

V&V Reference Report

L2 ASCDS Version : 8.4.3

Observation 13264 - L2 Version 3
Chandra X-Ray Center

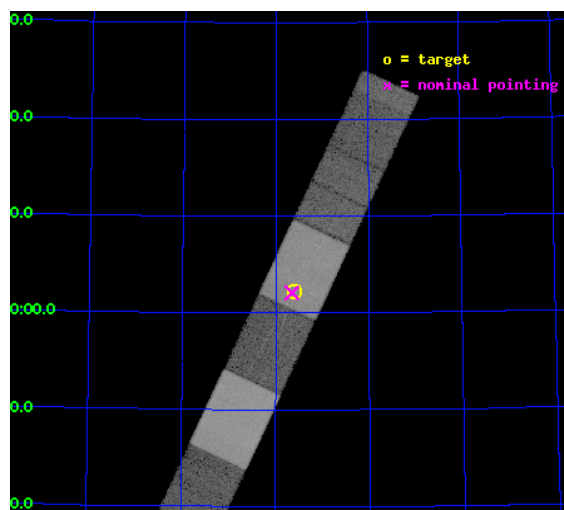
L2 Processing Date : Feb 8 2012

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1 Front

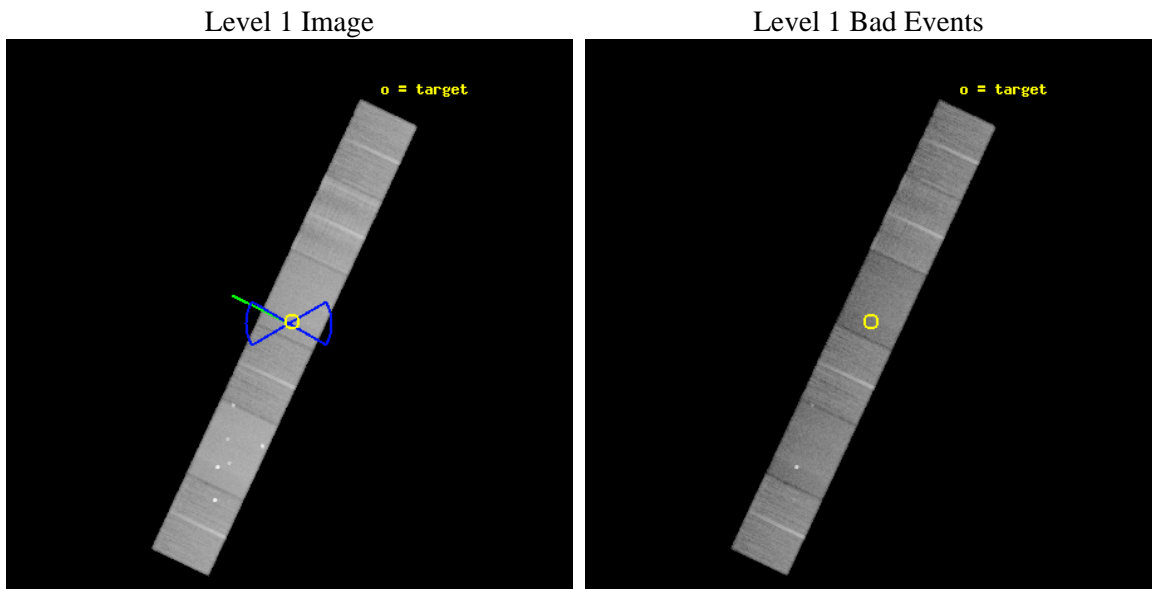
seq_num	702507	Sequence number
obs_id	13264	Observation id
title	THE FIRST SPATIALLY RESOLVED SPECTRUM OF AN AGN OUTFLOW IN AN EARLY-TYPE GALAXY: A DEEP HETG OBSERVATION OF MRK 3	Proposal title
observer	Dr Daniel Evans	Principal investigator
object	Markarian 3	Source name
dtcycle	0	
cycle	P	events from 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	93.91375231633	Nominal RA [deg]
dec_nom	71.03483757277	Nominal Dec [deg]
roll_nom	295.14480832419	Nominal Roll [deg]
revision	3	Processing version of data
ontime	36349.609948218	Sum of GTIs [s]
livetime	35762.532219306	Livetime [s]
ontime4	36349.650988221	Sum of GTIs [s]
ontime5	36349.568908215	Sum of GTIs [s]
ontime6	36346.986887872	Sum of GTIs [s]
ontime7	36349.609948218	Sum of GTIs [s]
ontime8	36349.486828089	Sum of GTIs [s]
ontime9	36349.445788205	Sum of GTIs [s]
l2events	310428	Number of level 2 events



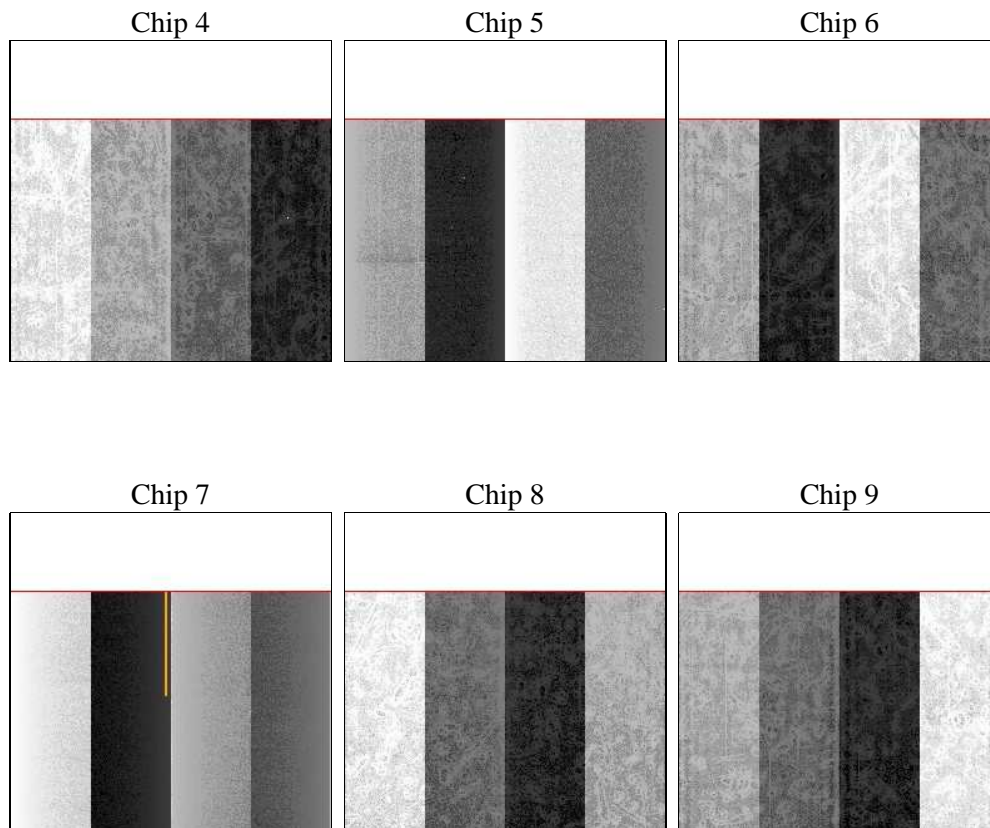
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	36594.000000	[s] Scheduled observation exposure time
ascdsver	8.4.3	Processing system revision	ontime	36349.609948218	Sum of GTIs [s]
caldbver	4.4.7	 	ontime4	36349.650988221	Sum of GTIs [s]
date	2012-02-09T00:27:50	Date and time of file creation	ontime5	36349.568908215	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	36346.986887872	Sum of GTIs [s]
			ontime7	36349.609948218	Sum of GTIs [s]
			ontime8	36349.486828089	Sum of GTIs [s]
			ontime9	36349.445788205	Sum of GTIs [s]
			l1events	1344373	Number of level 1 events

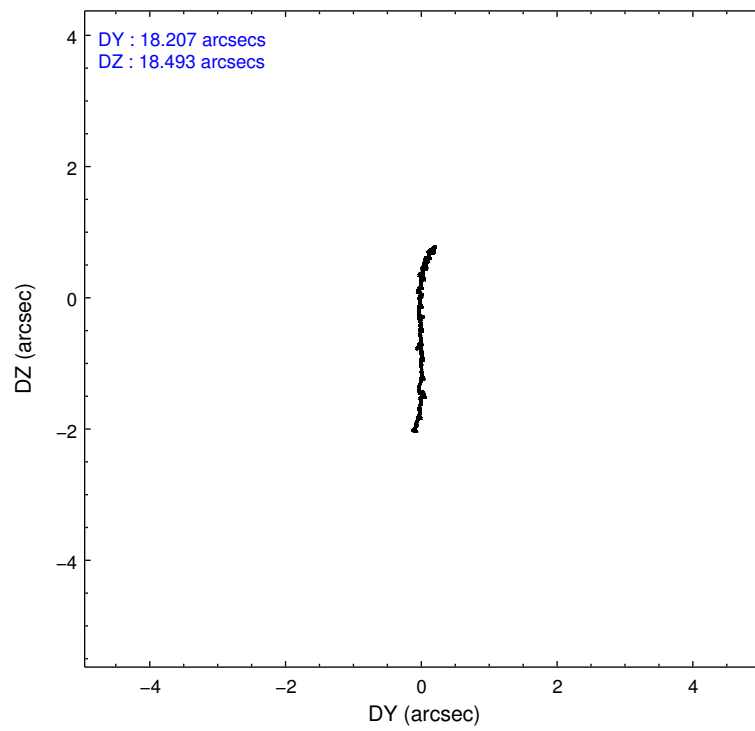
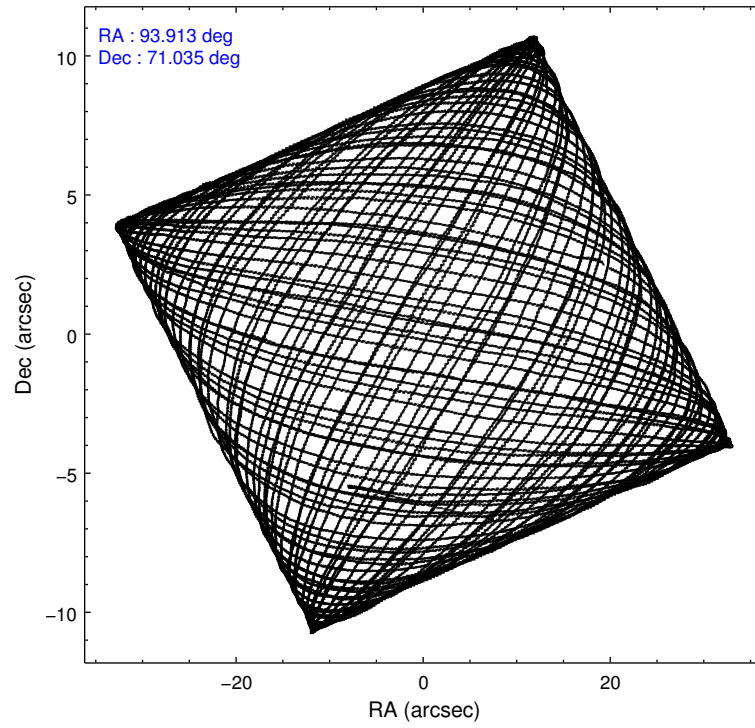
2.1.4 Events

