

V&V Reference Report

L2 ASCDS Version : 10.2.2

Observation 16431 - L2 Version 2
Chandra X-Ray Center

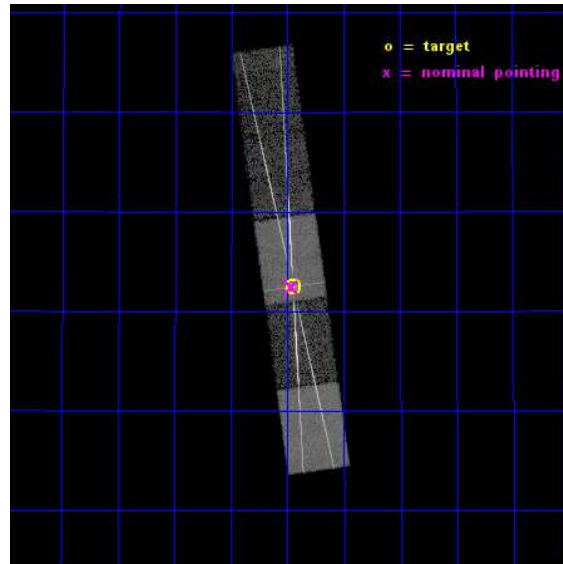
L2 Processing Date : Dec 12 2014

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1 Front

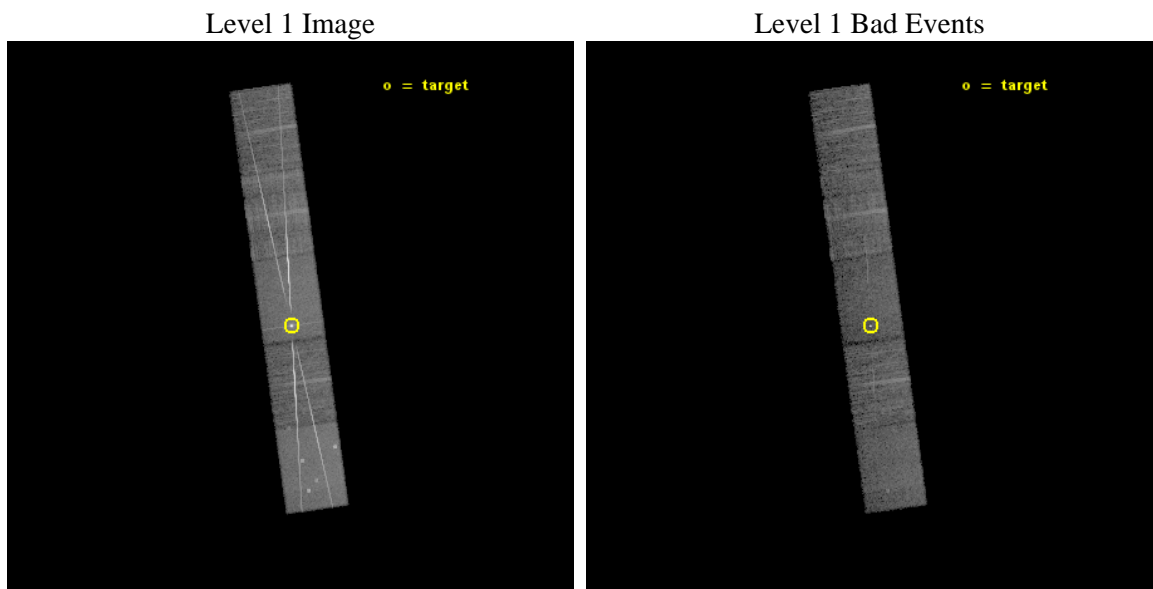
seq_num	790271	Sequence number
obs_id	16431	Observation id
title	AO-15 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11630744573	Nominal RA [deg]
dec_nom	38.207106543448	Nominal Dec [deg]
roll_nom	261.93052420213	Nominal Roll [deg]
revision	2	Processing version of data
ontime	15050.399850488	Sum of GTIs [s]
livetime	14797.364910518	Livetime [s]
ontime5	15050.399850488	Sum of GTIs [s]
ontime6	15047.95884043	Sum of GTIs [s]
ontime7	15050.399850488	Sum of GTIs [s]
ontime8	15050.399850488	Sum of GTIs [s]
ontime9	15050.399850488	Sum of GTIs [s]
l2events	220976	Number of level 2 events



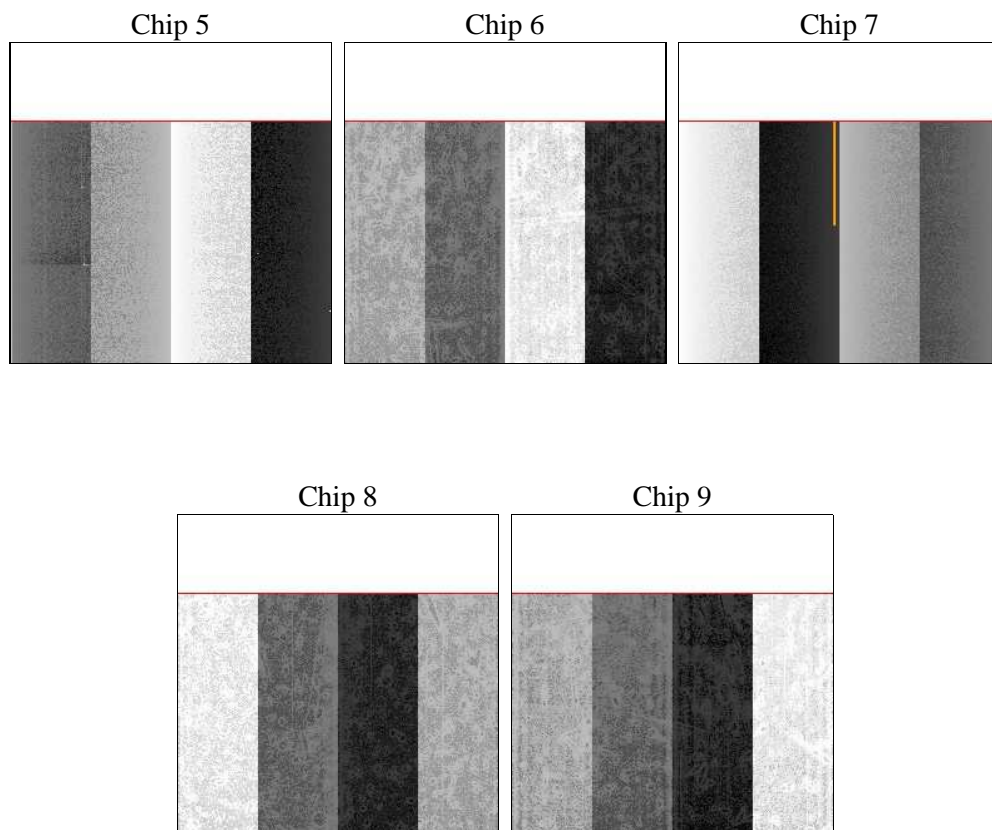
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	15050.399850488	Sum of GTIs [s]
caldsver	4.6.4	 	ontime5	15050.399850488	Sum of GTIs [s]
date	2014-12-12T06:43:57	Date and time of file creation	ontime6	15047.95884043	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	15050.399850488	Sum of GTIs [s]
			ontime8	15050.399850488	Sum of GTIs [s]
			ontime9	15050.399850488	Sum of GTIs [s]
			l1events	480849	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4110.86, 4109.48)	src1a sky pixel position
					src1a sky pixel position via

2.1.4 Events

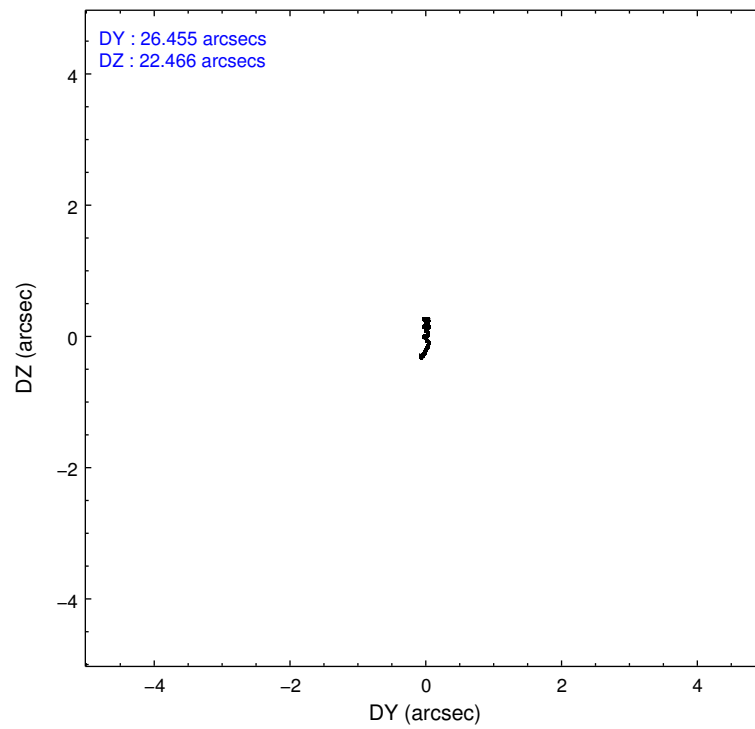
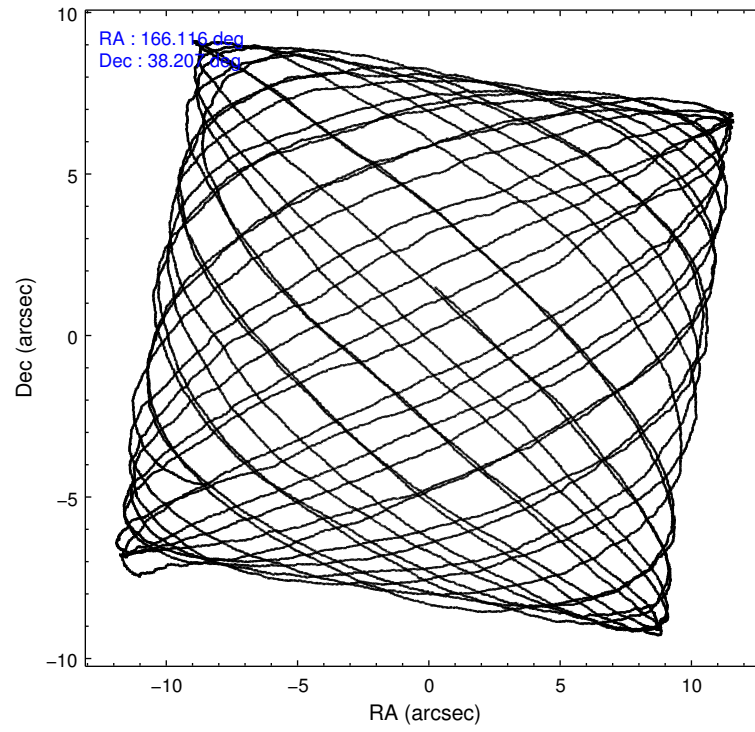
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	107197	99514	119314	96314	58510
rejected events	45145	47702	42429	51512	46317
rejected %	42%	47%	35%	53%	79%

