

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 717 - L2 Version 8
Chandra X-Ray Center

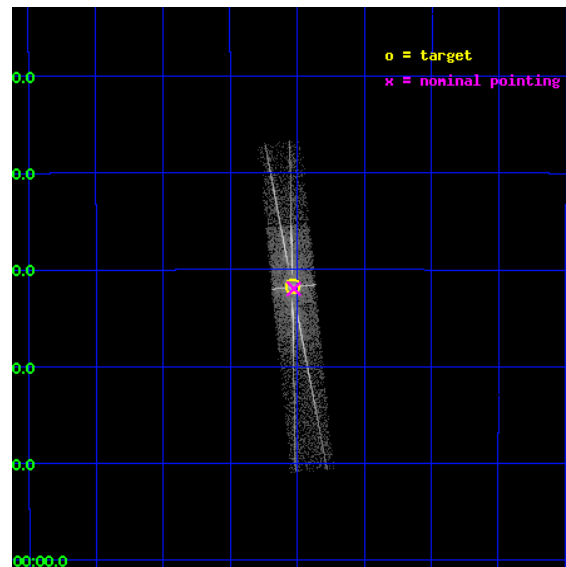
L2 Processing Date : Nov 8 2012

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1 Front

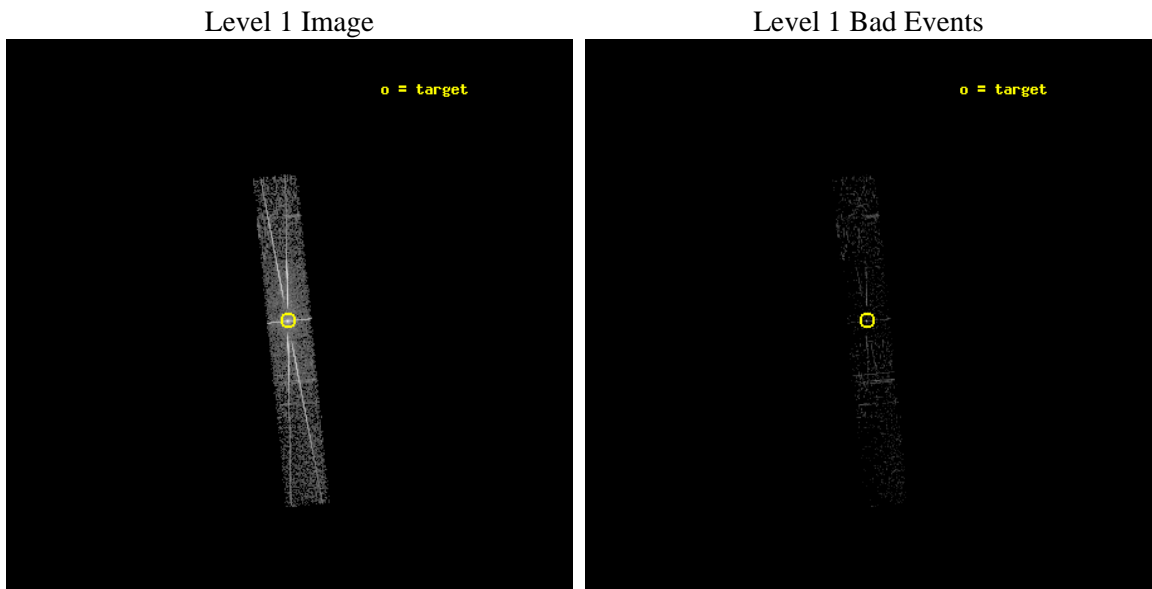
seq_num	400084	Sequence number
obs_id	717	Observation id
title	AXAF GRATING SPECTRA AND PRECISE POSITIONS OF BRIGHT GALACTIC-CENTER X-RAY SOURCES	Proposal title
observer	Dr. Alan Levine	Principal investigator
object	GX 9+1	Source name
dtcycle	0	
cycle	P	events are from which exps? P[rimary] S[econdar
ra_targ	270.38375	Observer's specified target RA [deg]
dec_targ	-20.528889	Observer's specified target Dec [deg]
ra_nom	270.38134813353	Nominal RA [deg]
dec_nom	-20.532996489838	Nominal Dec [deg]
roll_nom	264.26352194645	Nominal Roll [deg]
revision	8	Processing version of data
ontime	1460.751705125	Sum of GTIs [s]
livetime	212.97275134741	Livetime [s]
ontime5	1460.7106651217	Sum of GTIs [s]
ontime6	1460.6696251184	Sum of GTIs [s]
ontime7	1460.751705125	Sum of GTIs [s]
ontime8	1460.62858513	Sum of GTIs [s]
l2events	43756	Number of level 2 events



2 OBI Primary

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	1	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	1460.751705125	Sum of GTIs [s]
caldsver	4.5.1.1	 	ontime5	1460.7106651217	Sum of GTIs [s]
date	2012-08-30T18:06:33	Date and time of file creation	ontime6	1460.6696251184	Sum of GTIs [s]
revision	6	Processing version of data	ontime7	1460.751705125	Sum of GTIs [s]
			ontime8	1460.62858513	Sum of GTIs [s]
			l1events	56550	Number of level 1 events

2.1.3 Events

	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	4172	18361	26173	7844
rejected events	1554	3294	2739	3105
rejected %	37%	17%	10%	39%

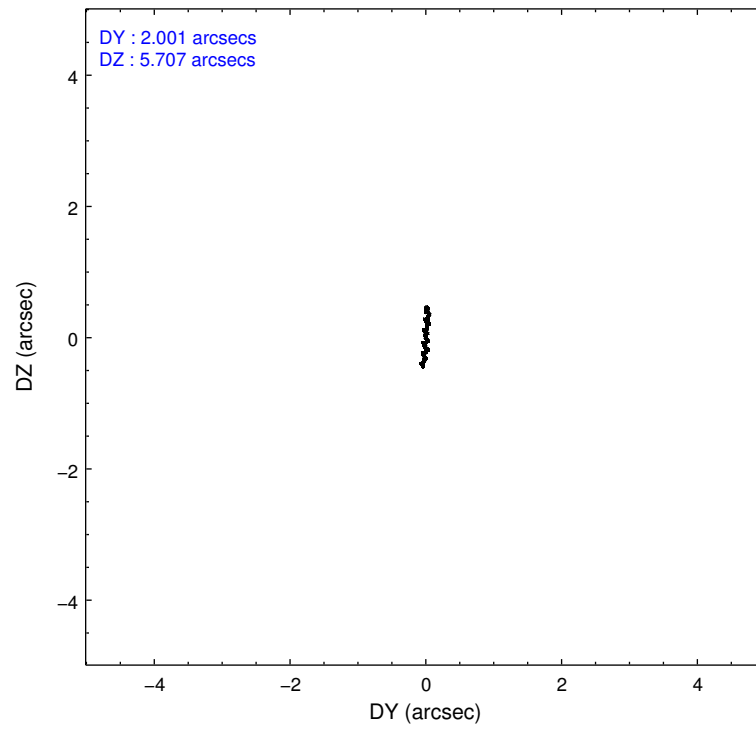
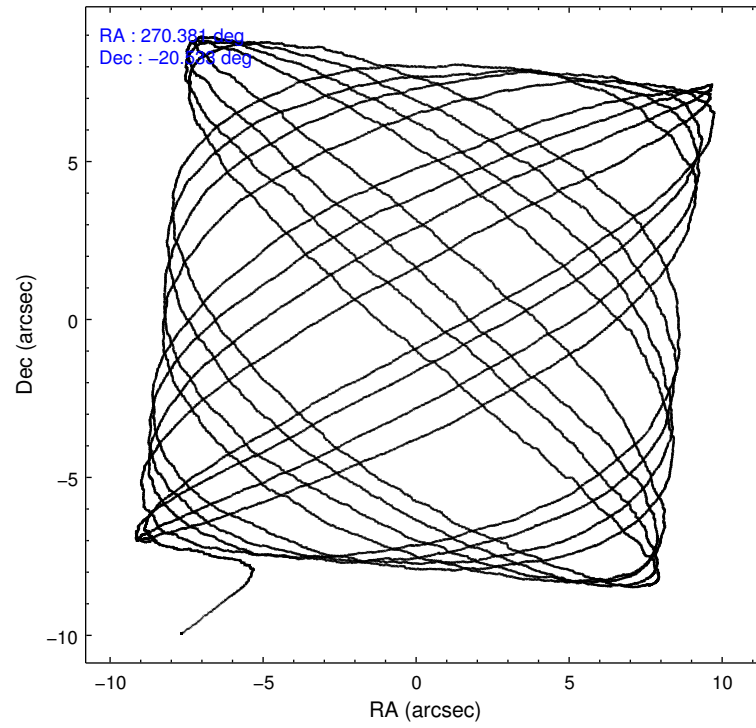
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	520	11196	4297	3459
	12%	60%	16%	44%
grade 1 events	2	61	50	8
	0%	0%	0%	0%
grade 2 events	893	1992	6195	645
	21%	10%	23%	8%
grade 3 events	205	709	2316	233
	4%	3%	8%	2%
grade 4 events	186	696	2380	229
	4%	3%	9%	2%
grade 5 events	142	158	422	84
	3%	0%	1%	1%
grade 6 events	907	797	8794	299
	21%	4%	33%	3%
grade 7 events	1317	2752	1719	2887
	31%	14%	6%	36%

