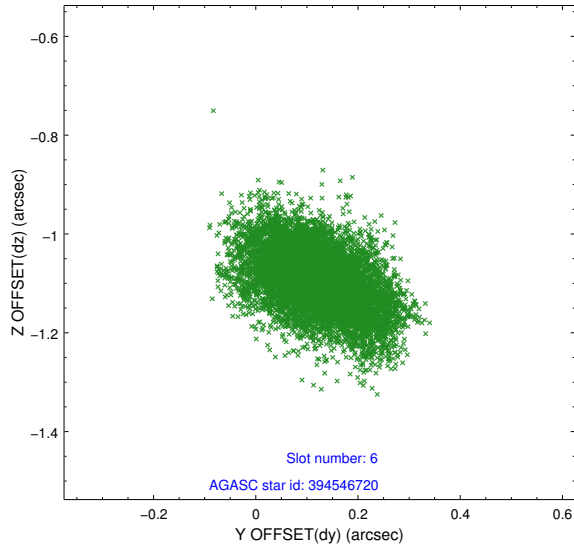
2.4.2 Slot 4



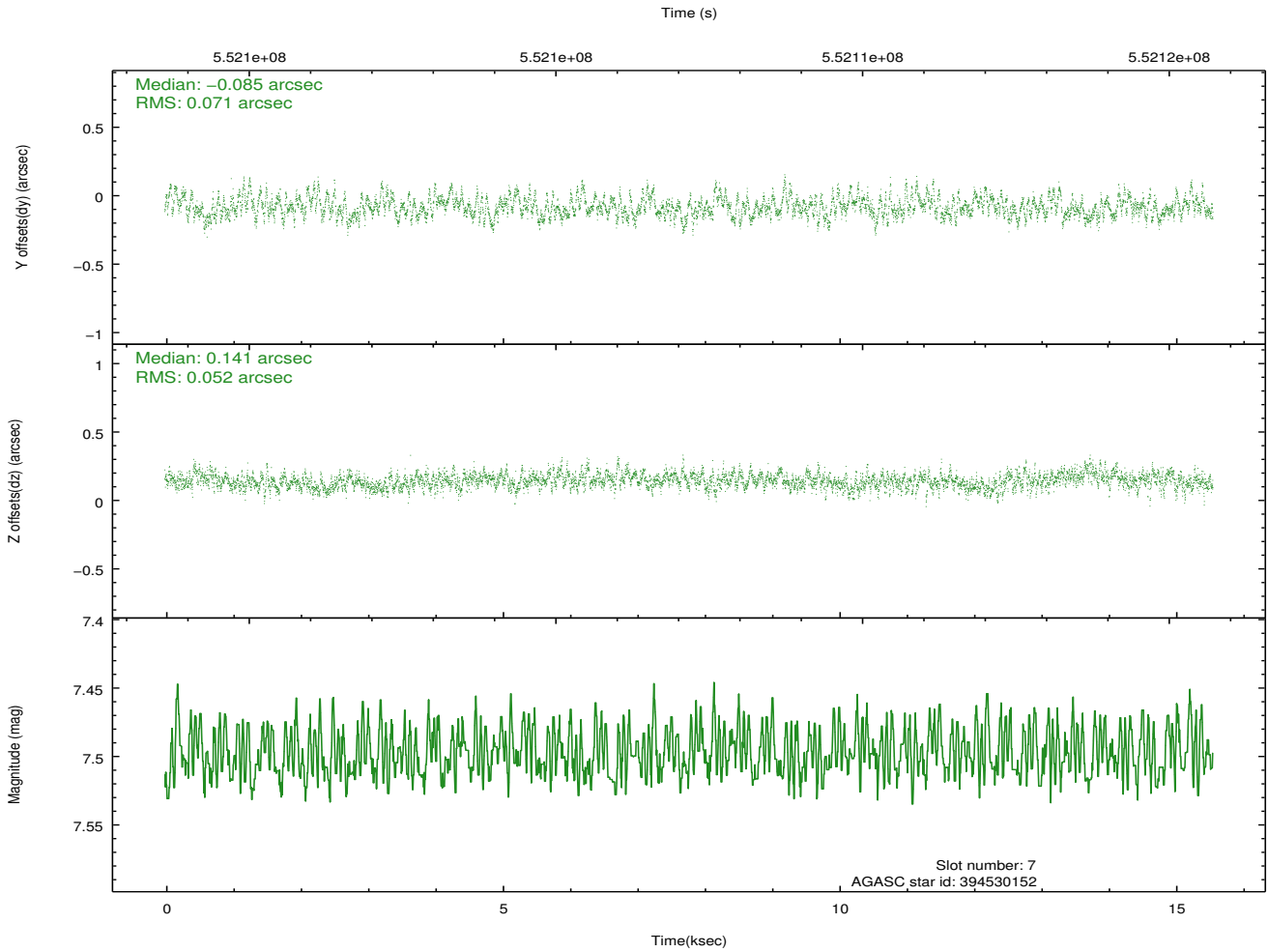
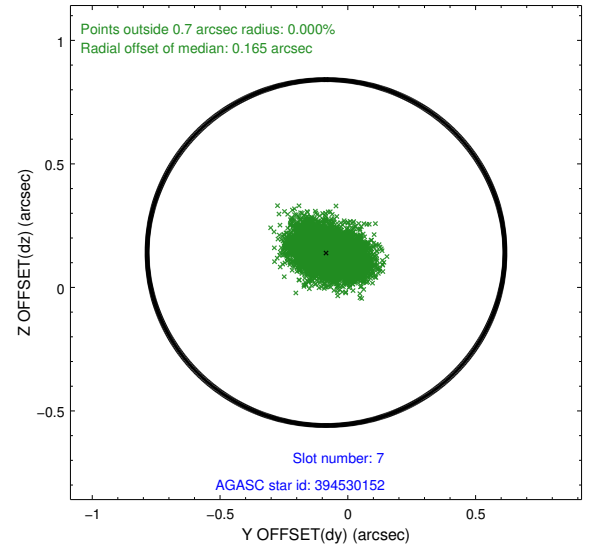
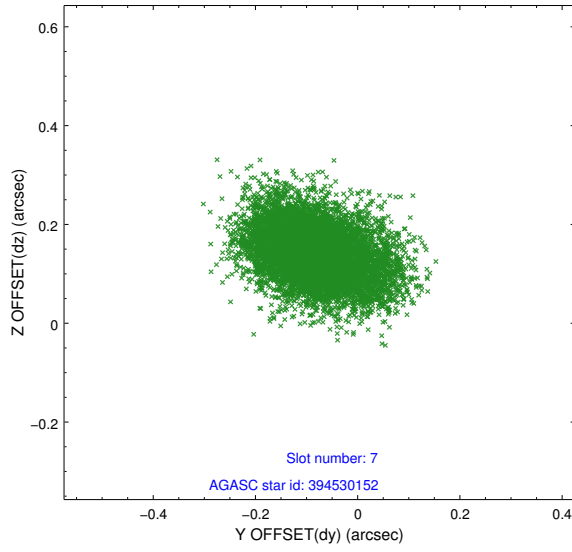
2.4.3 Slot 5



