

V&V Reference Report

L2 ASCDS Version : 8.4.3

Observation 13261 - L2 Version 3
Chandra X-Ray Center

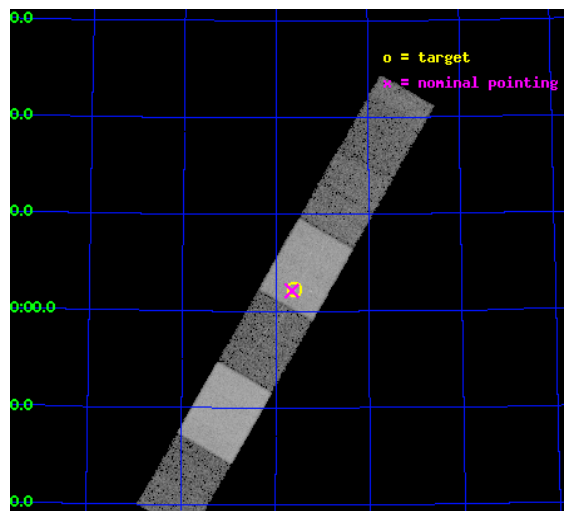
L2 Processing Date : Feb 9 2012

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1 Front

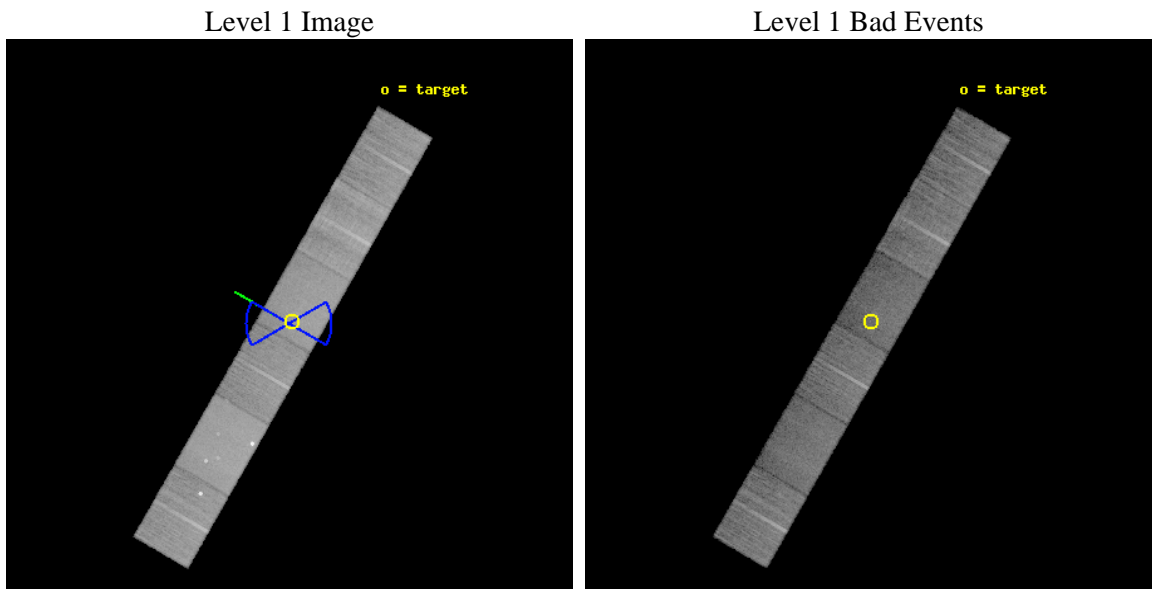
seq_num	702507	Sequence number
obs_id	13261	Observation id
title	THE FIRST SPATIALLY RESOLVED SPECTRUM OF AN AGN OUTFLOW IN AN EARLY-TYPE GALAXY: A DEEP HETG OBSERVATION OF MRK 3	Proposal title
observer	Dr Daniel Evans	Principal investigator
object	Markarian 3	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	93.90125	Observer's specified target RA [deg]
dec_targ	71.0375	Observer's specified target Dec [deg]
ra_nom	93.91433249868	Nominal RA [deg]
dec_nom	71.035193991149	Nominal Dec [deg]
roll_nom	299.84424307864	Nominal Roll [deg]
revision	3	Processing version of data
ontime	22447.5	Sum of GTIs [s]
livetime	22084.953404905	Livetime [s]
ontime4	22447.5	Sum of GTIs [s]
ontime5	22447.5	Sum of GTIs [s]
ontime6	22447.5	Sum of GTIs [s]
ontime7	22447.5	Sum of GTIs [s]
ontime8	22447.5	Sum of GTIs [s]
ontime9	22447.5	Sum of GTIs [s]
l2events	182250	Number of level 2 events



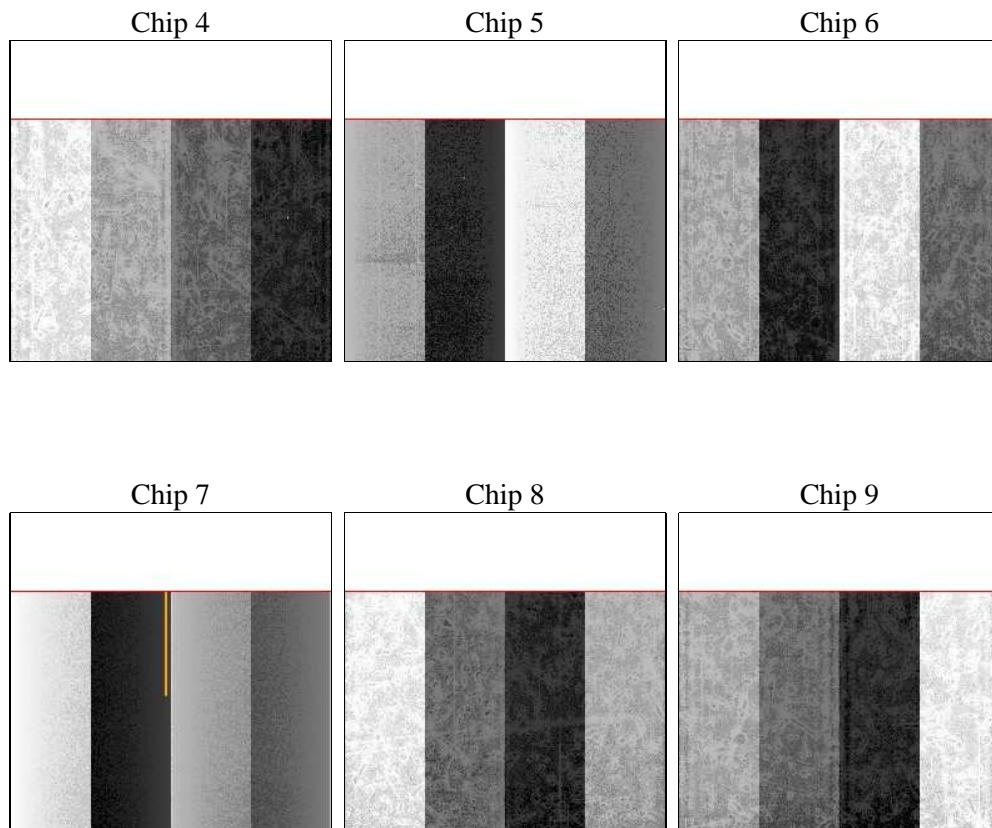
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	22400.000000	[s] Scheduled observation exposure time
ascdsver	8.4.3	Processing system revision	ontime	22447.5	Sum of GTIs [s]
caldsver	4.4.7	 	ontime4	22447.5	Sum of GTIs [s]
date	2012-02-09T17:01:50	Date and time of file creation	ontime5	22447.5	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	22447.5	Sum of GTIs [s]
			ontime7	22447.5	Sum of GTIs [s]
			ontime8	22447.5	Sum of GTIs [s]
			ontime9	22447.5	Sum of GTIs [s]
			l1events	781141	Number of level 1 events

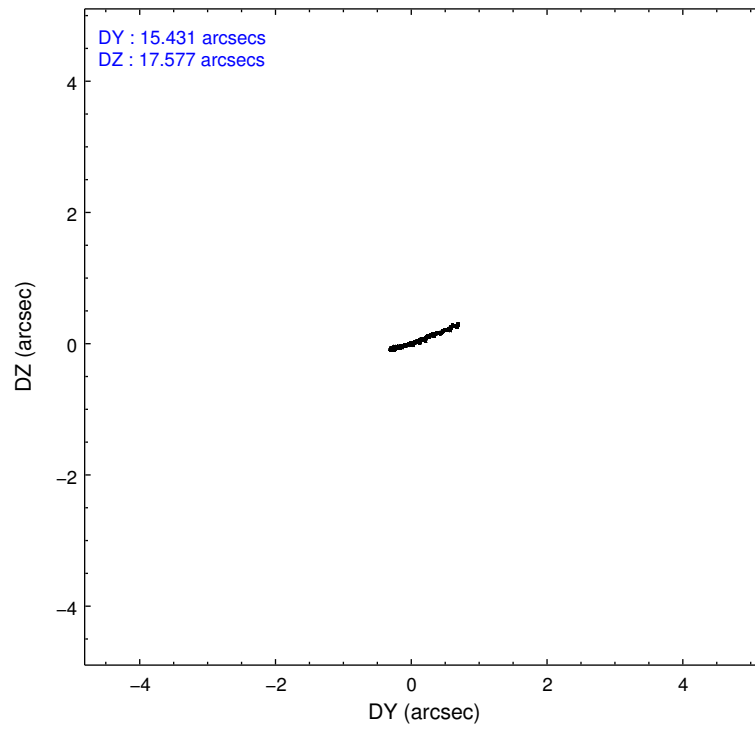
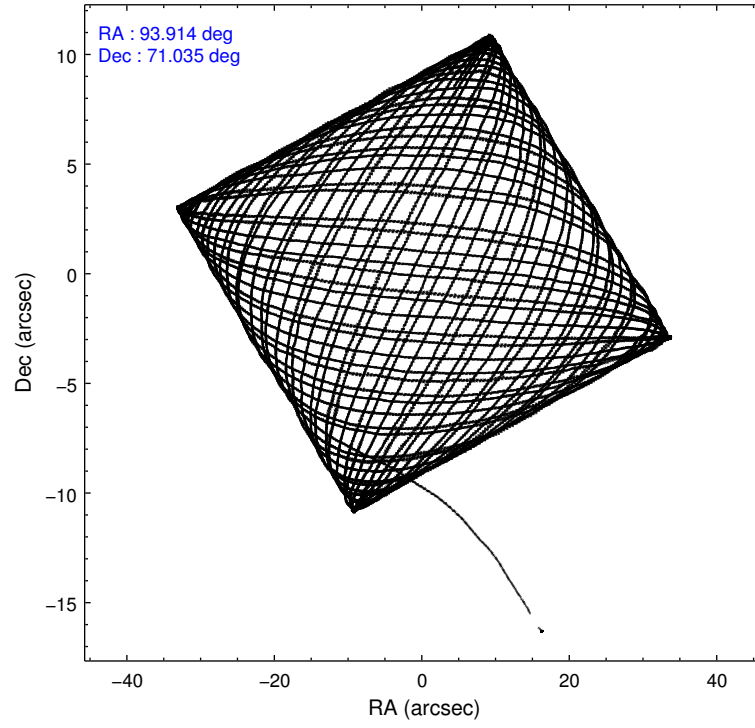
2.1.4 Events

