

V&V Reference Report

L2 ASCDS Version : 10.2.2

Observation 16628 - L2 Version 2
Chandra X-Ray Center

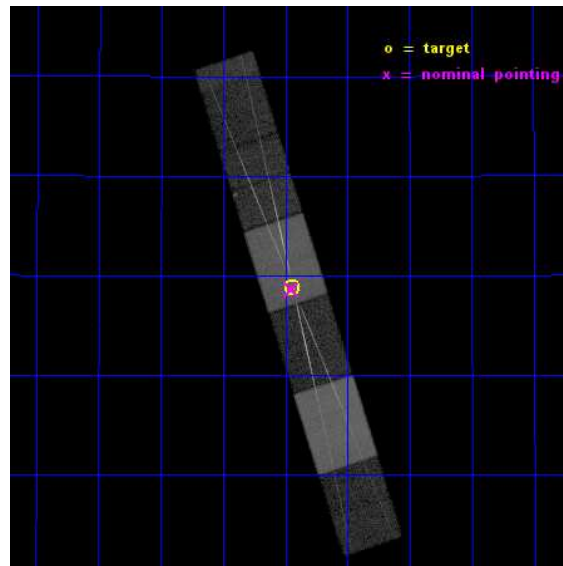
L2 Processing Date : Dec 12 2014

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.4.5	Slot 7	13
2.5	FID Slots	14
2.5.1	Slot 0	14
2.5.2	Slot 1	15
2.5.3	Slot 2	16
3	Gratings	17
3.1	HEG Arm	17
3.2	MEG Arm	19
A	Summary	21
A.1	Status	21
A.2	Comments	21

1 Front

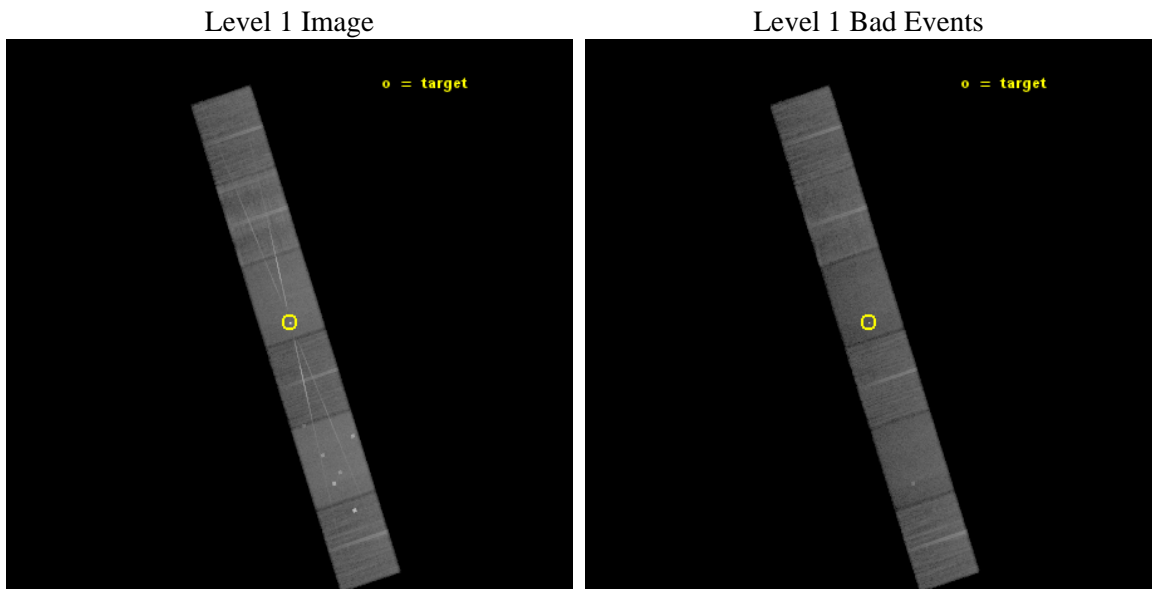
seq_num	703022	Sequence number
obs_id	16628	Observation id
title	A Warm Absorber Study of Mk 766	Proposal title
observer	Prof. Claude Canizares	Principal investigator
object	Mkn 766	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	184.610417	Observer's specified target RA [deg]
dec_targ	29.812778	Observer's specified target Dec [deg]
ra_nom	184.61263645199	Nominal RA [deg]
dec_nom	29.81045981153	Nominal Dec [deg]
roll_nom	252.15552469059	Nominal Roll [deg]
revision	2	Processing version of data
ontime	49634.749250174	Sum of GTIs [s]
livetime	48833.104998518	Livetime [s]
ontime4	49634.790290177	Sum of GTIs [s]
ontime5	49634.70821017	Sum of GTIs [s]
ontime6	49634.667170167	Sum of GTIs [s]
ontime7	49634.749250174	Sum of GTIs [s]
ontime8	49634.626130164	Sum of GTIs [s]
ontime9	49634.58509016	Sum of GTIs [s]
l2events	383955	Number of level 2 events



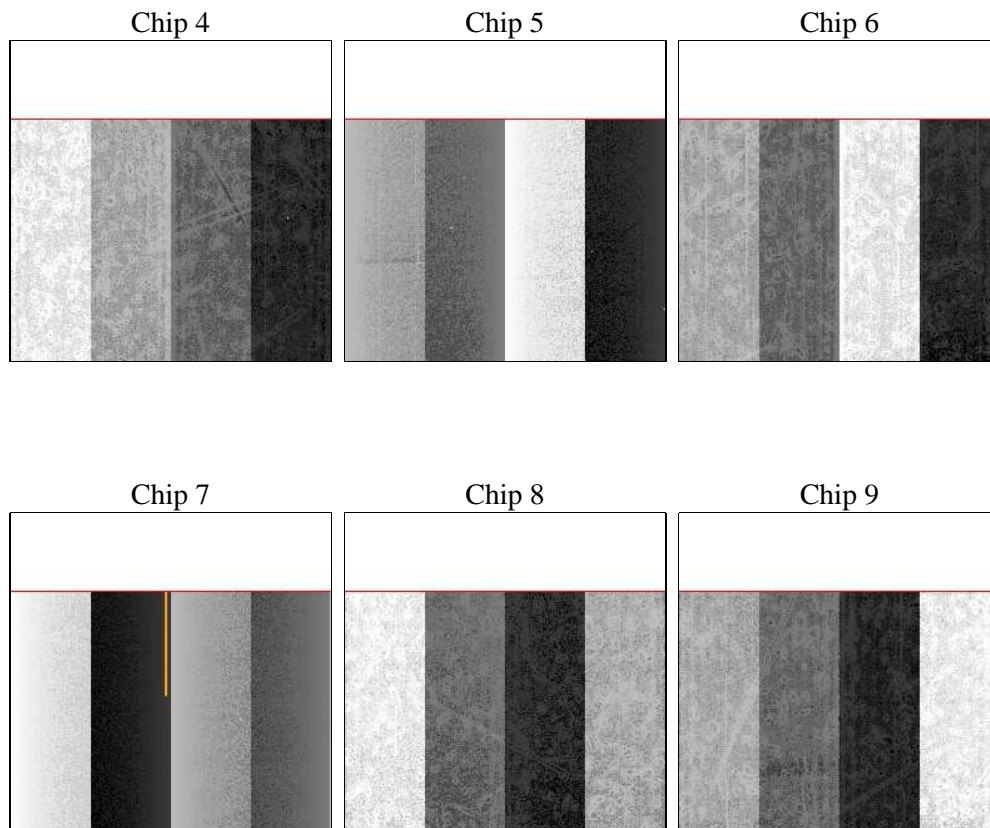
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	49600.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	49634.749250174	Sum of GTIs [s]
caldbver	4.6.4	 	ontime4	49634.790290177	Sum of GTIs [s]
date	2014-12-13T00:24:46	Date and time of file creation	ontime5	49634.70821017	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	49634.667170167	Sum of GTIs [s]
			ontime7	49634.749250174	Sum of GTIs [s]
			ontime8	49634.626130164	Sum of GTIs [s]
			ontime9	49634.58509016	Sum of GTIs [s]
			l1events	1418697	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			z0_pos	(4110.60, 4114.82)	src1a sky pixel position

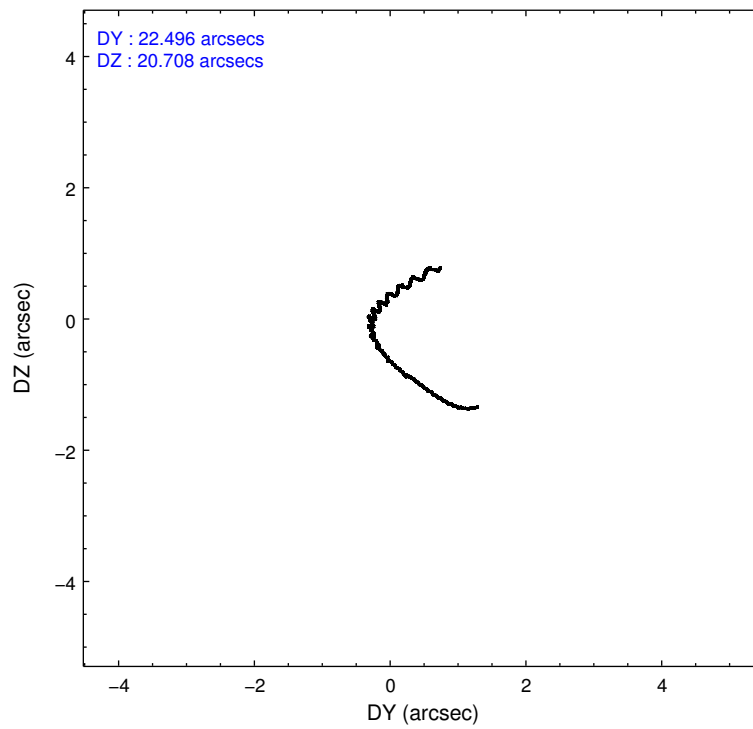
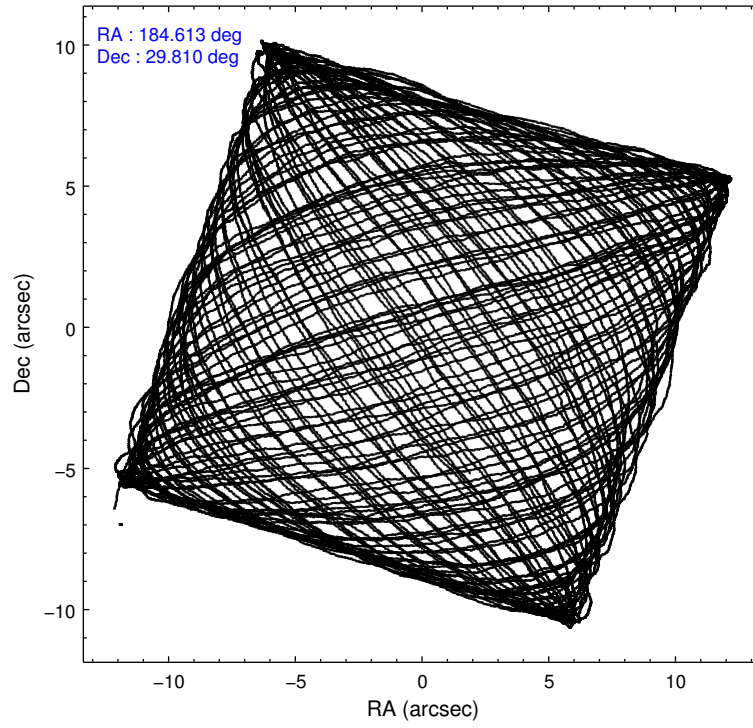
2.1.4 Events