2.4.4 Slot 6

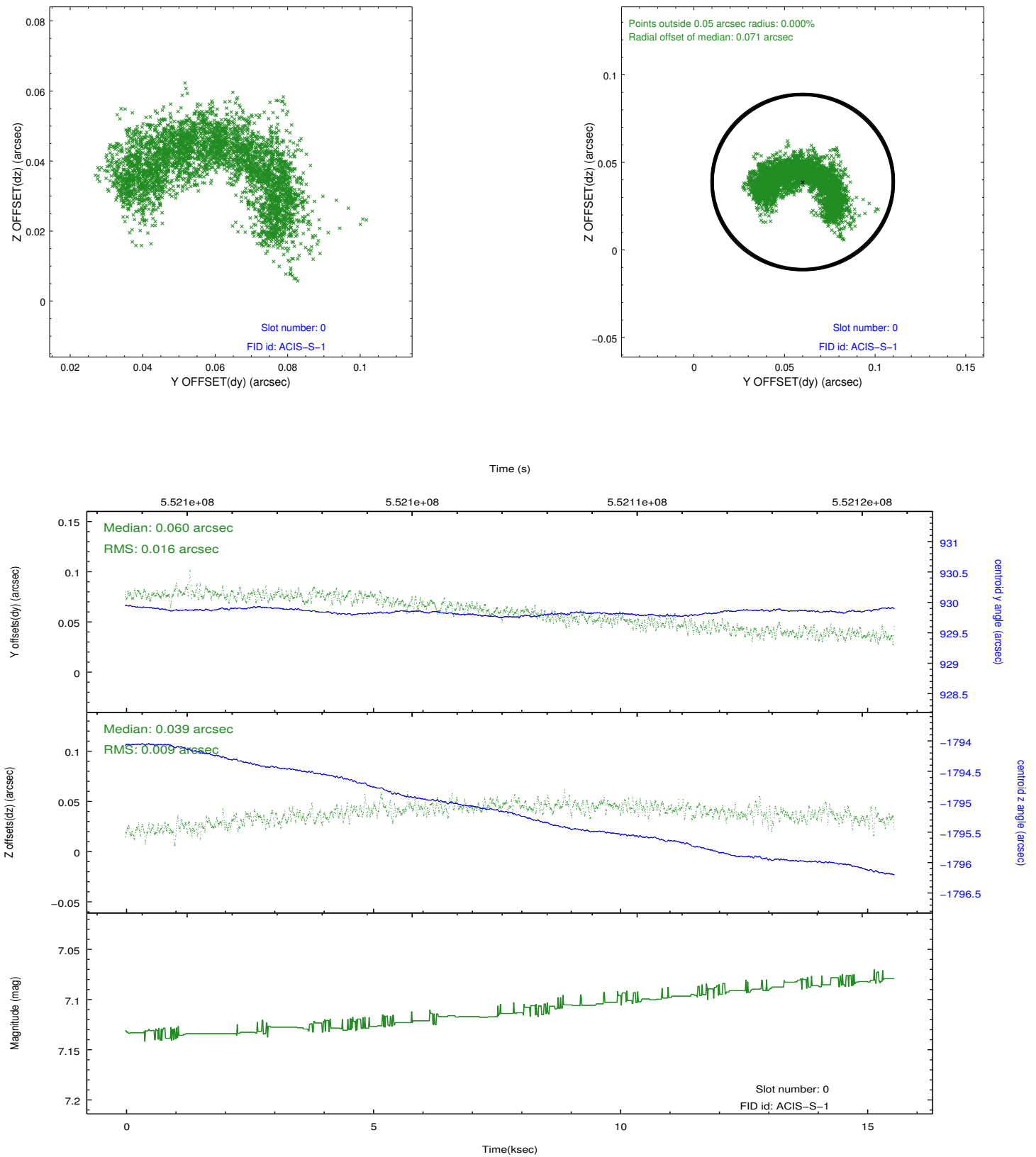


2.4.5 Slot 7

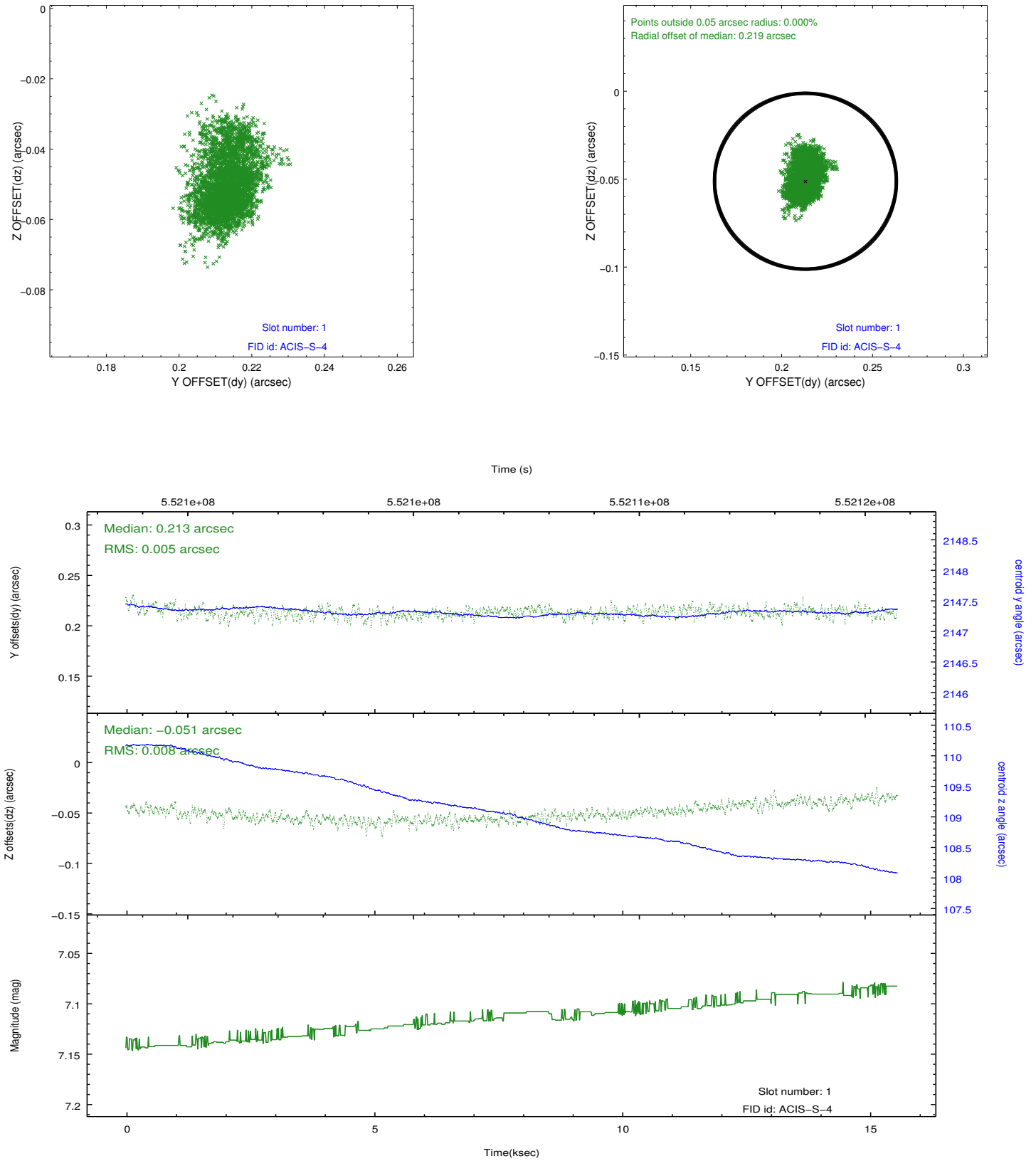


2.5 FID Slots

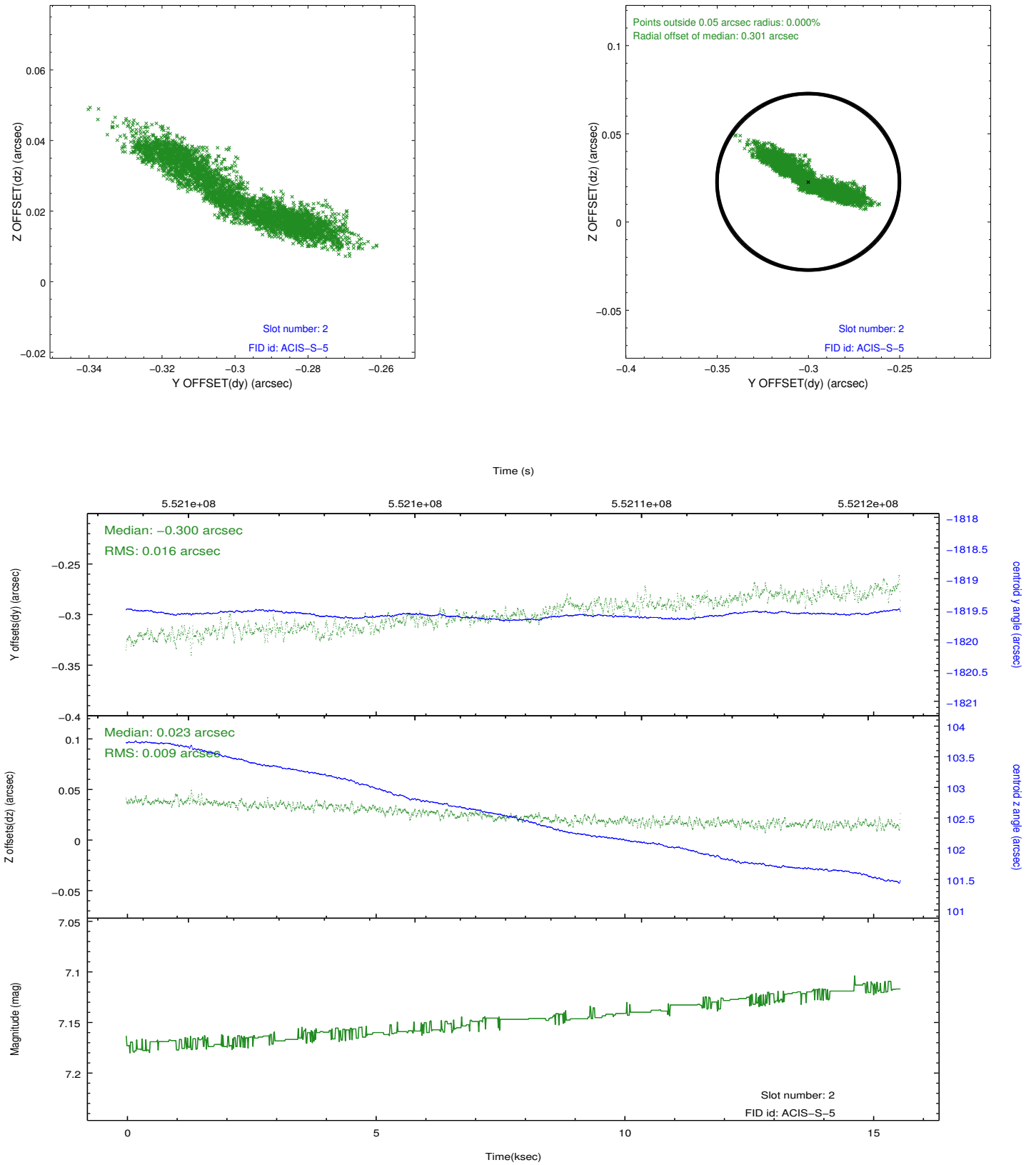