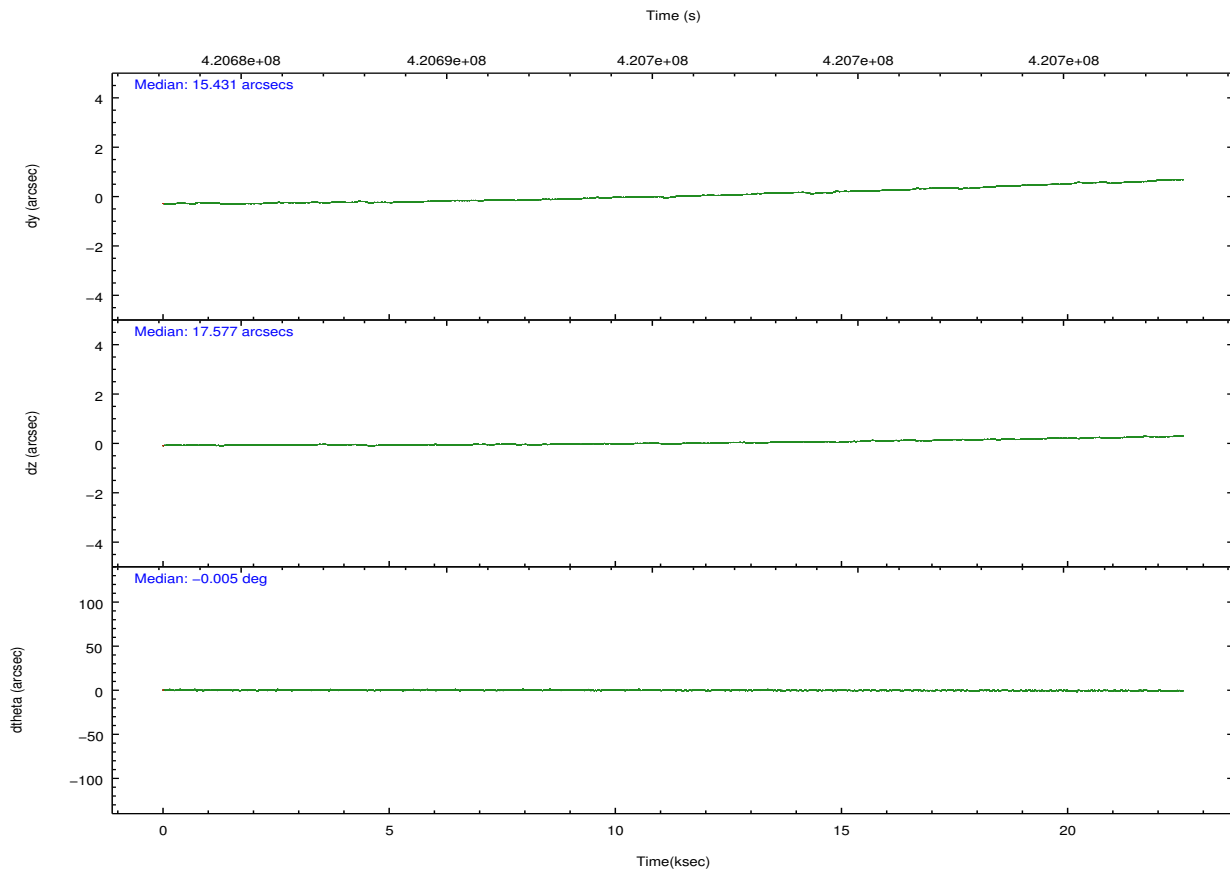
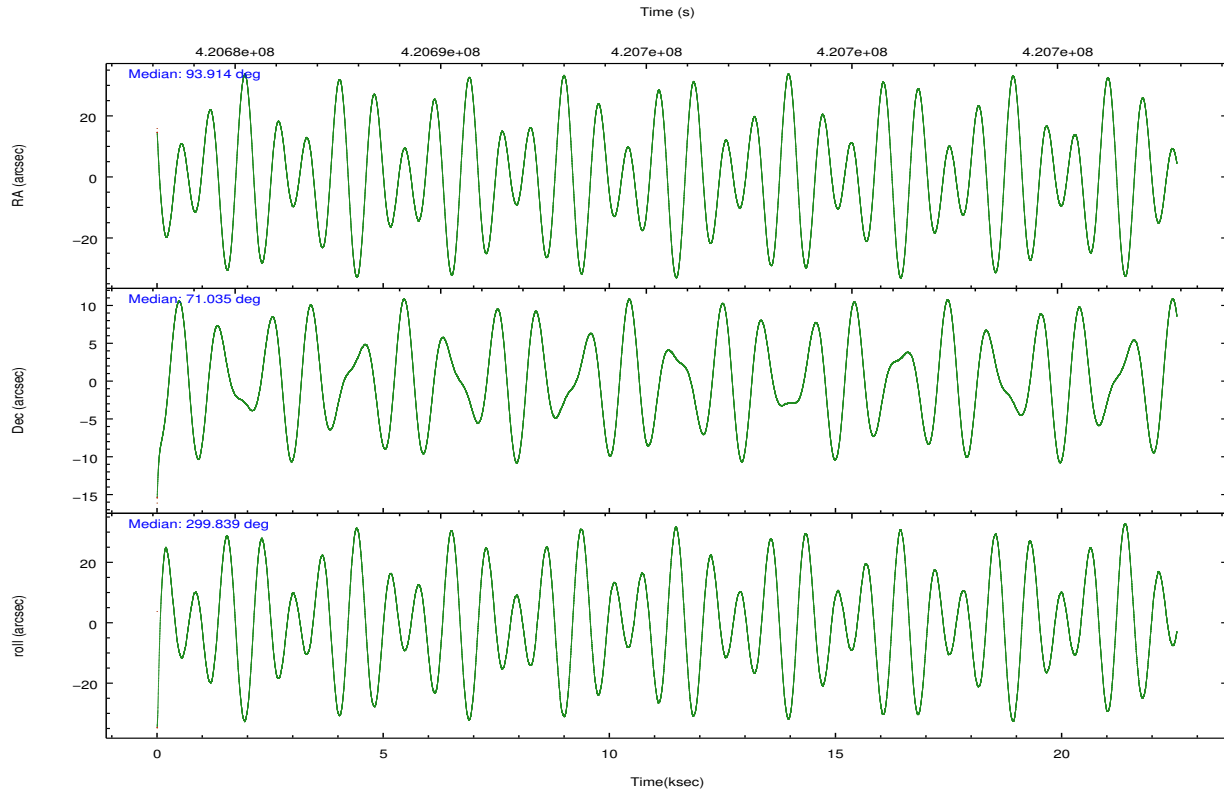
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	124038	169377	106899	133315	141798	105714	grade 0 events	9957	14224	4274	5721	11605	4508
rejected events	105570	81793	94241	71805	102968	92737		8%	8%	3%	4%	8%	4%
rejected %	85%	48%	88%	53%	72%	87%	grade 1 events	118	321	50	167	104	54
								0%	0%	0%	0%	0%	0%
							grade 2 events	3337	24123	2929	12579	8855	2816
								2%	14%	2%	9%	6%	2%
							grade 3 events	1509	3788	1420	5682	4246	1498
								1%	2%	1%	4%	2%	1%
							grade 4 events	1410	3607	1370	5635	3941	1383
								1%	2%	1%	4%	2%	1%
							grade 5 events	4765	13358	4922	13677	7025	5397
								3%	7%	4%	10%	4%	5%
							grade 6 events	2261	41856	2667	31900	10183	2776
								1%	24%	2%	23%	7%	2%
							grade 7 events	100681	68100	89267	57954	95839	87282
								81%	40%	83%	43%	67%	82%

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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	93.841004	93.91433249868044	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	71.048573	71.03519399114916	Subarray start row	1	1
[deg] Pointing Roll	299.756976	299.8442430786397	Subarray row count	774	774
[deg] Roll angle	270.000000	270.000000	Alternating exposures requested	N	N
[deg] Roll tolerance	30.000000	30.000000	[s] Primary exposure time	0.000000	2.5
Roll constraint allows 180D rotation	Y	Y			
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-187.132523	-187.1254020033014			
[mm] SIM translation stage offset	-3	-3.007120579706367			
[s] Observation start time (MET)	420684373.184000	420682650.53902			
Observation start date	2011-05-02T00:45:07	2011-05-02T00:17:30			
[s] Observation end time (MET)	420706773.184000	420707715.89032			
Observation end date	2011-05-02T06:58:27	2011-05-02T07:15:15			
Read mode	TIMED	TIMED			