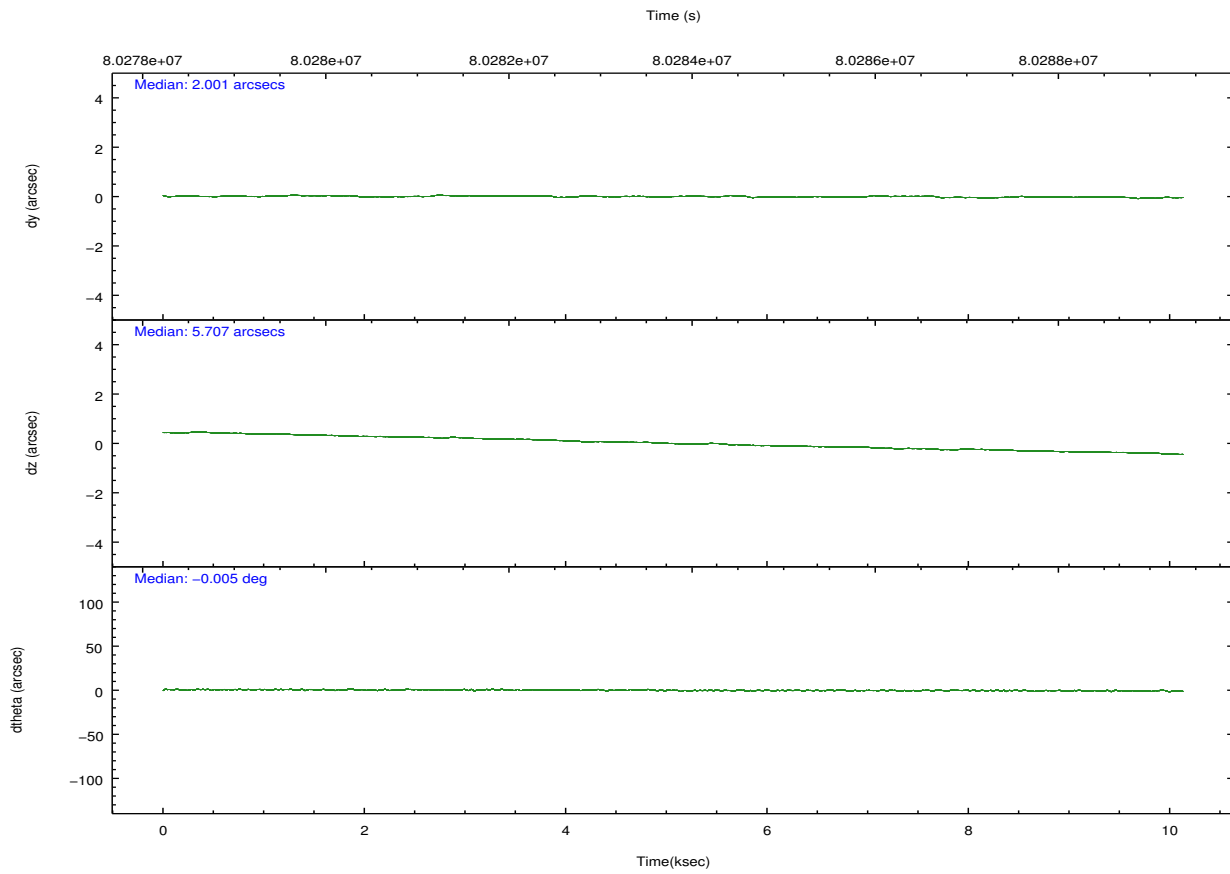
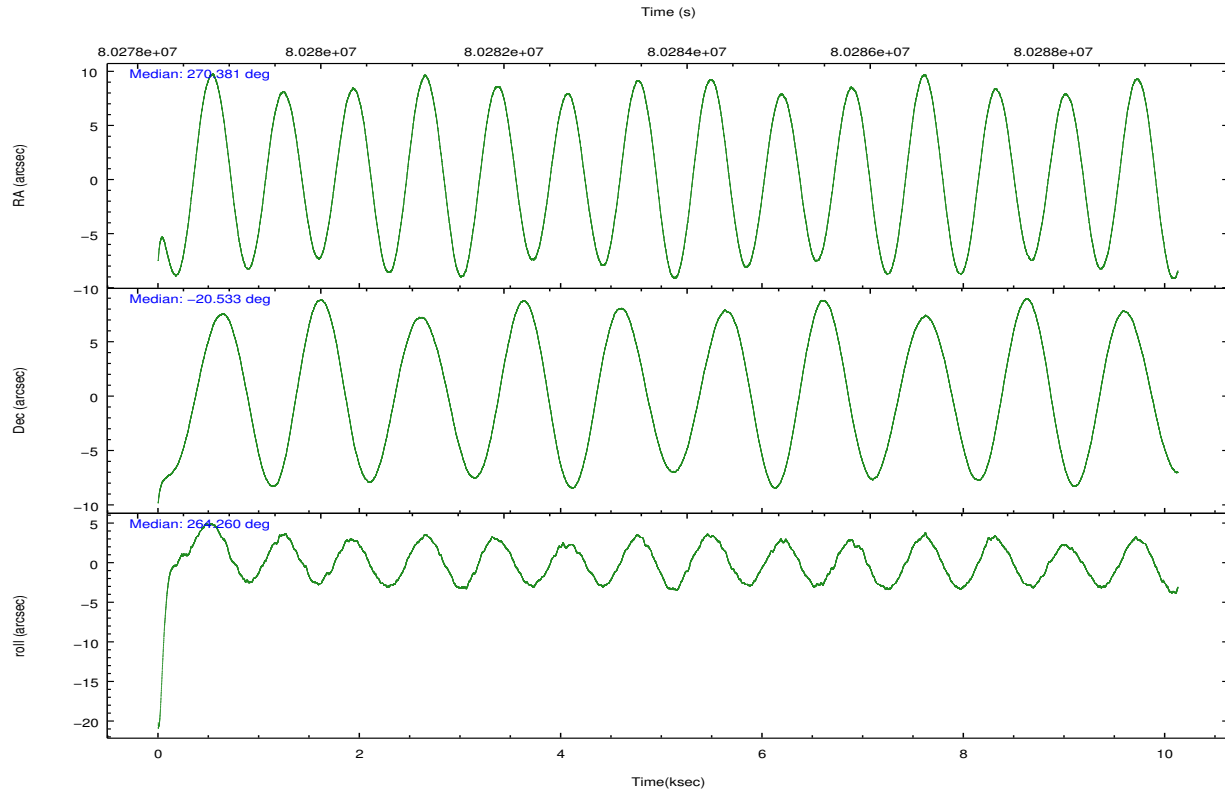
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-5678	ACIS-5678
Grating	HETG	HETG
Data mode	GRADED	GRADED
Observation mode	POINTING	POINTING
[deg] Pointing RA	270.369227	270.3813481335313
[deg] Pointing Dec	-20.508055	-20.53299648983772
[deg] Pointing Roll	264.102664	264.2635219464474
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-184.532523	-184.5306286120915
[mm] SIM translation stage offset	-5.6	-5.601893970916279
[s] Observation start time (MET)	80278859.184000	80277688.569391
Observation start date	2000-07-18T03:39:55	2000-07-18T03:21:28
[s] Observation end time (MET)	80288859.184000	80289195.732317
Observation end date	2000-07-18T06:26:35	2000-07-18T06:33:15
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	15	15
Subarray row count	542	542
Alternating exposures requested	Y	Y
[s] Primary exposure time	0.300000	0.3
[s] Secondary exposure time	1.700000	1.7
Duty cycle	7	7