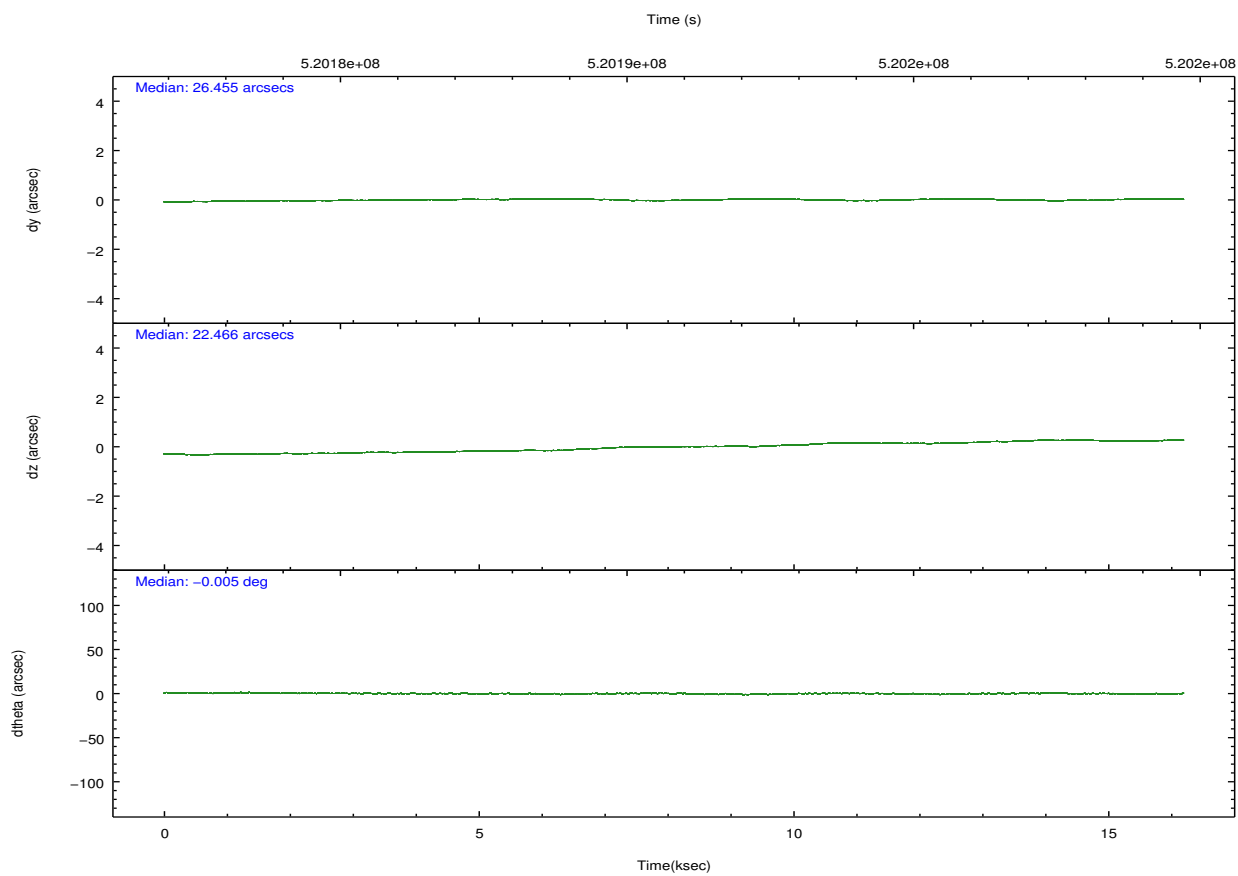
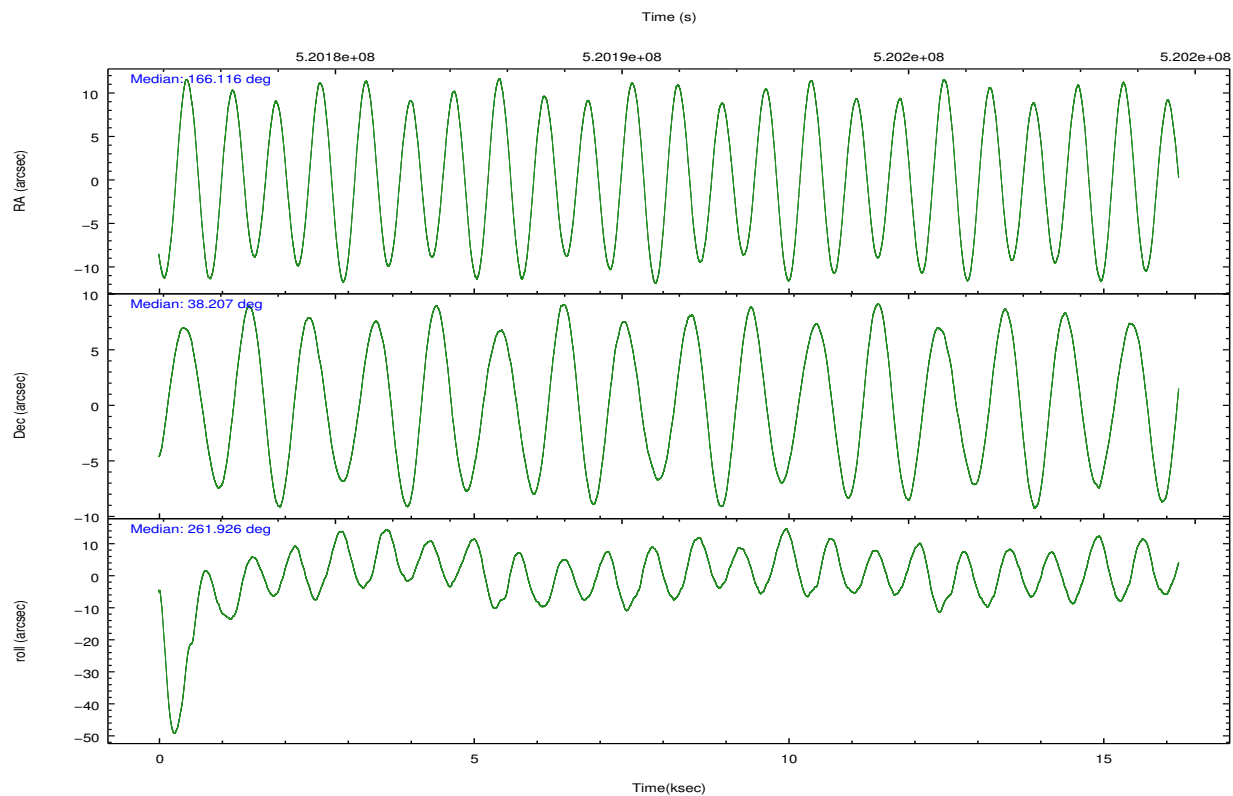
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	13131	38330	14532	26534	6843
	12%	38%	12%	27%	11%
grade 1 events	152	227	301	109	35
	0%	0%	0%	0%	0%
grade 2 events	17617	6542	18296	7015	1981
	16%	6%	15%	7%	3%
grade 3 events	3394	2246	7989	2738	893
	3%	2%	6%	2%	1%
grade 4 events	3190	2153	7946	2580	850
	2%	2%	6%	2%	1%
grade 5 events	6943	2867	8399	3952	3014
	6%	2%	7%	4%	5%
grade 6 events	24728	2548	28131	5970	1629
	23%	2%	23%	6%	2%
grade 7 events	38042	44601	33720	47416	43265
	35%	44%	28%	49%	73%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-56789	ACIS-56789	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	166.102875	166.1163074457279	CCD I2 on	N	N
[deg] Pointing Dec	38.232339	38.20710654344797	CCD I3 on	N	N
[deg] Pointing Roll	261.782215	261.9305242021321	CCD S0 on	N	N
[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)	520183909.184000	520182383.94785	CCD S5 on	O1	Y
Observation start date	2014-06-26T15:30:42	2014-06-26T15:06:23	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	520198909.184000	520200107.22383	On-chip summing requested	N	N
Observation end date	2014-06-26T19:40:42	2014-06-26T20:01:47	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	2.4