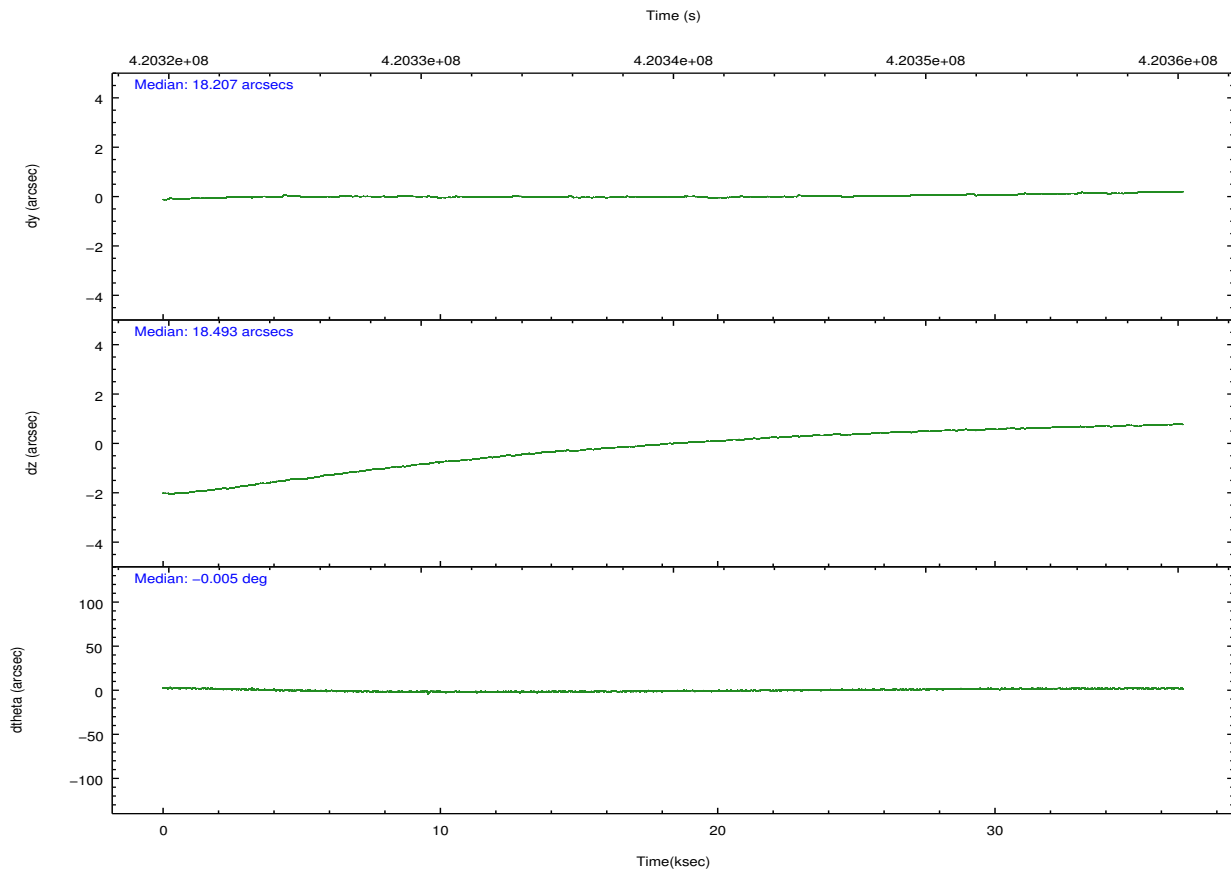
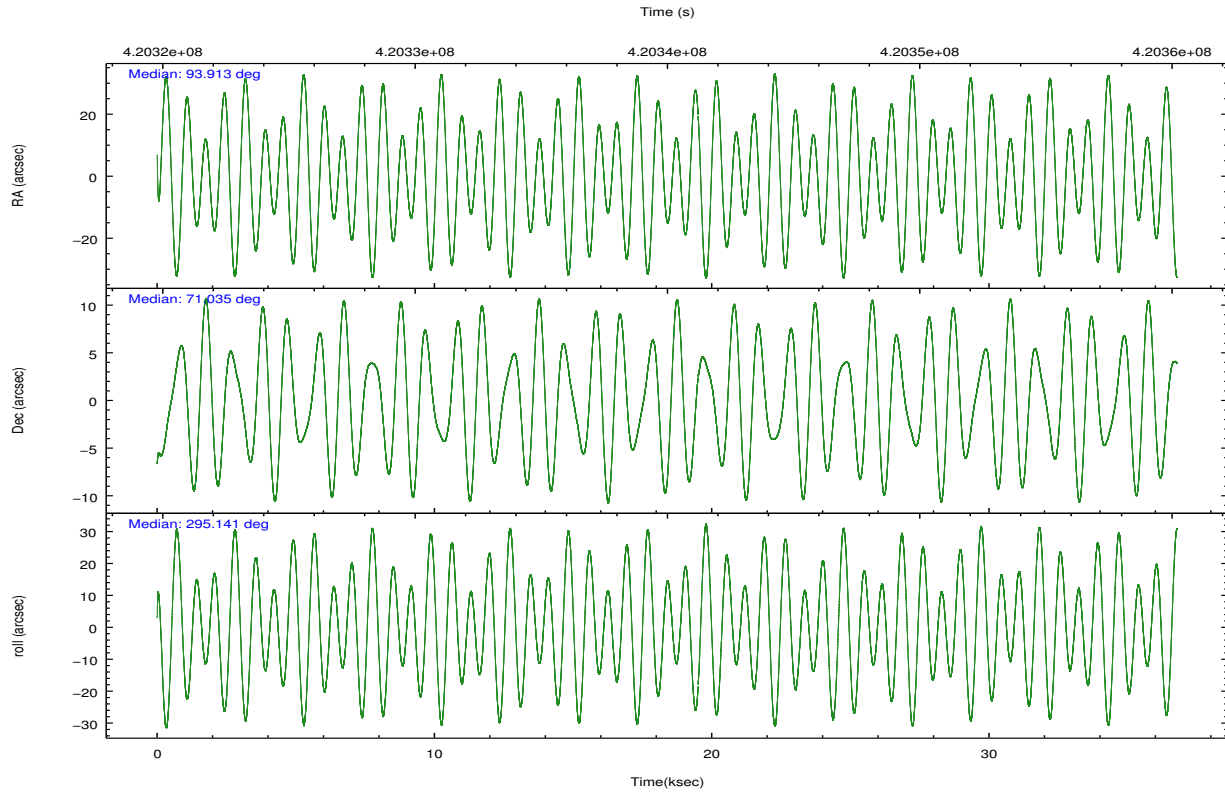
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	215510	295008	186301	228056	241203	178295	grade 0 events	17362	18775	7351	9850	19069	7940
rejected events	183750	146837	164992	123079	175792	155850		8%	6%	3%	4%	7%	4%
rejected %	85%	49%	88%	53%	72%	87%	grade 1 events	190	573	80	267	187	103
								0%	0%	0%	0%	0%	0%
							grade 2 events	5646	43490	4780	21337	15058	4901
								2%	14%	2%	9%	6%	2%
							grade 3 events	2389	7097	2268	9644	7094	2473
								1%	2%	1%	4%	2%	1%
							grade 4 events	2372	5785	2318	9523	6684	2338
								1%	1%	1%	4%	2%	1%
							grade 5 events	8243	25263	8148	23733	11984	9096
								3%	8%	4%	10%	4%	5%
							grade 6 events	3997	73045	4594	54635	17509	4798
								1%	24%	2%	23%	7%	2%
							grade 7 events	175311	120980	156762	99067	163618	146646
								81%	41%	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	93.91375231633035	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	71.050162	71.03483757277047	Subarray start row	1	1
[deg] Pointing Roll	295.054146	295.1448083241906	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)	420321784.184000	420320710.72022			
Observation start date	2011-04-27T20:01:58	2011-04-27T19:45:10			
[s] Observation end time (MET)	420358378.184000	420359109.78472			
Observation end date	2011-04-28T06:11:52	2011-04-28T06:25:09			
Read mode	TIMED	TIMED			

