

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 3814 - L2 Version 3
Chandra X-Ray Center

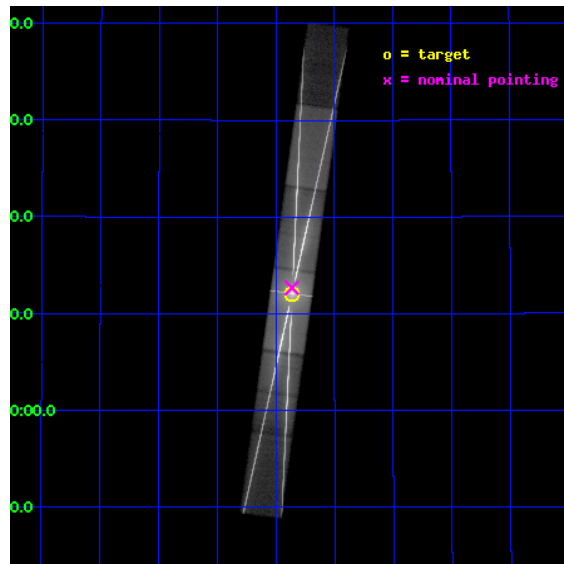
L2 Processing Date : Oct 30 2012

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1 Front

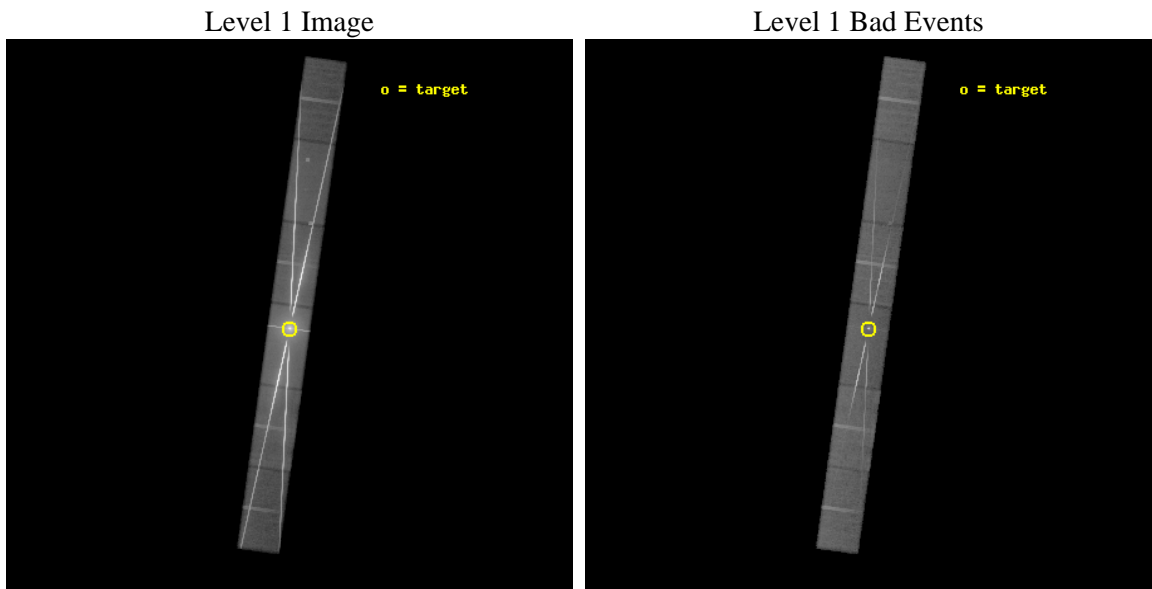
seq_num	400301	Sequence number
obs_id	3814	Observation id
title	CYGNUS X-1: X-RAY DIPS, DISTANCE, AND THE X-RAY HALO	Proposal titl
observer	Dr. Katja Pottschmidt	Principal investigator
object	CYG X-1	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	299.590417	Observer's specified target RA [deg]
dec_targ	35.20175	Observer's specified target Dec [deg]
ra_nom	299.59087262083	Nominal RA [deg]
dec_nom	35.211411930104	Nominal Dec [deg]
roll_nom	97.946317453269	Nominal Roll [deg]
revision	3	Processing version of data
ontime	48324.199661136	Sum of GTIs [s]
livetime	47185.095933425	Livetime [s]
ontime4	48324.199661136	Sum of GTIs [s]
ontime5	48324.199661136	Sum of GTIs [s]
ontime6	48324.199661136	Sum of GTIs [s]
ontime7	48324.199661136	Sum of GTIs [s]
ontime8	48322.458641022	Sum of GTIs [s]
ontime9	48324.199661136	Sum of GTIs [s]
l2events	5356527	Number of level 2 events



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	1	Obi number	sched_exp_time	48000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	48324.199661136	Sum of GTIs [s]
caldbver	4.5.2	 	ontime4	48324.199661136	Sum of GTIs [s]
date	2012-10-26T22:15:05	Date and time of file creation	ontime5	48324.199661136	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	48324.199661136	Sum of GTIs [s]
			ontime7	48324.199661136	Sum of GTIs [s]
			ontime8	48322.458641022	Sum of GTIs [s]
			ontime9	48324.199661136	Sum of GTIs [s]
			l1events	6724131	Number of level 1 events

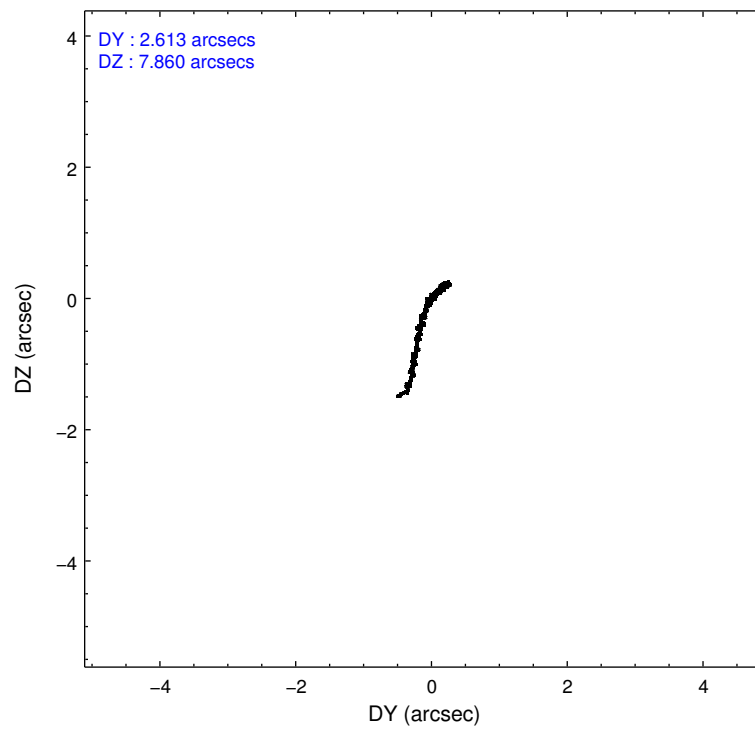
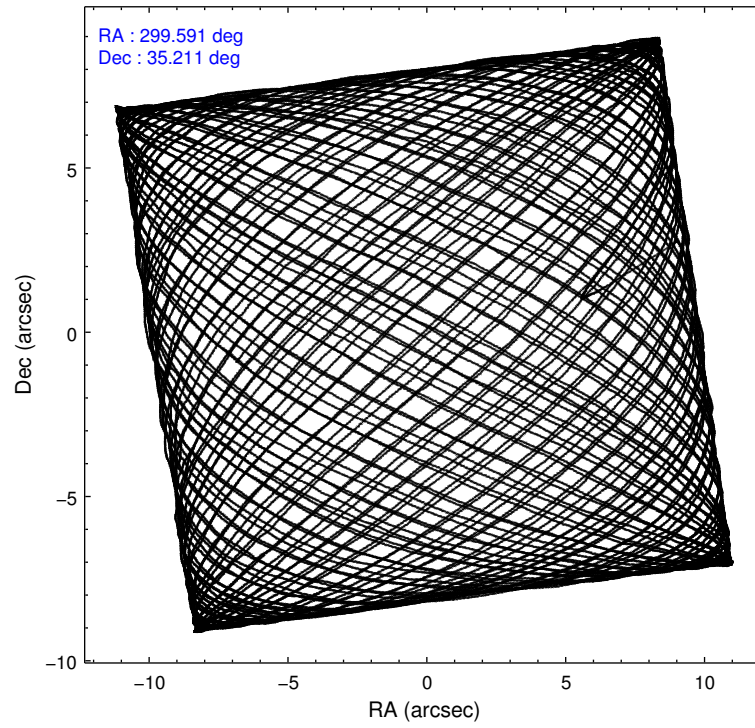
2.1.3 Events