2.3 Aspect



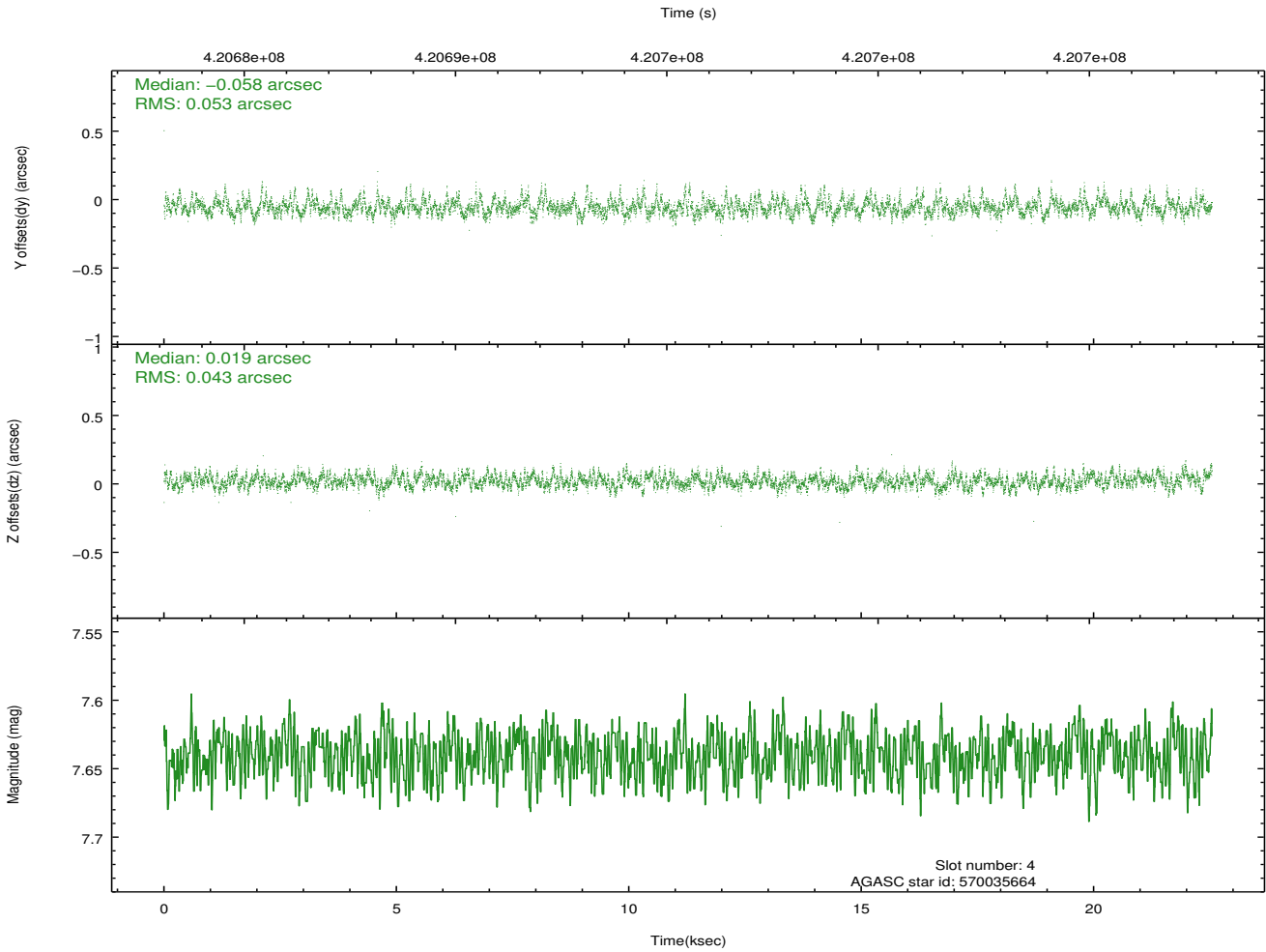
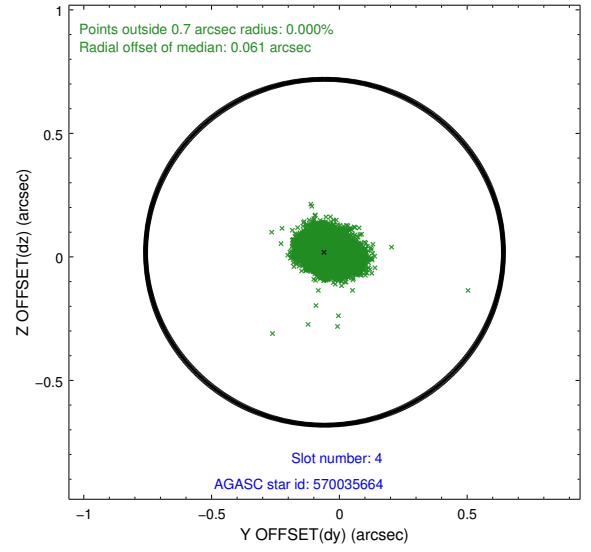
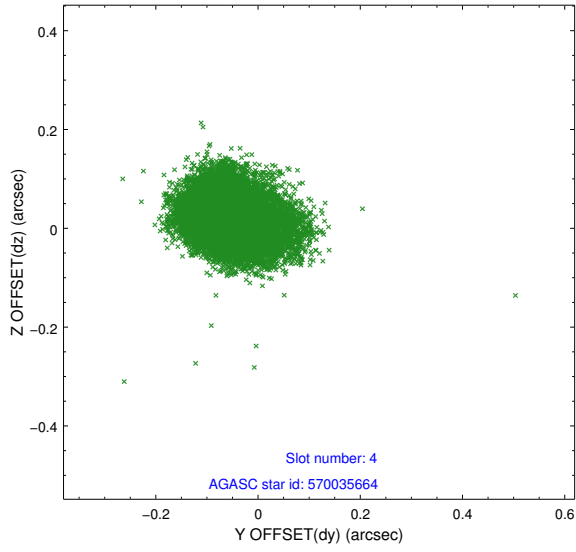


Slot Statistics

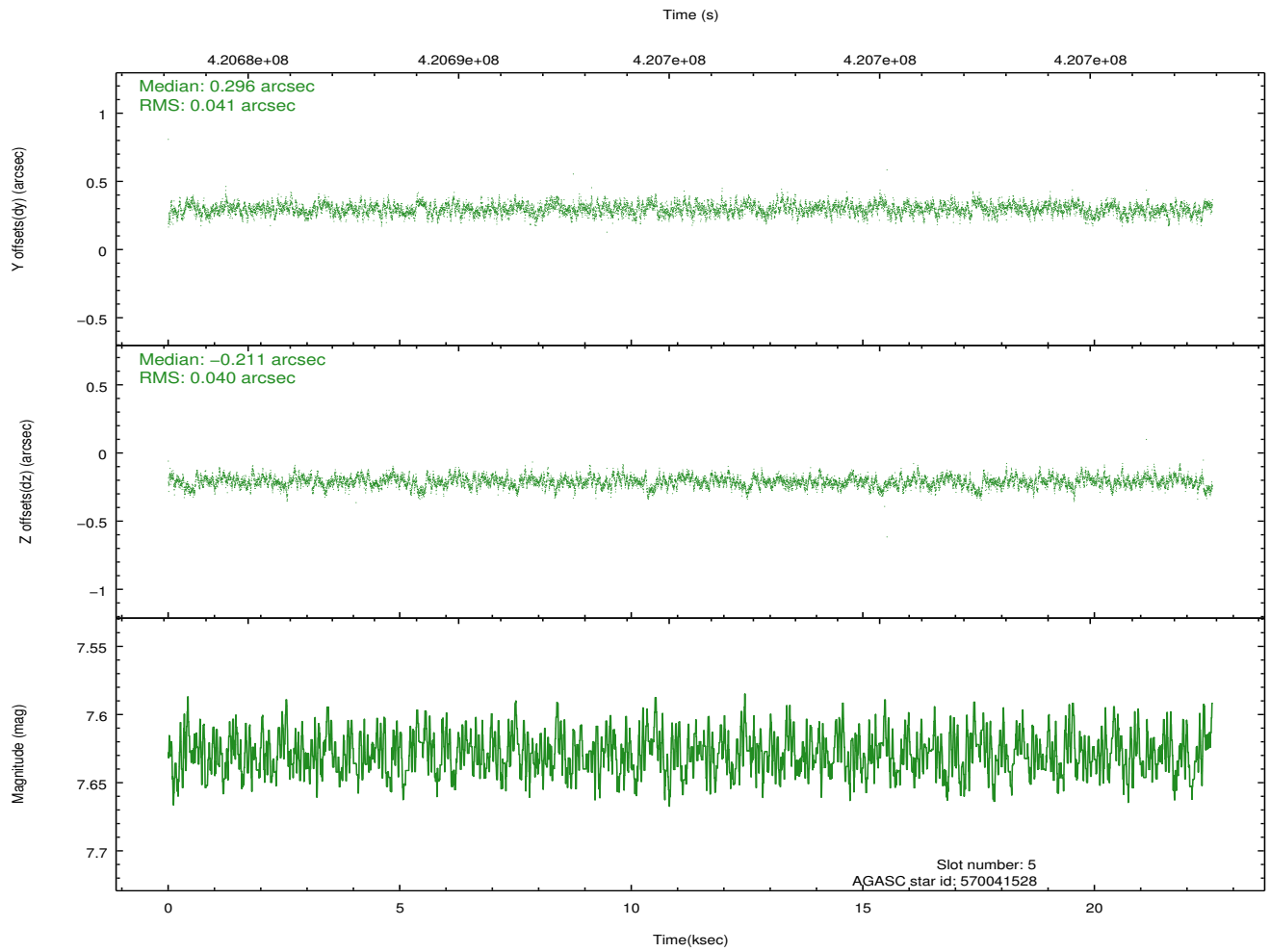
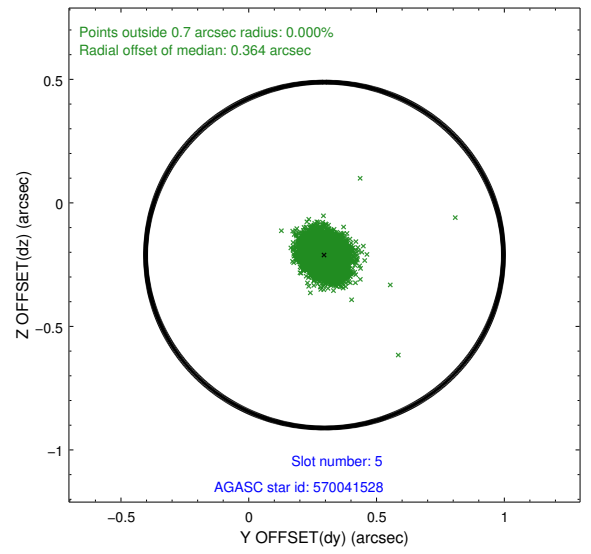
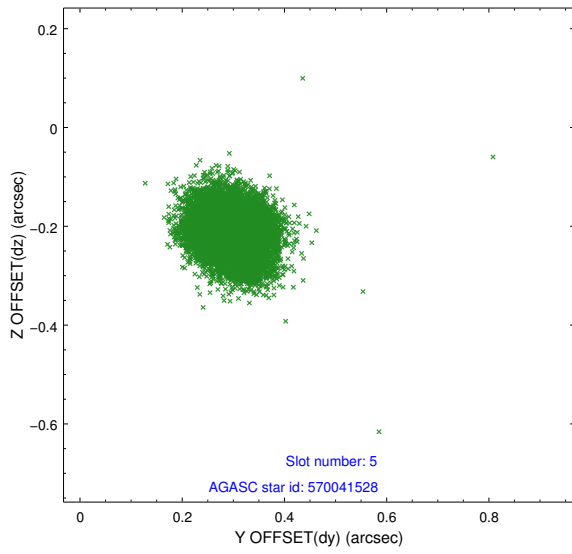
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.87	5500	-0.132	-0.031	0.008	0.020	0.000000	0.000000	-768.38	-1801.19
1	FID	ACIS-S-4	6.96	5499	0.205	0.072	0.010	0.031	0.000000	0.000000	2145.13	107.27
2	FID	ACIS-S-5	6.99	5500	-0.103	-0.033	0.009	0.025	0.000000	0.000000	-1821.03	100.93
3	OMITTED		0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00
4	GUIDE	570035664	7.64	10997	-0.058	0.019	0.072	0.120	92.975426	71.130782	-763.39	-724.33
5	GUIDE	570041528	7.63	10999	0.296	-0.211	0.059	0.097	93.751561	70.667714	1138.06	-772.83
6	GUIDE	570565312	8.28	10994	-0.108	0.056	0.060	0.098	94.342210	71.606805	-1463.52	1492.72
7	GUIDE	570559512	8.94	10941	-0.136	0.135	0.090	0.150	94.524462	71.891845	-2259.08	2172.79