2.3 Aspect



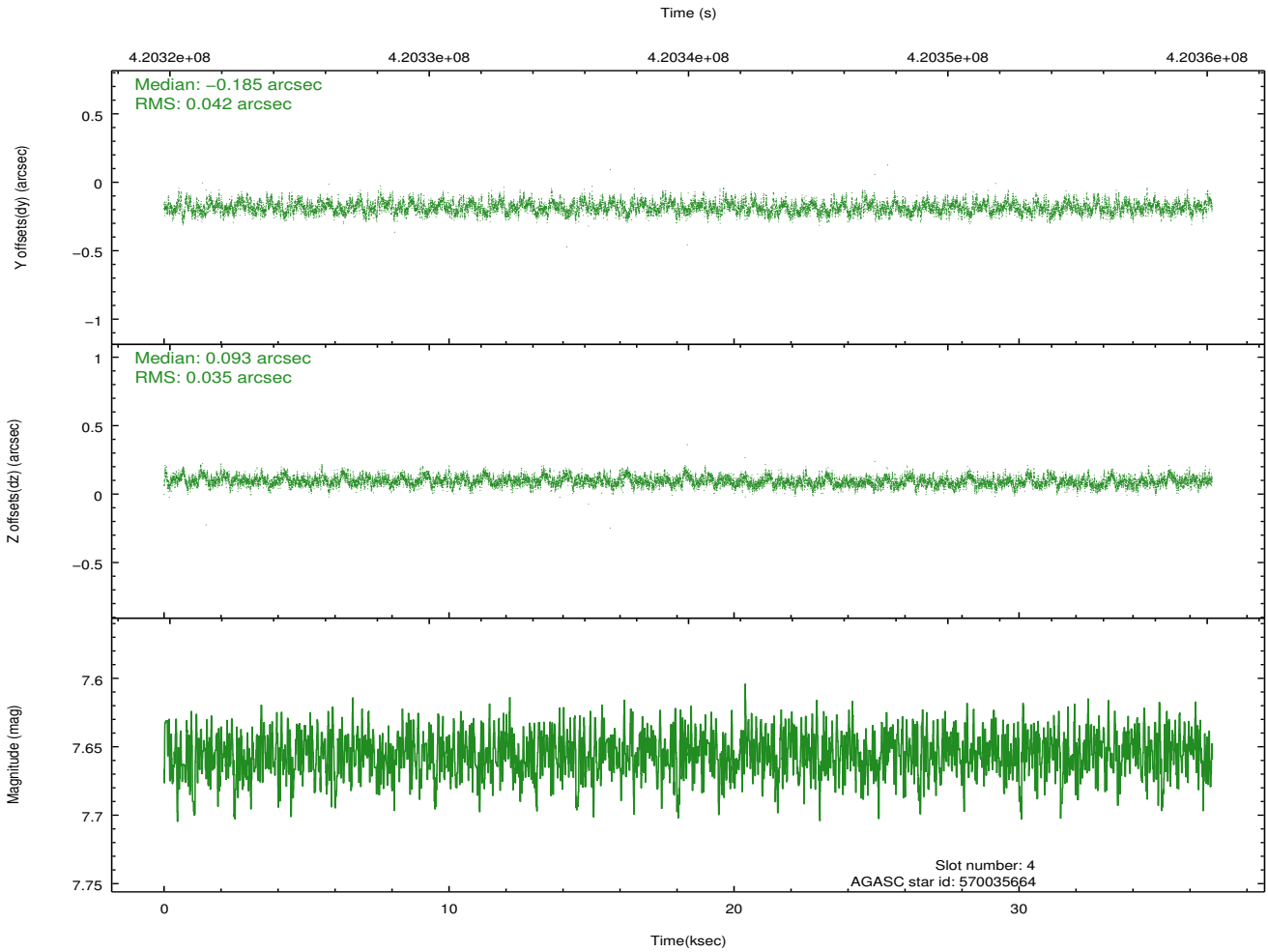
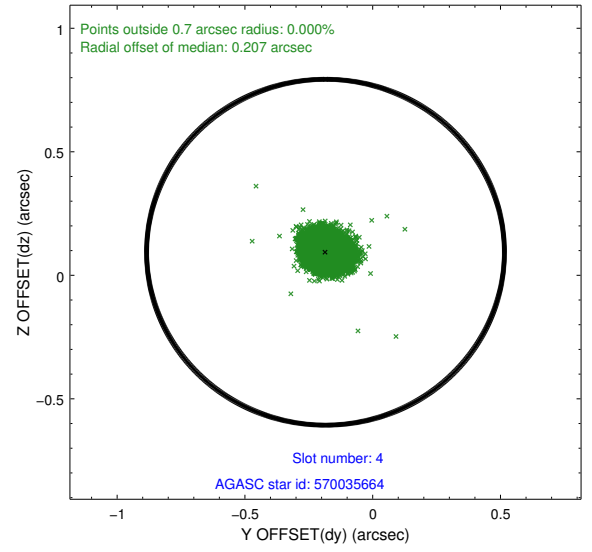
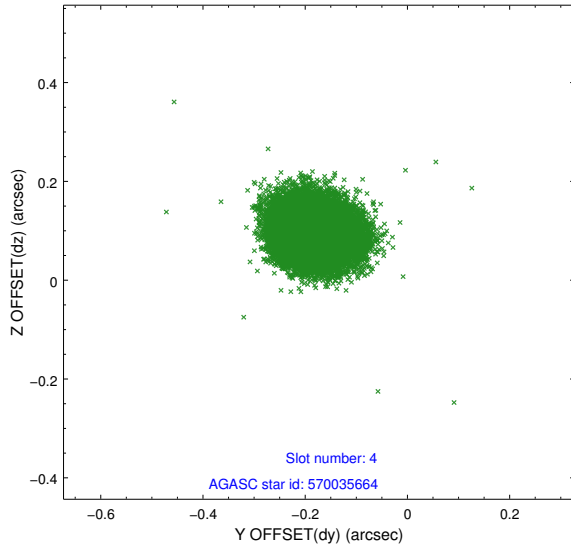


Slot Statistics

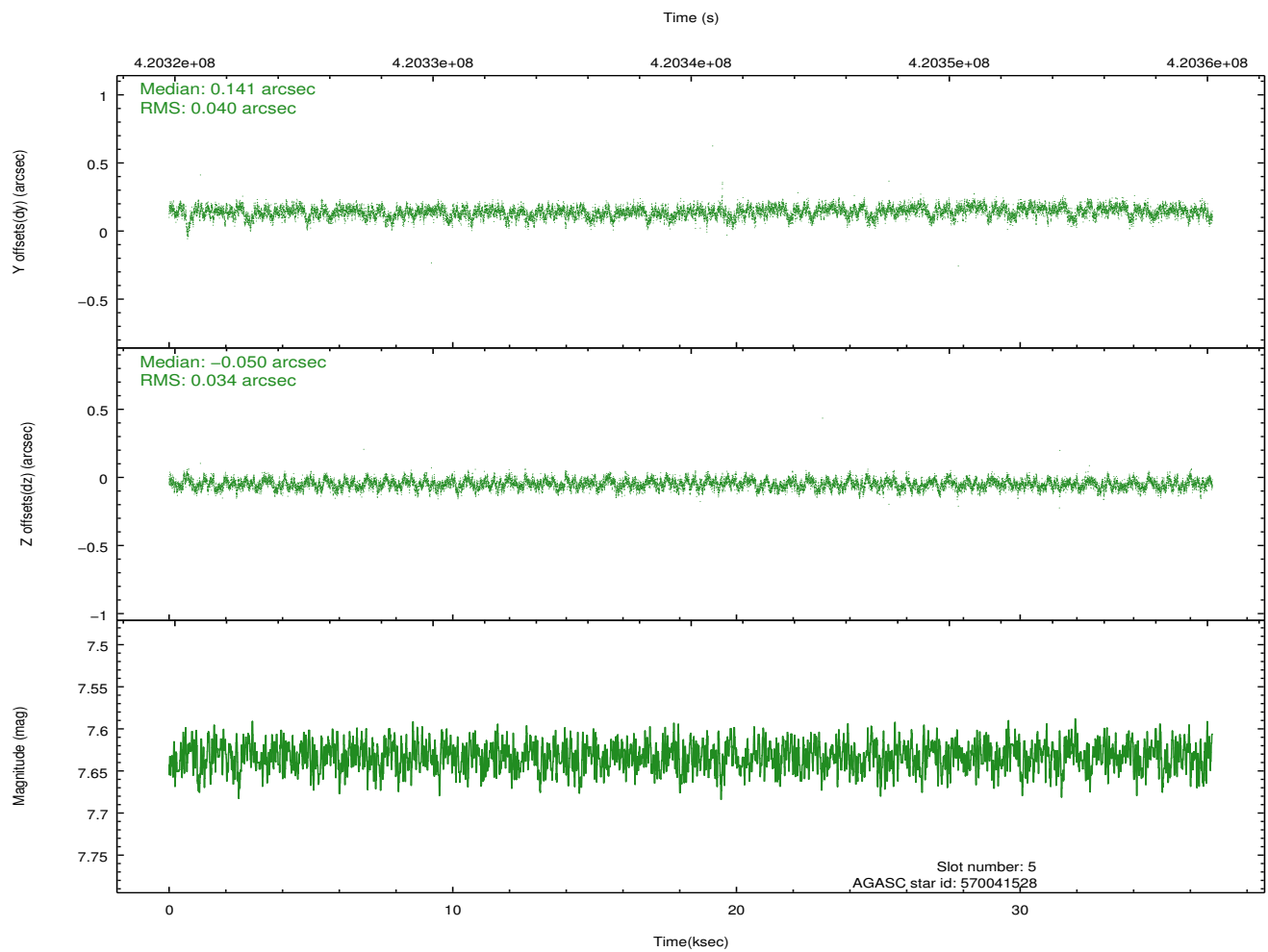
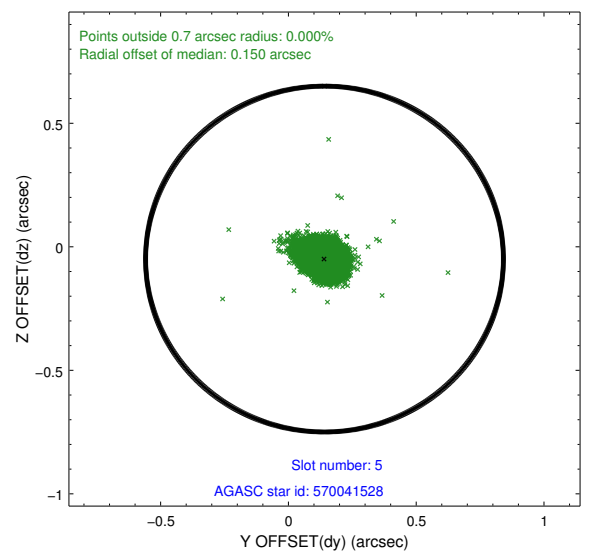
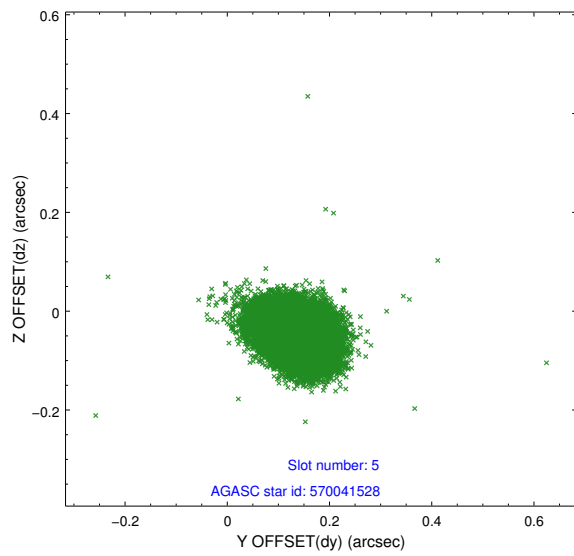
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.94	8970	-0.099	-0.040	0.017	0.027	0.000000	0.000000	-771.15	-1801.86
1	FID	ACIS-S-4	7.03	8970	0.231	0.058	0.008	0.015	0.000000	0.000000	2142.41	106.72
2	FID	ACIS-S-5	7.05	8970	-0.163	-0.009	0.018	0.028	0.000000	0.000000	-1824.04	100.30
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	17939	-0.185	0.093	0.058	0.092	92.975426	71.130782	-697.93	-790.01
5	GUIDE	570041528	7.63	17935	0.141	-0.050	0.055	0.090	93.751561	70.667714	1201.08	-682.50
6	GUIDE	570565312	8.29	17872	-0.268	0.139	0.060	0.096	94.342210	71.606805	-1577.42	1362.25
7	GUIDE	570566608	9.25	17912	0.315	-0.185	0.091	0.148	93.871444	71.374624	-1044.23	523.38

