

V&V Reference Report

L2 ASCDS Version : 8.4.3

Observation 13263 - L2 Version 3
Chandra X-Ray Center

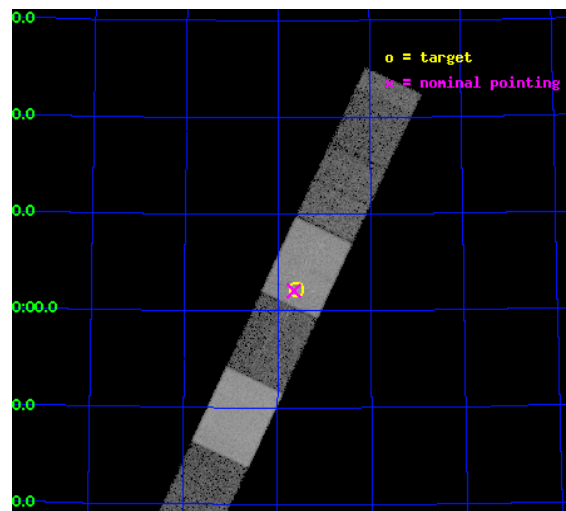
L2 Processing Date : Feb 8 2012

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1 Front

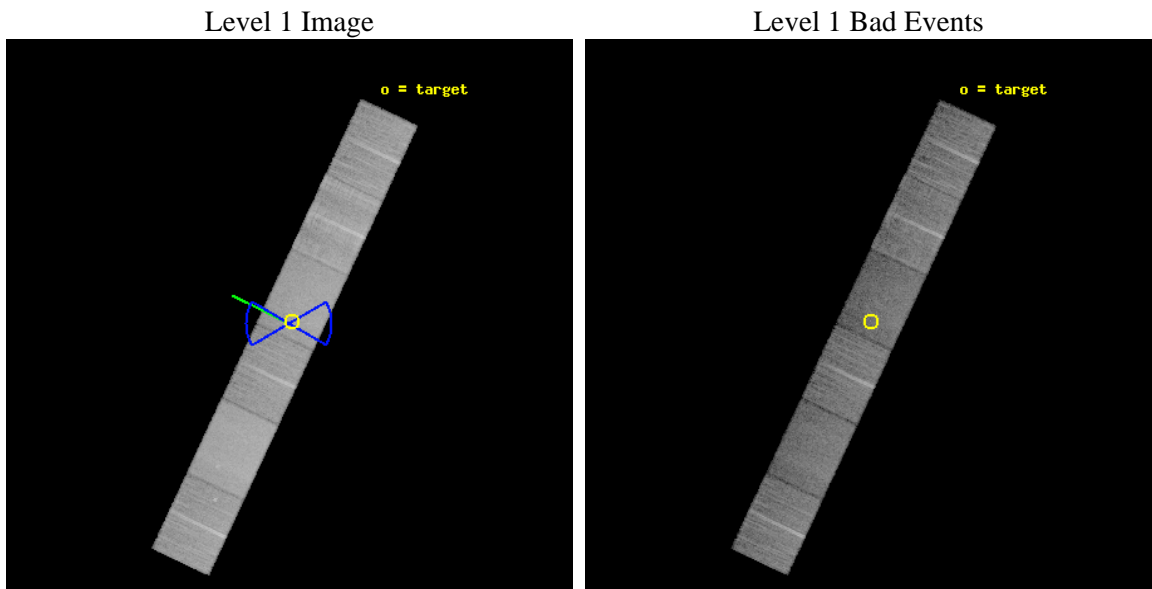
seq_num	702507	Sequence number
obs_id	13263	Observation id
title	THE FIRST SPATIALLY RESOLVED SPECTRUM OF AN AGN OUTFLOW IN AN EARLY-TYPE GALAXY: A DEEP HETG OBSERVATION OF MRK 3	Proposal title
observer	Dr Daniel Evans	Principal investigator
object	Markarian 3	Source name
dtcycle	0	
cycle	P	events from 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	93.913785606115	Nominal RA [deg]
dec_nom	71.034859330318	Nominal Dec [deg]
roll_nom	295.14478367551	Nominal Roll [deg]
revision	3	Processing version of data
ontime	20047.140693665	Sum of GTIs [s]
livetime	19723.361983346	Livetime [s]
ontime4	20047.181733668	Sum of GTIs [s]
ontime5	20047.099653661	Sum of GTIs [s]
ontime6	20047.058613658	Sum of GTIs [s]
ontime7	20047.140693665	Sum of GTIs [s]
ontime8	20047.017573655	Sum of GTIs [s]
ontime9	20046.976533651	Sum of GTIs [s]
l2events	169464	Number of level 2 events



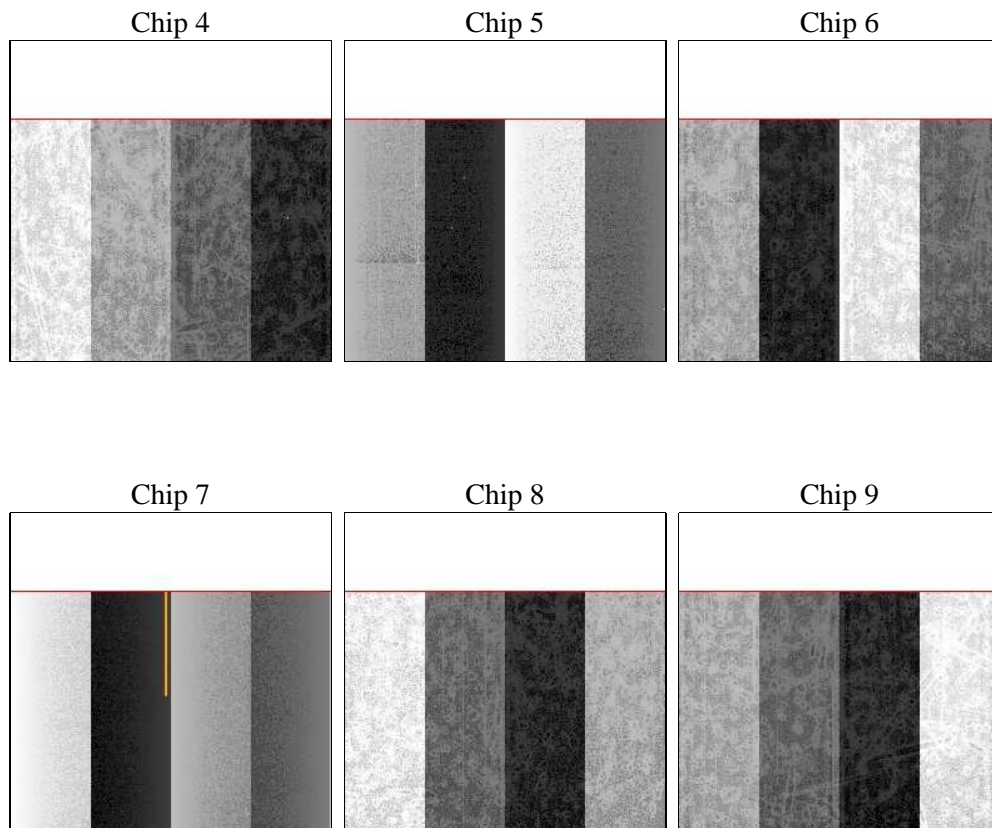
2 OBI

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	8.4.3	Processing system revision	ontime	20047.140693665	Sum of GTIs [s]
caldsver	4.4.7	 	ontime4	20047.181733668	Sum of GTIs [s]
date	2012-02-09T00:47:48	Date and time of file creation	ontime5	20047.099653661	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	20047.058613658	Sum of GTIs [s]
			ontime7	20047.140693665	Sum of GTIs [s]
			ontime8	20047.017573655	Sum of GTIs [s]
			ontime9	20046.976533651	Sum of GTIs [s]
			l1events	719304	Number of level 1 events

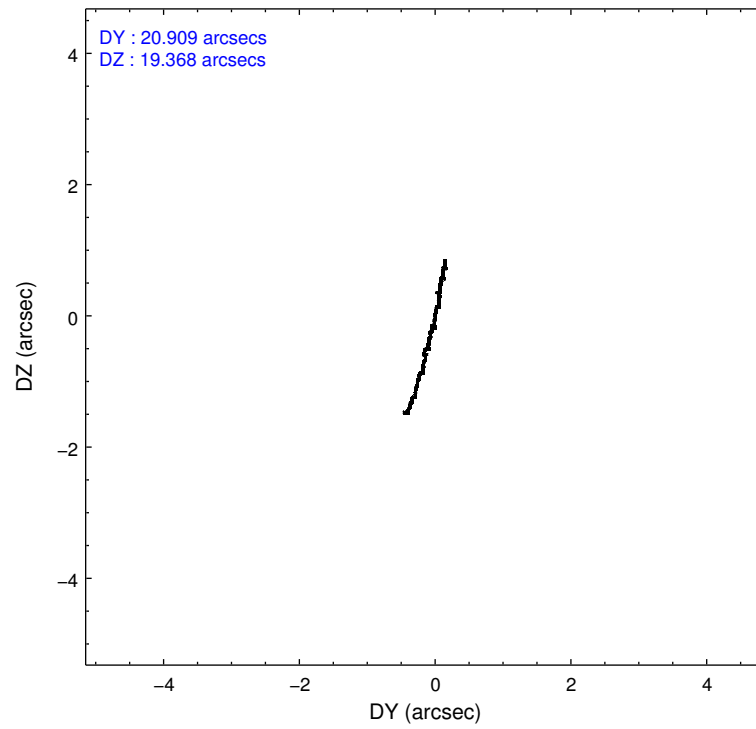
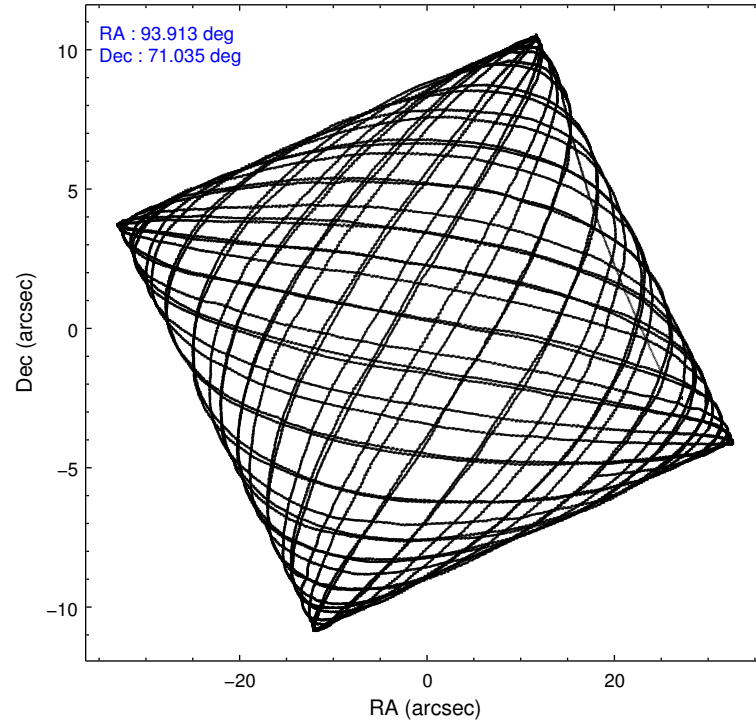
2.1.4 Events

