

V&V Reference Report

L2 ASCDS Version : 8.4.3

Observation 13097 - L2 Version 2
Chandra X-Ray Center

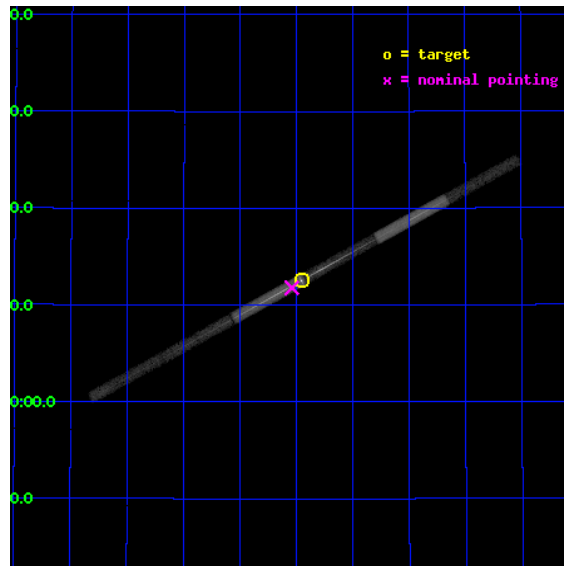
L2 Processing Date : Feb 7 2012

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	LETG Arm	17
A	Summary	19
A.1	Status	19
A.2	Comments	19

1 Front

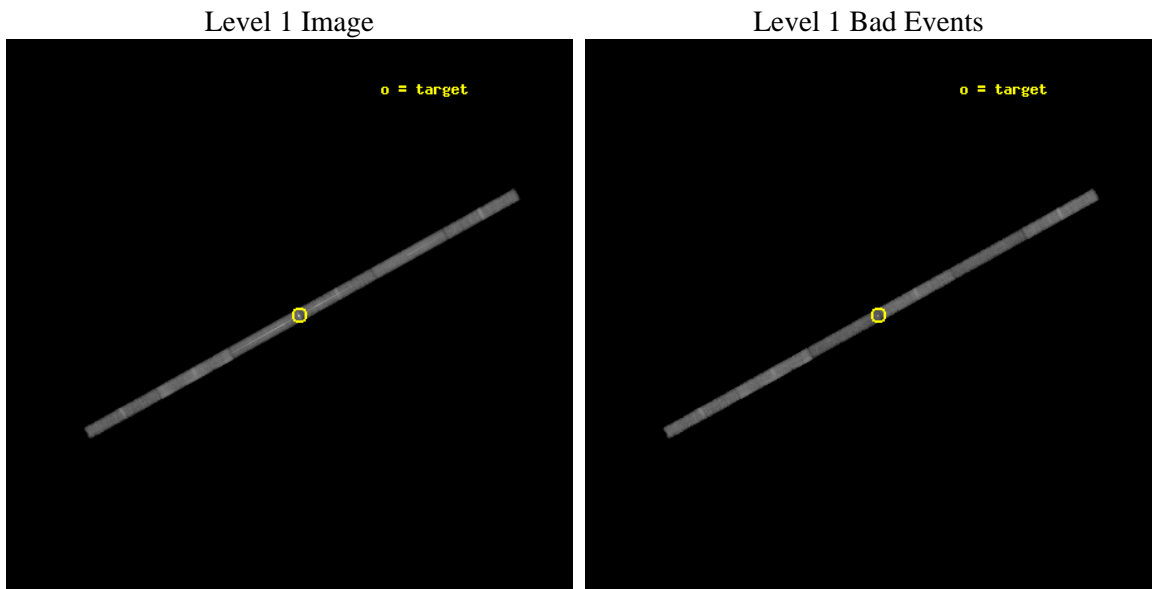
seq_num	790227	Sequence number
obs_id	13097	Observation id
title	AO-12 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.13498569188	Nominal RA [deg]
dec_nom	38.196442992923	Nominal Dec [deg]
roll_nom	151.14325917384	Nominal Roll [deg]
revision	2	Processing version of data
ontime	30064.801194668	Sum of GTIs [s]
livetime	28140.023581681	Livetime [s]
ontime4	30064.160154521	Sum of GTIs [s]
ontime5	30064.801194668	Sum of GTIs [s]
ontime6	30064.801194668	Sum of GTIs [s]
ontime7	30064.801194668	Sum of GTIs [s]
ontime8	30064.801194668	Sum of GTIs [s]
ontime9	30064.801194668	Sum of GTIs [s]
l2events	90939	Number of level 2 events



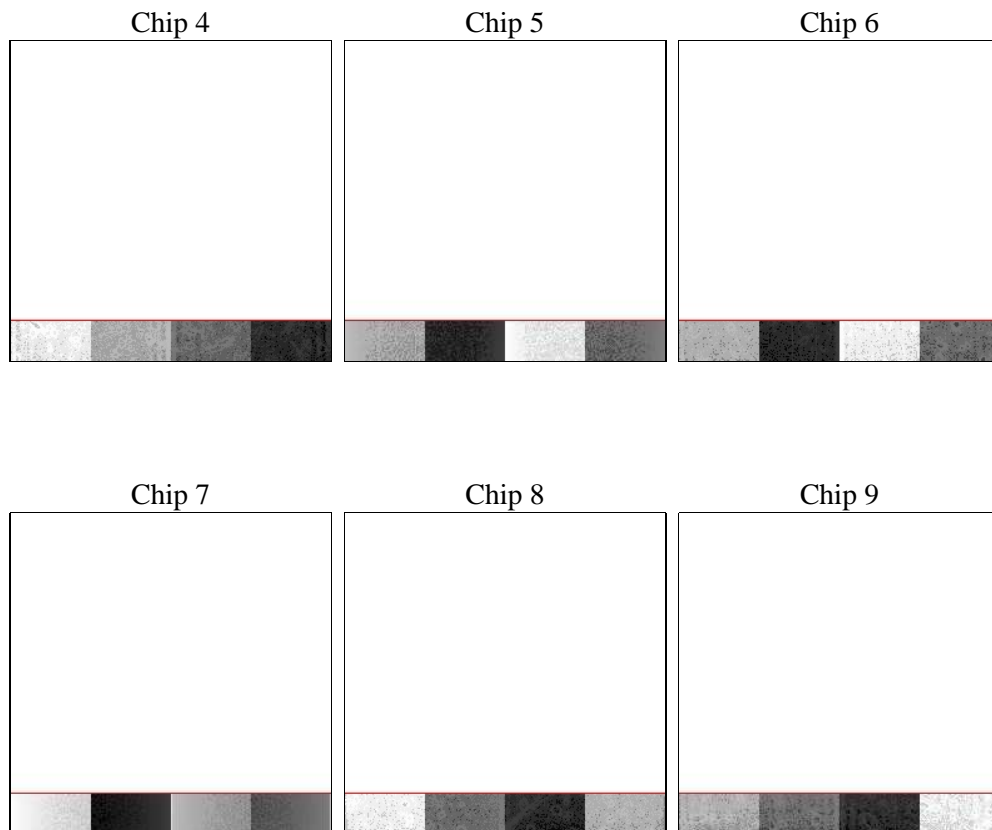
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.3	Processing system revision	ontime	30064.801194668	Sum of GTIs [s]
caldbver	4.4.7	 	ontime4	30064.160154521	Sum of GTIs [s]
date	2012-02-04T06:19:18	Date and time of file creation	ontime5	30064.801194668	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	30064.801194668	Sum of GTIs [s]
			ontime7	30064.801194668	Sum of GTIs [s]
			ontime8	30064.801194668	Sum of GTIs [s]
			ontime9	30064.801194668	Sum of GTIs [s]
			l1events	287974	Number of level 1 events