2.4 Star Slots

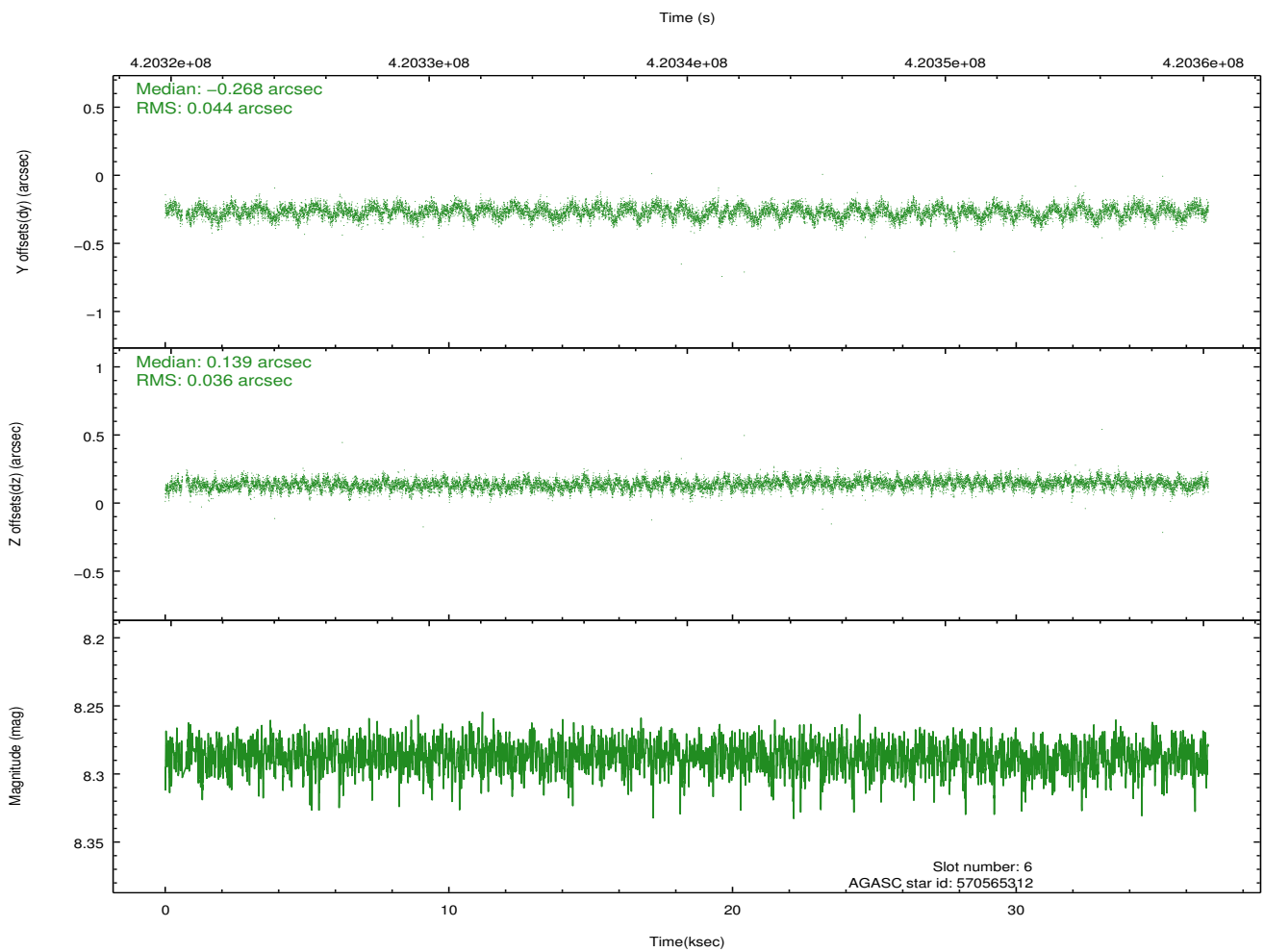
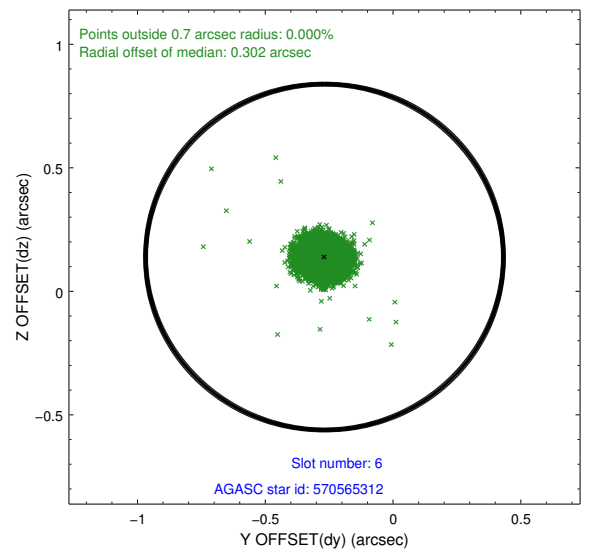
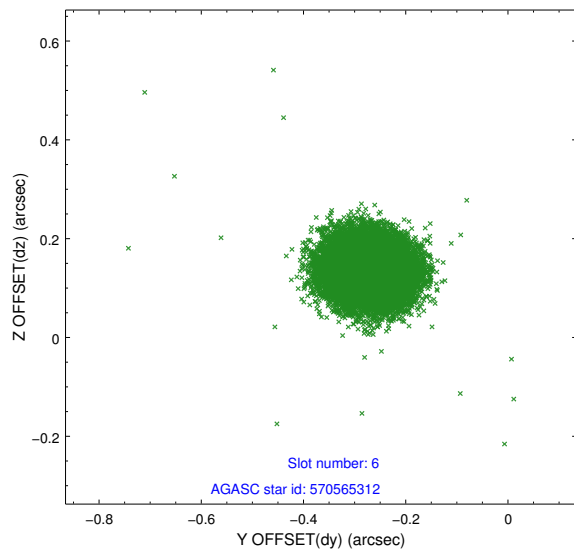
2.4.1 Slot 4



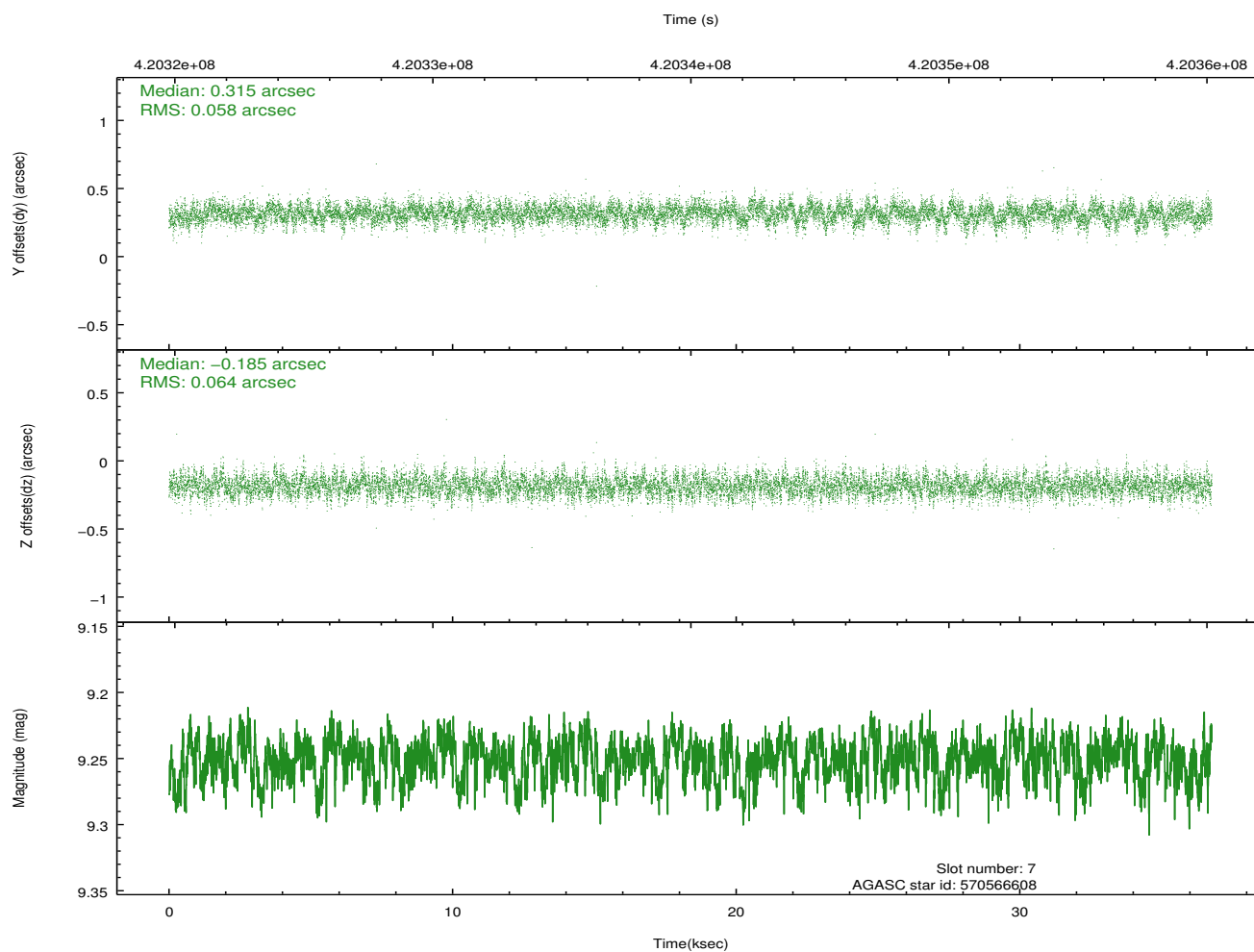
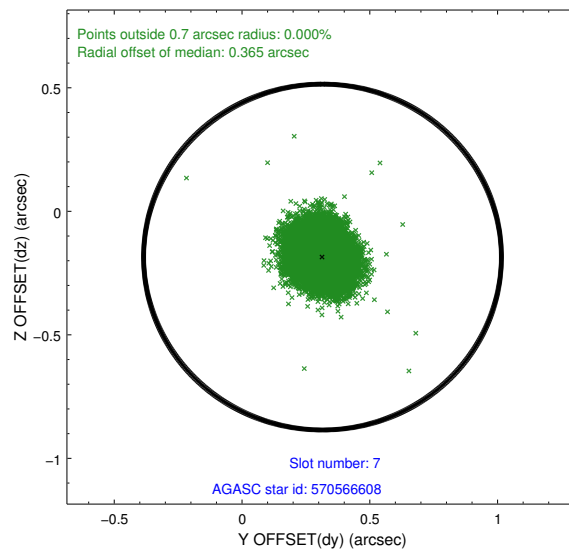
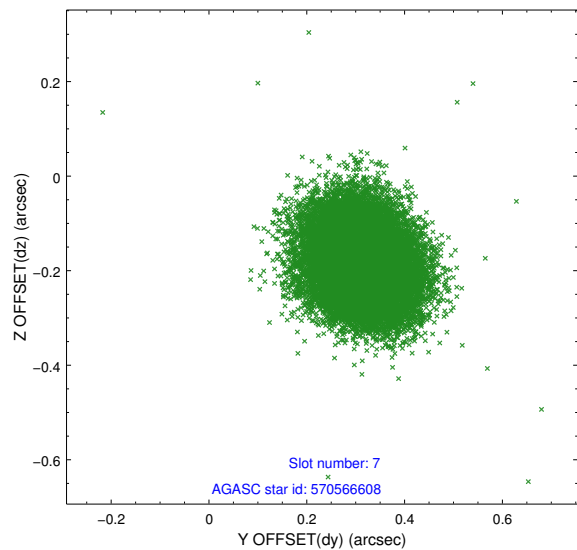
2.4.2 Slot 5



