

V&V Reference Report

L2 ASCDS Version : 10

Observation 15477 - L2 Version 3
Chandra X-Ray Center

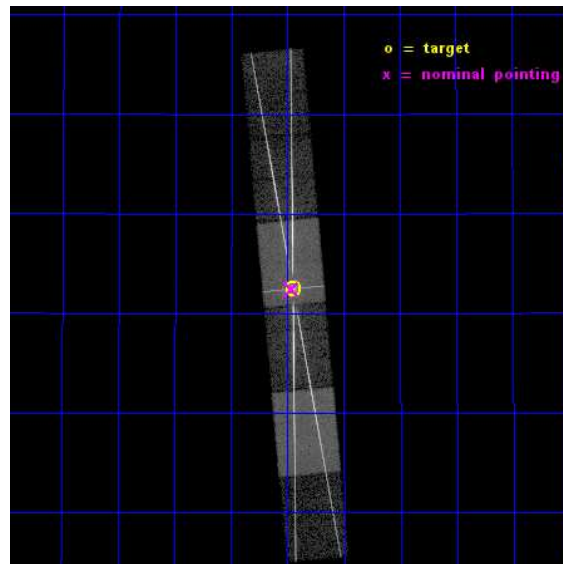
L2 Processing Date : Dec 3 2014

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1 Front

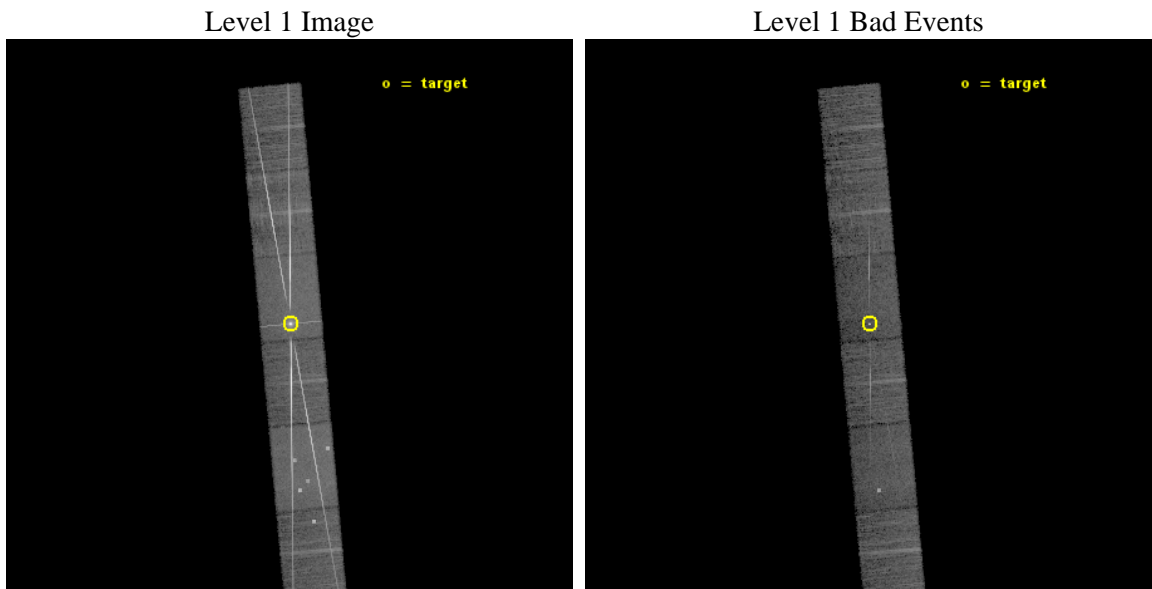
seq_num	790253	Sequence number
obs_id	15477	Observation id
title	AO-14 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11640623249	Nominal RA [deg]
dec_nom	38.20722884424	Nominal Dec [deg]
roll_nom	264.65227949264	Nominal Roll [deg]
revision	3	Processing version of data
ontime	14646.464089036	Sum of GTIs [s]
livetime	14409.91099022	Livetime [s]
ontime4	14646.505129039	Sum of GTIs [s]
ontime5	14646.423049033	Sum of GTIs [s]
ontime6	14646.382009029	Sum of GTIs [s]
ontime7	14646.464089036	Sum of GTIs [s]
ontime8	14646.340969026	Sum of GTIs [s]
ontime9	14646.299929023	Sum of GTIs [s]
l2events	478789	Number of level 2 events



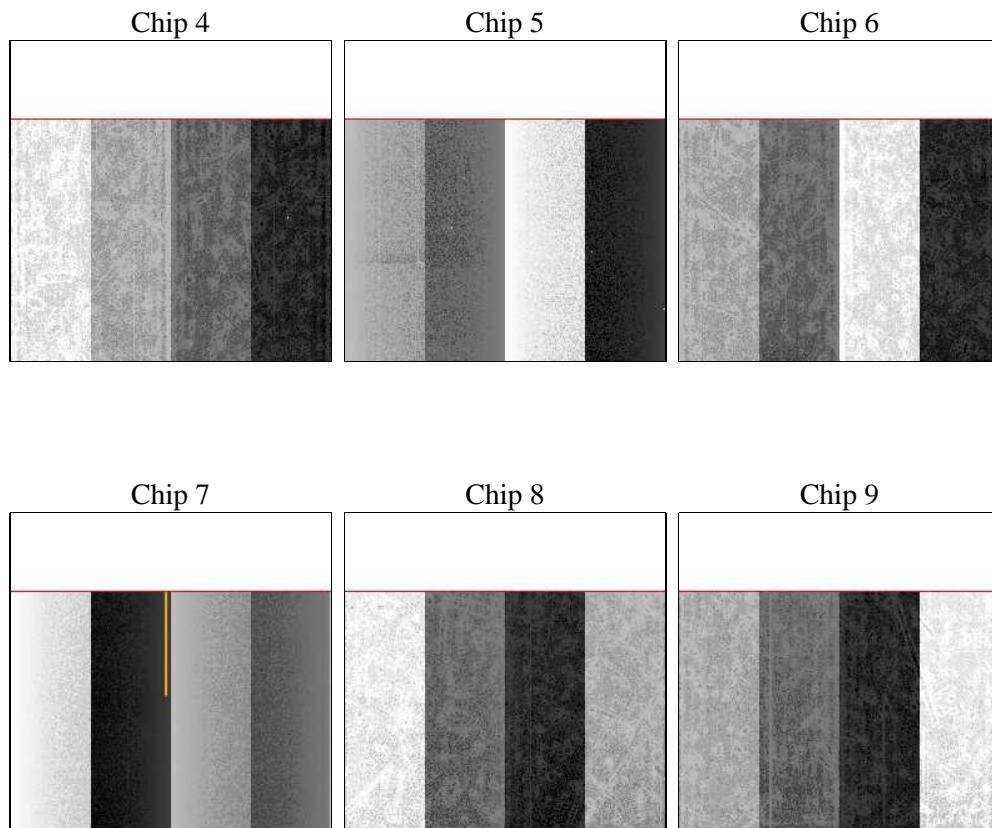
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	14610.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	14646.464089036	Sum of GTIs [s]
caldbver	4.6.4	 	ontime4	14646.505129039	Sum of GTIs [s]
date	2014-12-04T01:05:05	Date and time of file creation	ontime5	14646.423049033	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	14646.382009029	Sum of GTIs [s]
			ontime7	14646.464089036	Sum of GTIs [s]
			ontime8	14646.340969026	Sum of GTIs [s]
			ontime9	14646.299929023	Sum of GTIs [s]
			l1events	826764	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			z0_pos	(4110.74 4108.10)	src1a sky level position

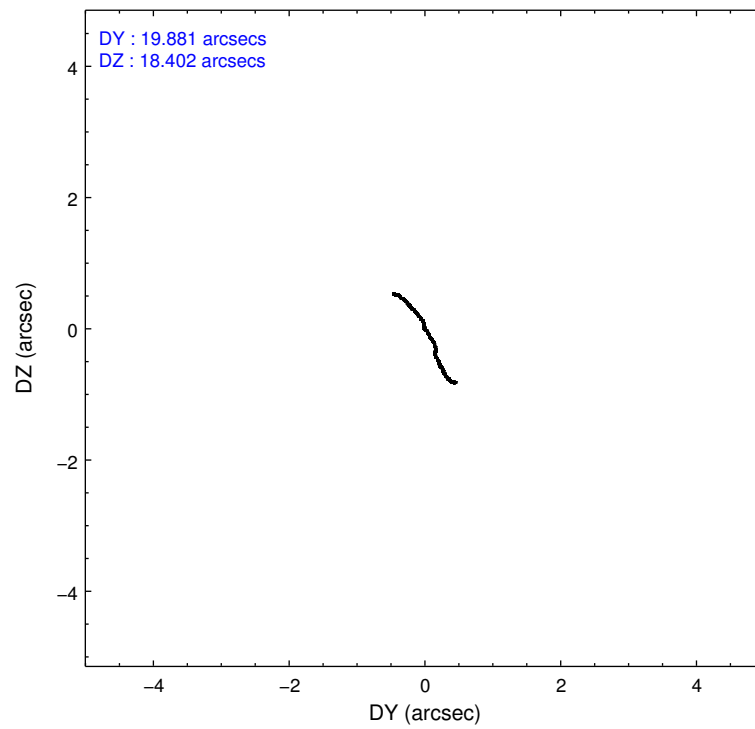
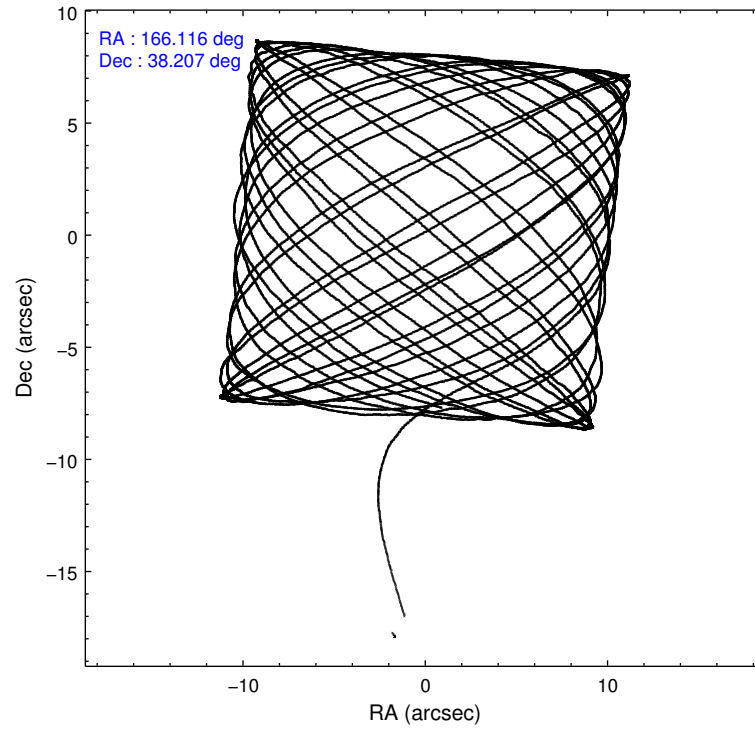
2.1.4 Events