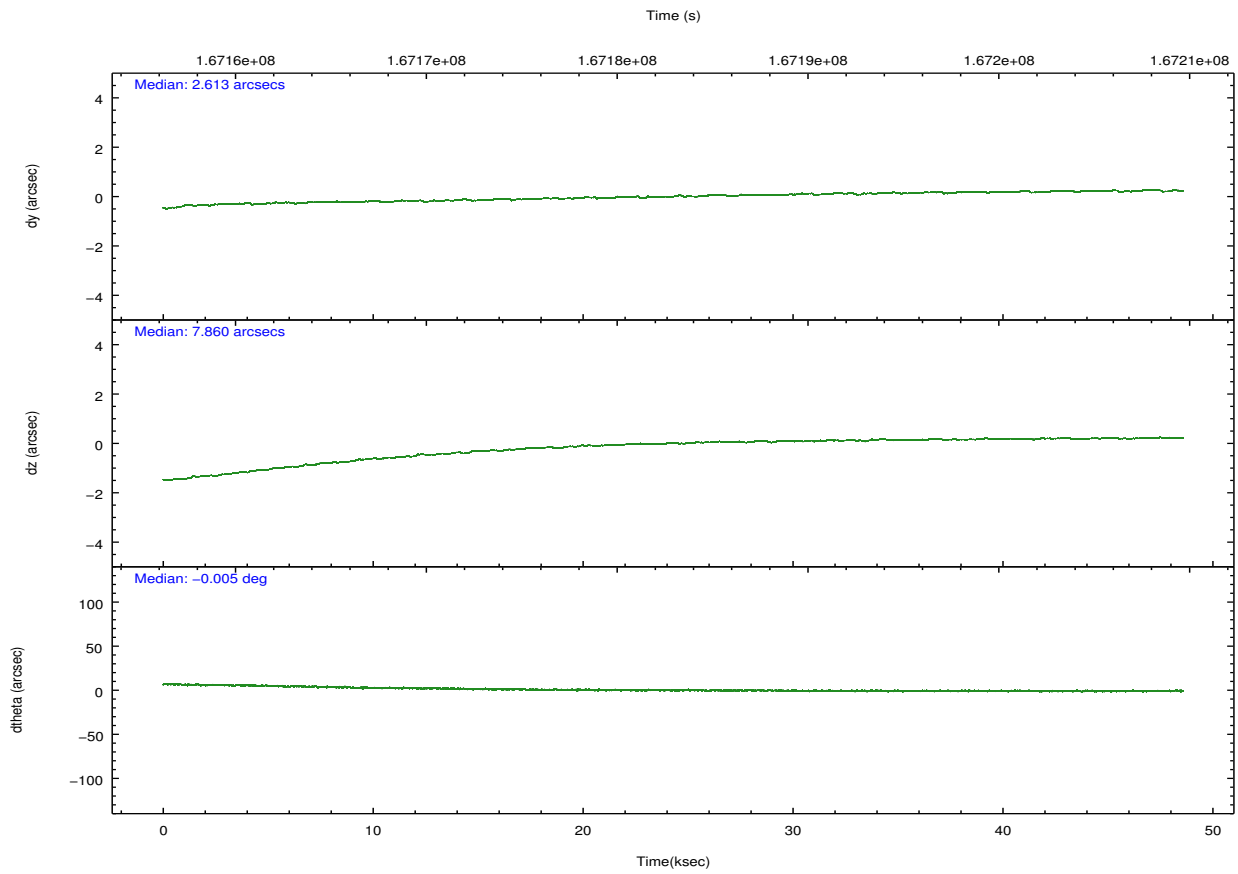
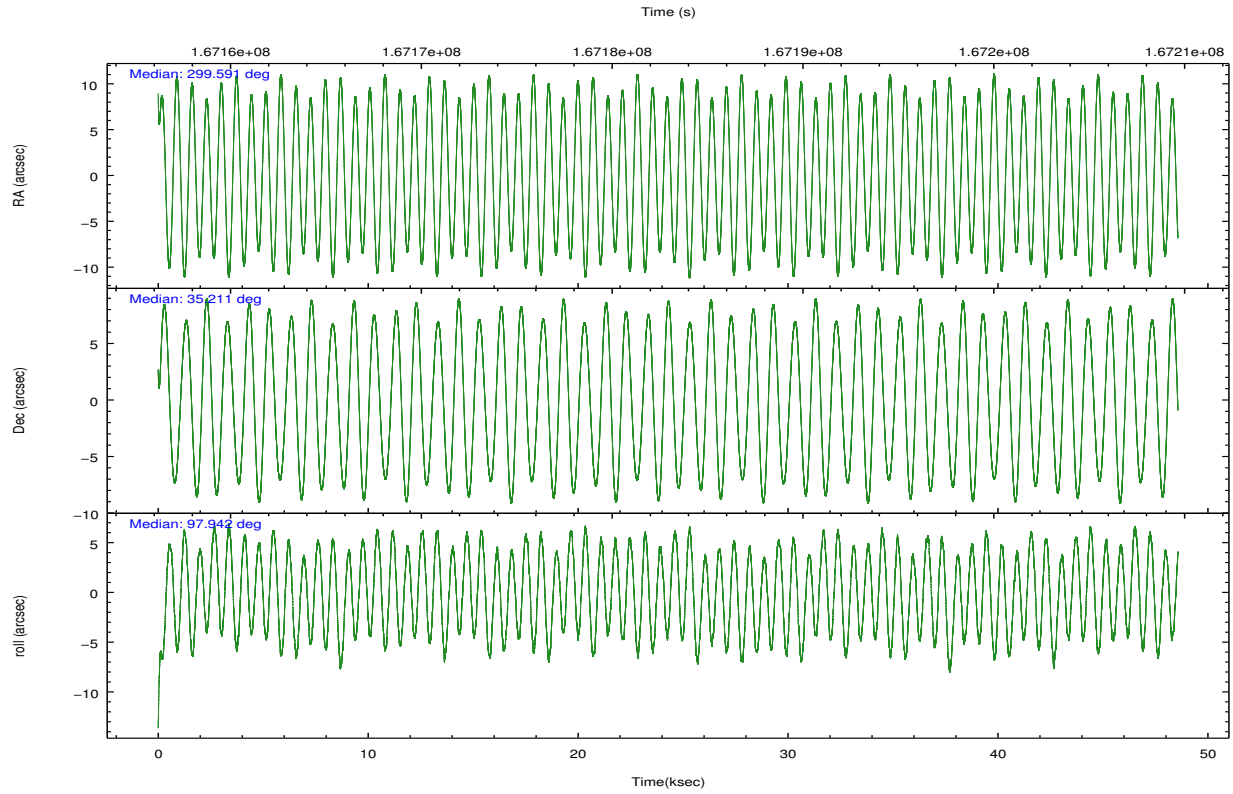
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	239933	608305	2031761	2433626	1095007	315499	grade 0 events	55202	121611	1339118	397961	710368	132113
rejected events	158904	136025	219568	266347	183295	140356		23%	19%	65%	16%	64%	41%
rejected %	66%	22%	10%	10%	16%	44%	grade 1 events	183	927	32780	10578	9348	425
								0%	0%	1%	0%	0%	0%
							grade 2 events	12645	157737	232319	566578	101837	21247
								5%	25%	11%	23%	9%	6%
							grade 3 events	4146	34942	80062	214582	34766	7207
								1%	5%	3%	8%	3%	2%
							grade 4 events	3781	34959	78327	212581	34158	7106
								1%	5%	3%	8%	3%	2%
							grade 5 events	5332	16637	29099	67073	12892	6641
								2%	2%	1%	2%	1%	2%
							grade 6 events	5256	123049	82430	775647	30628	7479
								2%	20%	4%	31%	2%	2%
							grade 7 events	153388	118443	157626	188626	161010	133281
								63%	19%	7%	7%	14%	42%

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	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	299.611707	299.5908726208275	Subarray requested	CUSTOM	1/2
[deg] Pointing Dec	35.190162	35.21141193010402	Subarray start row	1	1
[deg] Pointing Roll	97.777683	97.94631745326913	Subarray row count	512	512
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	1.7
[mm] SIM translation stage pos	-183.992523	-183.9875365069546			
[mm] SIM translation stage offset	-6.14	-6.144986076053243			
Phase constraints	Y	Y			
[d] Phase period	5.599829	5.599829			
[d] Phase epoch (MJD)	51242.721000	51242.721000			
Phase start	0.900000	0.900000			
Phase end	1.000000	1.000000			
Phase start error	0.050000	0.050000			
Phase end error	0.050000	0.050000			
[s] Observation start time (MET)	167159211.184000	167158051.18707			
Observation start date	2003-04-19T17:05:47	2003-04-19T16:47:31			
[s] Observation end time (MET)	167207211.184000	167208102.96418			
Observation end date	2003-04-20T06:25:47	2003-04-20T06:41:42			
Read mode	TIMED	TIMED			

2.3 Aspect



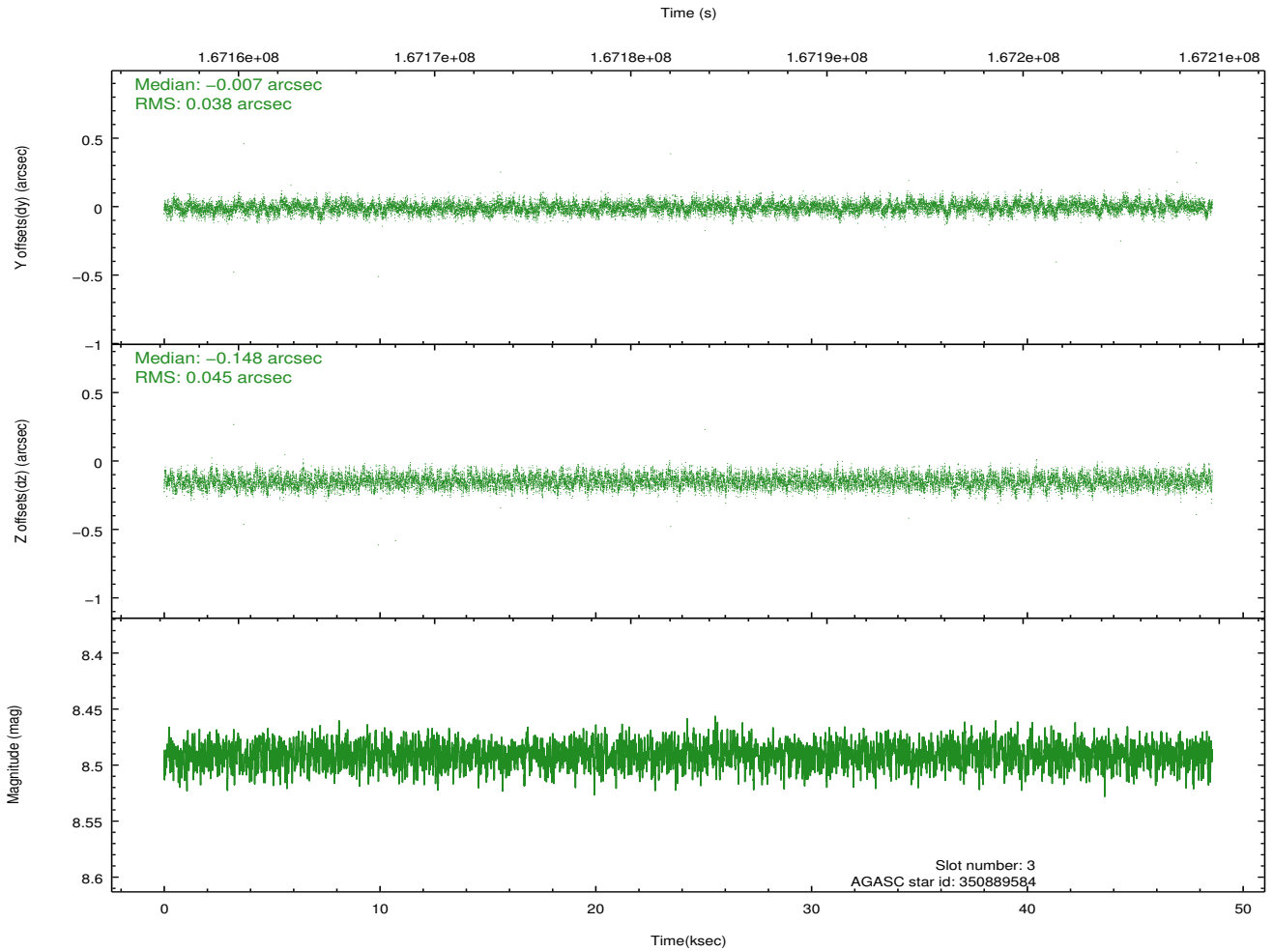
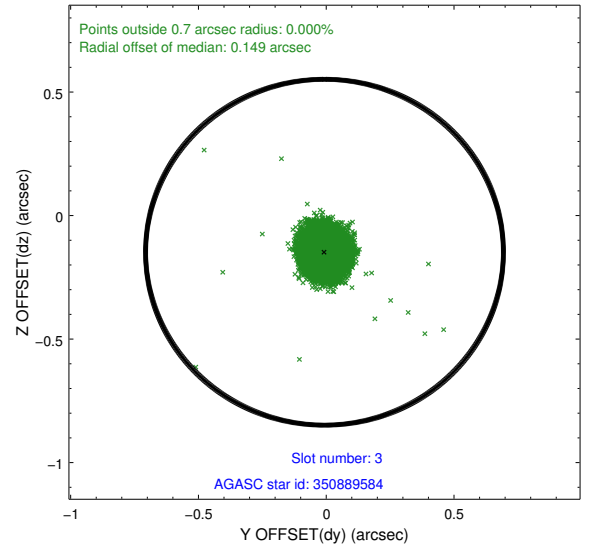
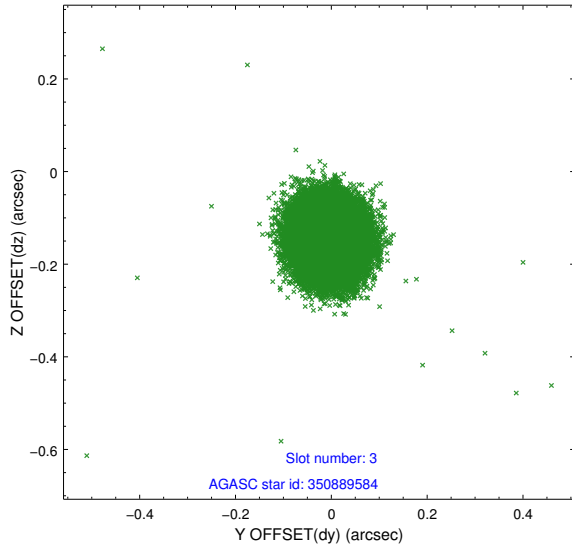