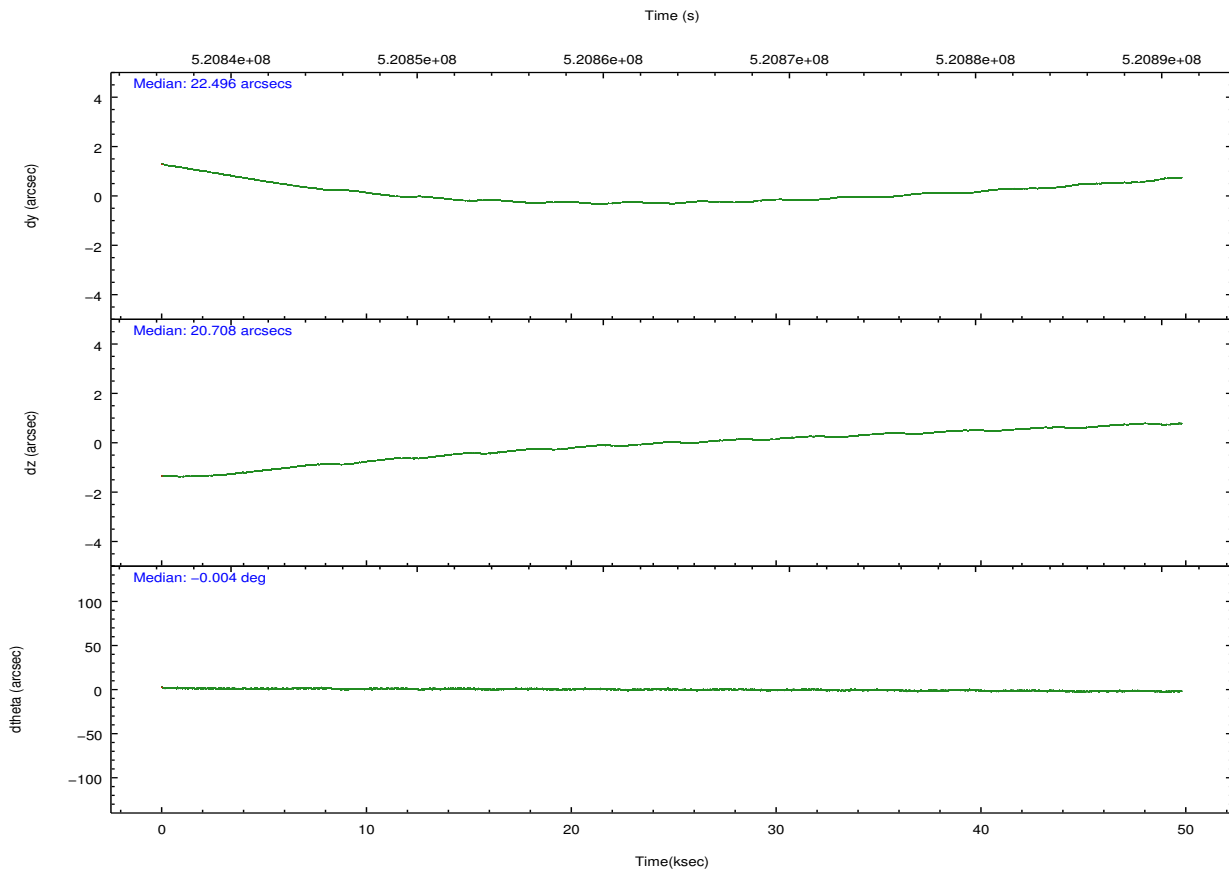
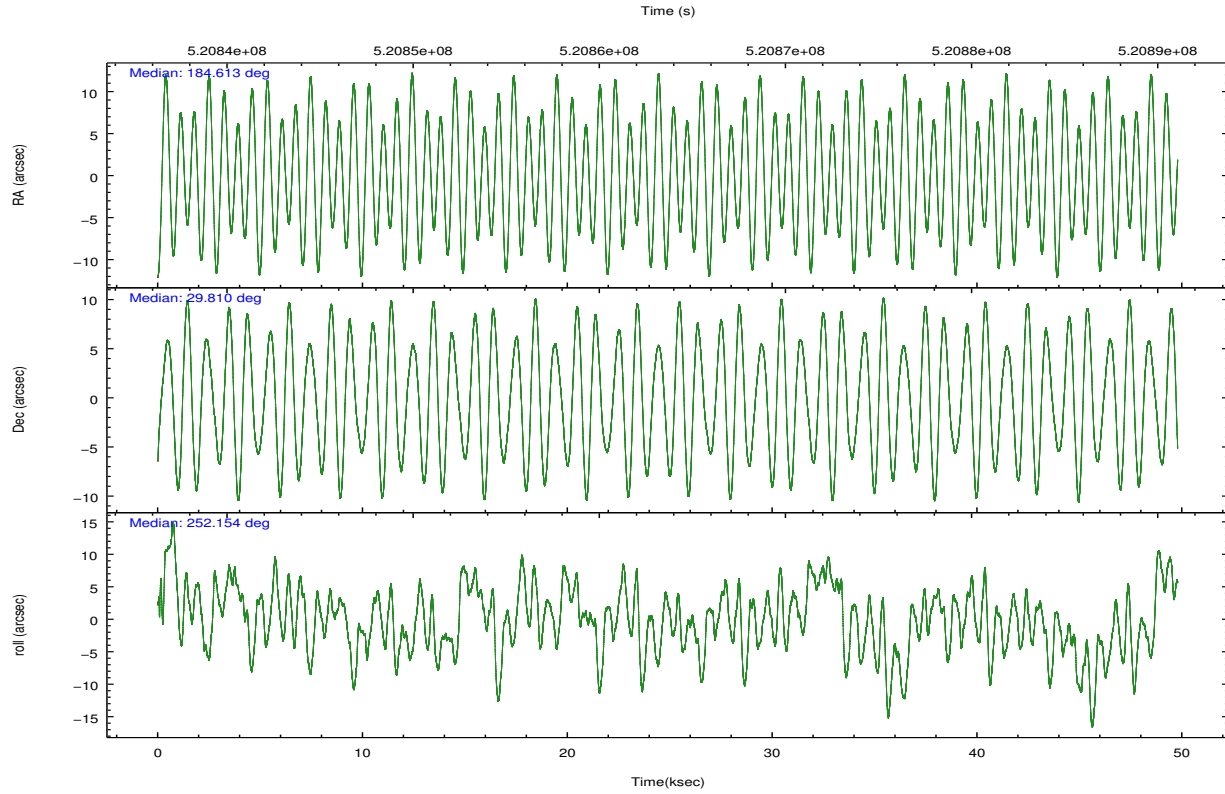
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	209820	308832	198132	278923	243919	179071	grade 0 events	20440	23080	22417	16207	26143	9344
rejected events	174278	151255	156997	140778	170537	154494		9%	7%	11%	5%	10%	5%
rejected %	83%	48%	79%	50%	69%	86%	grade 1 events	172	1197	131	610	174	99
								0%	0%	0%	0%	0%	0%
							grade 2 events	5921	45854	7160	29586	16114	5249
								2%	14%	3%	10%	6%	2%
							grade 3 events	2552	6234	2987	12522	6968	2581
								1%	2%	1%	4%	2%	1%
							grade 4 events	2447	6078	3045	12442	6716	2400
								1%	1%	1%	4%	2%	1%
							grade 5 events	9112	22681	9169	27113	13265	10134
								4%	7%	4%	9%	5%	5%
							grade 6 events	4183	76342	5526	67401	17444	5007
								1%	24%	2%	24%	7%	2%
							grade 7 events	164993	127366	147697	113042	157095	144257
								78%	41%	74%	40%	64%	80%

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	184.605585	184.6126364519921	CCD I2 on	N	N
[deg] Pointing Dec	29.837094	29.81045981152987	CCD I3 on	N	N
[deg] Pointing Roll	252.002408	252.1555246905901	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	-187.1254020033014	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-3	-3.007120579706367	CCD S4 on	Y	Y
[s] Observation start time (MET)	520838983.184000	520837796.14663	CCD S5 on	Y	Y
Observation start date	2014-07-04T05:28:36	2014-07-04T05:09:56	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	520888583.184000	520889190.16197	On-chip summing requested	N	N
Observation end date	2014-07-04T19:15:16	2014-07-04T19:26:30	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