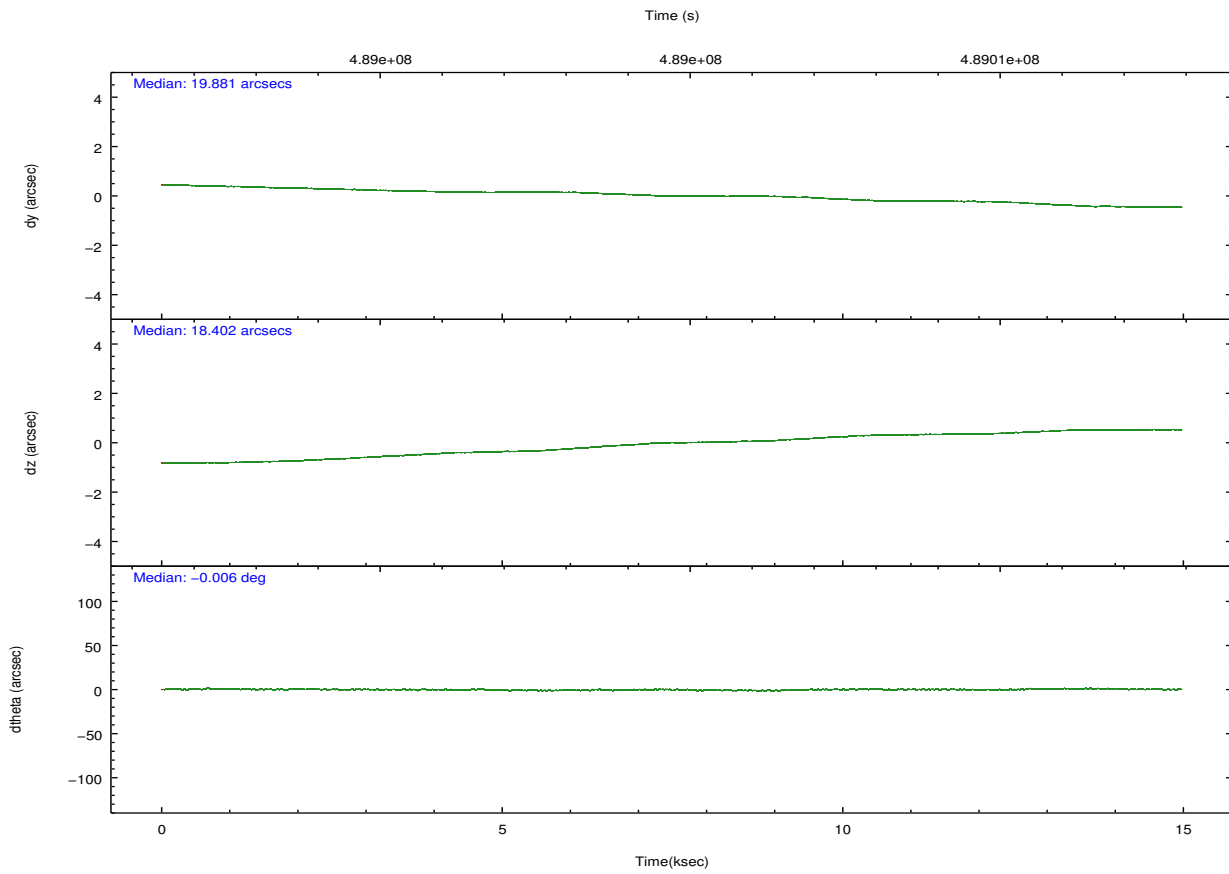
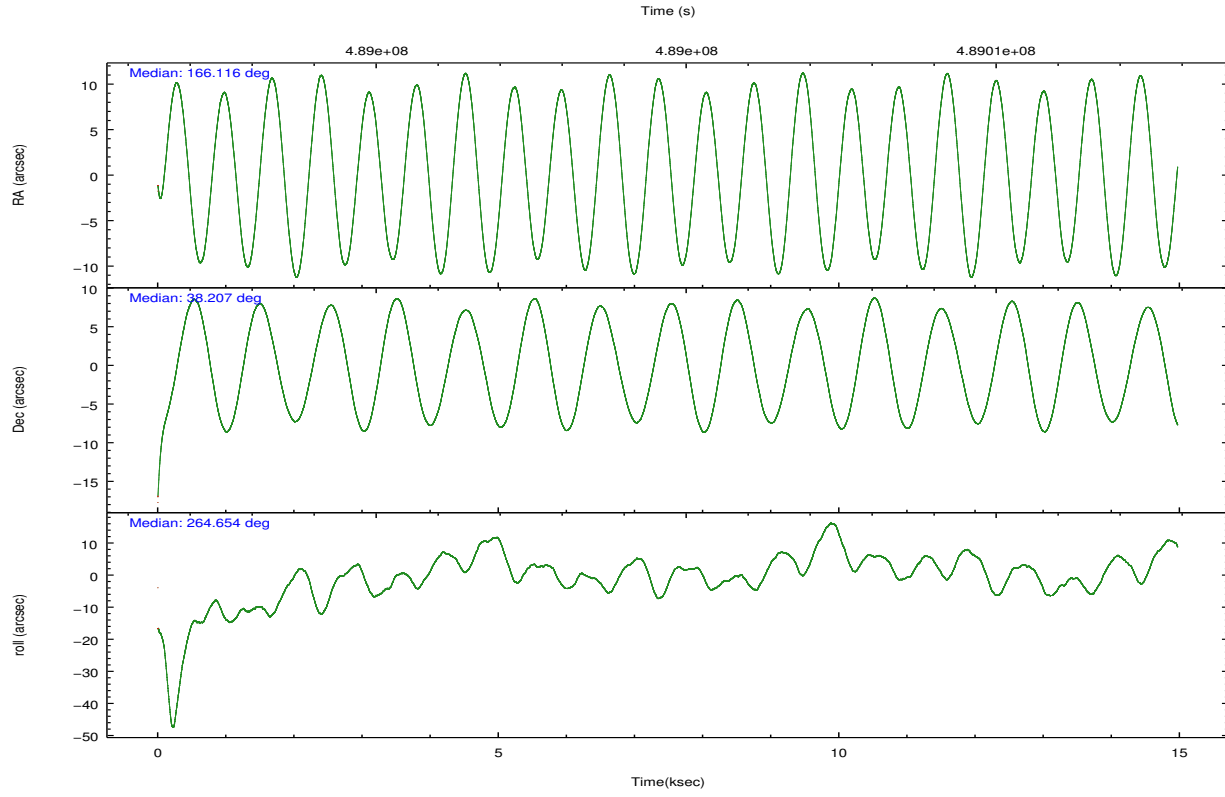
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	74929	146825	190778	197397	144879	71956	grade 0 events	15348	29850	107254	33287	66985	15753
rejected events	53563	47388	52226	45948	53100	49228		20%	20%	56%	16%	46%	21%
rejected %	71%	32%	27%	23%	36%	68%	grade 1 events	102	1874	1291	775	466	62
								0%	1%	0%	0%	0%	0%
							grade 2 events	2689	28086	16195	37275	10913	2979
								3%	19%	8%	18%	7%	4%
							grade 3 events	1051	6365	5213	16273	3869	1189
								1%	4%	2%	8%	2%	1%
							grade 4 events	960	6186	5178	16142	3905	1111
								1%	4%	2%	8%	2%	1%
							grade 5 events	2663	7104	3437	10085	4155	3028
								3%	4%	1%	5%	2%	4%
							grade 6 events	1321	28978	4729	48494	6120	1699
								1%	19%	2%	24%	4%	2%
							grade 7 events	50795	38382	47481	35066	48466	46135
								67%	26%	24%	17%	33%	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	166.101456	166.1164062324936	CCD I2 on	N	N
[deg] Pointing Dec	38.231922	38.20722884423994	CCD I3 on	N	N
[deg] Pointing Roll	264.504911	264.6522794926392	CCD S0 on	O1	Y
[s] Window start time (MET)	486432067.184000	486432067.184000	CCD S1 on	Y	Y
[s] Window stop time (MET)	494294467.184000	494294467.184000	CCD S2 on	Y	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S3 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S4 on	Y	Y
[mm] SIM translation stage pos	-187.132523	-187.1254020033014	CCD S5 on	Y	Y
[mm] SIM translation stage offset	-3	-3.007120579706367	Number of optional ACIS chips dropped	0	0
[s] Observation start time (MET)	488997402.184000	488996204.24861	On-chip summing requested	N	N
Observation start date	2013-06-30T16:35:35	2013-06-30T16:16:44	Subarray requested	CUSTOM	CUSTOM
[s] Observation end time (MET)	489012012.184000	489012447.93699	Subarray start row	1	1
Observation end date	2013-06-30T20:39:05	2013-06-30T20:47:27	Subarray row count	774	774
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	2.5