2.3 Aspect



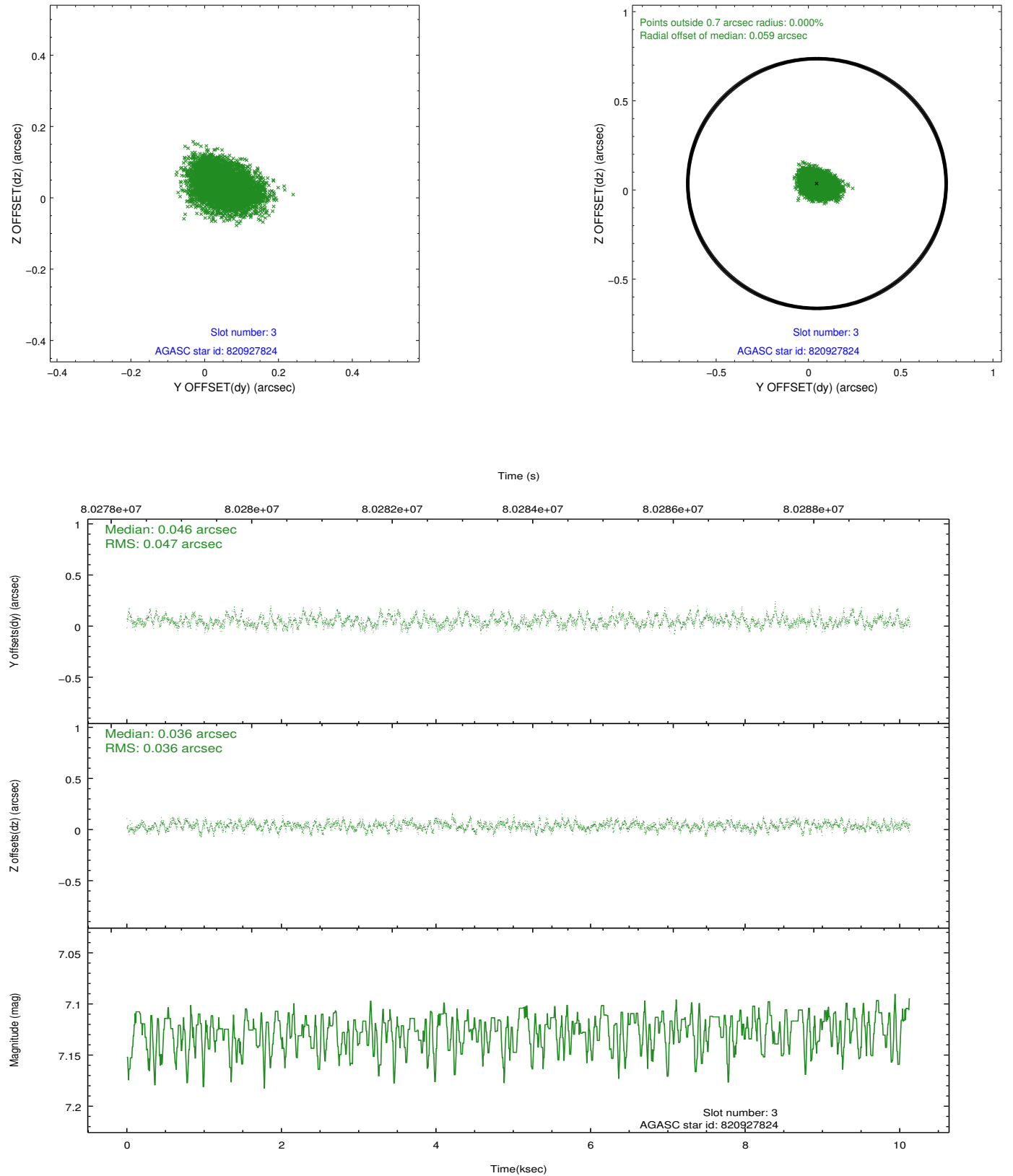


Slot Statistics

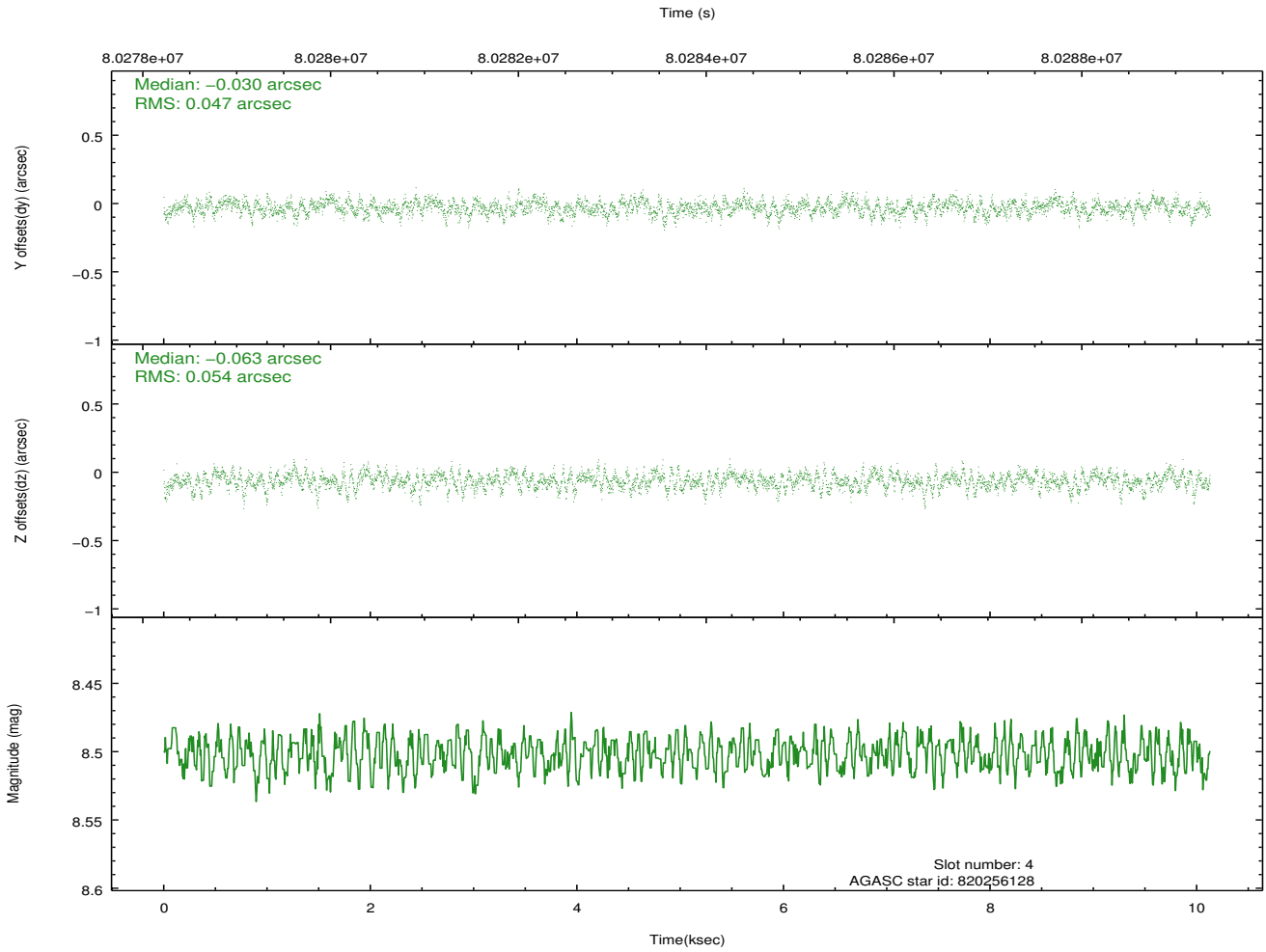
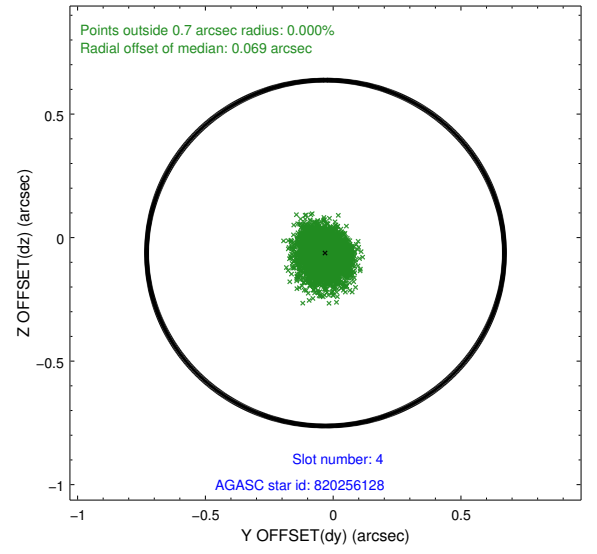
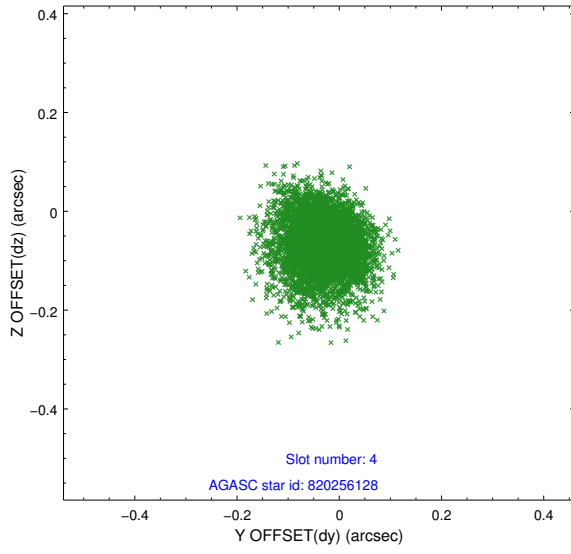
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.20	2469	0.012	0.023	0.008	0.012	0.000000	0.000000	941.81	-1837.95
1	FID	ACIS-S-5	7.23	2468	-0.010	0.029	0.008	0.012	0.000000	0.000000	-1806.89	59.05
2	FID	ACIS-S-6	7.40	2468	-0.024	-0.041	0.011	0.018	0.000000	0.000000	406.80	703.51
3	GUIDE	820927824	7.13	4938	0.046	0.036	0.064	0.103	270.655496	-20.737630	723.81	1044.50
4	GUIDE	820256128	8.50	4936	-0.030	-0.063	0.075	0.125	269.765287	-20.062383	-1382.26	-2195.19
5	GUIDE	820927832	9.24	4939	0.037	-0.066	0.076	0.126	270.396289	-20.662149	542.10	147.90
6	GUIDE	820921296	9.19	4937	0.000	0.091	0.079	0.130	270.875103	-20.917893	1295.40	1844.93
7	GUIDE	820380512	8.90	4936	-0.053	0.004	0.062	0.101	270.034486	-20.047074	-1533.11	-1295.50

2.4 Star Slots

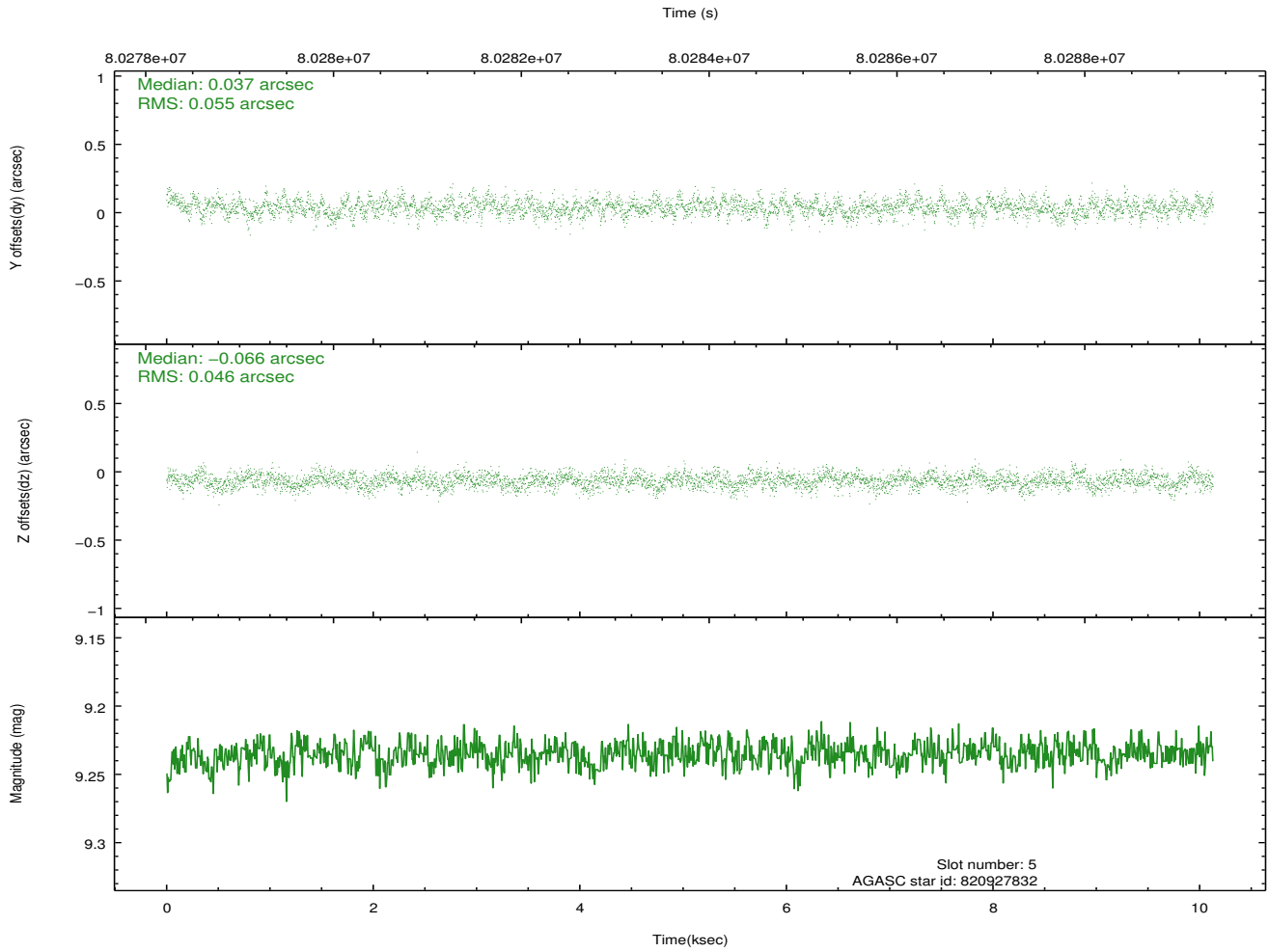
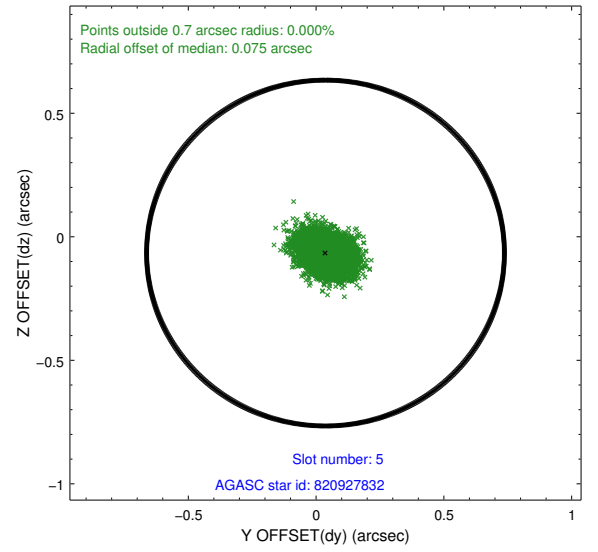
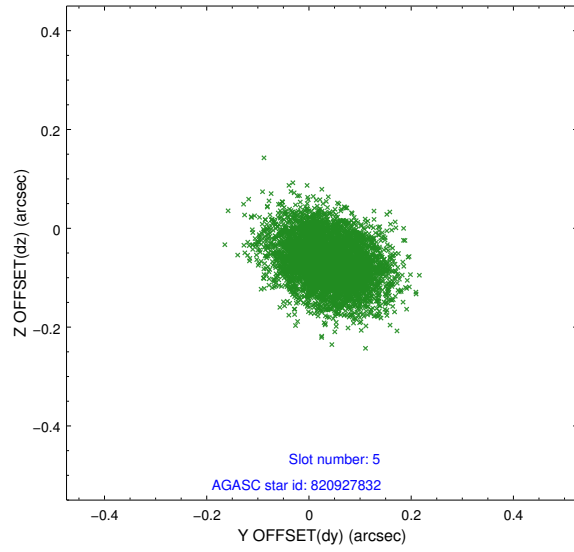
2.4.1 Slot 3



