

V&V Reference Report

L2 ASCDS Version : 10

Observation 15484 - L2 Version 3
Chandra X-Ray Center

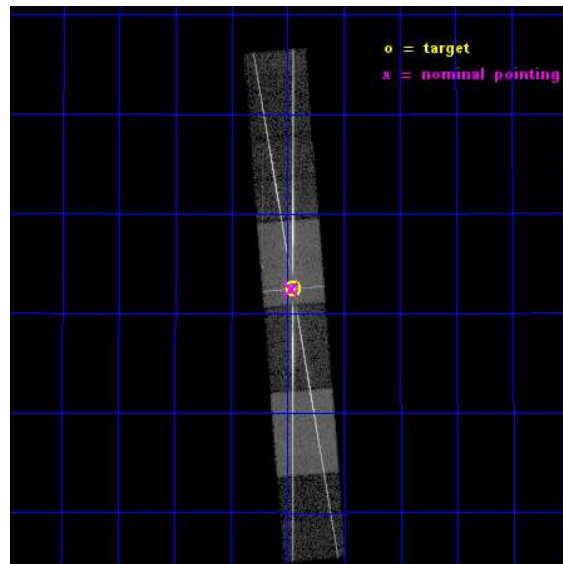
L2 Processing Date : Dec 3 2014

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1 Front

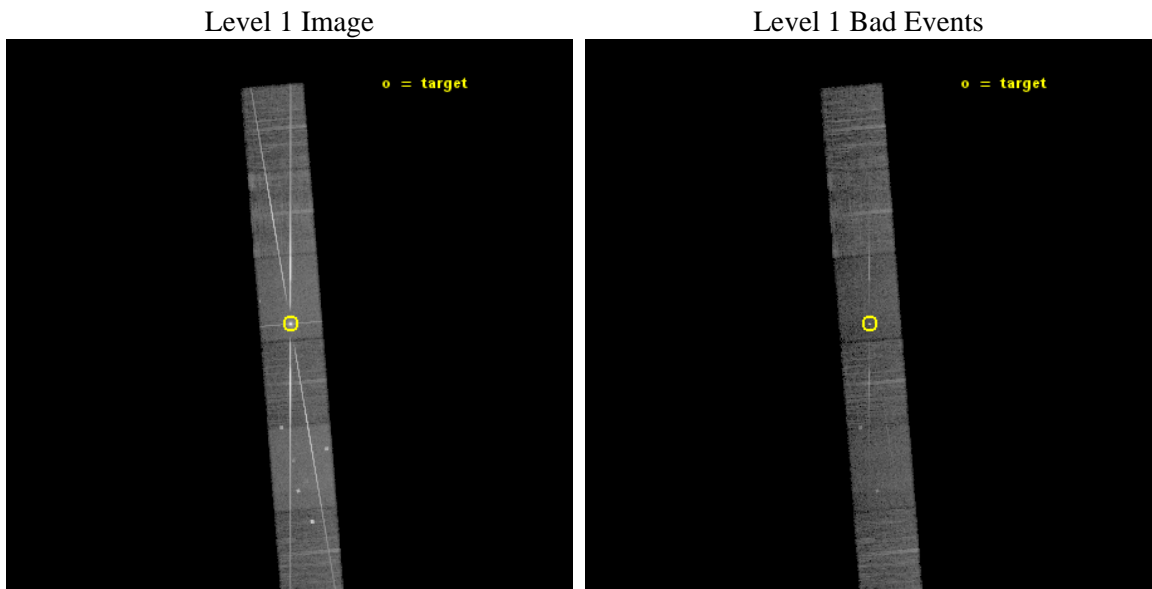
seq_num	790260	Sequence number
obs_id	15484	Observation id
title	AO-14 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11641403042	Nominal RA [deg]
dec_nom	38.20726985631	Nominal Dec [deg]
roll_nom	265.27878775907	Nominal Roll [deg]
revision	3	Processing version of data
ontime	14504.576321602	Sum of GTIs [s]
livetime	14270.314833298	Livetime [s]
ontime4	14504.617361605	Sum of GTIs [s]
ontime5	14504.535281599	Sum of GTIs [s]
ontime6	14504.494241595	Sum of GTIs [s]
ontime7	14504.576321602	Sum of GTIs [s]
ontime8	14504.453201592	Sum of GTIs [s]
ontime9	14504.412161589	Sum of GTIs [s]
l2events	436549	Number of level 2 events



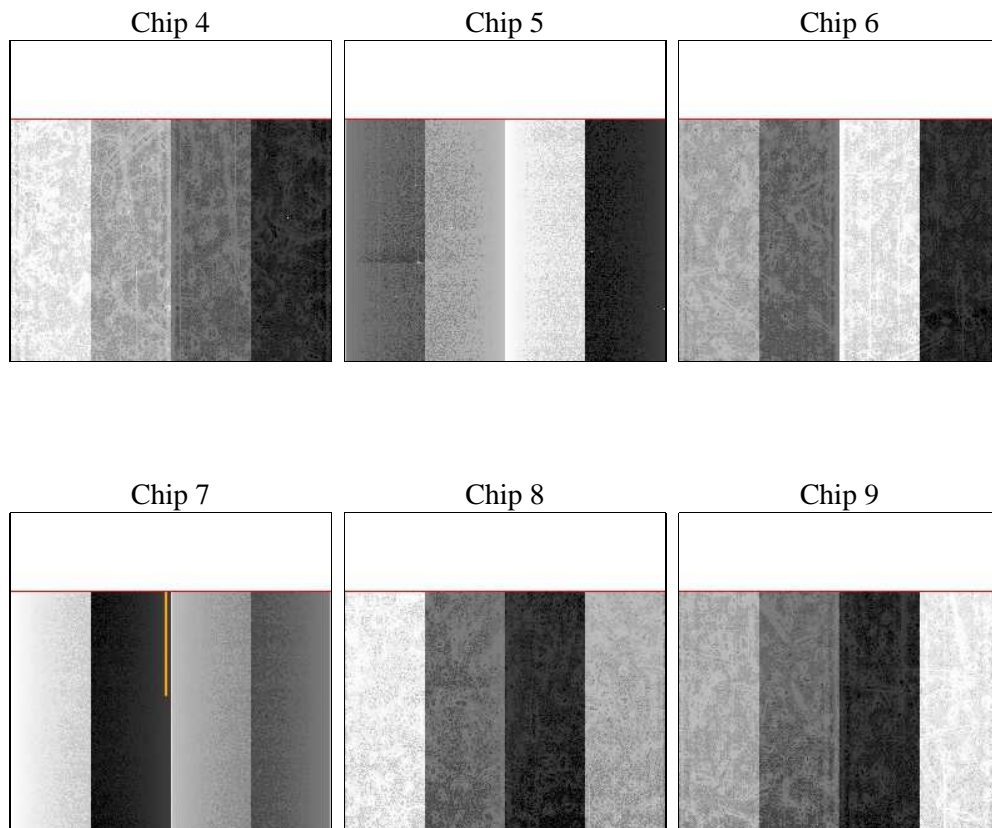
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	14619.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	14504.576321602	Sum of GTIs [s]
caldsver	4.6.4	 	ontime4	14504.617361605	Sum of GTIs [s]
date	2014-12-04T01:51:19	Date and time of file creation	ontime5	14504.535281599	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	14504.494241595	Sum of GTIs [s]
			ontime7	14504.576321602	Sum of GTIs [s]
			ontime8	14504.453201592	Sum of GTIs [s]
			ontime9	14504.412161589	Sum of GTIs [s]
			l1events	773231	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			z0_pos	(4110.78, 4107.37)	src1a sky pixel position

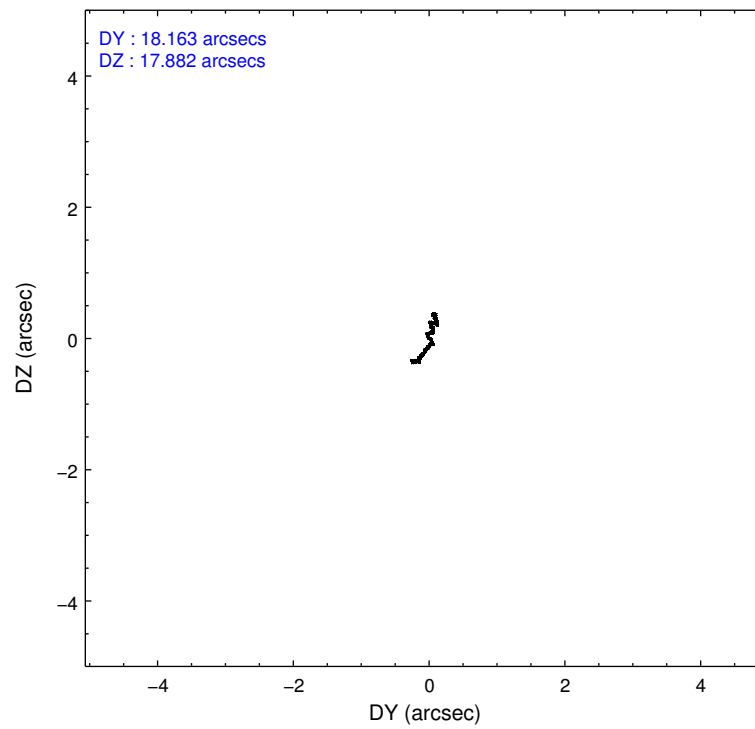
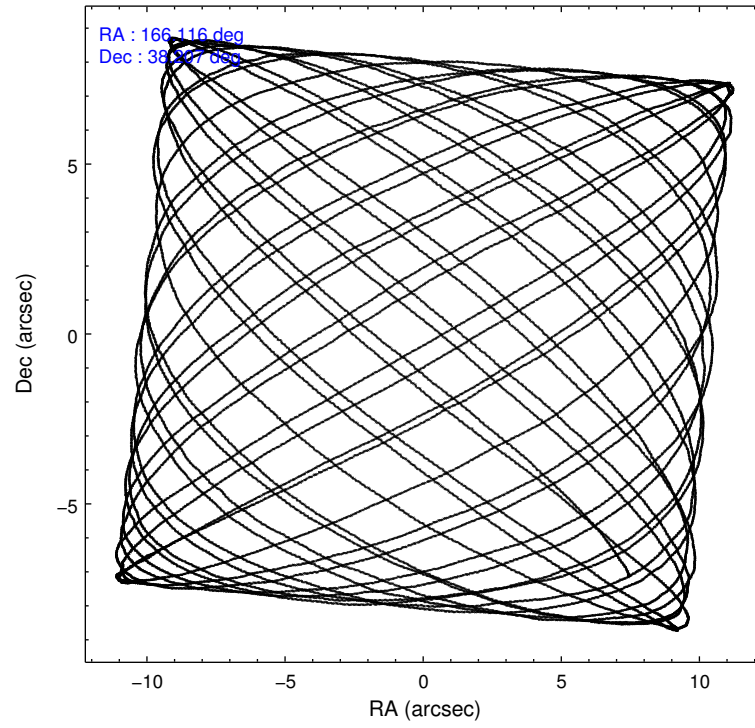
2.1.4 Events