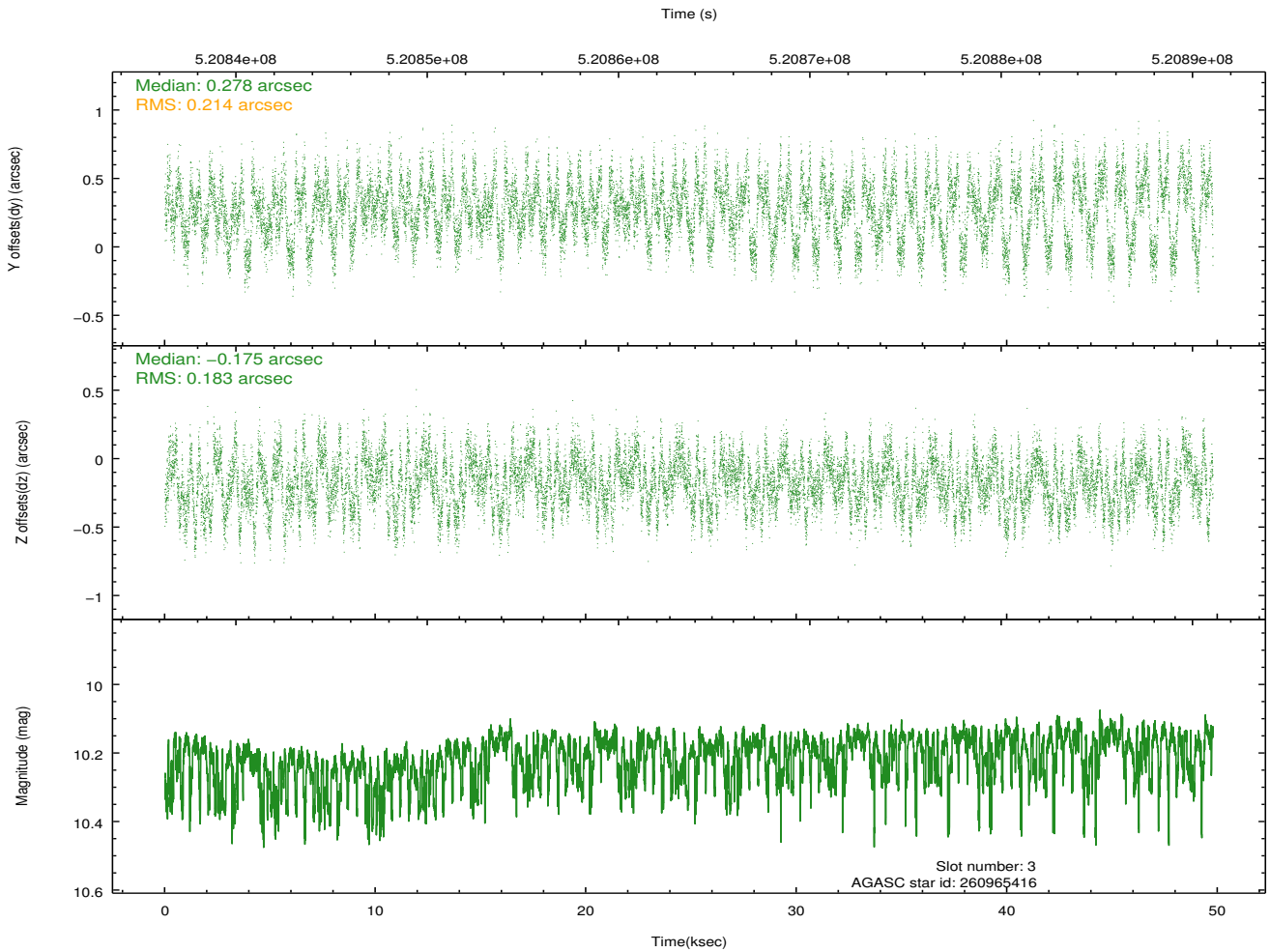
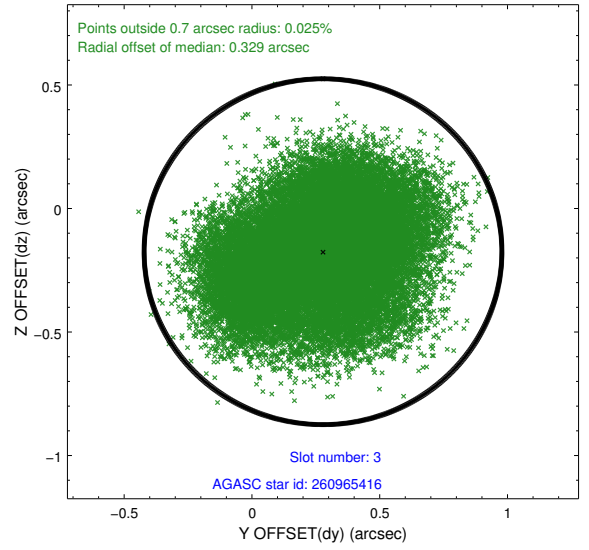
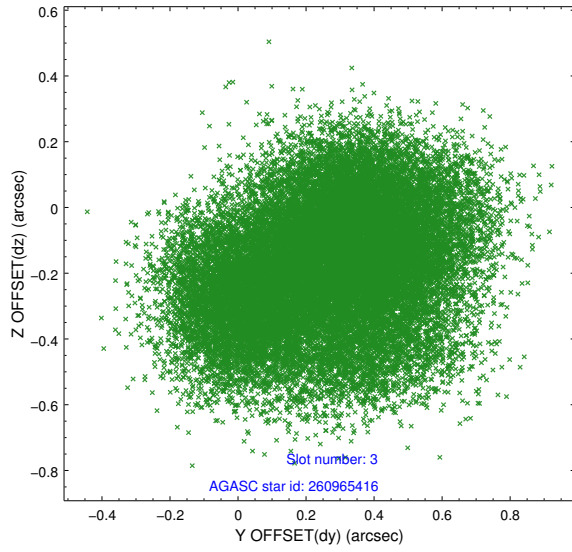
Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.99	12143	-0.145	-0.070	0.015	0.030	0.000000	0.000000	-775.73	-1804.28
1	FID		ACIS-S-4	7.06	12143	0.310	0.089	0.019	0.063	0.000000	0.000000	2138.00	104.40
2	FID		ACIS-S-5	7.10	12143	-0.198	-0.010	0.018	0.038	0.000000	0.000000	-1828.67	97.91
3	GUIDE	used	260965416	10.21	23528	0.278	-0.175	0.310	0.464	184.798422	29.200373	1992.79	1283.85
4	GUIDE	used	260966048	10.24	23959	-0.637	-0.138	0.384	0.604	185.169624	29.533581	488.75	2016.26
5	GUIDE	used	331368240	6.53	24287	-0.155	0.106	0.134	0.214	184.631757	30.249046	-1434.17	-378.77
6	GUIDE	used	331352880	9.64	24233	0.150	0.270	0.214	0.327	184.726920	30.468207	-2276.38	-344.14
7	GUIDE	used	260968144	10.22	24167	0.389	-0.072	0.217	0.399	184.193166	29.586641	1254.84	-949.85

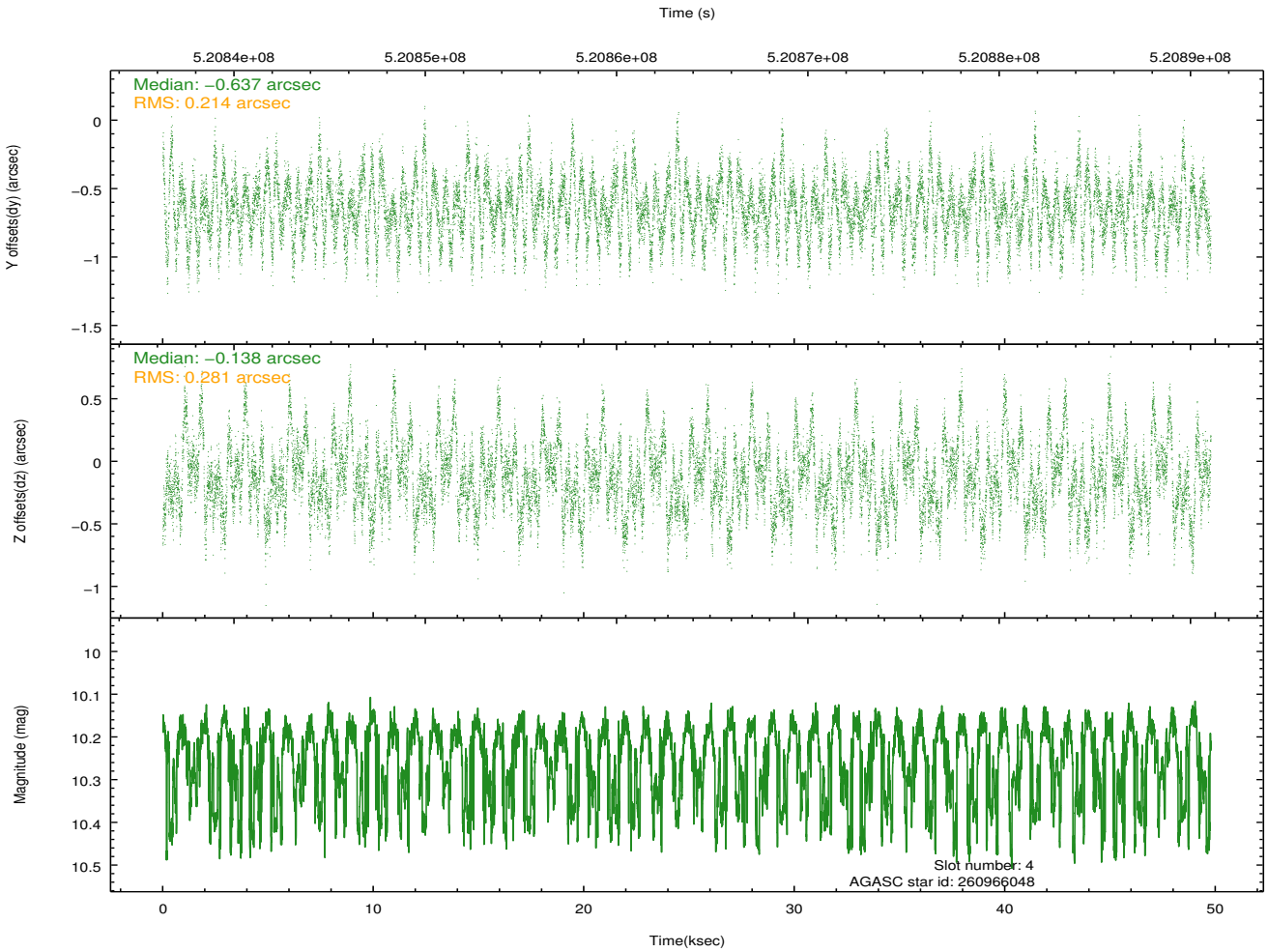
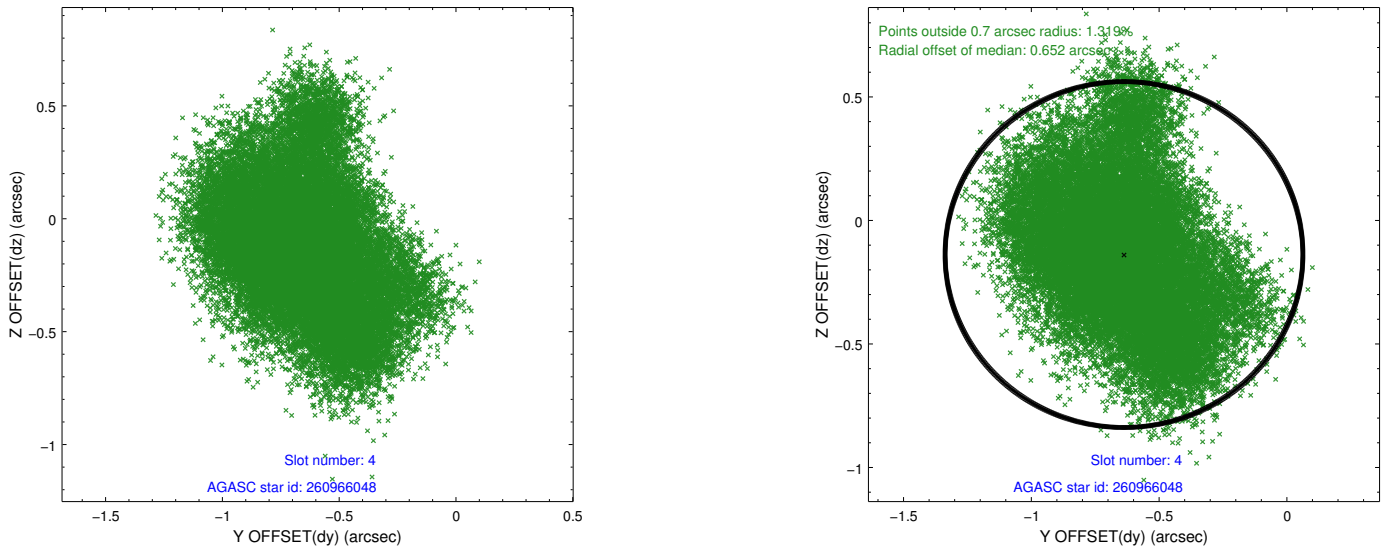
∞