2.3 Aspect





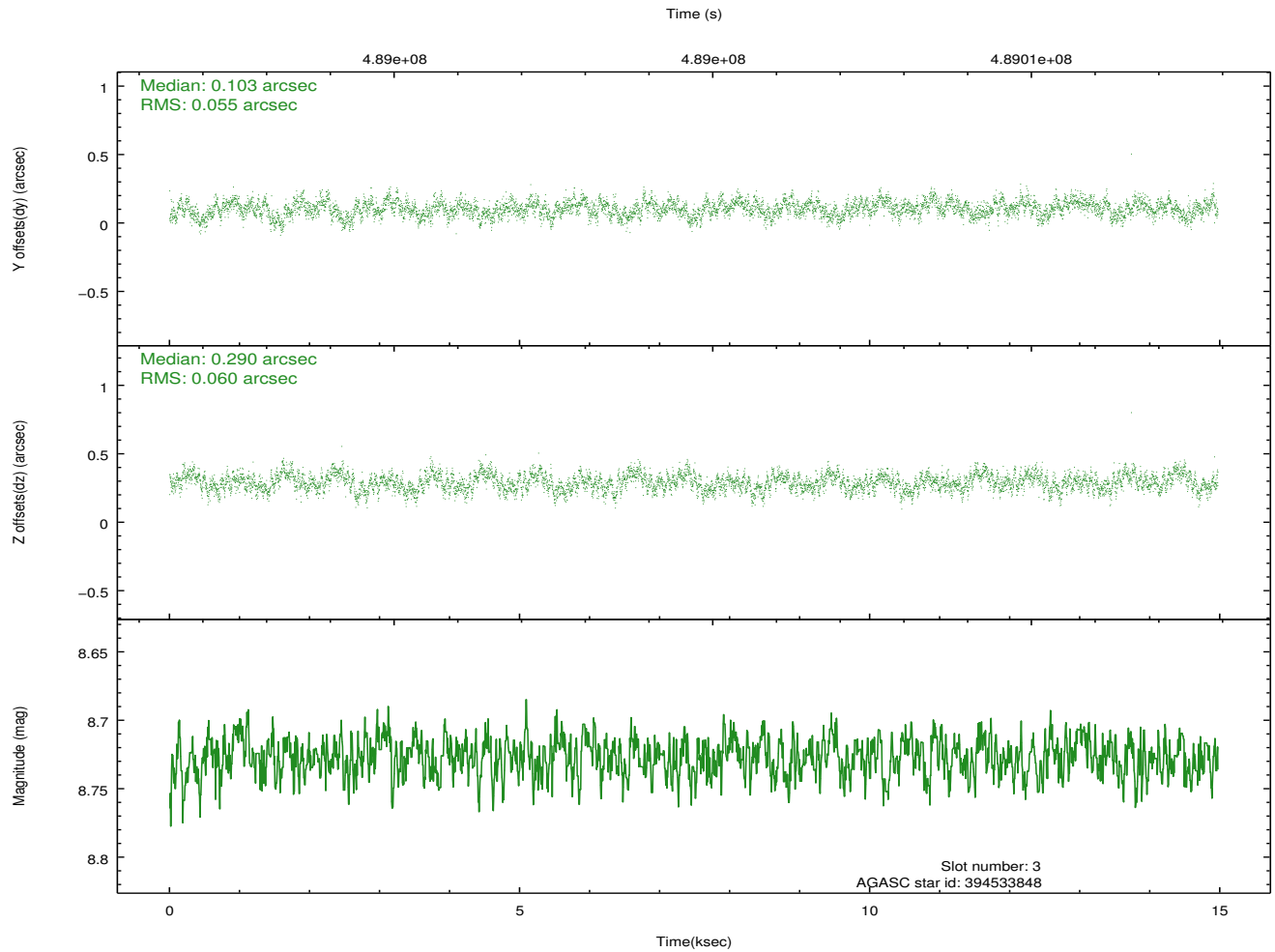
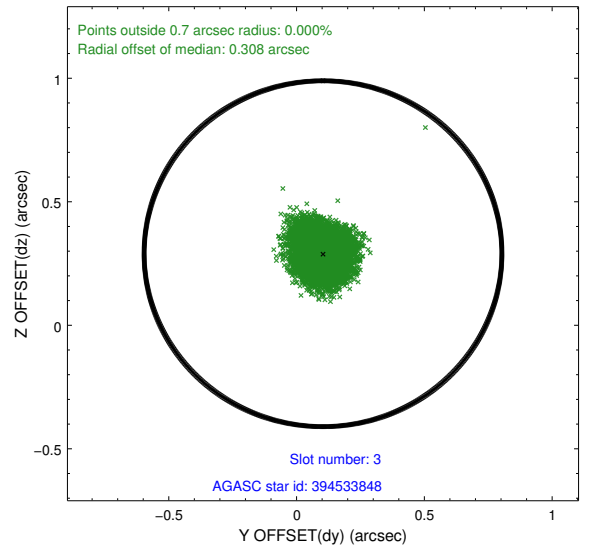
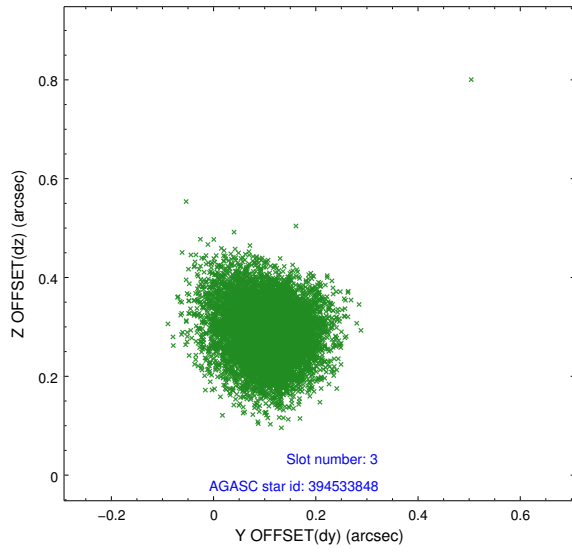
Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	7.10	3651	0.005	-0.011	0.023	0.036	0.000000	0.000000	923.29	-1797.49
1	FID		ACIS-S-4	7.10	3652	0.248	0.007	0.013	0.021	0.000000	0.000000	2141.07	106.37
2	FID		ACIS-S-5	7.13	3652	-0.283	0.013	0.013	0.024	0.000000	0.000000	-1825.52	100.24
3	GUIDE	used	394533848	8.73	7304	0.103	0.290	0.087	0.138	166.382906	38.276007	-235.41	772.20
4	GUIDE	used	394543960	9.81	7282	0.118	0.241	0.168	0.277	165.802757	37.787371	1673.34	-692.43
5	GUIDE	used	394546712	6.60	7303	-0.214	0.276	0.059	0.098	166.451462	38.394357	-677.94	926.09
6	GUIDE	used	394546720	6.43	7304	0.075	-0.975	0.109	0.171	166.130115	38.241361	-41.41	76.61
7	GUIDE	used	394530152	7.49	7301	-0.084	0.169	0.062	0.102	166.075805	38.868252	-2273.27	-290.67

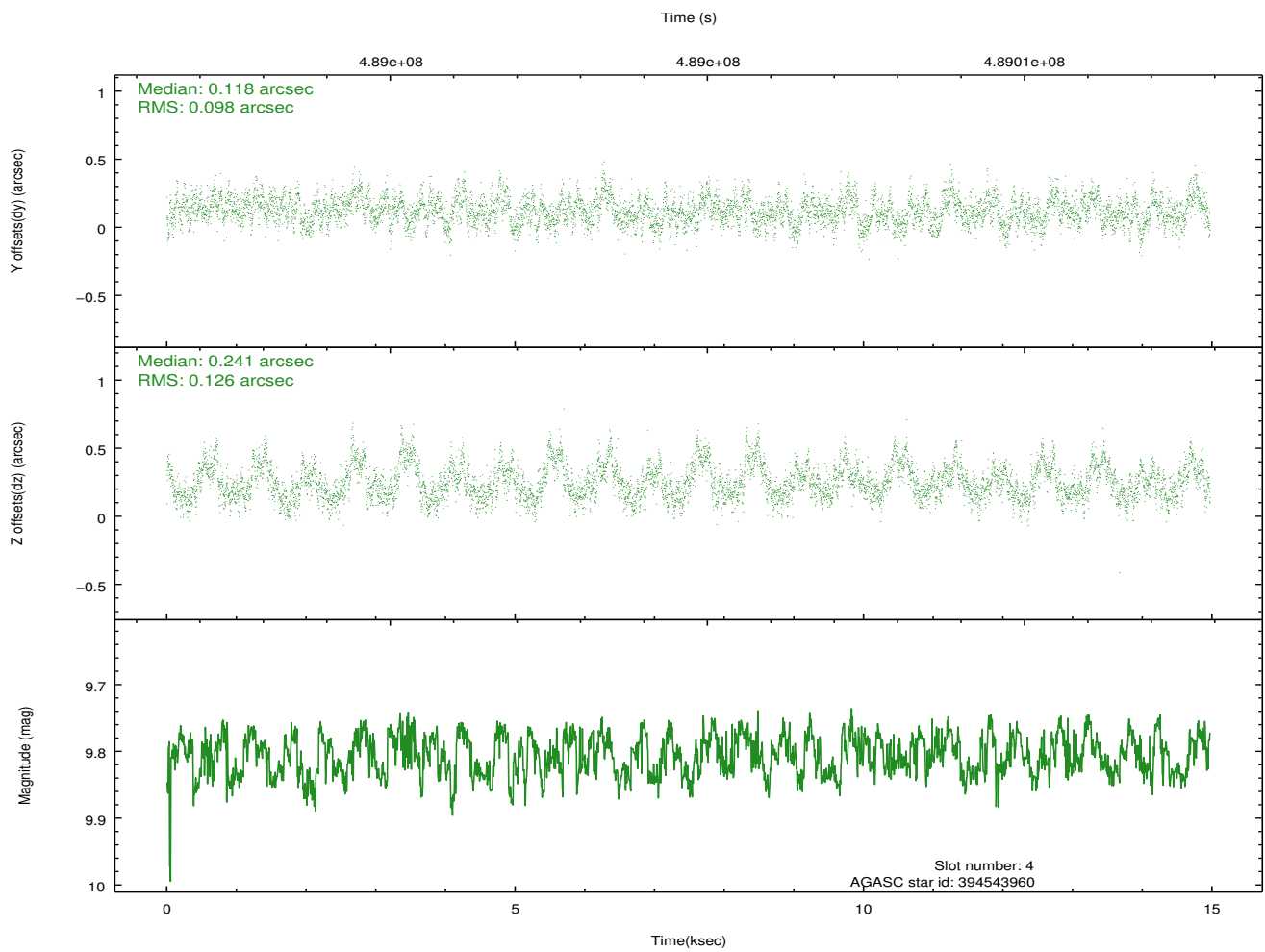
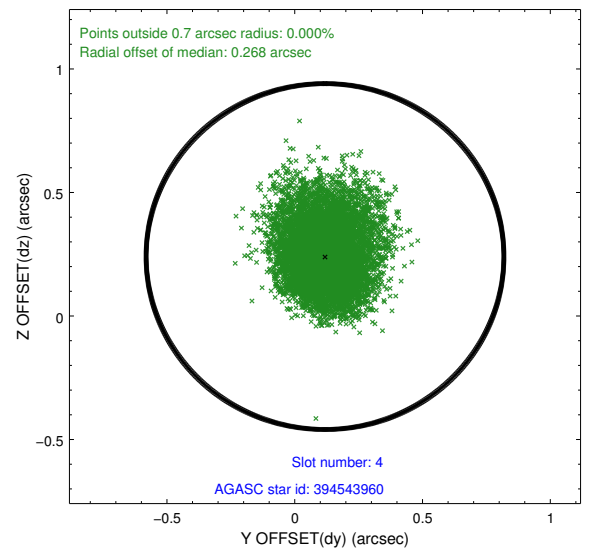
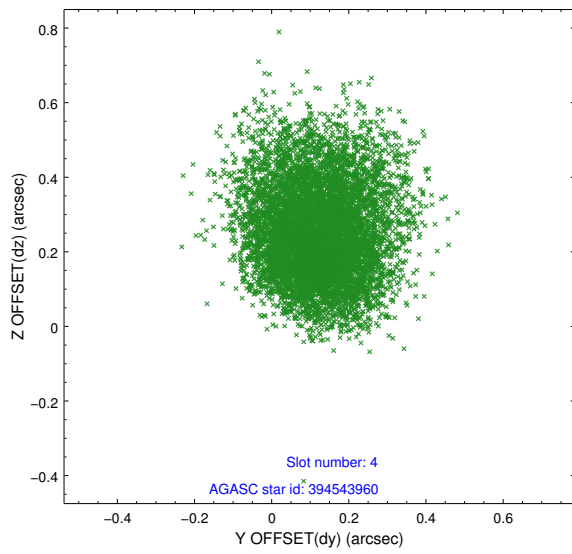
∞