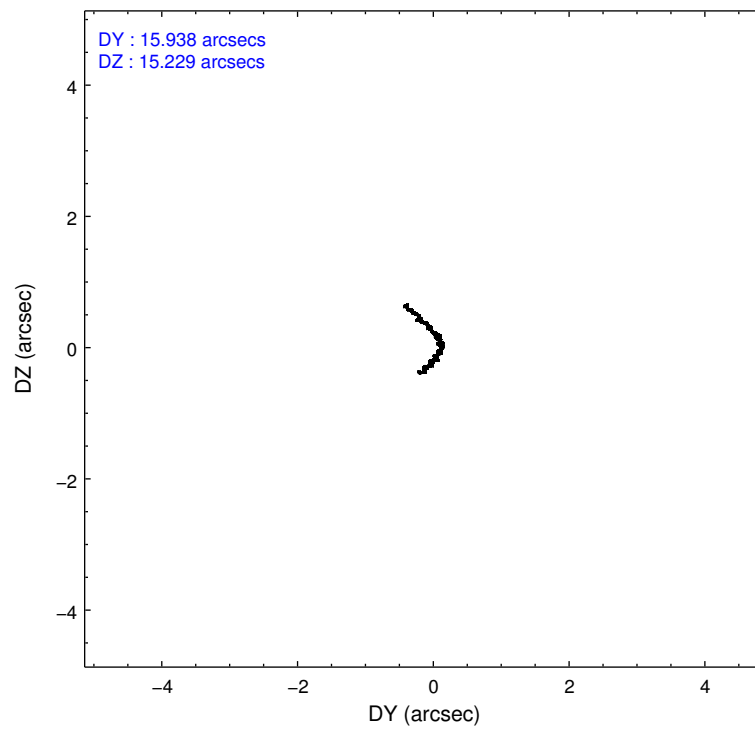
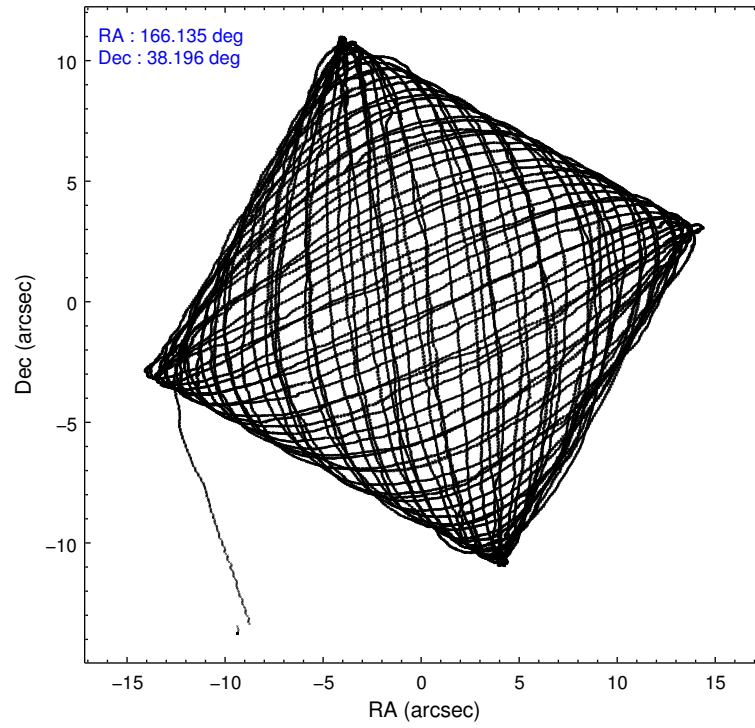
2.1.4 Events

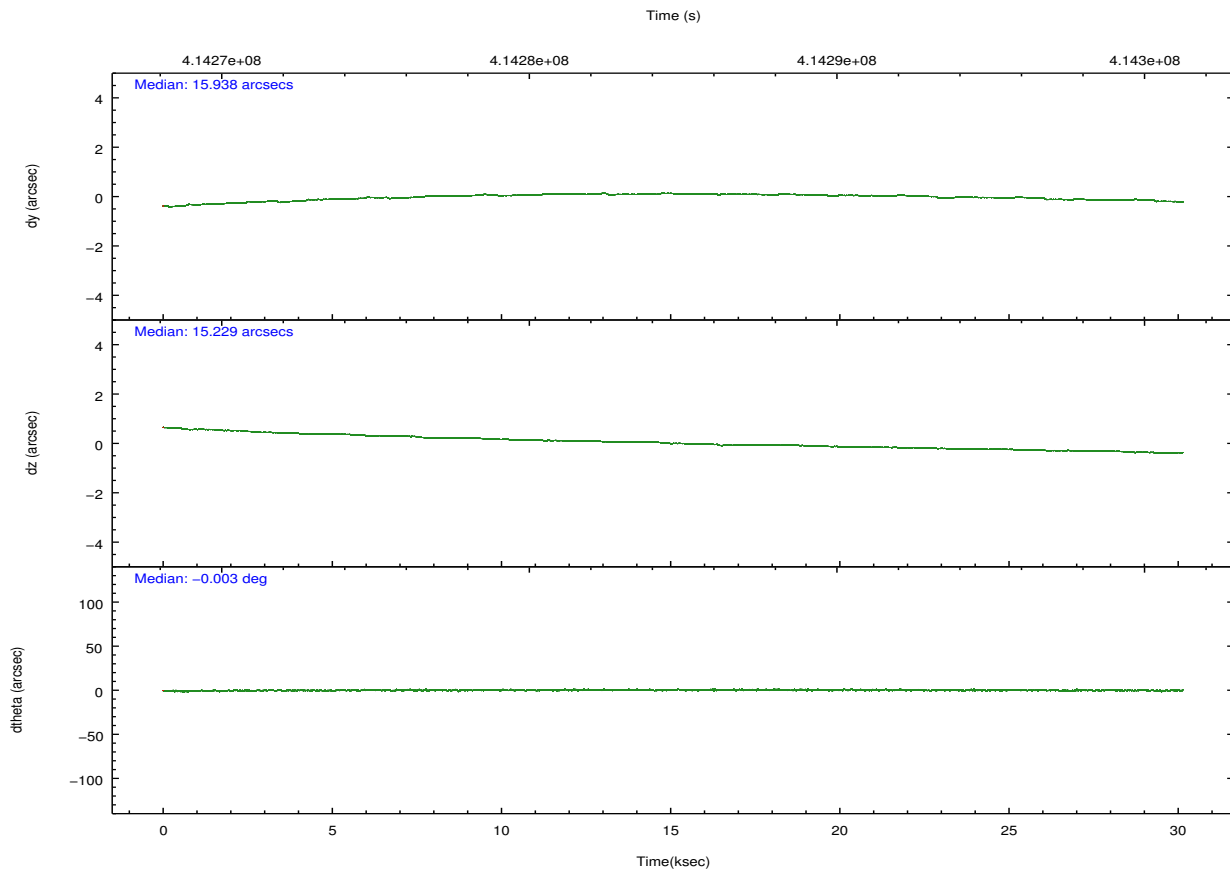
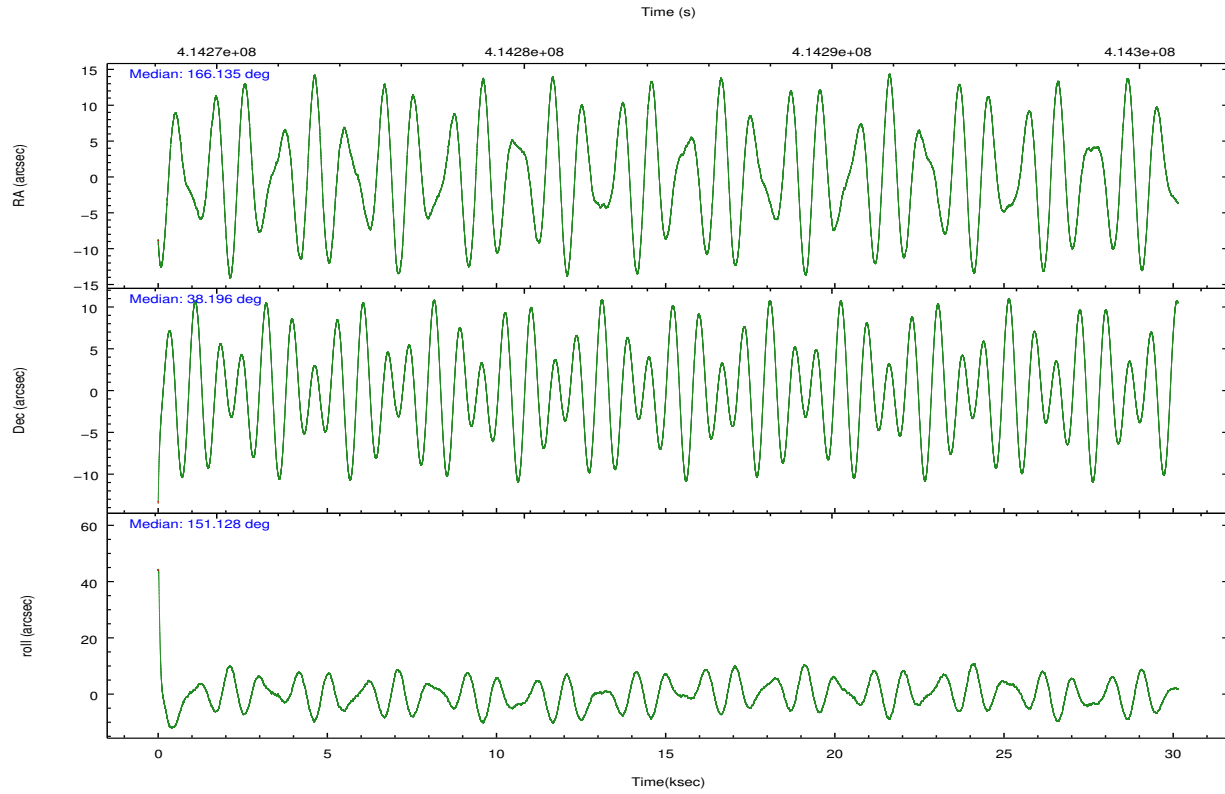
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	42631	46851	45208	65499	54378	33407	grade 0 events	1492	4372	7179	10811	3698	1350
rejected events	37918	21027	33739	20220	40877	29120		3%	9%	15%	16%	6%	4%
rejected %	88%	44%	74%	30%	75%	87%	grade 1 events	9	70	21	202	17	10
								0%	0%	0%	0%	0%	0%
							grade 2 events	1001	6317	1465	10364	2421	722
								2%	13%	3%	15%	4%	2%
							grade 3 events	775	2176	939	5265	1798	760
								1%	4%	2%	8%	3%	2%
							grade 4 events	704	2142	981	5051	1654	712
								1%	4%	2%	7%	3%	2%
							grade 5 events	1161	4063	1166	4167	1742	1172
								2%	8%	2%	6%	3%	3%
							grade 6 events	741	10817	905	13791	3935	743
								1%	23%	2%	21%	7%	2%
							grade 7 events	36748	16894	32552	15848	39113	27938
								86%	36%	72%	24%	71%	83%