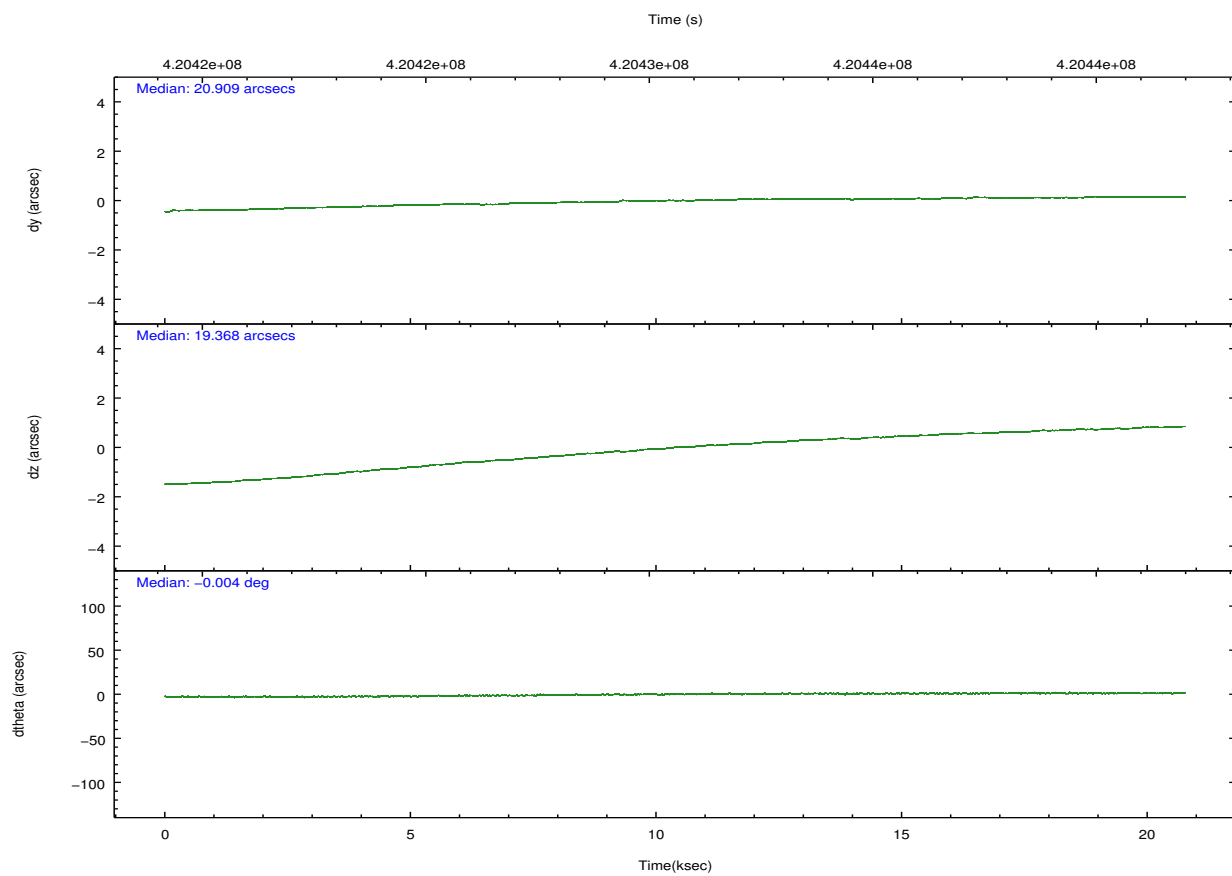
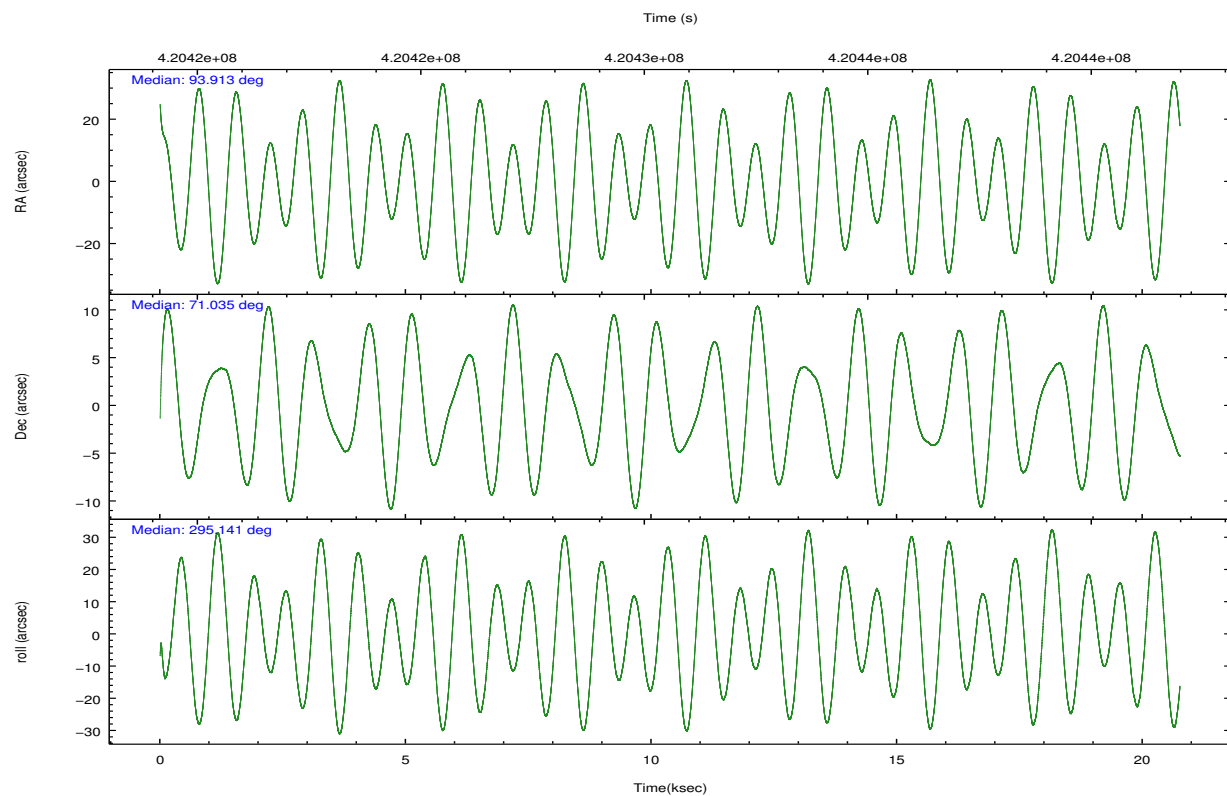
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	112162	150098	101228	125137	130766	99913	grade 0 events	5117	4929	3837	5391	10312	4207
rejected events	99370	76999	89635	68050	95389	87899		4%	3%	3%	4%	7%	4%
rejected %	88%	51%	88%	54%	72%	87%	grade 1 events	80	272	44	142	95	44
								0%	0%	0%	0%	0%	0%
							grade 2 events	3039	21749	2625	11913	8147	2609
								2%	14%	2%	9%	6%	2%
							grade 3 events	1333	3413	1303	5204	3791	1310
								1%	2%	1%	4%	2%	1%
							grade 4 events	1169	3260	1277	5197	3478	1260
								1%	2%	1%	4%	2%	1%
							grade 5 events	4417	12074	4451	12994	6474	5093
								3%	8%	4%	10%	4%	5%
							grade 6 events	2136	39766	2553	29400	9656	2631
								1%	26%	2%	23%	7%	2%
							grade 7 events	94871	64635	85138	54896	88813	82759
								84%	43%	84%	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	93.844009	93.91378560611531	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	71.050162	71.03485933031844	Subarray start row	1	1
[deg] Pointing Roll	295.054146	295.1447836755051	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	-187.1228876879999			
[mm] SIM translation stage offset	-3	-3.009634895007935			
[s] Observation start time (MET)	420420961.184000	420419313.67534			
Observation start date	2011-04-28T23:34:55	2011-04-28T23:08:33			
[s] Observation end time (MET)	420440961.184000	420441791.41401			
Observation end date	2011-04-29T05:08:15	2011-04-29T05:23:11			
Read mode	TIMED	TIMED			