2.5.1 Slot 0



2.5.2 Slot 1

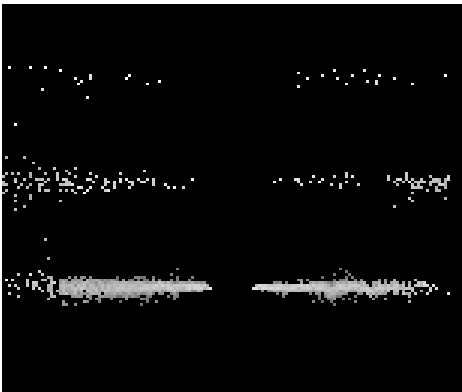


2.5.3 Slot 2

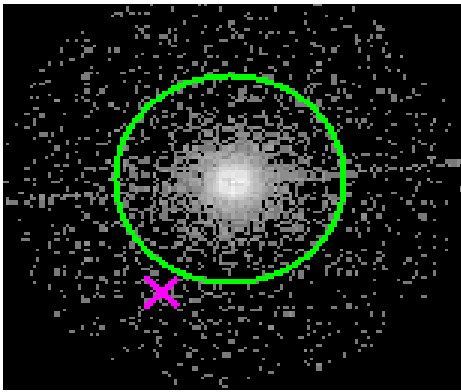


3 Gratings