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	LETG	LETG	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	166.169766	166.1349856918762	CCD I2 on	N	N
[deg] Pointing Dec	38.197353	38.1964429929232	CCD I3 on	N	N
[deg] Pointing Roll	150.965100	151.1432591738373	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	-179.132523	-179.1399366055469	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-11	-10.99258597746092	CCD S4 on	Y	Y
[s] Observation start time (MET)	414269740.184000	414268450.81907	CCD S5 on	Y	Y
Observation start date	2011-02-16T18:54:34	2011-02-16T18:34:10	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	414299740.184000	414300746.52074	On-chip summing requested	N	N
Observation end date	2011-02-17T03:14:34	2011-02-17T03:32:26	Subarray requested	CUSTOM	1/8
Read mode	TIMED	TIMED	Subarray start row	1	1
			Subarray row count	128	128
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.6

2.3 Aspect



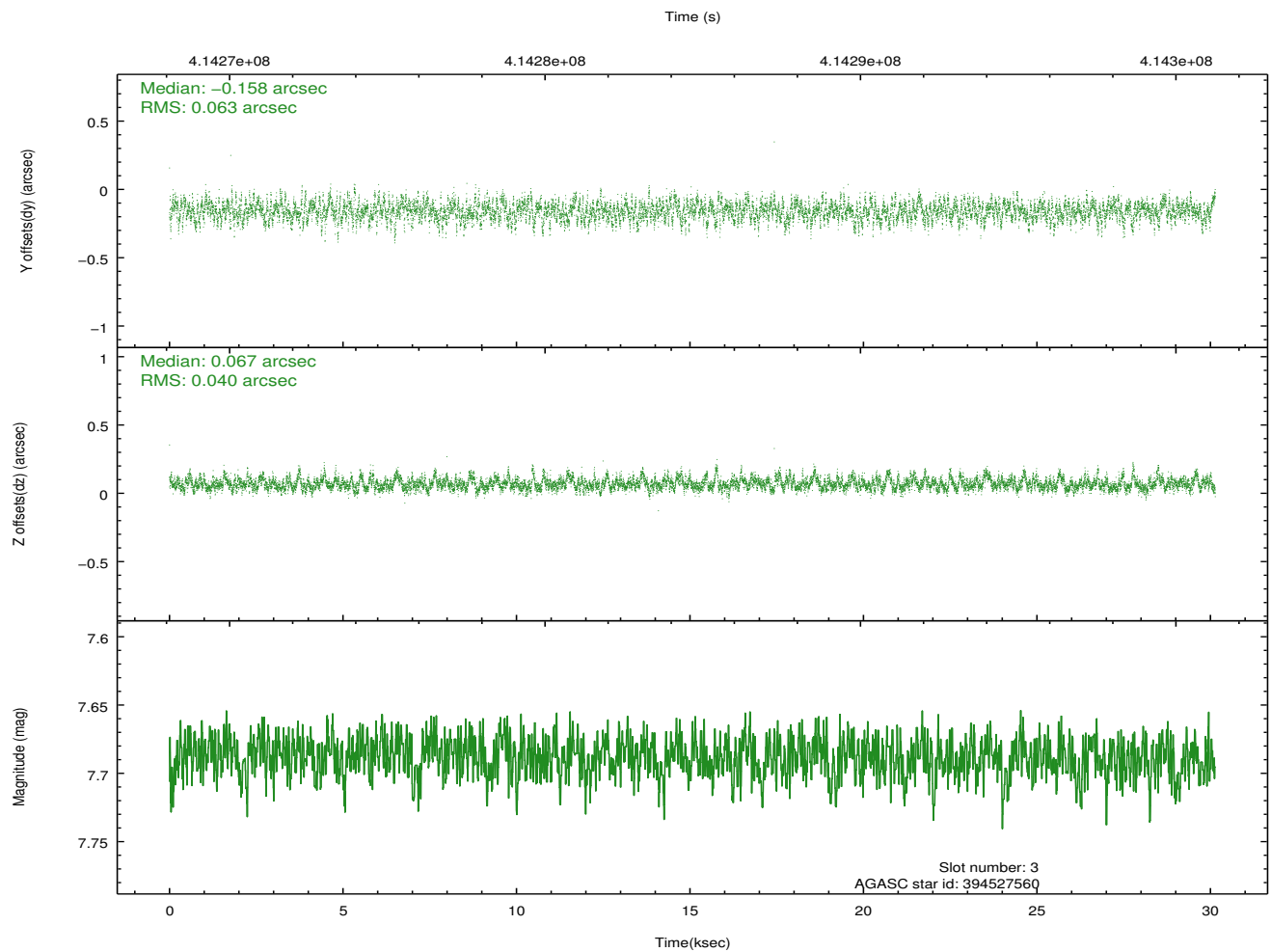
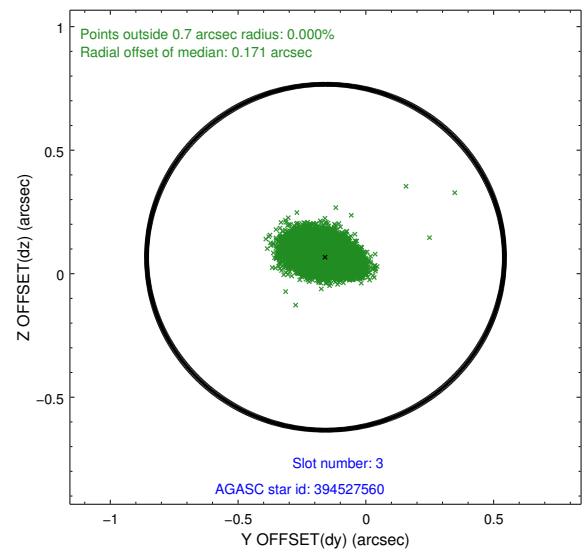
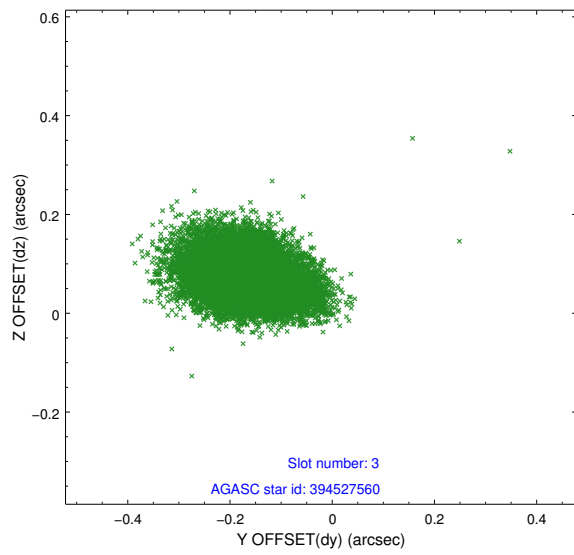