2.4.3 Slot 6

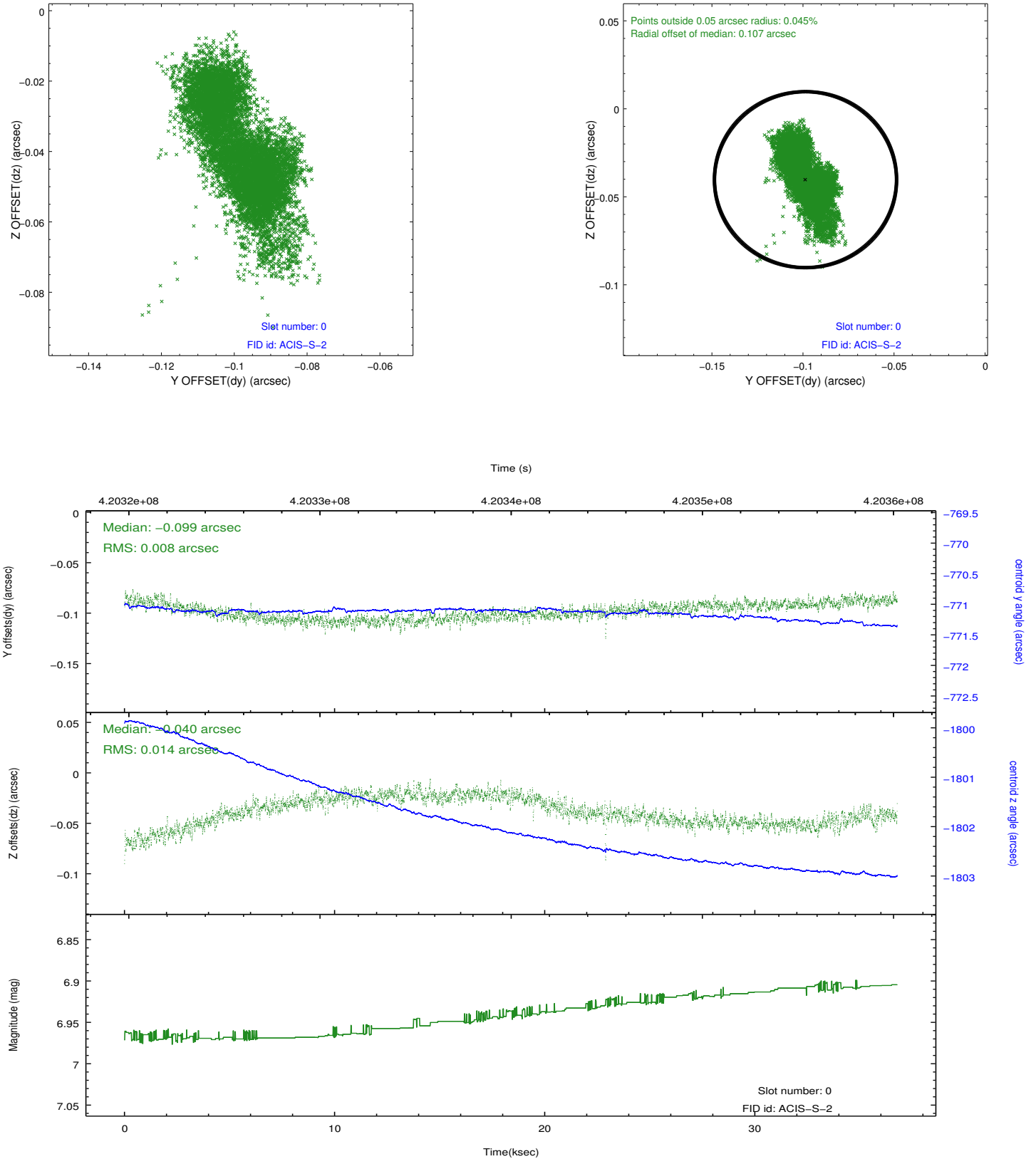


2.4.4 Slot 7

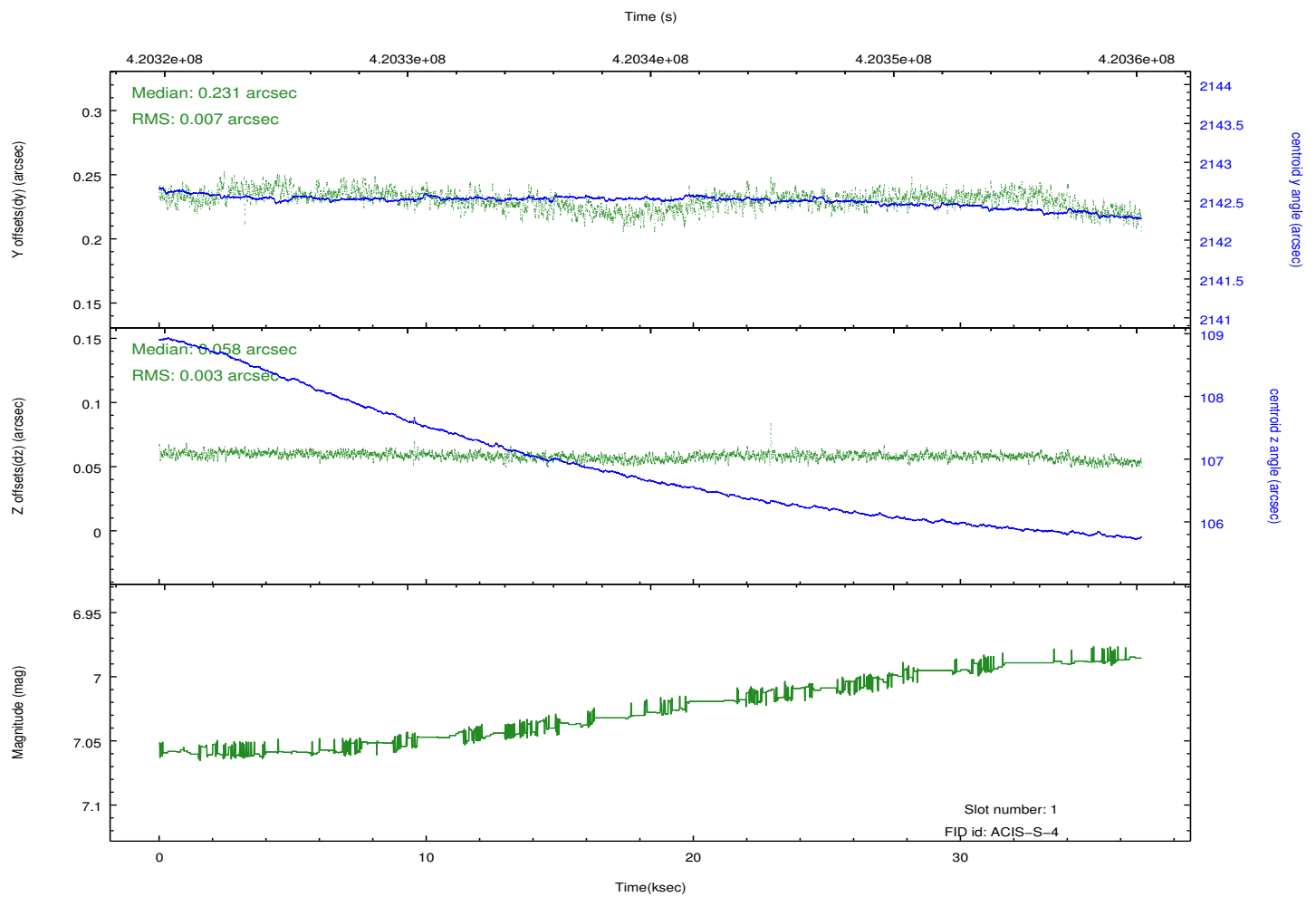
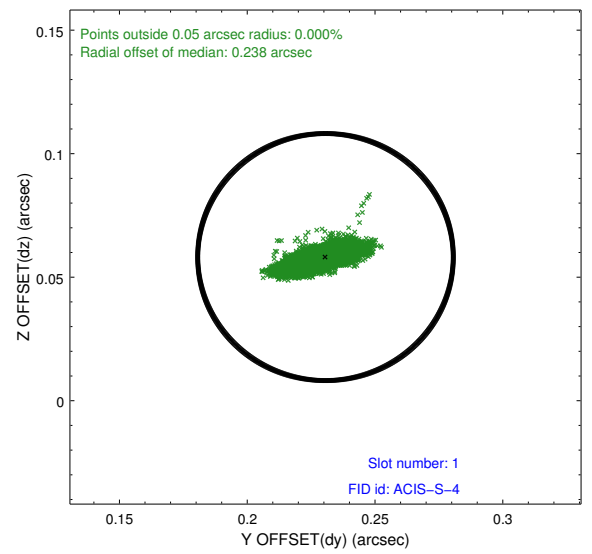
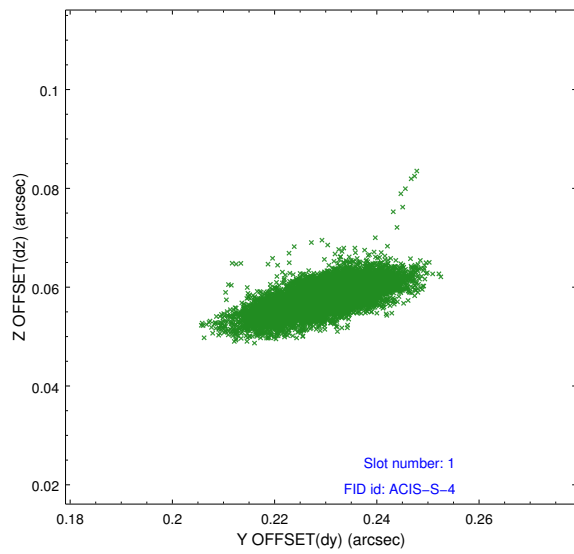