2.3 Aspect



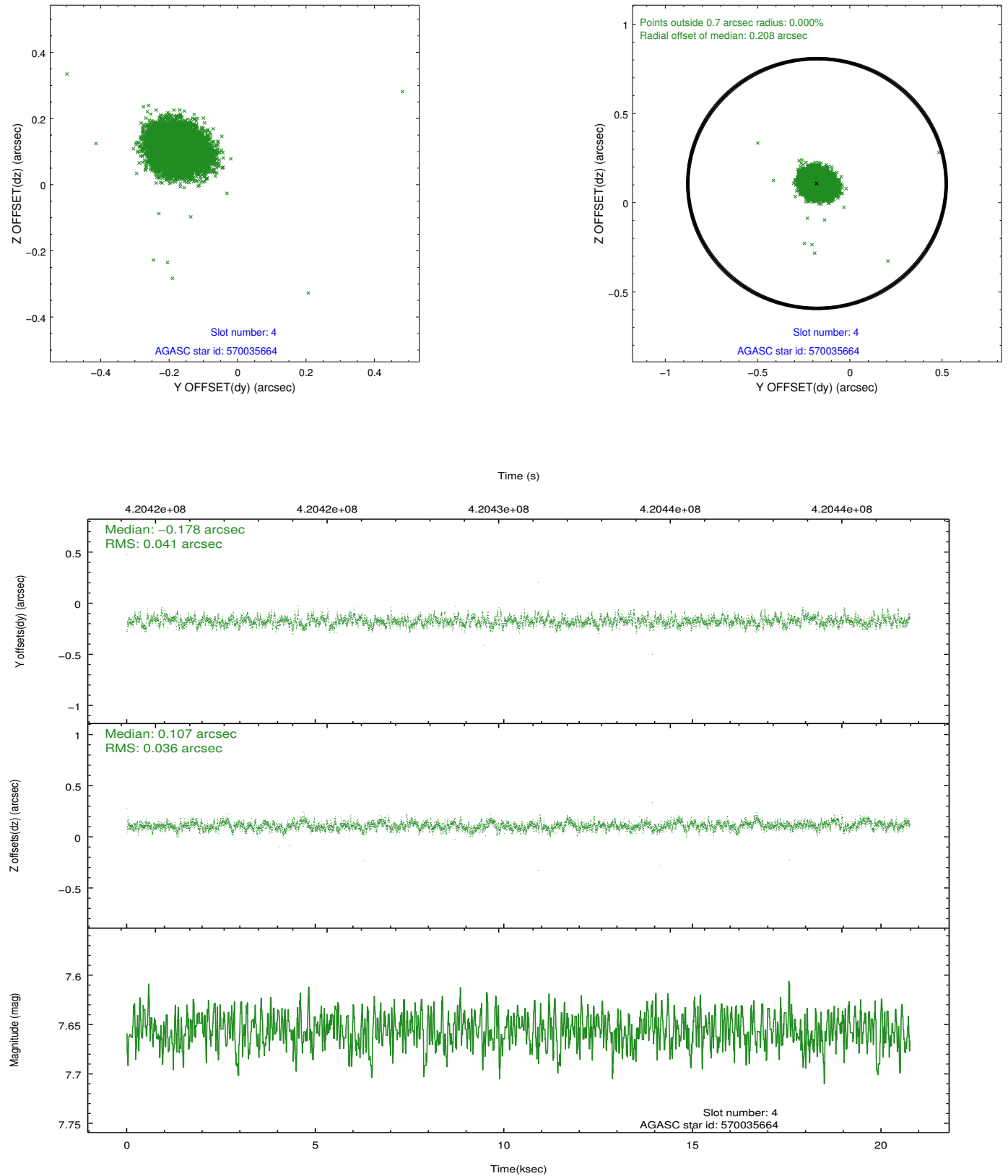


Slot Statistics

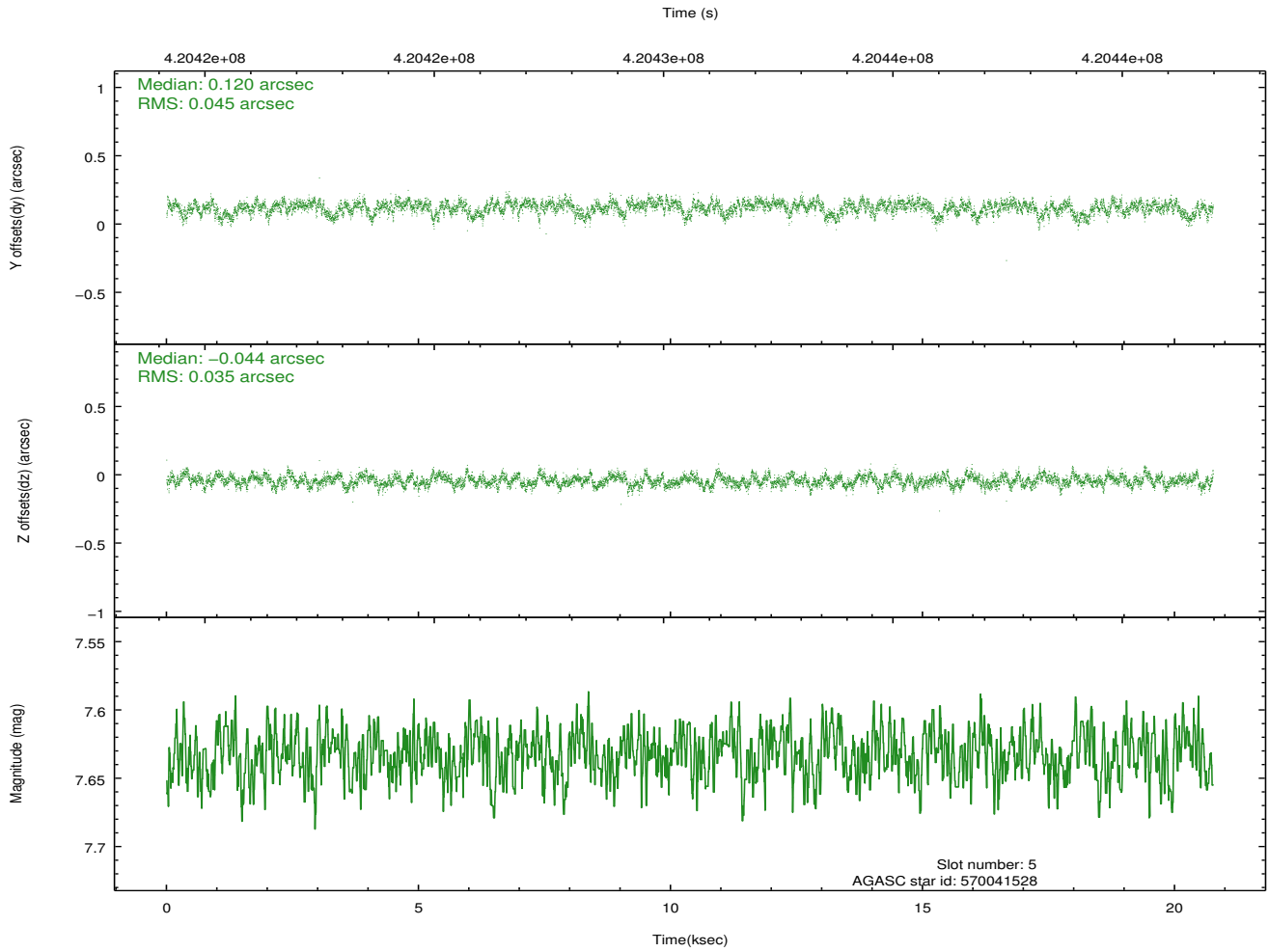
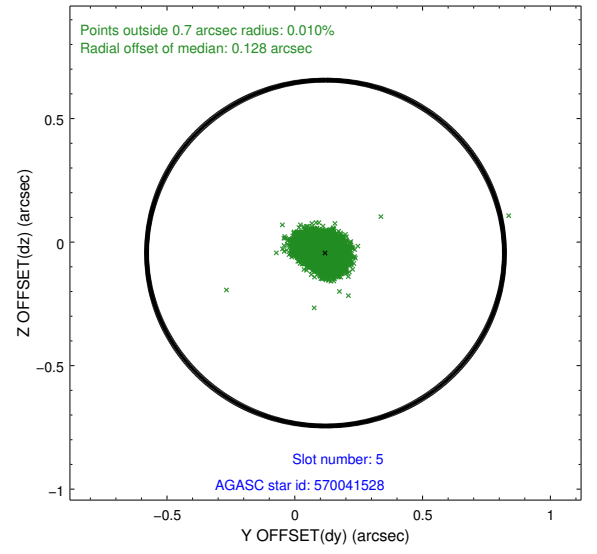
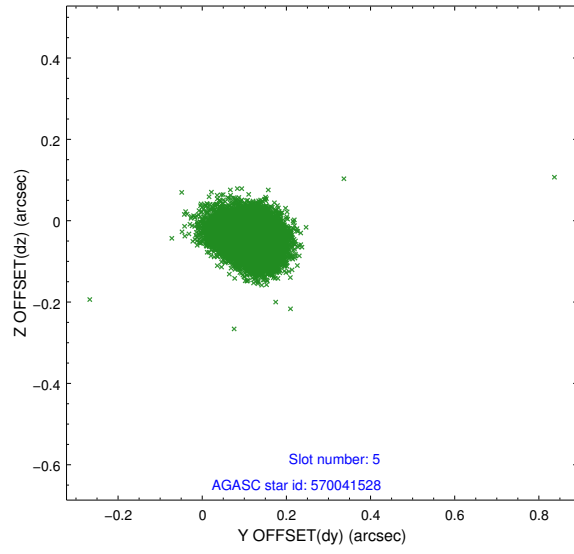
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.90	5064	-0.120	-0.057	0.022	0.043	0.000000	0.000000	-773.90	-1802.89
1	FID	ACIS-S-4	6.98	5064	0.236	0.073	0.017	0.032	0.000000	0.000000	2139.66	105.51
2	FID	ACIS-S-5	7.01	5062	-0.146	-0.007	0.020	0.039	0.000000	0.000000	-1826.54	99.30
3	OMITTED		0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00
4	GUIDE	570035664	7.66	10125	-0.178	0.107	0.057	0.092	92.975426	71.130782	-697.87	-790.05
5	GUIDE	570041528	7.63	10129	0.120	-0.044	0.060	0.097	93.751561	70.667714	1201.09	-682.58
6	GUIDE	570565312	8.29	10127	-0.260	0.122	0.059	0.096	94.342210	71.606805	-1577.28	1362.17
7	GUIDE	570566608	9.25	10125	0.324	-0.187	0.098	0.155	93.871444	71.374624	-1044.23	523.38