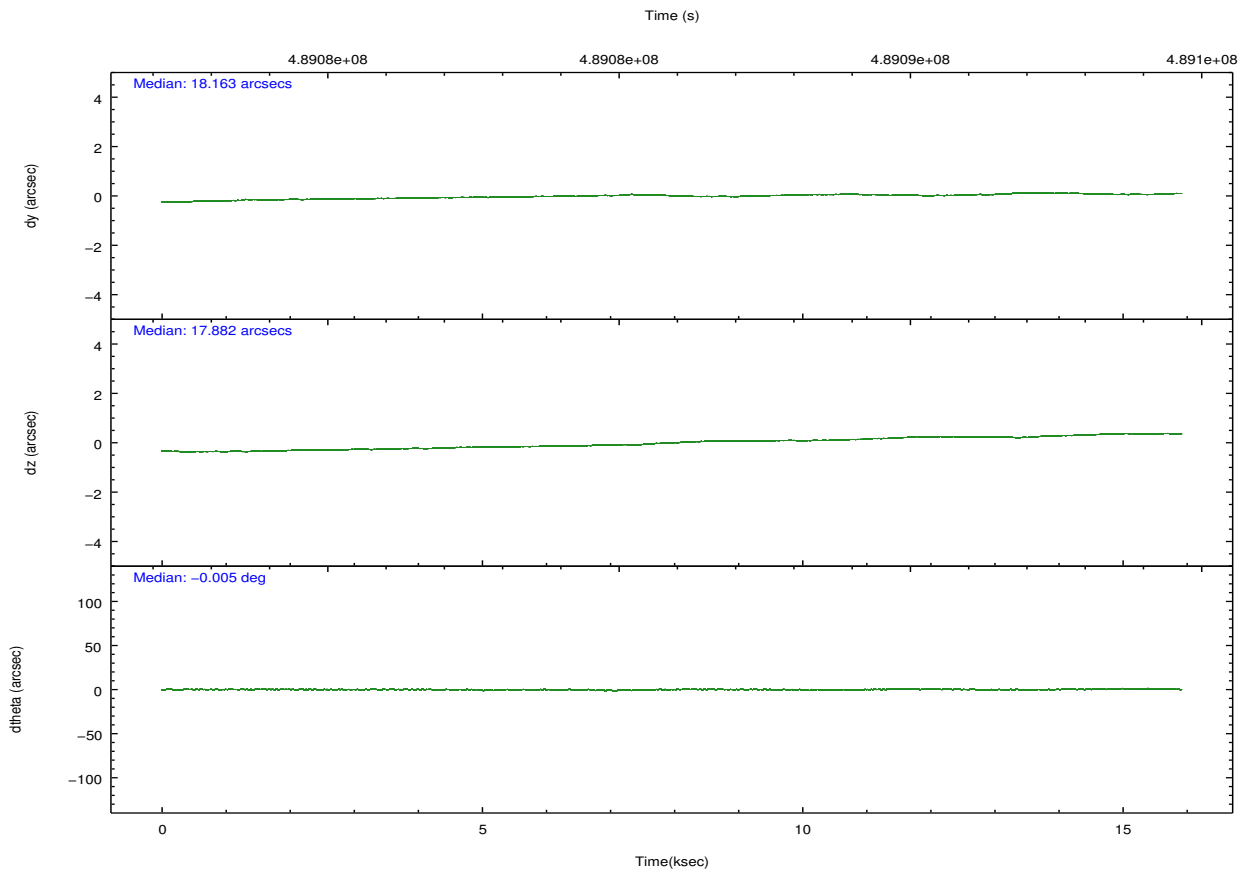
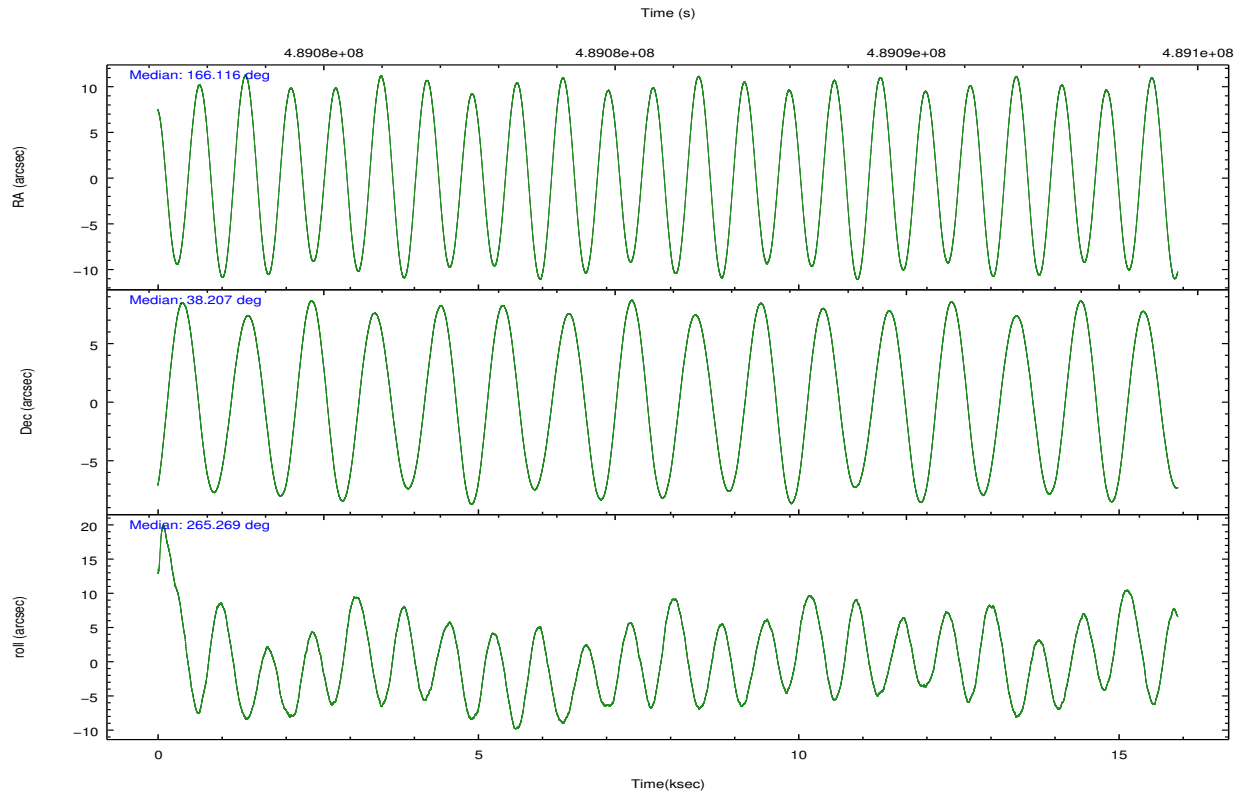
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	74943	137717	170659	182417	140037	67458	grade 0 events	16403	24424	94422	30090	61716	14234
rejected events	52652	46112	48476	44446	54278	46564		21%	17%	55%	16%	44%	21%
rejected %	70%	33%	28%	24%	38%	69%	grade 1 events	74	421	1061	691	423	58
								0%	0%	0%	0%	0%	0%
							grade 2 events	2547	27252	14233	33922	10370	2838
								3%	19%	8%	18%	7%	4%
							grade 3 events	1007	5993	4710	15076	3738	1091
								1%	4%	2%	8%	2%	1%
							grade 4 events	984	5777	4613	14626	3730	1102
								1%	4%	2%	8%	2%	1%
							grade 5 events	2659	7550	3477	9553	4031	2974
								3%	5%	2%	5%	2%	4%
							grade 6 events	1354	28190	4234	44310	6235	1634
								1%	20%	2%	24%	4%	2%
							grade 7 events	49915	38110	43909	34149	49794	43527
								66%	27%	25%	18%	35%	64%

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	166.101134	166.1164140304172	CCD I2 on	N	N
[deg] Pointing Dec	38.231817	38.20726985631044	CCD I3 on	N	N
[deg] Pointing Roll	265.131618	265.2787877590723	CCD S0 on	O1	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-187.132523	-187.1228876879999	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-3	-3.009634895007935	CCD S4 on	Y	Y
[s] Observation start time (MET)	489079247.184000	489077625.64053	CCD S5 on	Y	Y
Observation start date	2013-07-01T15:19:40	2013-07-01T14:53:45	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	489093866.184000	489095275.62899	On-chip summing requested	N	N
Observation end date	2013-07-01T19:23:19	2013-07-01T19:47:55	Subarray requested	CUSTOM	CUSTOM
Read mode	TIMED	TIMED	Subarray start row	1	1
			Subarray row count	774	774
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	2.5