2.4 Star Slots

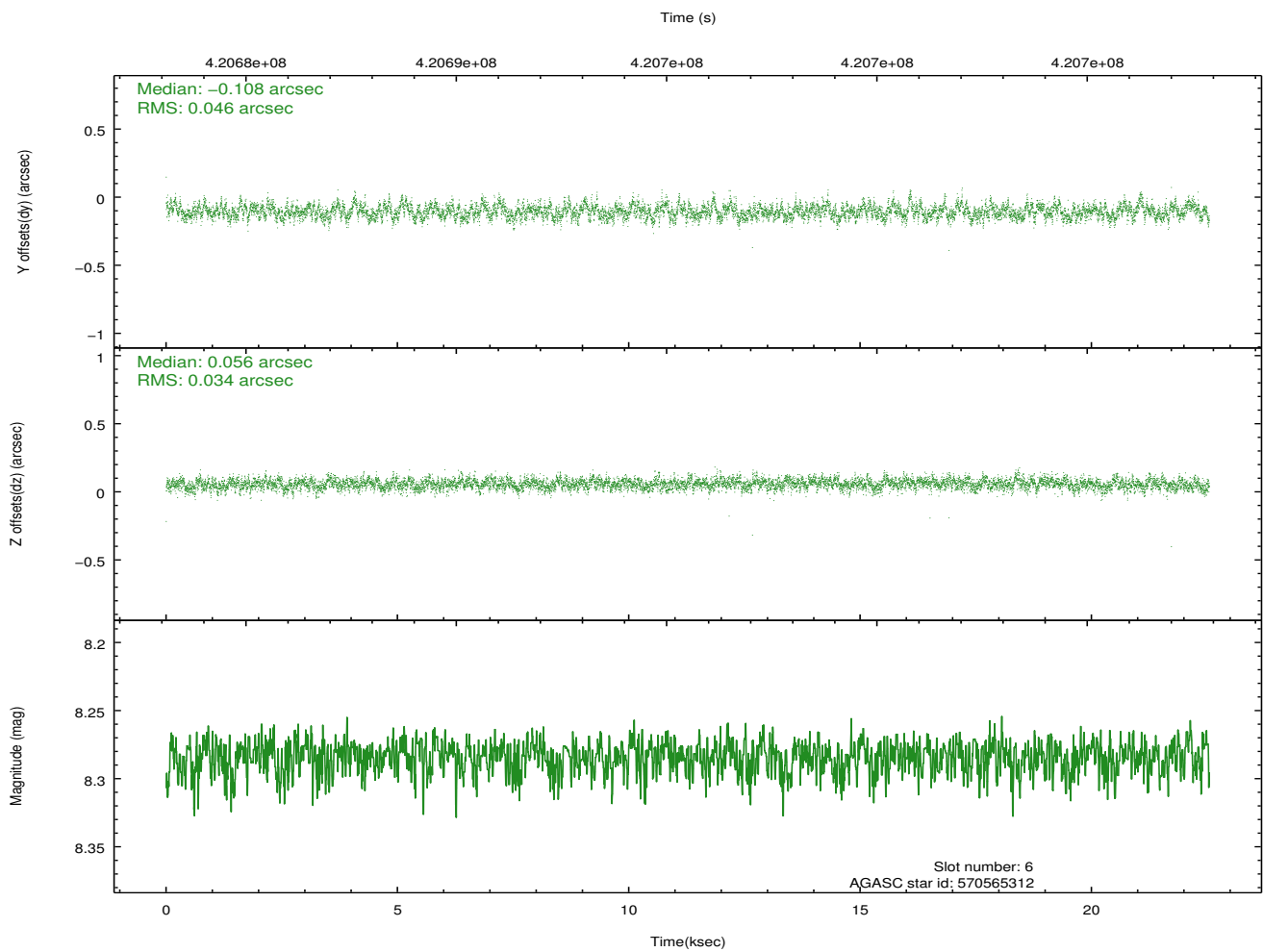
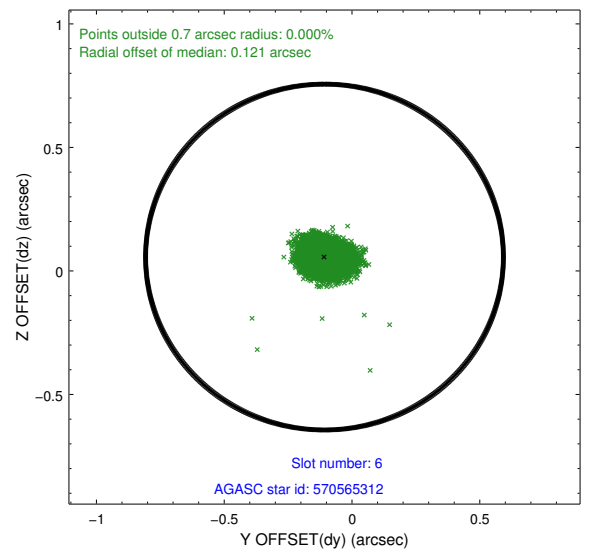
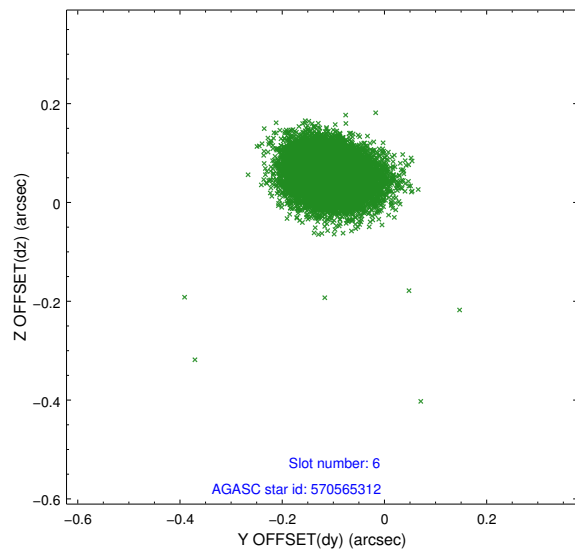
2.4.1 Slot 4



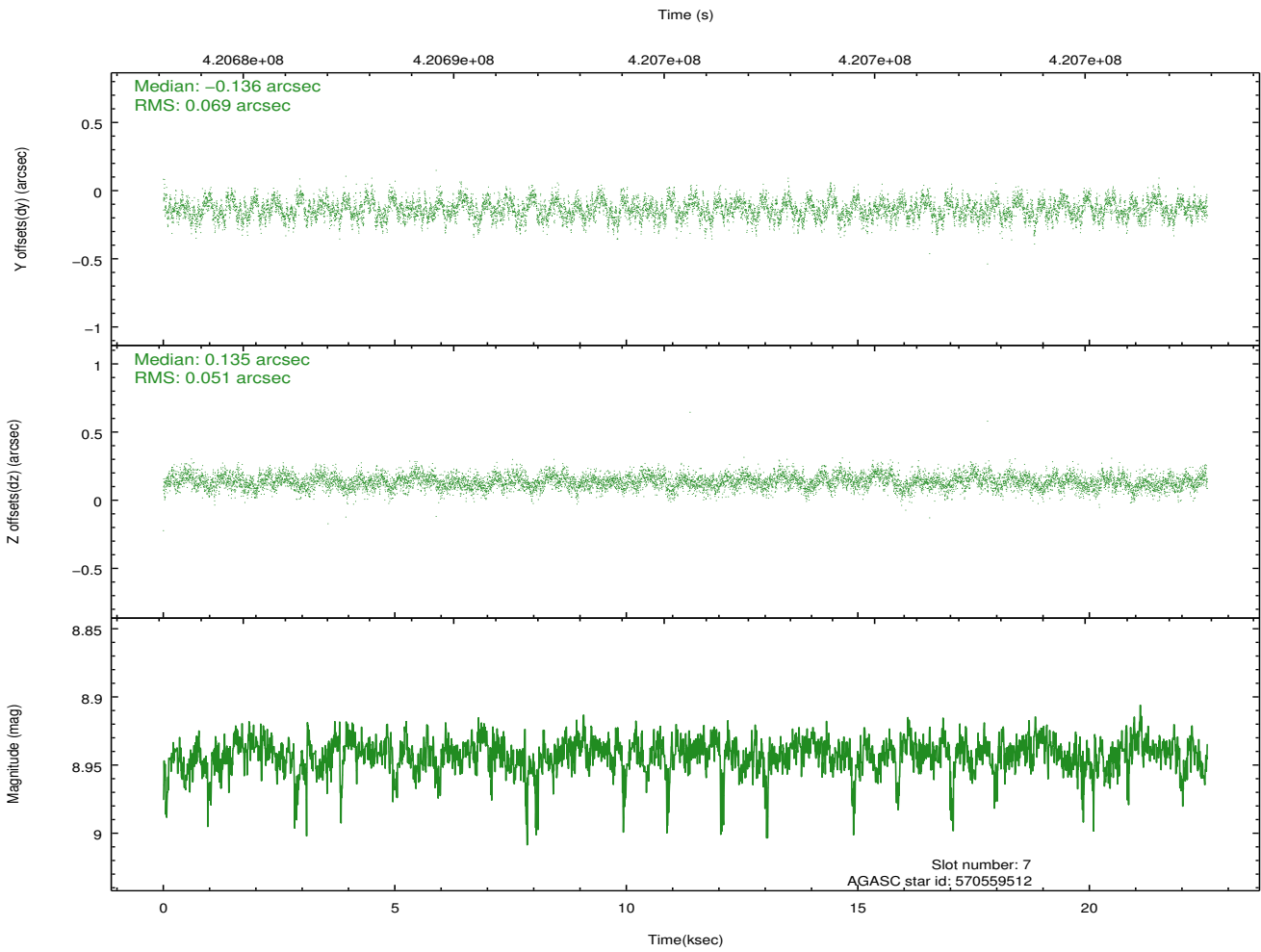
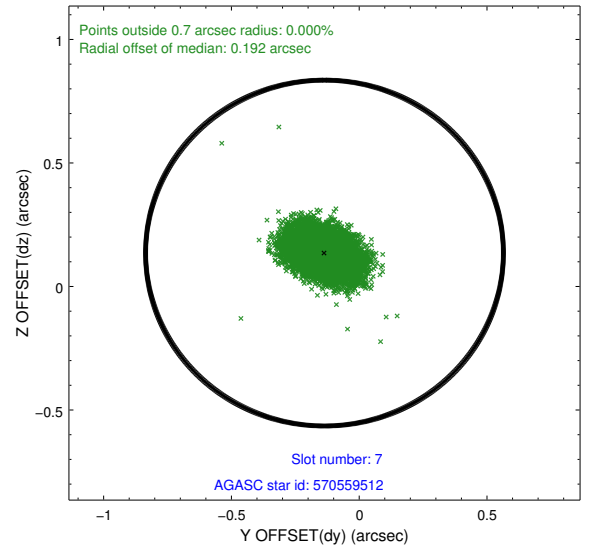
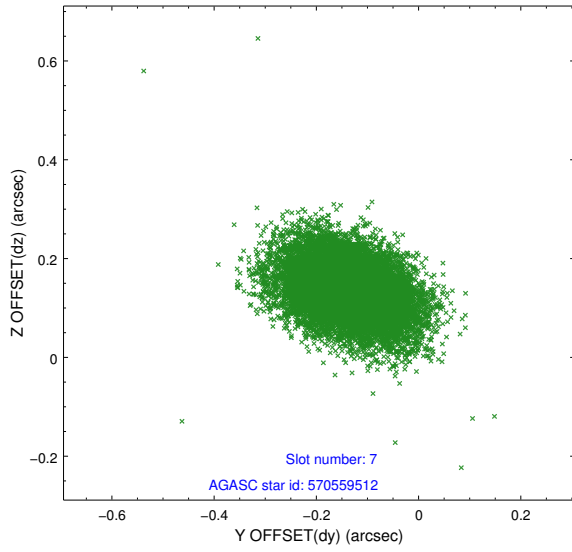
2.4.2 Slot 5