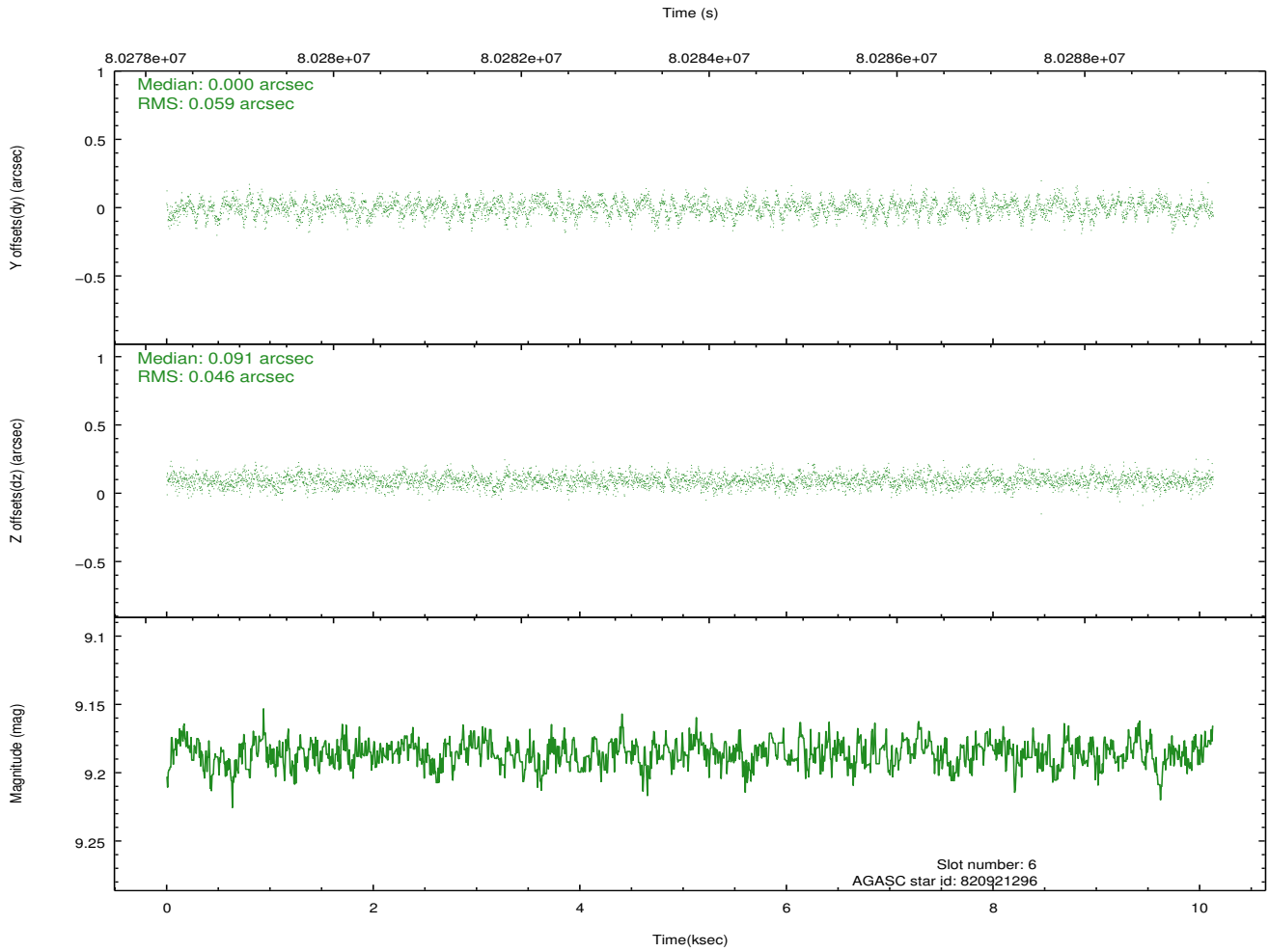
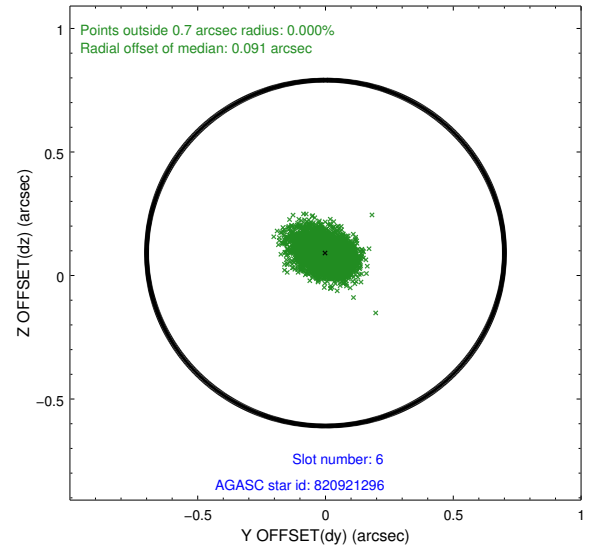
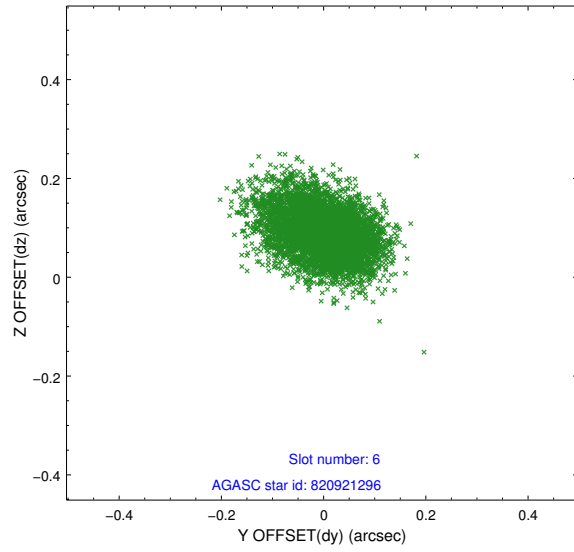
2.4.2 Slot 4