2.3 Aspect





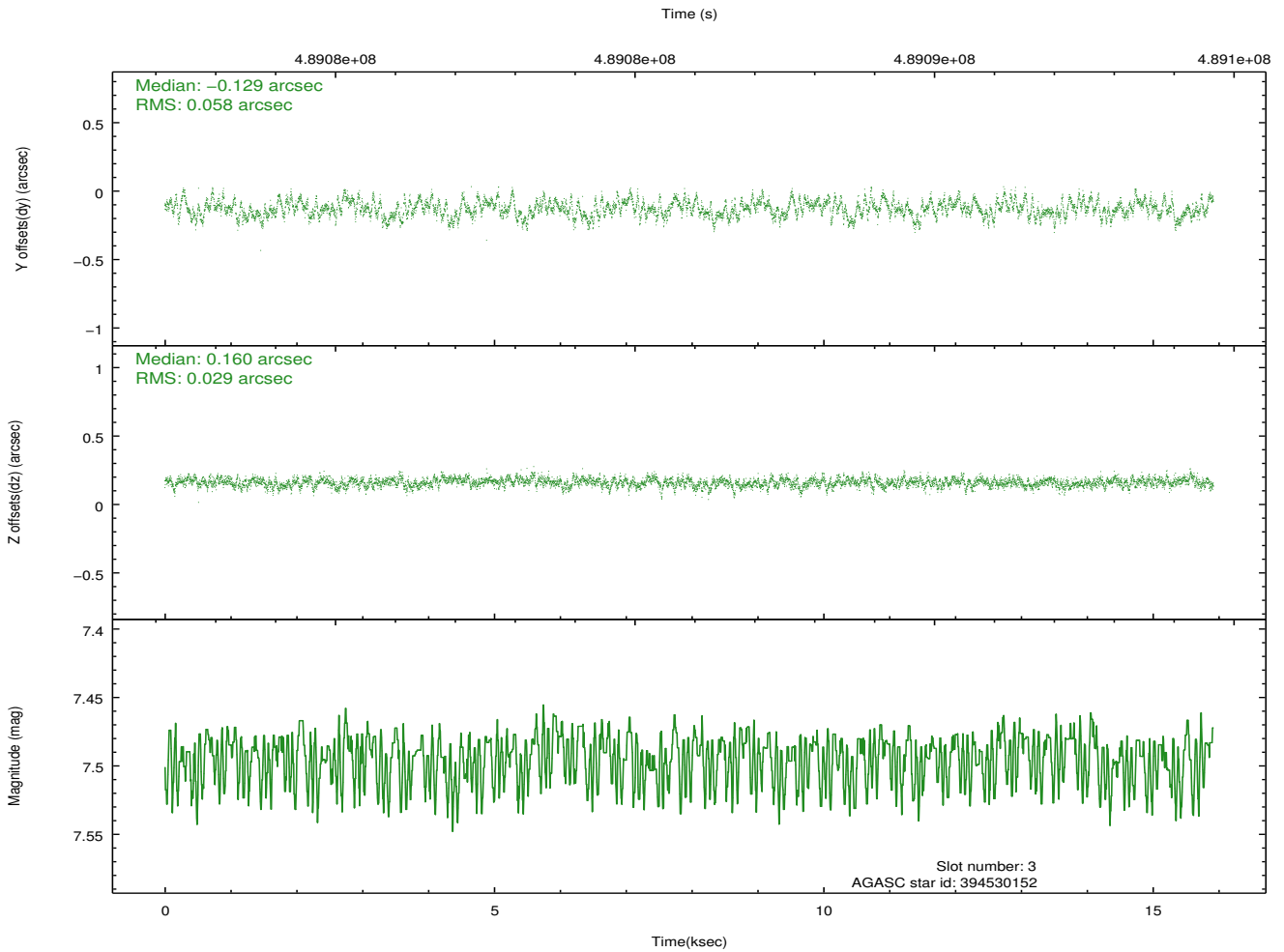
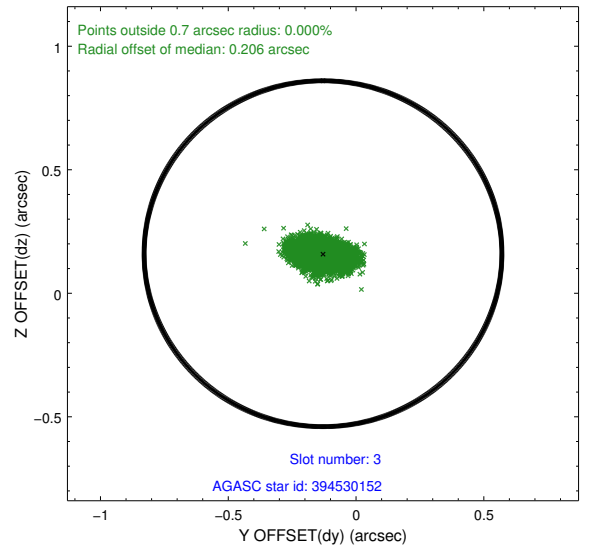
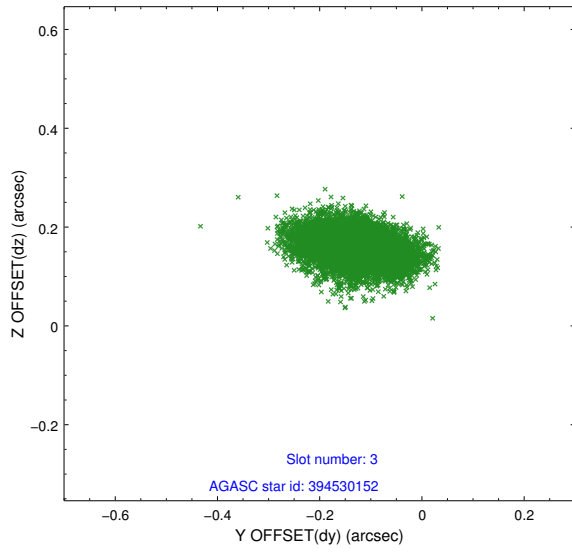
Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.87	3883	-0.102	0.004	0.007	0.011	0.000000	0.000000	-771.06	-1801.47
1	FID		ACIS-S-4	6.95	3883	0.221	0.048	0.006	0.011	0.000000	0.000000	2142.38	106.79
2	FID		ACIS-S-5	6.97	3883	-0.150	-0.044	0.007	0.012	0.000000	0.000000	-1823.63	100.62
3	GUIDE	used	394530152	7.49	7764	-0.129	0.160	0.068	0.115	166.075805	38.868252	-2276.55	-265.12
4	GUIDE	used	394533848	8.73	7759	0.086	0.314	0.091	0.145	166.382906	38.276007	-227.66	775.82
5	GUIDE	used	394543960	9.79	7725	0.186	0.213	0.221	0.318	165.802757	37.787371	1665.65	-709.24
6	GUIDE	used	394546712	6.61	7766	-0.210	0.281	0.082	0.125	166.451462	38.394357	-668.21	934.47
7	GUIDE	used	394546720	6.42	7765	0.071	-0.972	0.103	0.163	166.130115	38.241361	-40.81	78.20

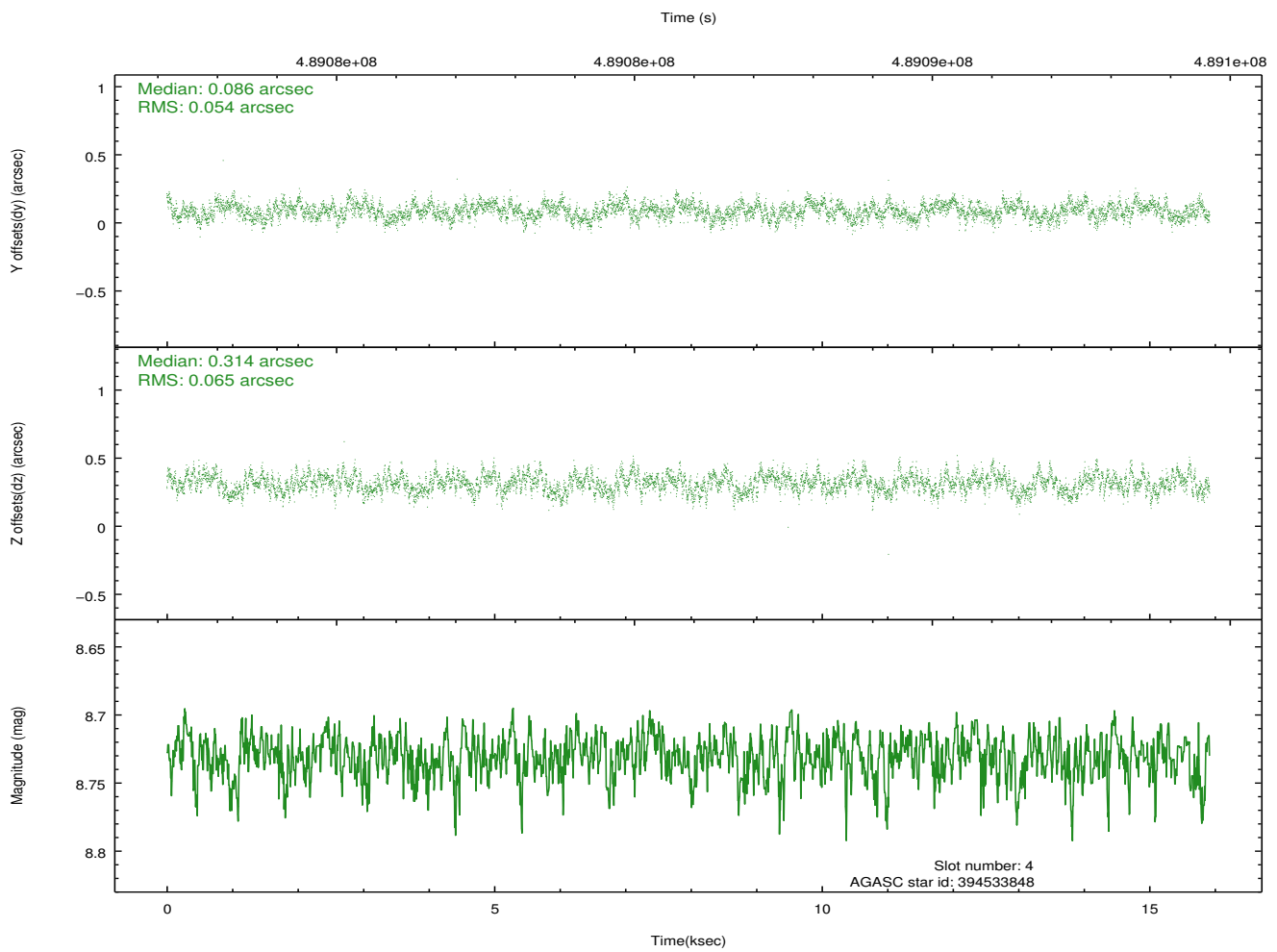
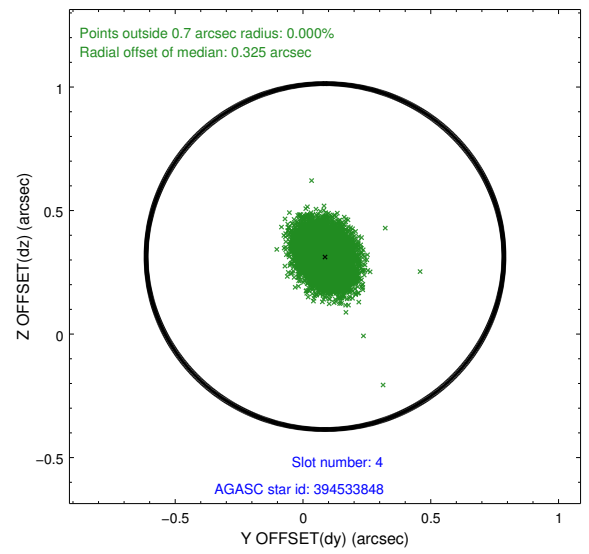
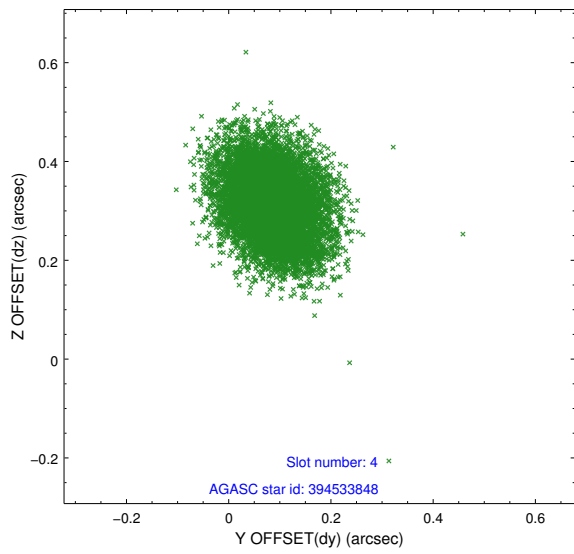
∞

2.4 Star Slots

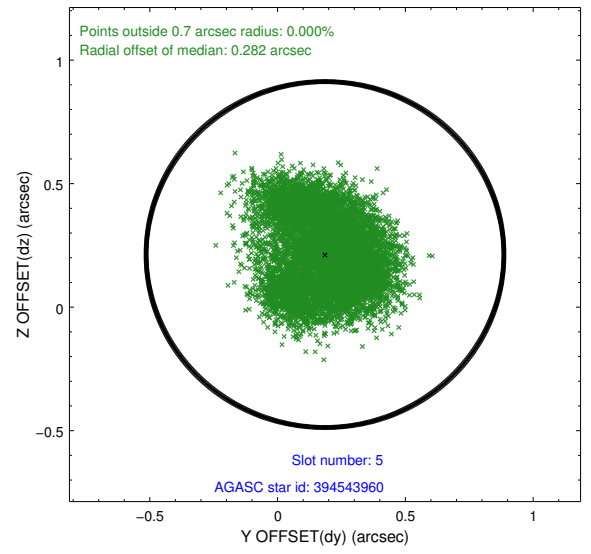
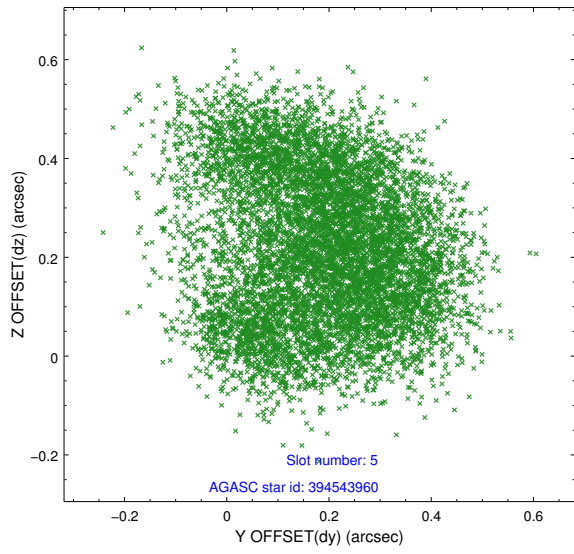
2.4.1 Slot 3