Slot Statistics

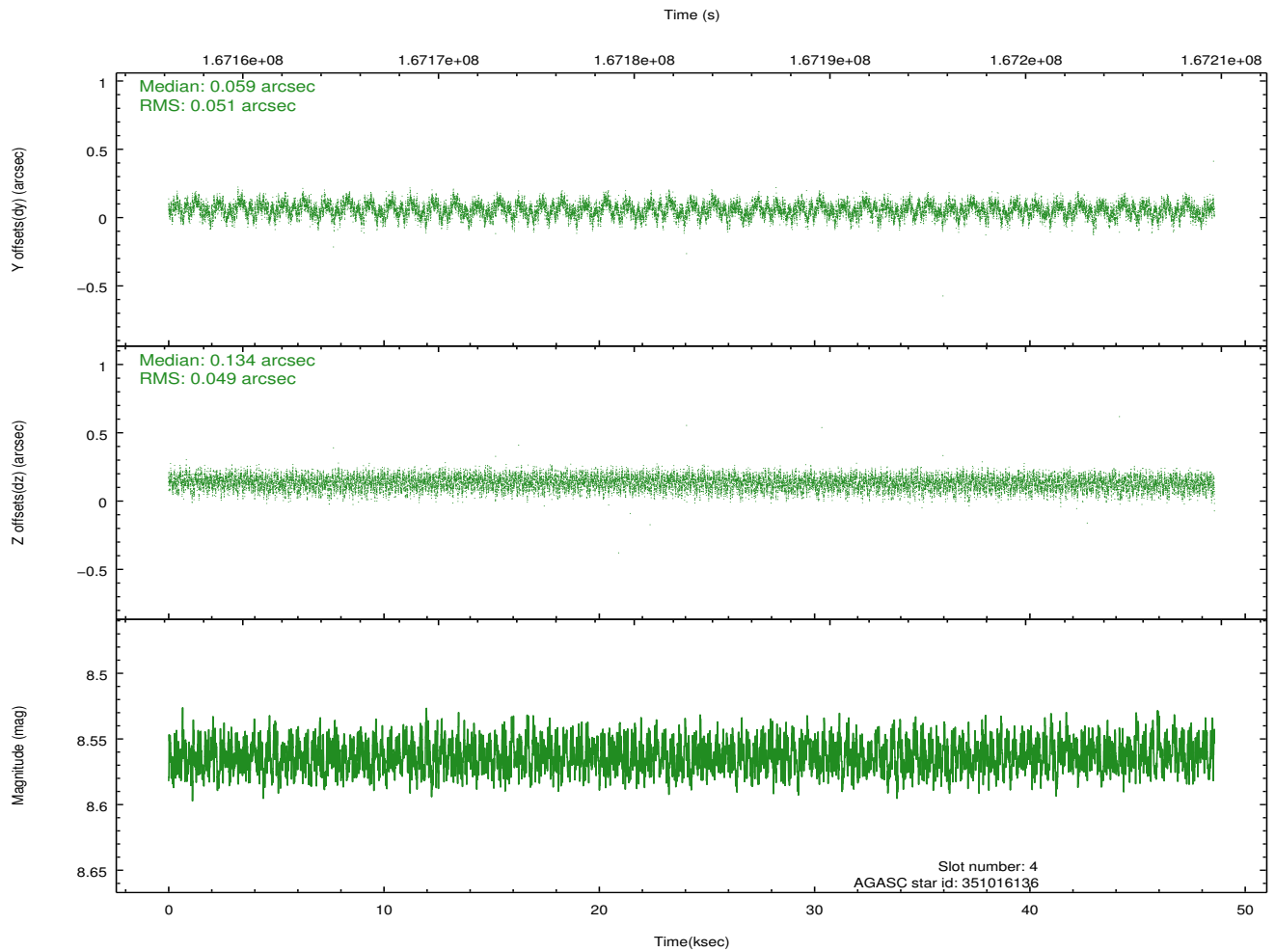
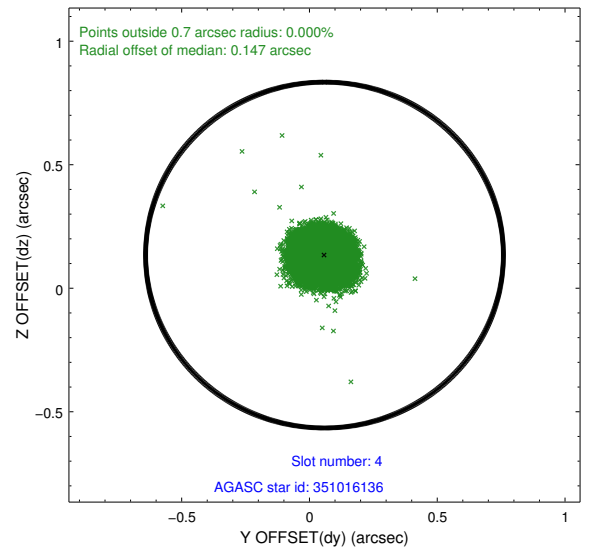
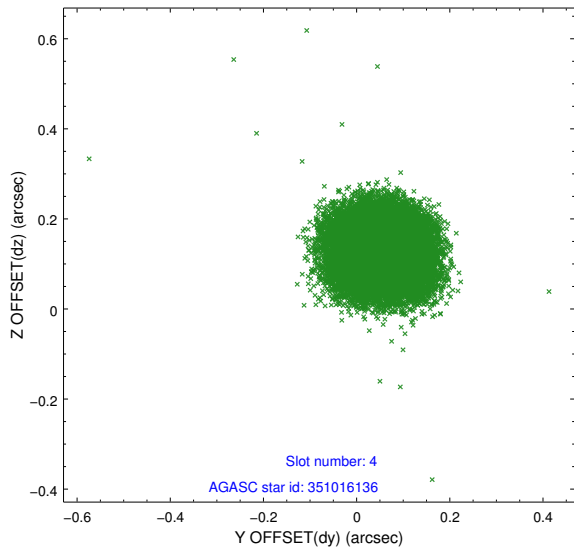
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	11847	-0.067	-0.053	0.016	0.064	0.000000	0.000000	-754.83	-1855.55
1	FID	ACIS-S-4	7.18	11848	0.029	0.048	0.008	0.015	0.000000	0.000000	2158.52	53.08
2	FID	ACIS-S-5	7.23	11847	0.006	0.014	0.014	0.054	0.000000	0.000000	-1807.65	46.65
3	GUIDE	350889584	8.49	23692	-0.007	-0.148	0.063	0.100	299.222293	35.536921	1393.50	961.20
4	GUIDE	351016136	8.56	23693	0.059	0.134	0.076	0.120	300.302636	34.786391	-1709.41	-1828.04
5	GUIDE	351018080	8.33	23690	0.121	-0.127	0.055	0.088	299.327312	34.581247	-2056.70	1131.59
6	GUIDE	351024856	8.54	23689	0.053	0.205	0.077	0.128	300.374482	35.139033	-477.65	-2200.64
7	GUIDE	351406096	8.90	23685	-0.224	-0.054	0.067	0.110	299.076637	35.711249	2074.21	1295.54