2.3 Aspect



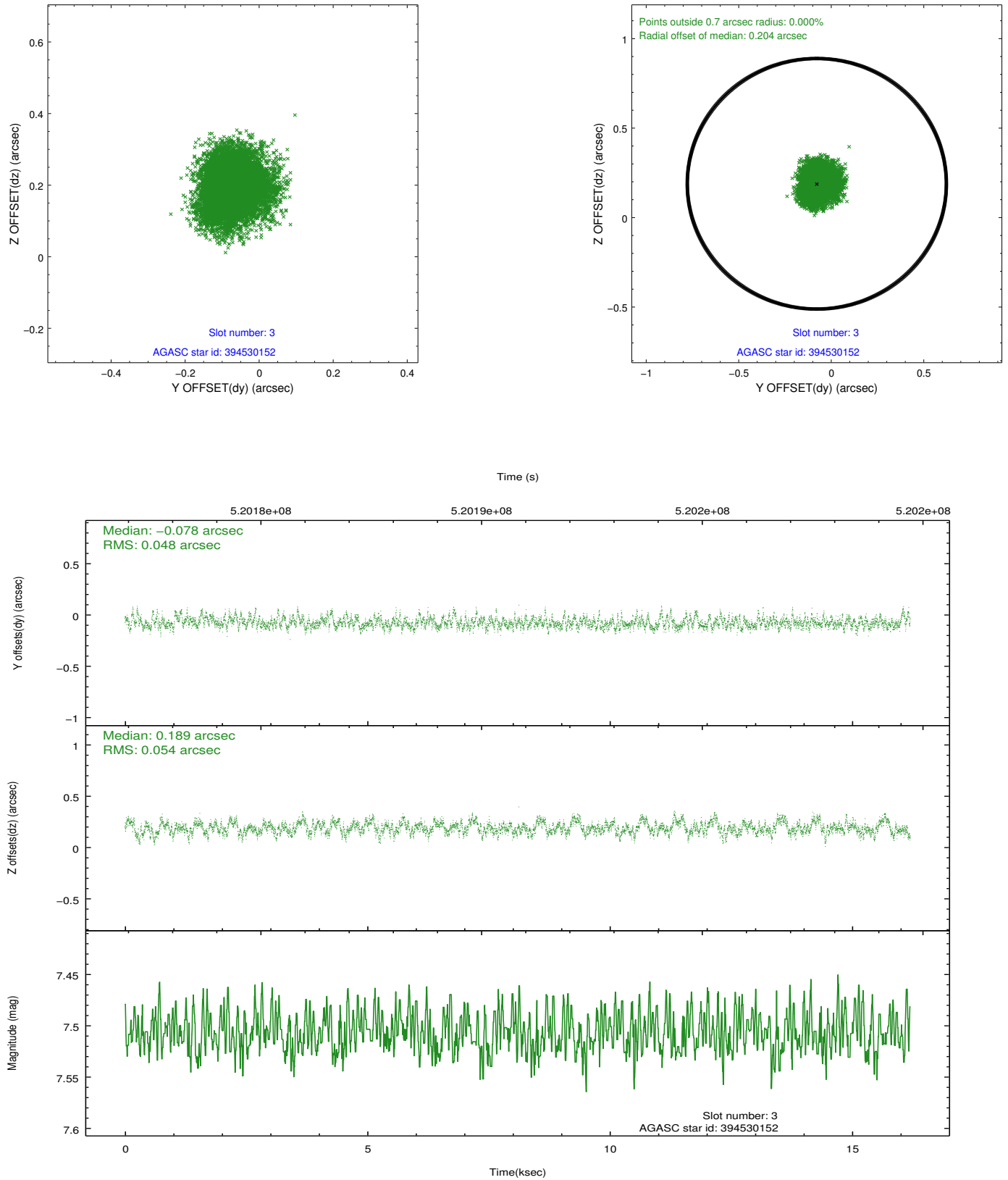


Slot Statistics

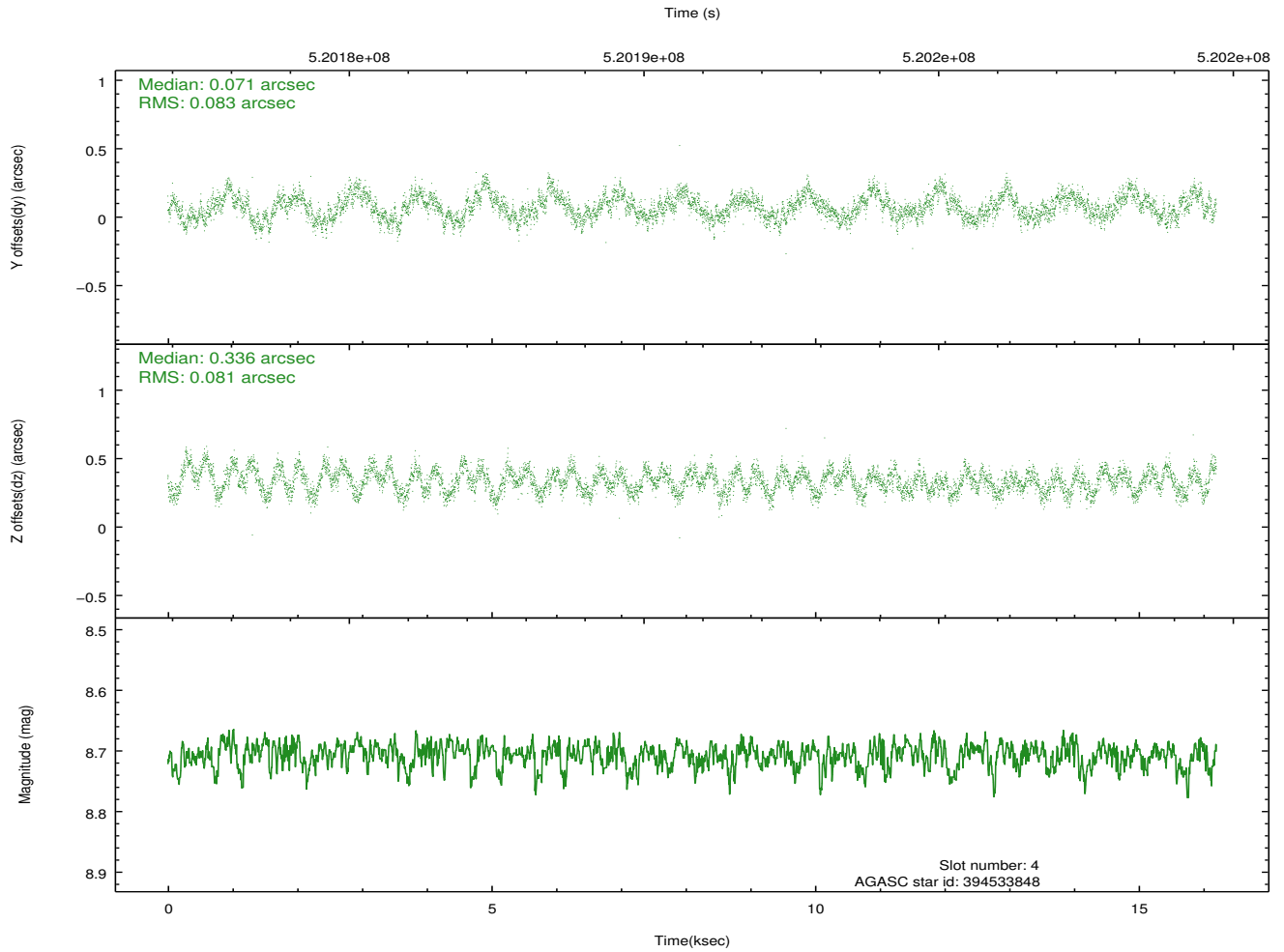
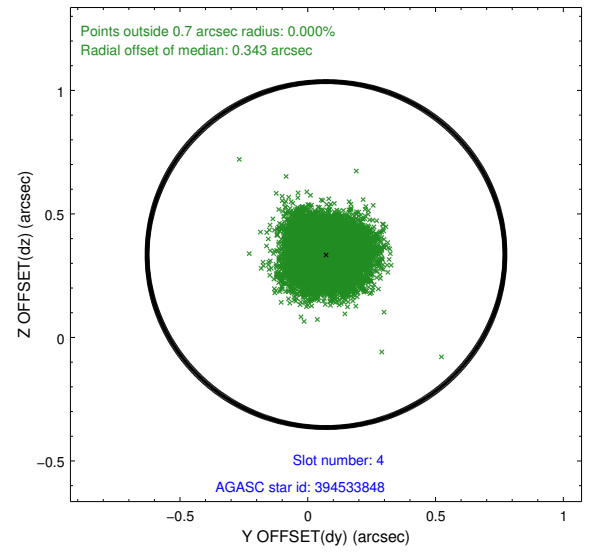
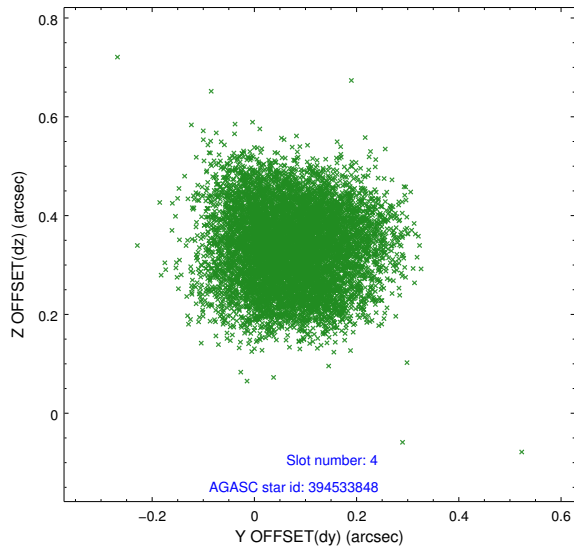
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.88	3950	-0.206	0.002	0.008	0.012	0.000000	0.000000	-779.69	-1806.17
1	FID		ACIS-S-4	6.95	3951	0.314	0.099	0.008	0.015	0.000000	0.000000	2133.94	102.16
2	FID		ACIS-S-5	6.99	3951	-0.139	-0.092	0.009	0.017	0.000000	0.000000	-1832.17	95.86
3	GUIDE	used	394530152	7.51	7902	-0.078	0.189	0.077	0.124	166.075805	38.868252	-2254.71	-402.14
4	GUIDE	used	394533848	8.71	7898	0.071	0.336	0.126	0.191	166.382906	38.276007	-270.07	756.14
5	GUIDE	used	394543960	9.79	7891	0.156	0.261	0.178	0.288	165.802757	37.787371	1706.58	-615.64
6	GUIDE	used	394546712	6.61	7901	-0.247	0.272	0.067	0.114	166.451462	38.394357	-719.12	889.09
7	GUIDE	used	394546720	6.44	7902	0.094	-1.055	0.095	0.149	166.130115	38.241361	-42.89	70.83