2.5 FID Slots

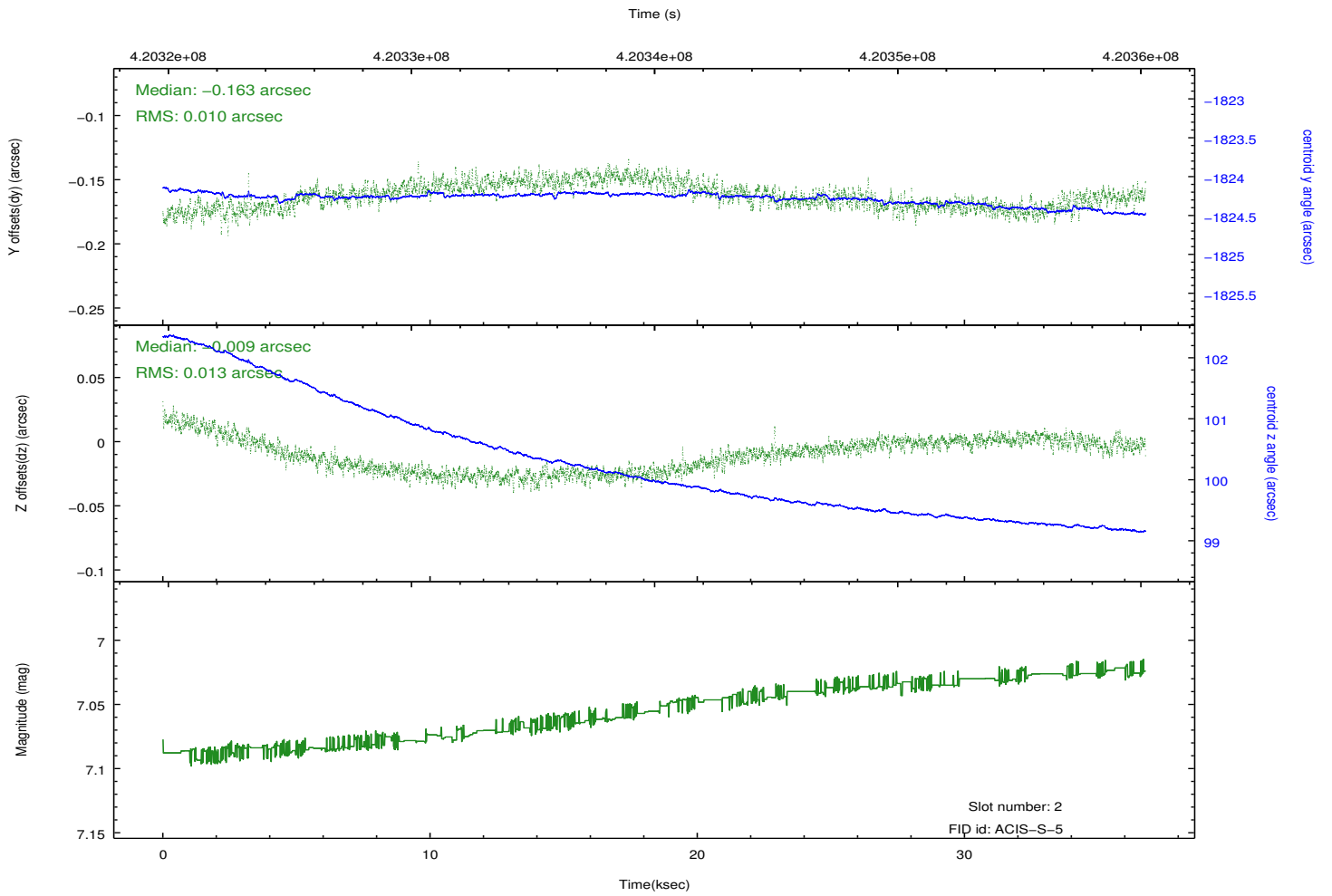
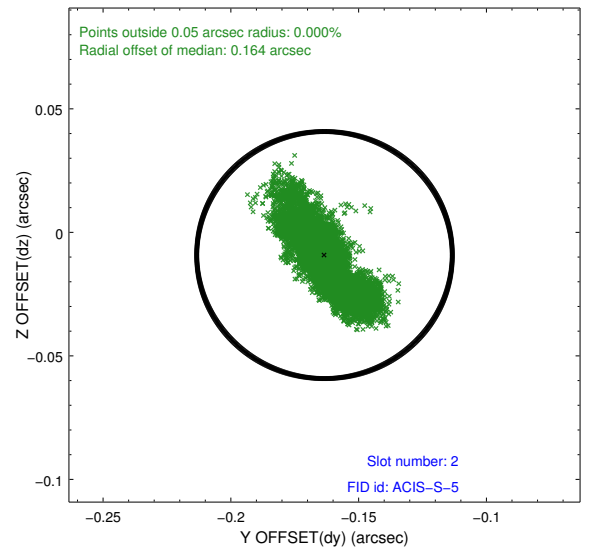
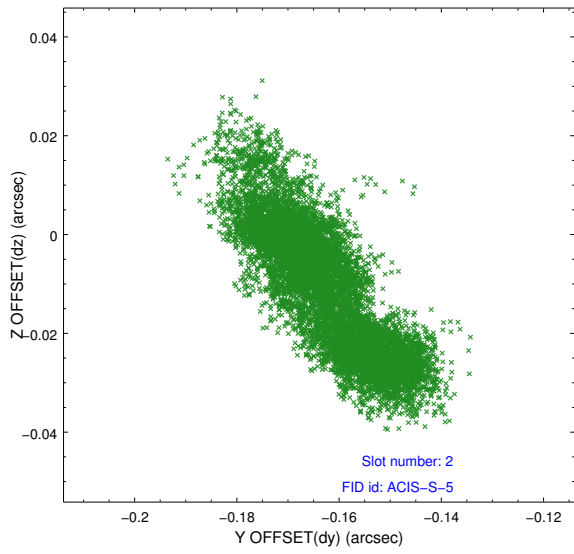
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2