2.4 Star Slots

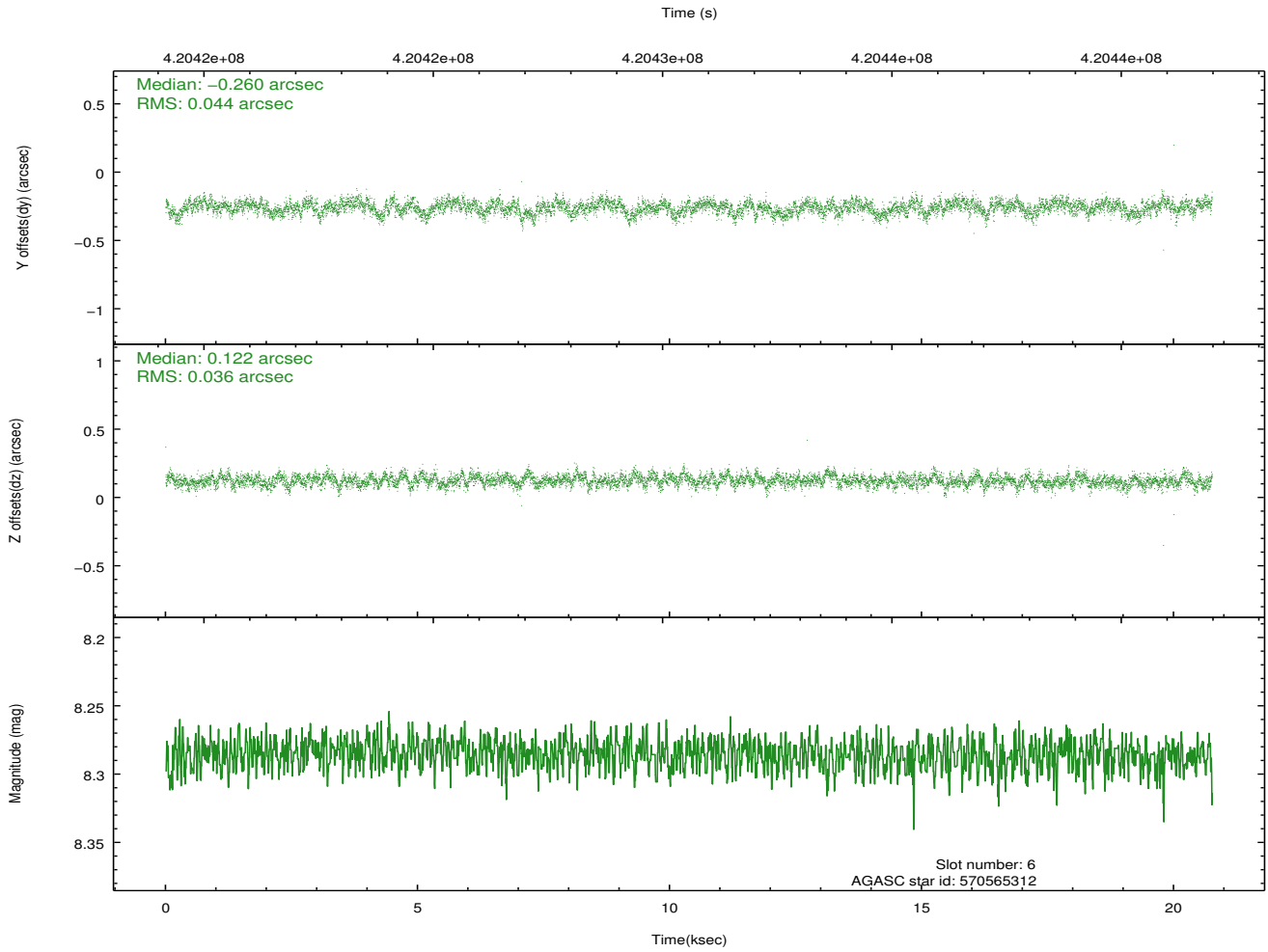
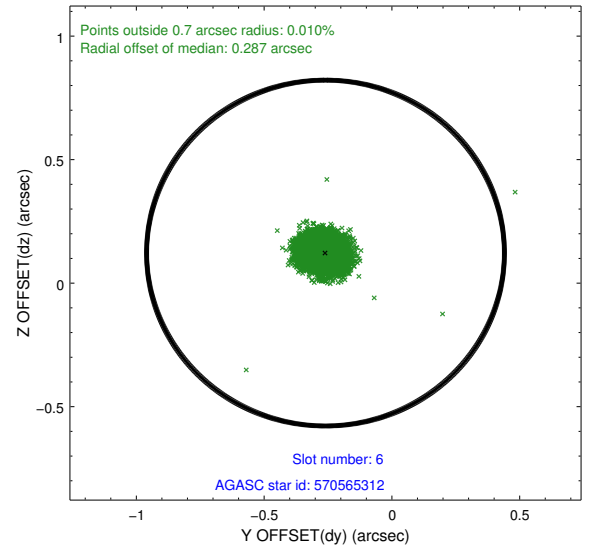
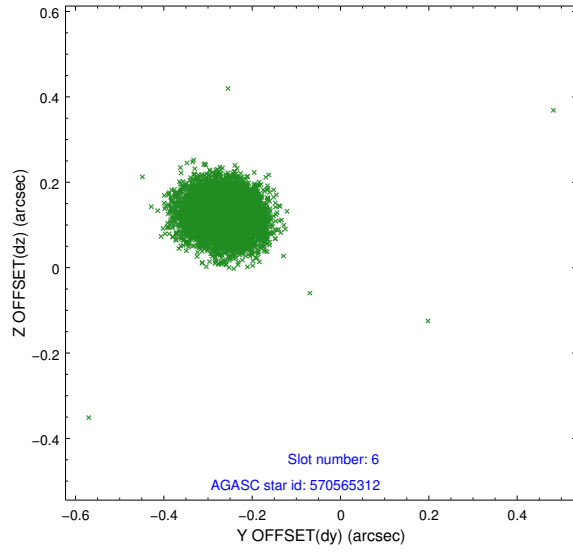
2.4.1 Slot 4



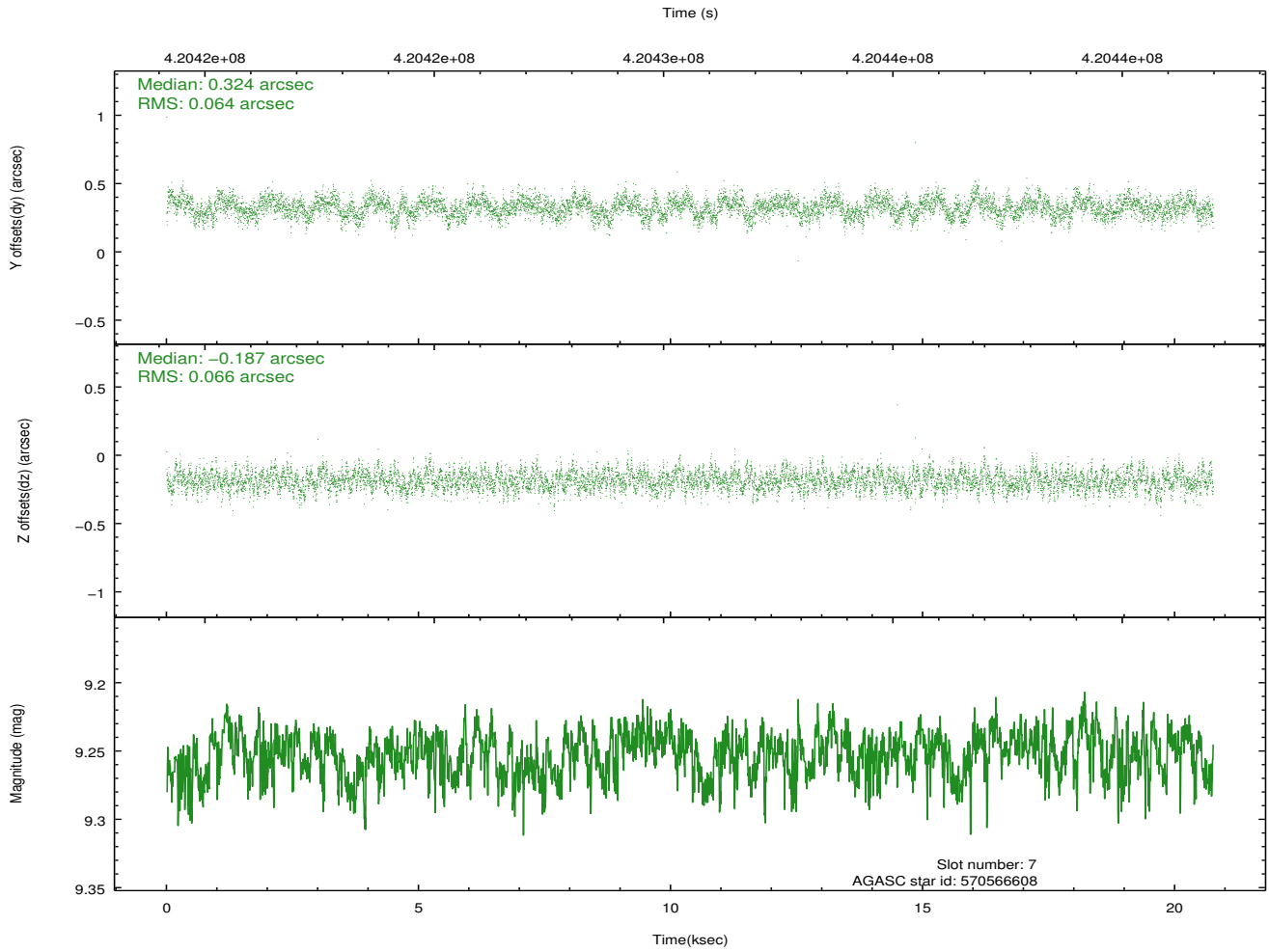
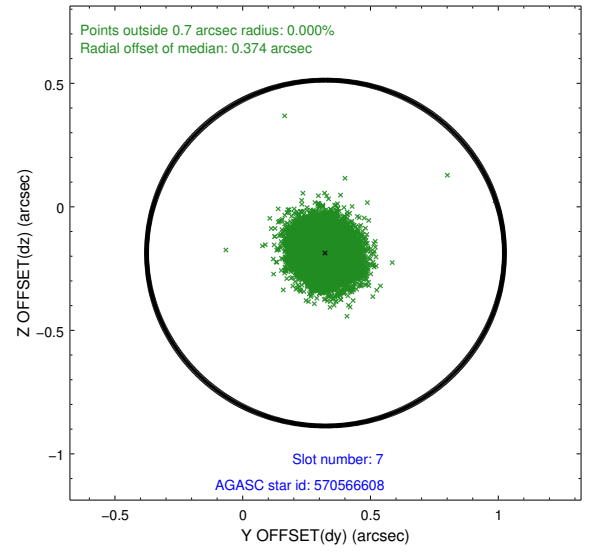
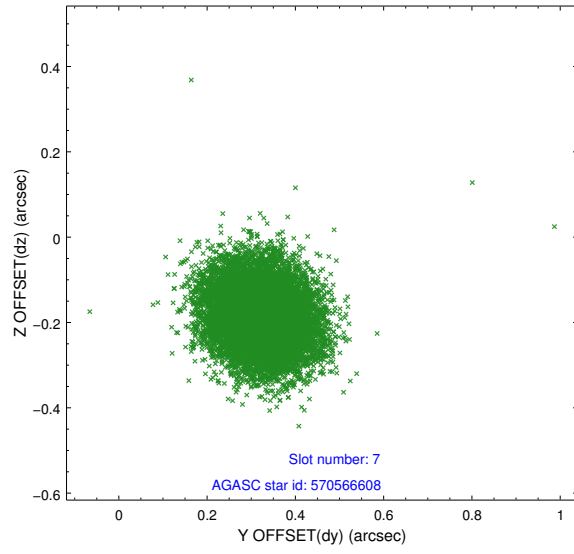
2.4.2 Slot 5