2.4 Star Slots

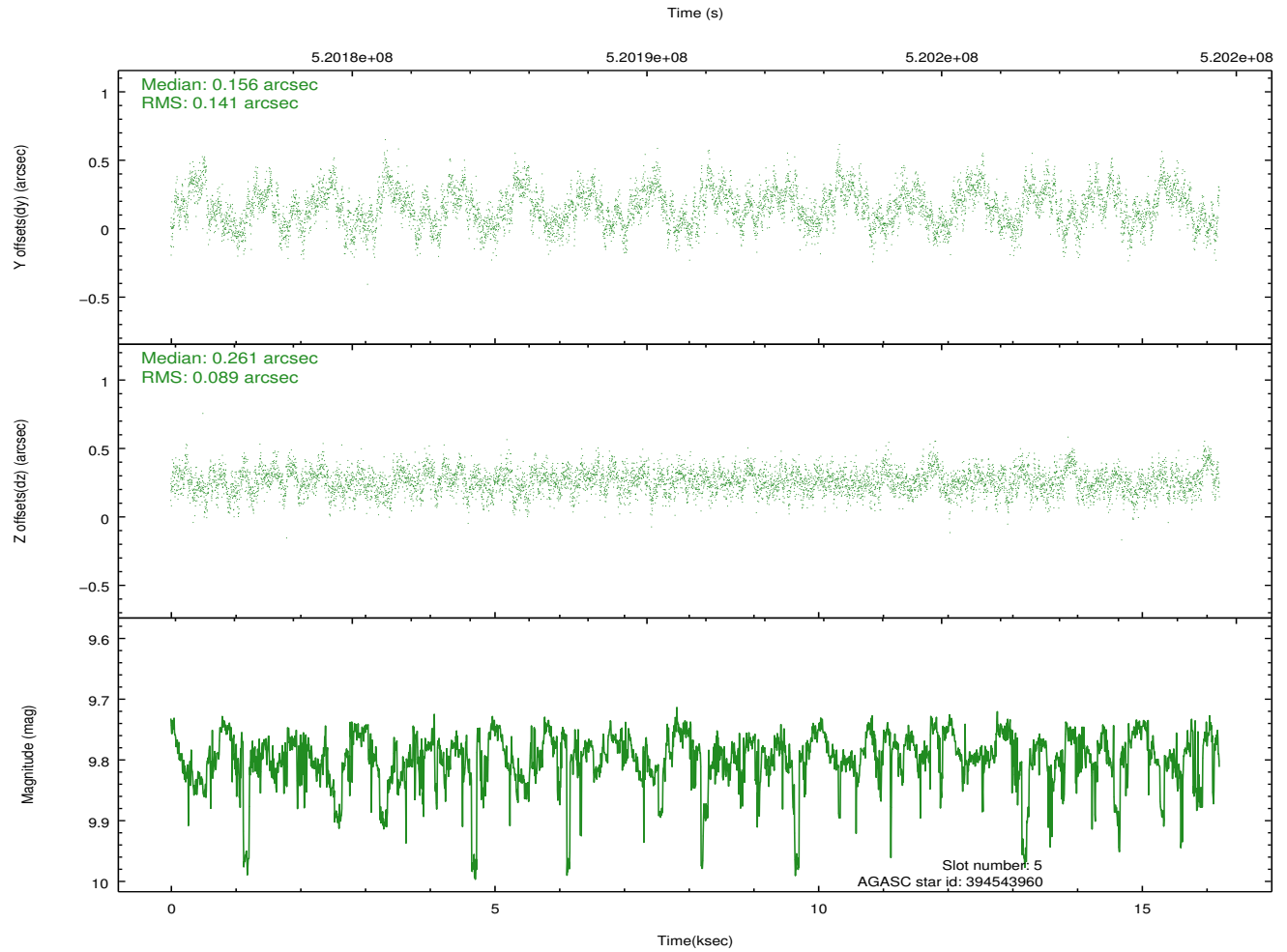
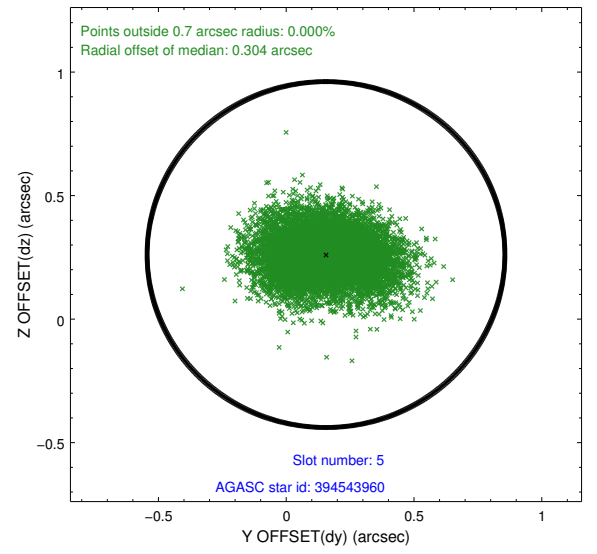
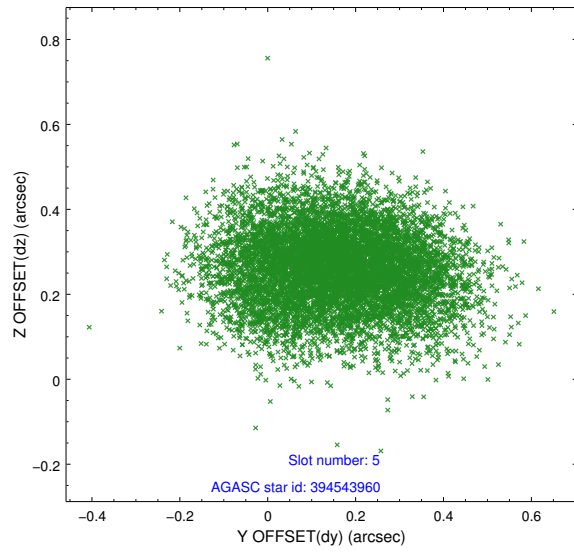
2.4.1 Slot 3



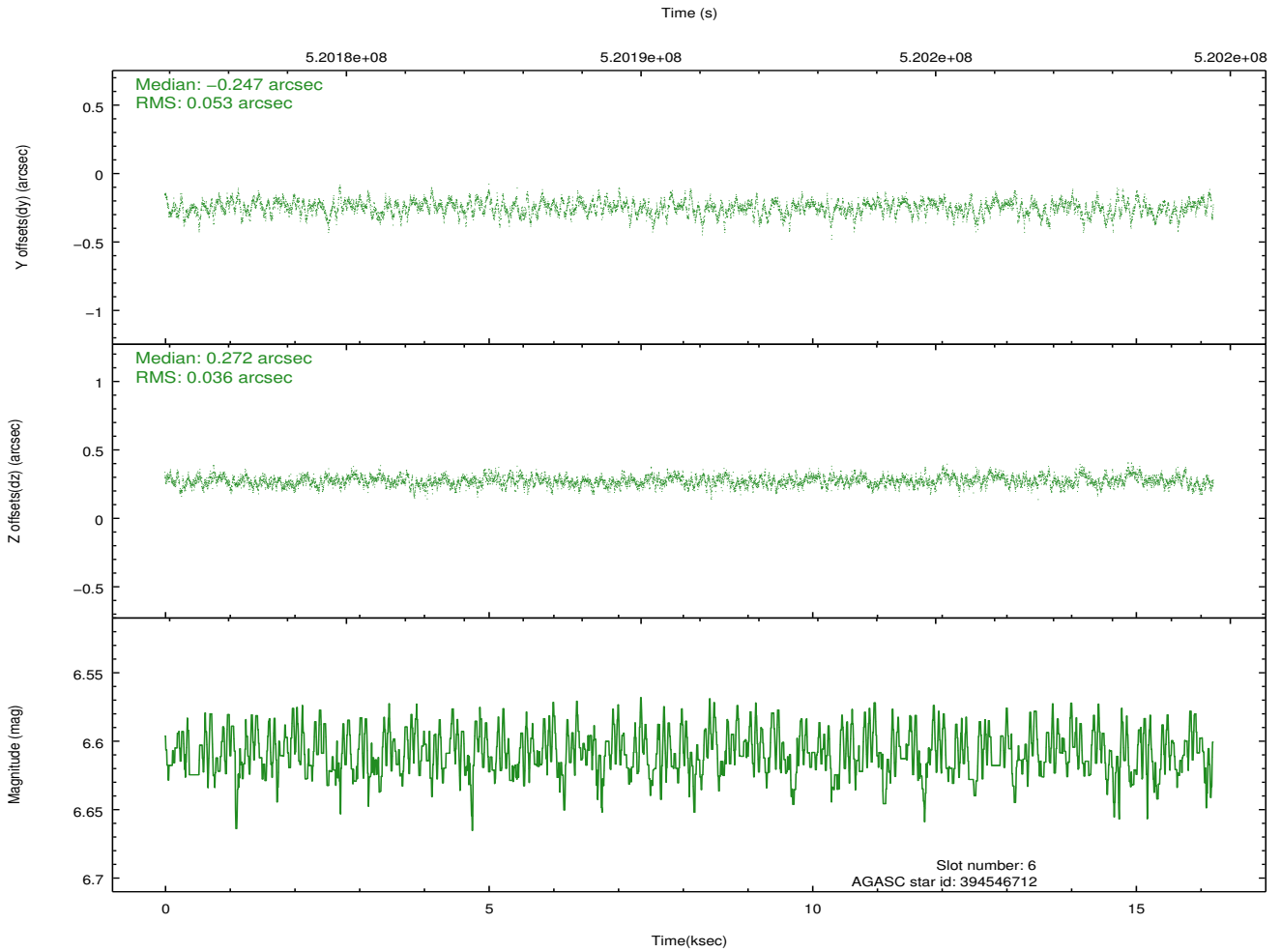
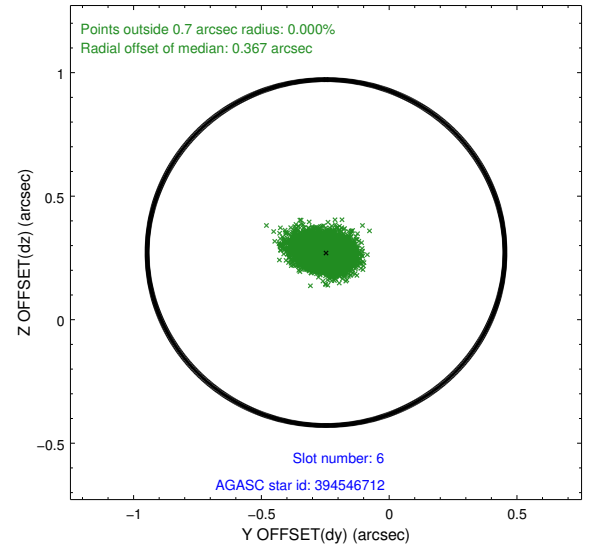
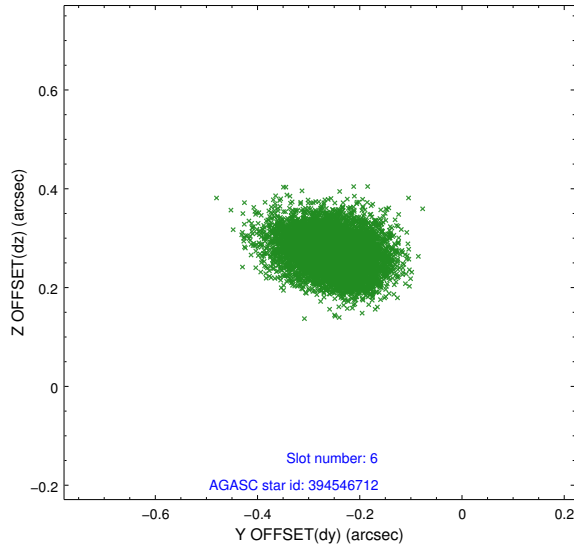
2.4.2 Slot 4