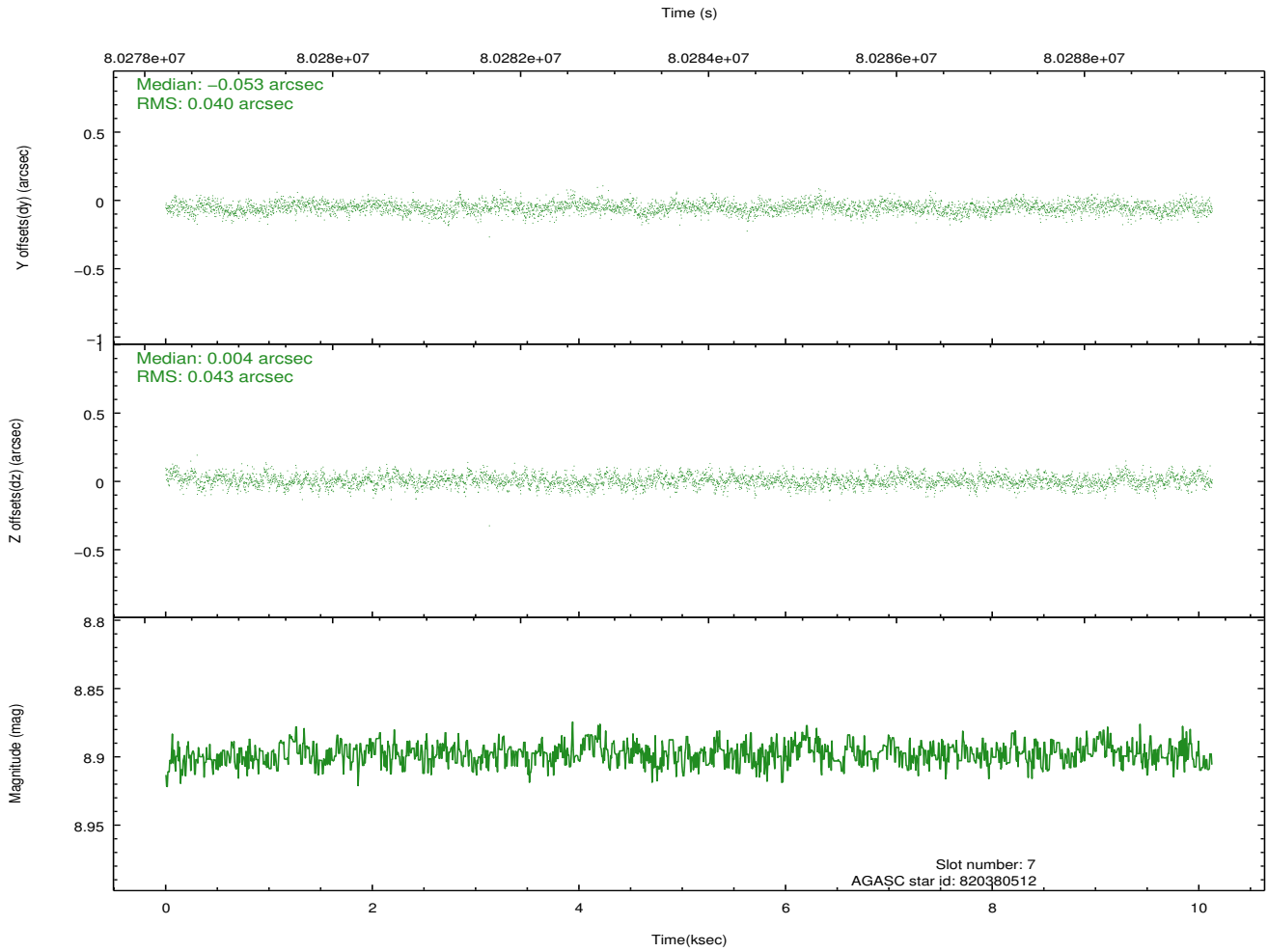
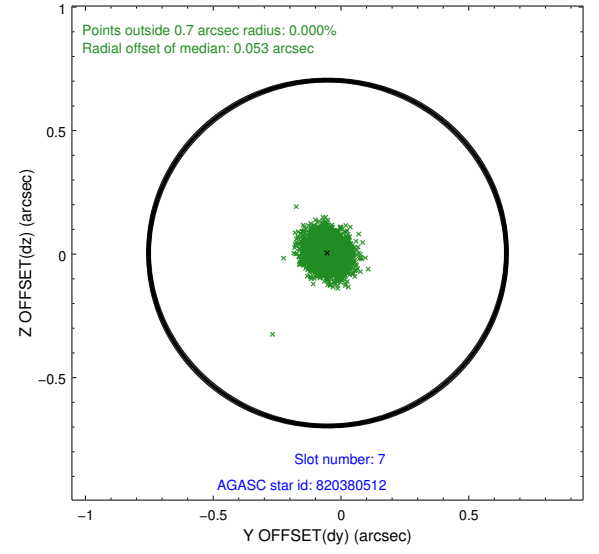
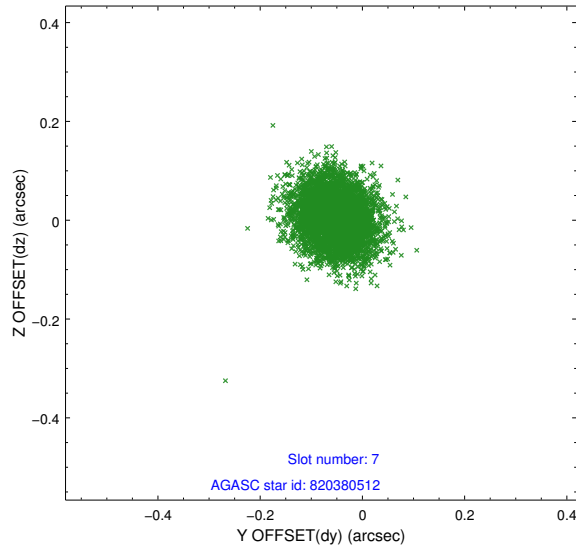
2.4.3 Slot 5