2.4.3 Slot 6

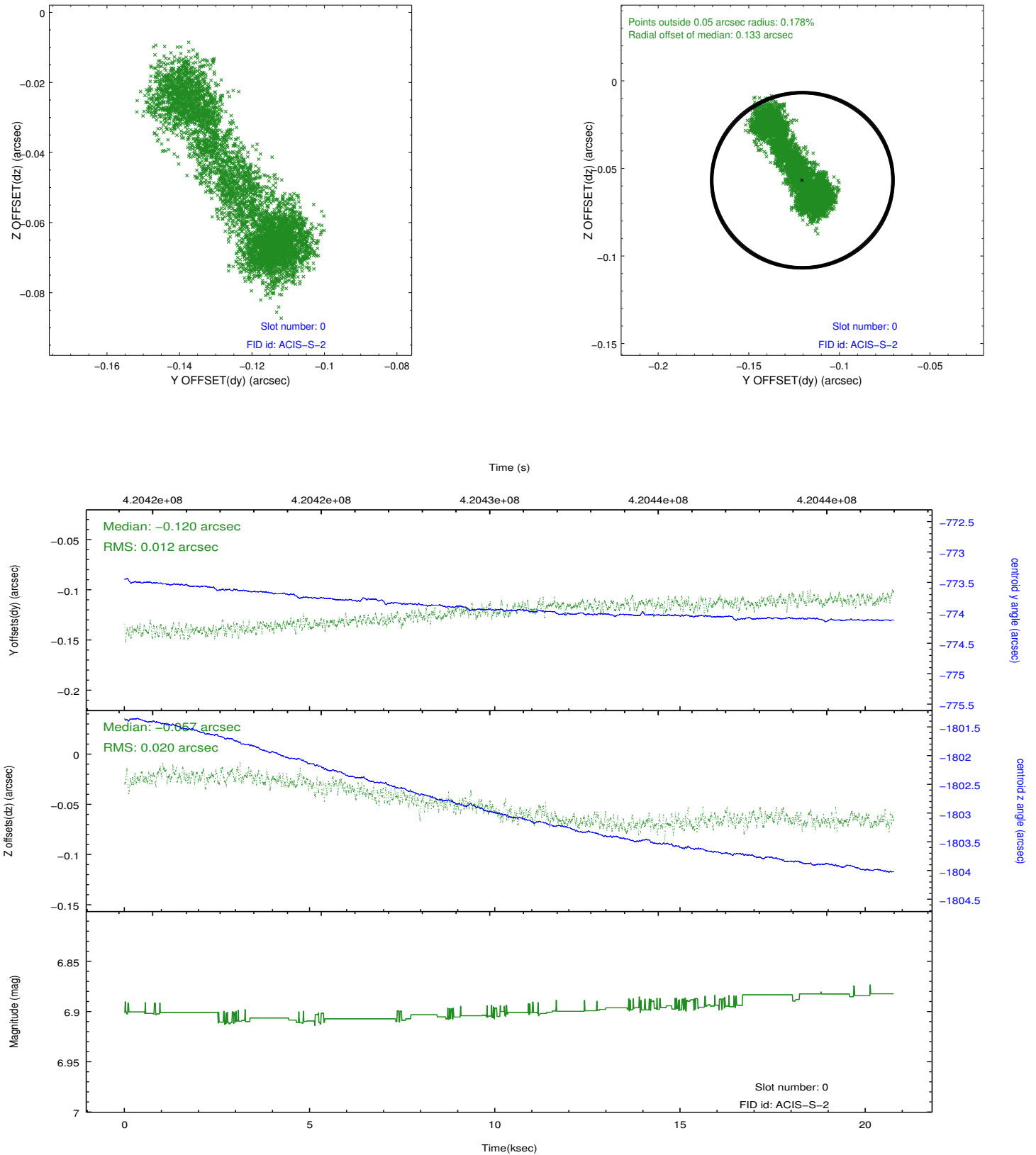


2.4.4 Slot 7

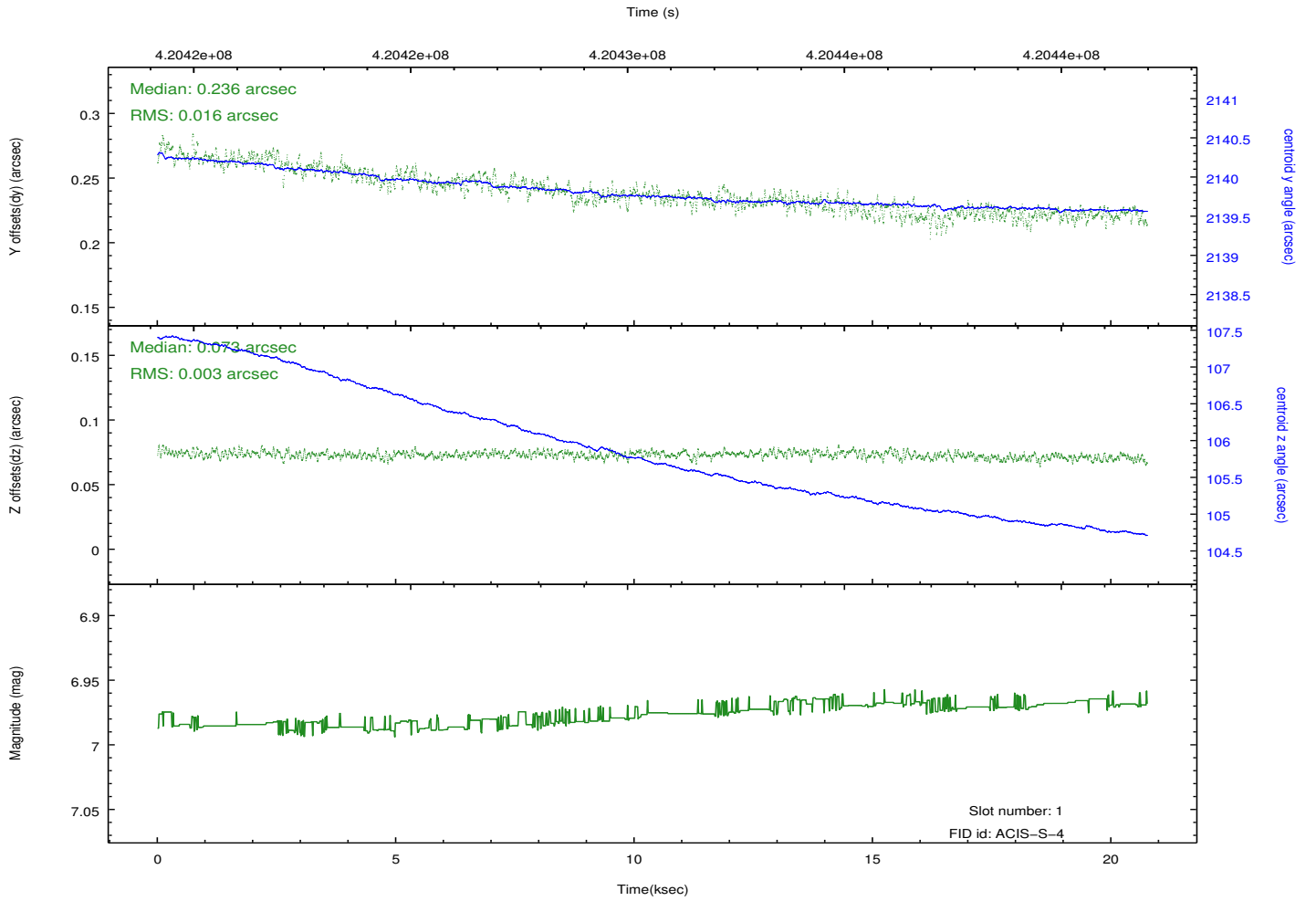
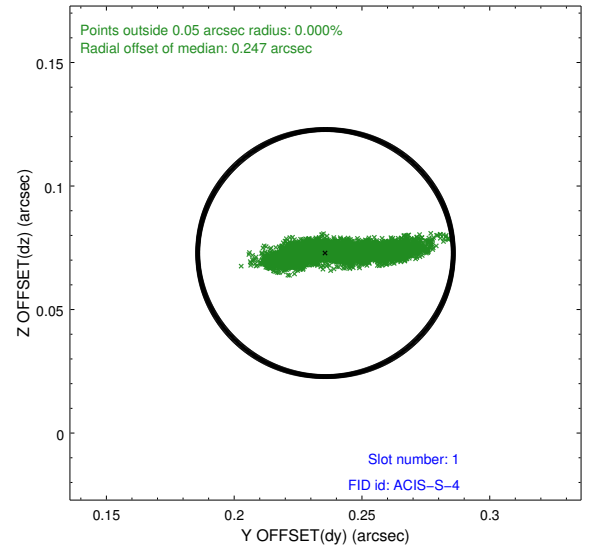
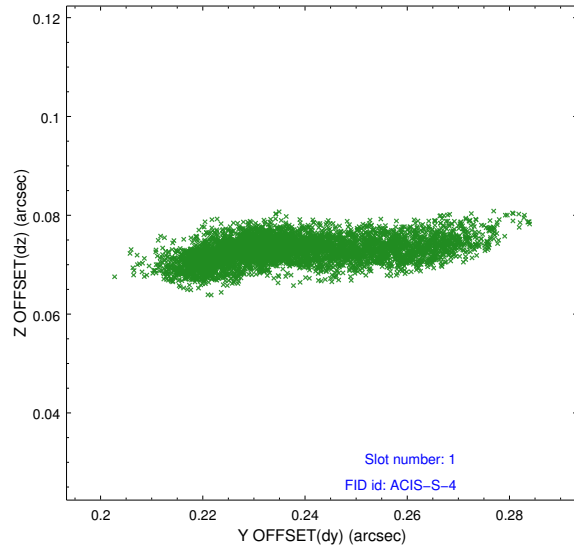