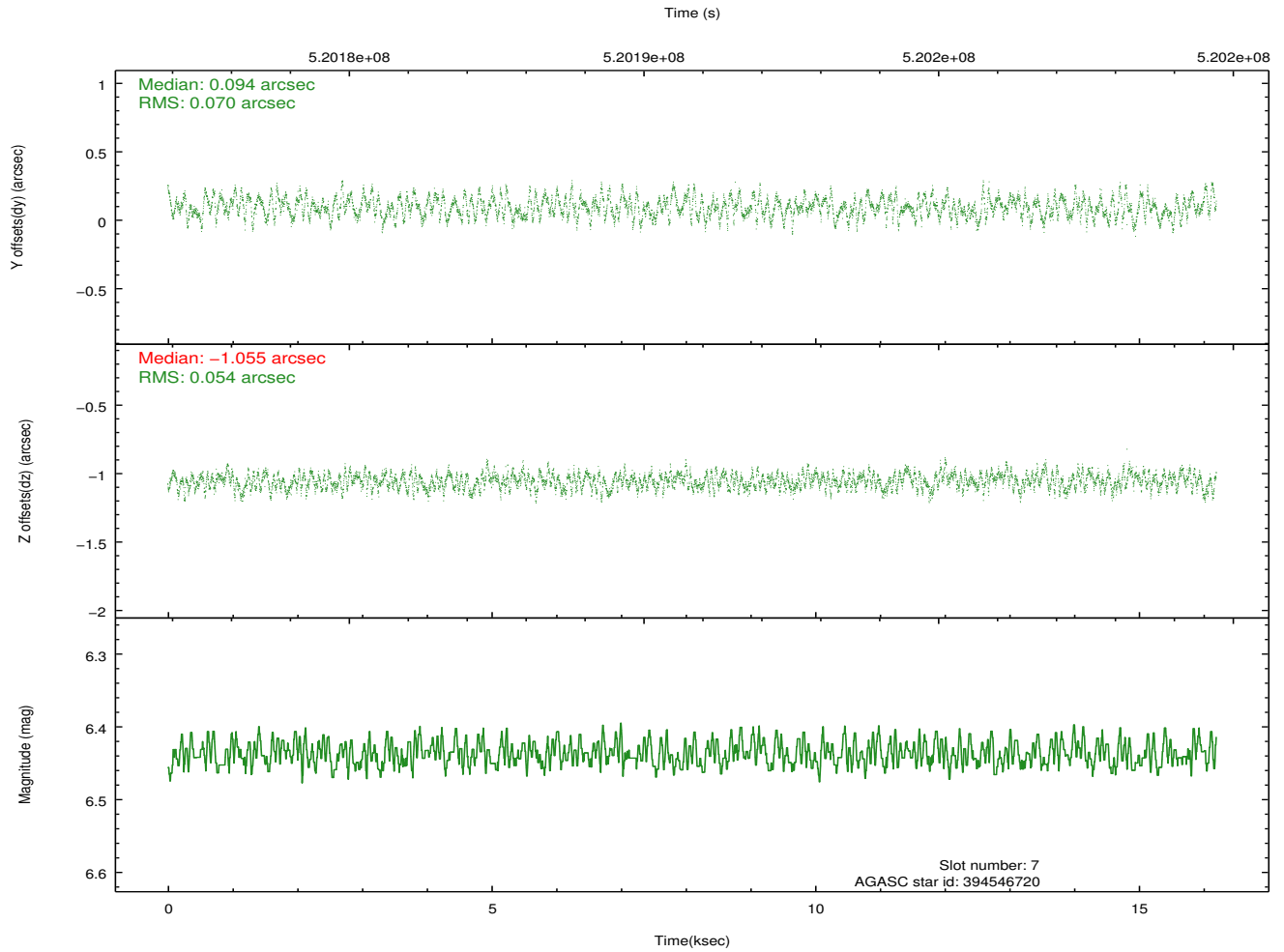
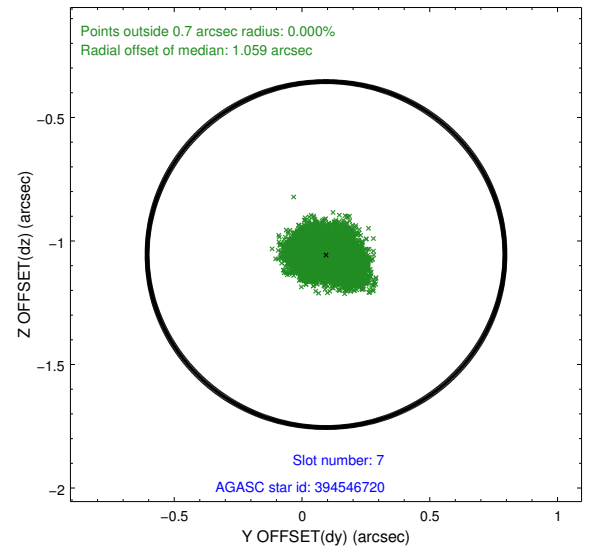
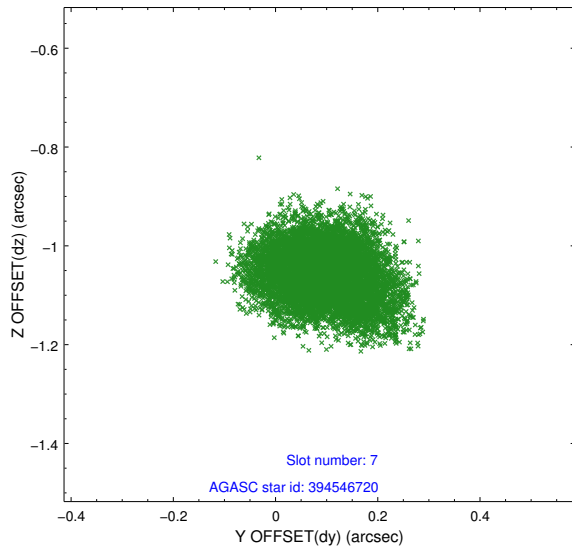
2.4.3 Slot 5