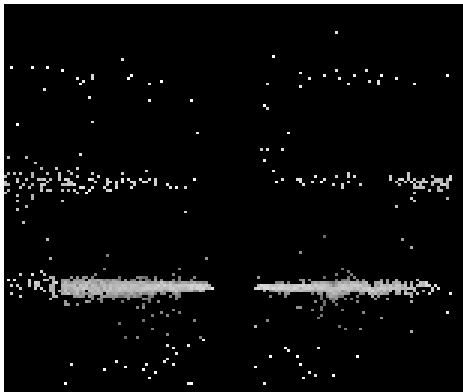
3.1 HEG Arm



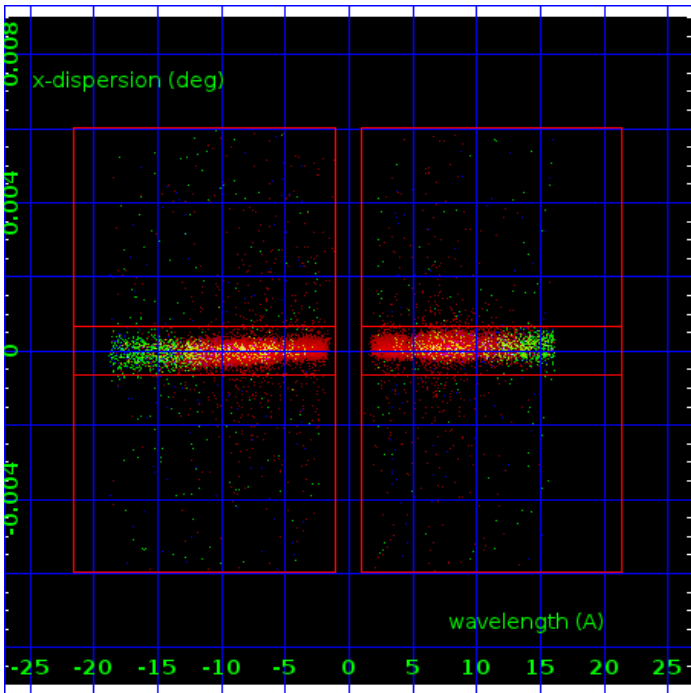
HEG Order Sort 123



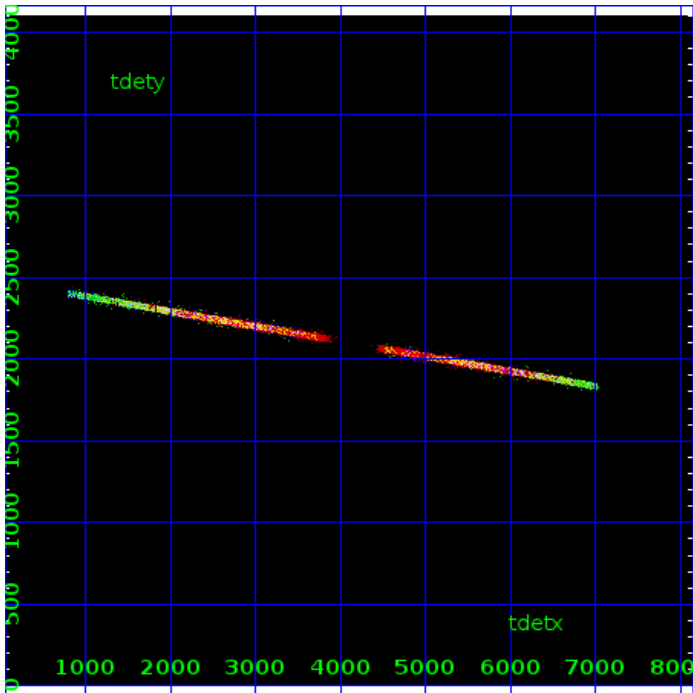