Slot Statistics

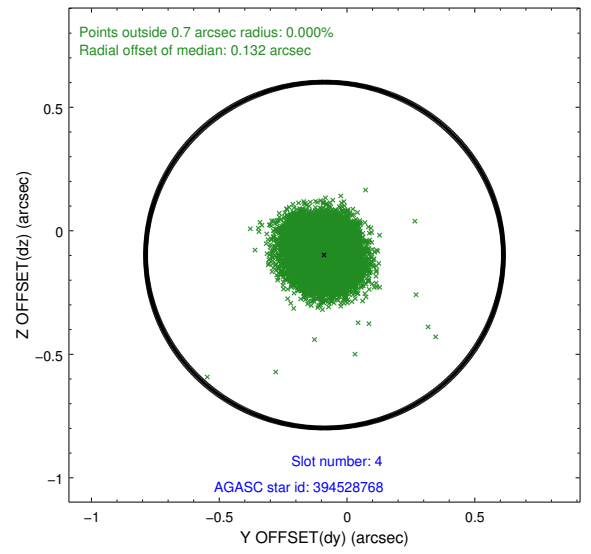
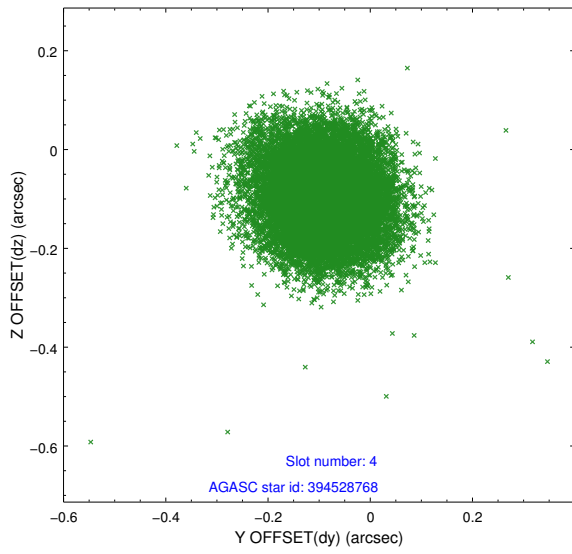
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.01	7352	0.162	0.094	0.010	0.021	0.000000	0.000000	928.03	-1958.54
1	FID	ACIS-S-5	7.07	7351	-0.177	0.170	0.010	0.023	0.000000	0.000000	-1821.18	-60.91
2	FID	ACIS-S-6	7.24	7352	-0.005	-0.252	0.009	0.016	0.000000	0.000000	393.46	582.61
3	GUIDE	394527560	7.69	14701	-0.158	0.067	0.078	0.133	165.970713	38.960939	1822.28	-2132.81
4	GUIDE	394528768	8.87	14699	-0.088	-0.098	0.107	0.167	166.180365	38.952248	1293.96	-2390.00
5	GUIDE	394530152	7.50	14698	0.189	0.095	0.081	0.131	166.075805	38.868252	1403.57	-1983.50
6	GUIDE	394533848	8.73	14687	-0.233	-0.262	0.084	0.136	166.382906	38.276007	-385.12	-539.58
7	GUIDE	394546720	6.43	14701	0.281	0.193	0.089	0.171	166.130115	38.241361	175.38	-83.70