2.4 Star Slots

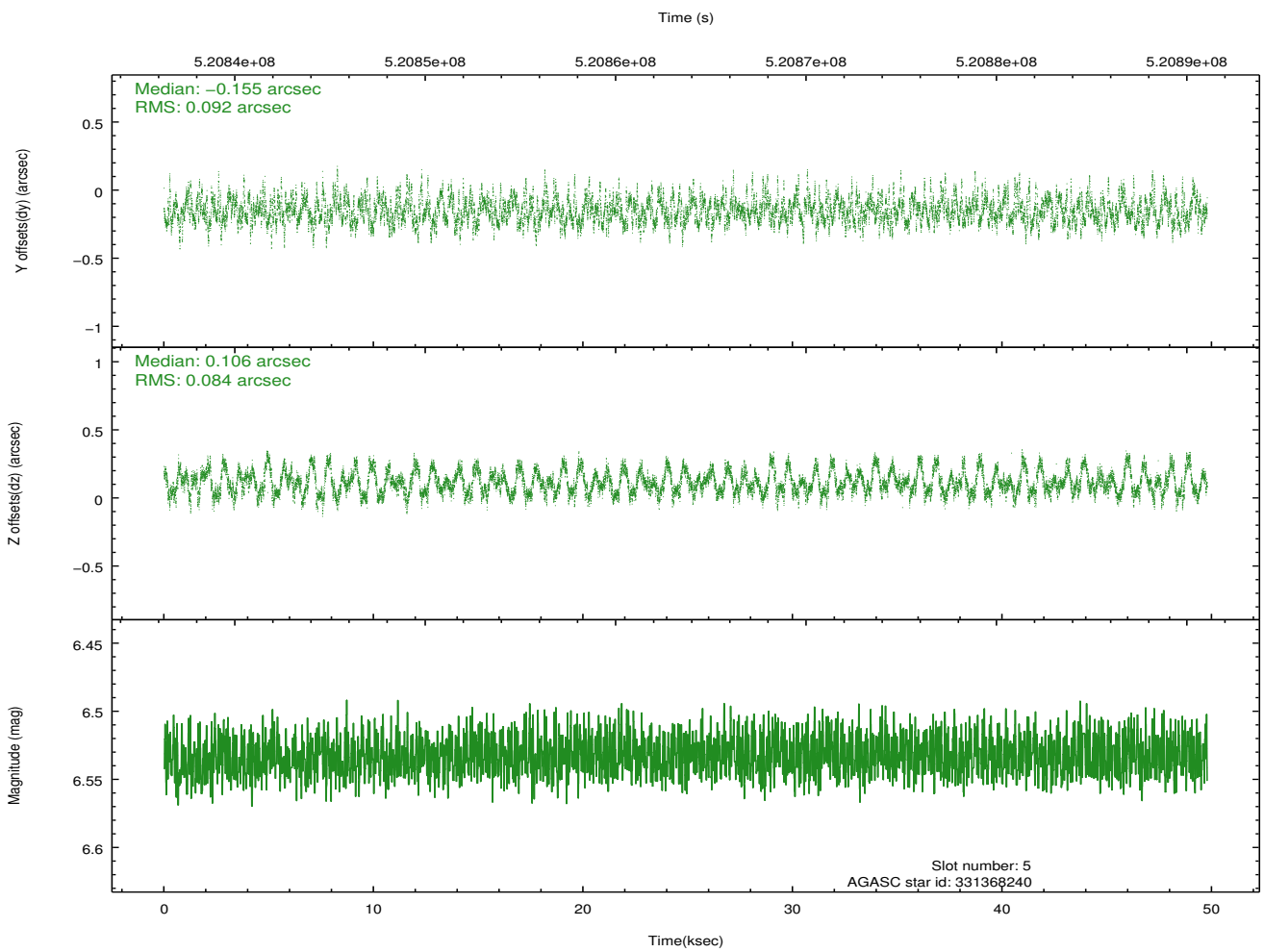
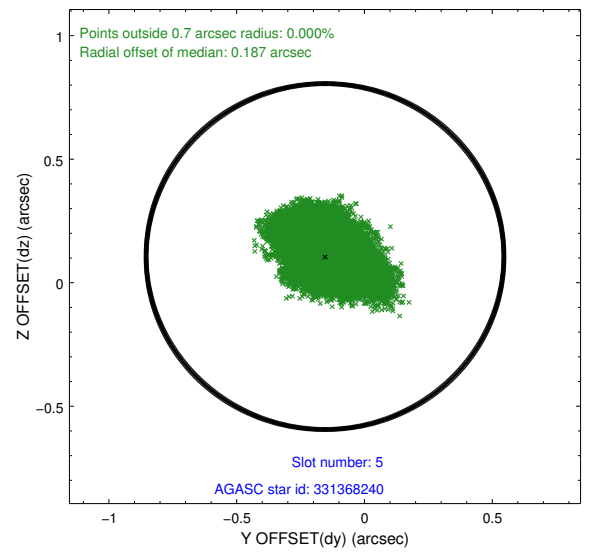
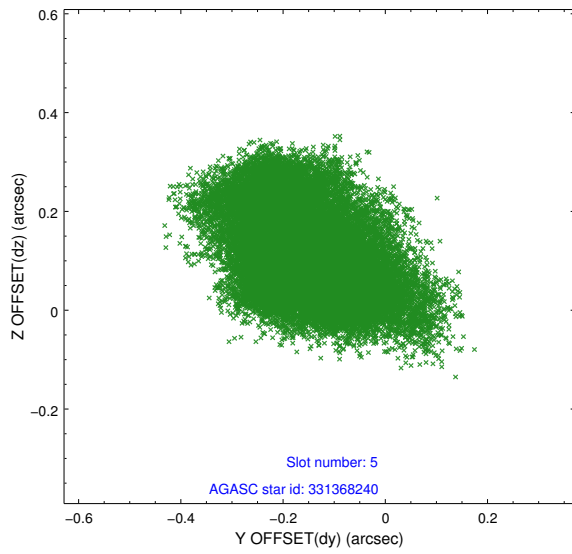
2.4.1 Slot 3



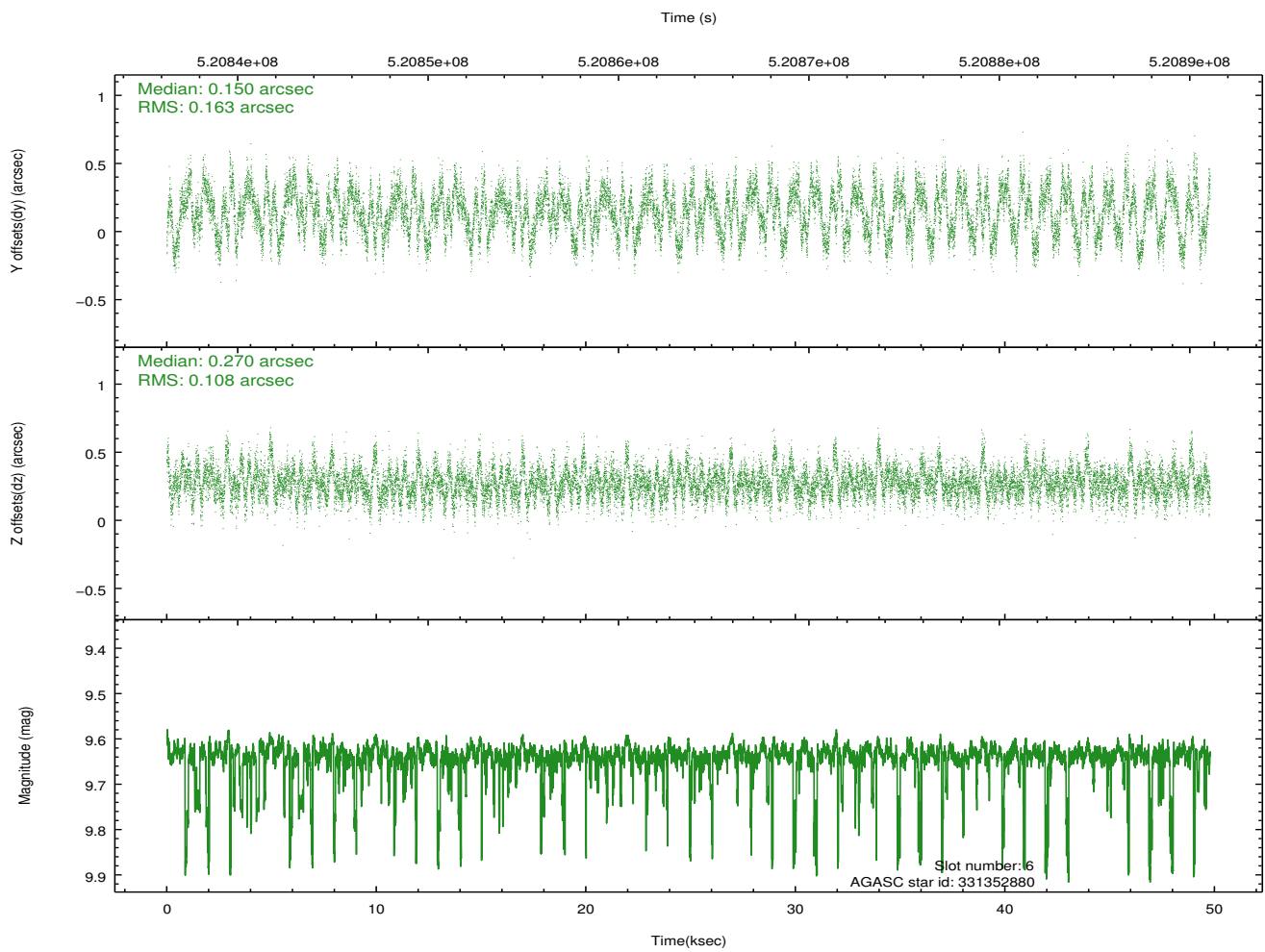
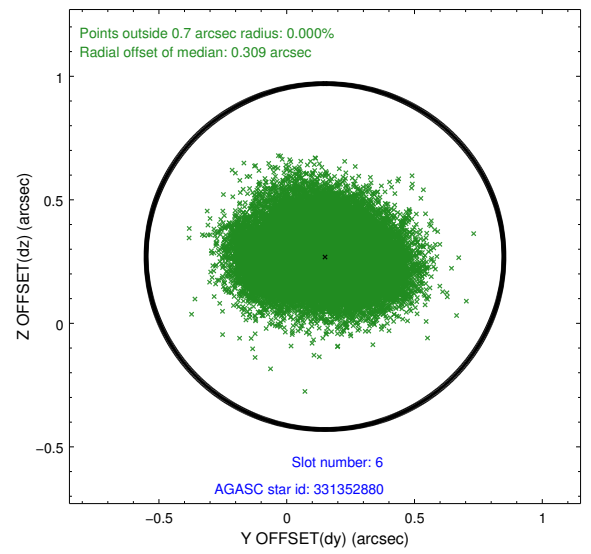
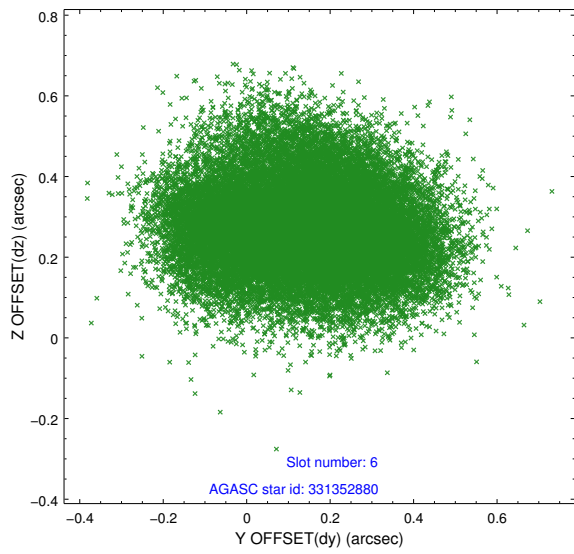
2.4.2 Slot 4