2.4.4 Slot 6

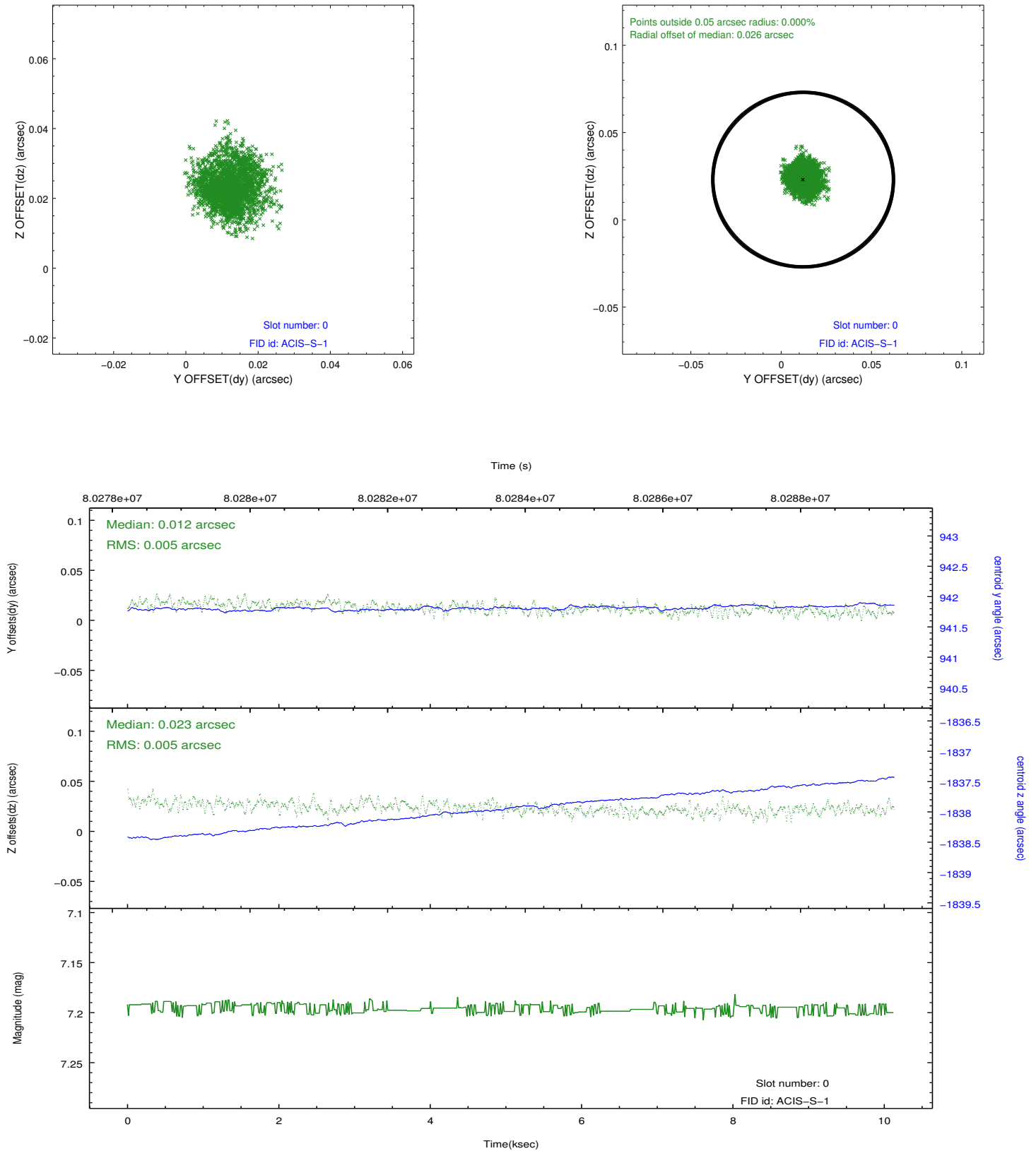


2.4.5 Slot 7

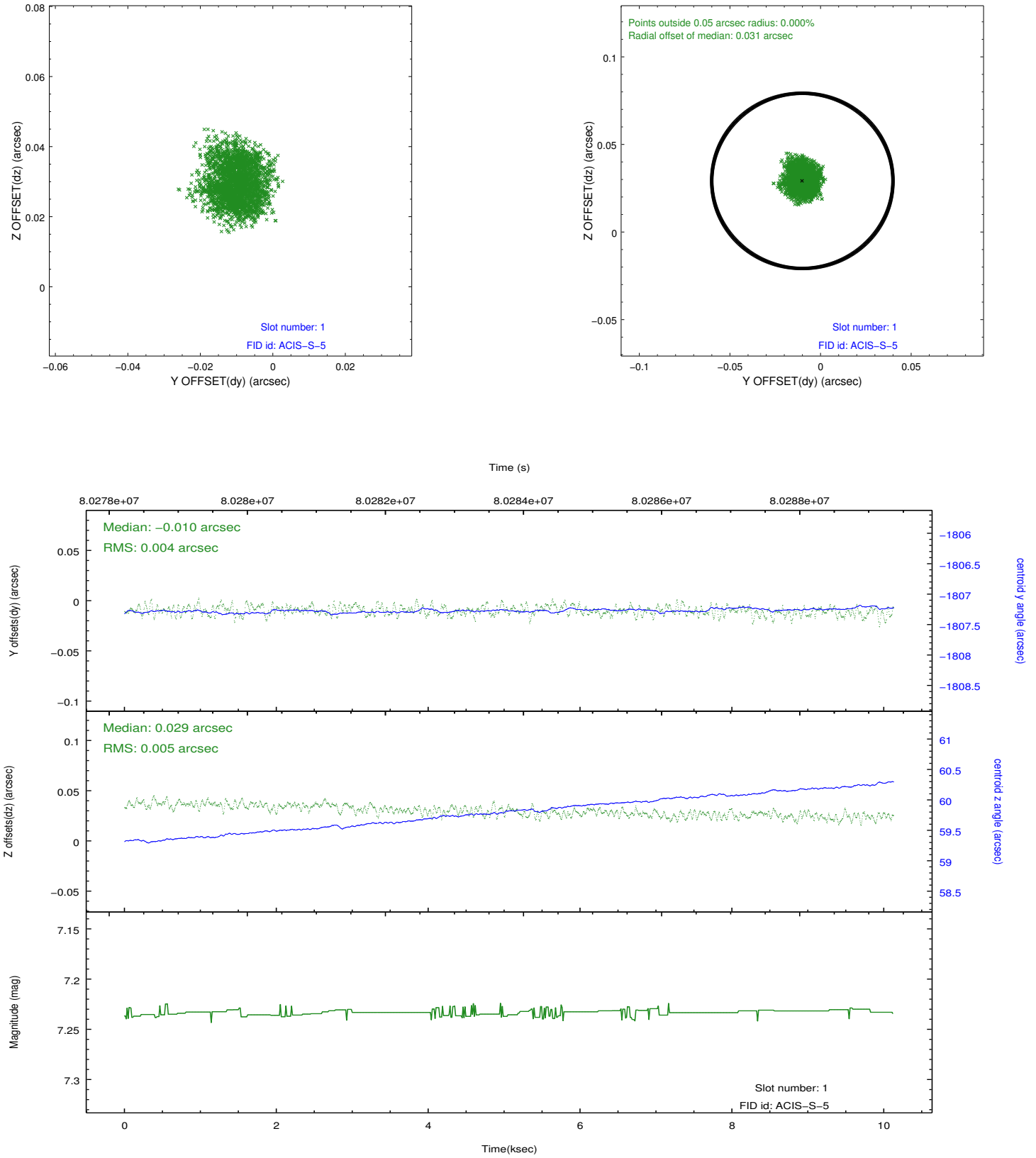


2.5 FID Slots

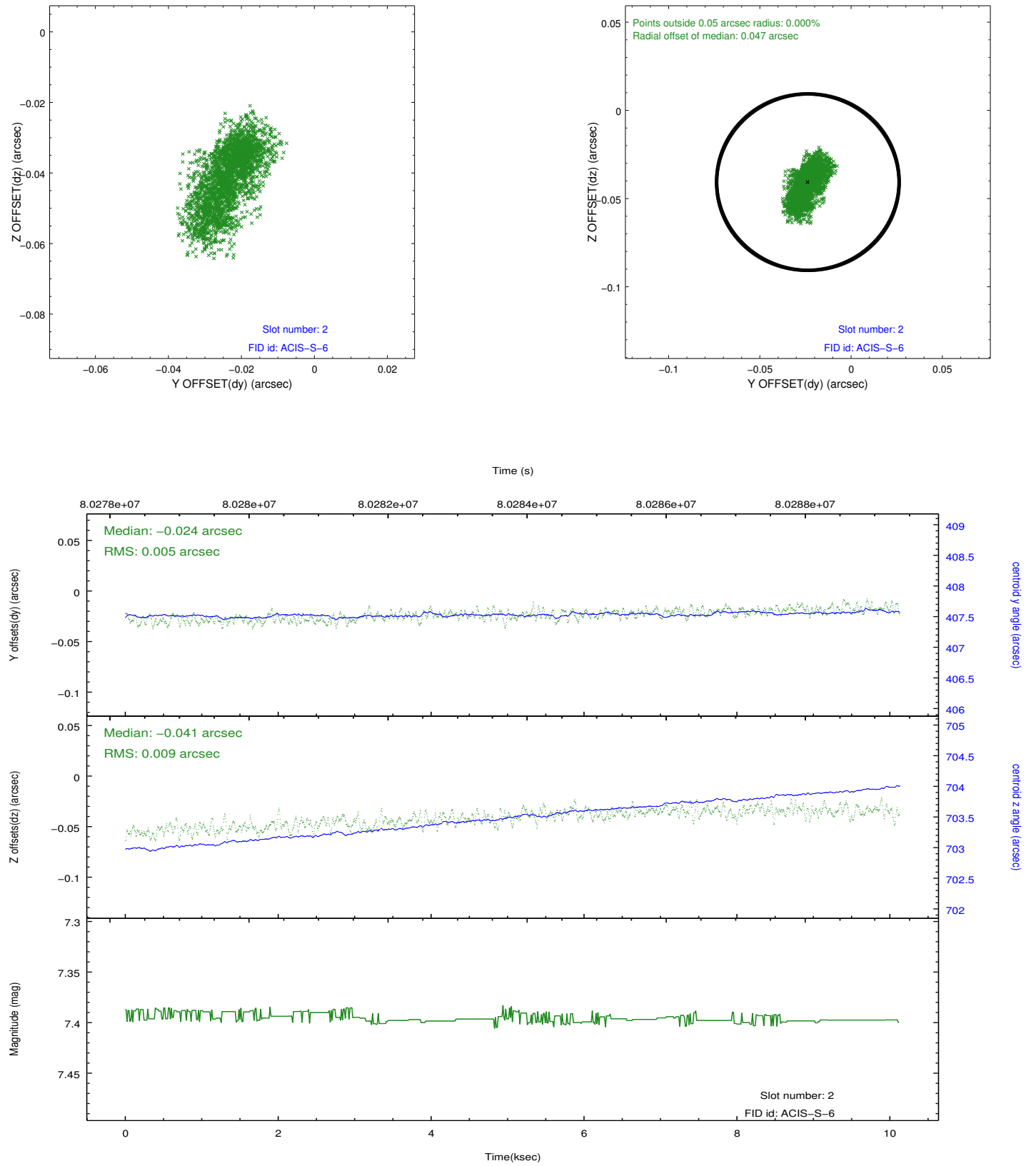
2.5.1 Slot 0



2.5.2 Slot 1



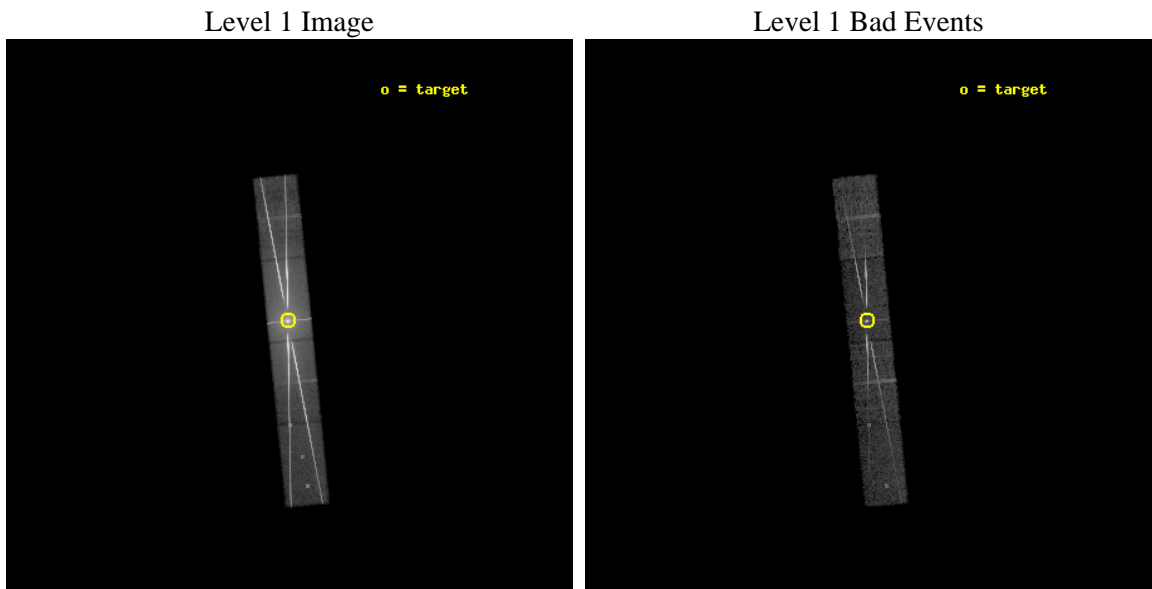
2.5.3 Slot 2



3 OBI Secondary

3.1 OBI

3.1.1 Images



3.1.2 Parameters

obi_num	1	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	8656.8743125498	Sum of GTIs [s]
caldsver	4.5.1.1	 	ontime5	8655.1328737885	Sum of GTIs [s]
date	2012-08-30T18:14:40	Date and time of file creation	ontime6	8655.1333124638	Sum of GTIs [s]
revision	6	Processing version of data	ontime7	8656.8743125498	Sum of GTIs [s]
			ontime8	8655.1330631971	Sum of GTIs [s]
			l1events	1689280	Number of level 1 events

3.1.3 Events

	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	115912	568867	799486	205015
rejected events	25666	63437	98485	39532
rejected %	22%	11%	12%	19%

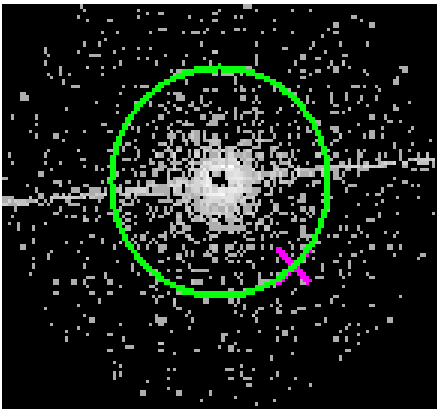
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	22688	361534	122049	123932
	19%	63%	15%	60%
grade 1 events	901	11769	4188	1149
	0%	2%	0%	0%
grade 2 events	31447	71786	182502	20569
	27%	12%	22%	10%
grade 3 events	6518	25806	69483	8232
	5%	4%	8%	4%
grade 4 events	6381	25038	69575	8071
	5%	4%	8%	3%
grade 5 events	3062	10572	24006	2073
	2%	1%	3%	1%
grade 6 events	25914	30076	271492	8951
	22%	5%	33%	4%
grade 7 events	19001	32286	56191	32038
	16%	5%	7%	15%