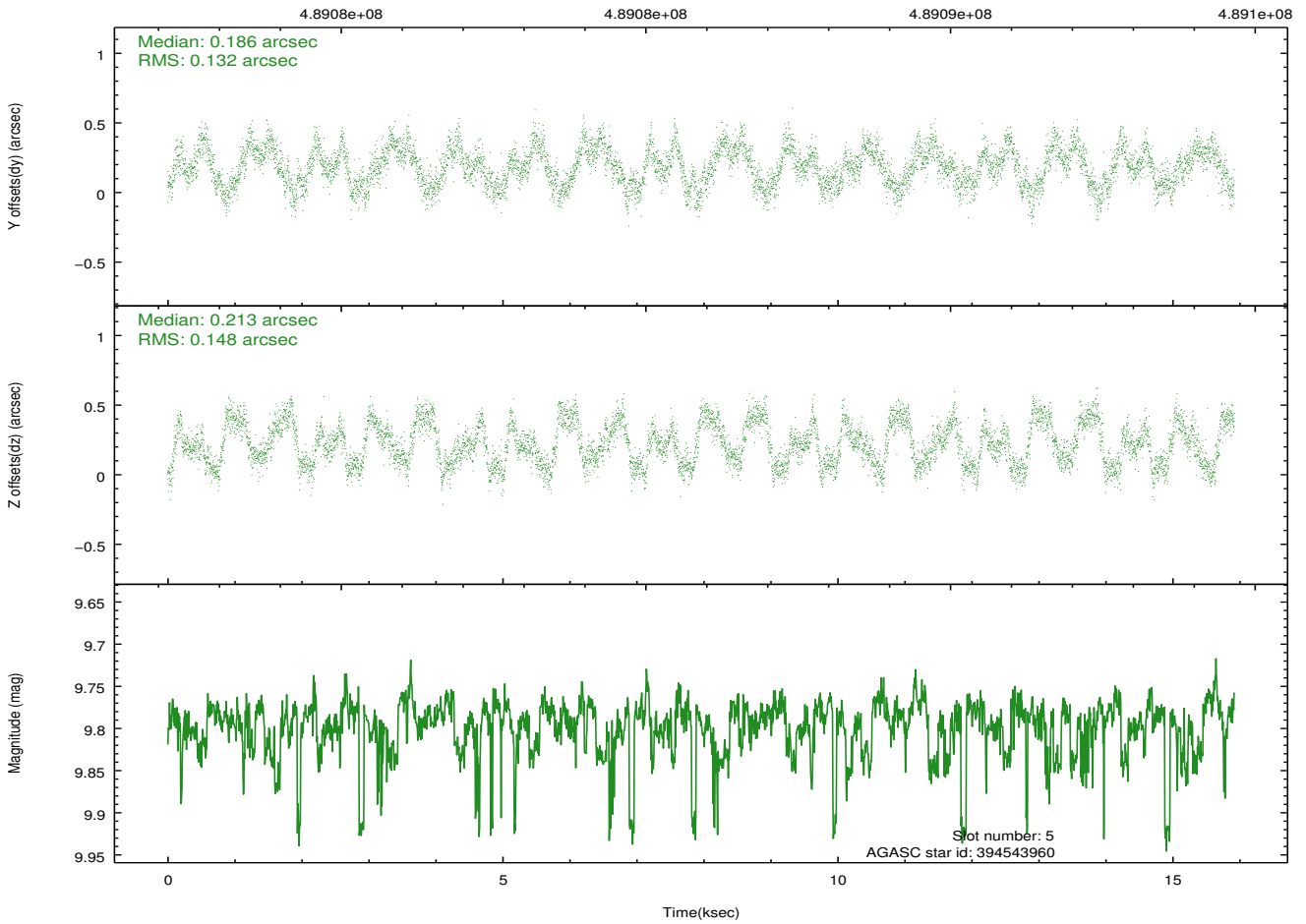
2.4.2 Slot 4



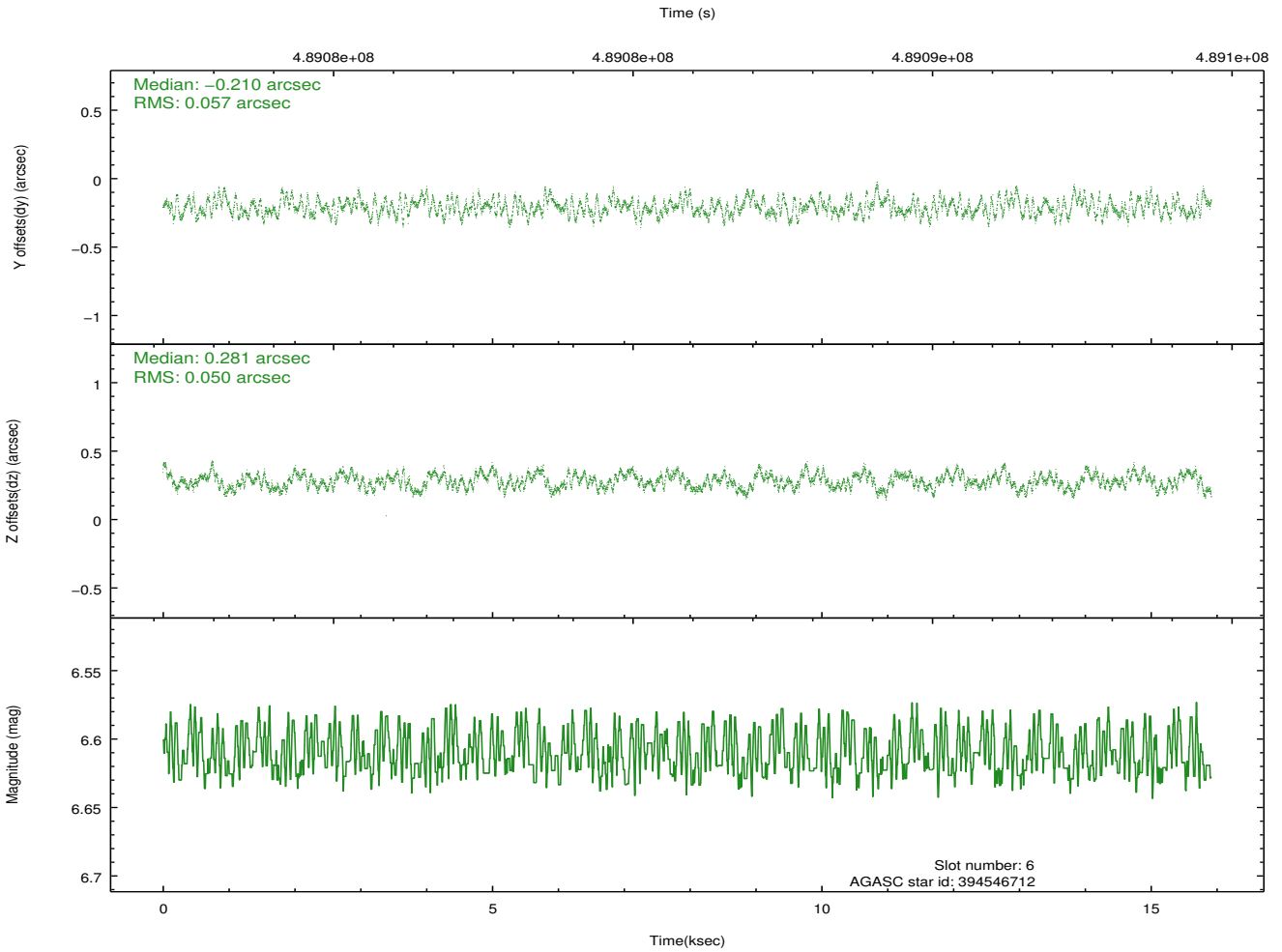
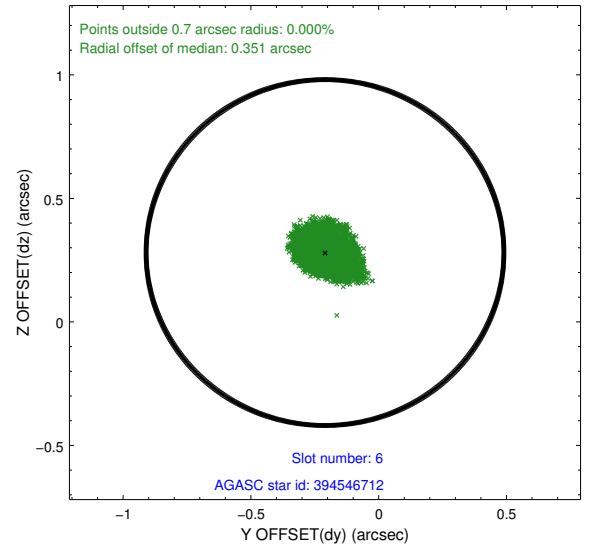
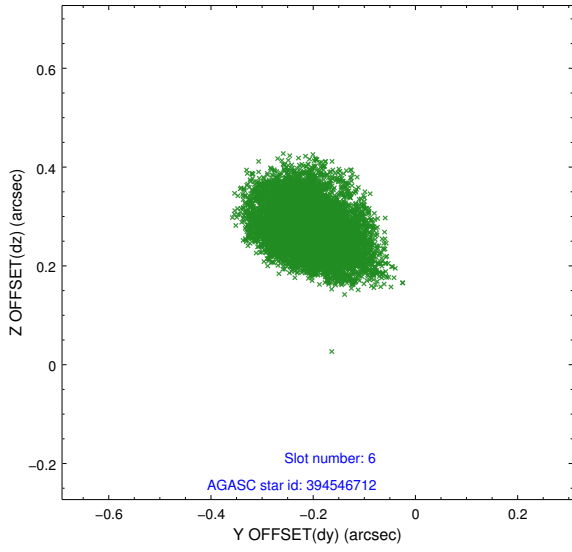
2.4.3 Slot 5