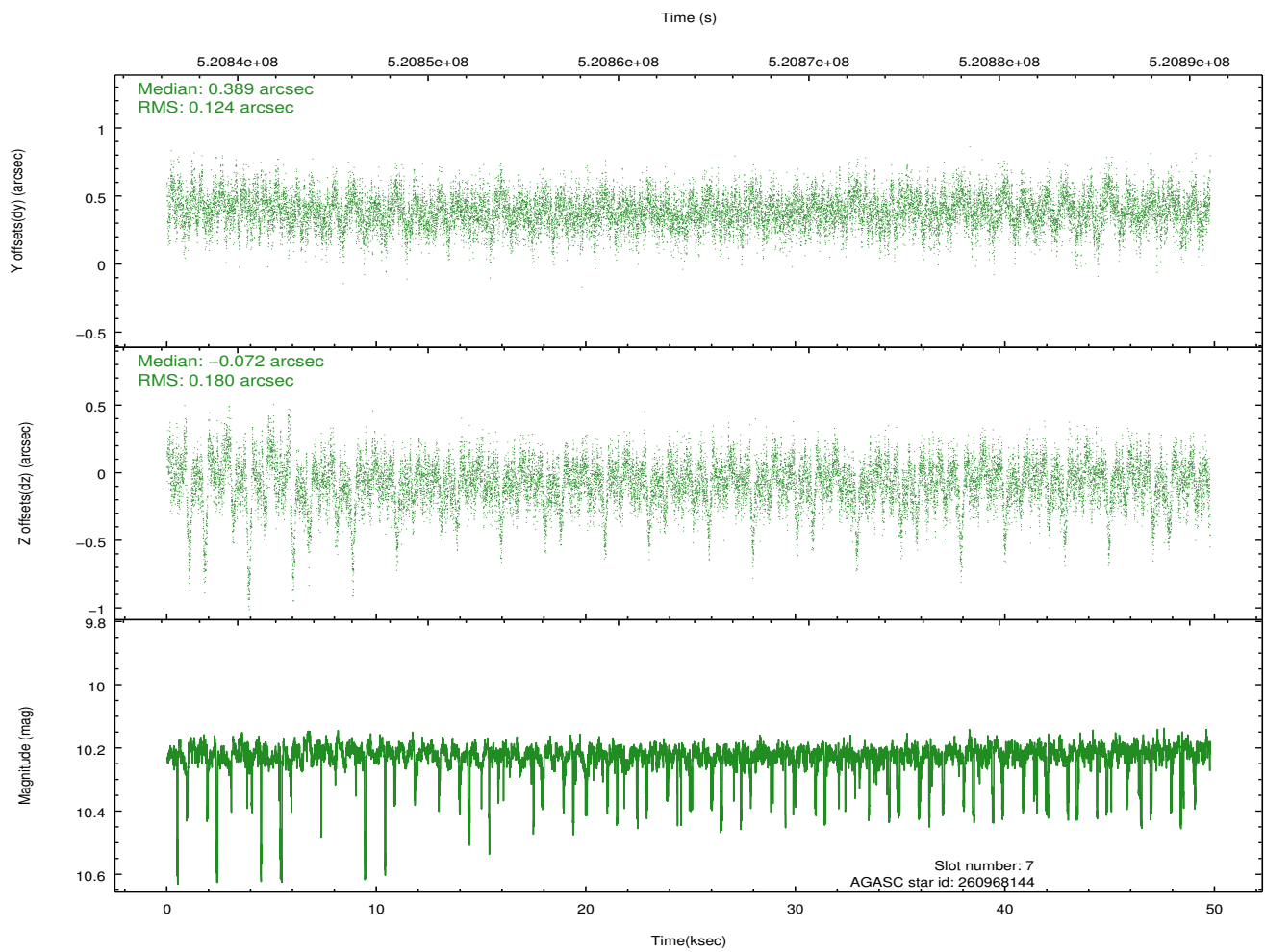
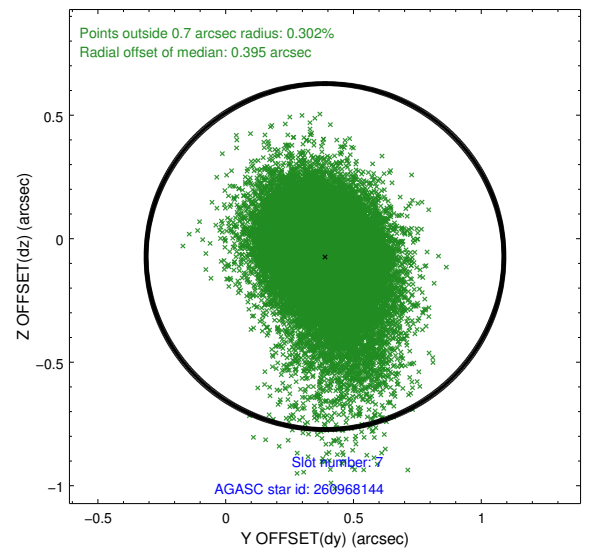
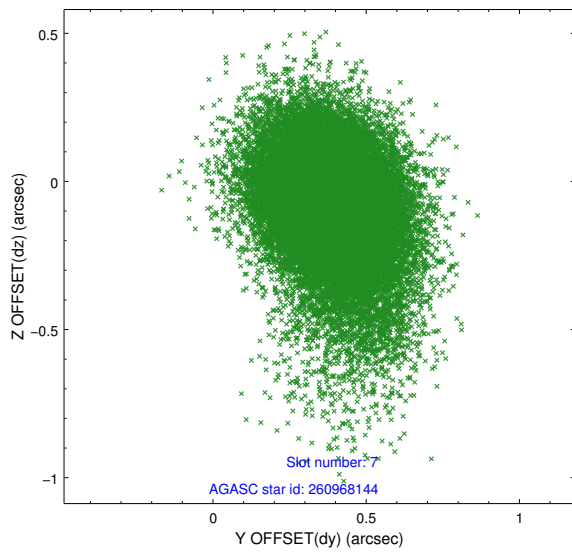
2.4.3 Slot 5



2.4.4 Slot 6

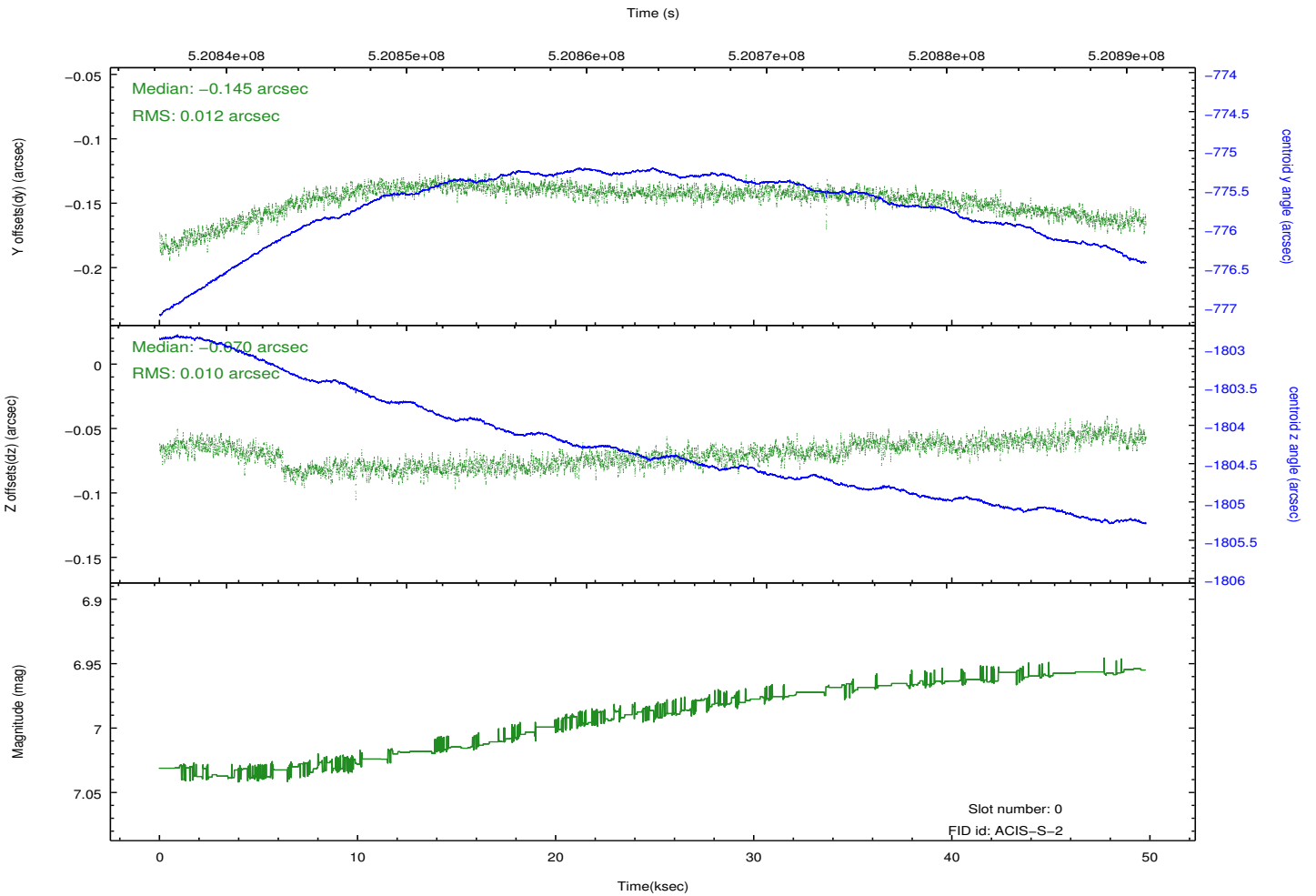
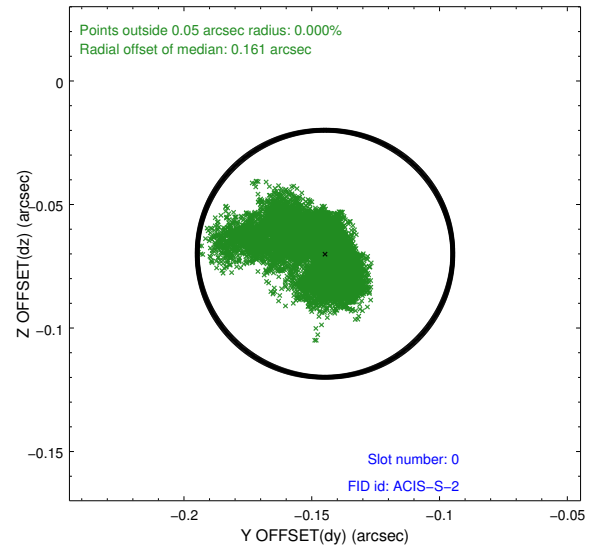
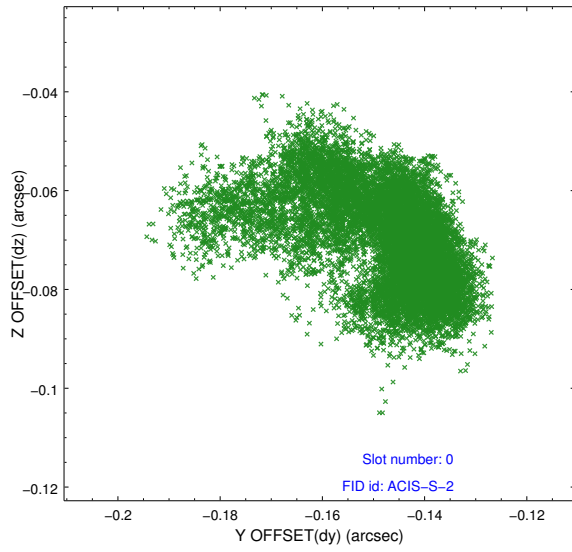