4 Gratings

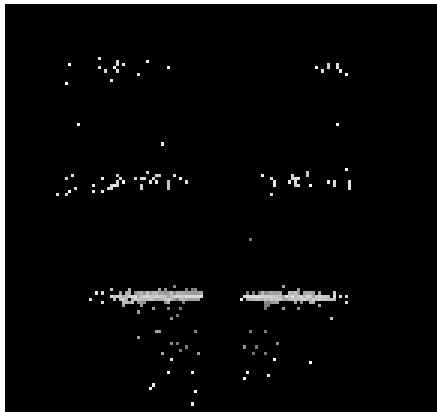
4.1 HEG Arm



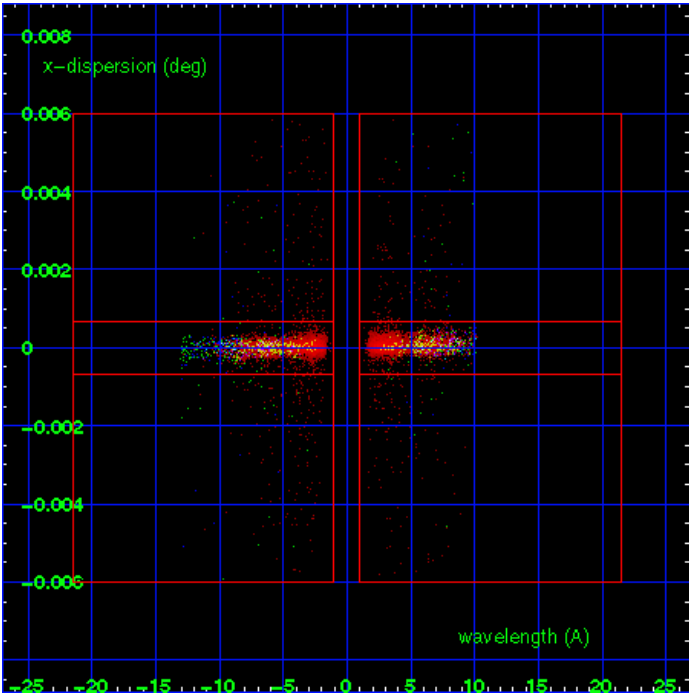
HEG Order Sort 123



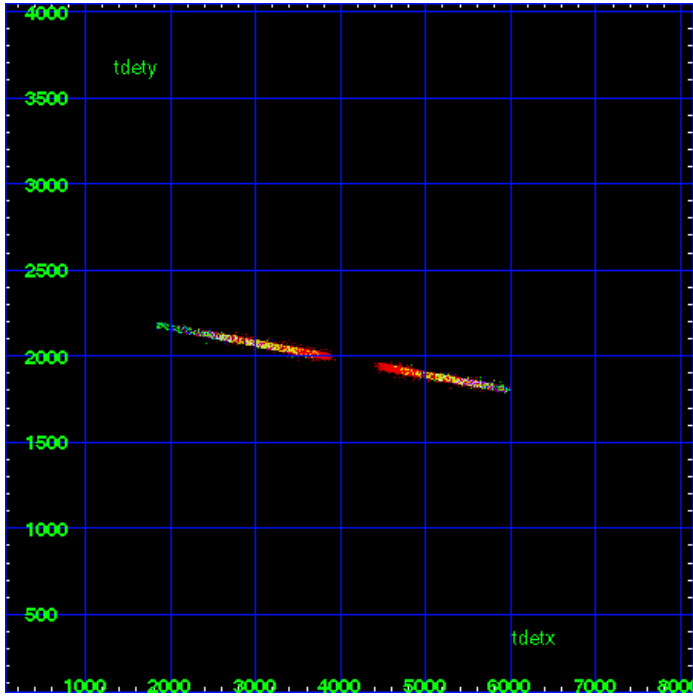
HEG Zero Order



HEG Order Sort ALL

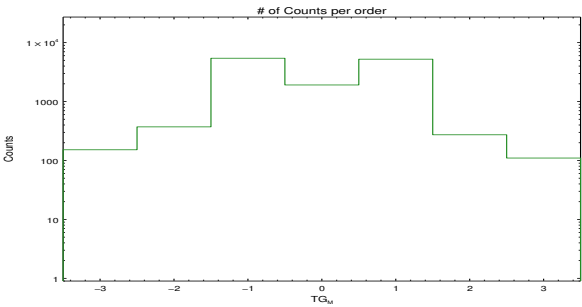


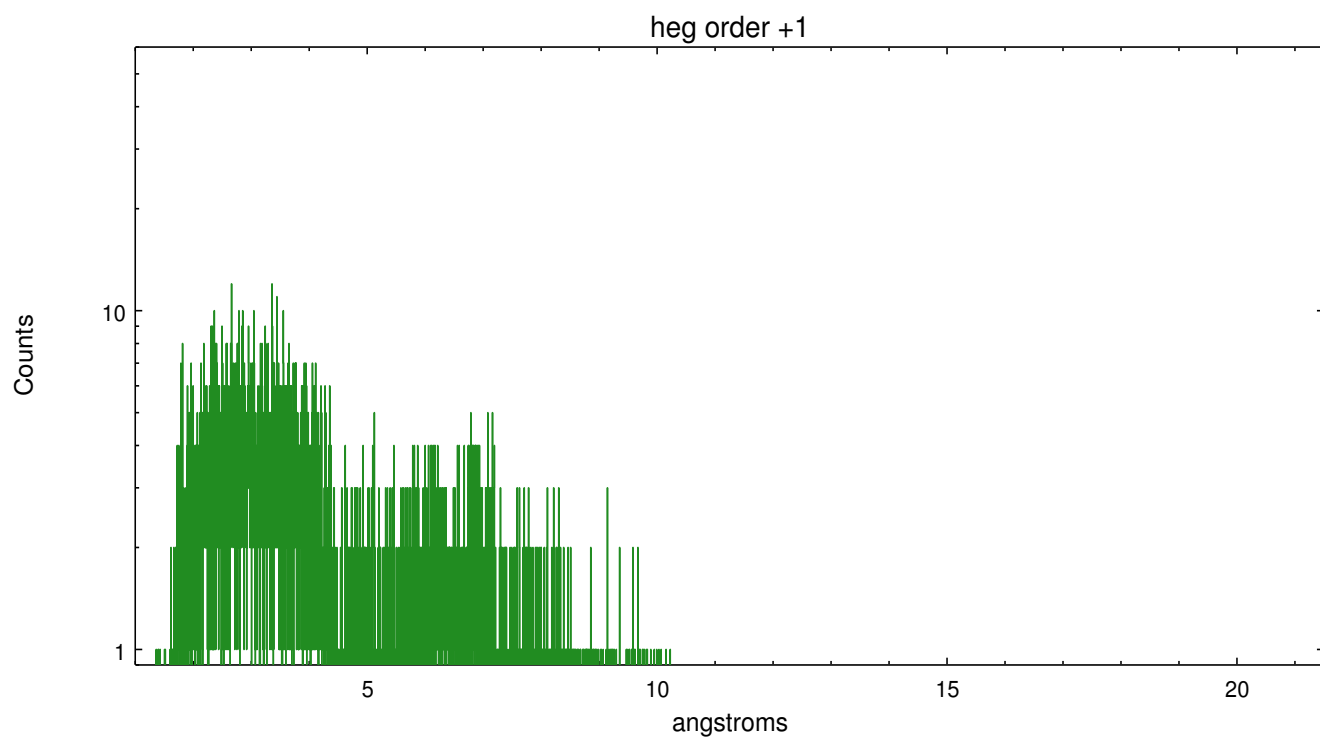
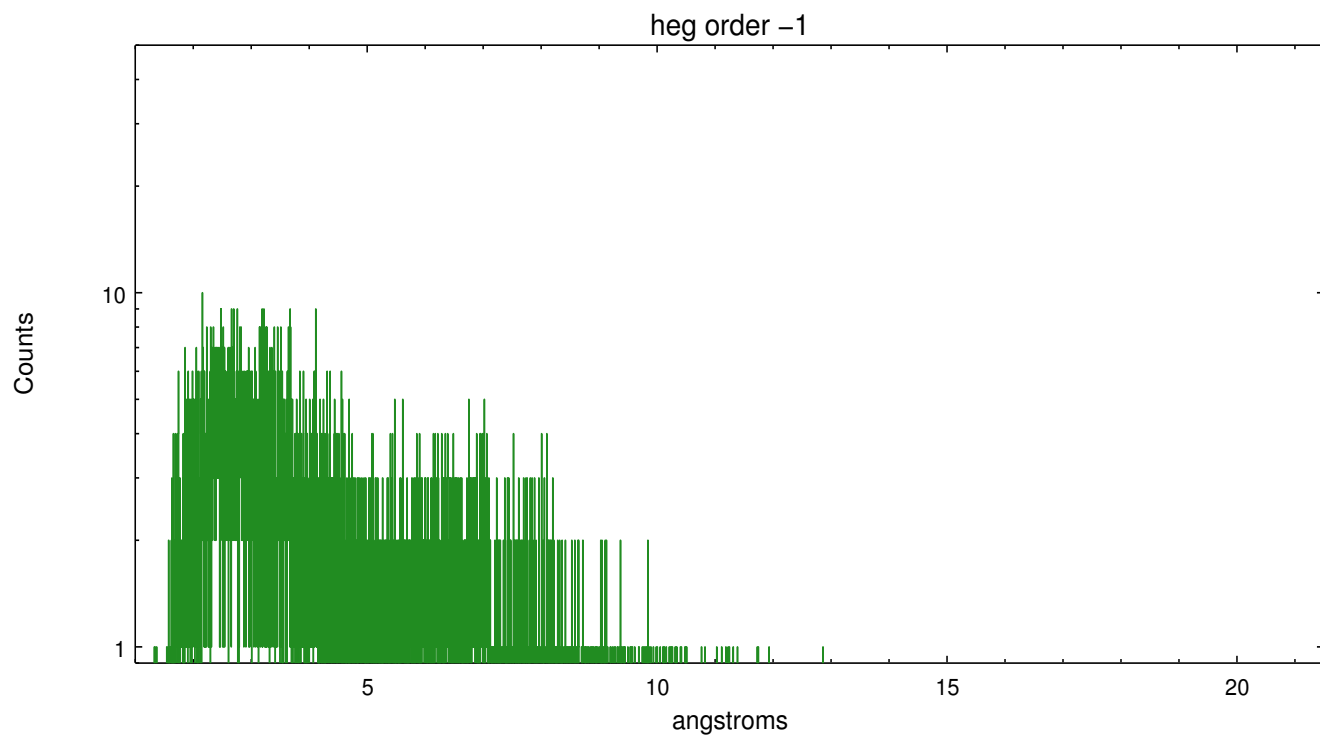
Spot Image HEG



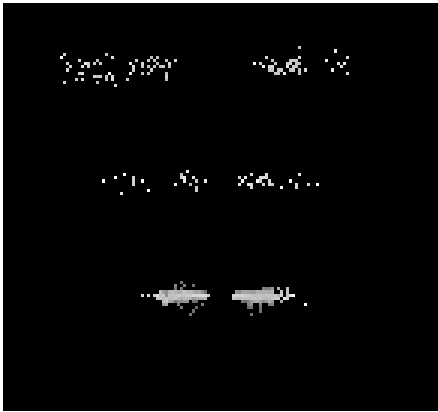
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	152	372	5432	1912	5234	273	110