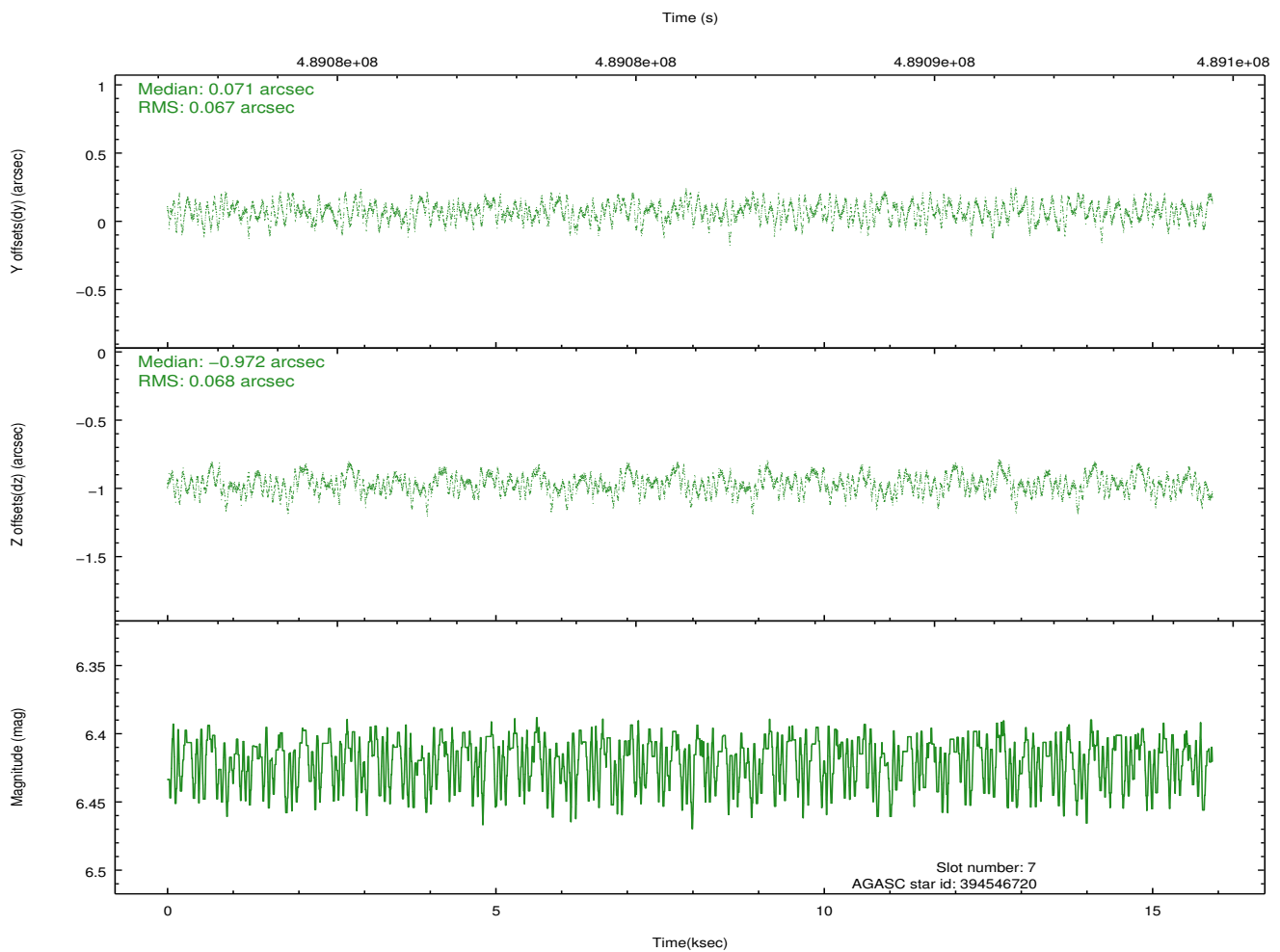
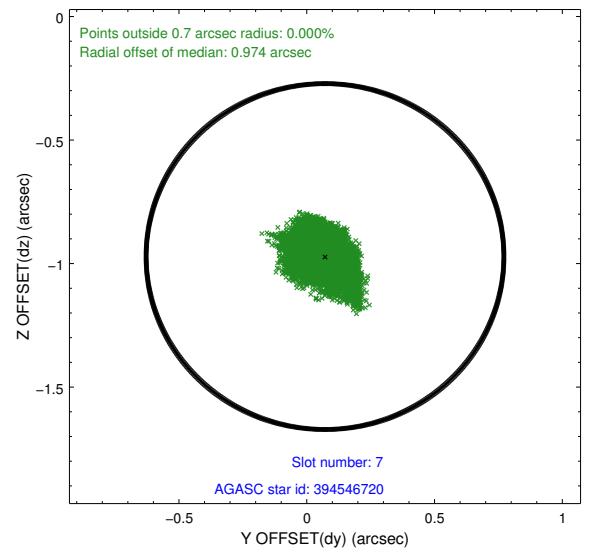
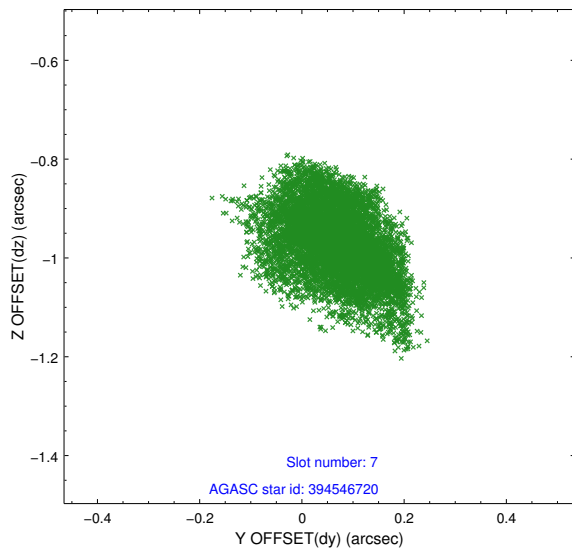
Time (s)



2.4.4 Slot 6

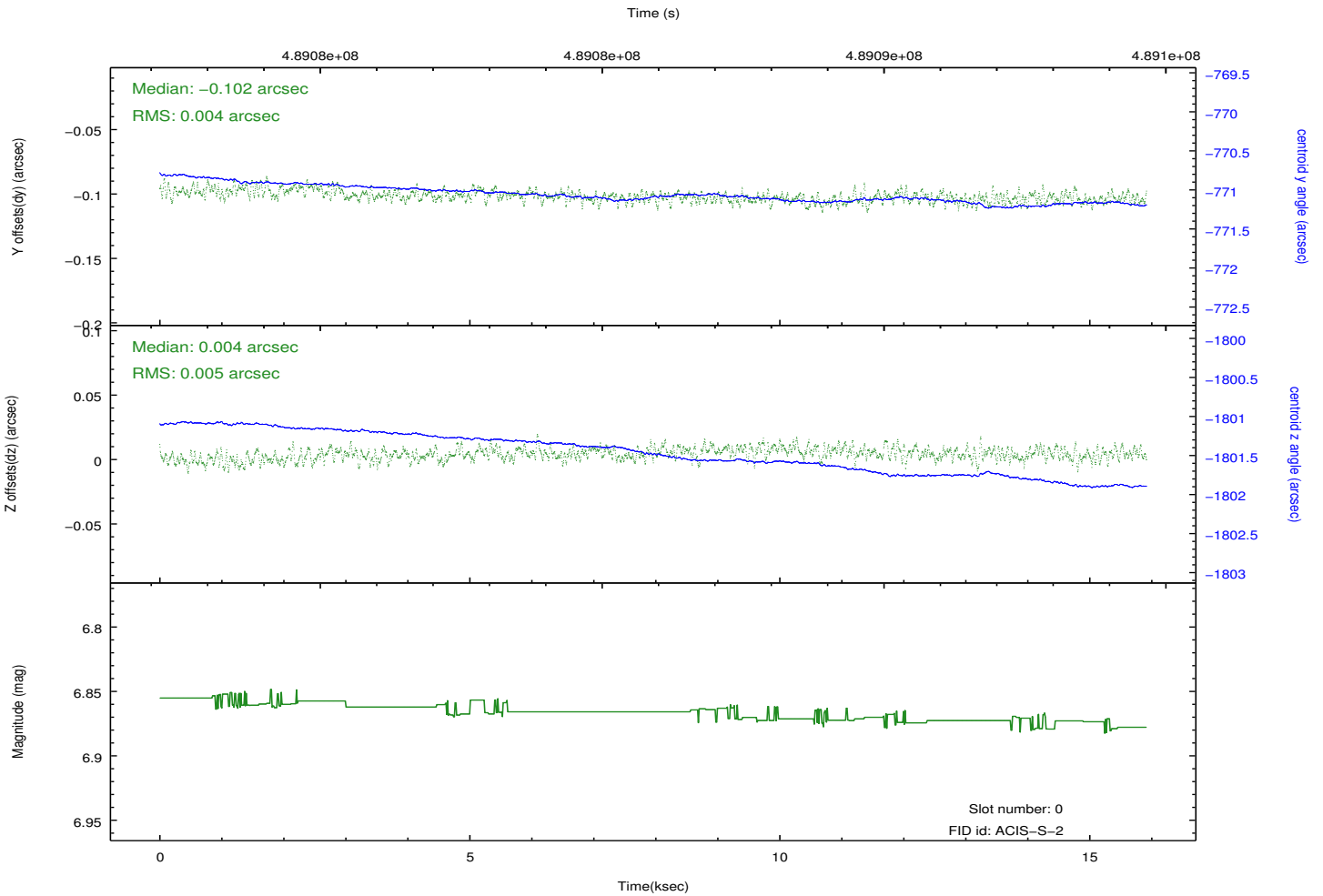
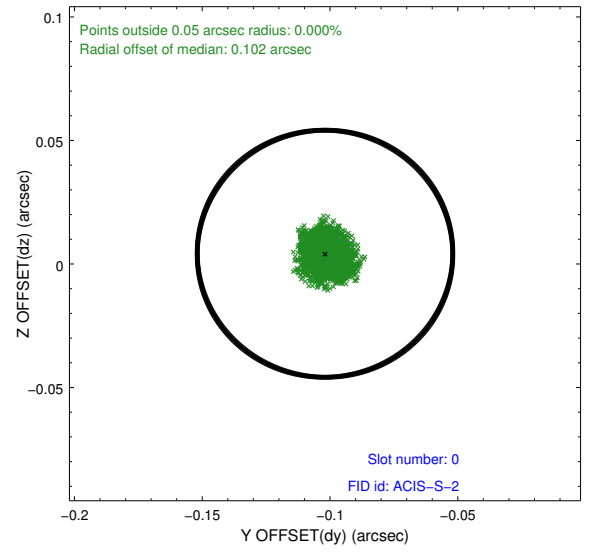
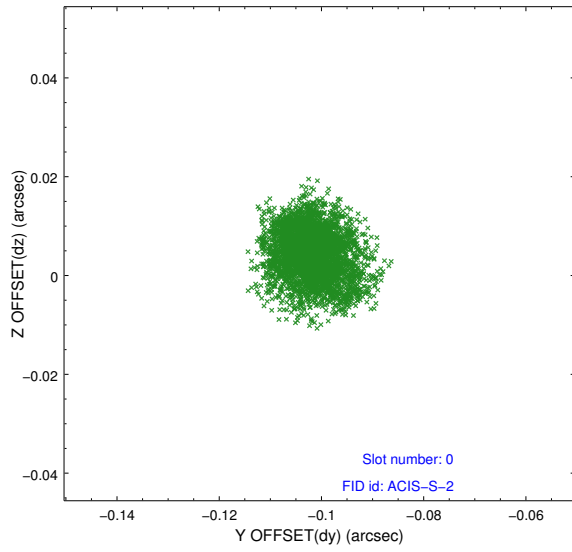