2.5 FID Slots

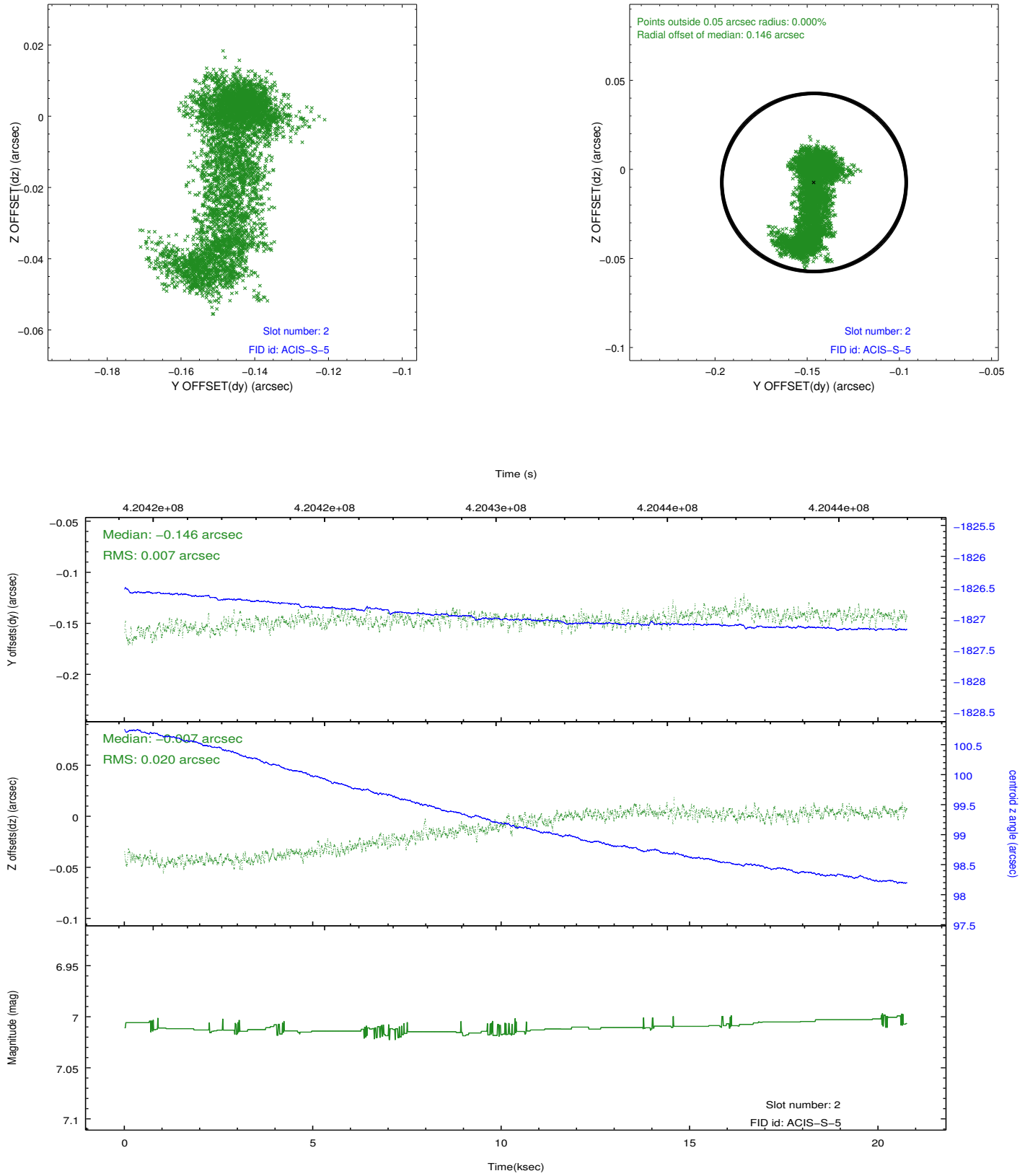
2.5.1 Slot 0



2.5.2 Slot 1

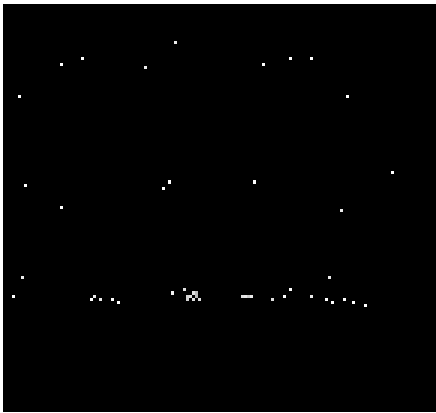


2.5.3 Slot 2

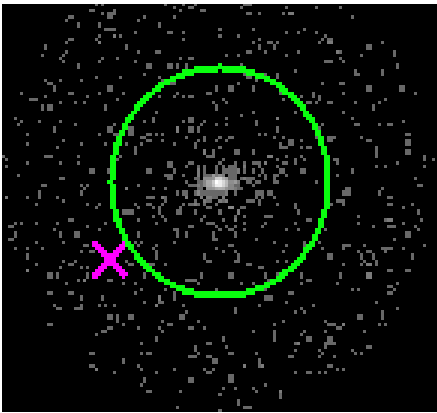


3 Gratings

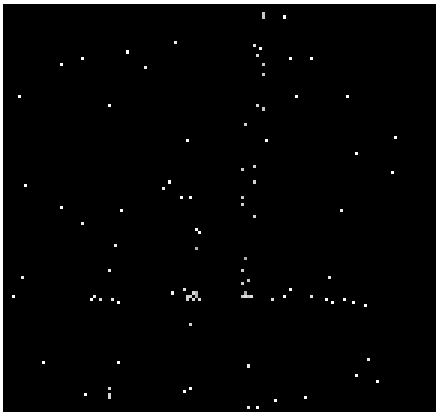
3.1 HEG Arm



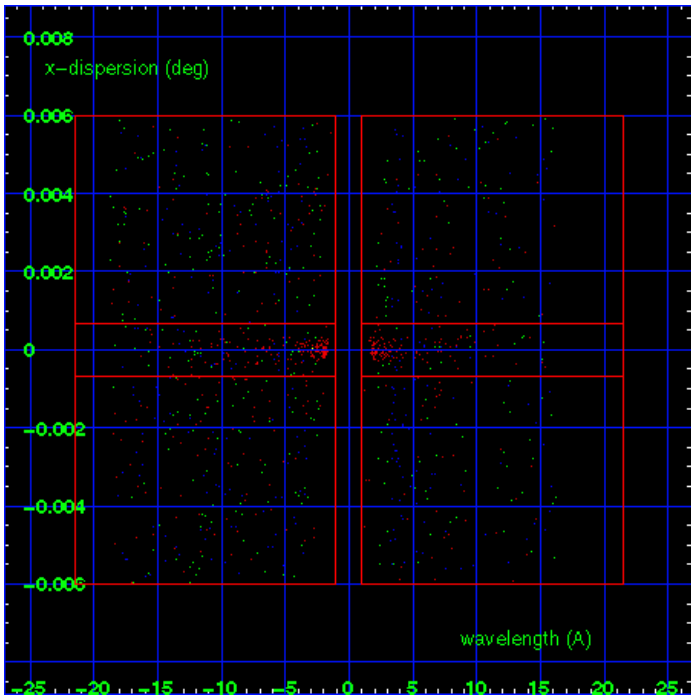
HEG Order Sort 123