2.4.4 Slot 6

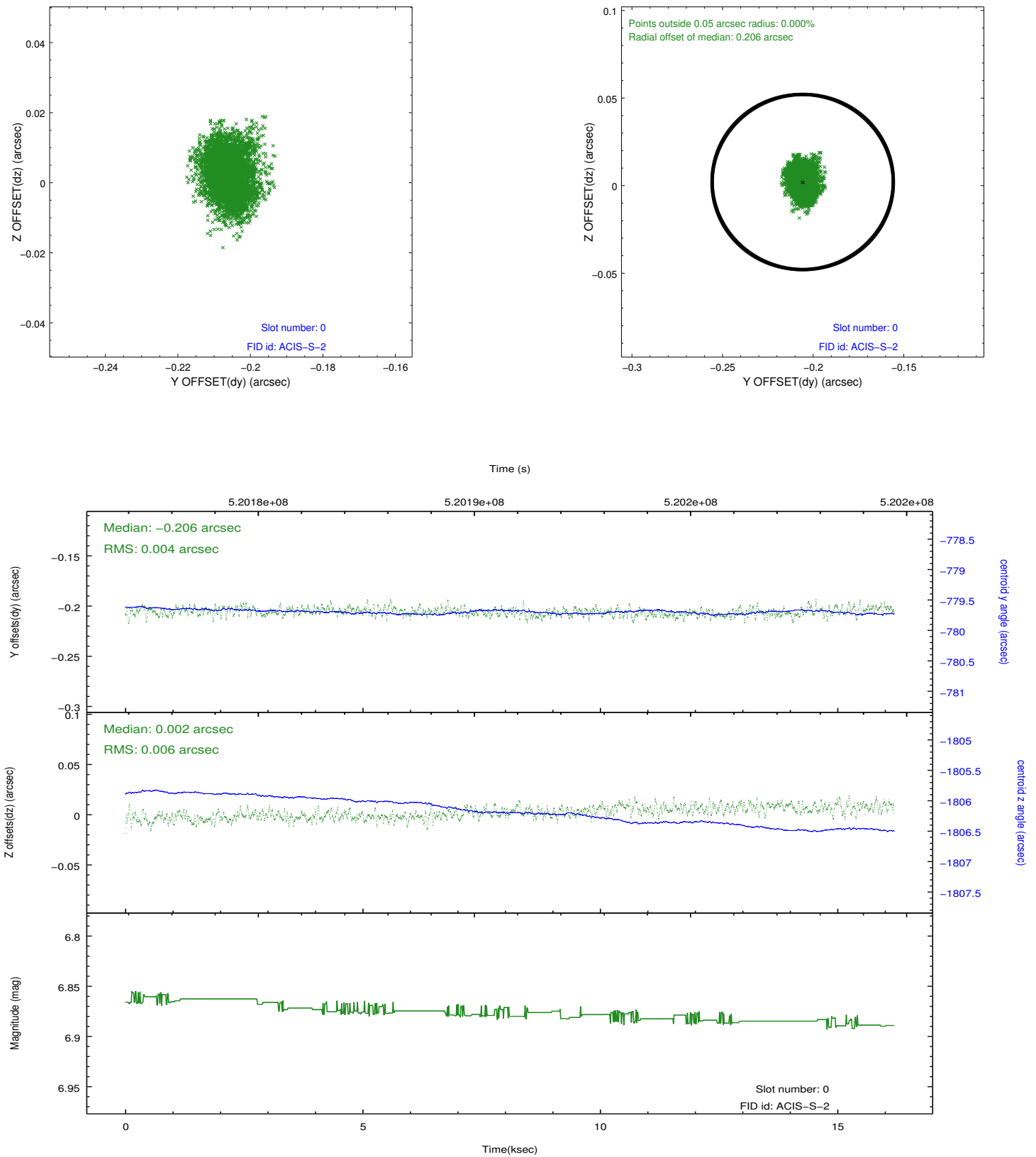


2.4.5 Slot 7

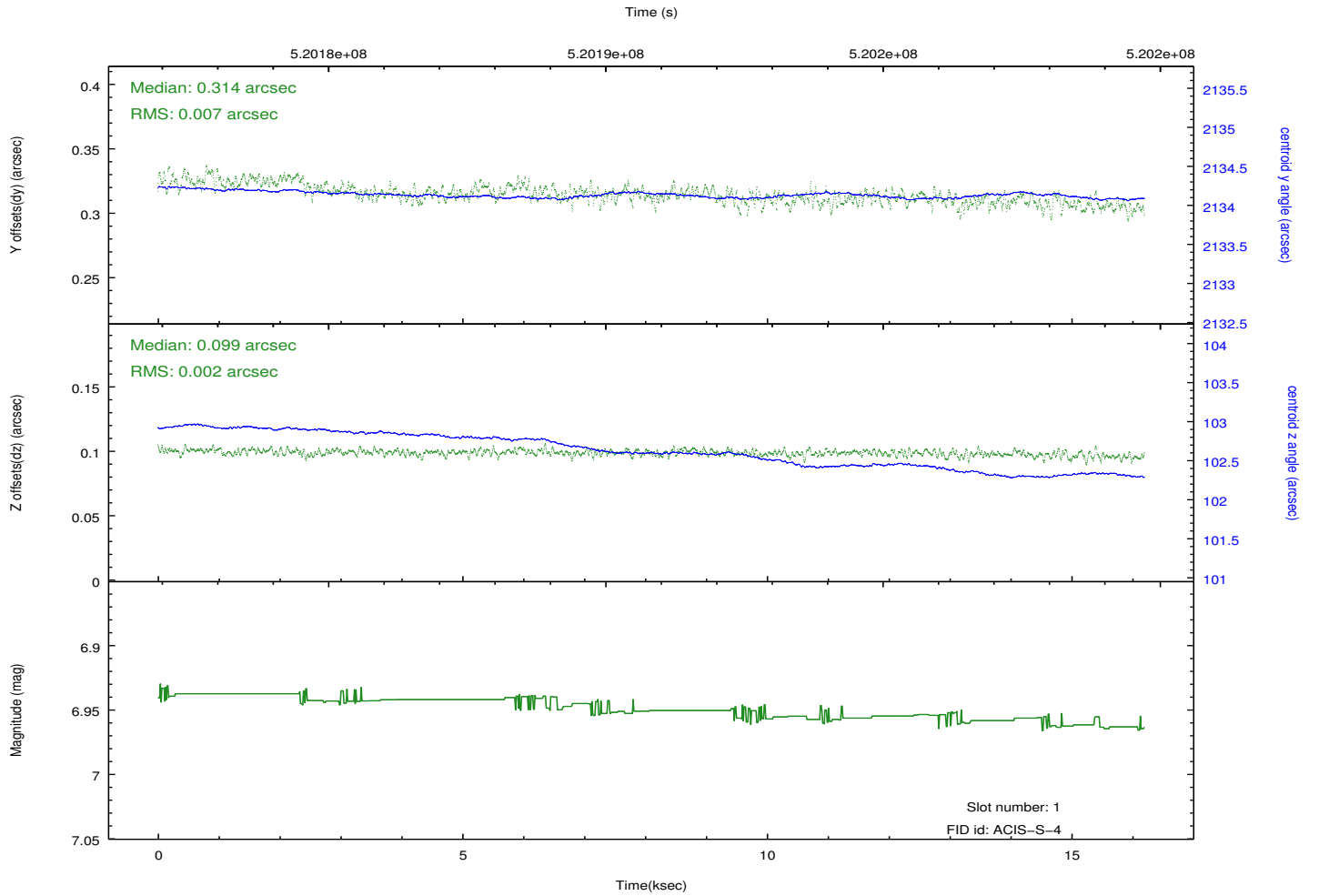
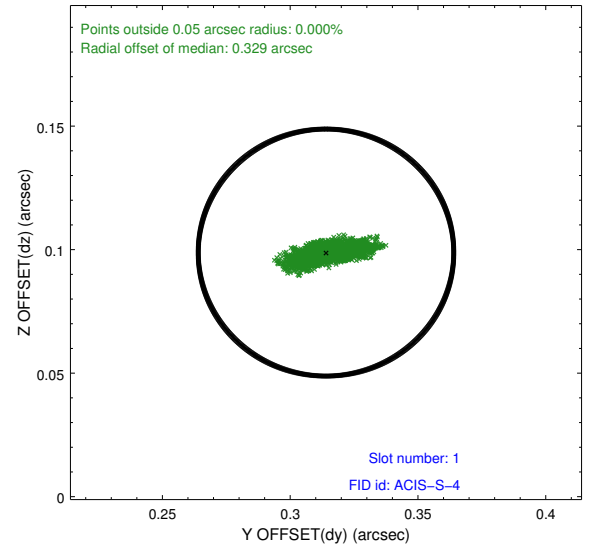
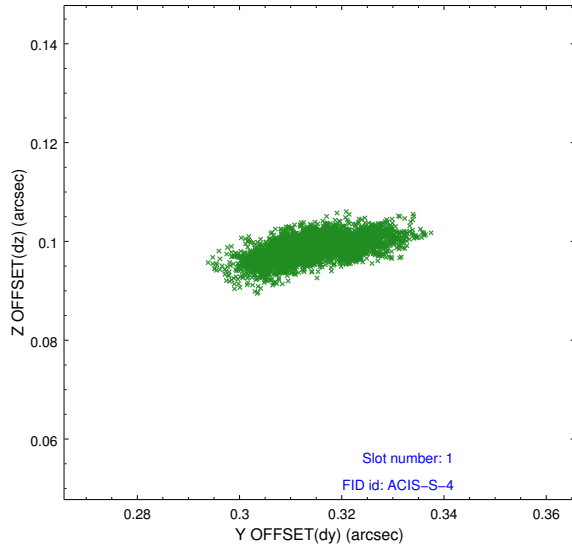