2.4.3 Slot 6

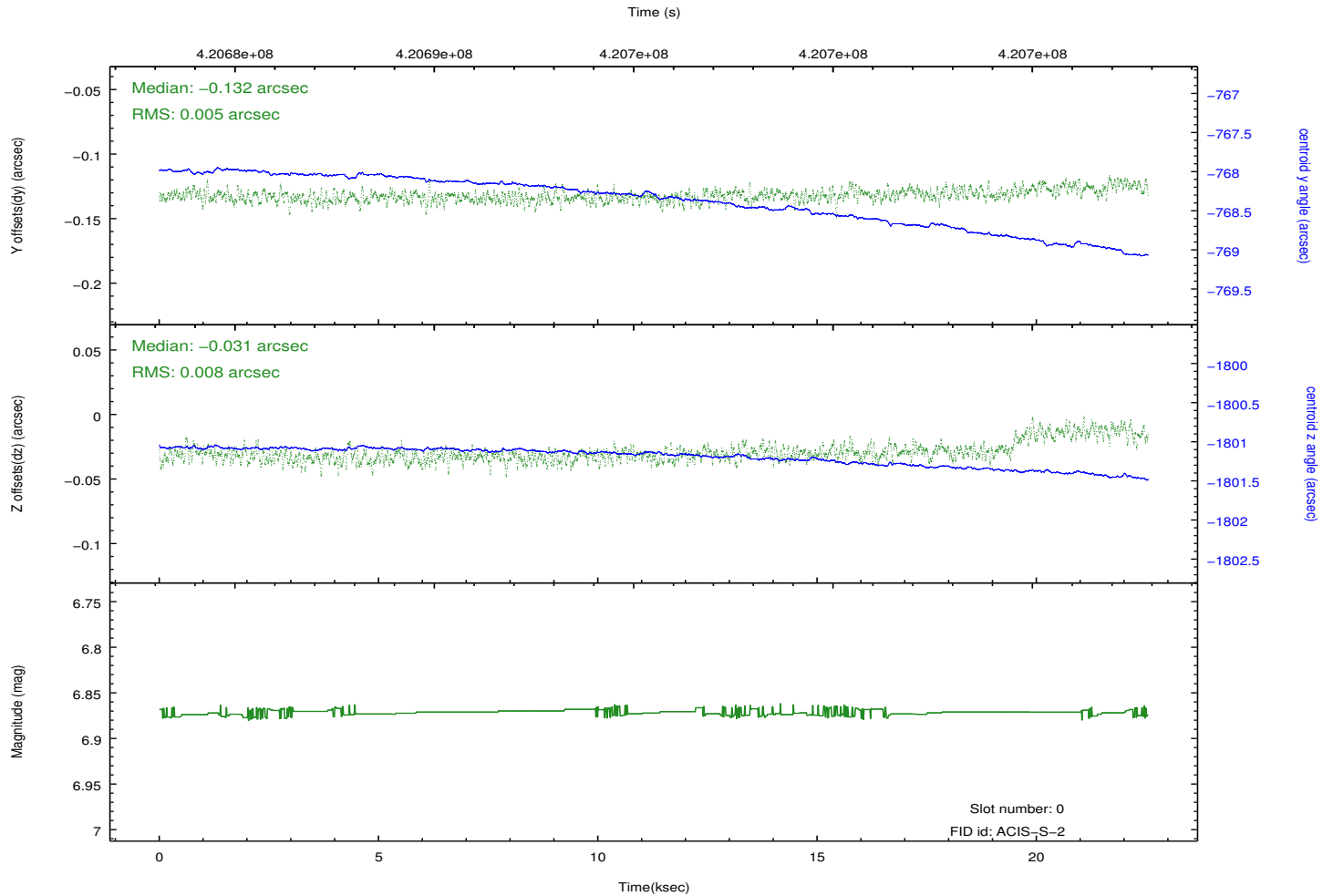
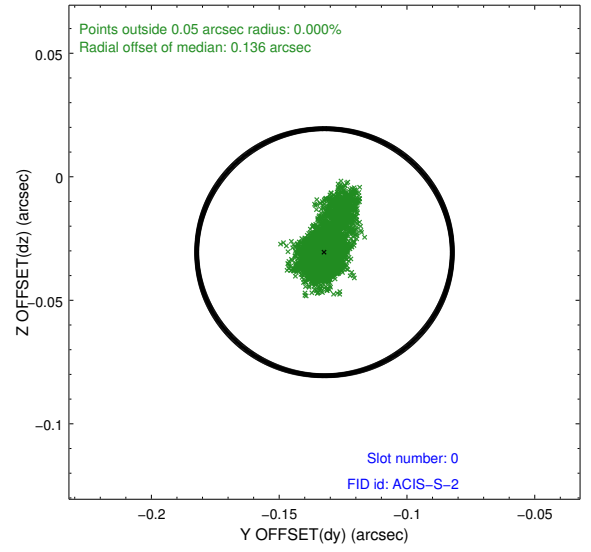
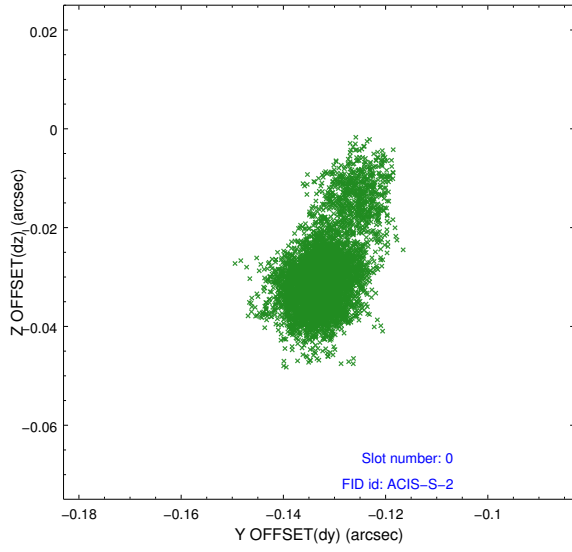


2.4.4 Slot 7

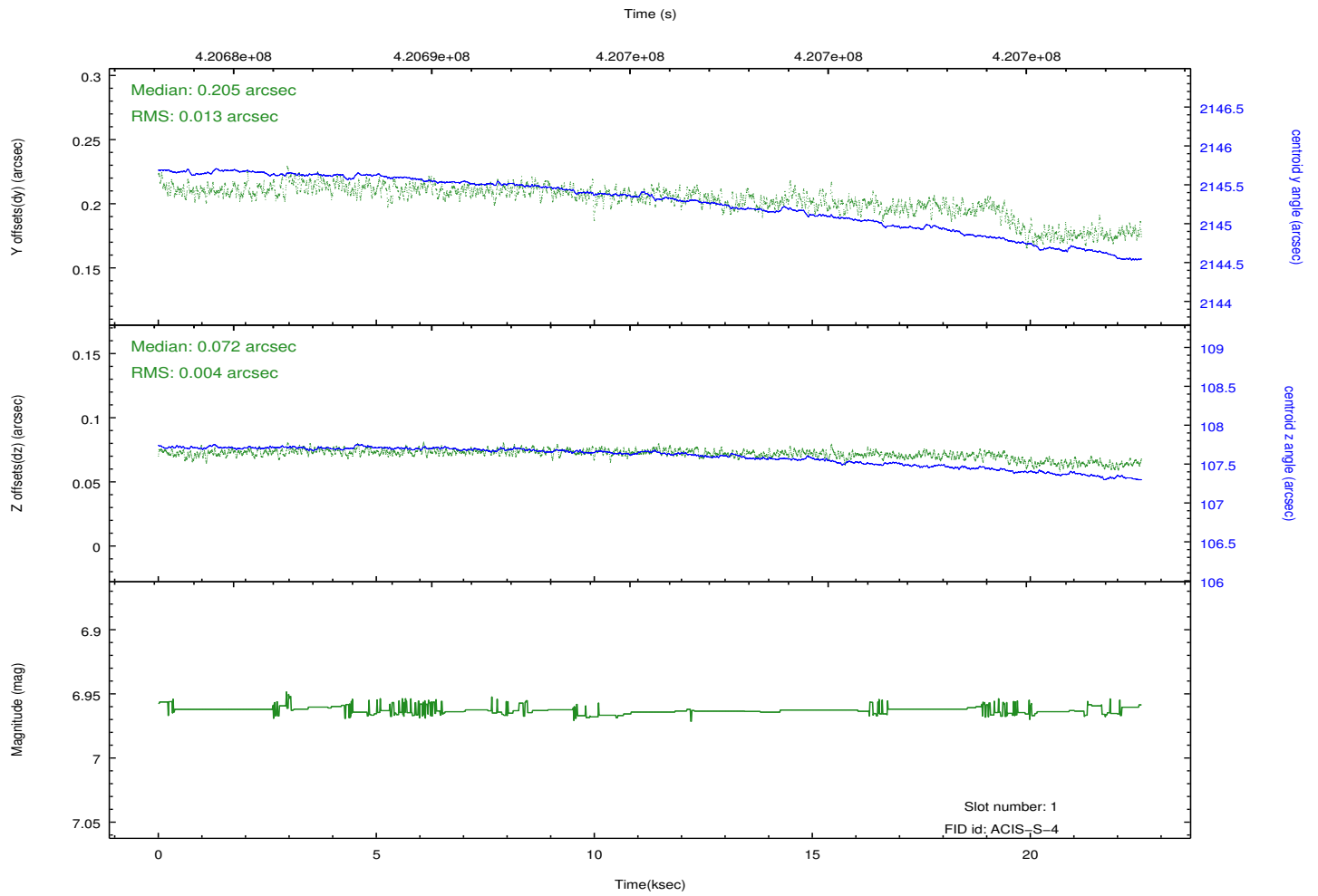
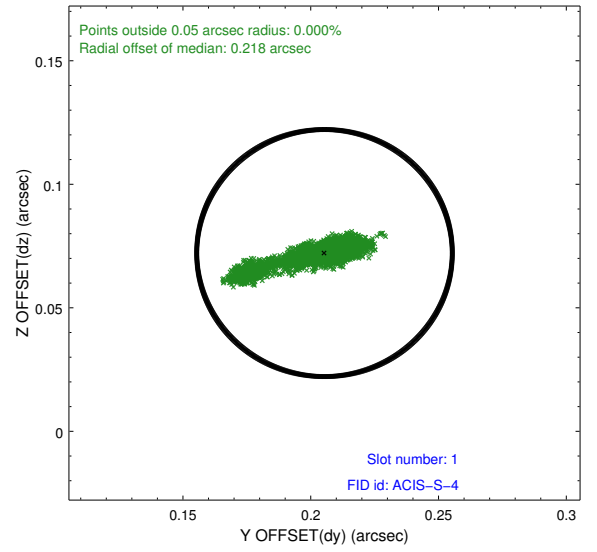
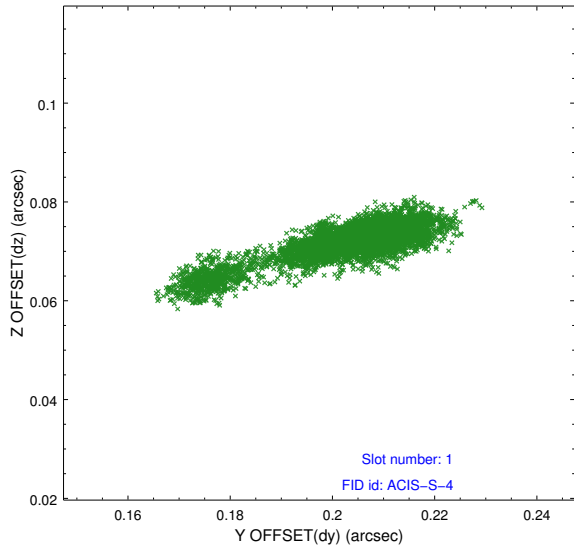