HEG Zero Order



HEG Order Sort ALL

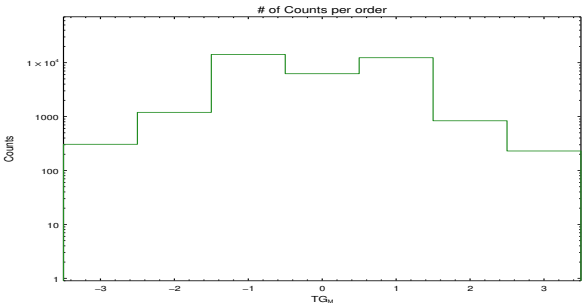


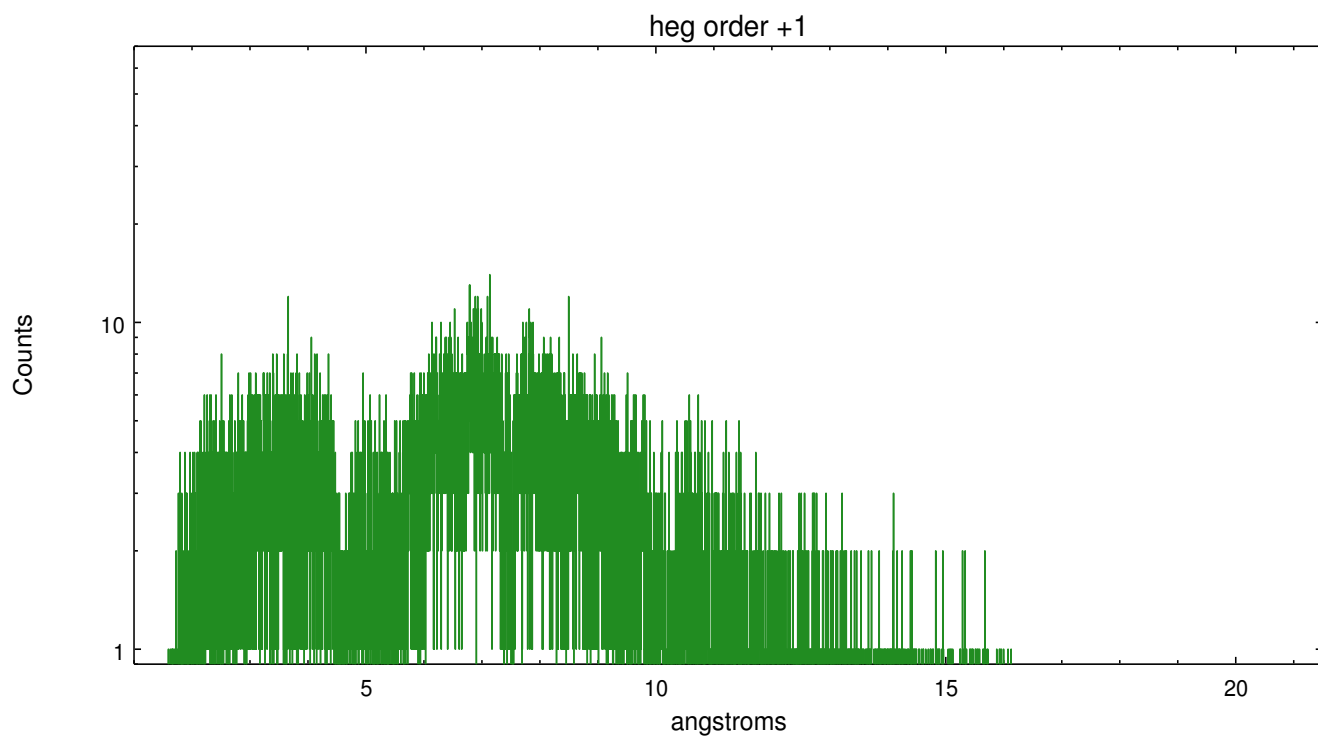
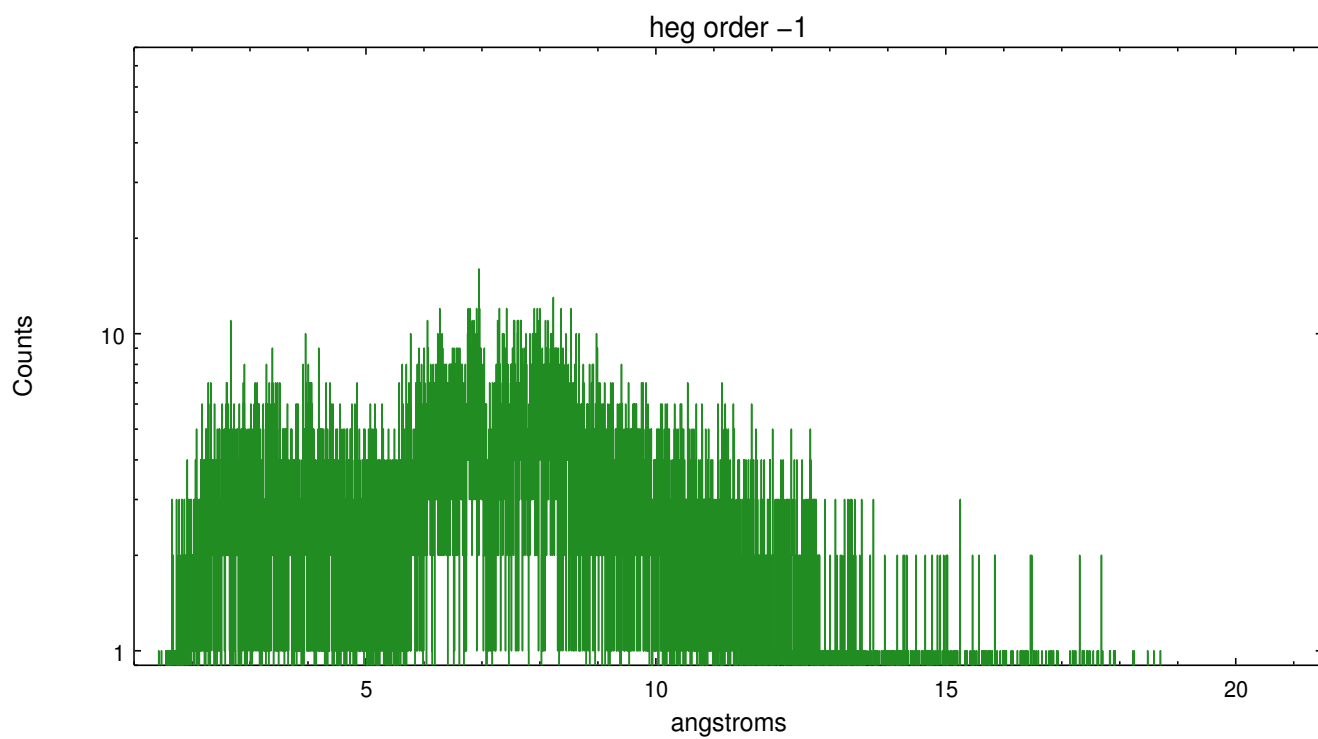
Spot Image HEG



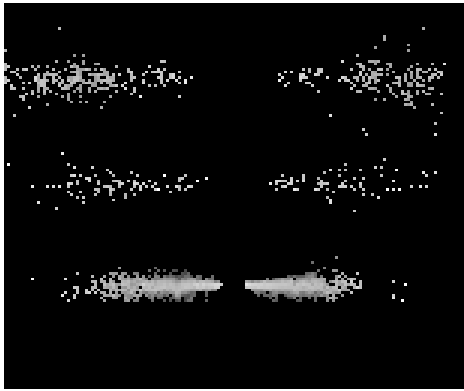
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	306	1197	14186	6241	12357	836	230