2.4 Star Slots

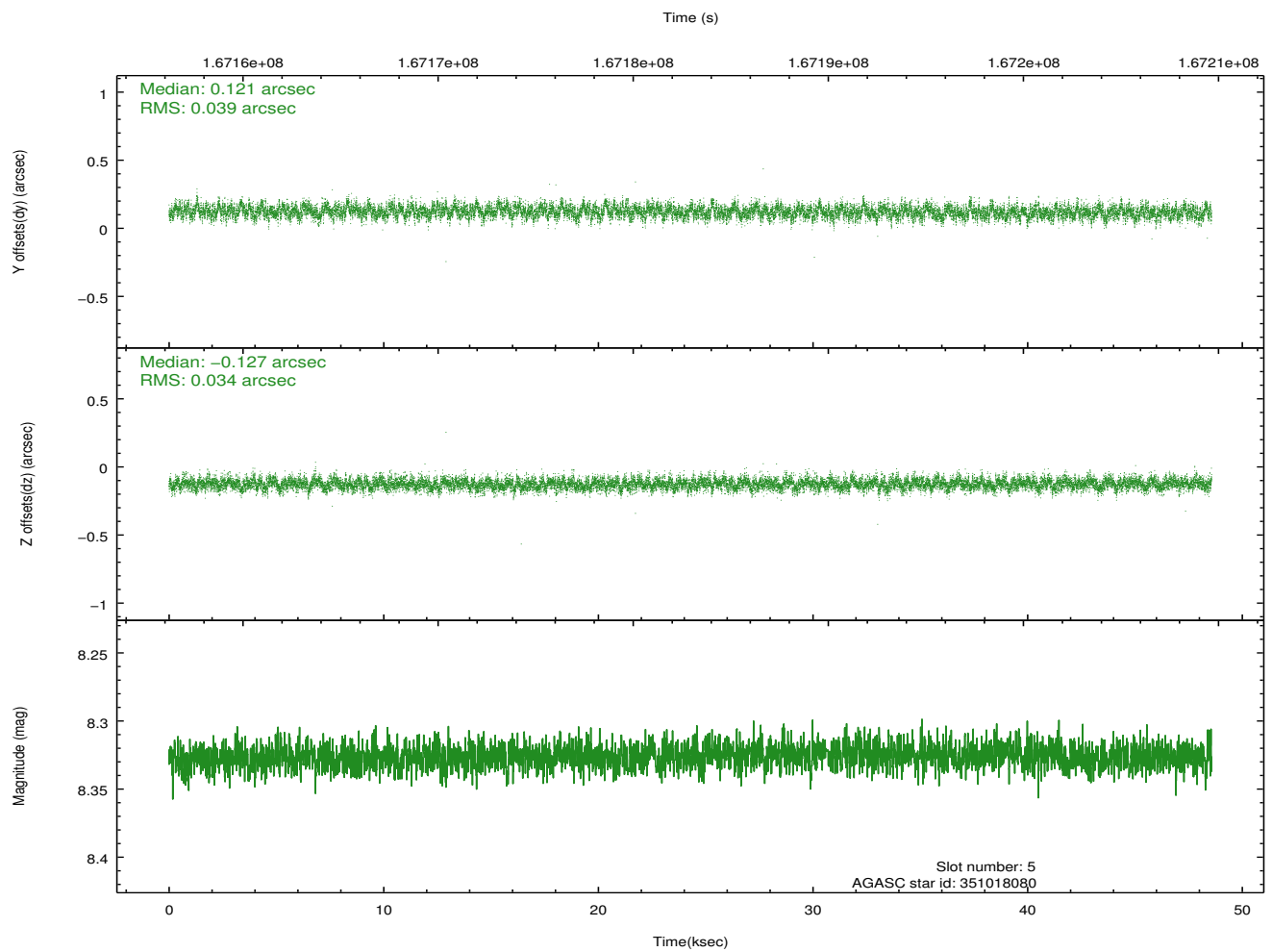
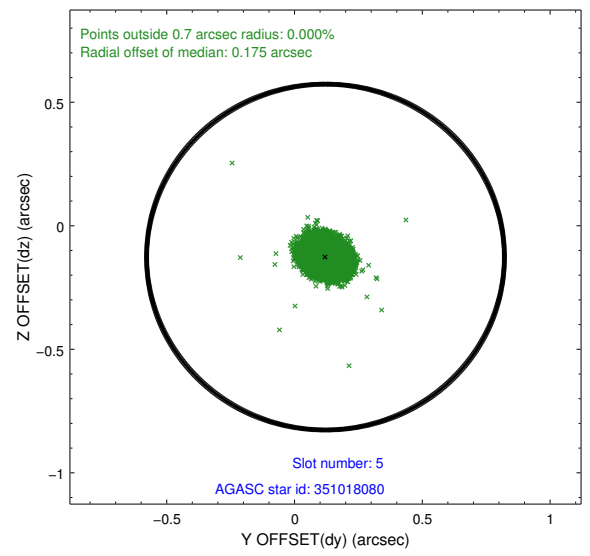
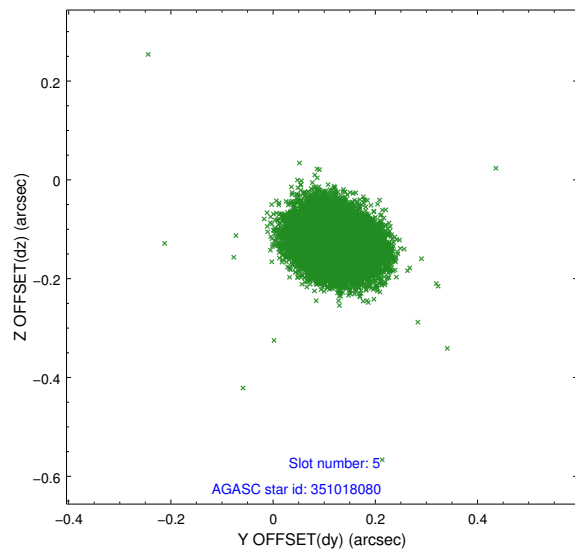
2.4.1 Slot 3



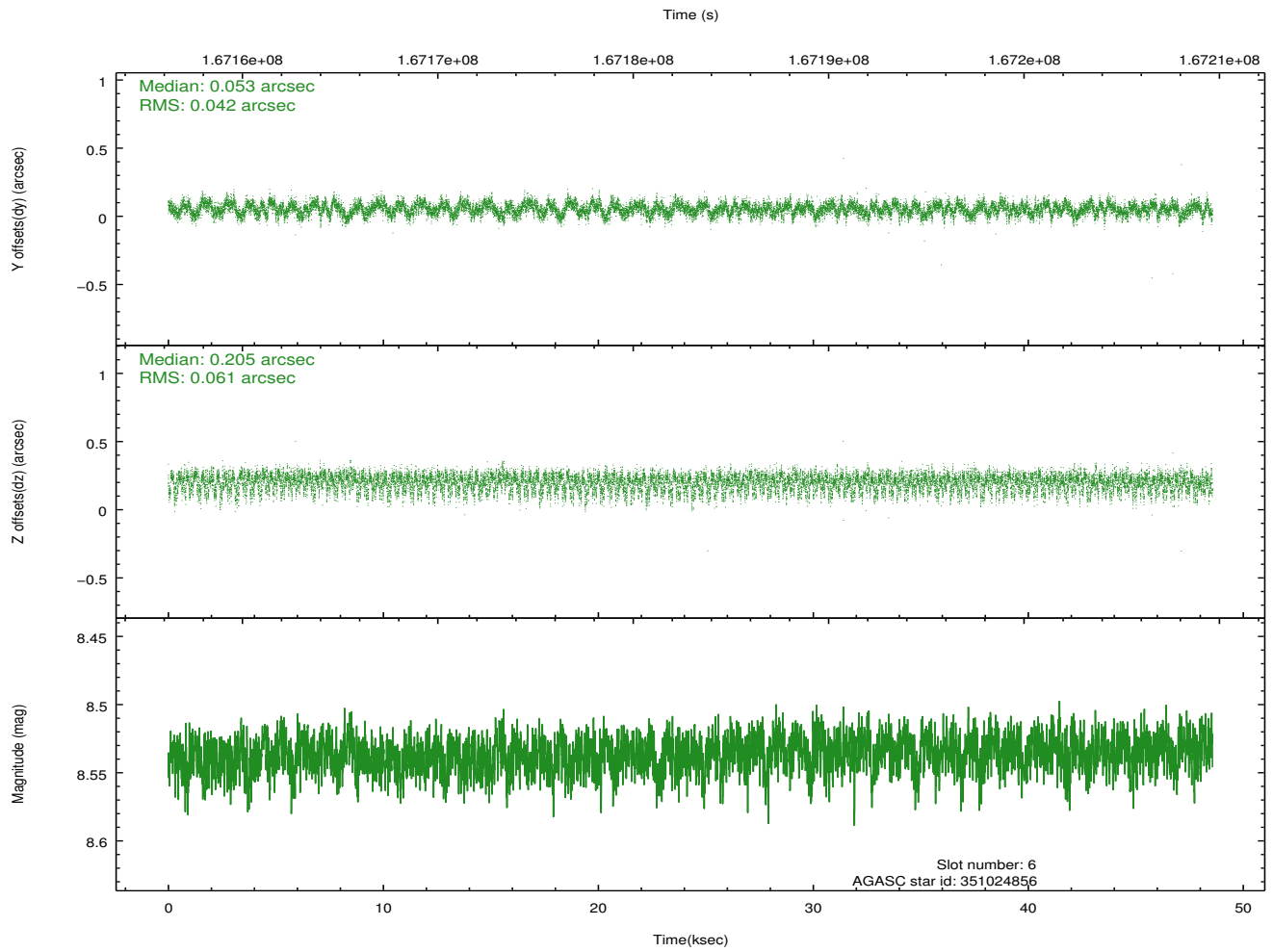
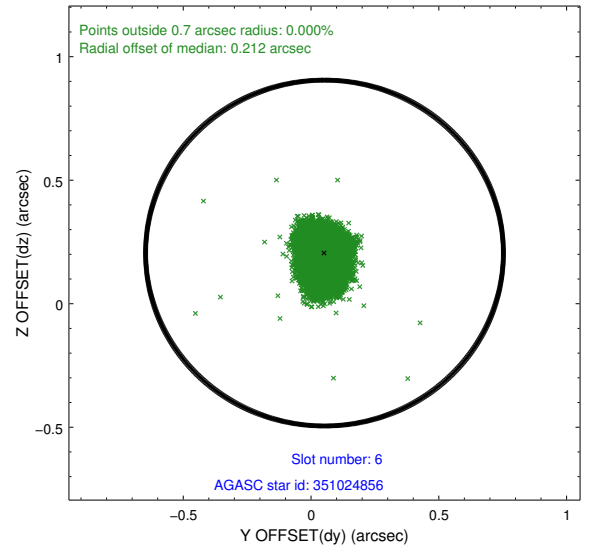
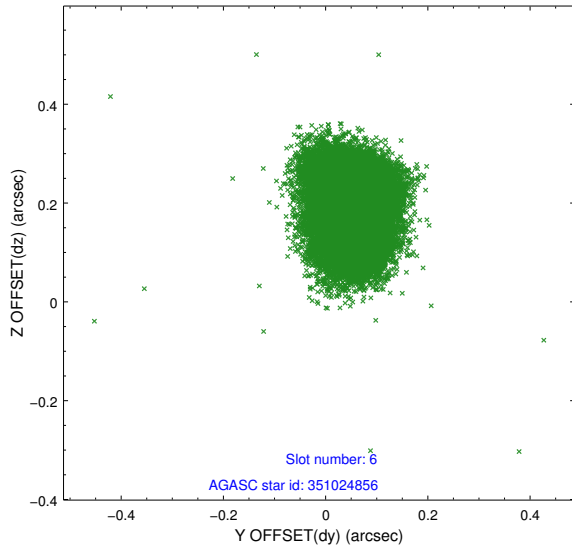
2.4.2 Slot 4