2.4.5 Slot 7

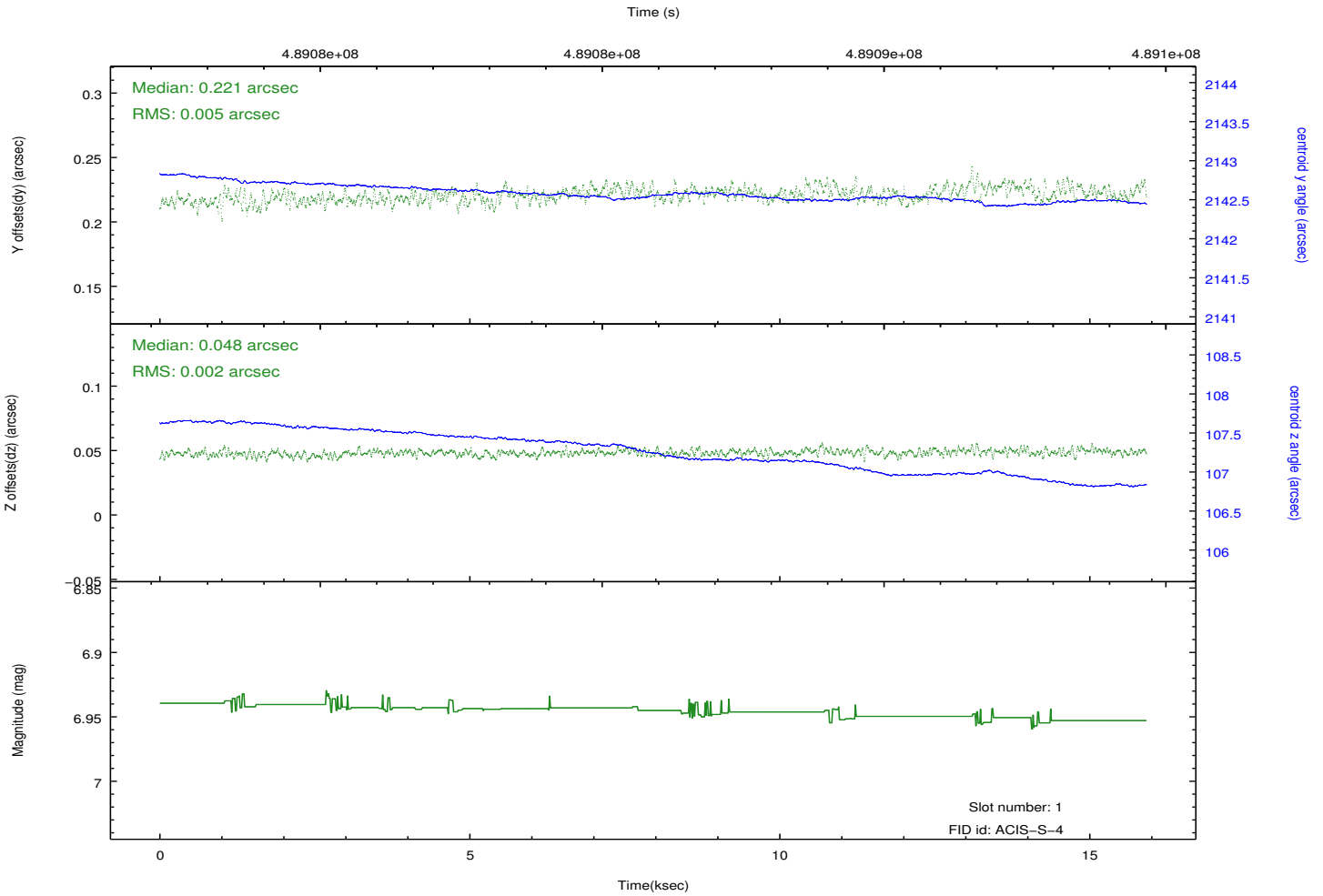
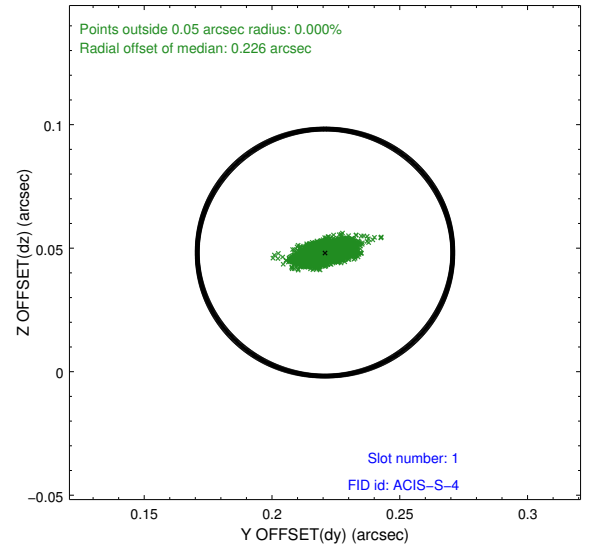
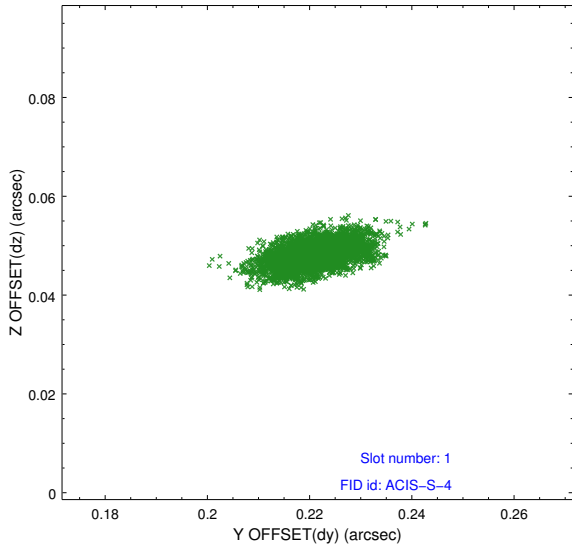


2.5 FID Slots

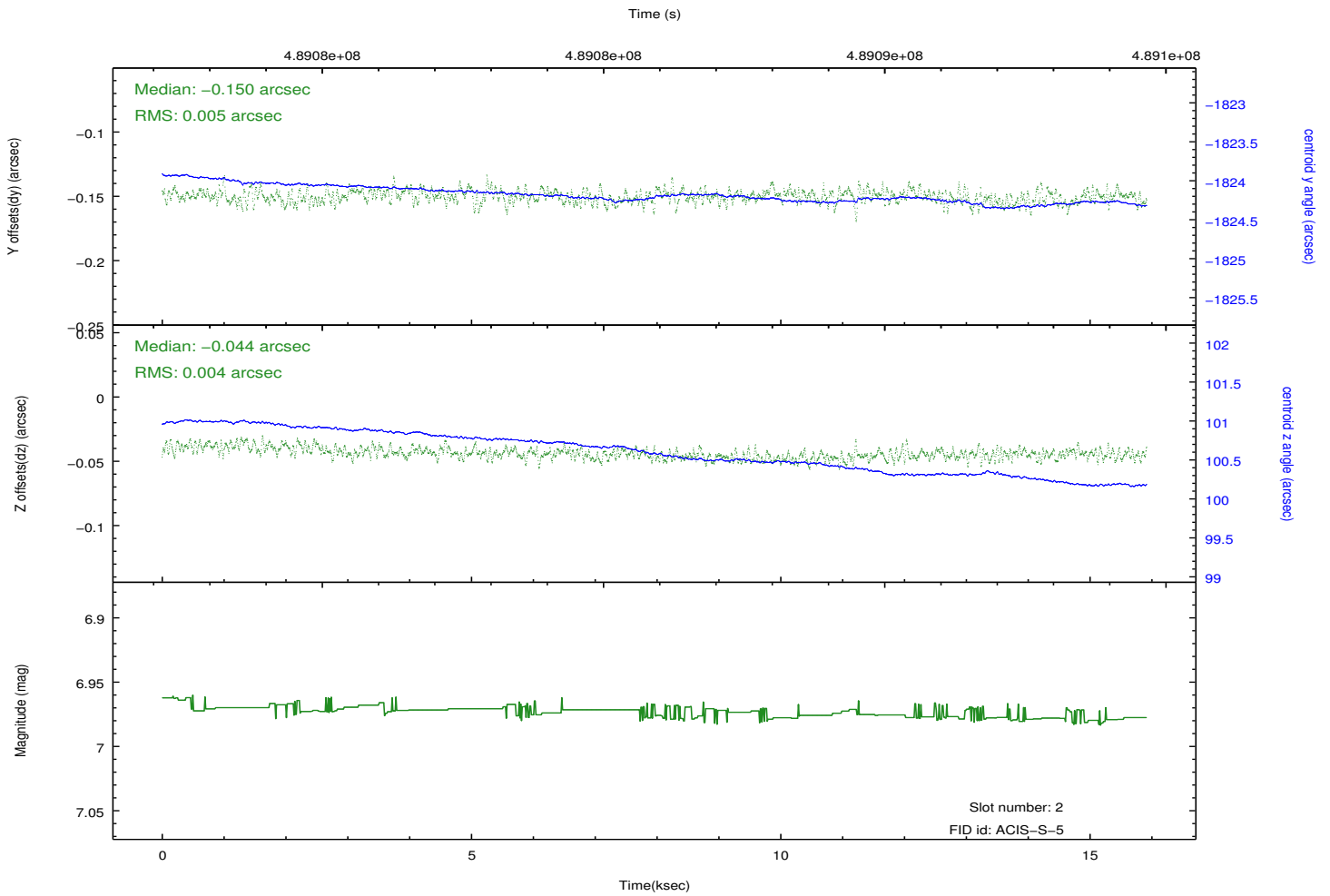
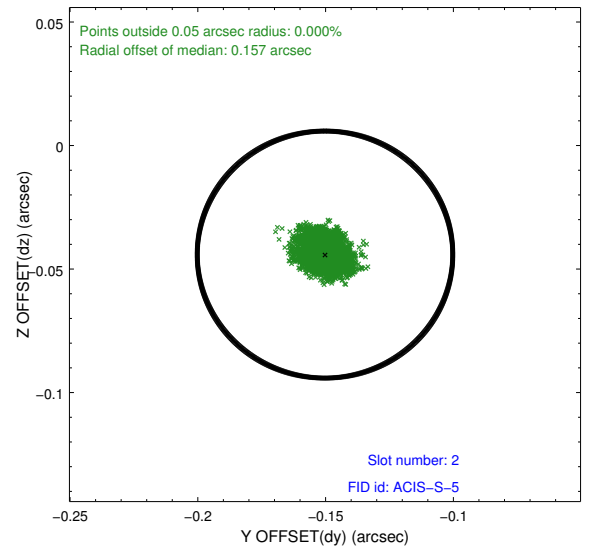
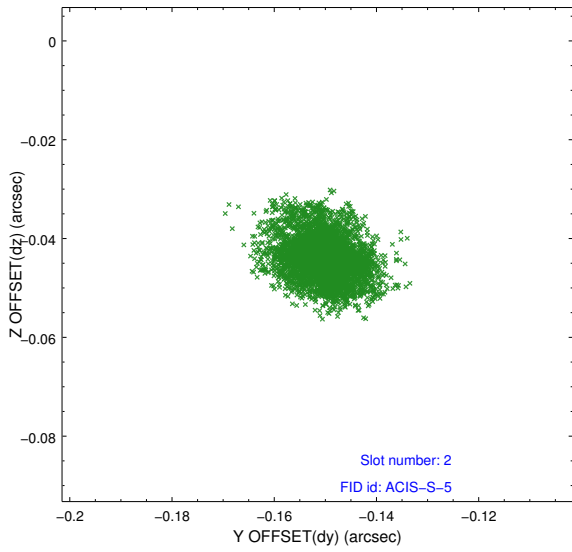
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2