2.4.5 Slot 7

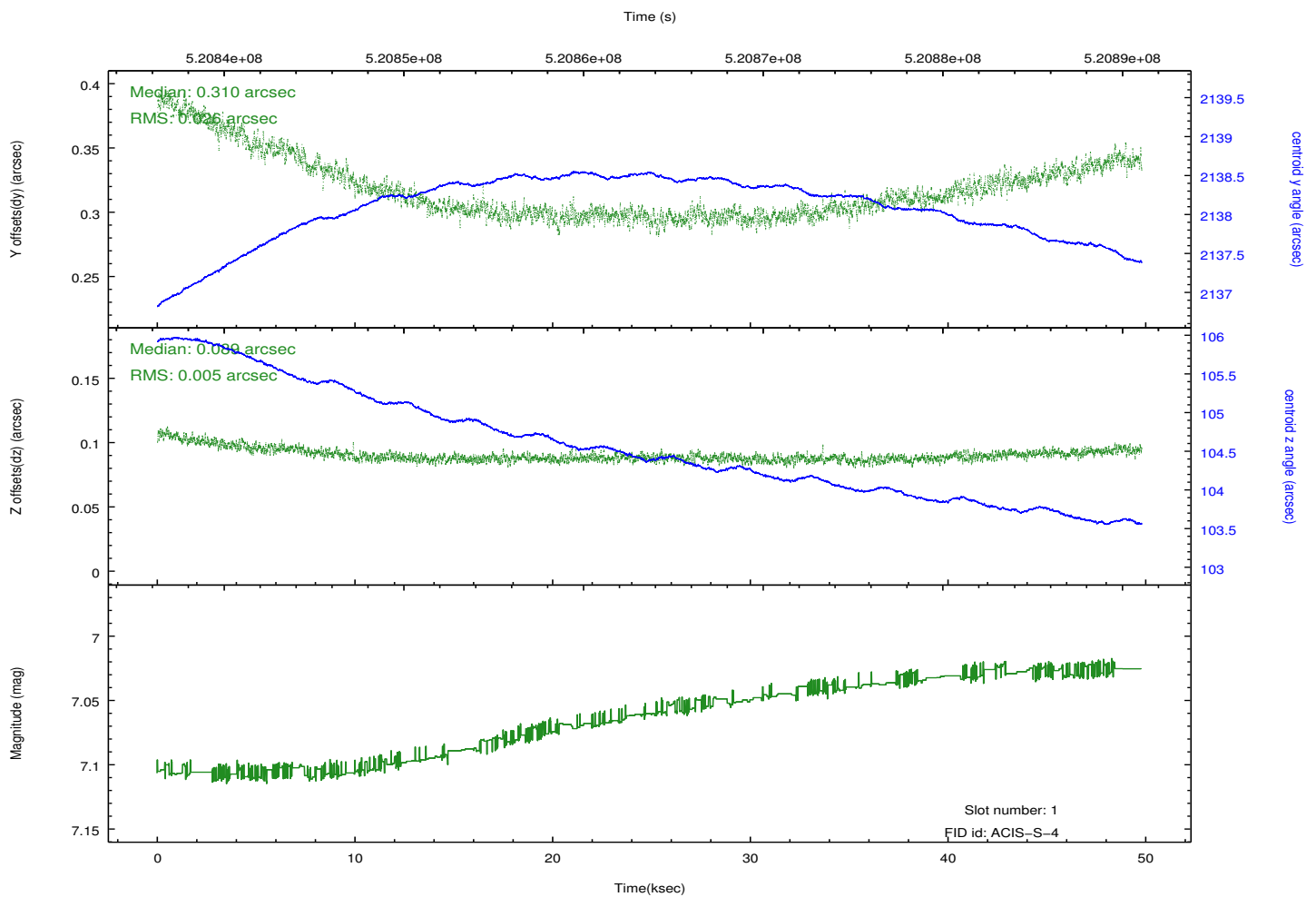
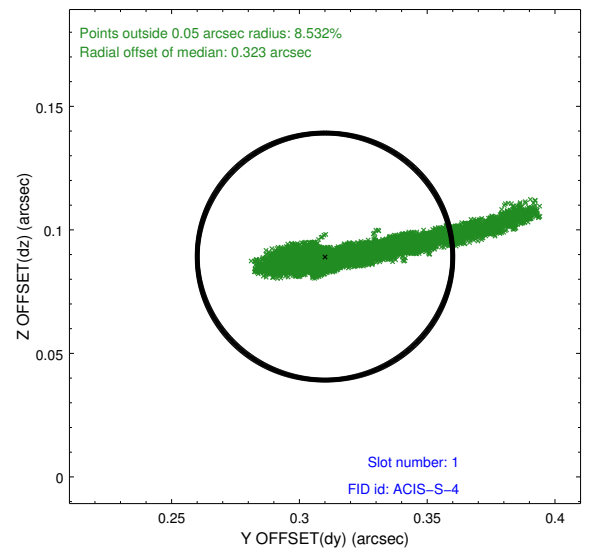
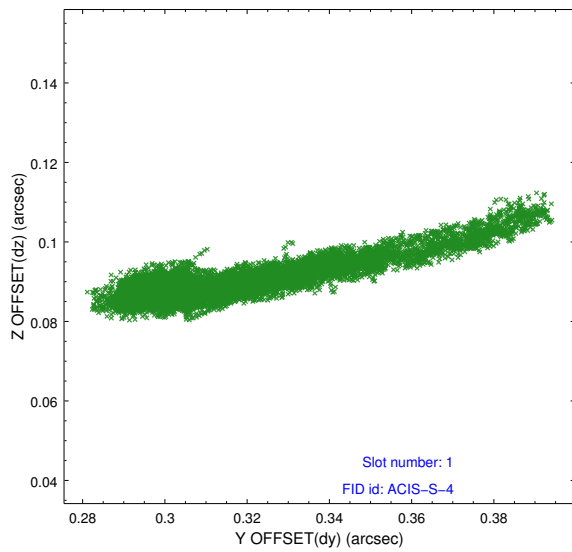


2.5 FID Slots

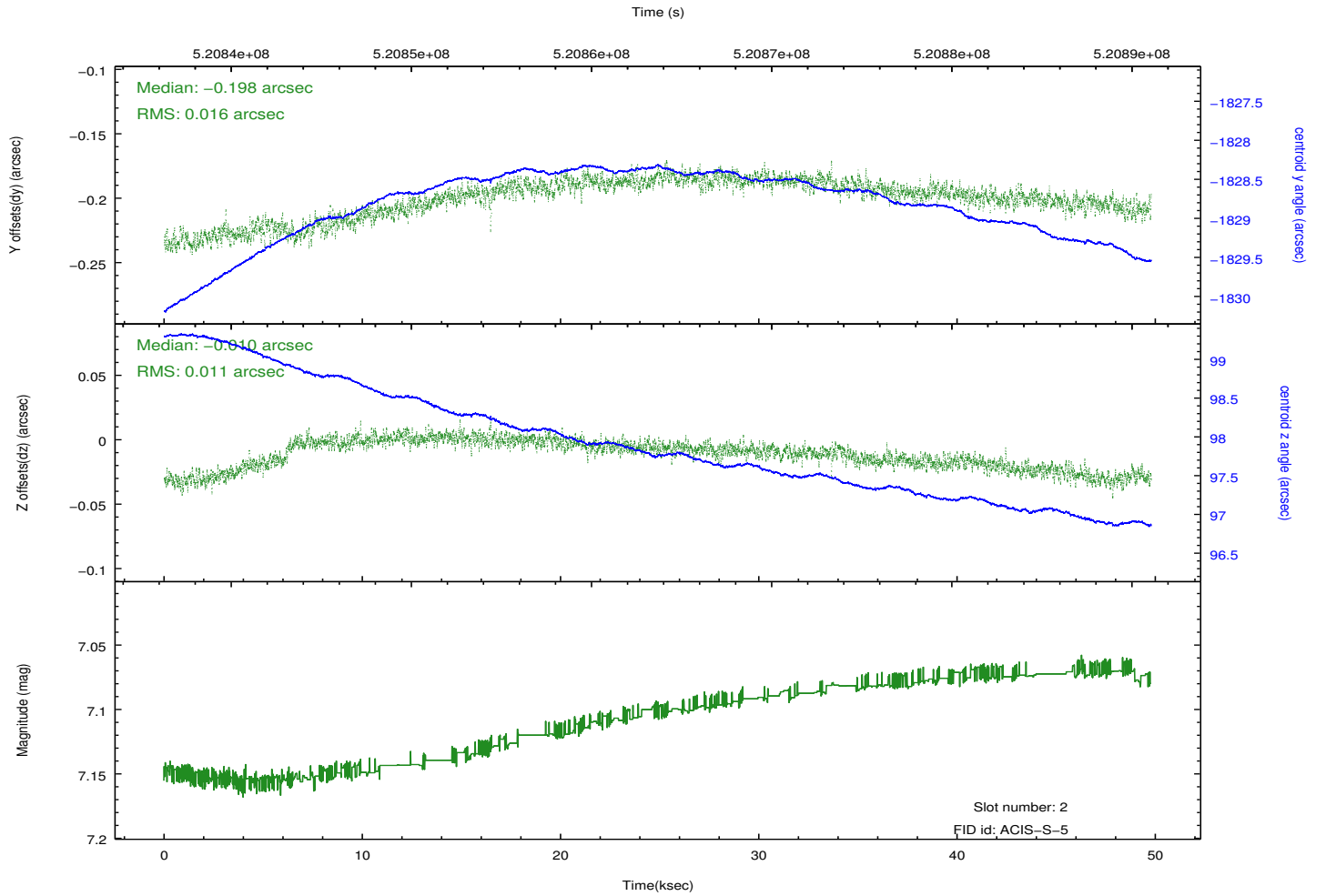
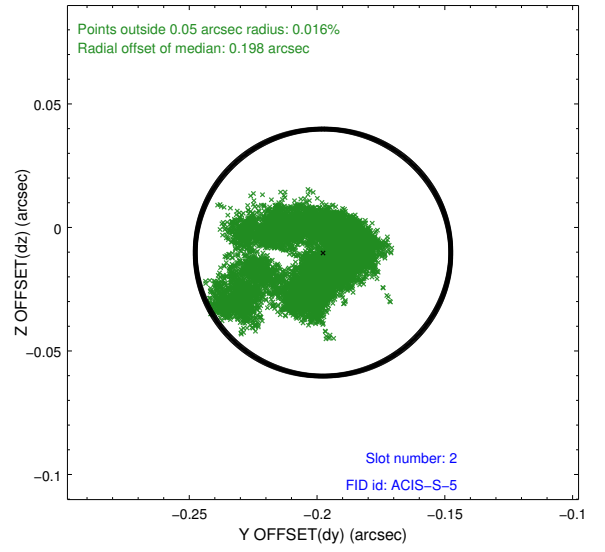
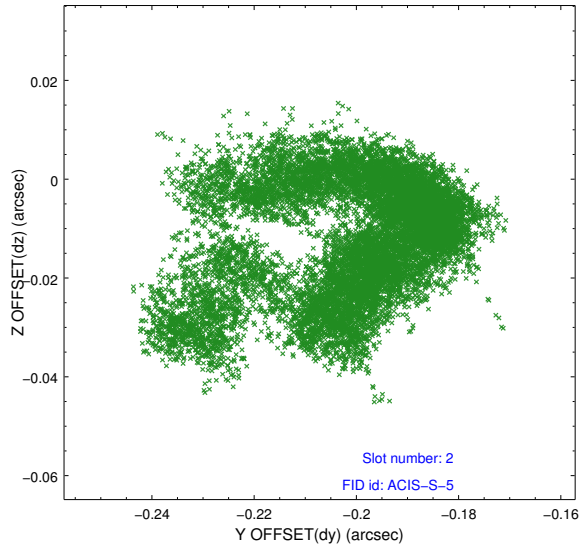
2.5.1 Slot 0