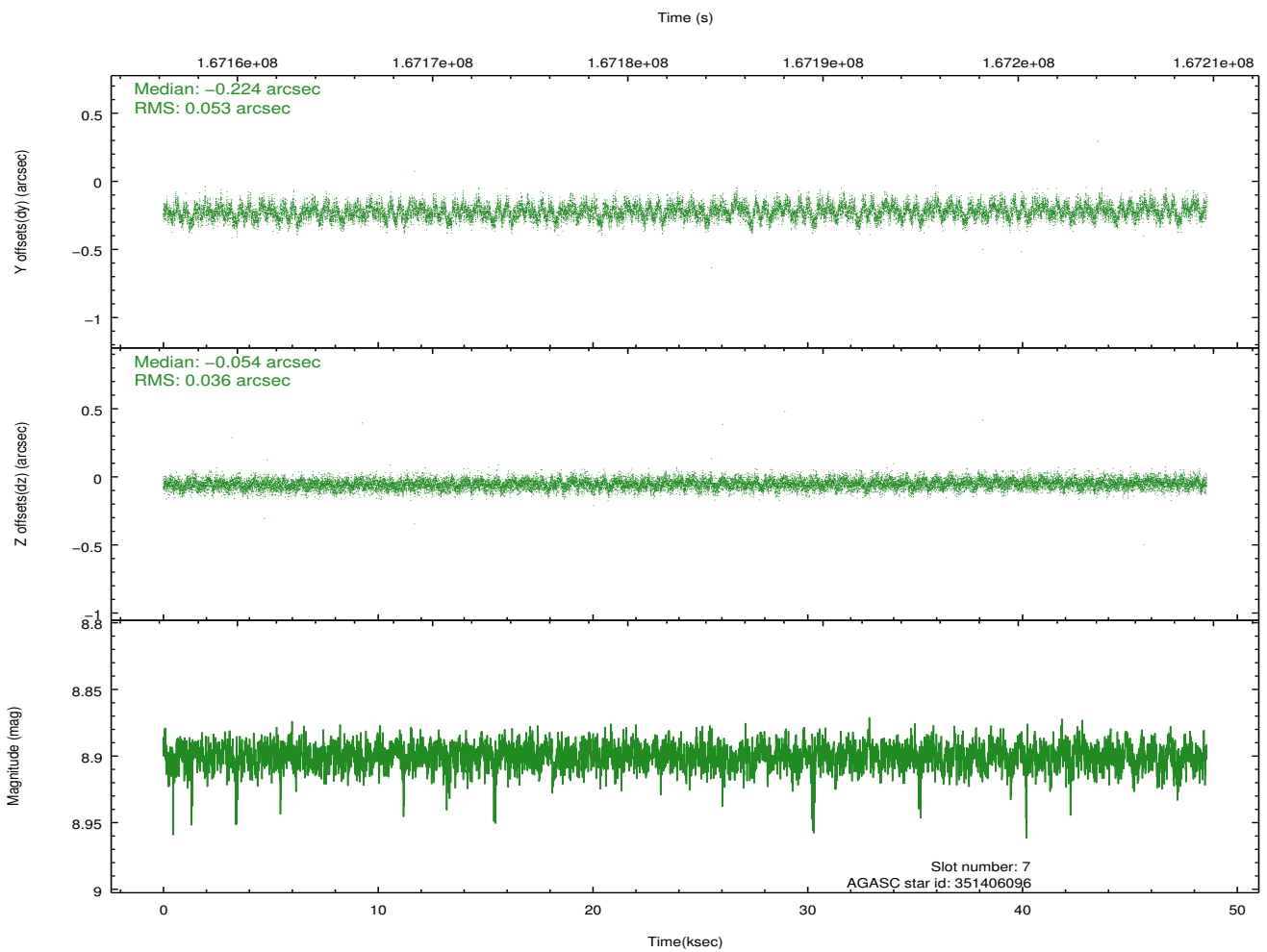
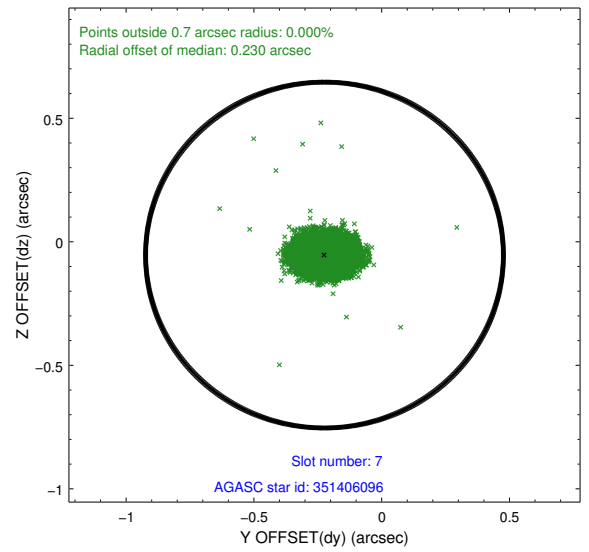
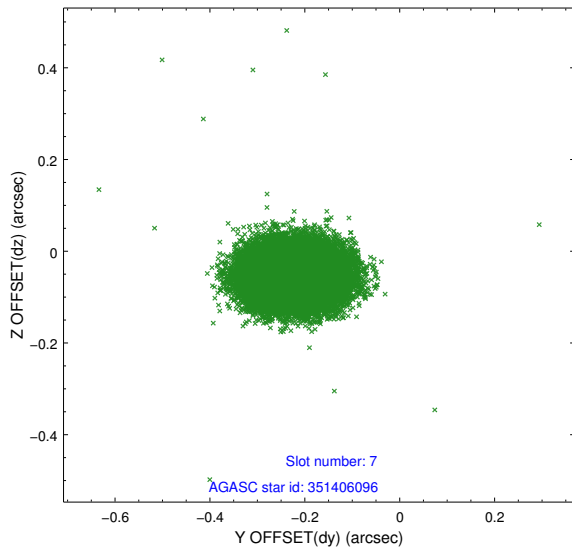
2.4.3 Slot 5