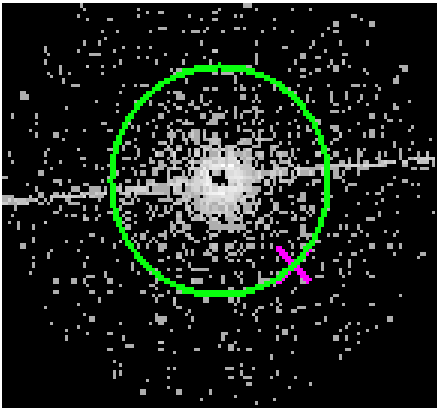




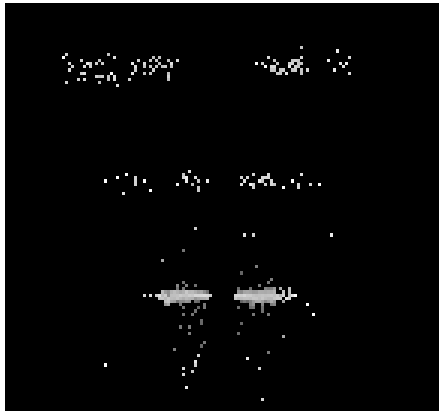
4.2 MEG Arm



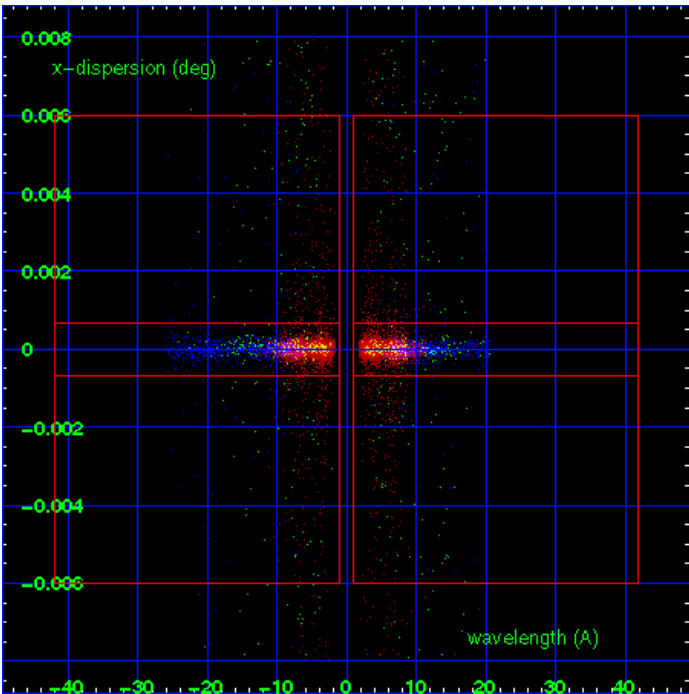
MEG Order Sort 123



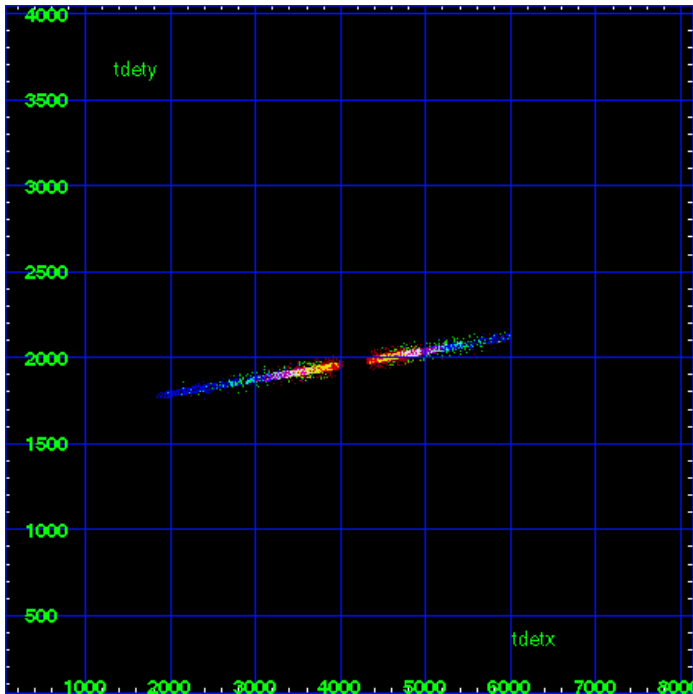
MEG Zero Order



MEG Order Sort ALL

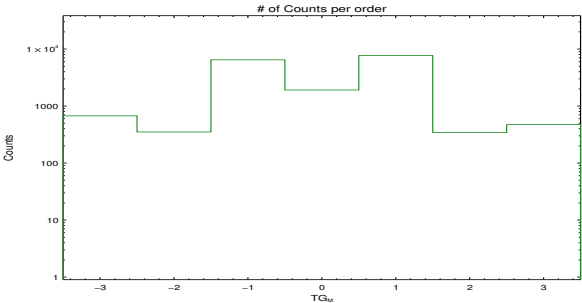


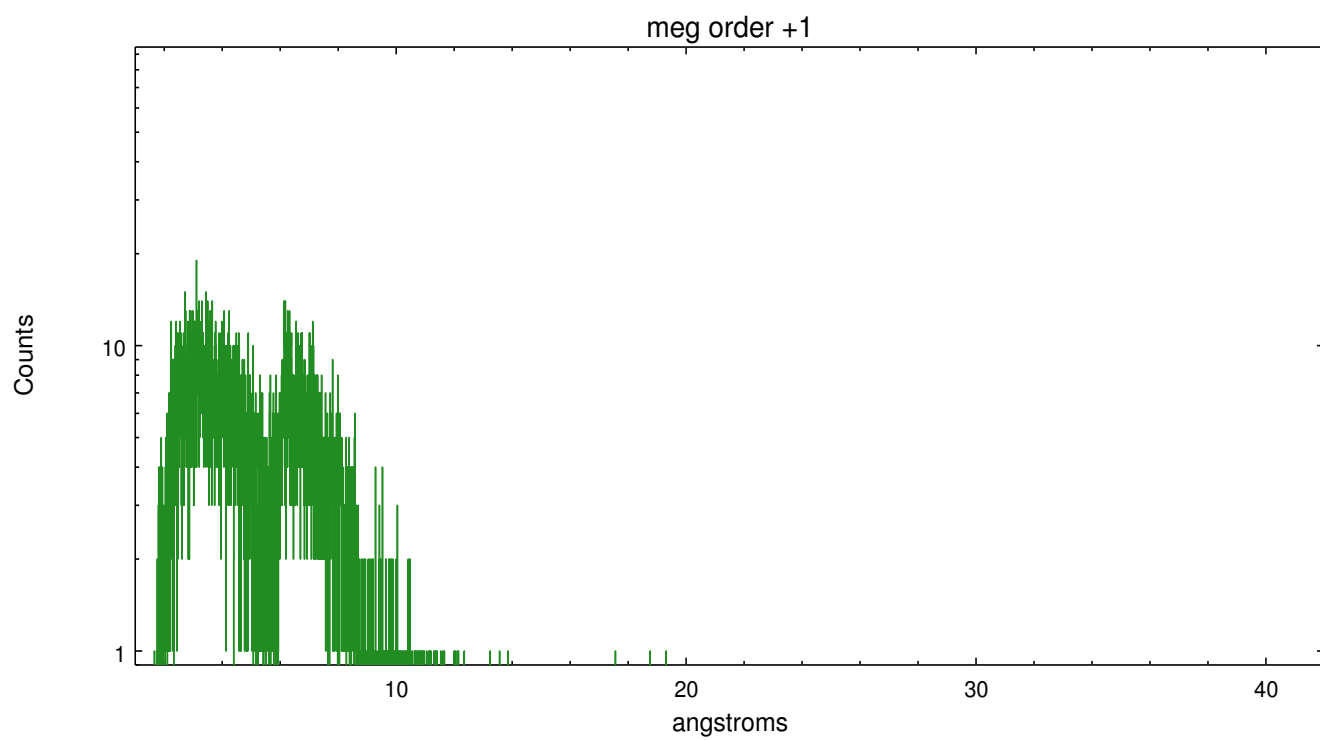
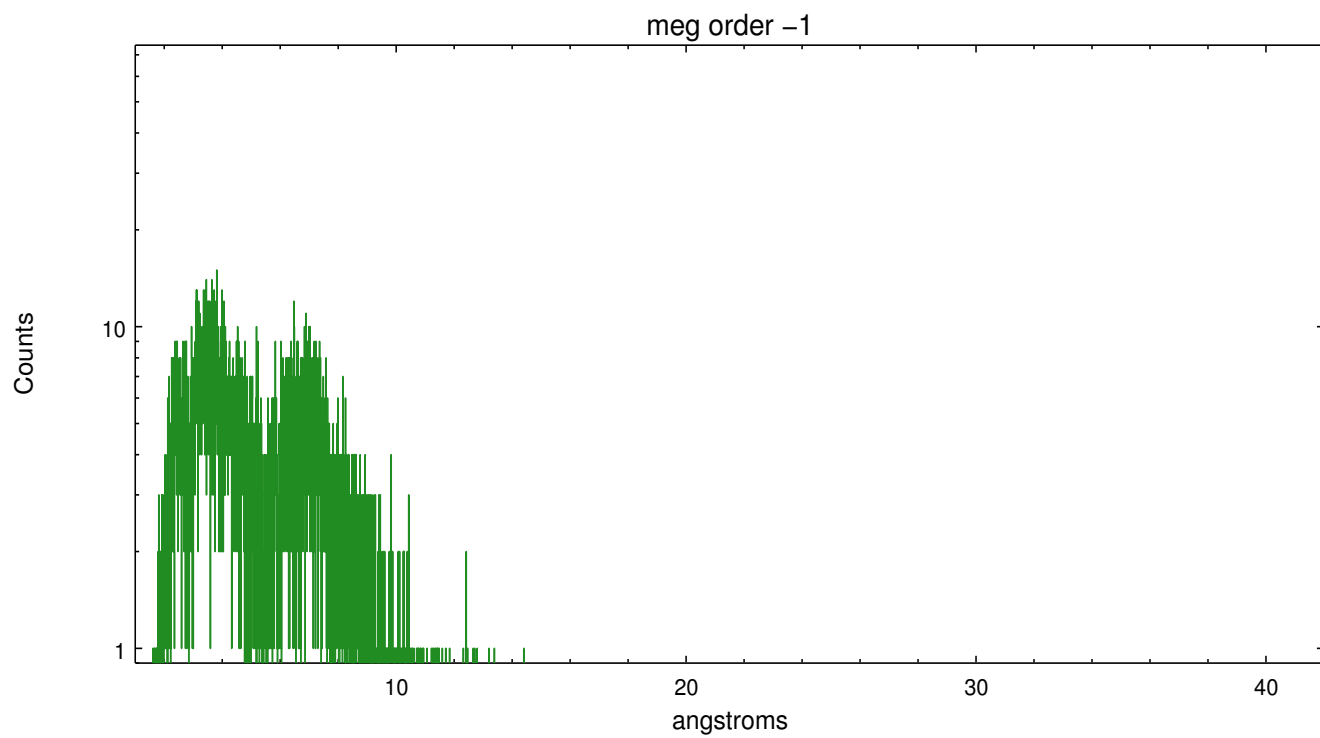
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	673	351	6473	1912	7693	343	473





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.11.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.093

A.2 Comments

This is an interleaved-mode observation. The primary exposure (e1) is shorter than the secondary exposure (e2). Therefore the longer exposure was used to determine the zeroth order position, then that position was applied to both exposures.

===

Zeroth order in both e1 and e2 piled up and cratered. 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=4075.45, y=4118.57) into the *src1a.fits file table. These corrected coordinates were determined for the secondary e2 exposure using a software tool developed by CXC called findzero, which is expected to be released in CIAO as tg_findzo (currently in ISIS as findzo). 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.

===

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.

===

The livetime for each chip in the primary exposure e1 is about 213 s instead of 1460.75 s for each chip because the use of a 0.3 s frame time for the selection of chips and rows used during the observation is shorter than the time it takes to read out one frame of data. The frame time must be at least 0.7 s to avoid 'flushing' the detector before each frame of data is collected. The secondary exposure e2 has a frame time of 1.7 s so the livetime is similar to the ontime.

Charge time for this ObsId remains at previous value of 10.093 ks.