2.5.2 Slot 1

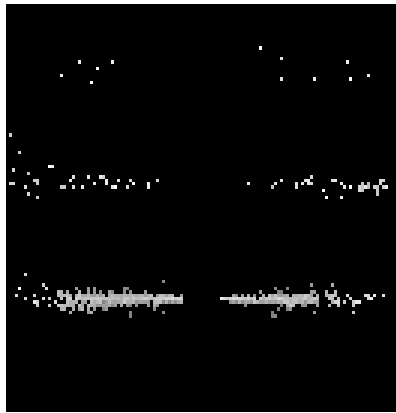


2.5.3 Slot 2

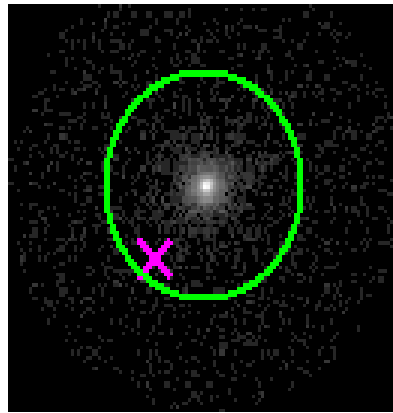


3 Gratings

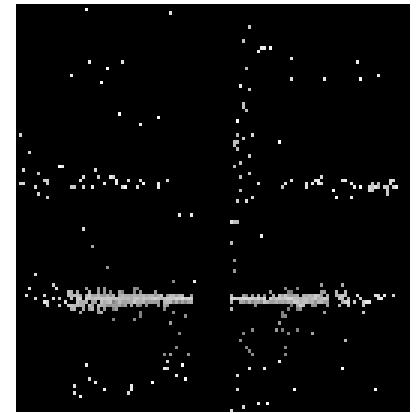
3.1 HEG Arm



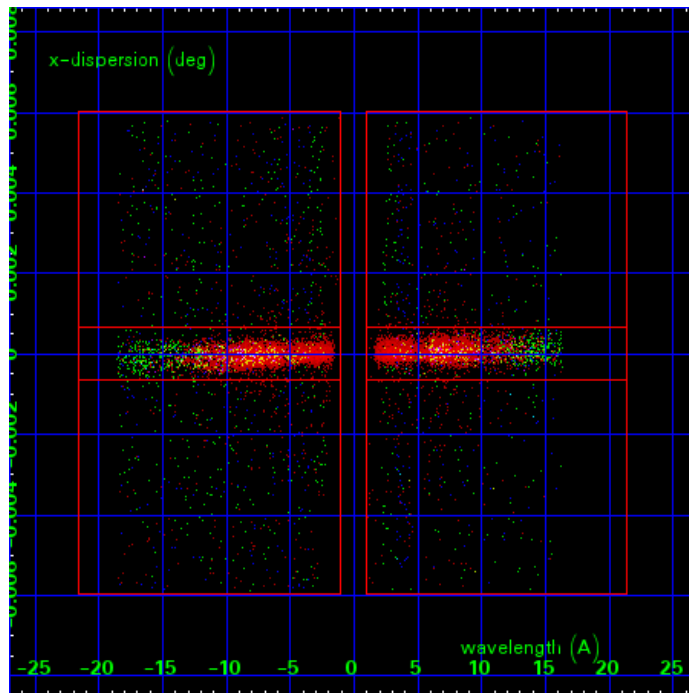
HEG Order Sort 123



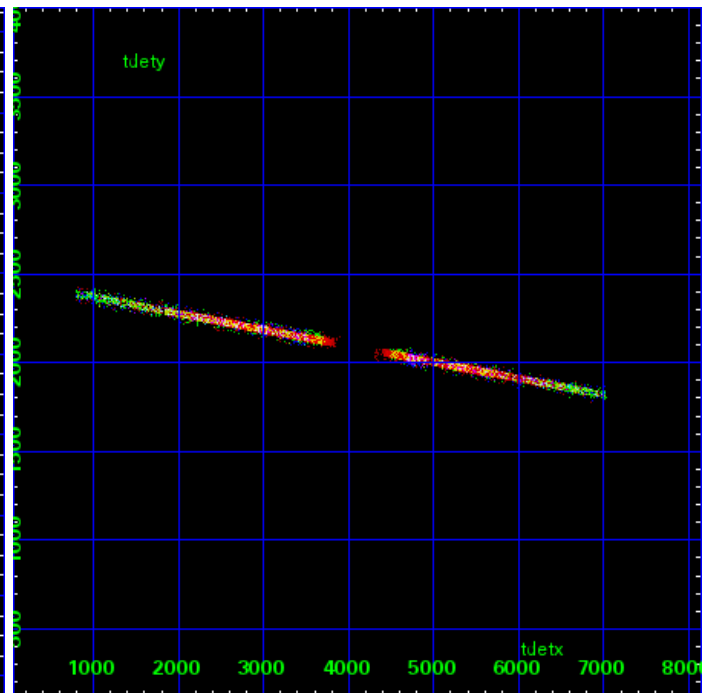
HEG Zero Order



HEG Order Sort ALL

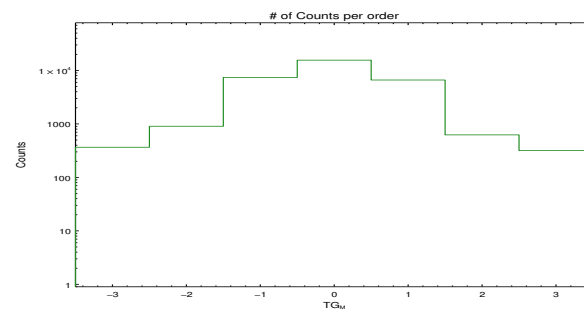


Spot Image HEG

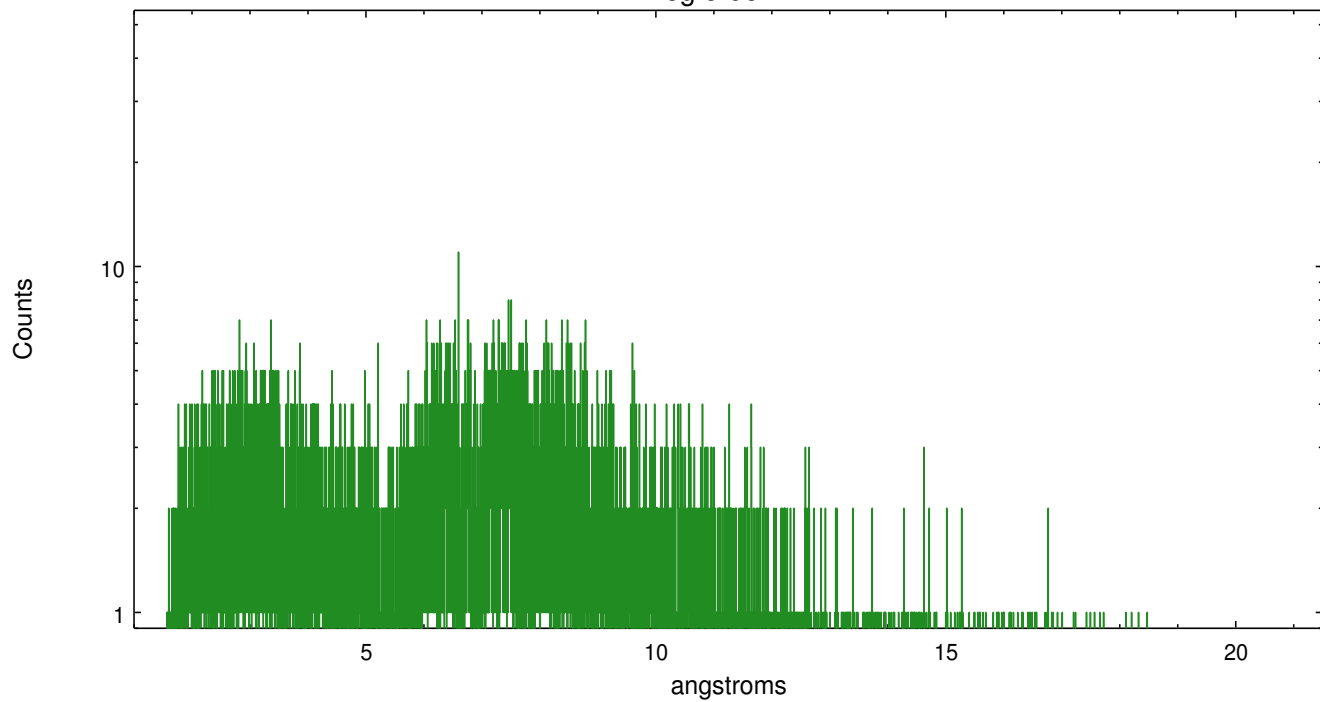


Full Detector HEG

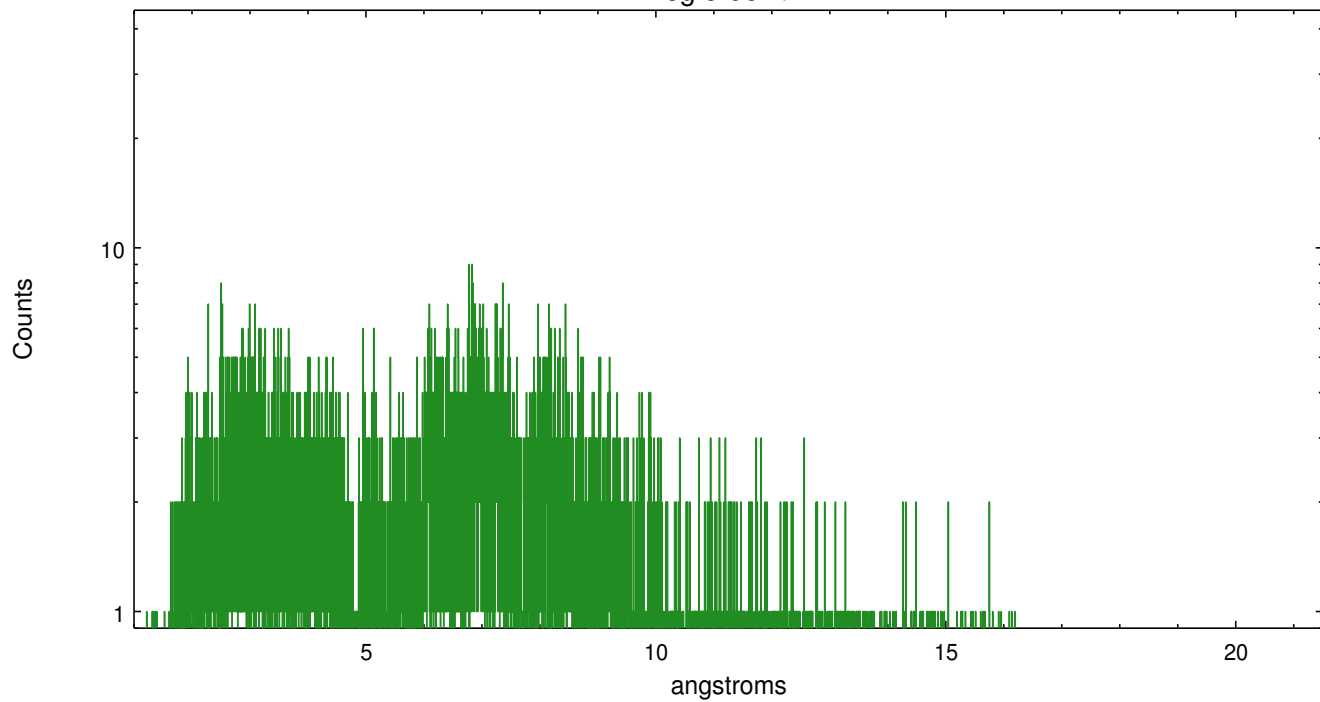
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	366	904	7413	15572	6625	624	317