2.4 Star Slots

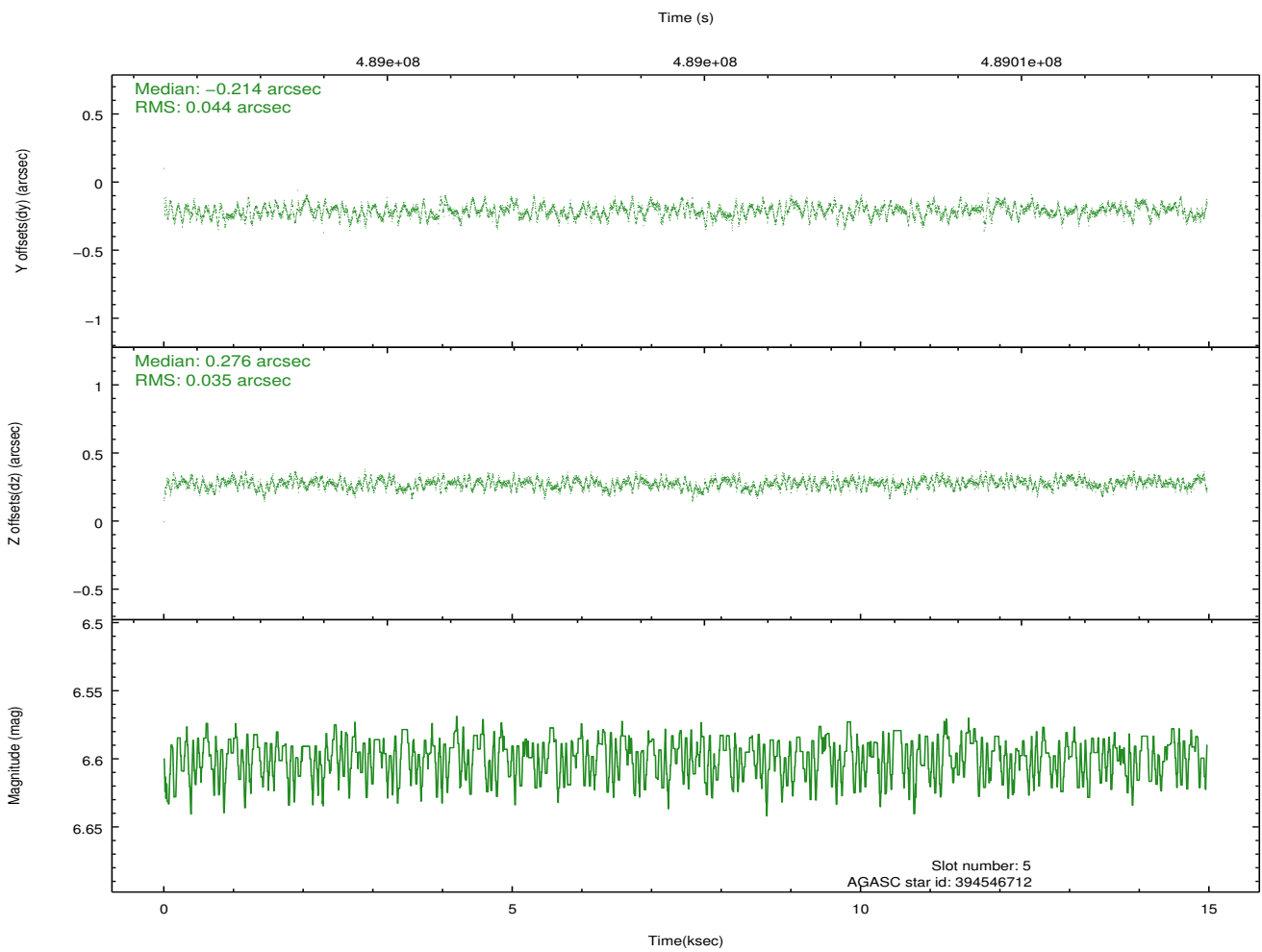
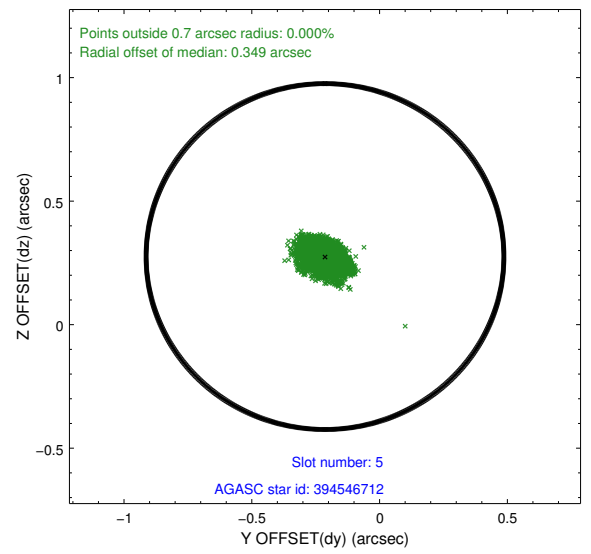
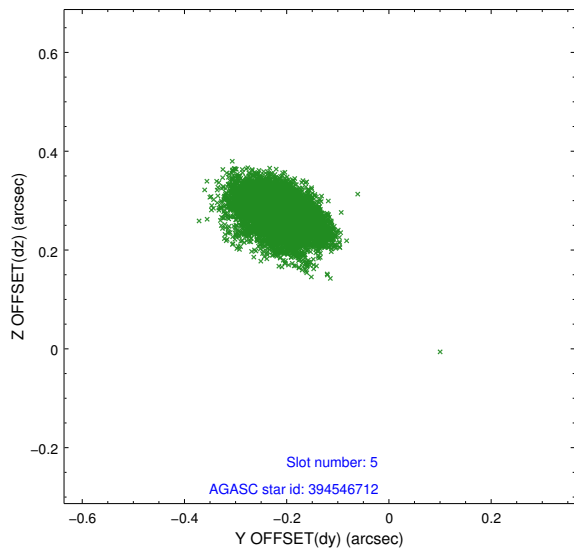
2.4.1 Slot 3



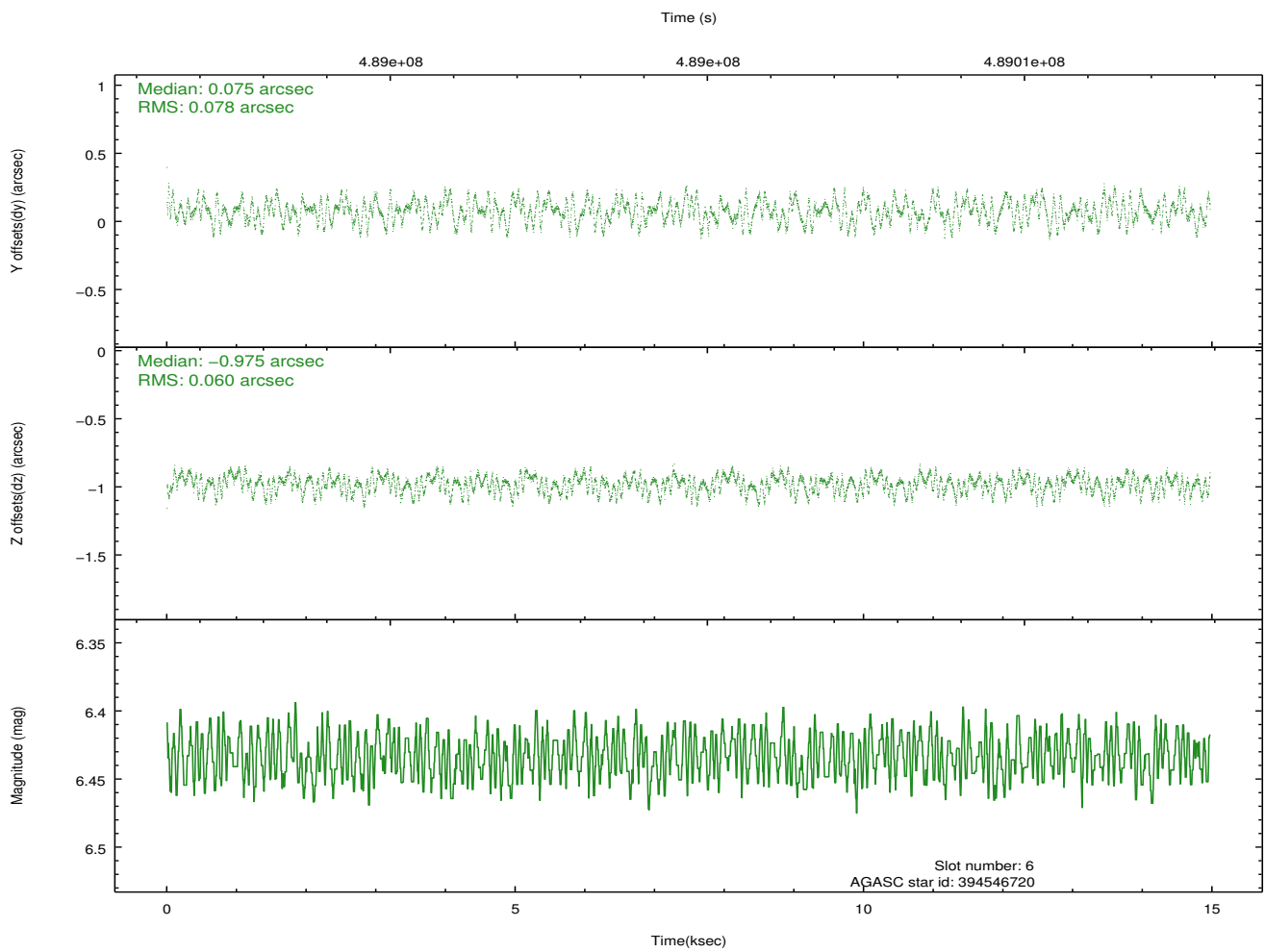
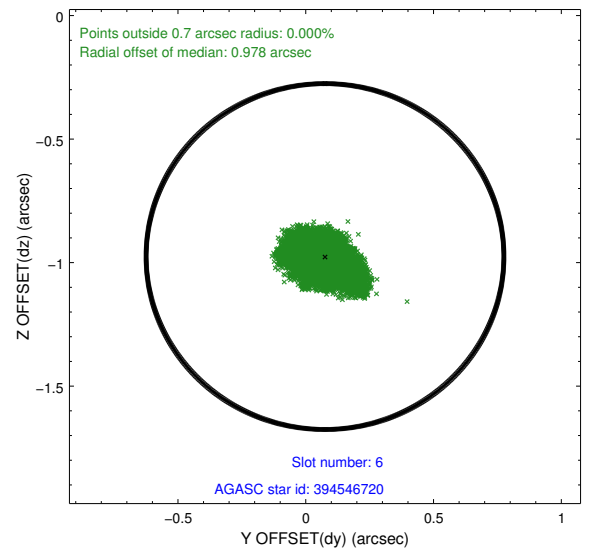
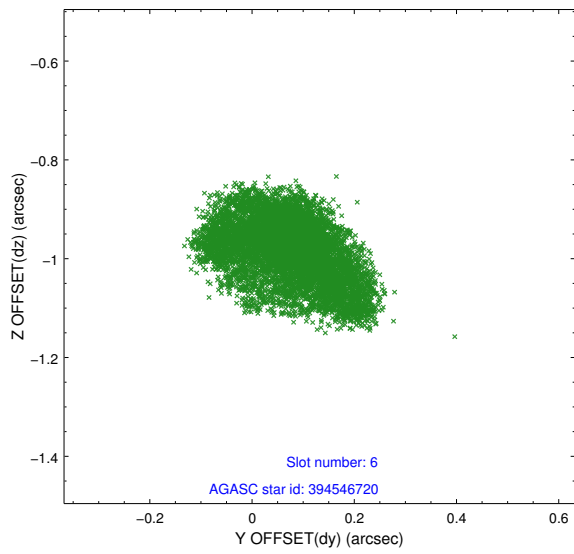
2.4.2 Slot 4