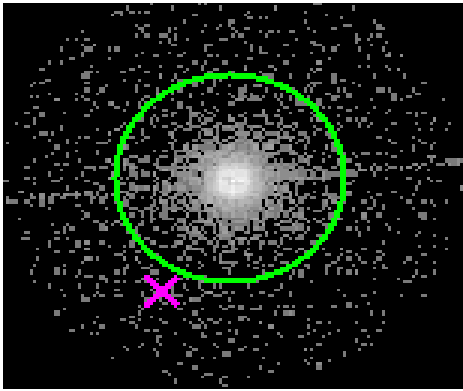




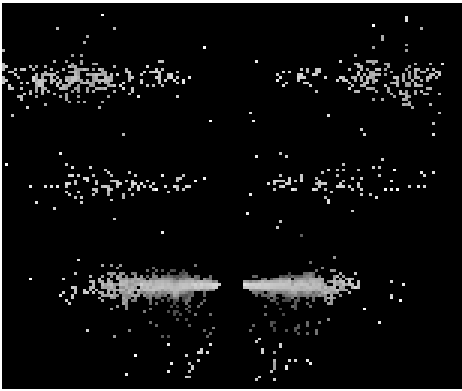
3.2 MEG Arm



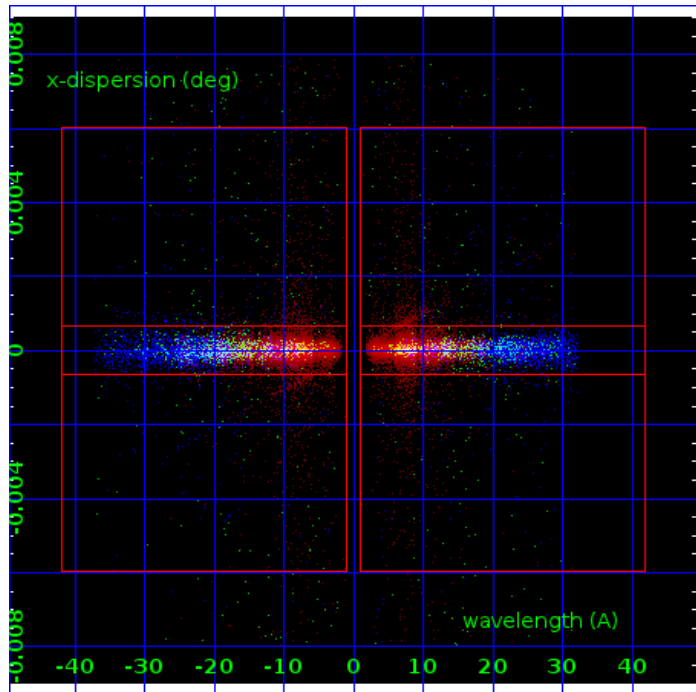
MEG Order Sort 123



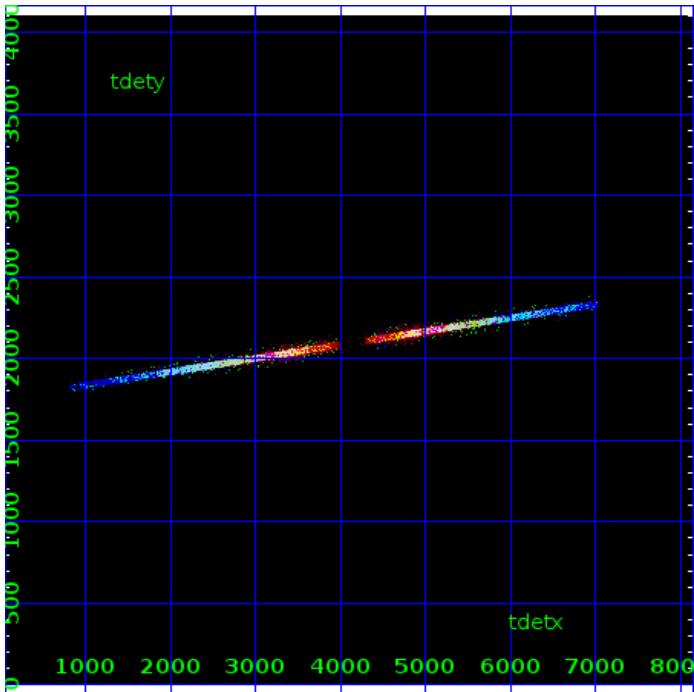
MEG Zero Order



MEG Order Sort ALL

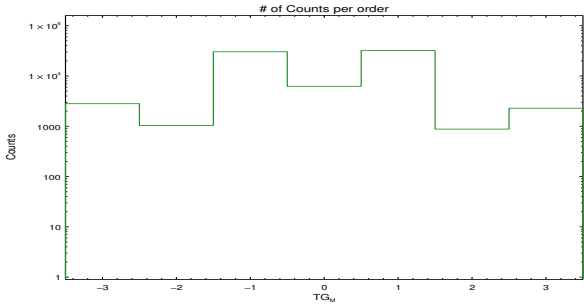


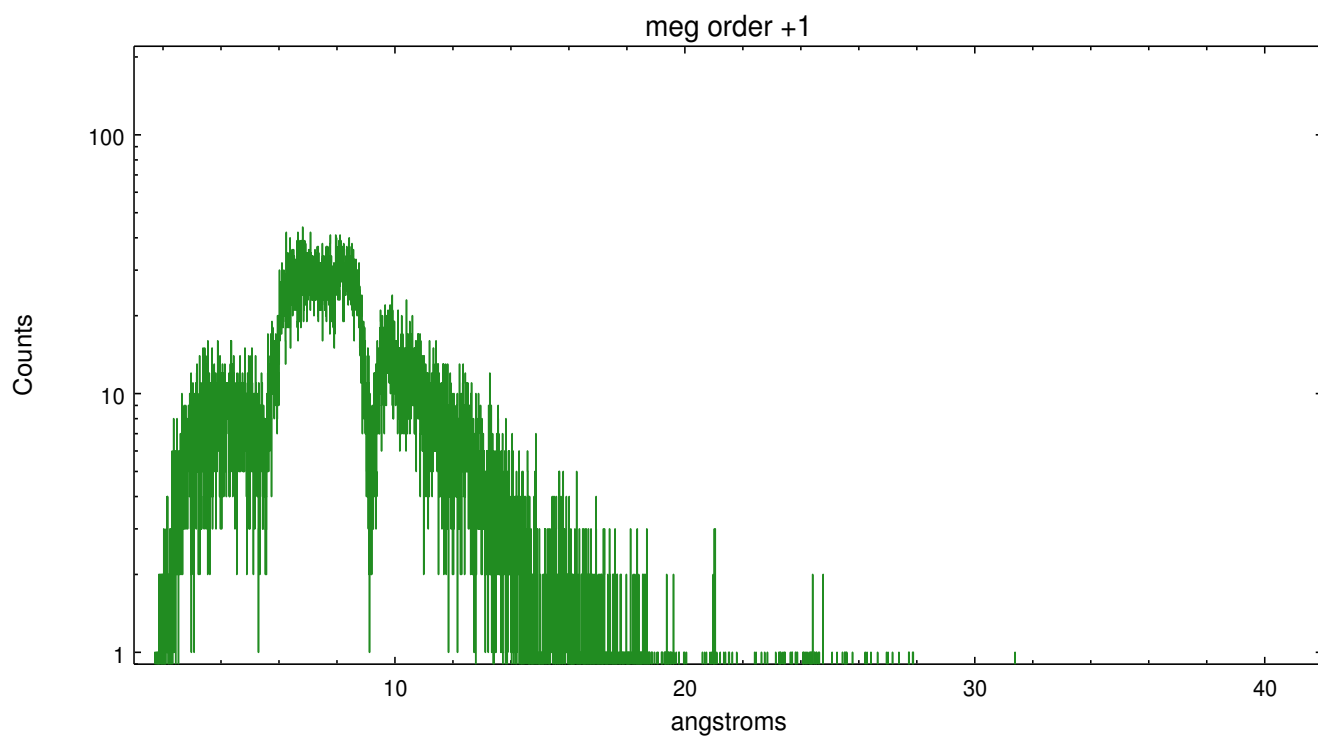
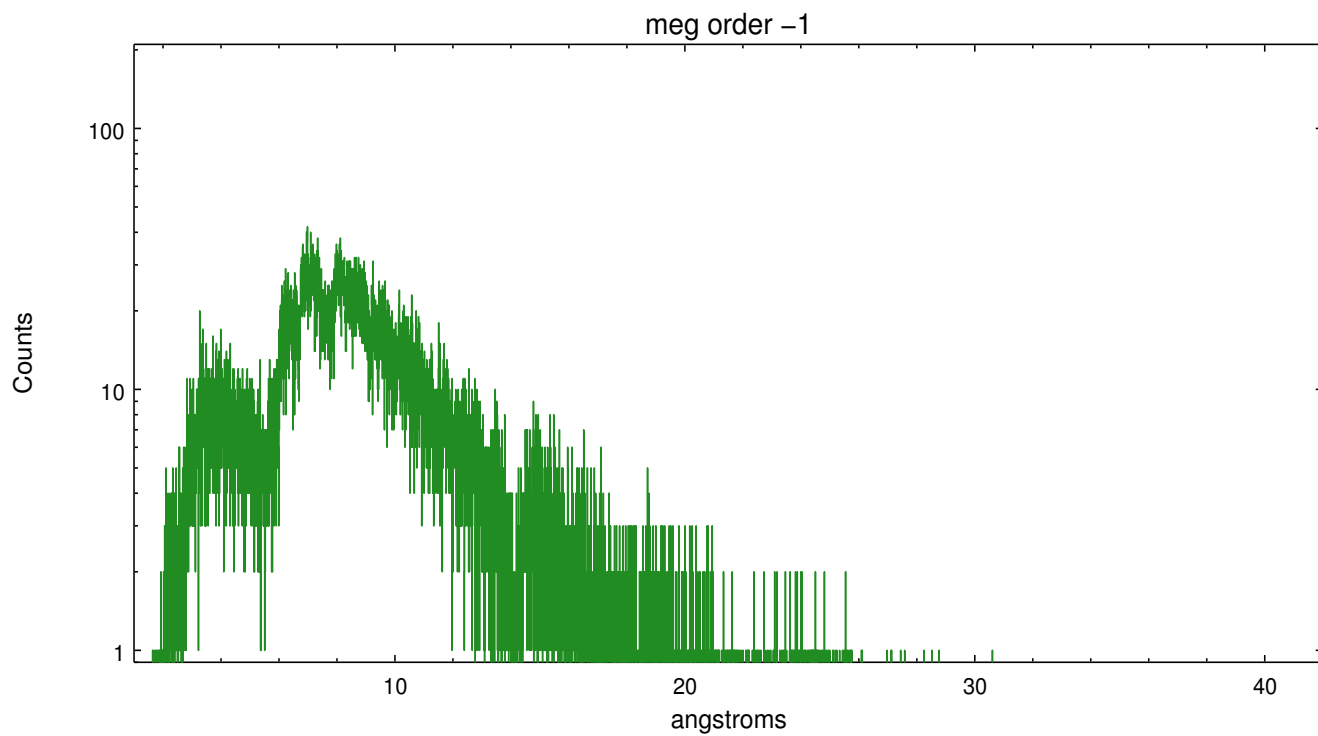
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2812	1039	30356	6241	32021	878	2287





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2015.07.06
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	15.0325

A.2 Comments

Zeroth order piled up. The zeroth order sky position was determined using a software tool developed by CXC called findzero, which is available in CIAO as part of the tgdetect2 tool. The tool calculates the point of intersection of the readout streak on the ACIS CCD and the meg dispersed spectral arm, rather than using a centroid position of the source. The findzero results are more accurate than source centroid in this case.

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WARNING: there are no standard ciao tools for analysis of grating spectra from extended sources. The shape of an emission 'line' will be the shape of the zero order spatial structure convolved with the instrumental LSF. Grating extractions can be used, but need to be combined with custom spatial-spectral analysis, since wavelength is multi-valued at any particular diffraction angle.