2.5 FID Slots

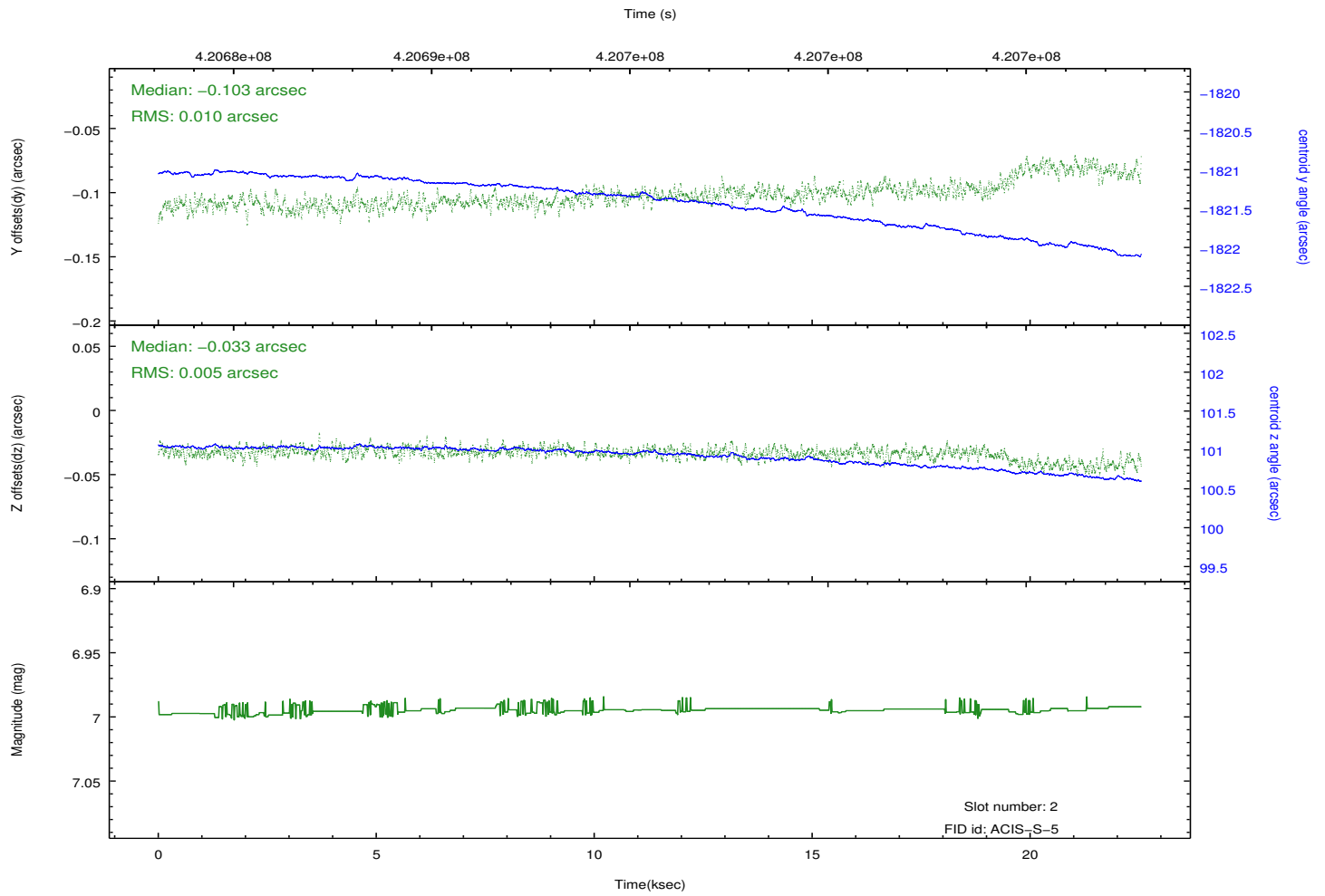
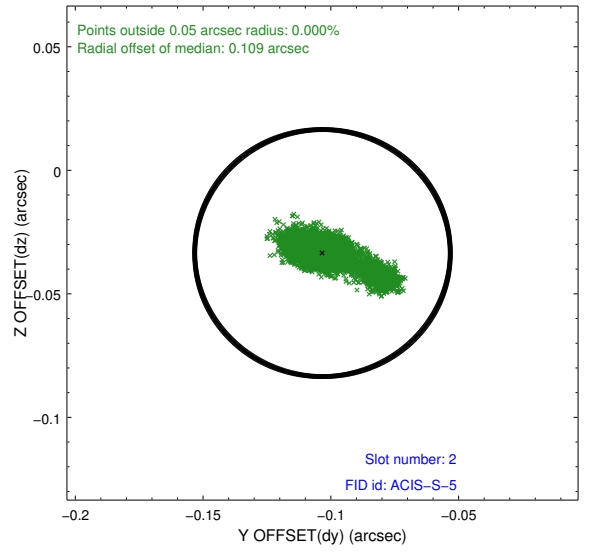
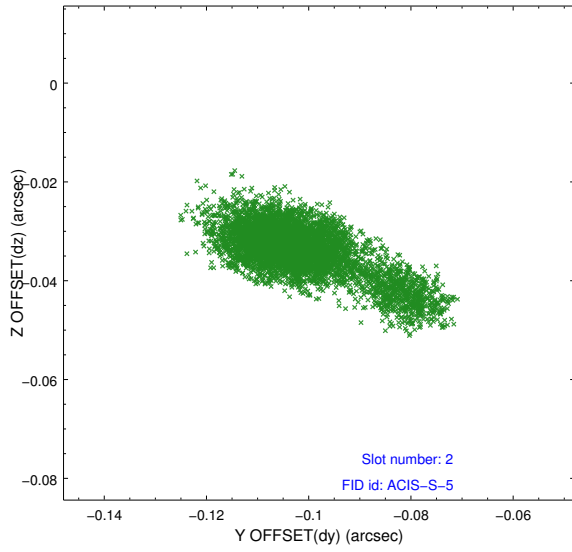
2.5.1 Slot 0