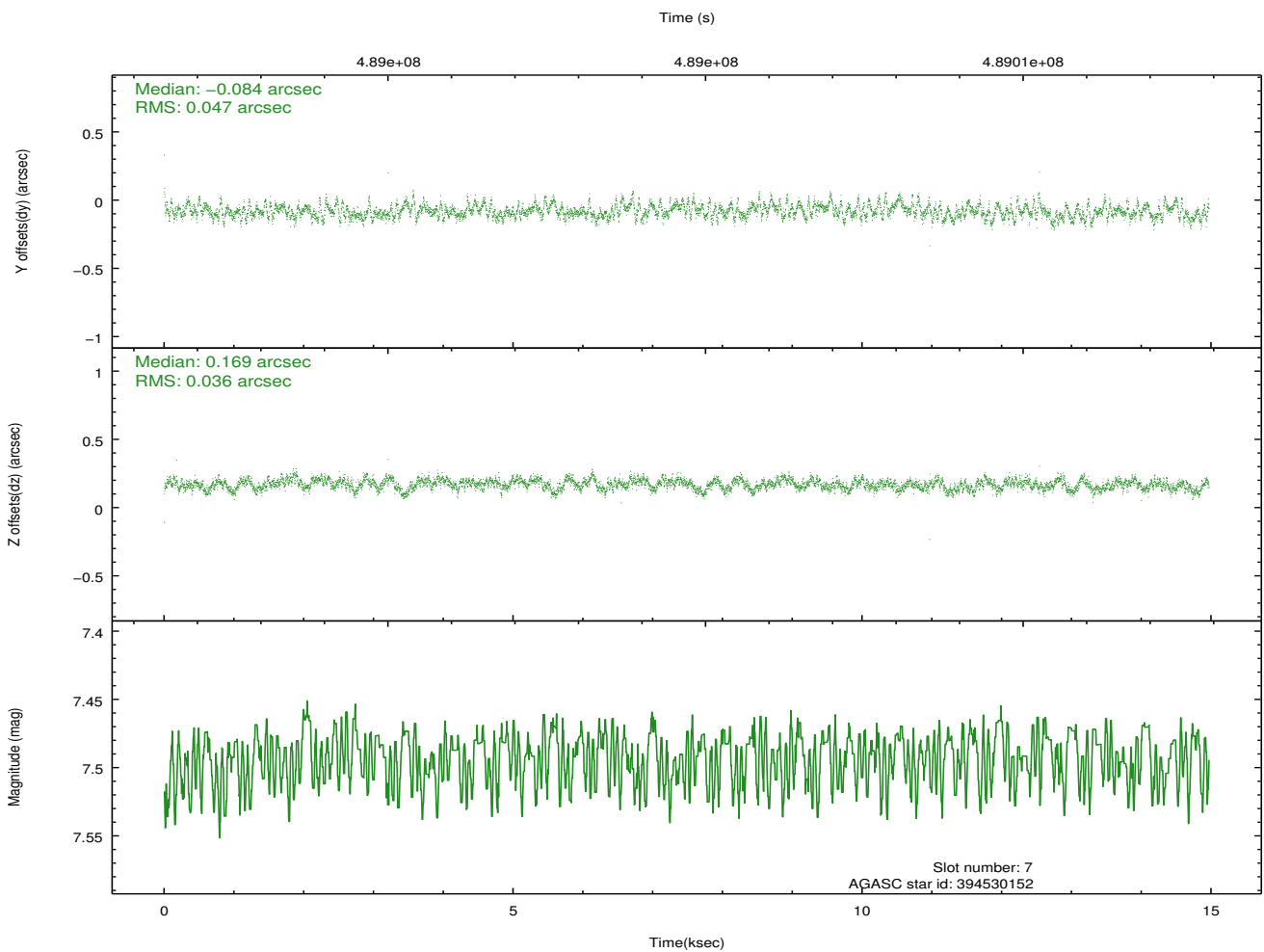
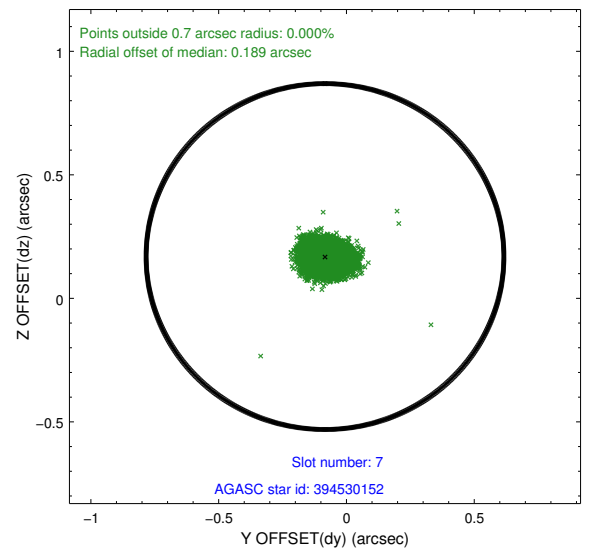
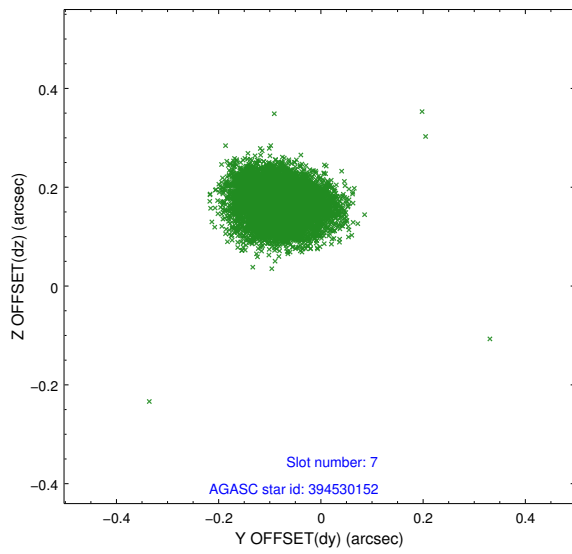
2.4.3 Slot 5



2.4.4 Slot 6

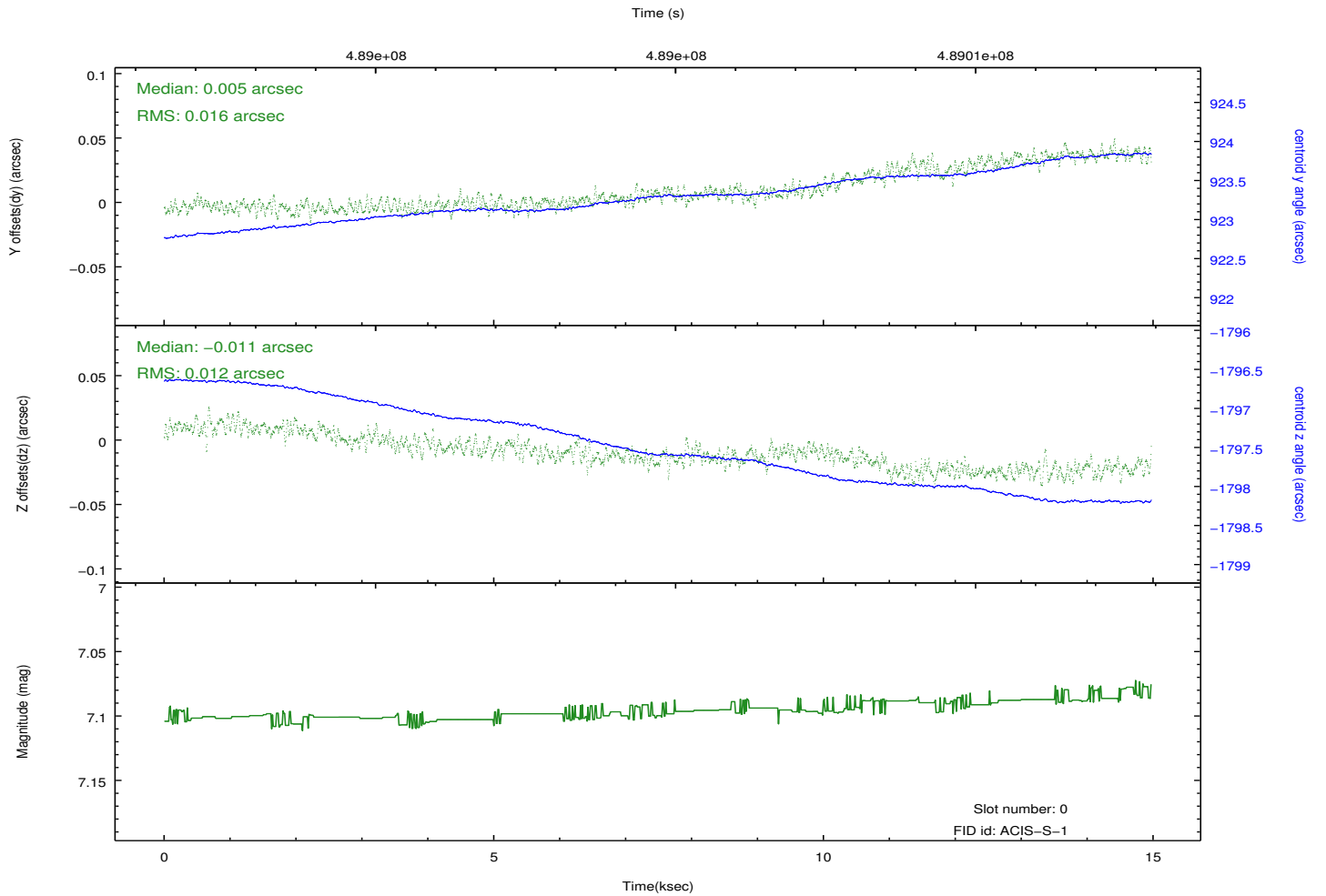
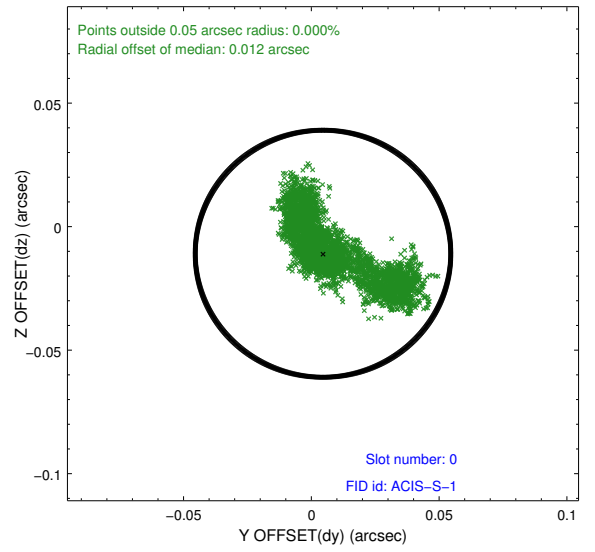
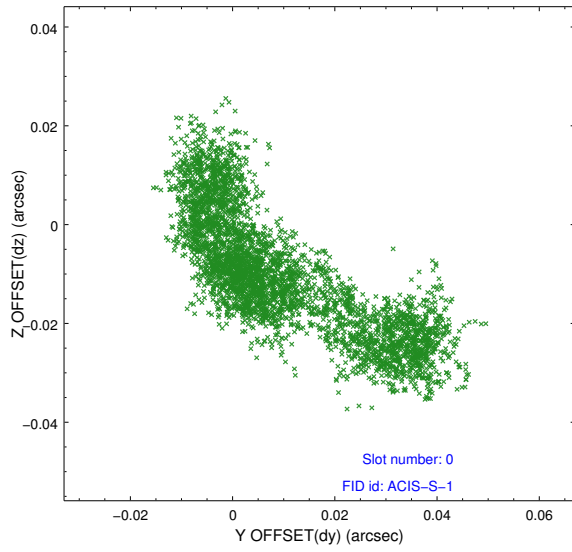