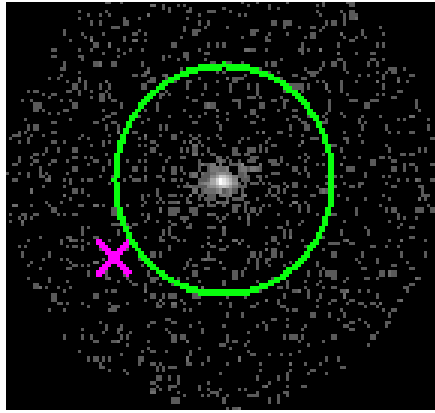


3 Gratings

3.1 HEG Arm



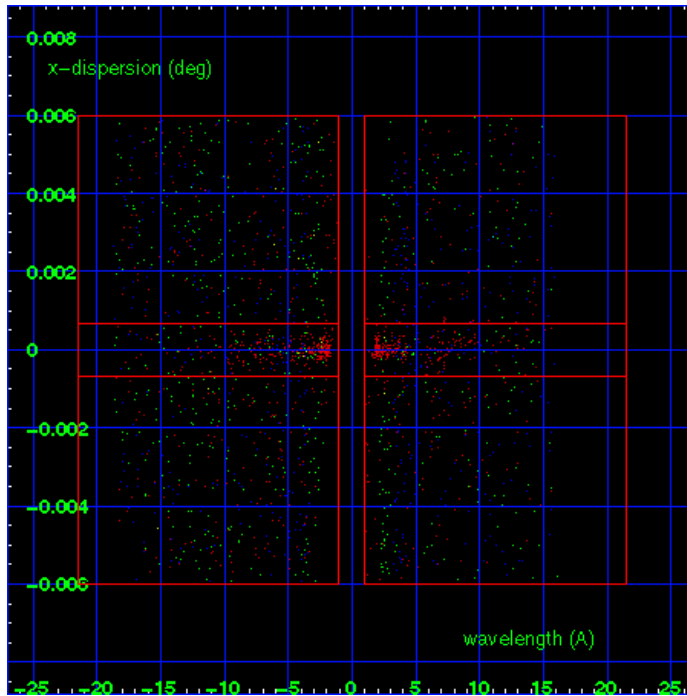
HEG Order Sort 123



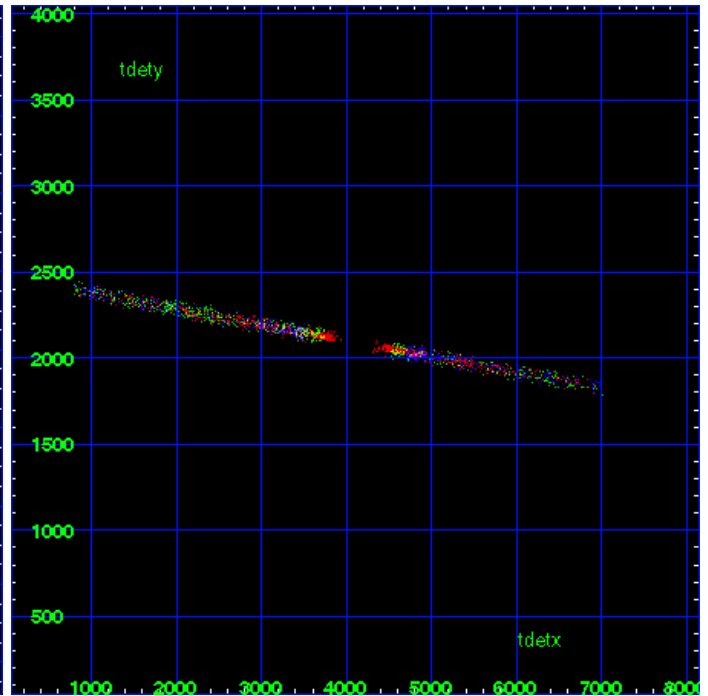
HEG Zero Order



HEG Order Sort ALL

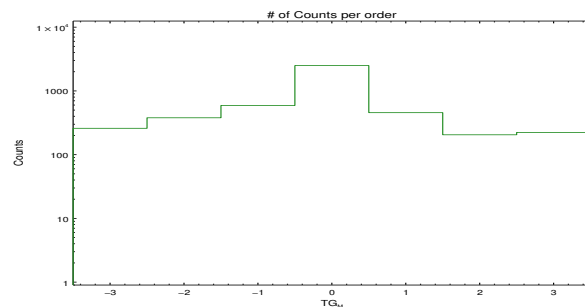


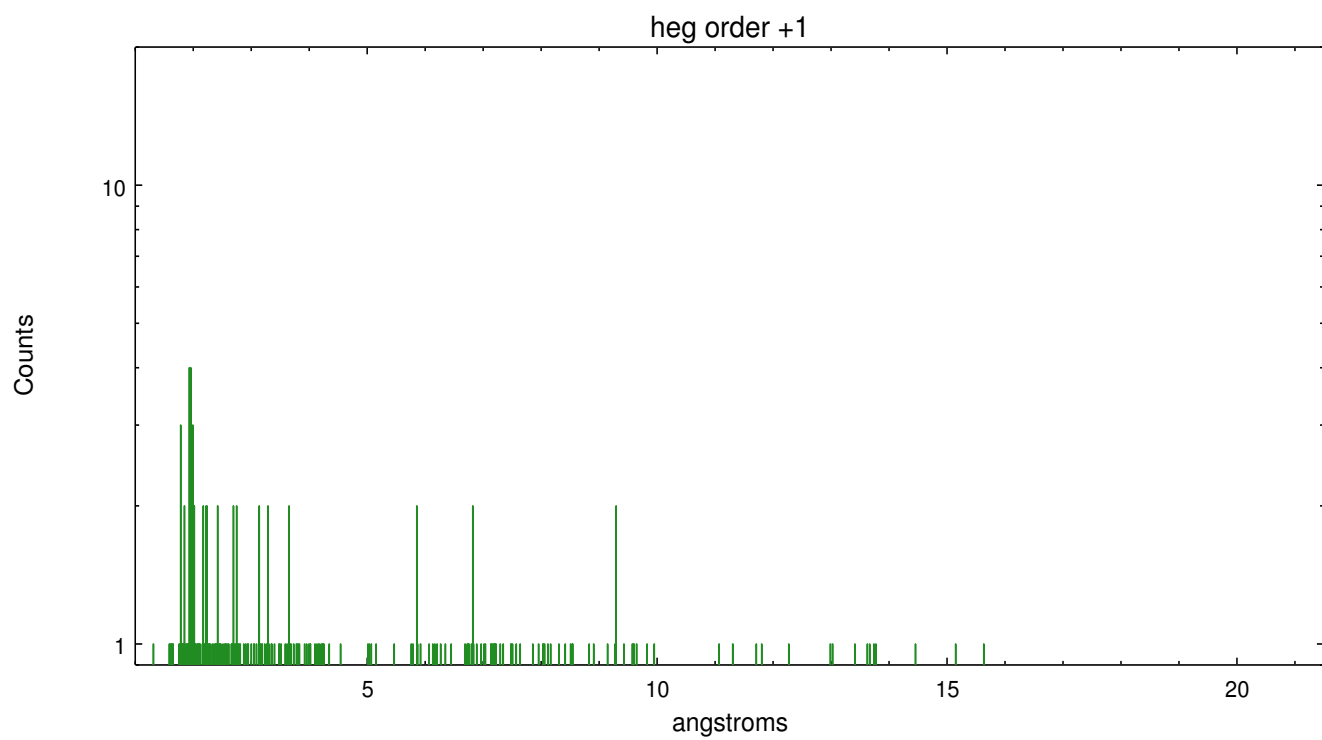
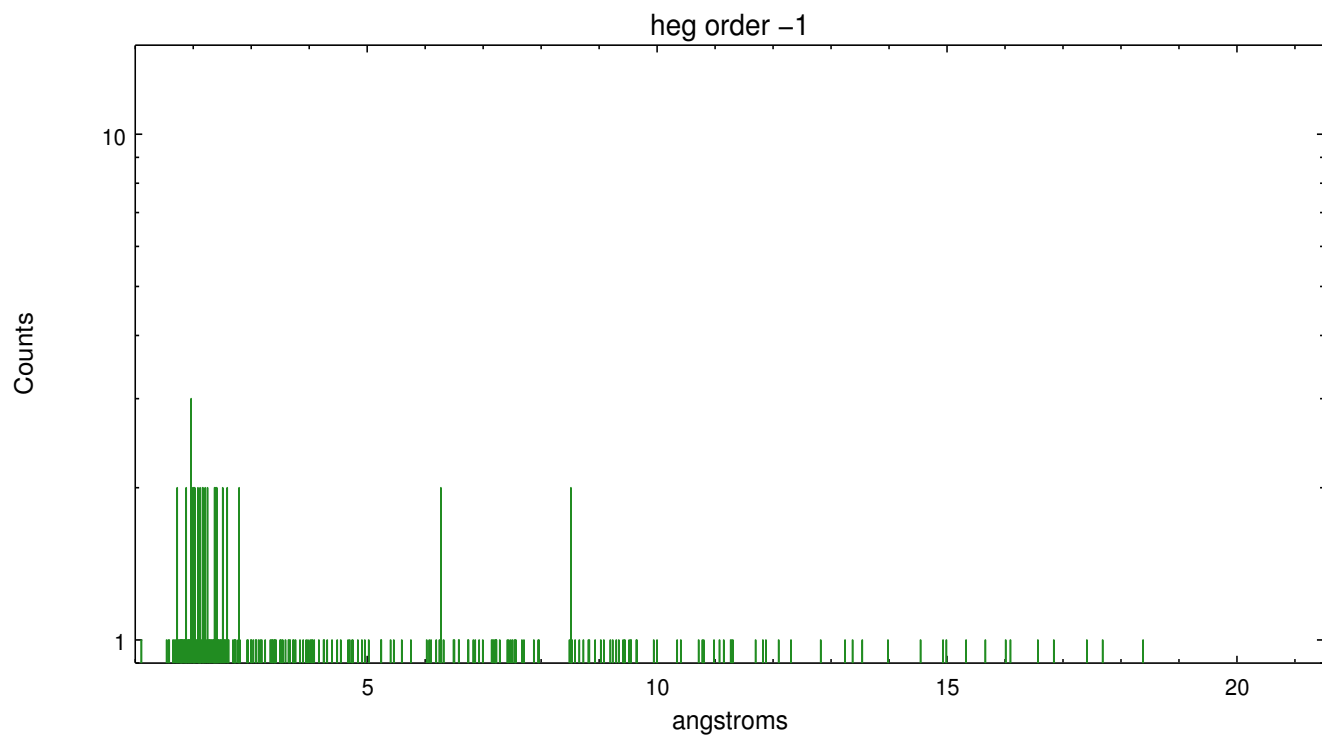
Spot Image HEG



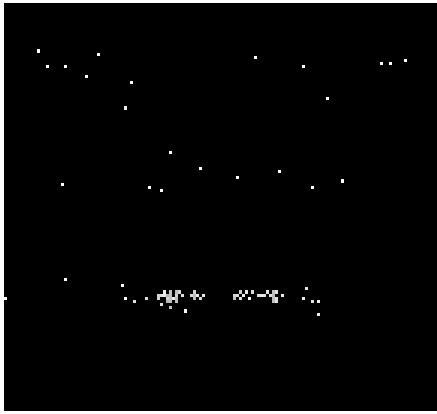
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	259	379	591	2496	456	205	223