2.4.4 Slot 6

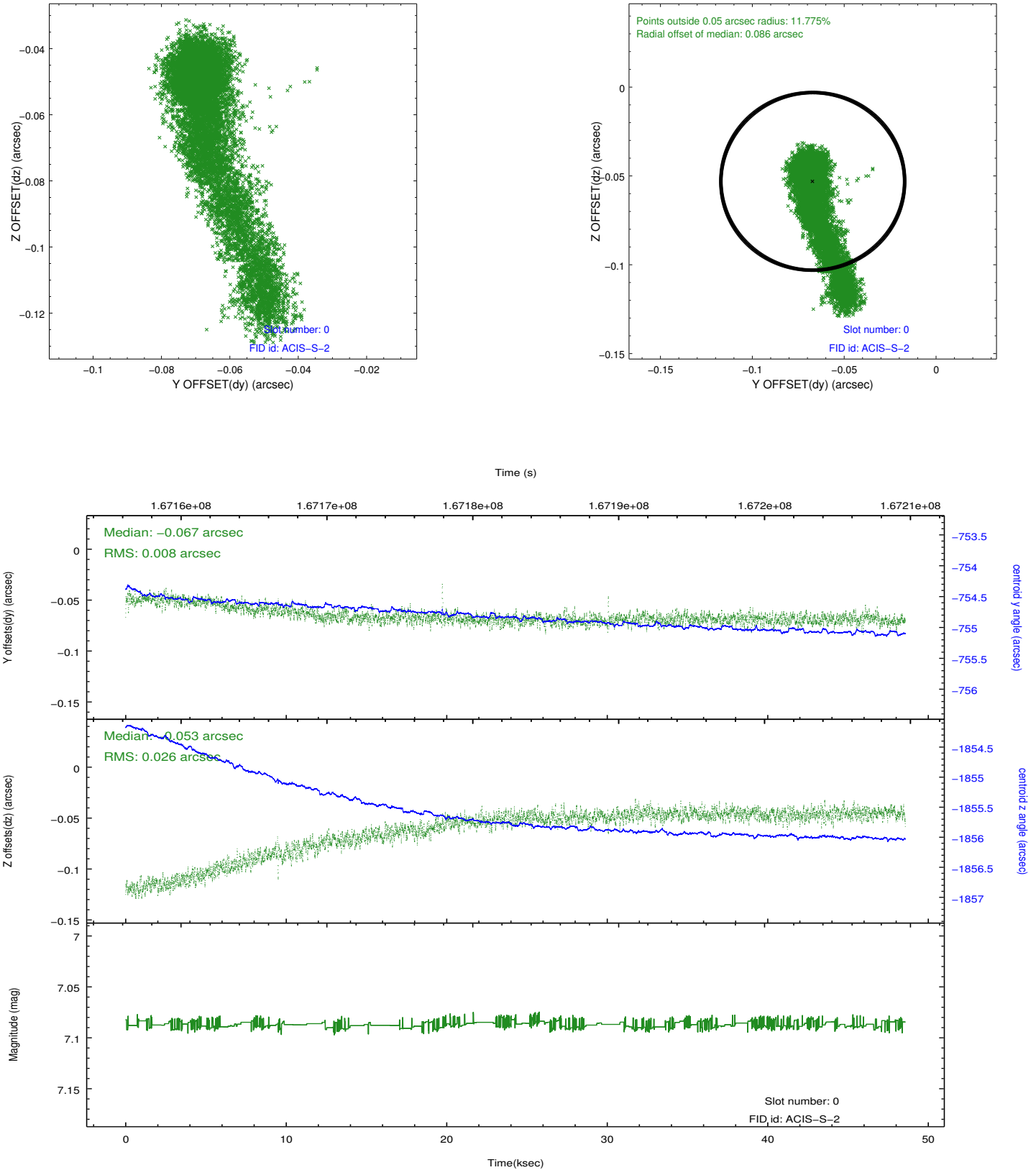


2.4.5 Slot 7

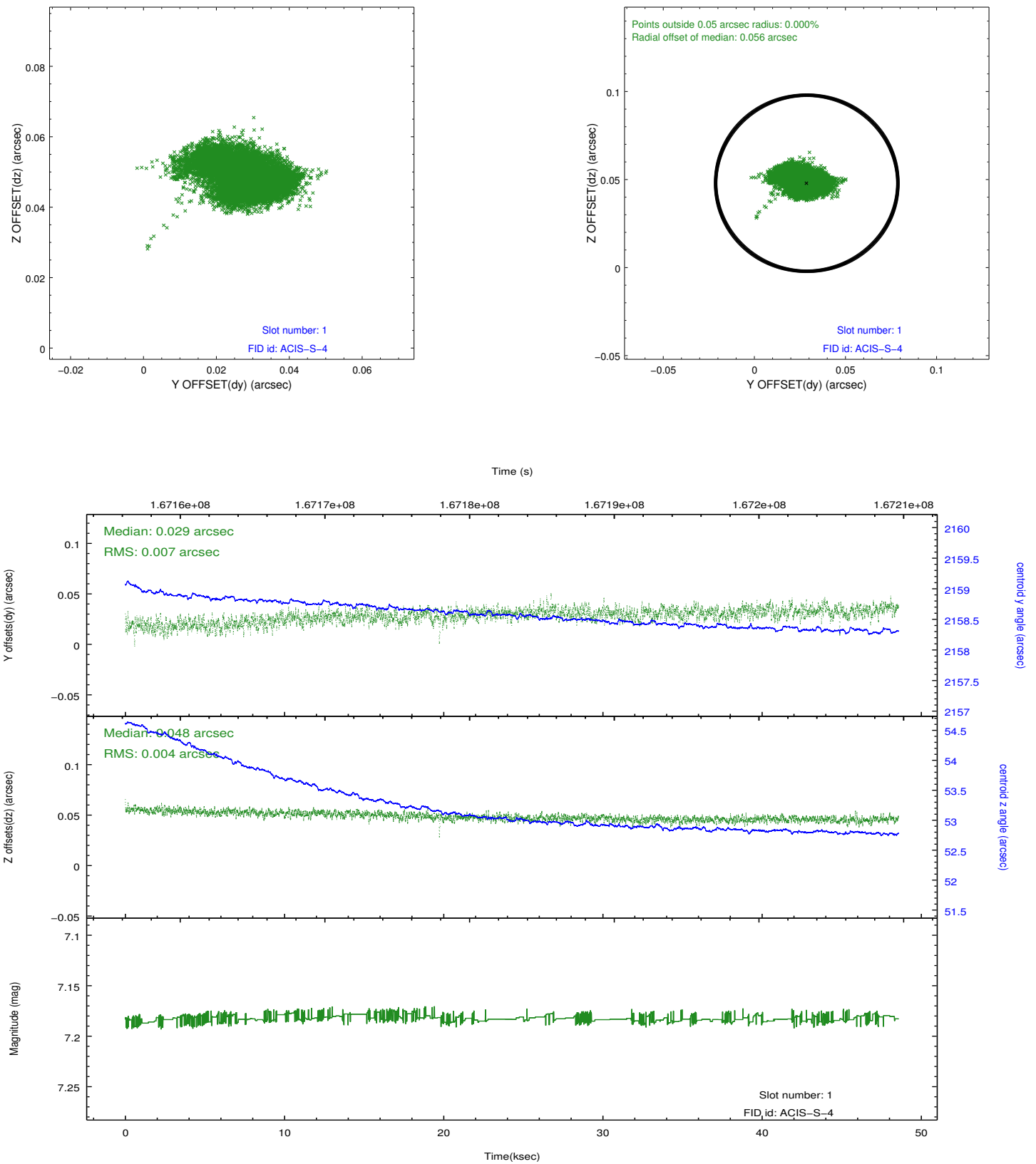


2.5 FID Slots

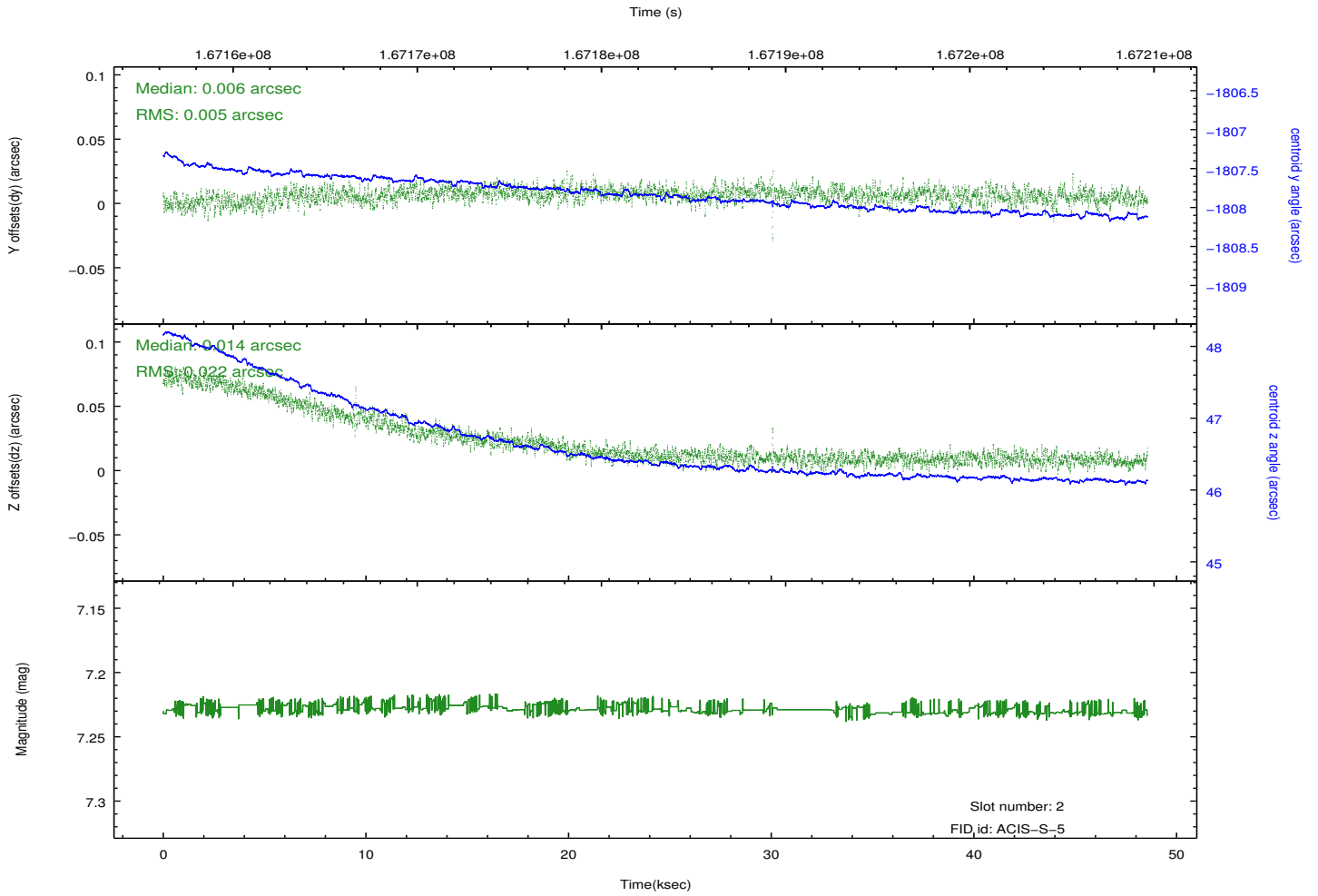
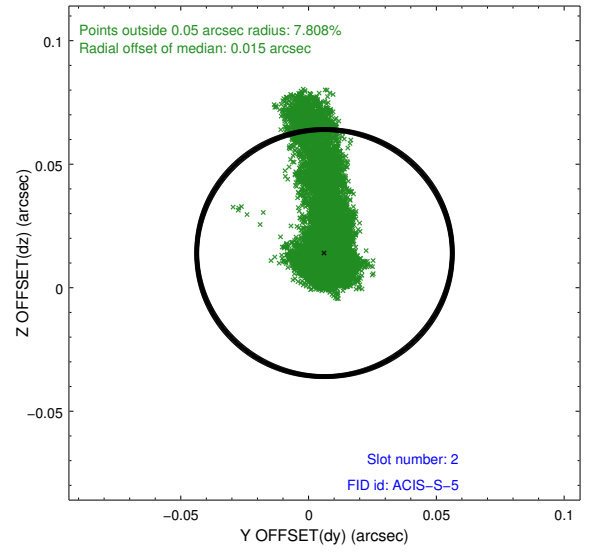
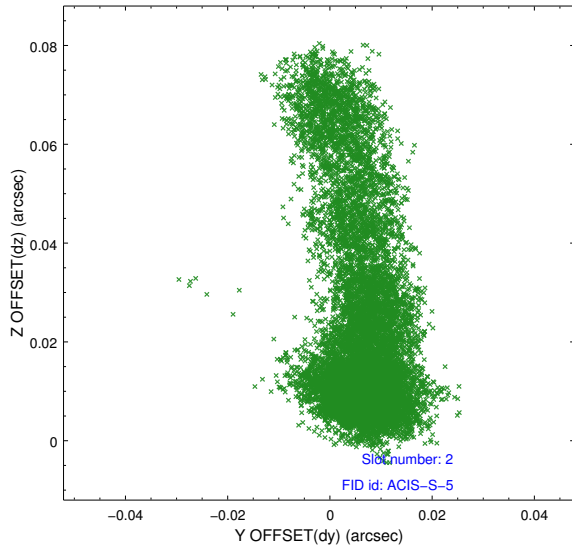
2.5.1 Slot 0