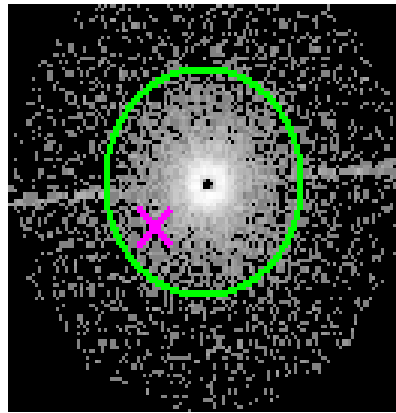


3 Gratings

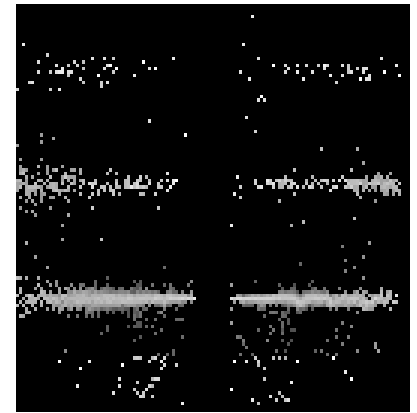
3.1 HEG Arm



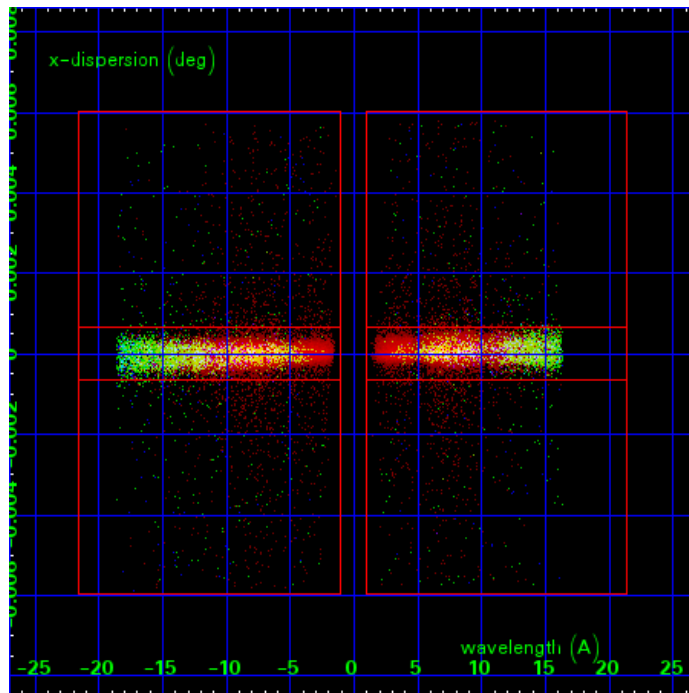
HEG Order Sort 123



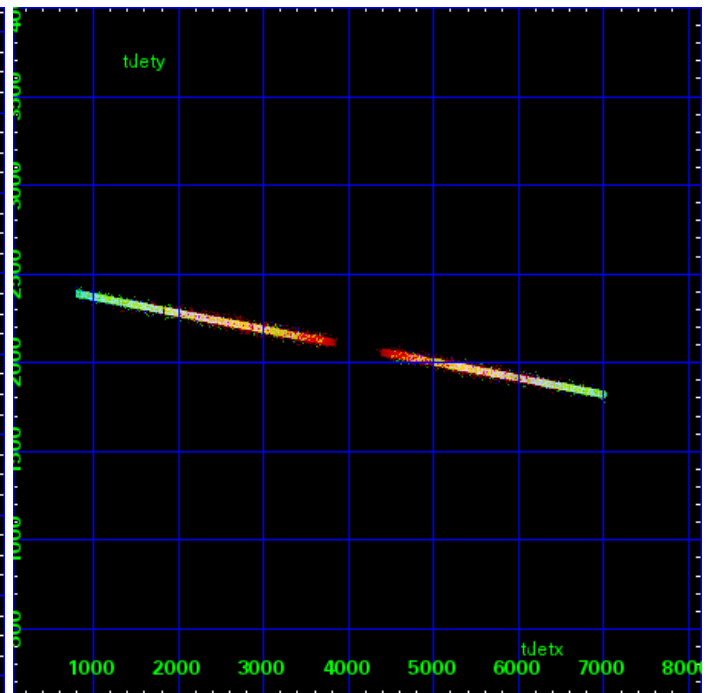
HEG Zero Order



HEG Order Sort ALL

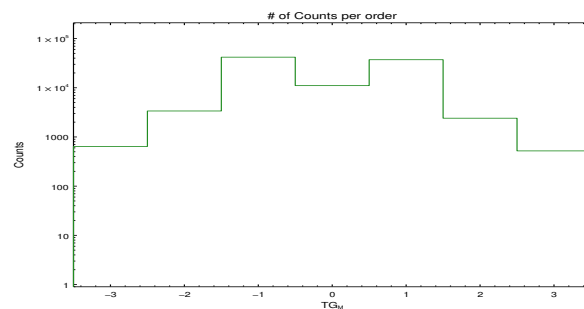


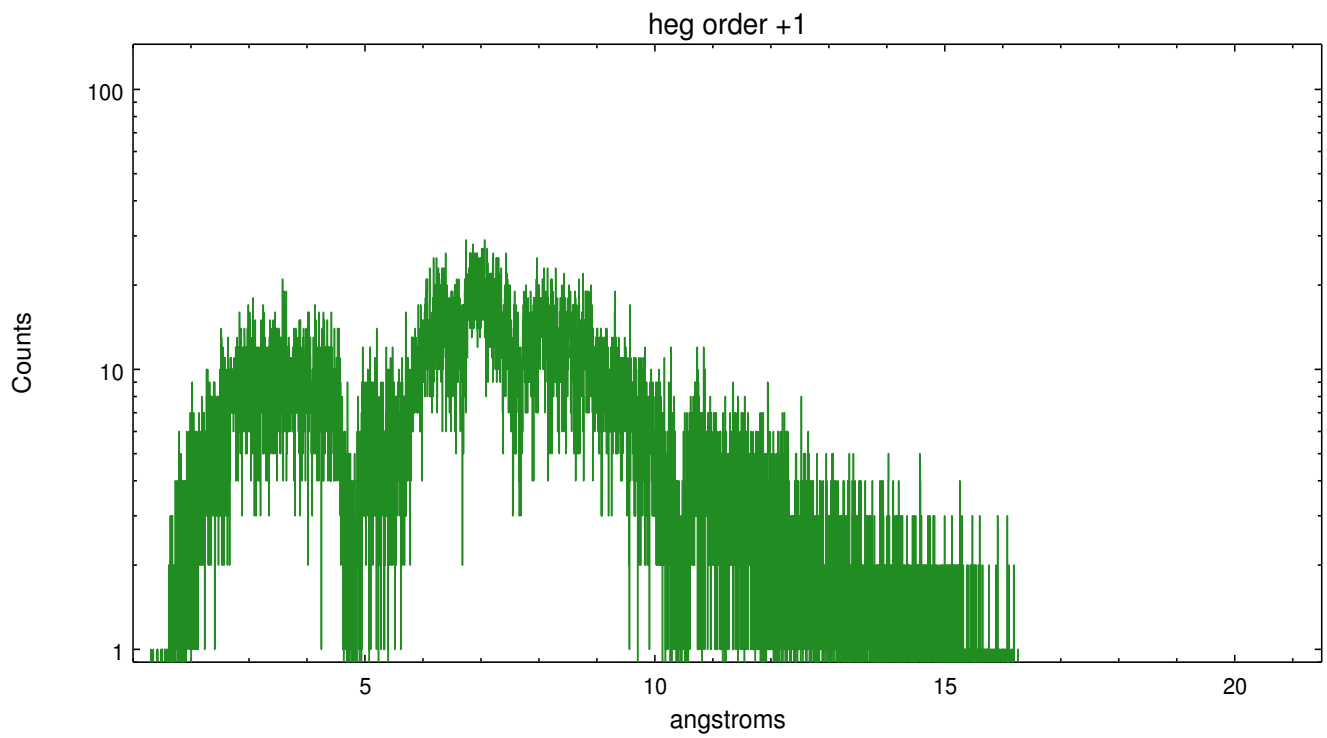
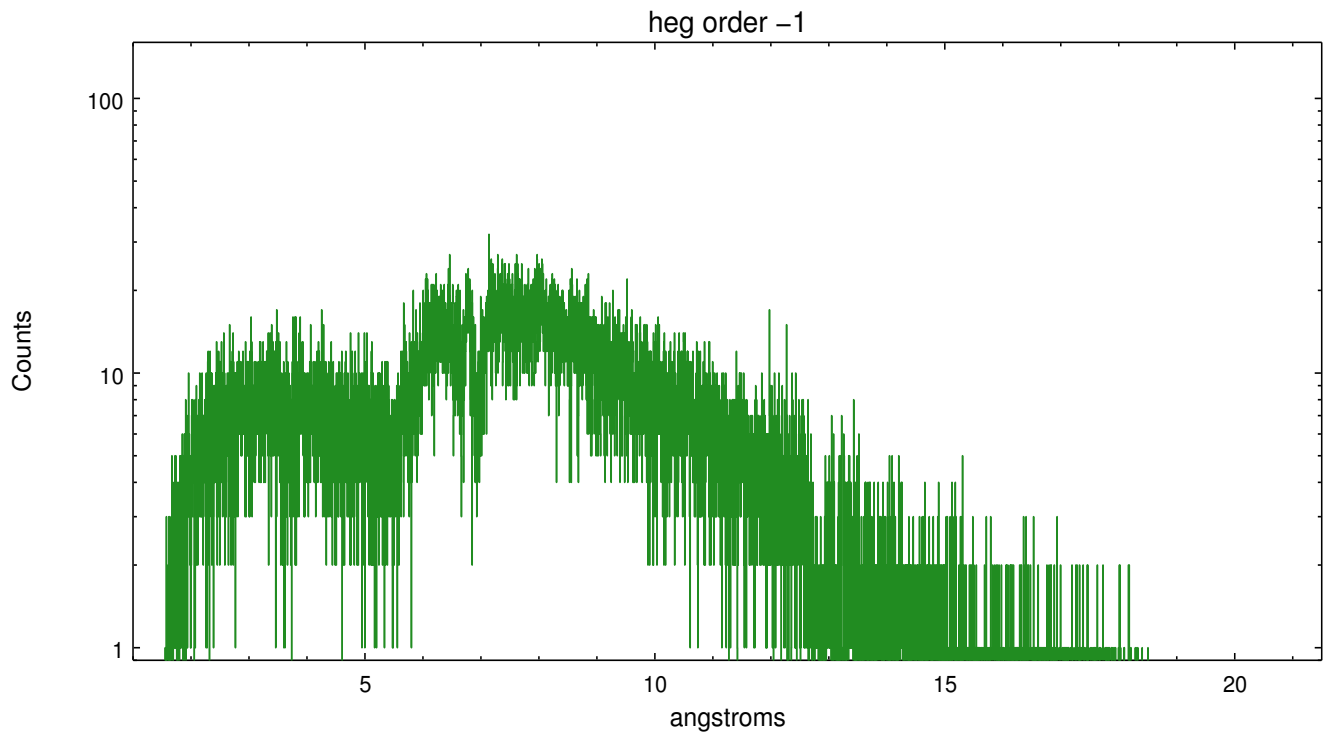
Spot Image HEG



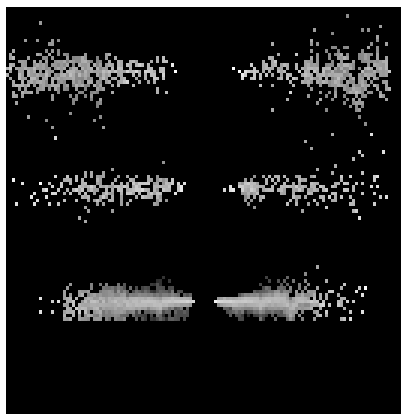
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	641	3374	41870	11058	37192	2404	521