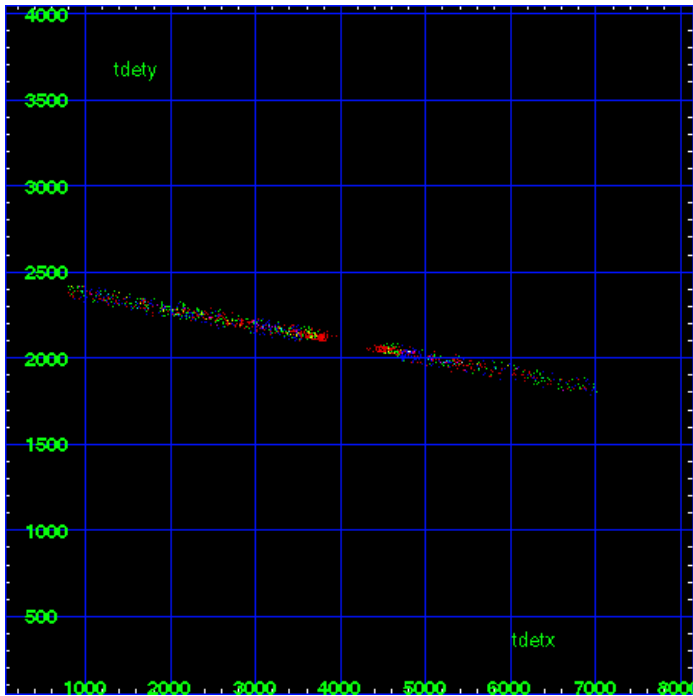
HEG Zero Order



HEG Order Sort ALL

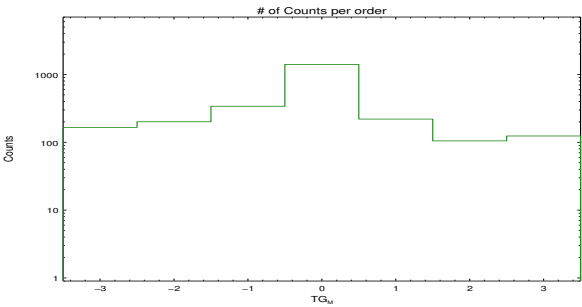


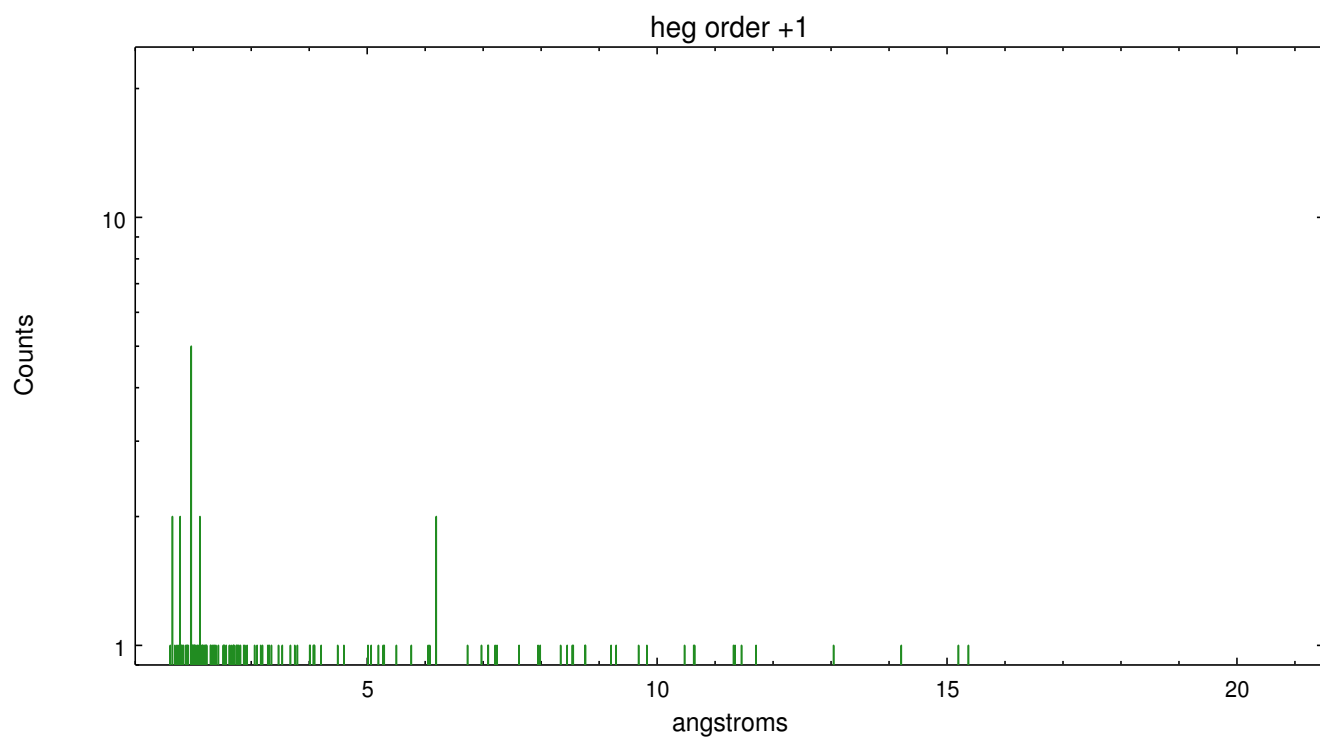
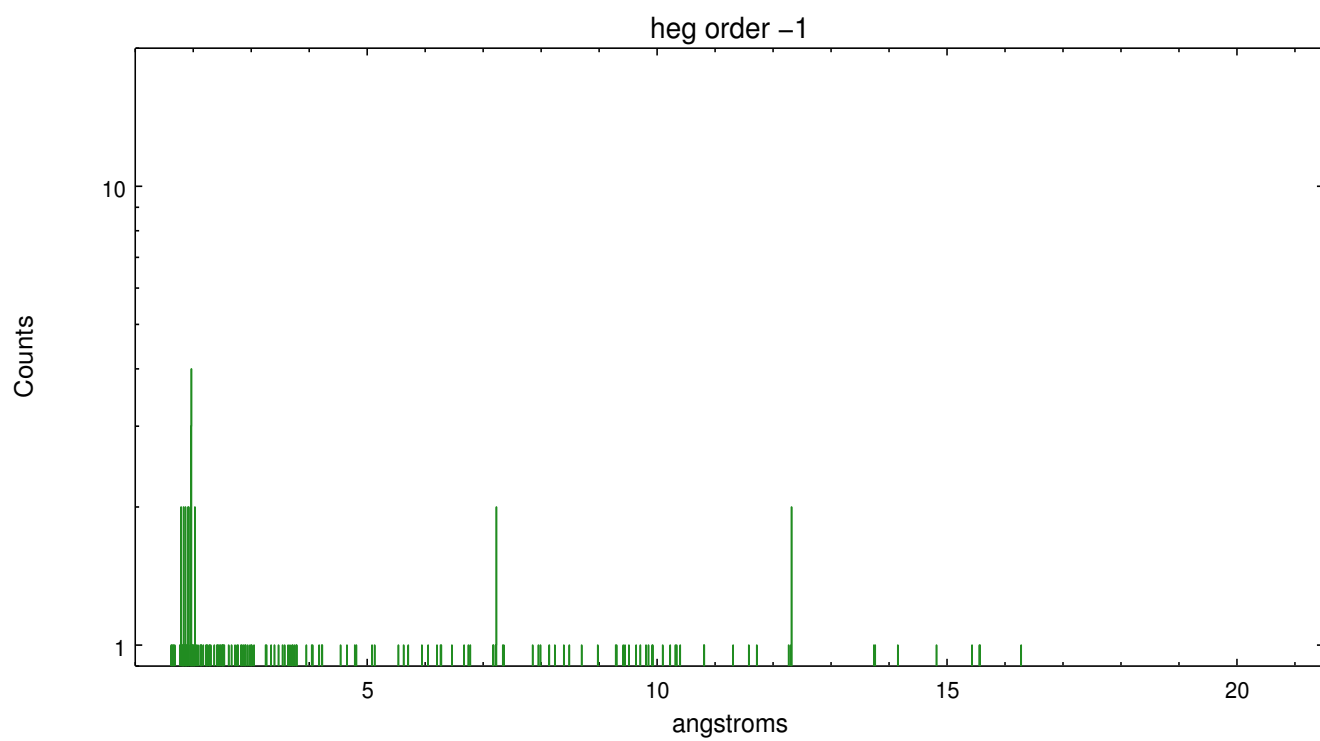
Spot Image HEG



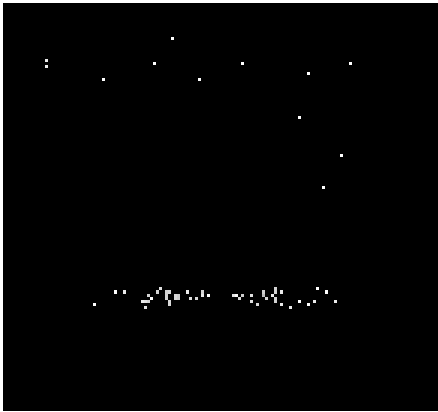
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	166	201	340	1406	220	105	124