2.5.2 Slot 1

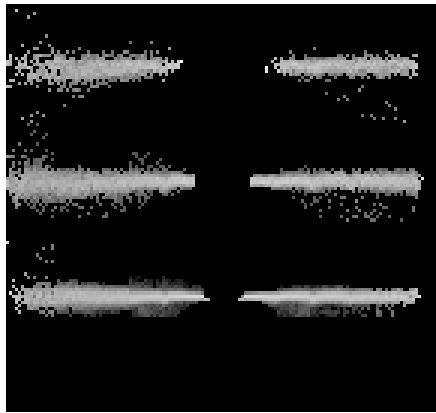


2.5.3 Slot 2

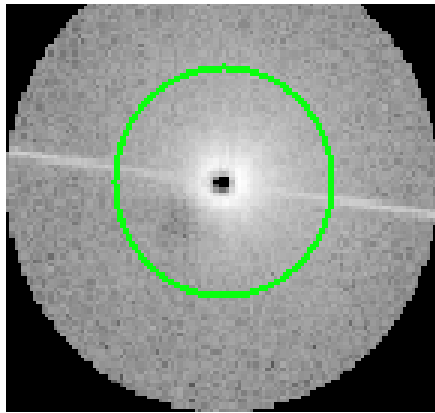


3 Gratings

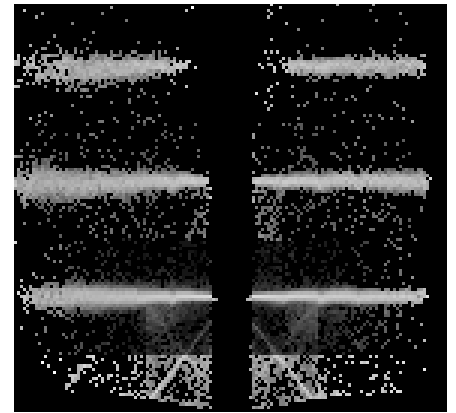
3.1 HEG Arm



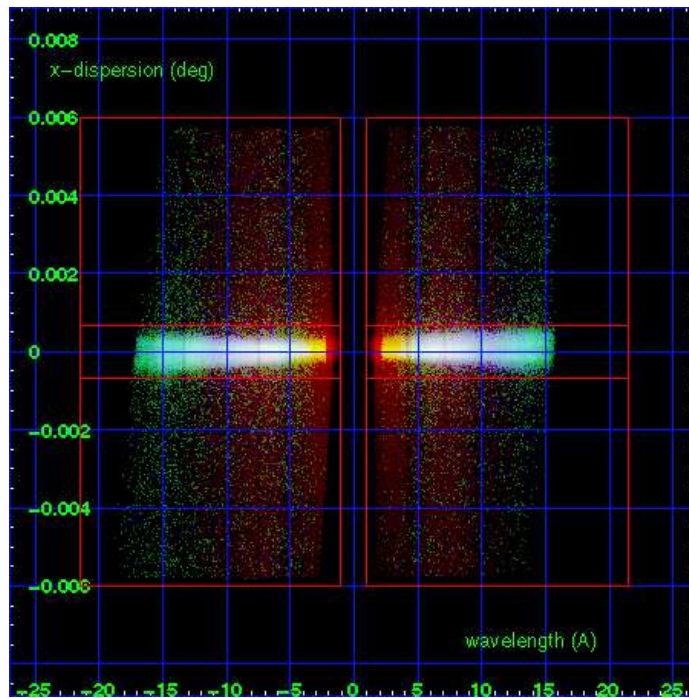
HEG Order Sort 123



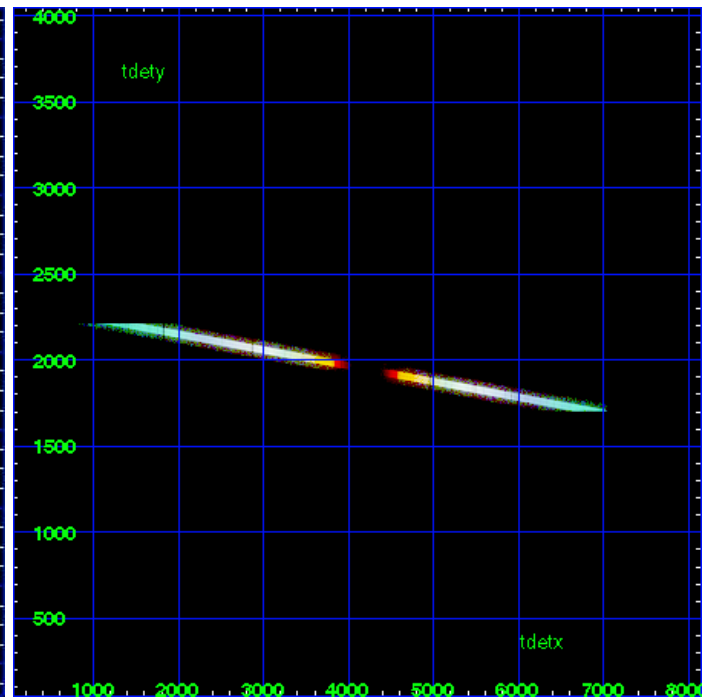
HEG Zero Order



HEG Order Sort ALL

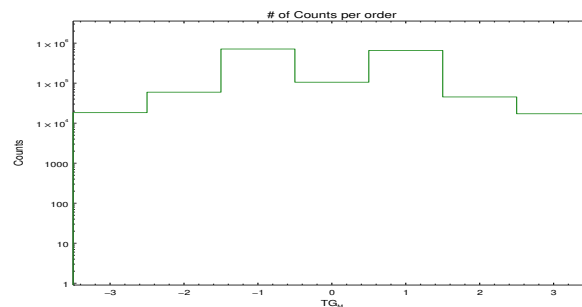


Spot Image HEG

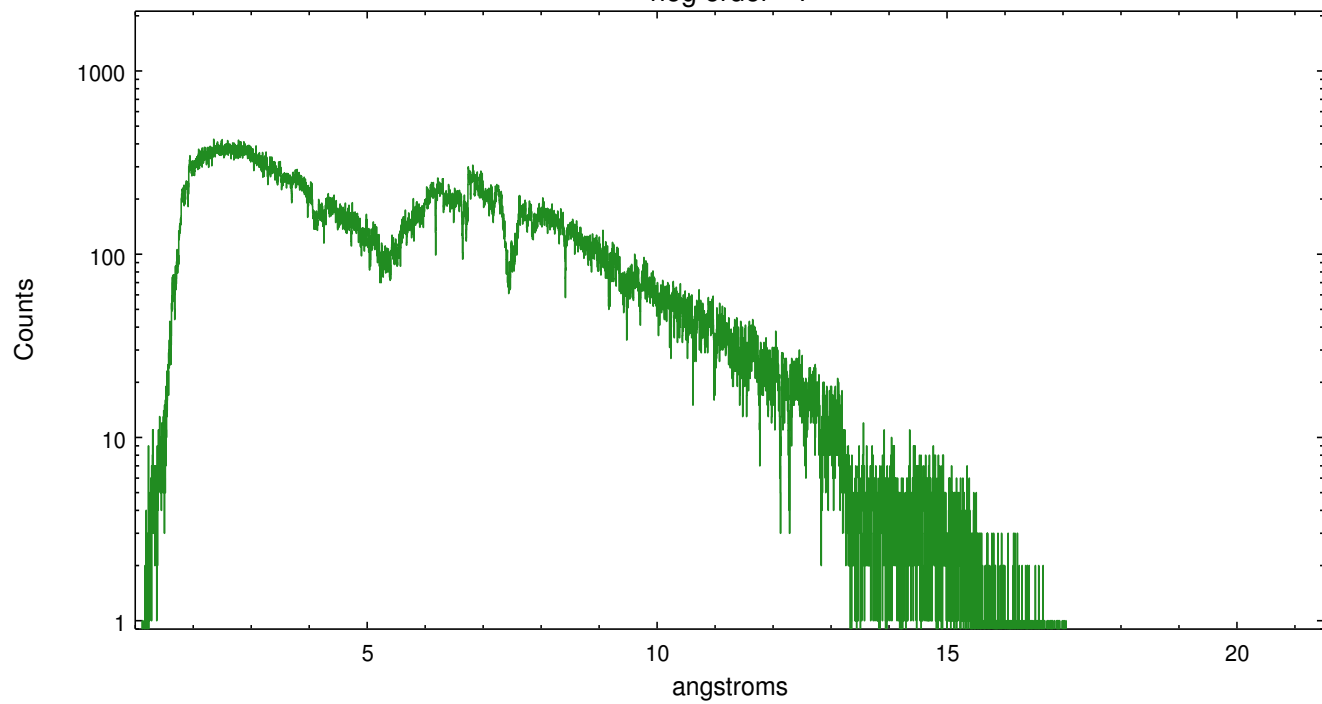


Full Detector HEG

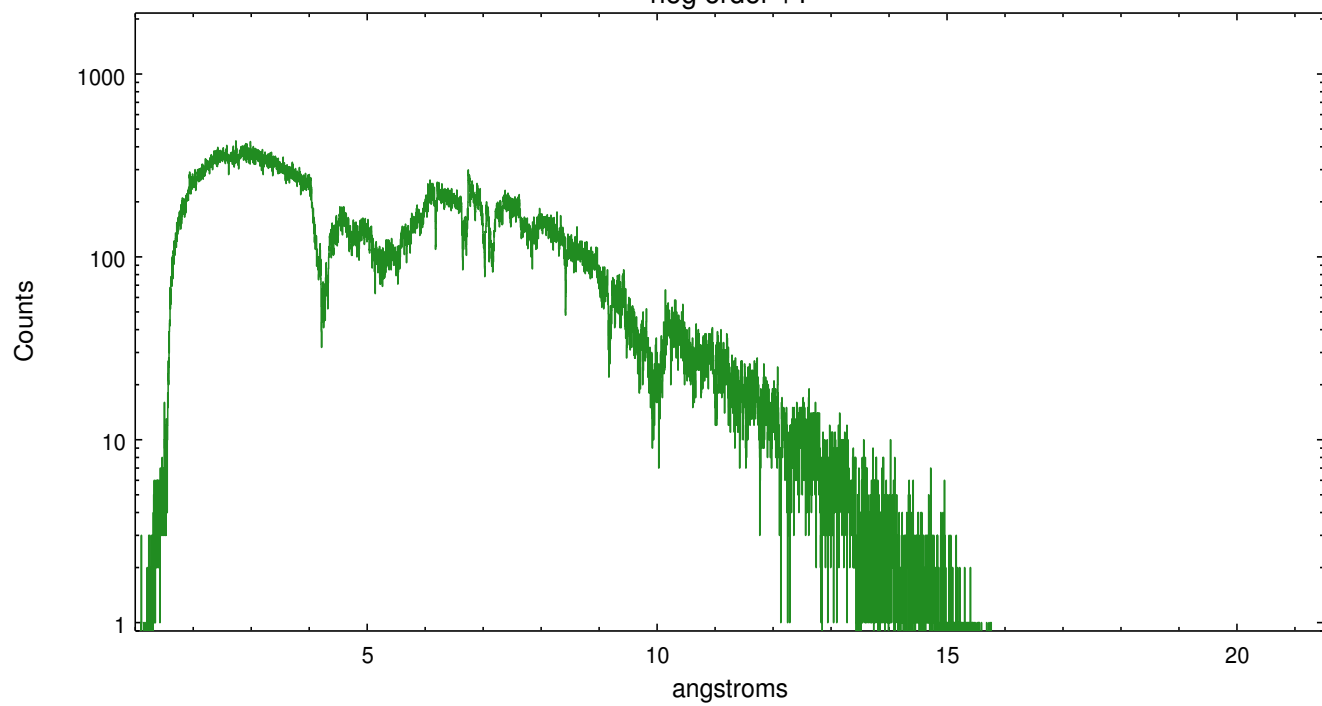
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	18327	59464	713152	105477	656182	45223	17182