2.4 Star Slots

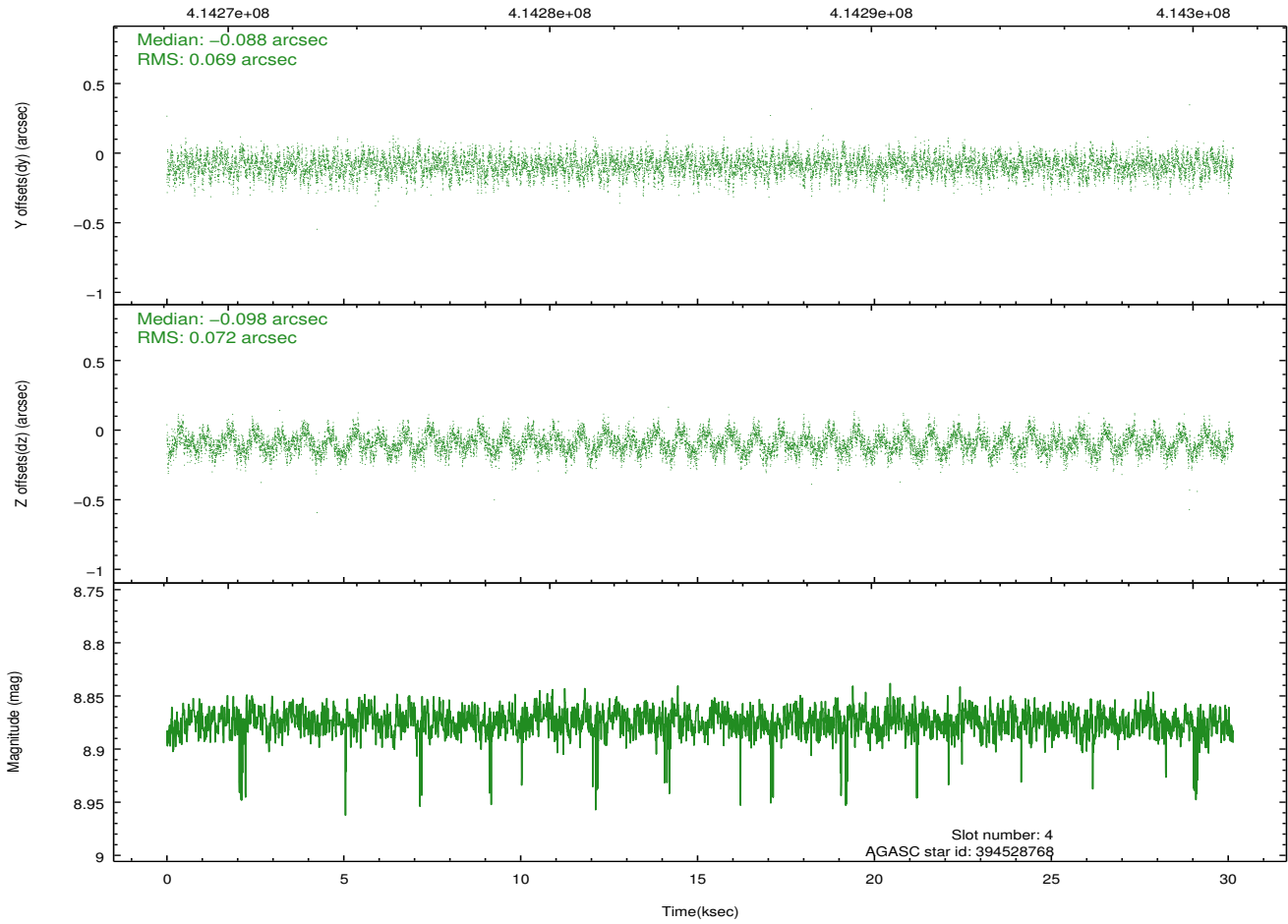
2.4.1 Slot 3



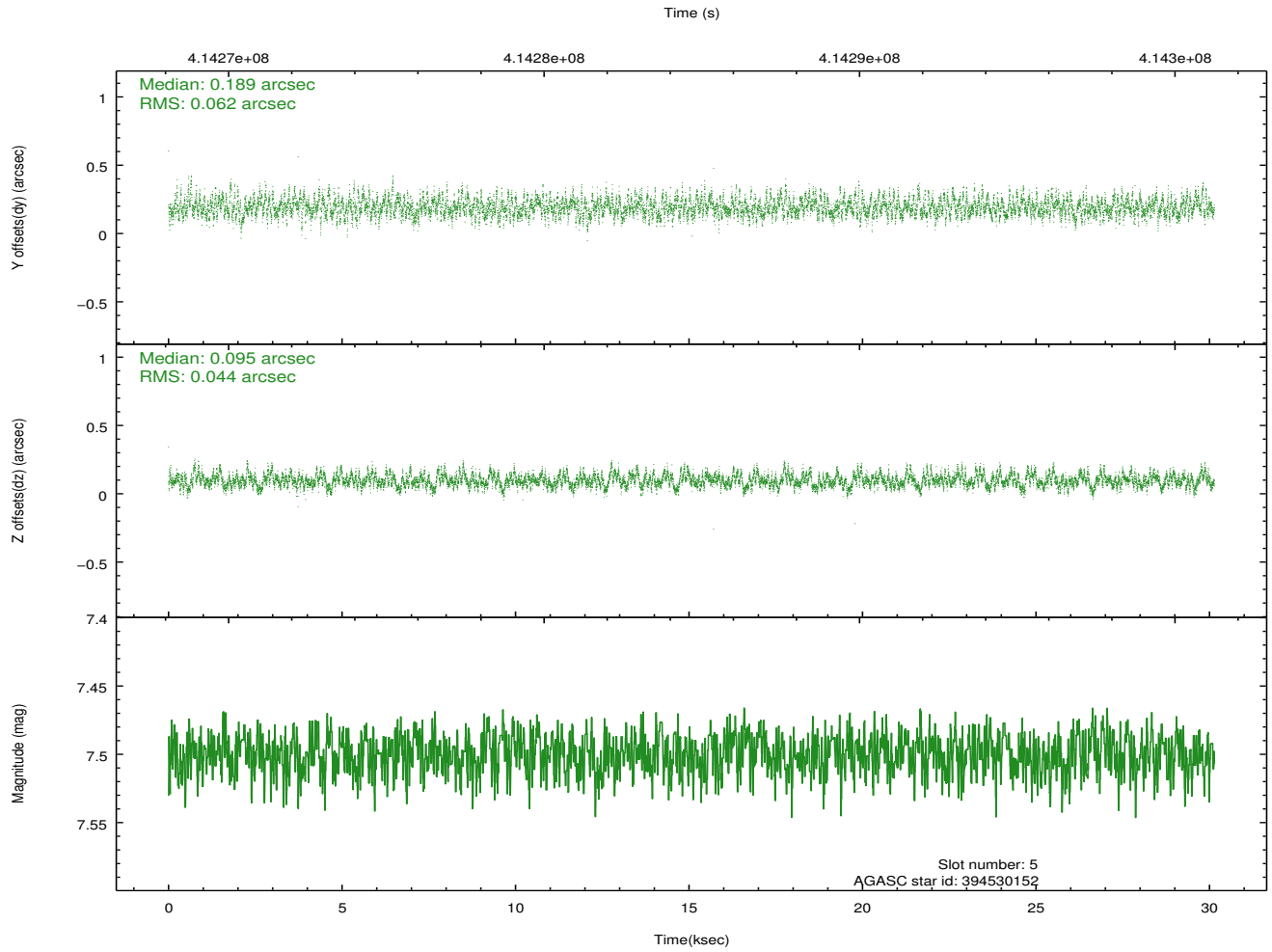
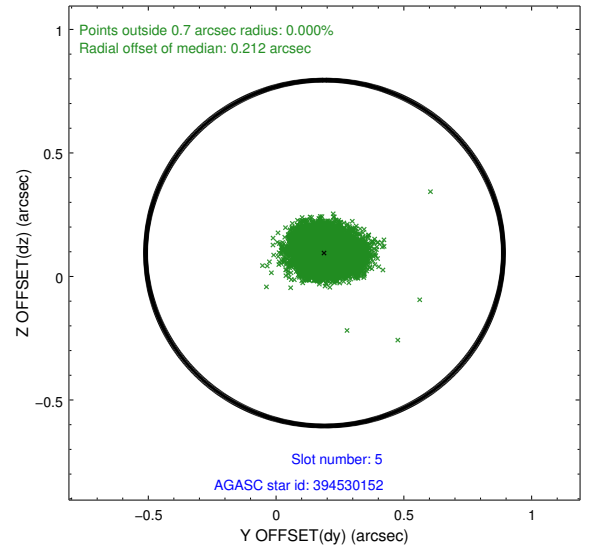
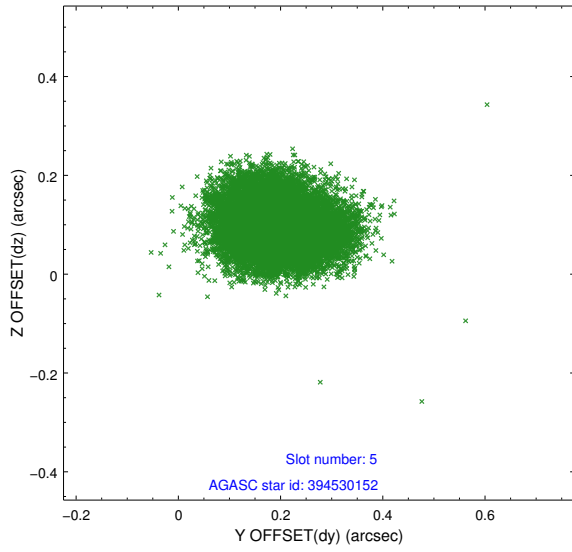
2.4.2 Slot 4



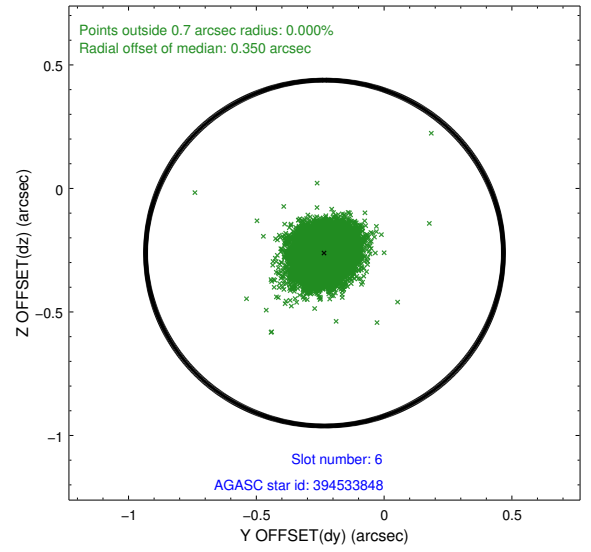
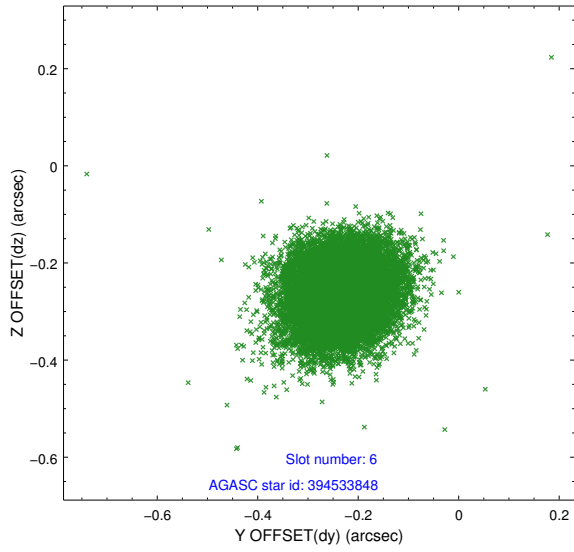
Time (s)