2.5.2 Slot 1

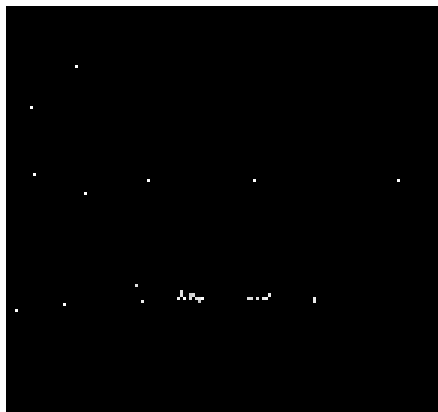


2.5.3 Slot 2

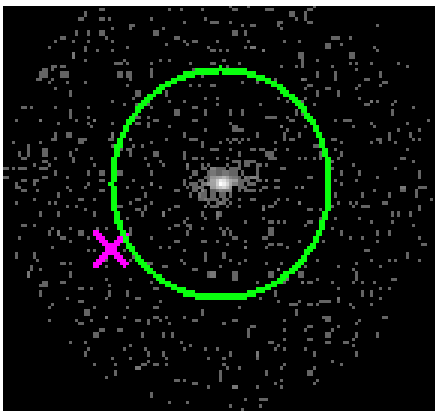


3 Gratings

3.1 HEG Arm



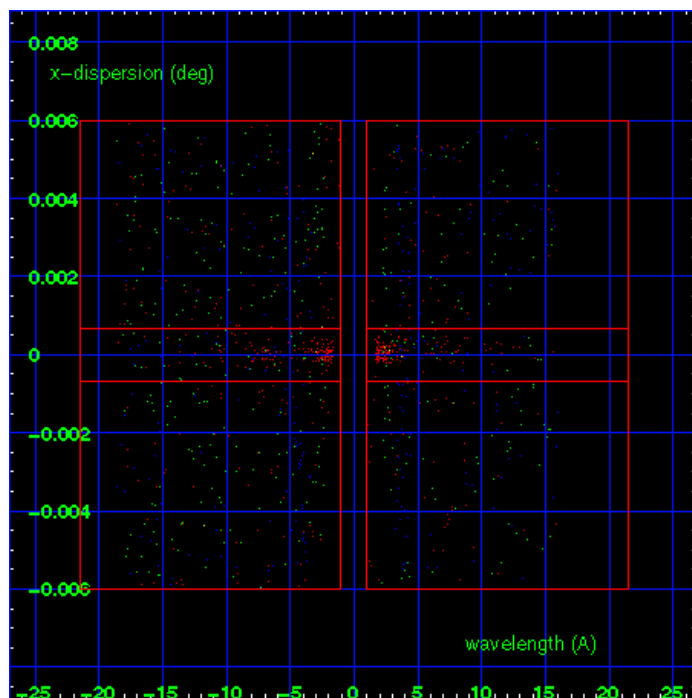
HEG Order Sort 123



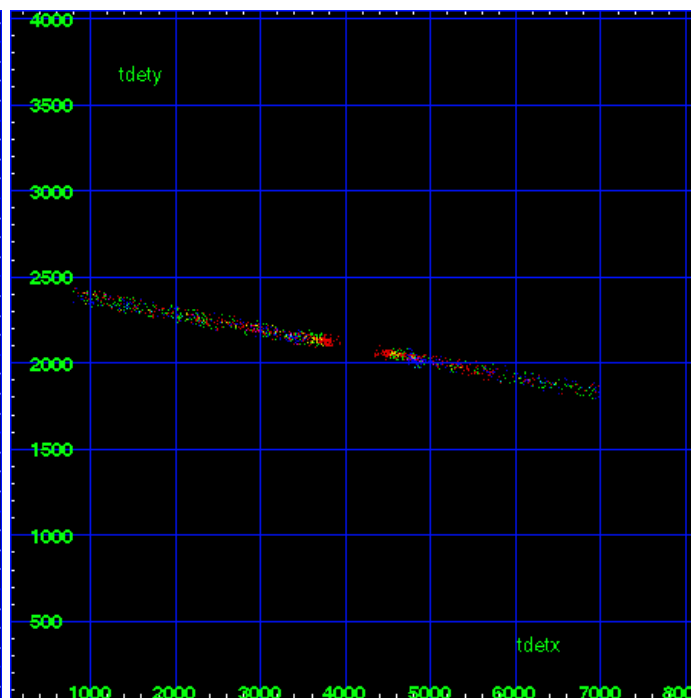
HEG Zero Order



HEG Order Sort ALL

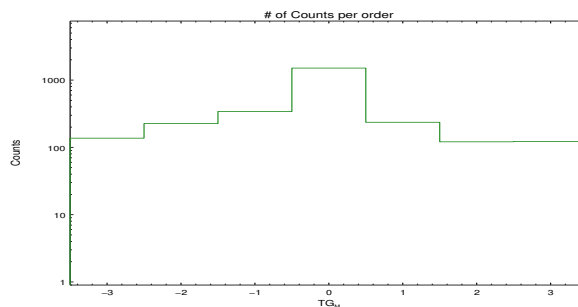


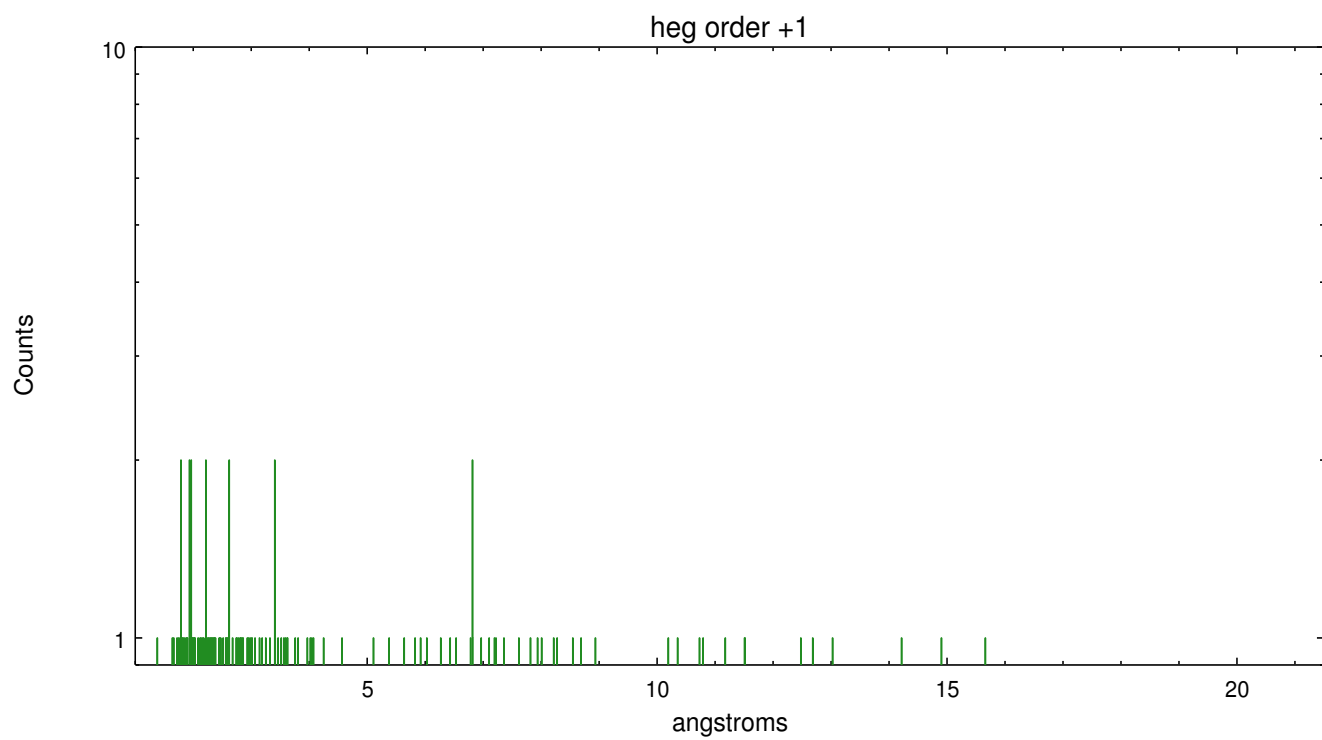
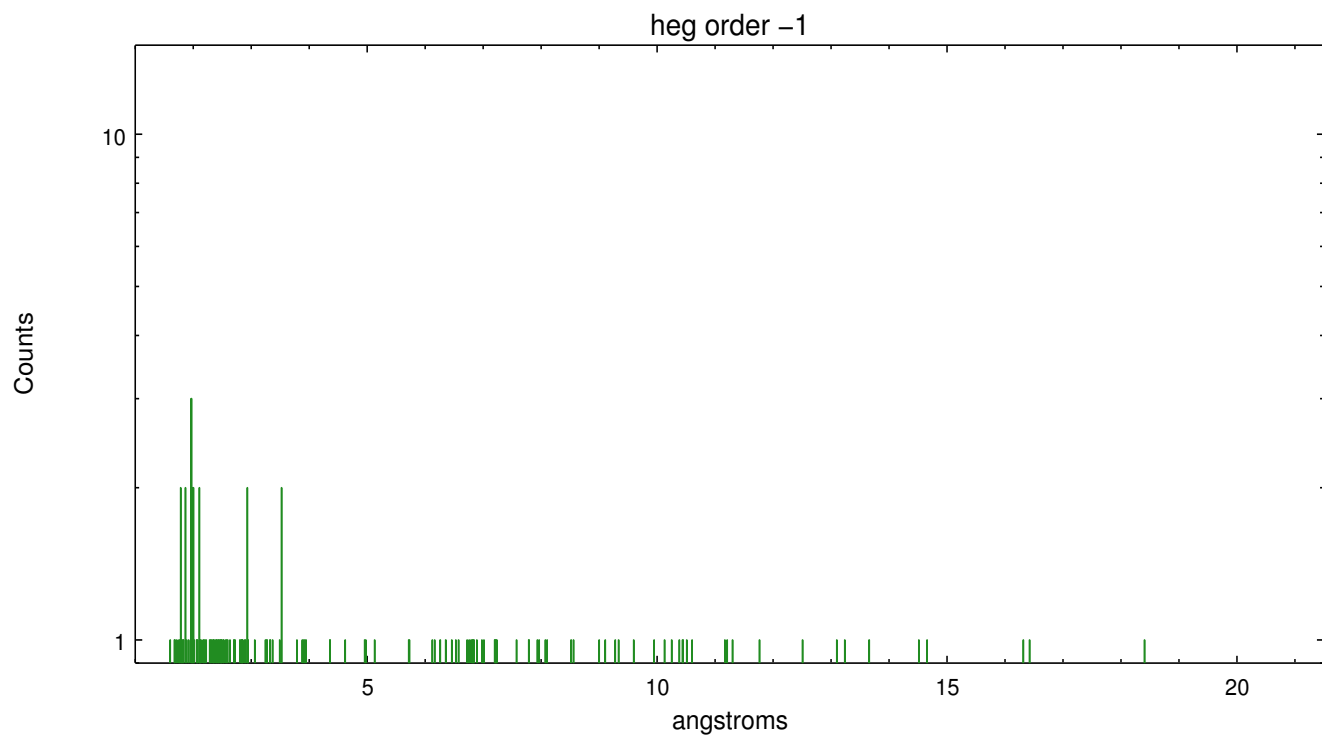
Spot Image HEG



Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	137	226	341	1508	236	121	122