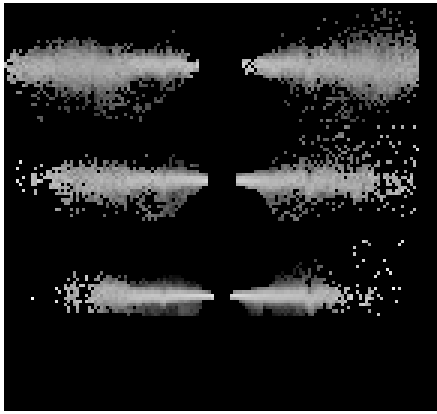
heg order -1



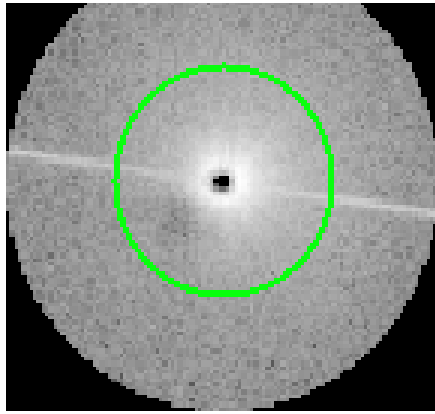
heg order +1



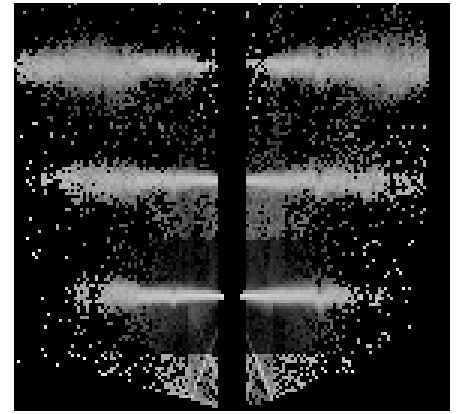
3.2 MEG Arm



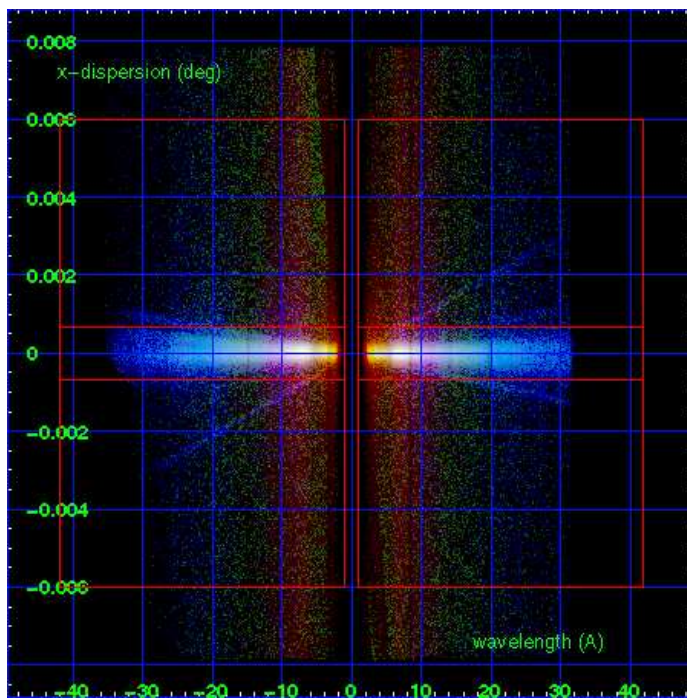
MEG Order Sort 123



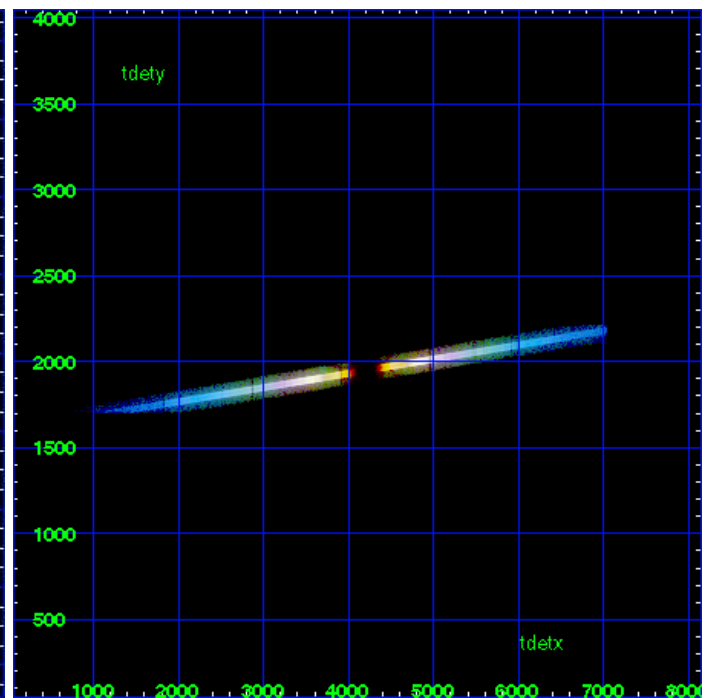
MEG Zero Order



MEG Order Sort ALL

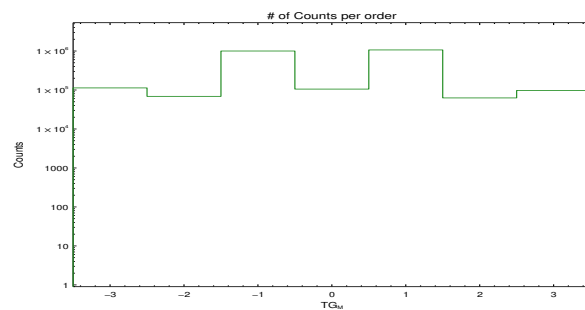


Spot Image MEG

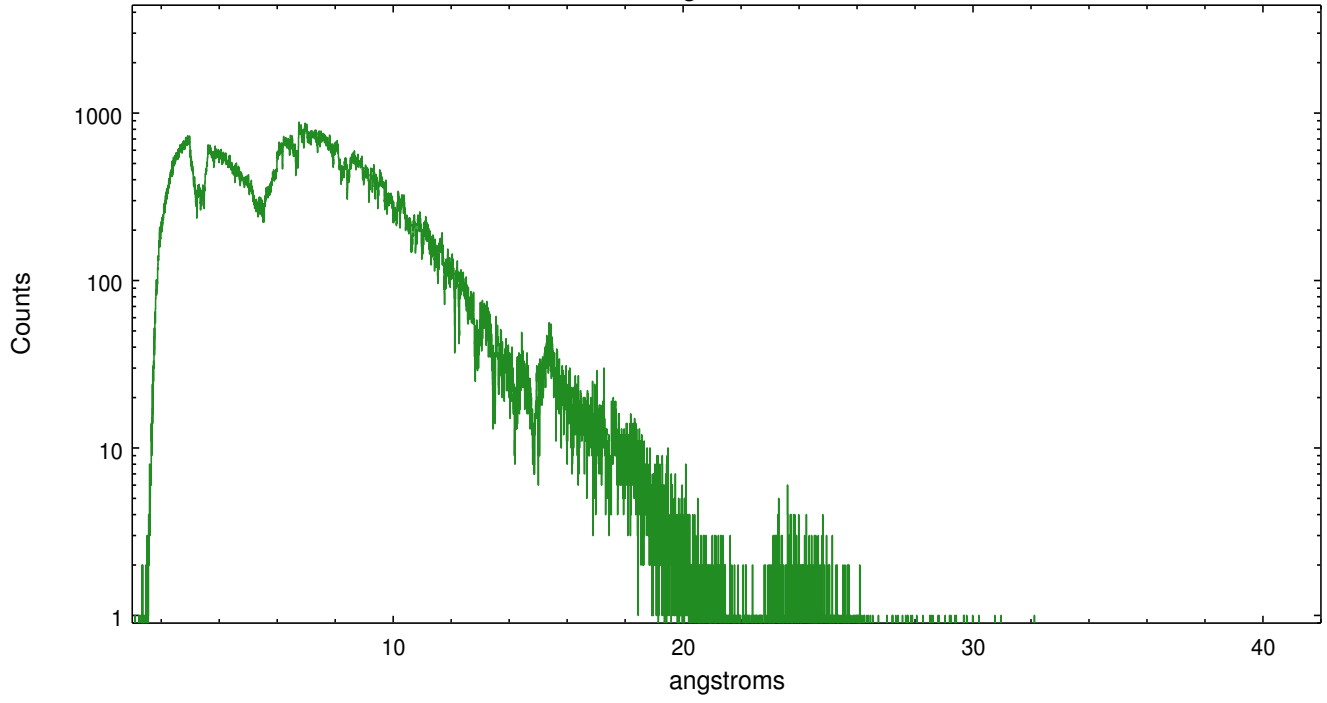


Full Detector MEG

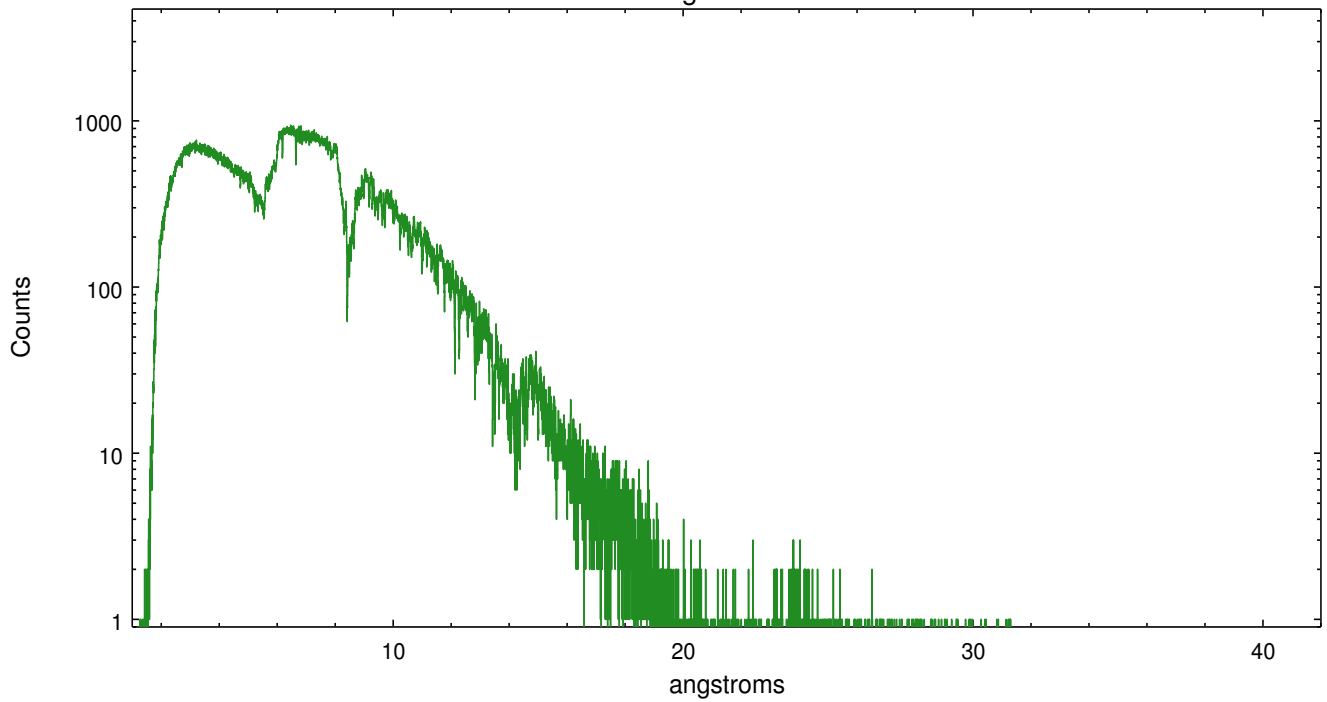
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	113140	68646	1000253	105477	1066155	62637	97312



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.12.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	48.325

A.2 Comments

Zeroth order piled up. Standard data processing software did not correctly locate the zeroth order due to pileup. Manual intervention was used to input the correct sky coordinates (x=4099.96, y=4024.89) into the *src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called tg_findzo, available in CIAO. The tool calculates the point of intersection of the readout streak and the meg arm. The zeroth order source position determined by the standard pipeline processing using the tool tgdetect was not used in this processing. The newly determined zeroth order coordinates have been placed in the *src1a.fits file, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect on the data.

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Faint grating spectra can be seen in an image of bad events. This is probably due to pileup in the spectrum, causing migration to bad grades. This should be considered in analysis.