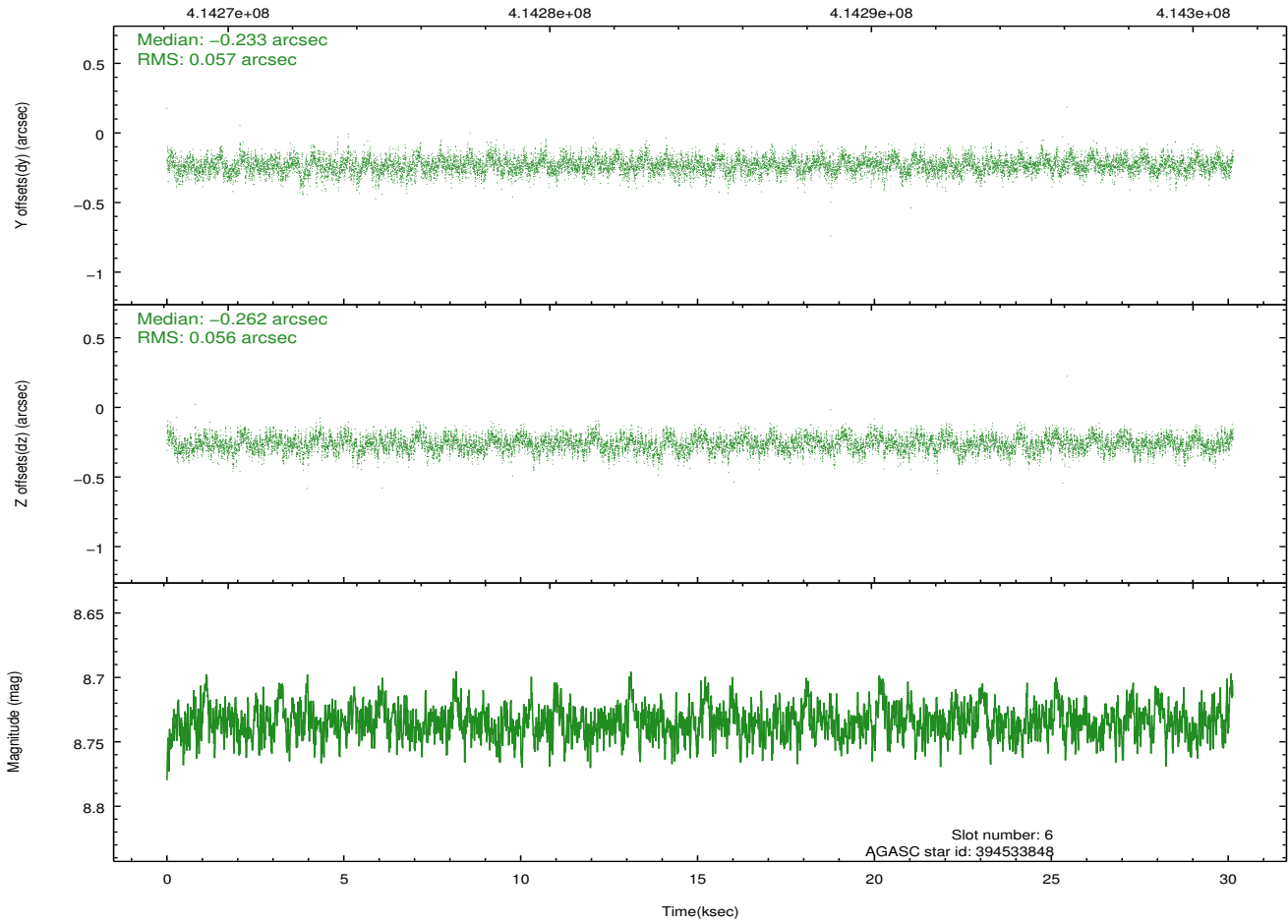
2.4.3 Slot 5



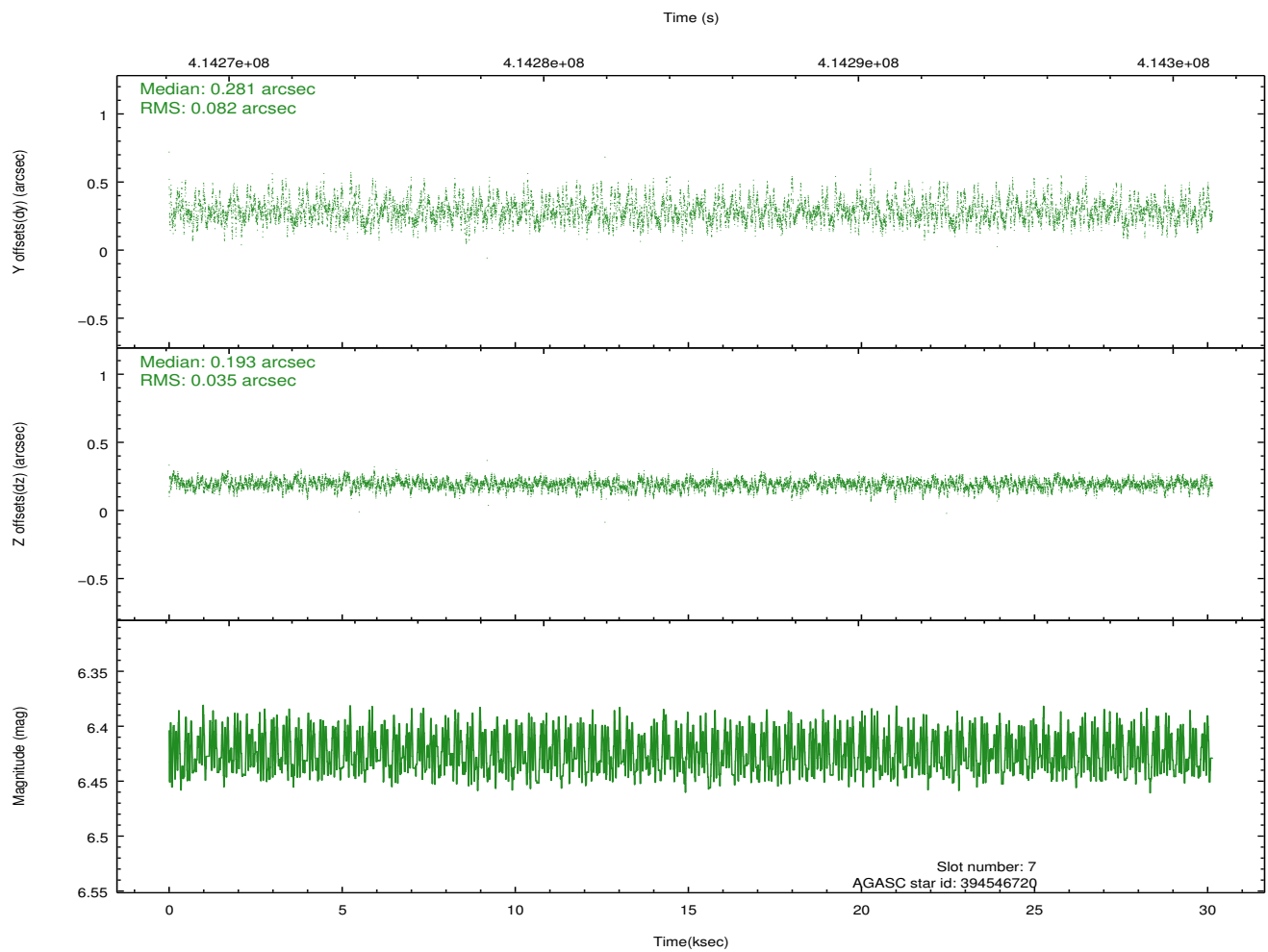
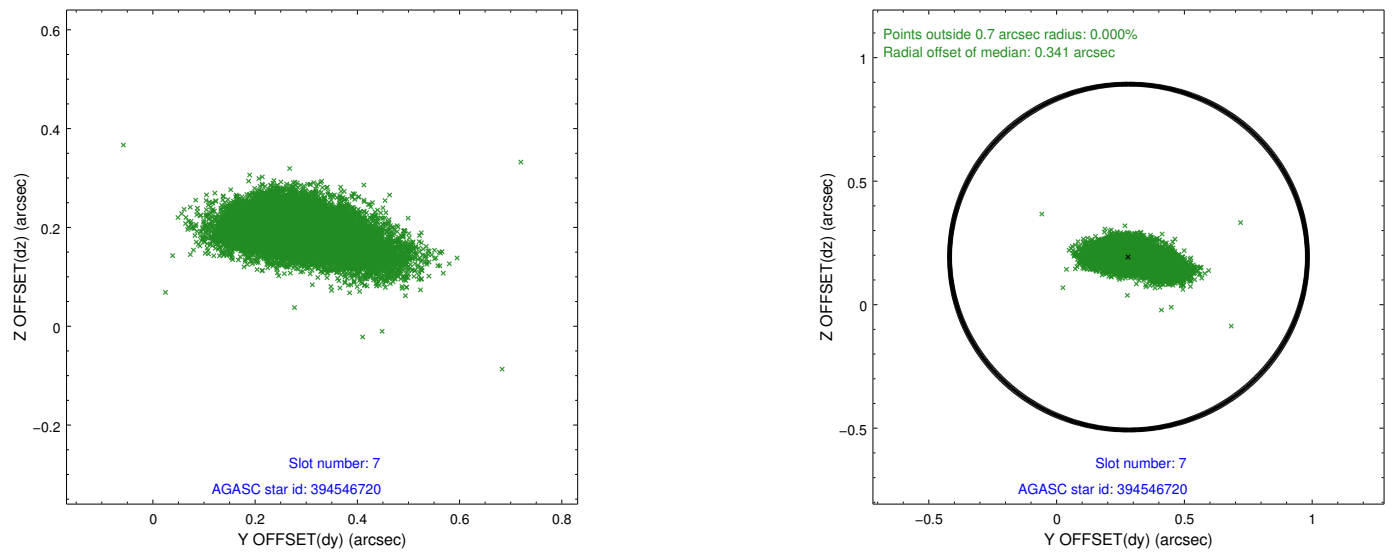
2.4.4 Slot 6



Time (s)