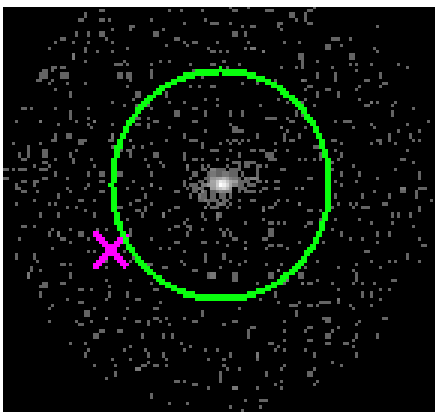




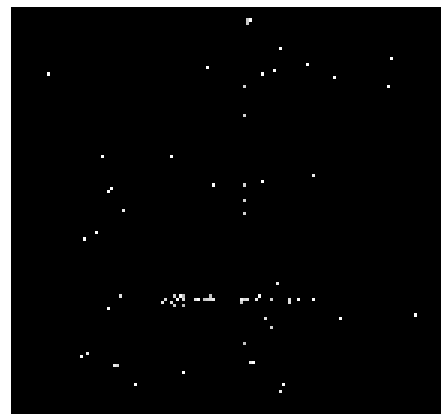
3.2 MEG Arm



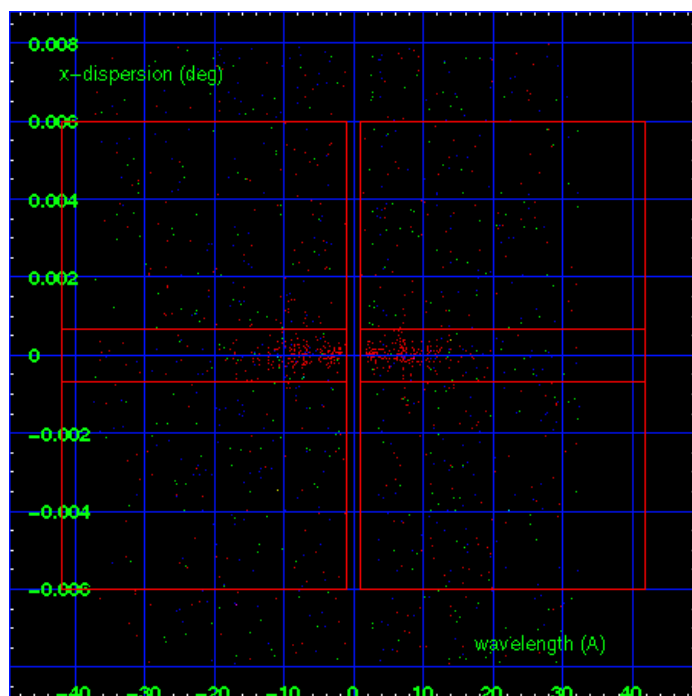
MEG Order Sort 123



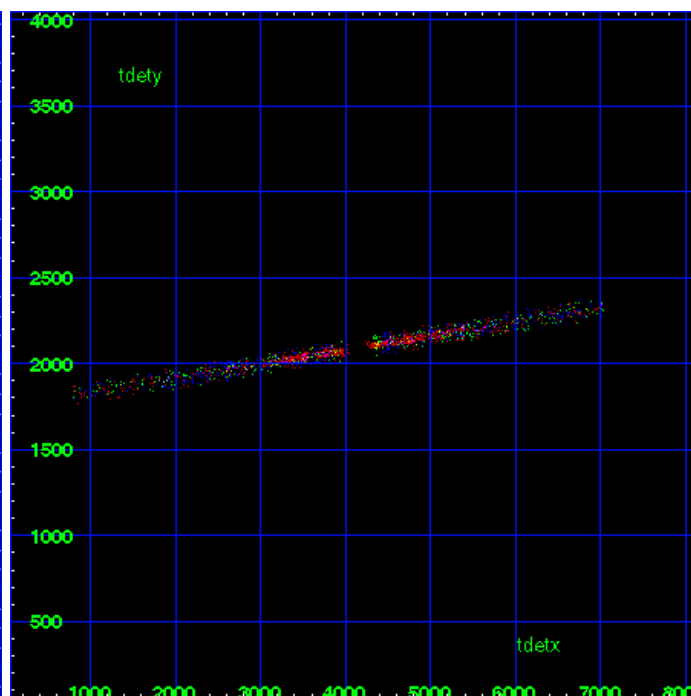
MEG Zero Order



MEG Order Sort ALL

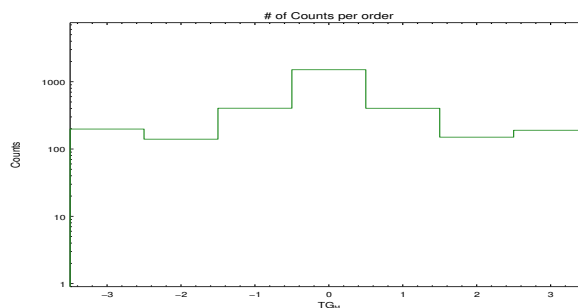


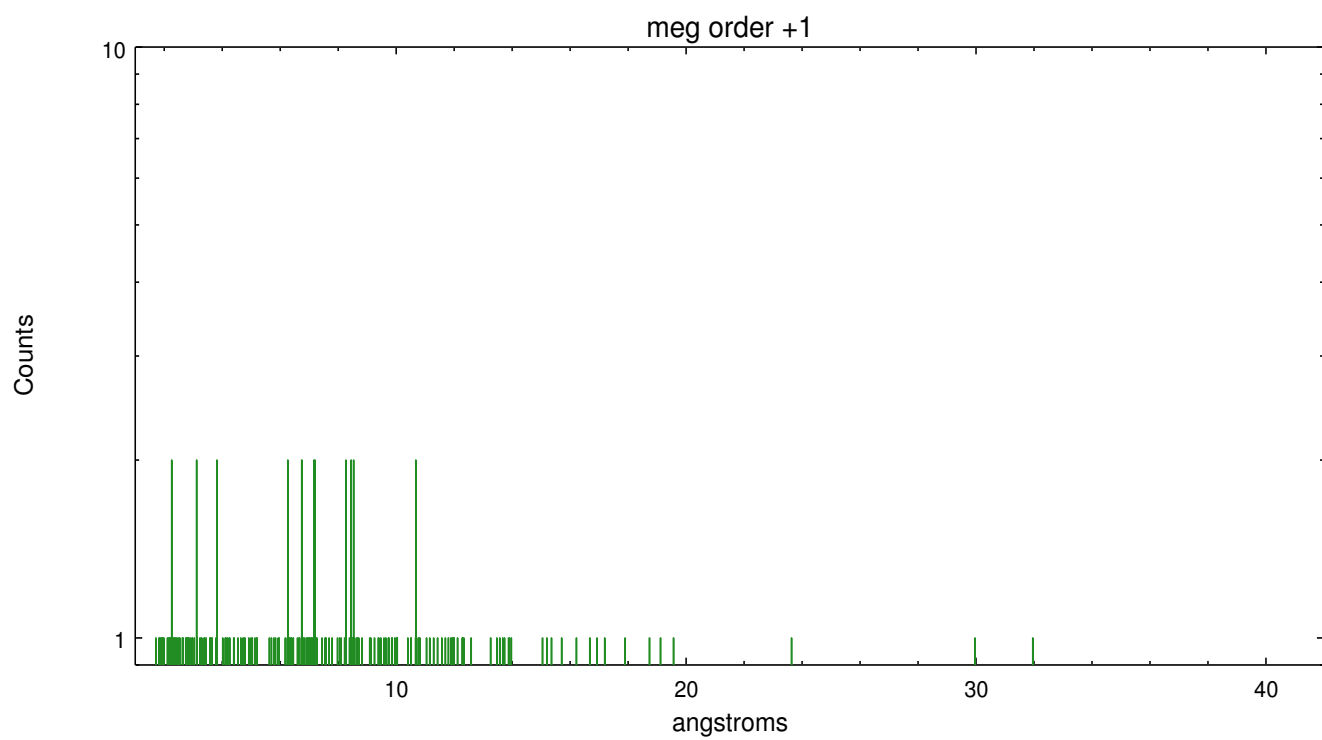
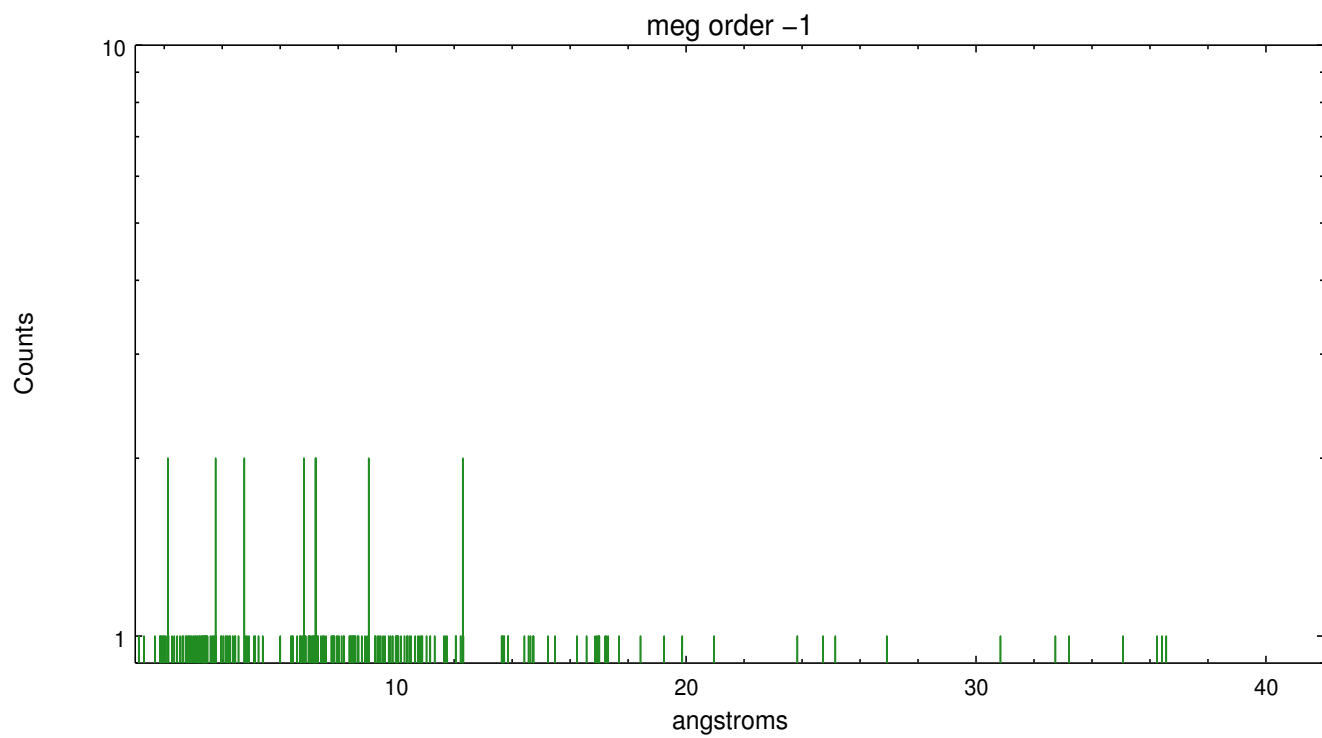
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	198	140	404	1508	403	150	190





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.02.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	22.4475

A.2 Comments

Roll constraint met.

===

The guide star in slot 3 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this guide star from the solution.

===

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.

=====

The data for this observation have been processed using the 'EDSER' sub-pixel event-repositioning algorithm of Li et al. (2004, ApJ, 610, 1204). Small-scale features should become sharper for sources near the aim point. The improvement will be less noticeable for off-axis sources where the size of the point-spread function is comparable to or larger than the size of an ACIS pixel. To take full advantage of the improvement, images should be binned on spatial scales smaller than the size of an ACIS pixel. Note that, at present, the point-spread function has not been calibrated for data to which the EDSER algorithm has been applied. If dither was disabled for the observation, then the algorithm can introduce artificial aliasing effects on spatial scales smaller than a pixel. If you would prefer to use no sub-pixel adjustment or to apply a coordinate randomization, then use `acis_process_events` to reprocess the data with the parameter `pix_adj=NONE` or `RANDOMIZE`, respectively.