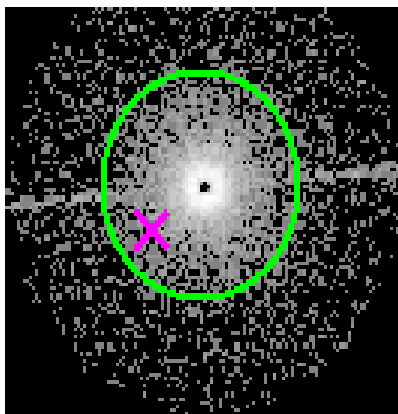




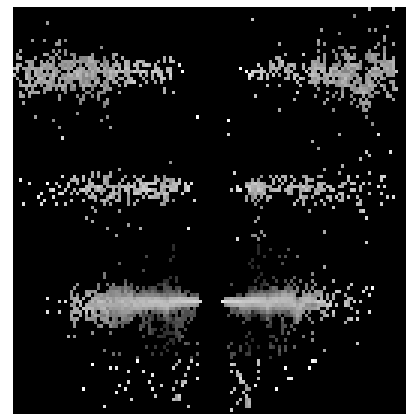
3.2 MEG Arm



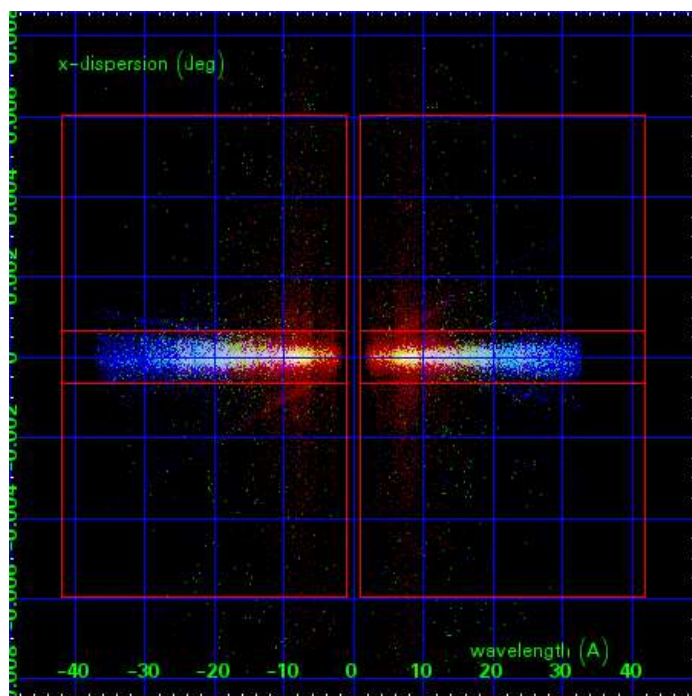
MEG Order Sort 123



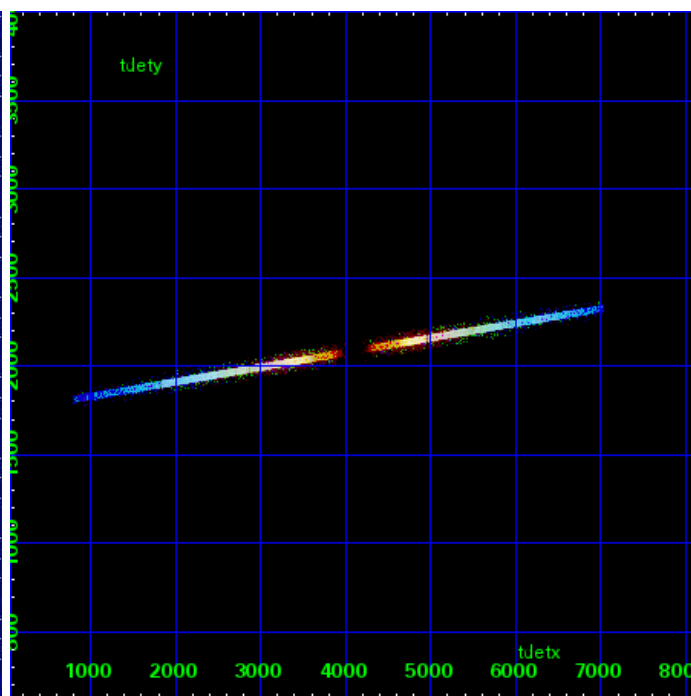
MEG Zero Order



MEG Order Sort ALL

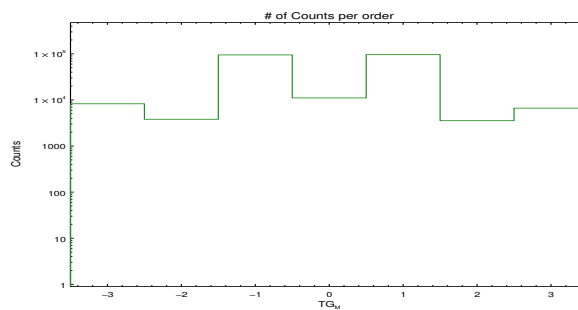


Spot Image MEG

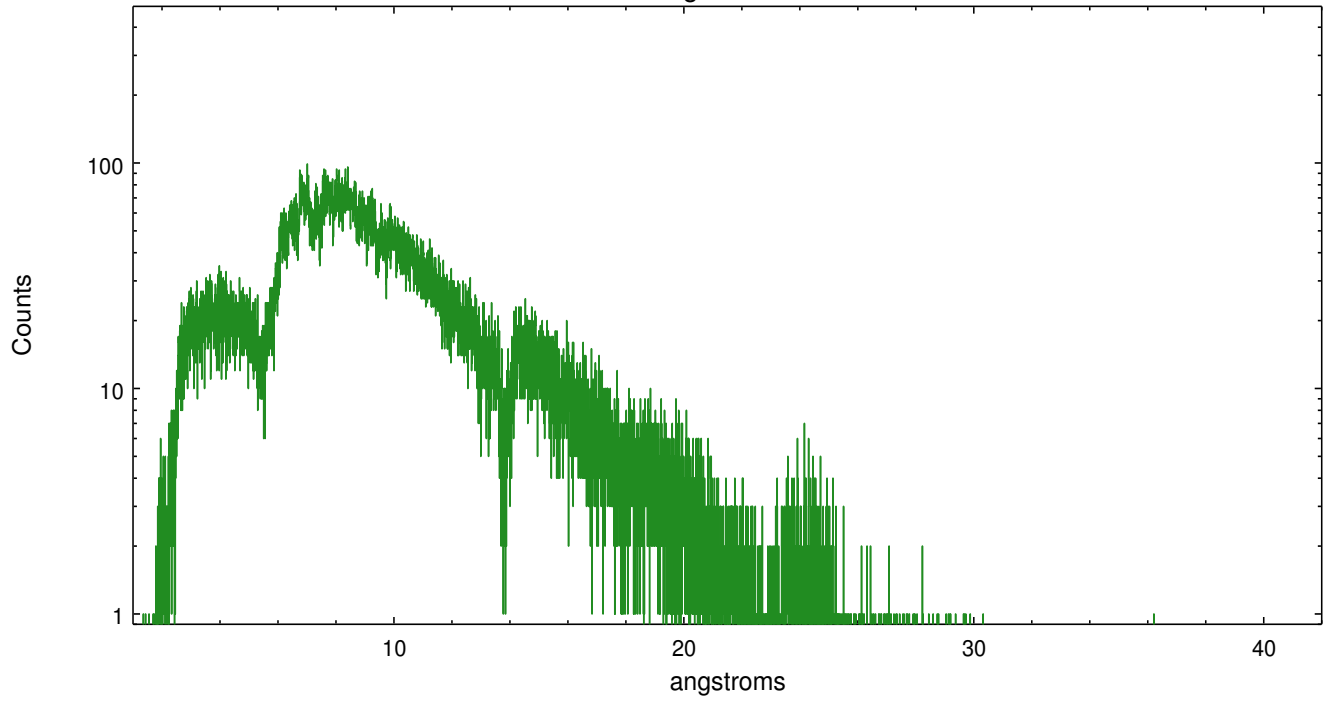


Full Detector MEG

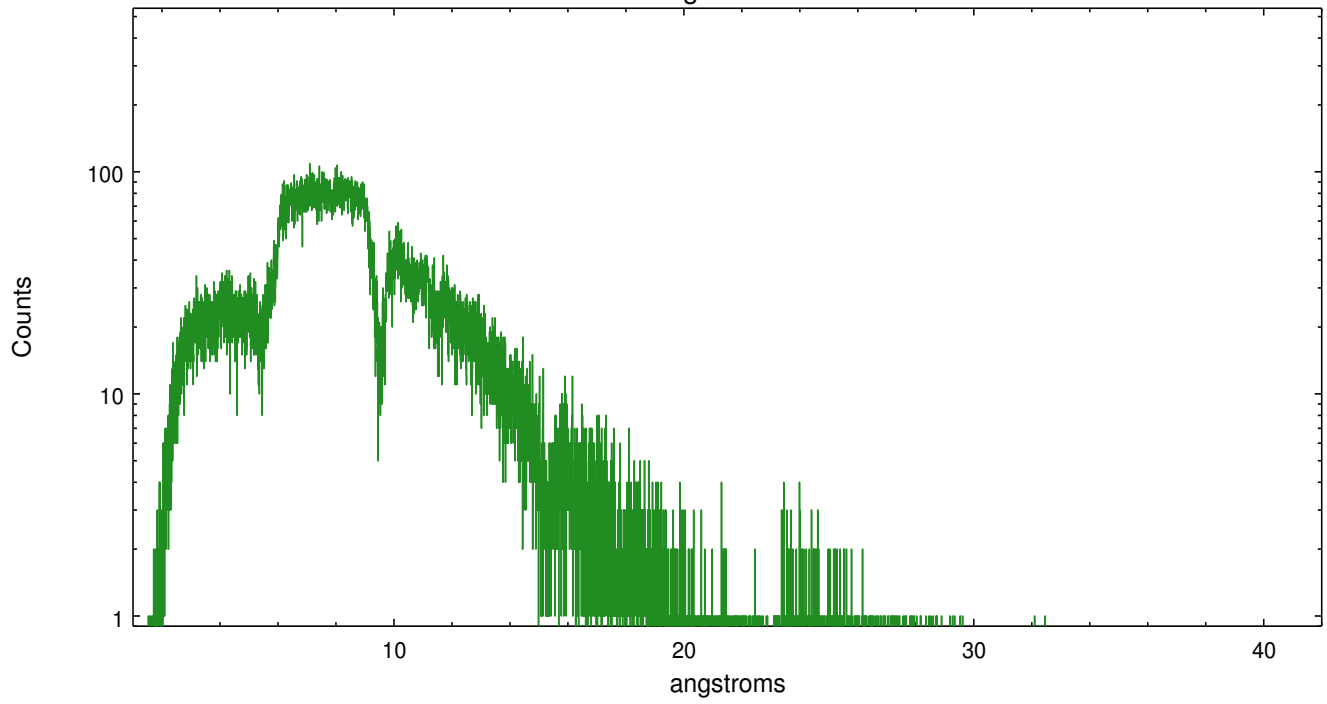
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	8260	3807	94805	11058	96096	3548	6635



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2015.10.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	14.504576321602

A.2 Comments

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.

=====

Zeroth order piled up. Dispersed spectral arms can be seen on the bad pixel image, indicating they are also likely 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.