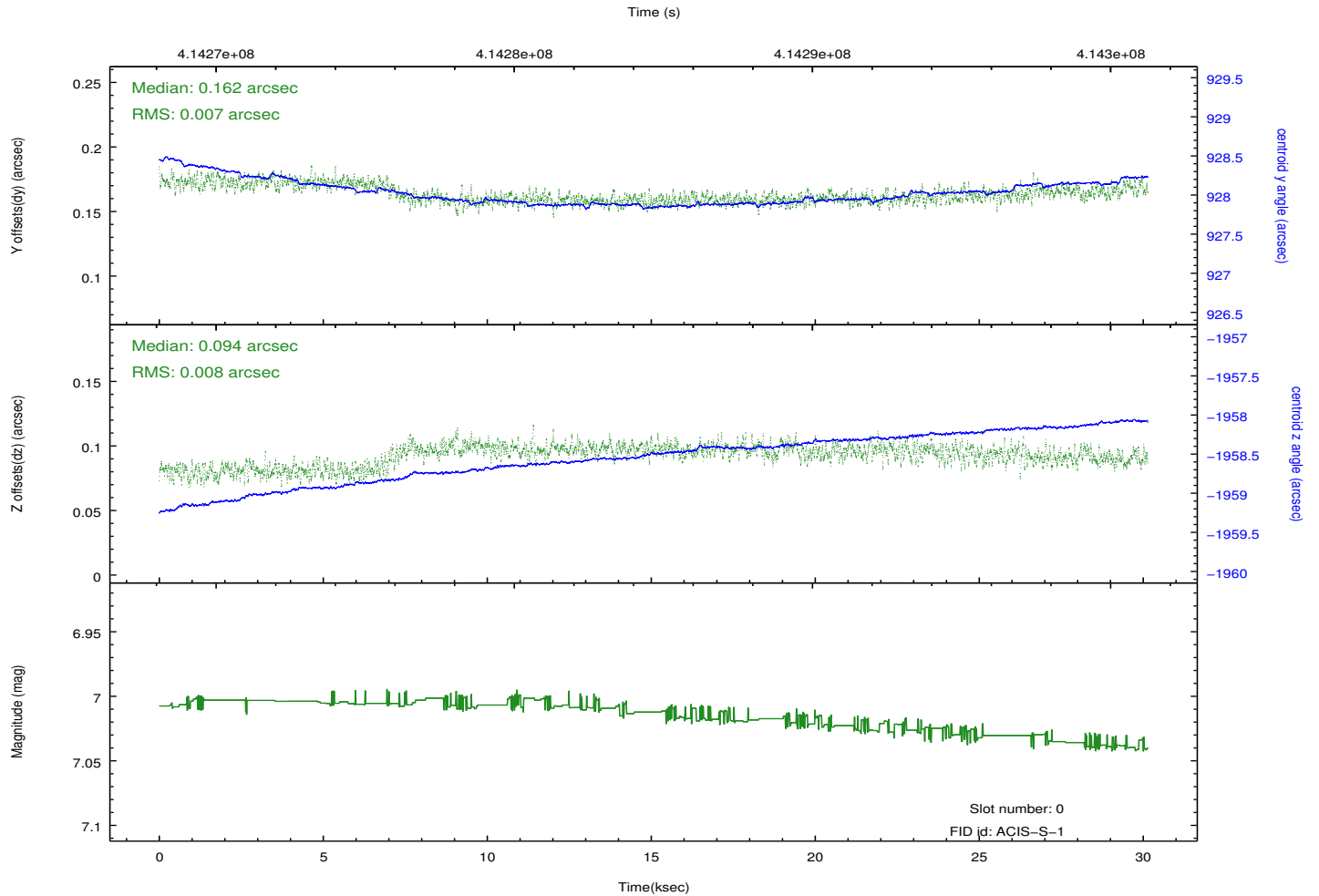
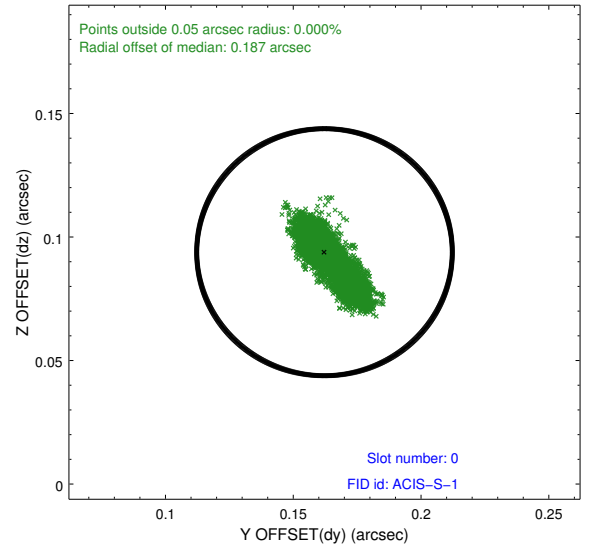
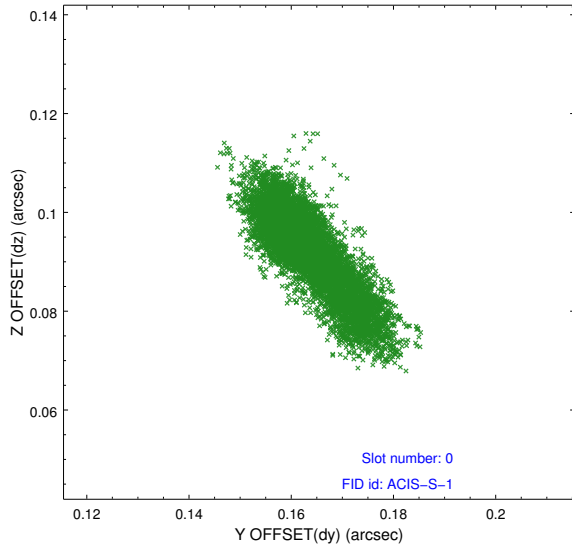