2.5 FID Slots

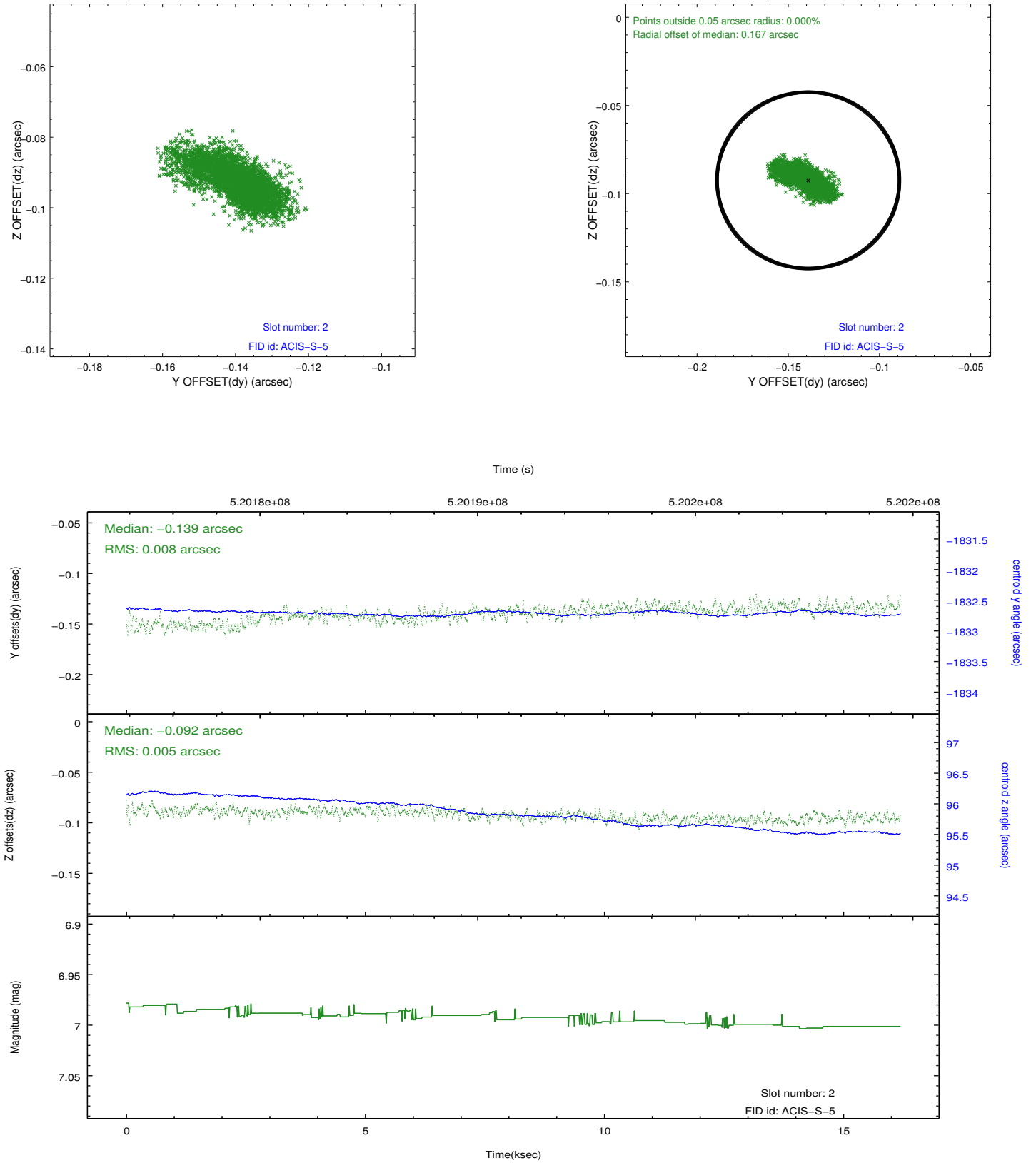
2.5.1 Slot 0



2.5.2 Slot 1

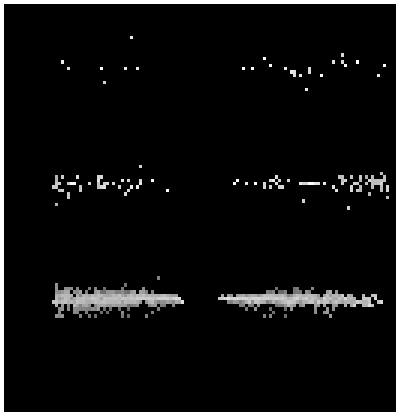


2.5.3 Slot 2

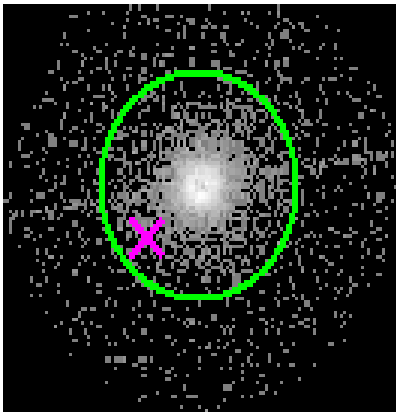


3 Gratings

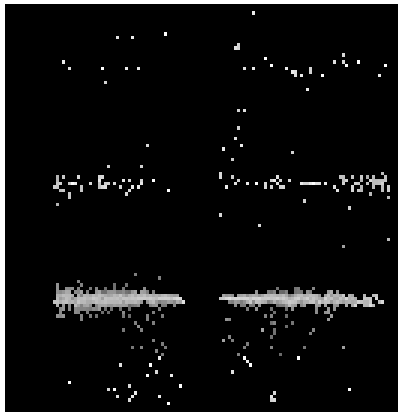
3.1 HEG Arm



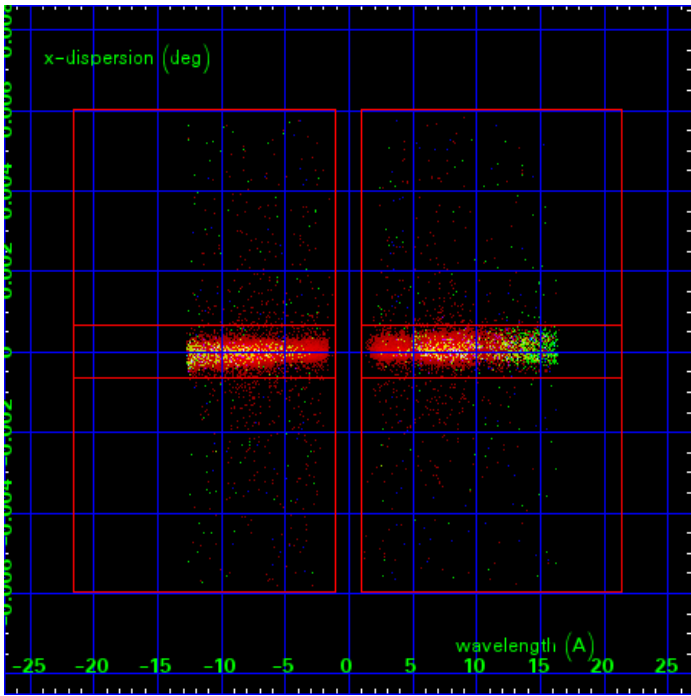
HEG Order Sort 123



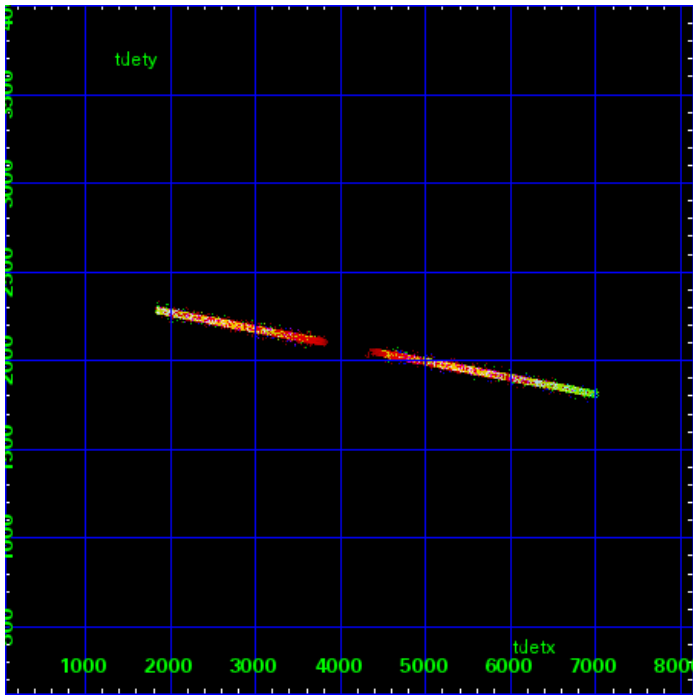
HEG Zero Order



HEG Order Sort ALL

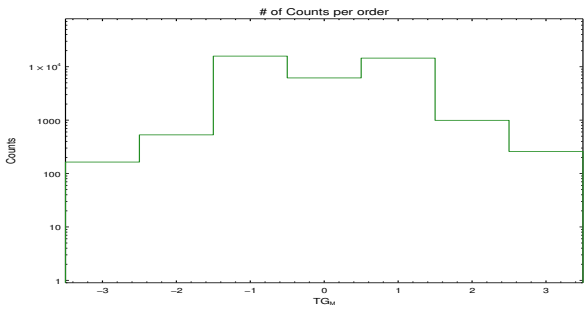


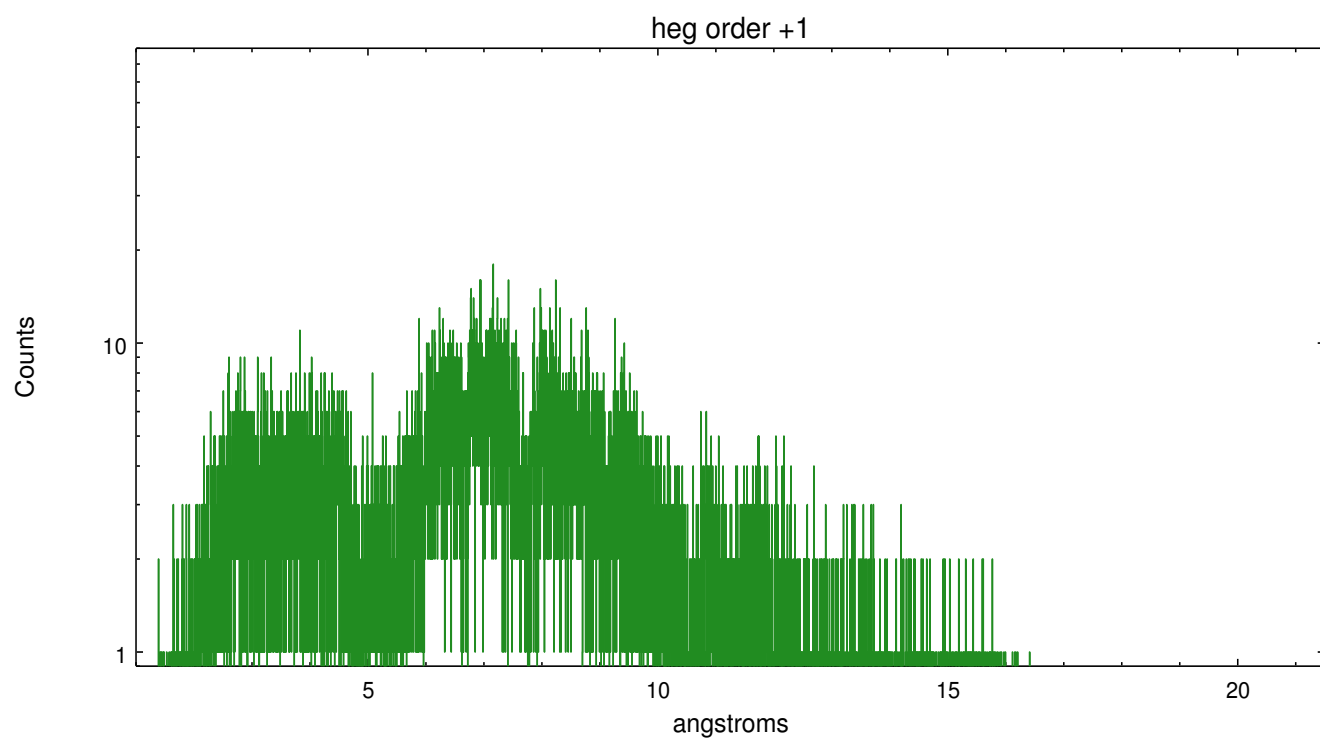
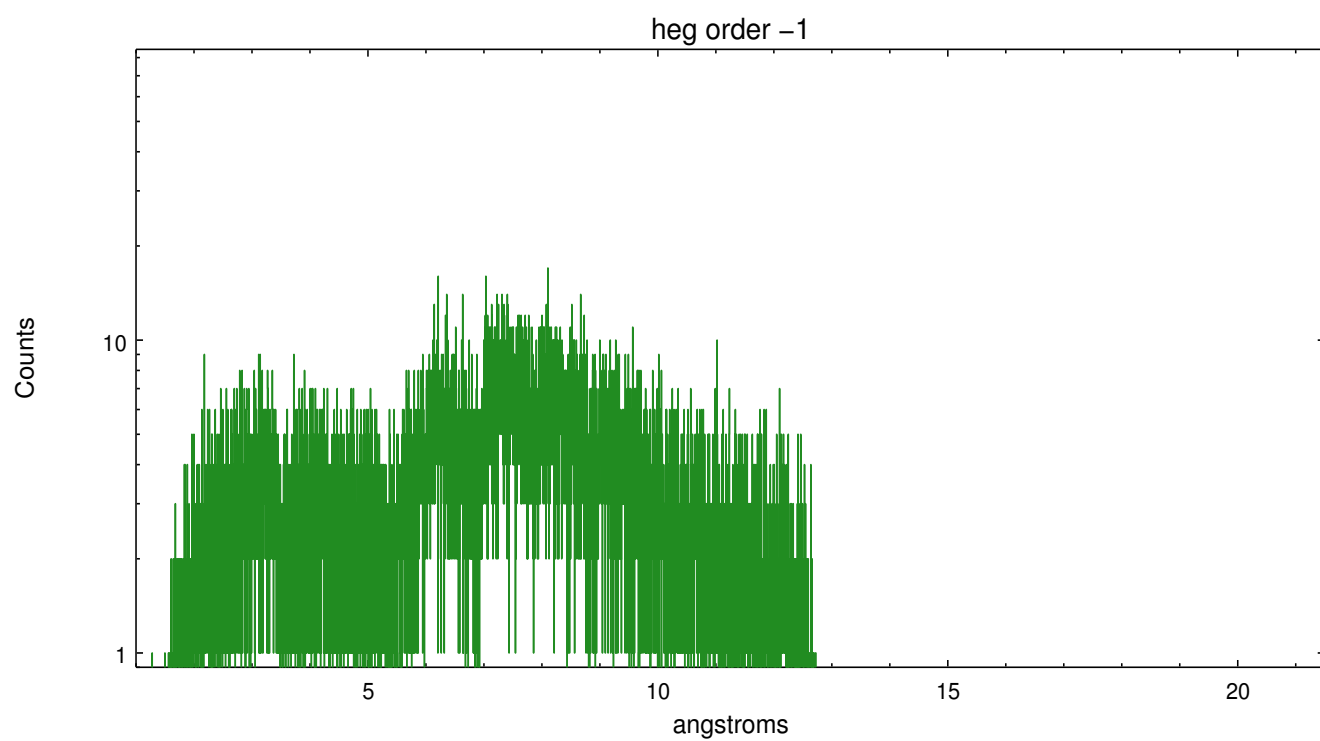
Spot Image HEG



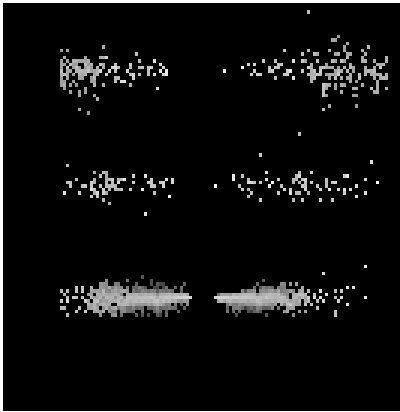
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	164	530	15803	6171	14495	991	259