heg order -1



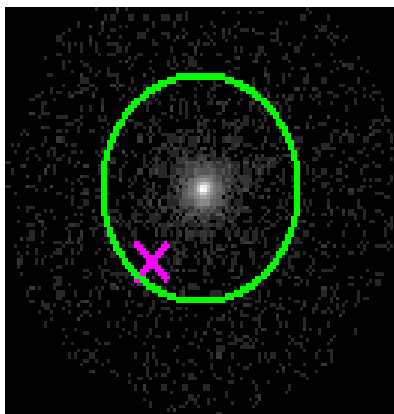
heg order +1



3.2 MEG Arm



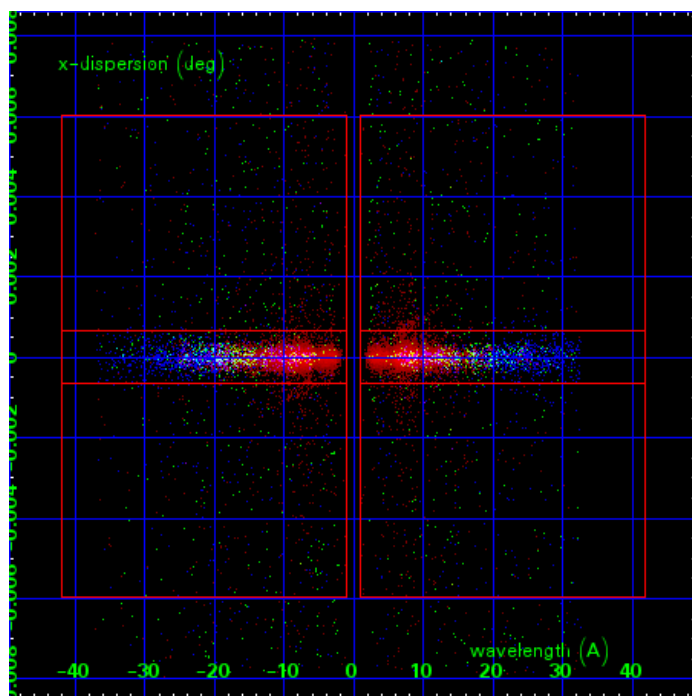
MEG Order Sort 123



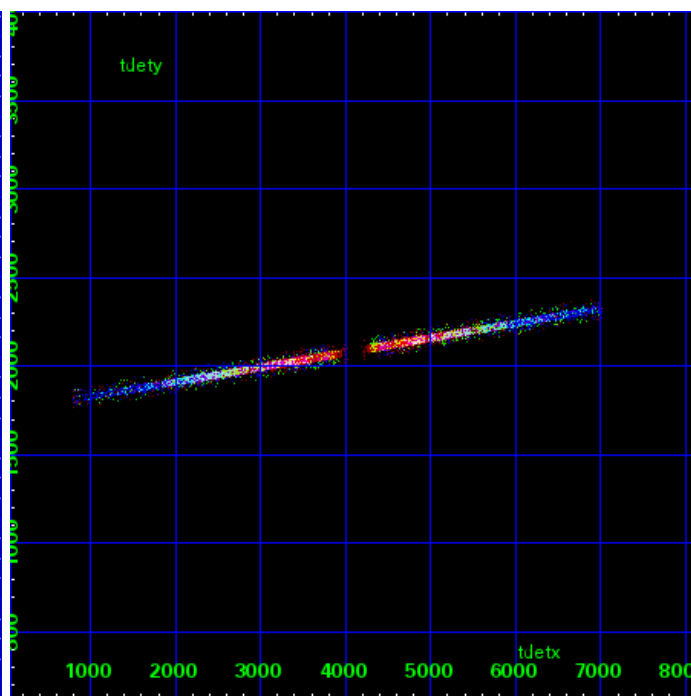
MEG Zero Order



MEG Order Sort ALL

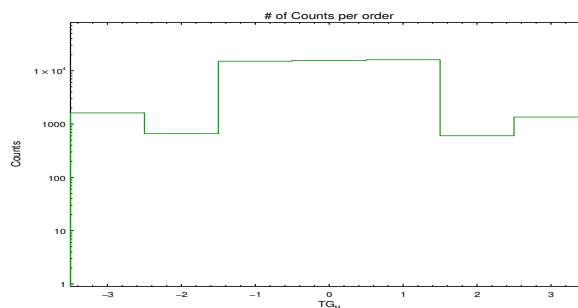


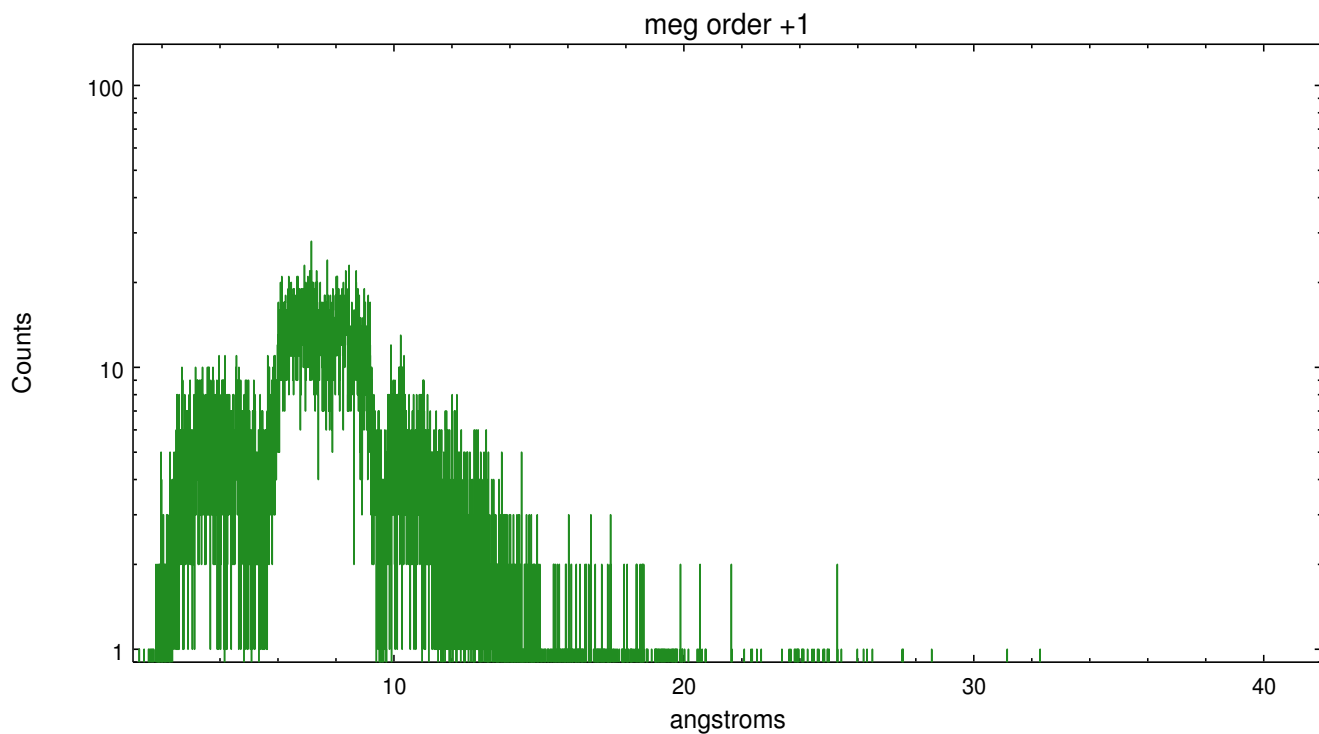
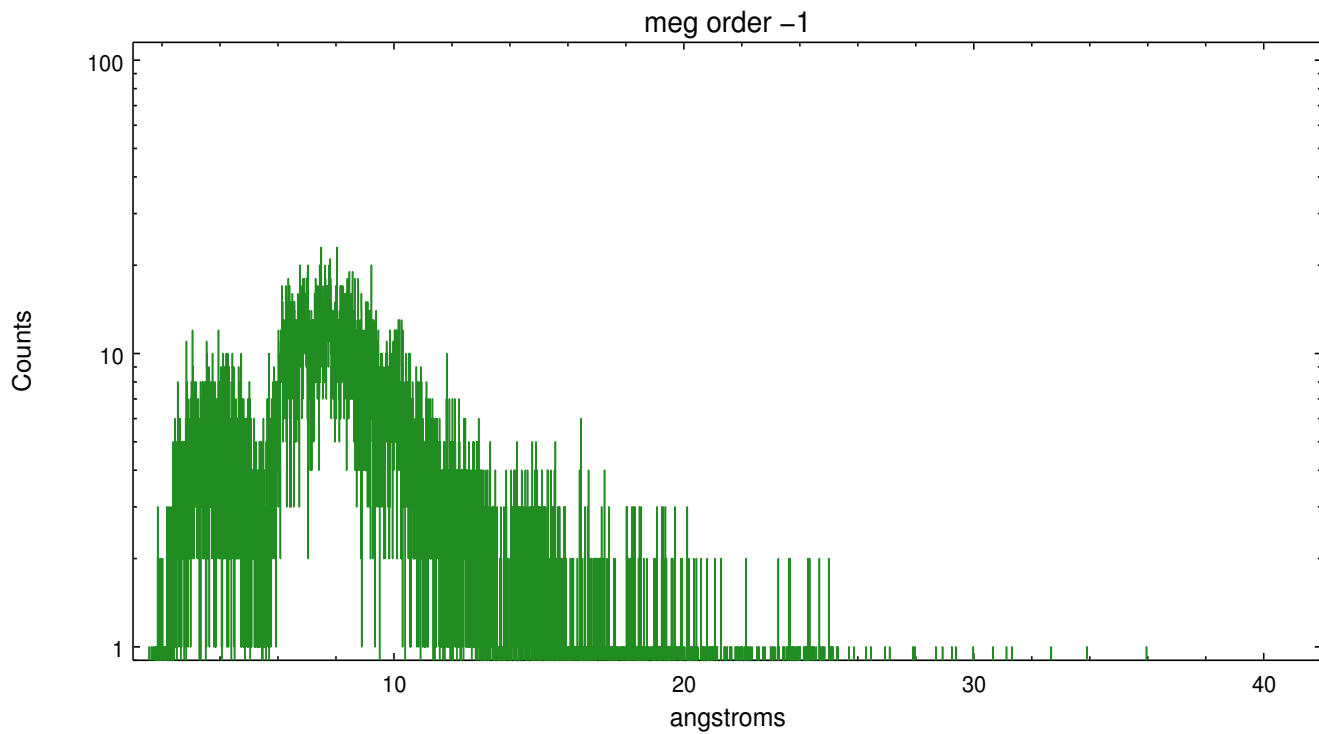
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1619	661	15089	15572	16127	604	1353





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2015.10.16
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	49.634749250174

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. 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.

====Star in slot 3 has an RMS deviation > 0.200000 arcsec;

Star in slot 4 has an RMS deviation > 0.200000 arcsec; Aspect review indicates these deviations are acceptable.