2.4.5 Slot 7

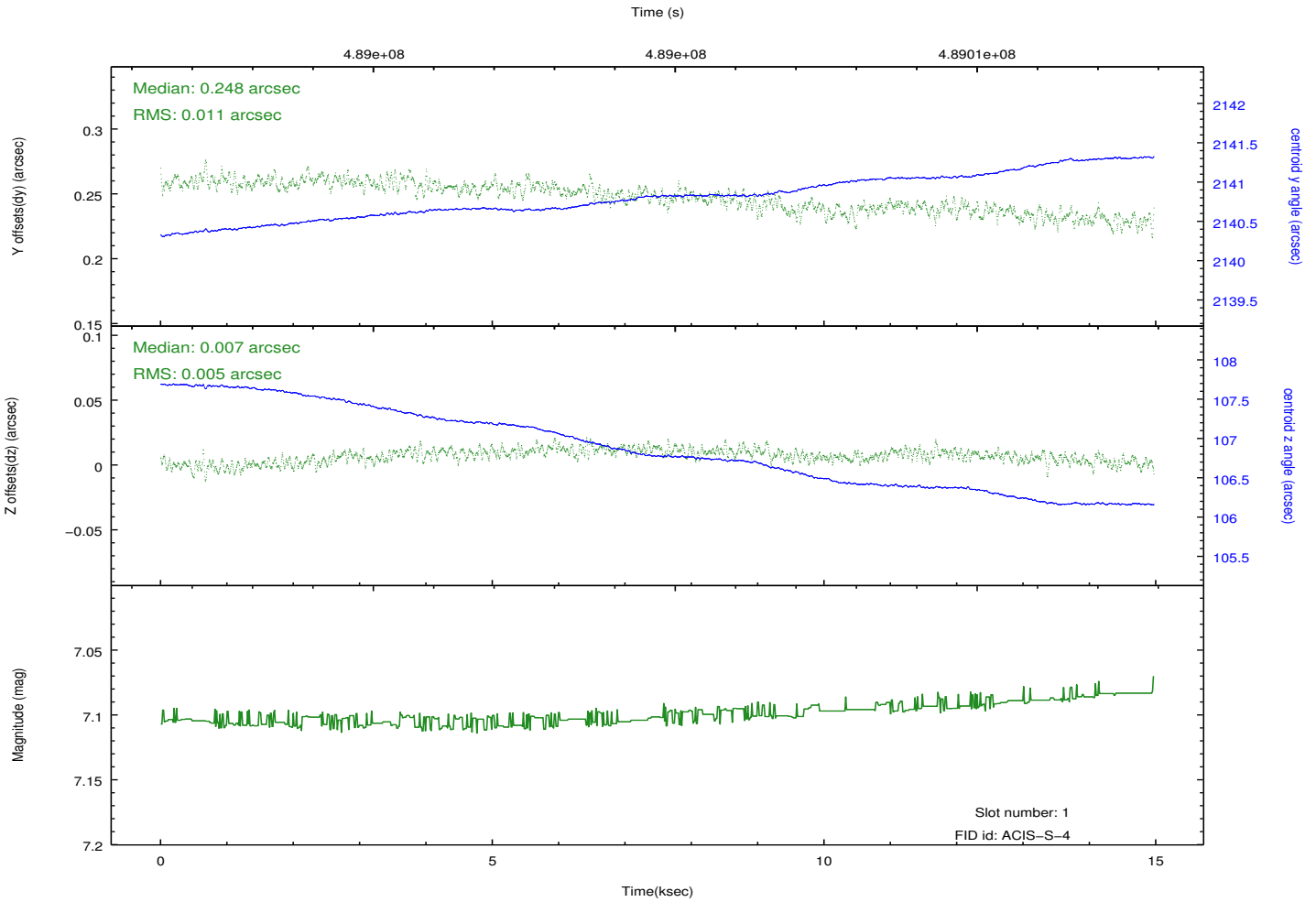
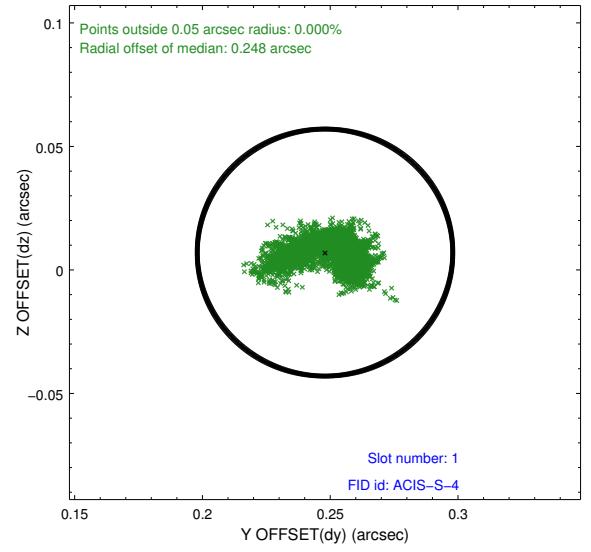
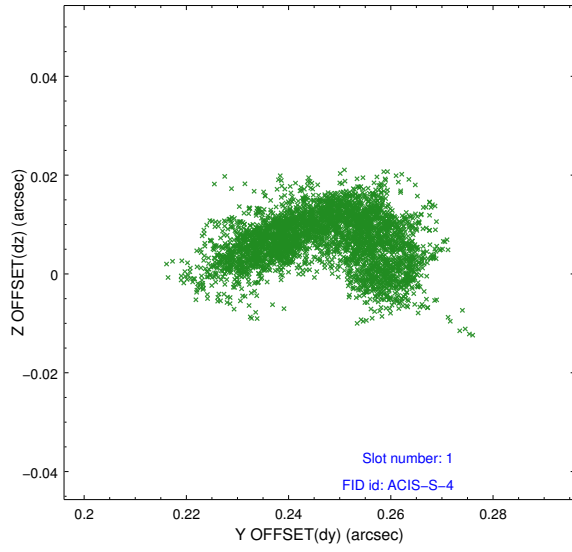


2.5 FID Slots

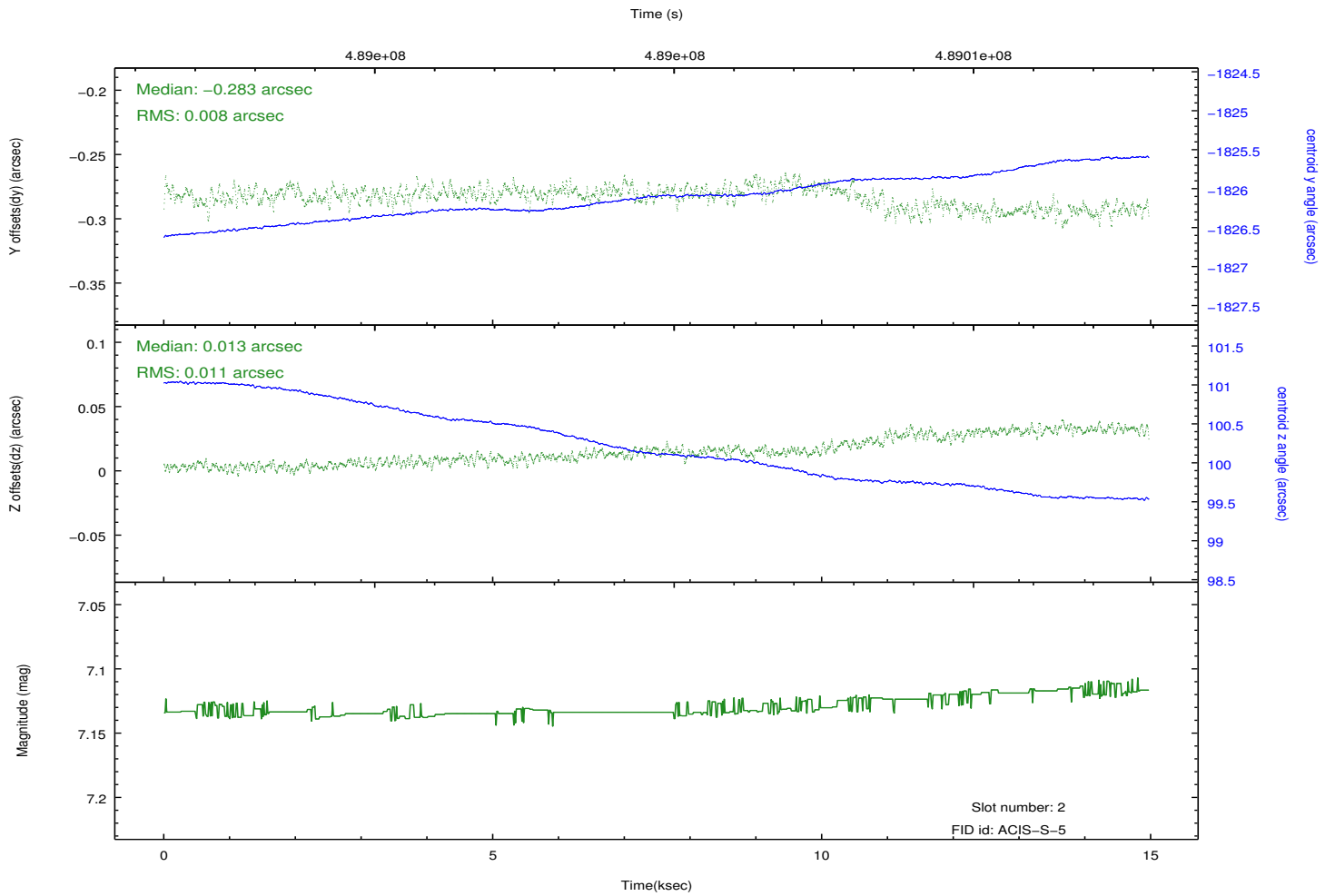
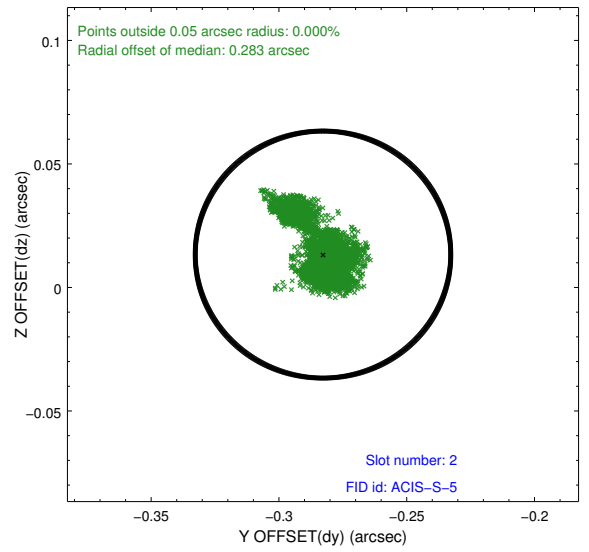
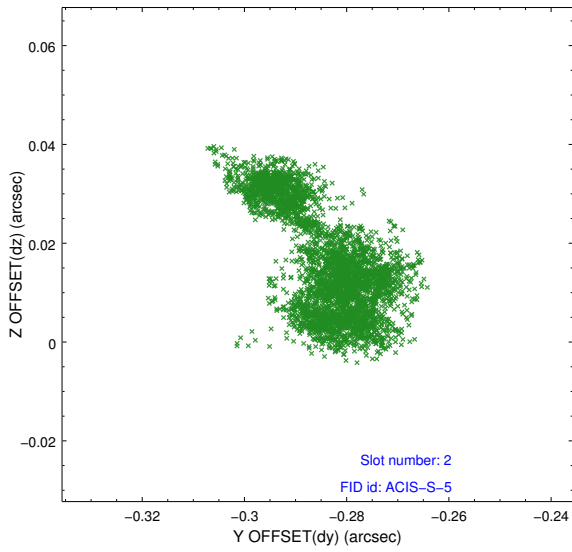
2.5.1 Slot 0