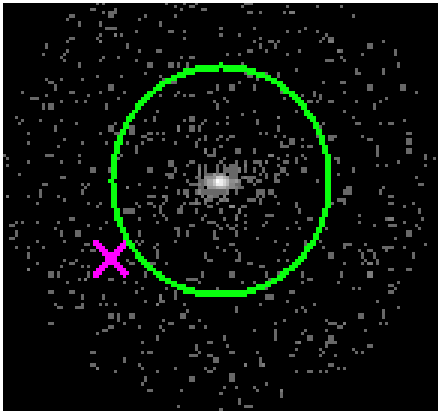




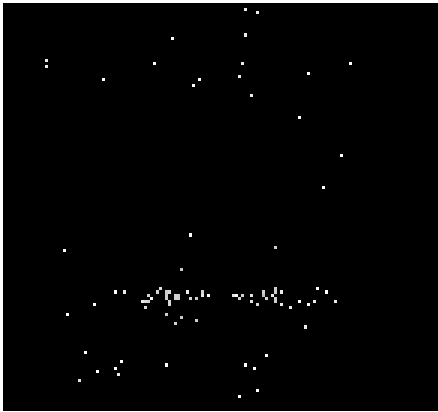
3.2 MEG Arm



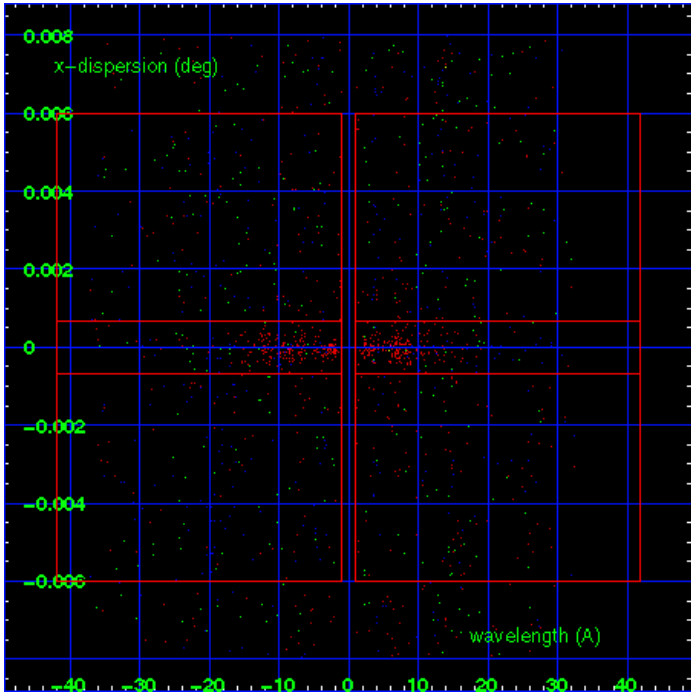
MEG Order Sort 123



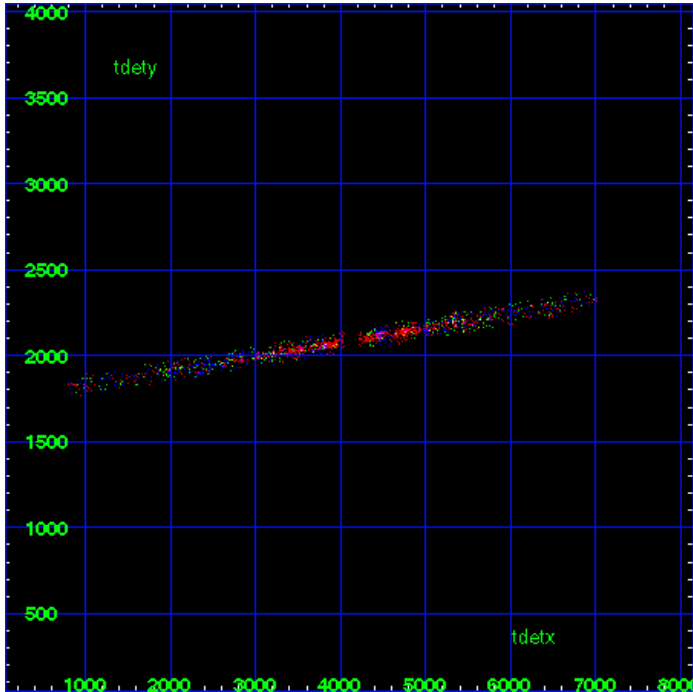
MEG Zero Order



MEG Order Sort ALL

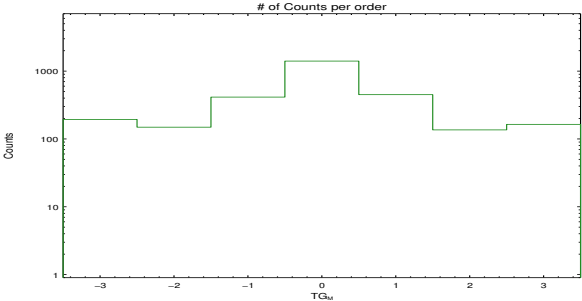


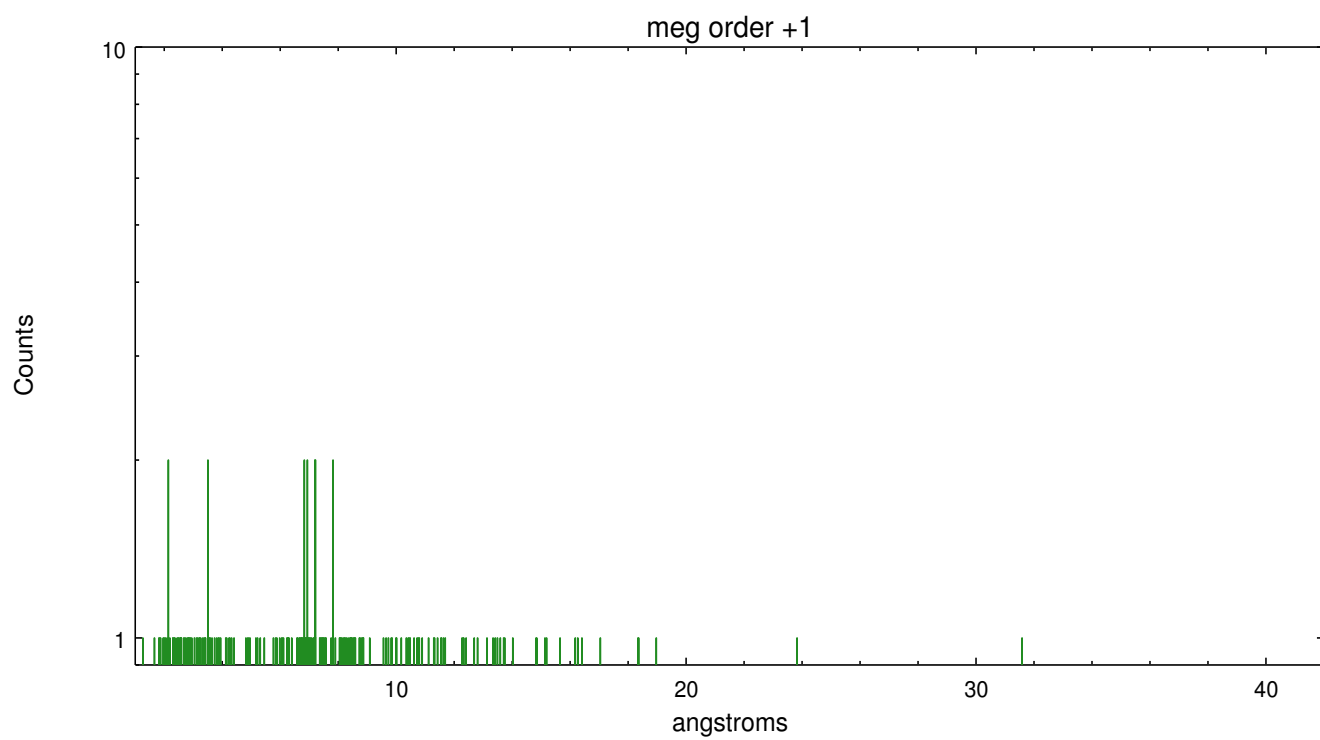
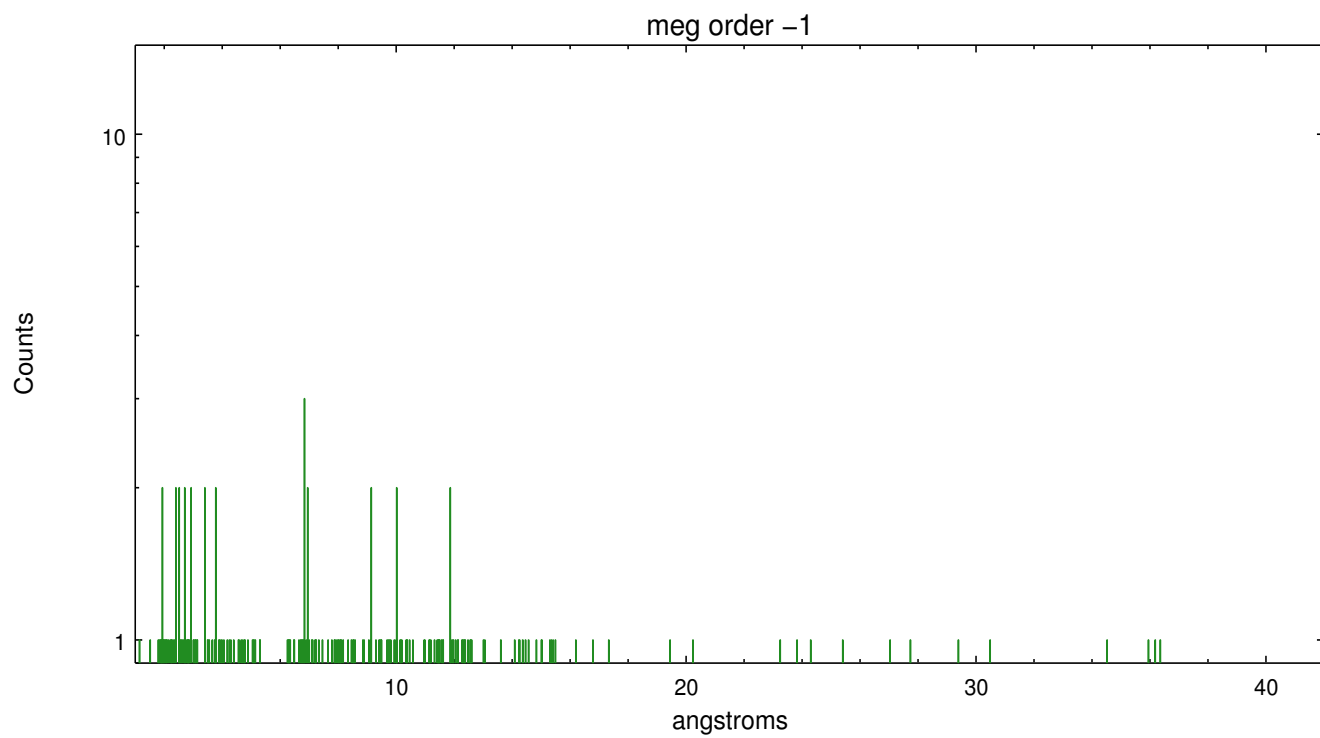
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	194	149	414	1406	450	136	164





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.02.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.047140699744

A.2 Comments

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.

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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.

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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.