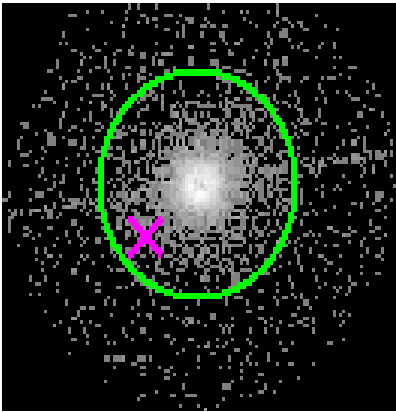




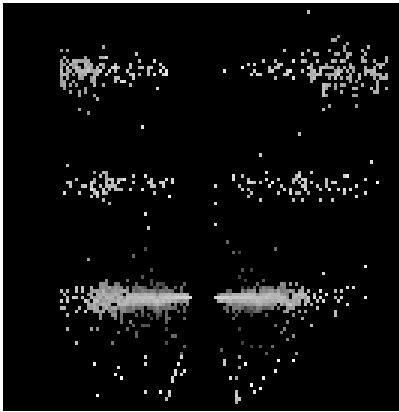
3.2 MEG Arm



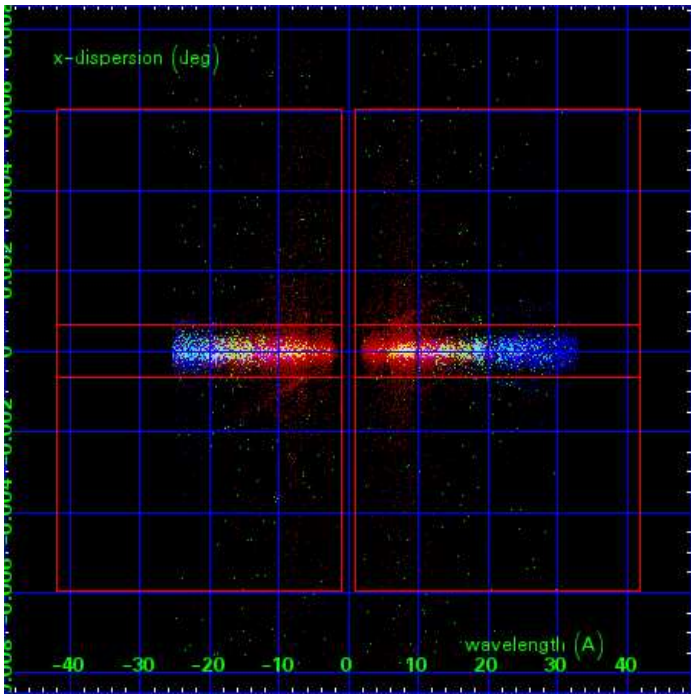
MEG Order Sort 123



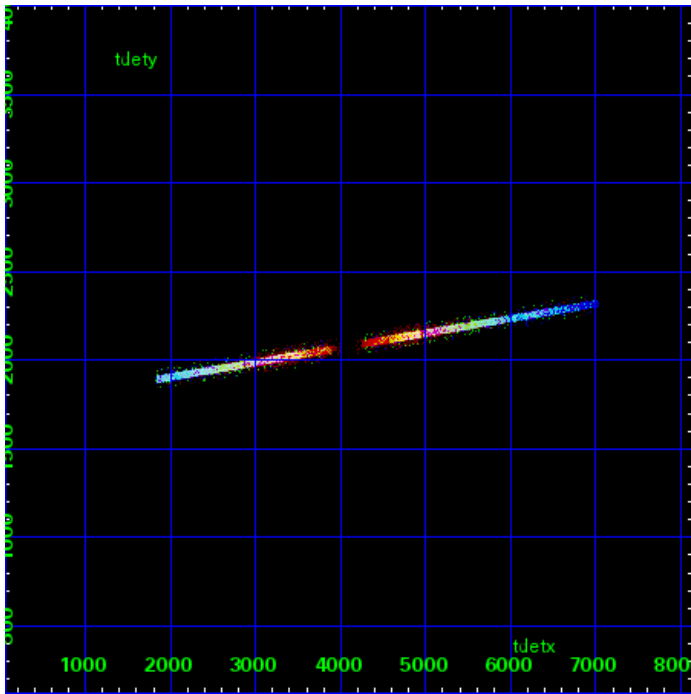
MEG Zero Order



MEG Order Sort ALL

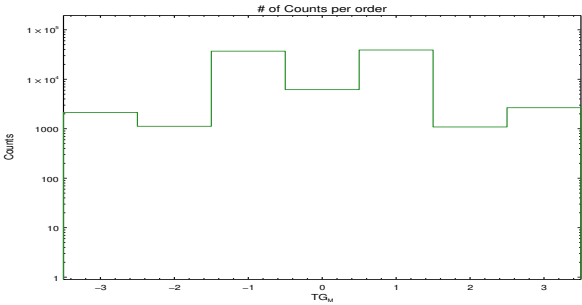


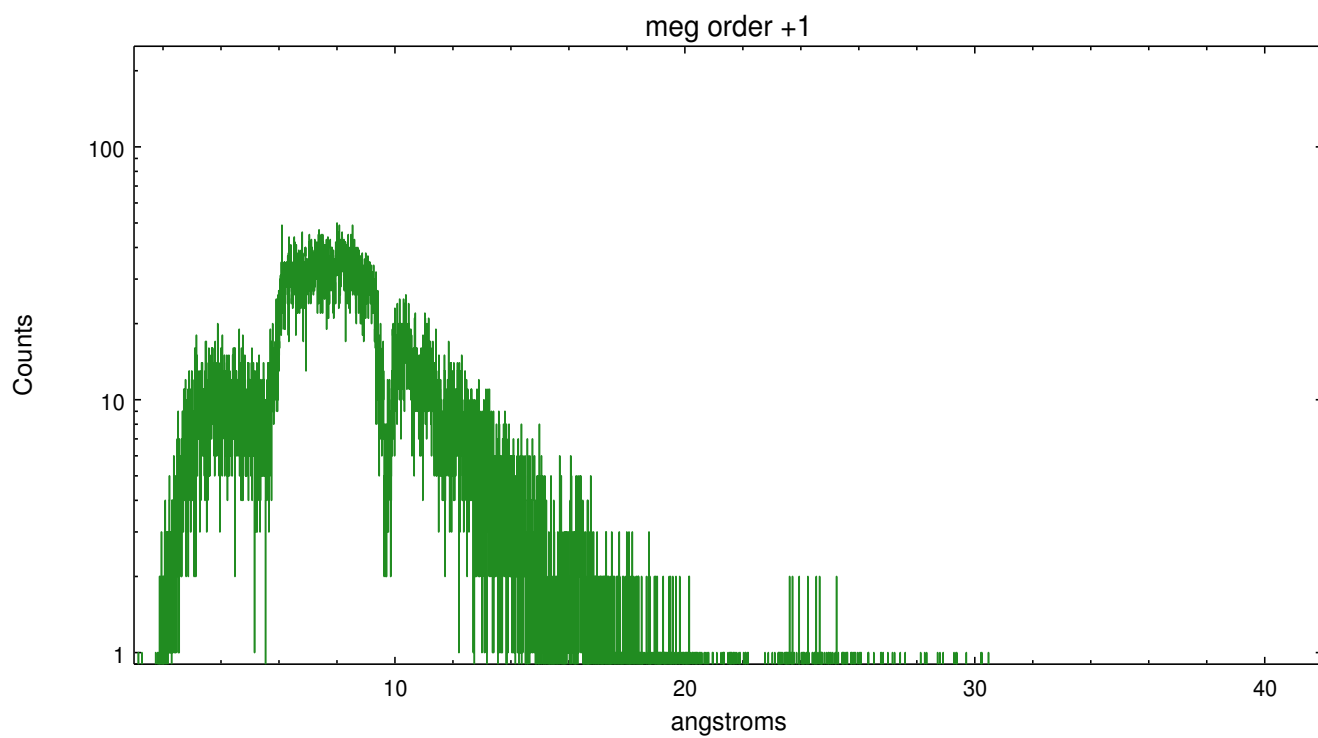
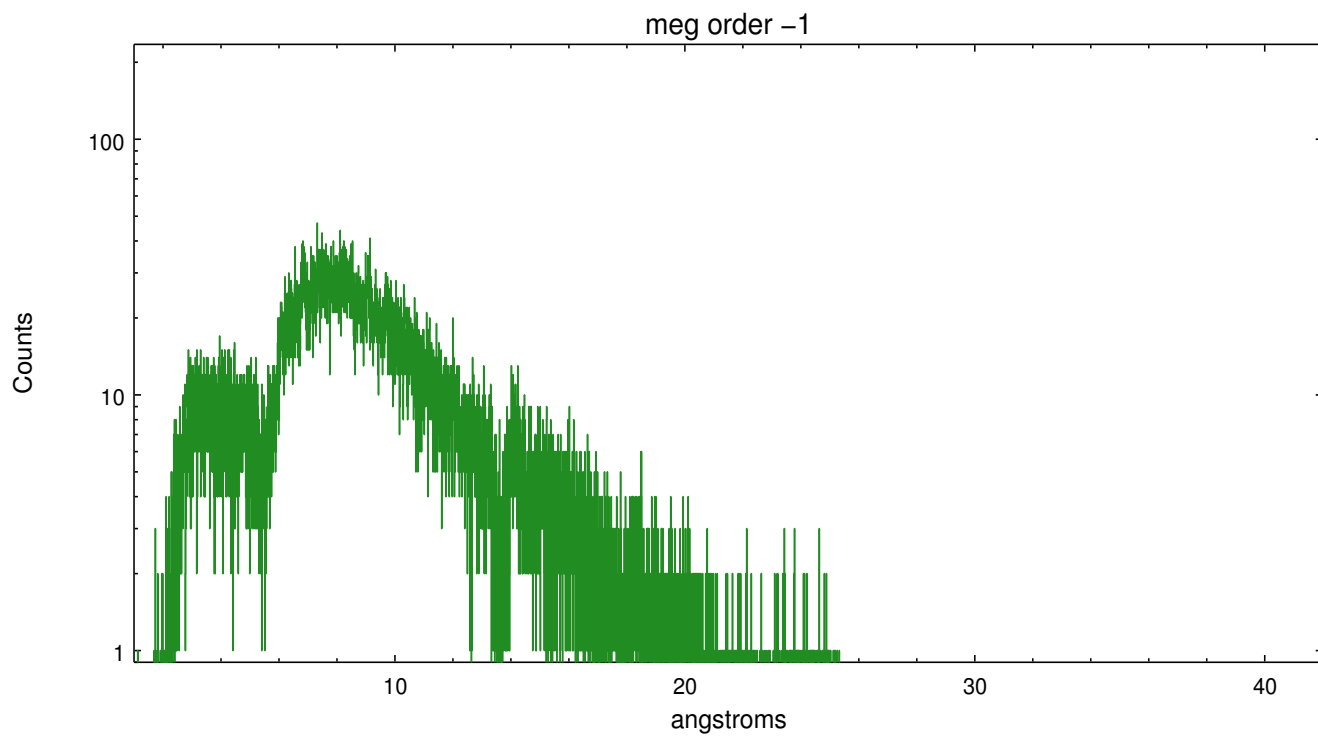
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2136	1121	36983	6171	39019	1086	2660





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	15.050399850488

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.

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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.