2.5.2 Slot 1

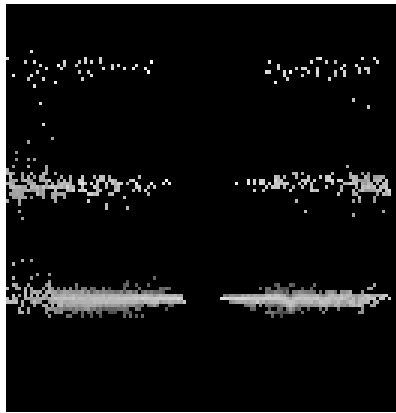


2.5.3 Slot 2

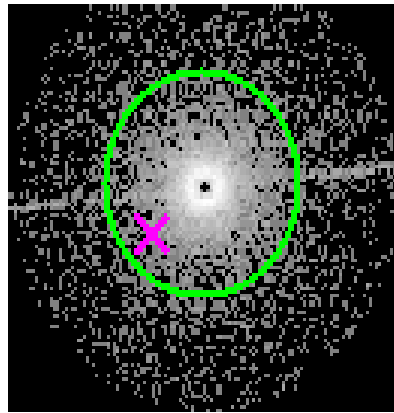


3 Gratings

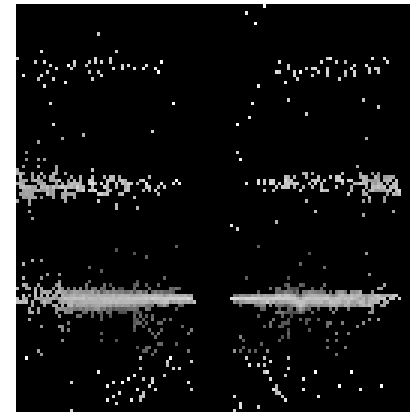
3.1 HEG Arm



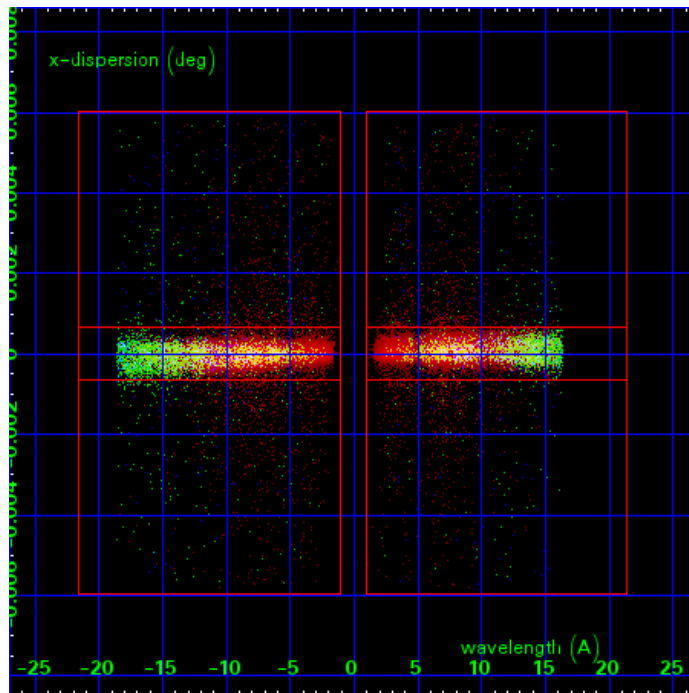
HEG Order Sort 123



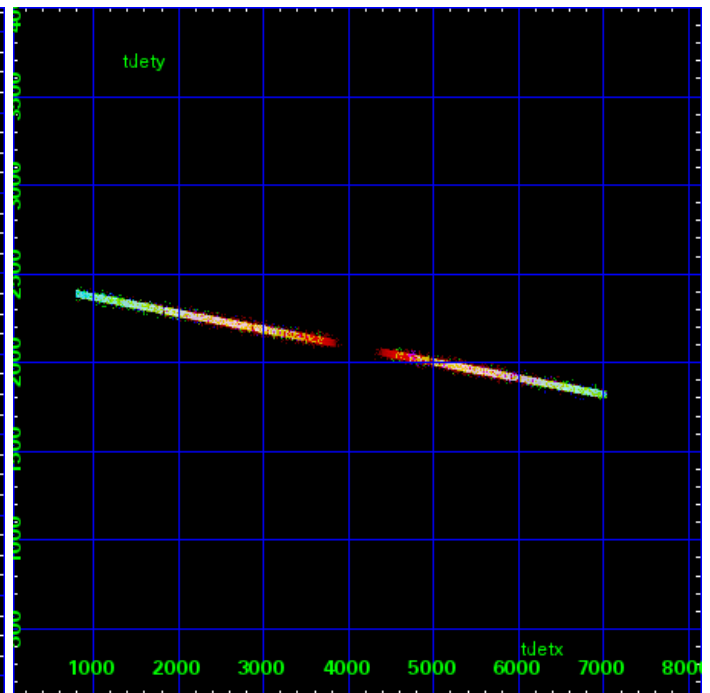
HEG Zero Order



HEG Order Sort ALL

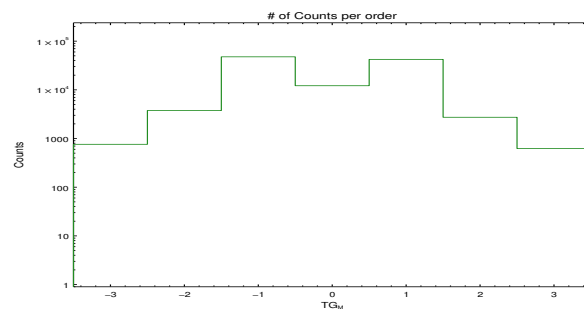


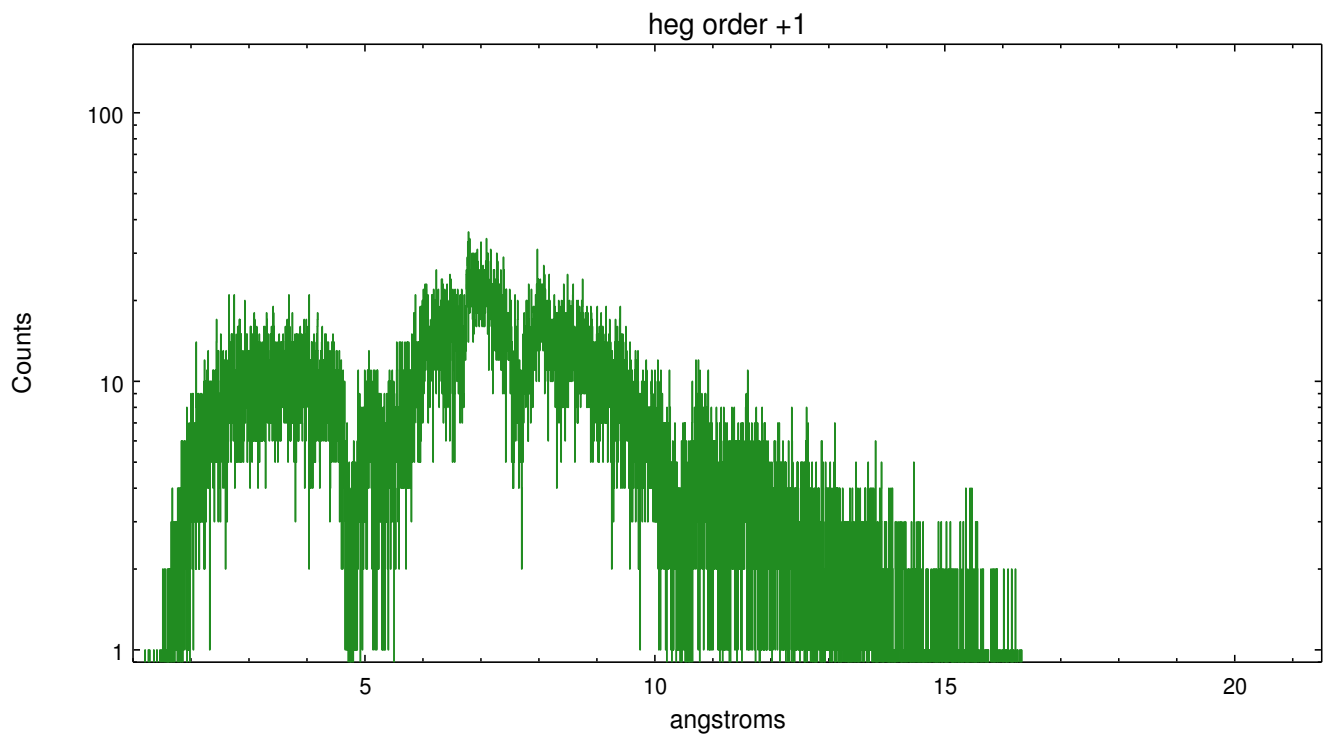
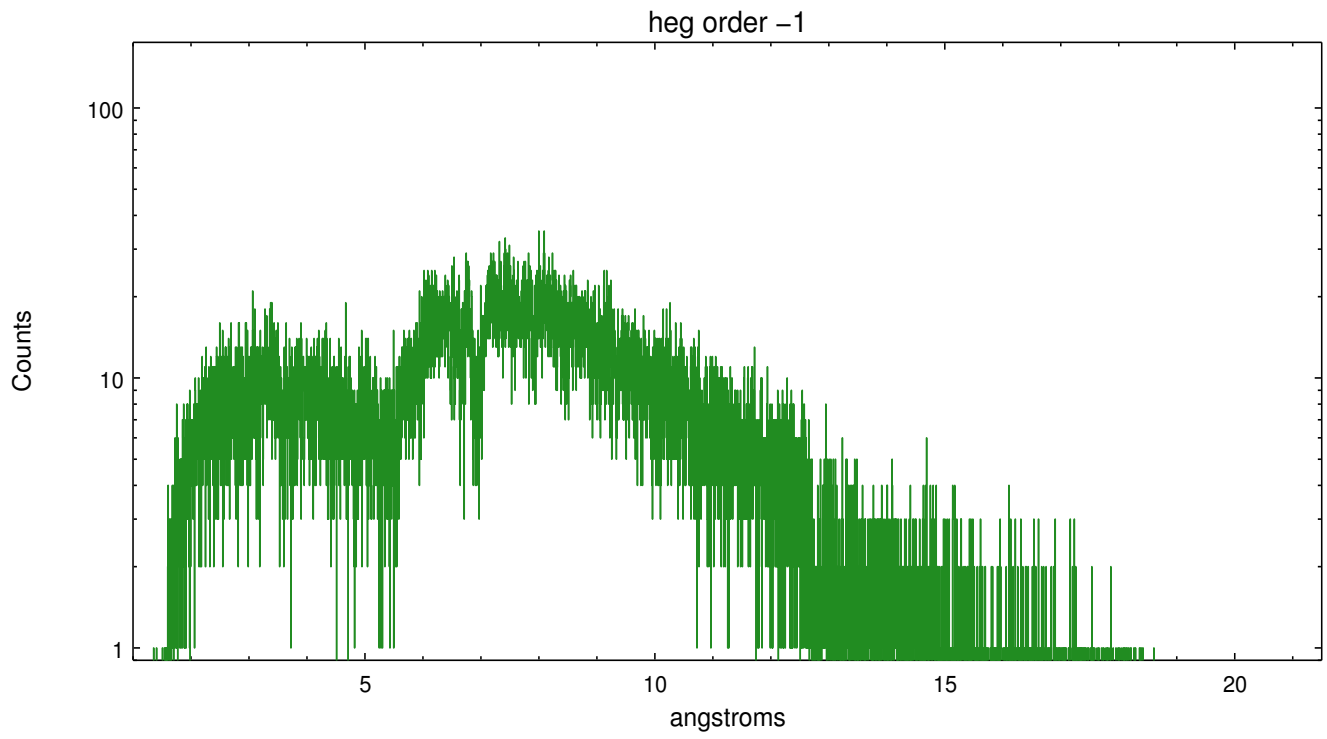
Spot Image HEG



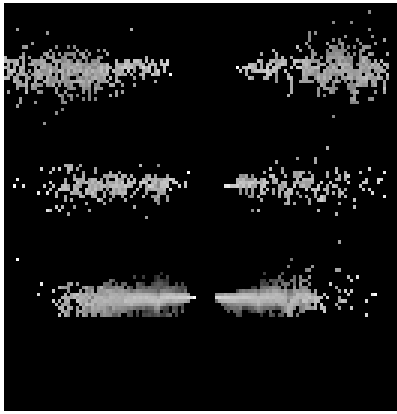
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	760	3757	47697	12157	42227	2730	622