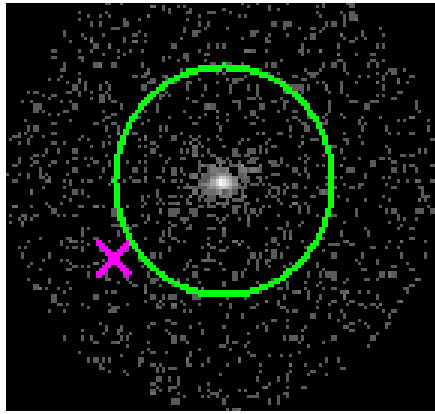




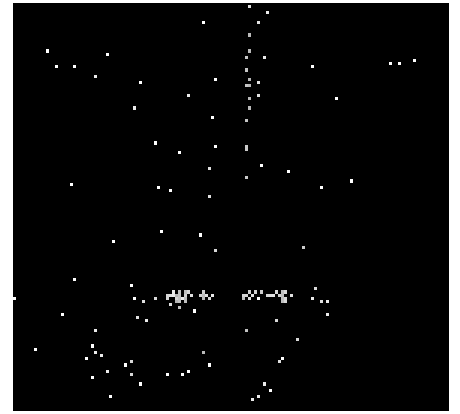
3.2 MEG Arm



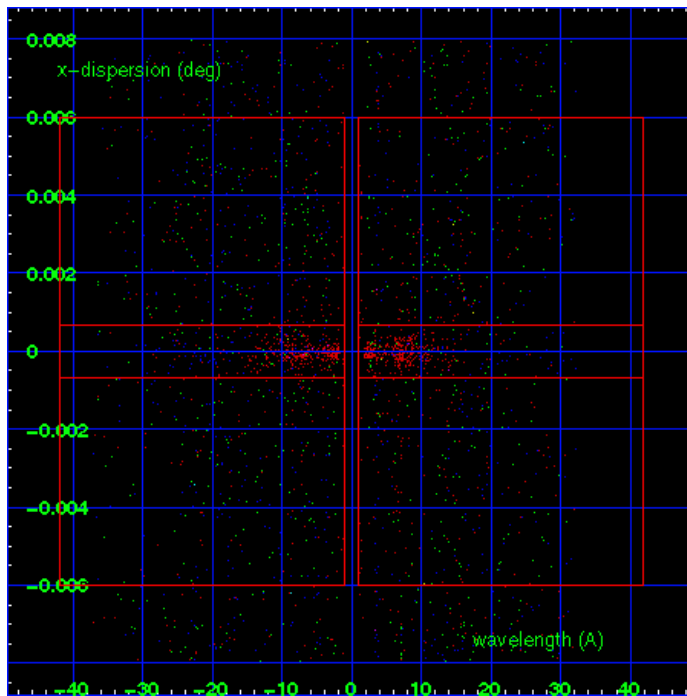
MEG Order Sort 123



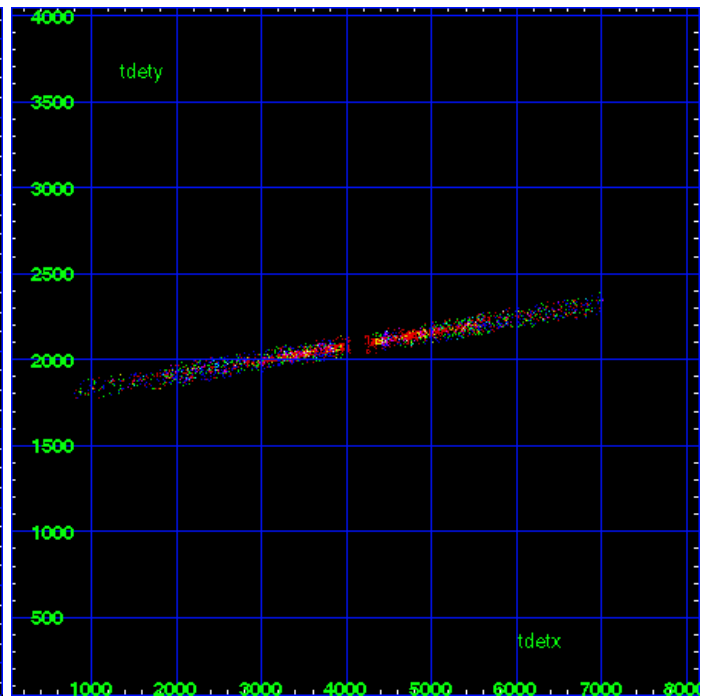
MEG Zero Order



MEG Order Sort ALL

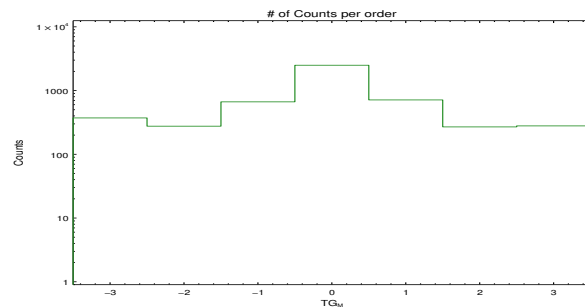


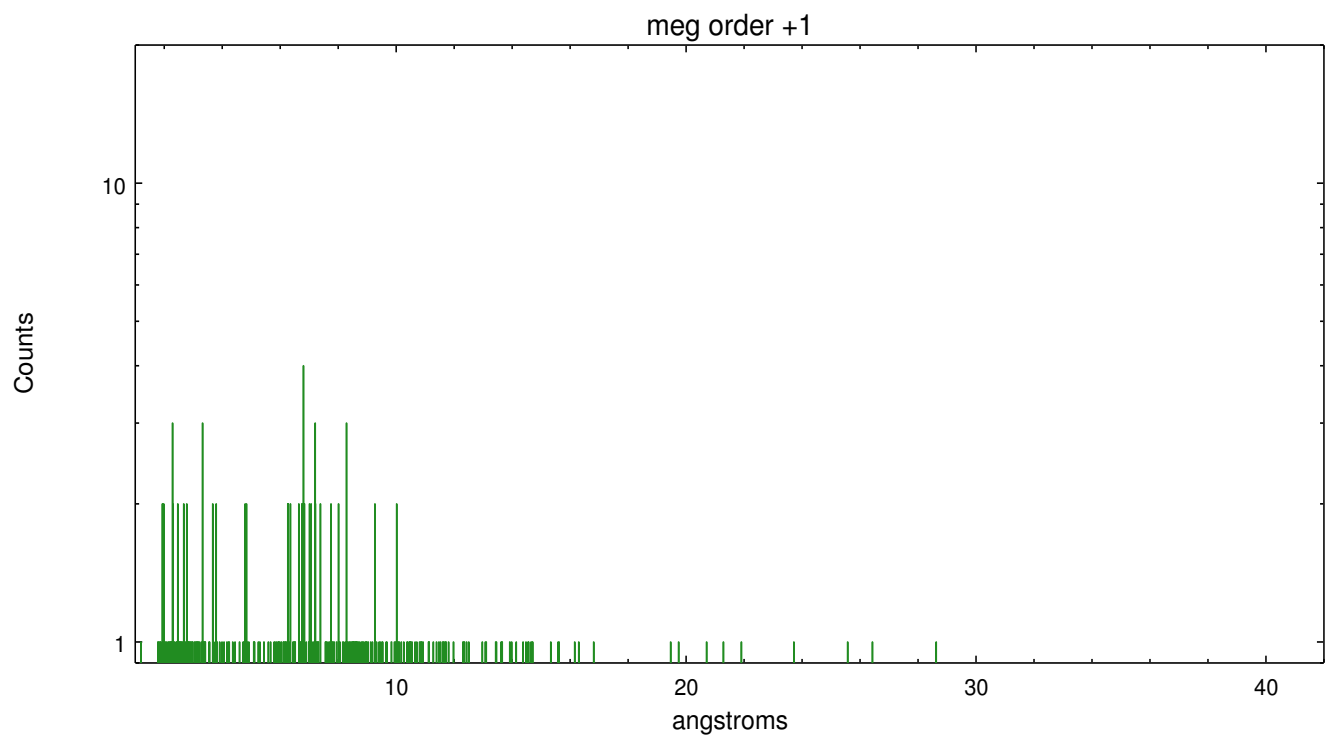
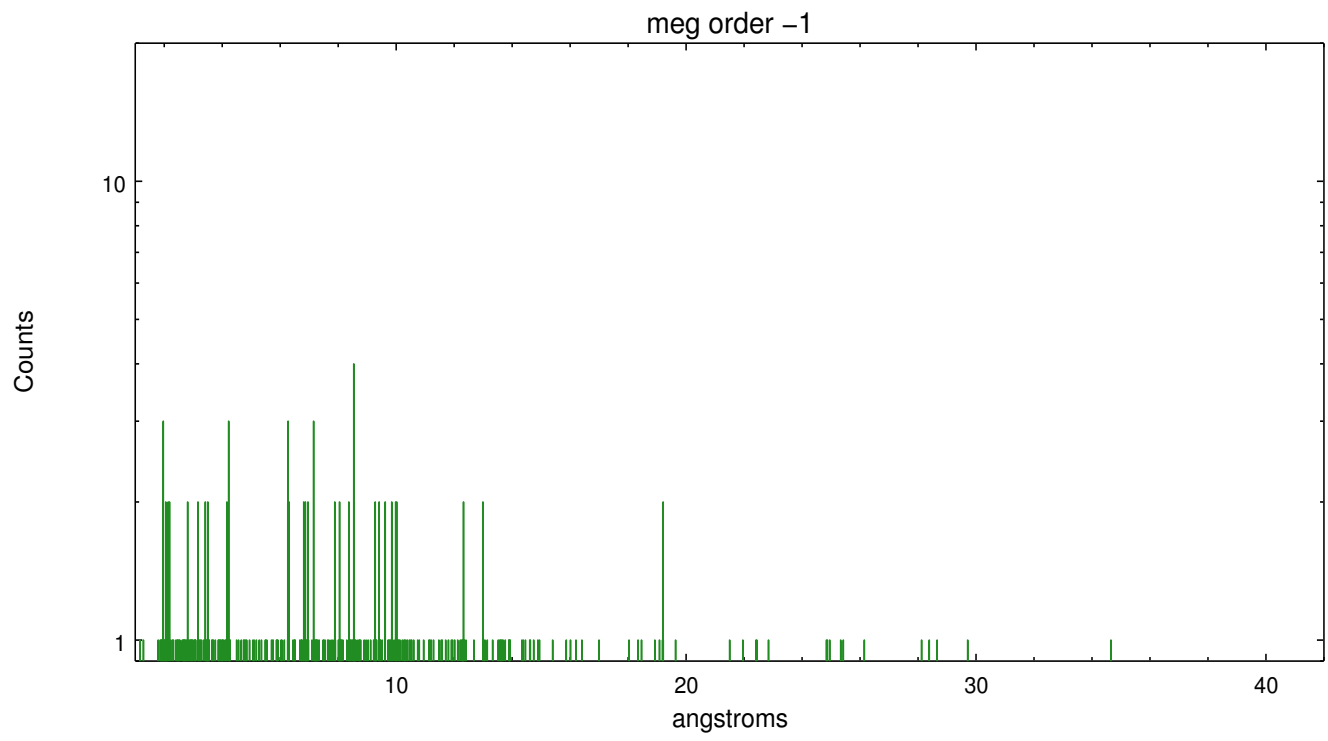
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	372	276	665	2496	713	269	279





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	36.349609952211

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.

=== 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.

=== 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.