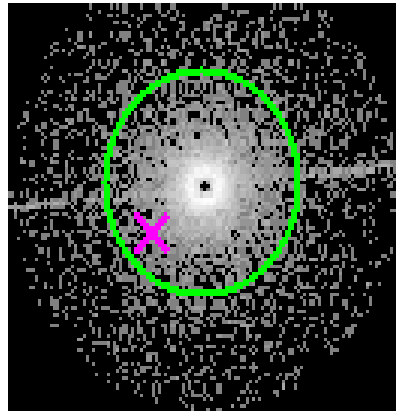




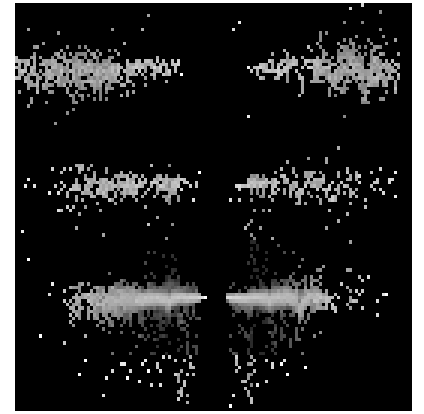
3.2 MEG Arm



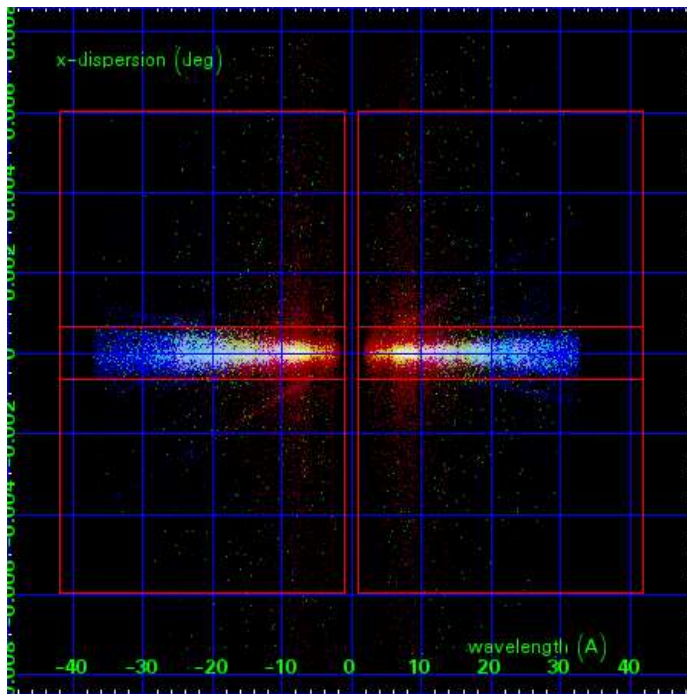
MEG Order Sort 123



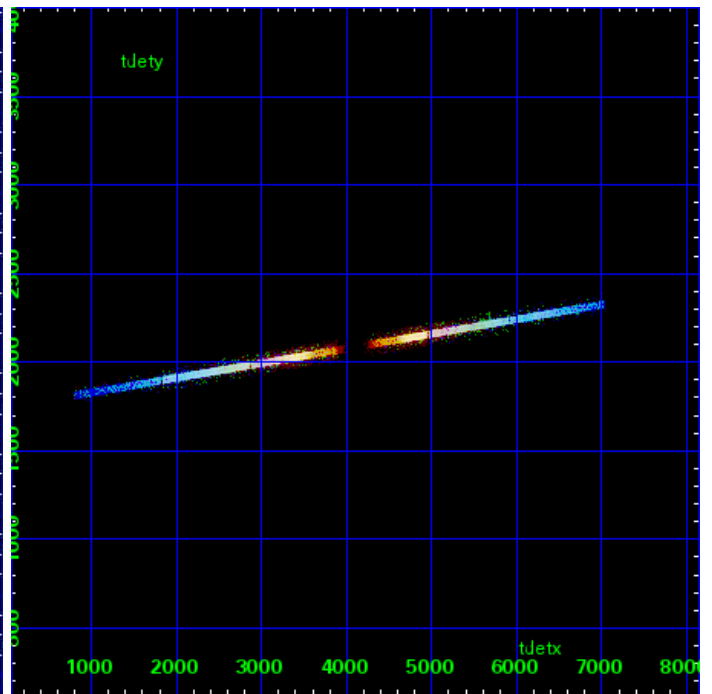
MEG Zero Order



MEG Order Sort ALL

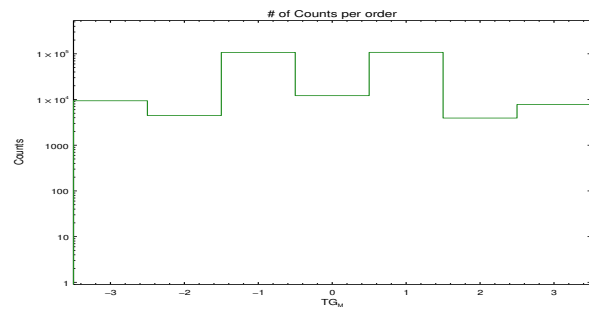


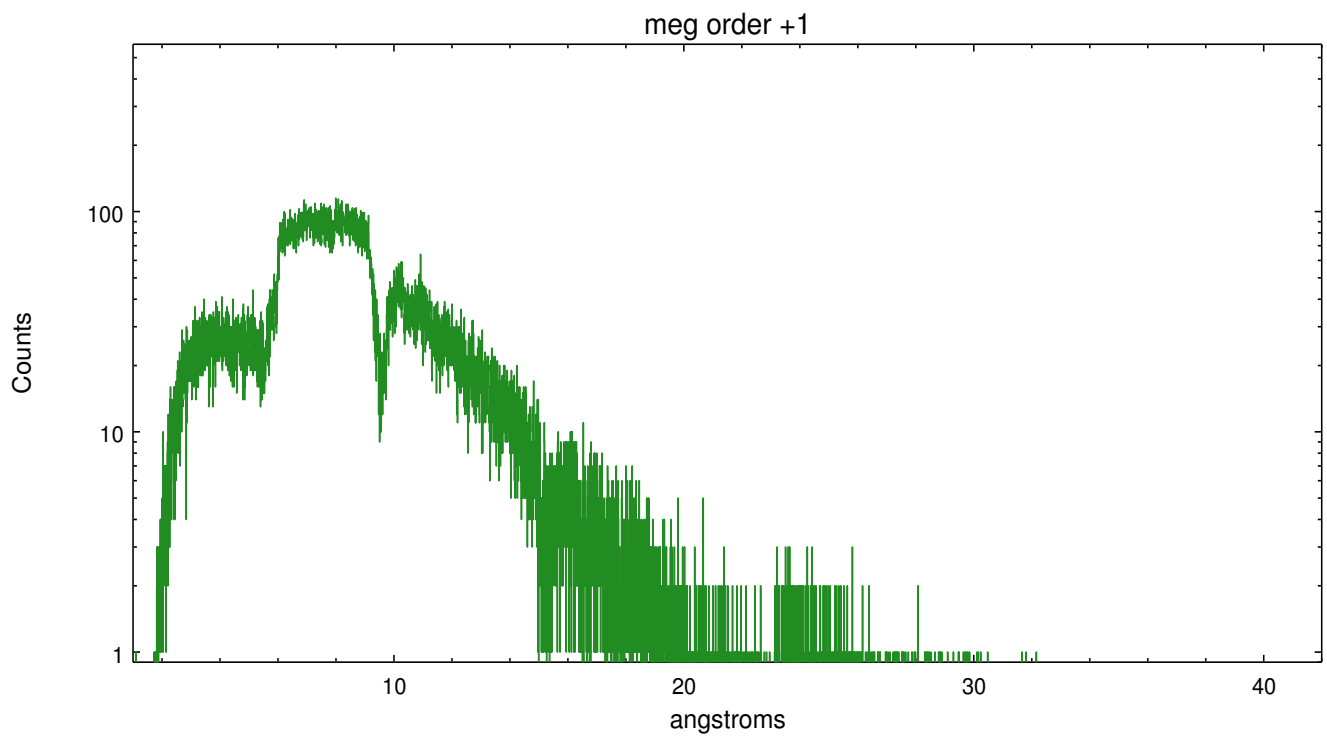
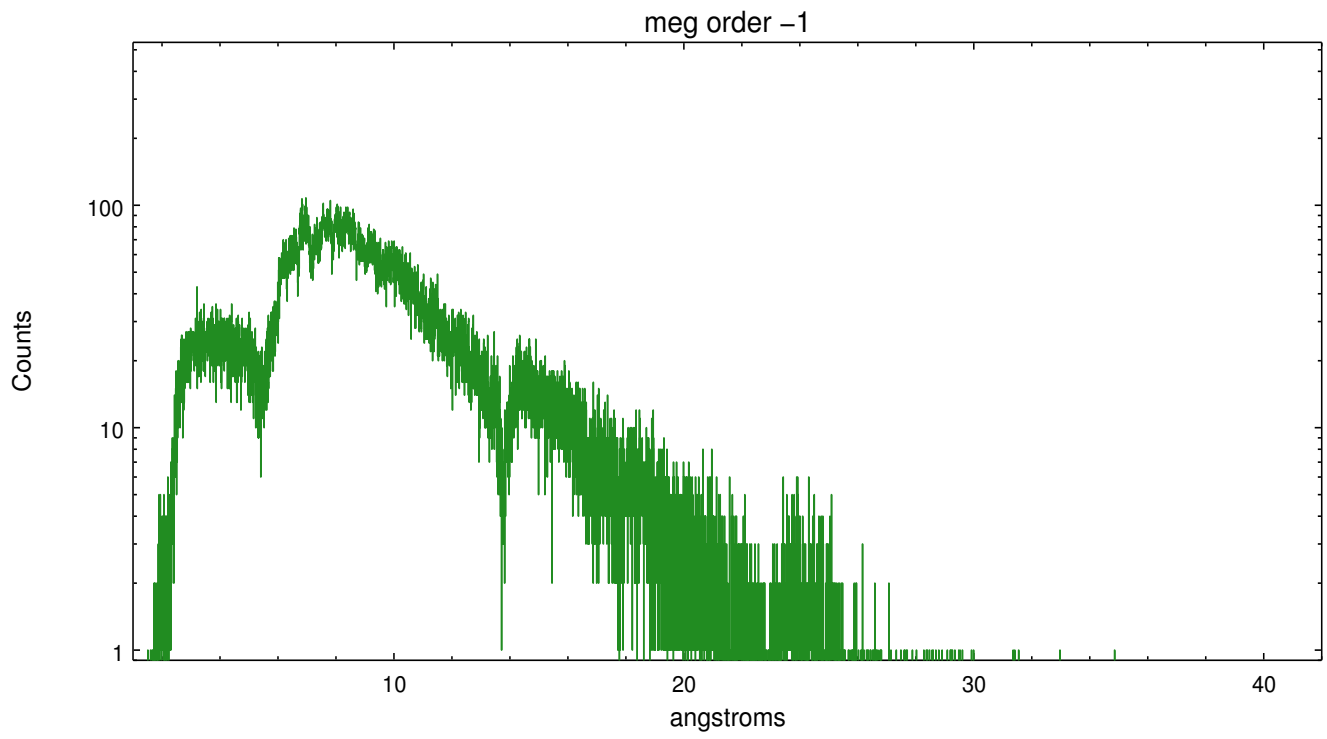
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	9395	4461	107321	12157	107475	3928	7773





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	14.646464089036

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 and cratered. Also, dispersed spectra are apparent in the level 1 bad events image, meaning they are likely piled. 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.