2.4.5 Slot 7

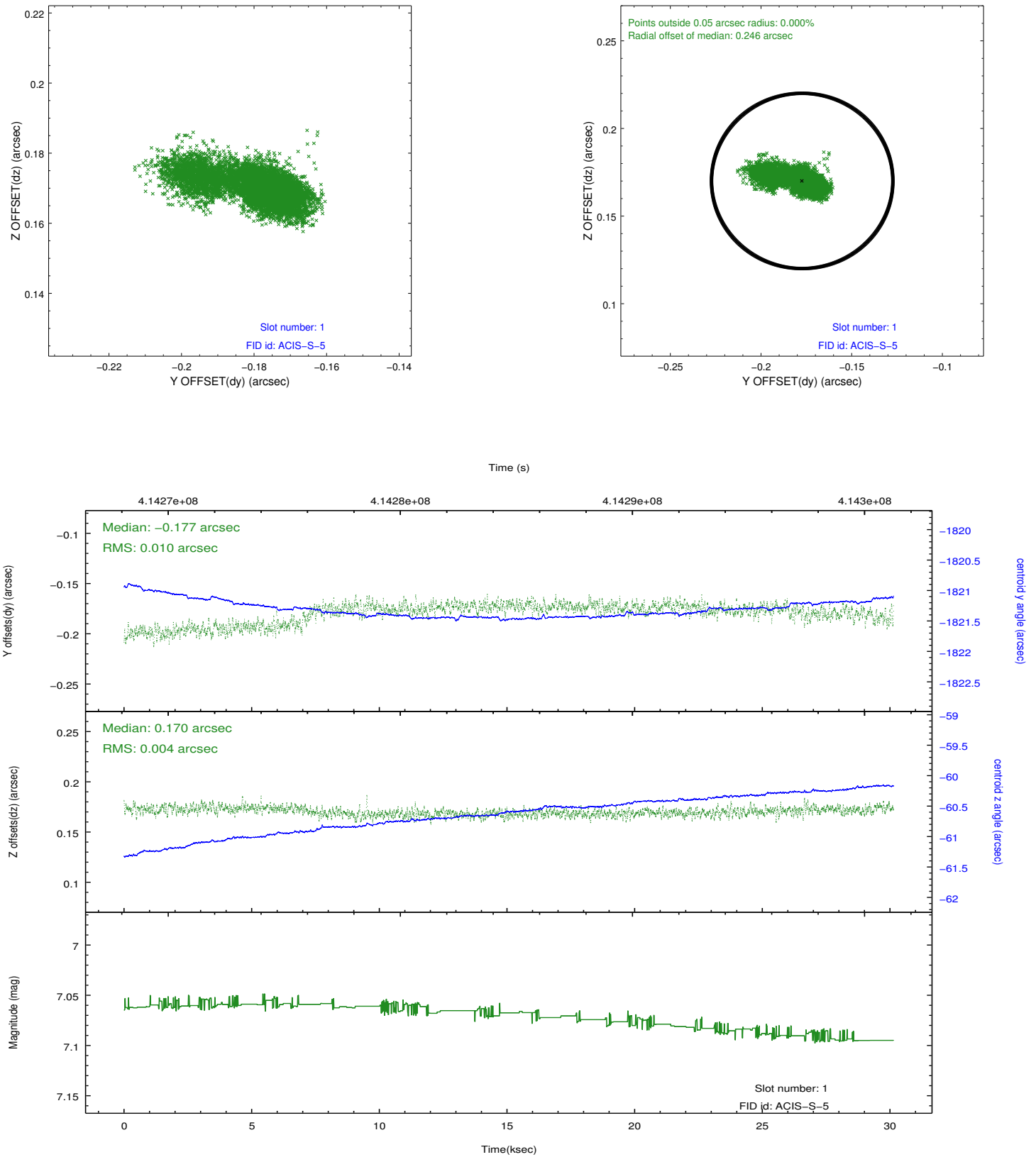


2.5 FID Slots

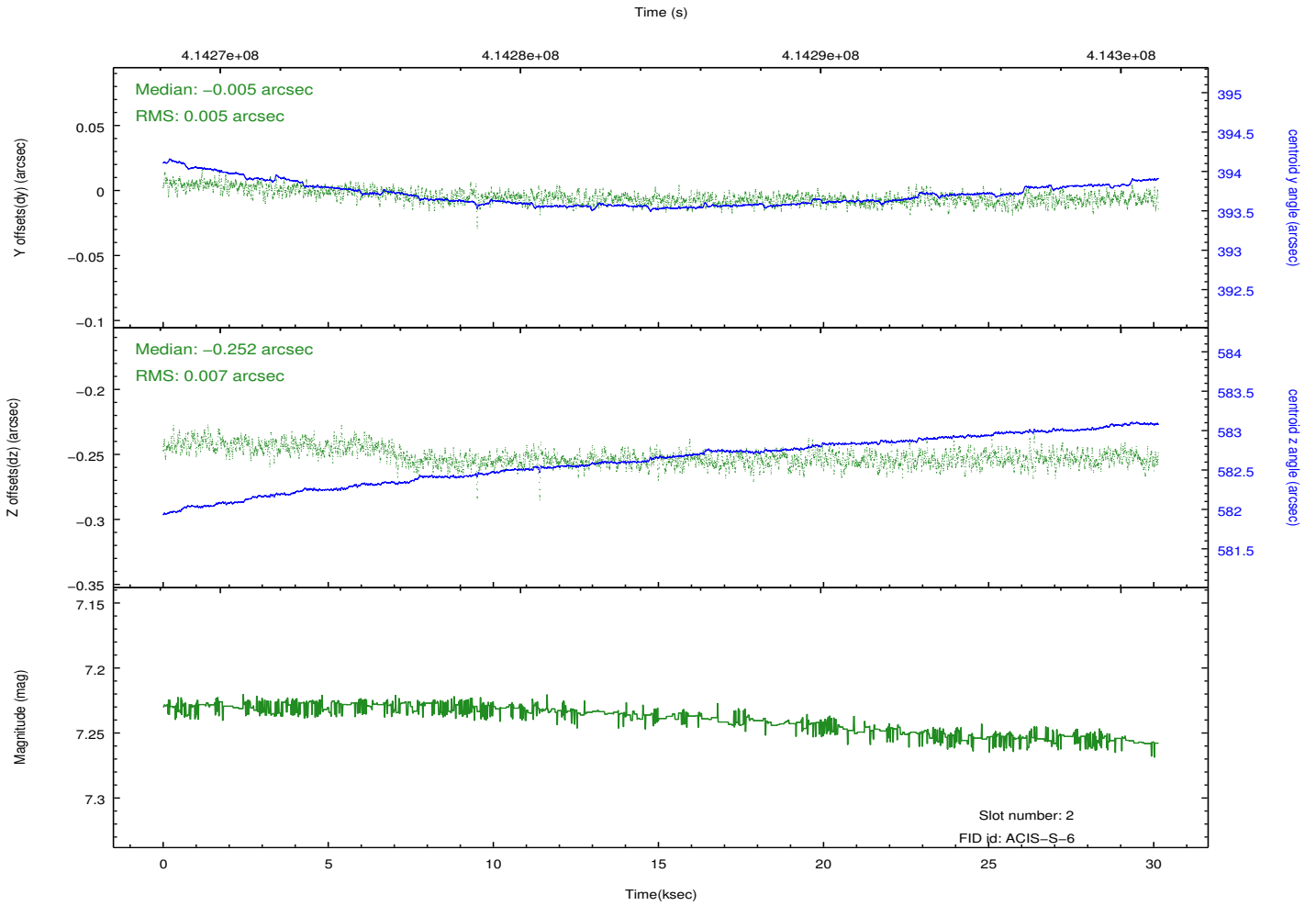
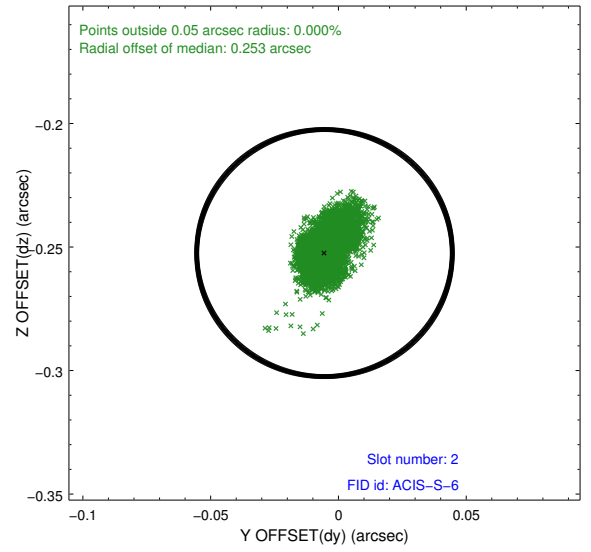
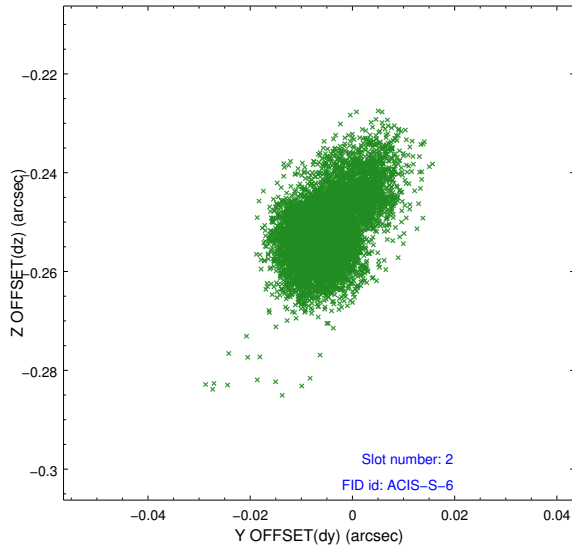
2.5.1 Slot 0



2.5.2 Slot 1

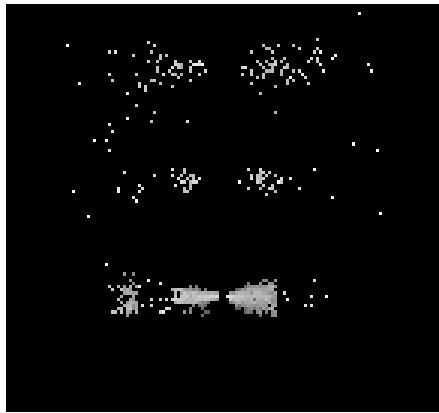


2.5.3 Slot 2

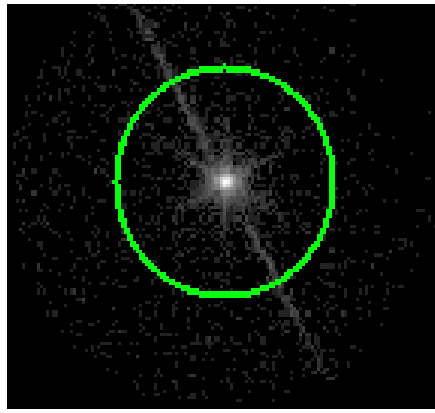


3 Gratings

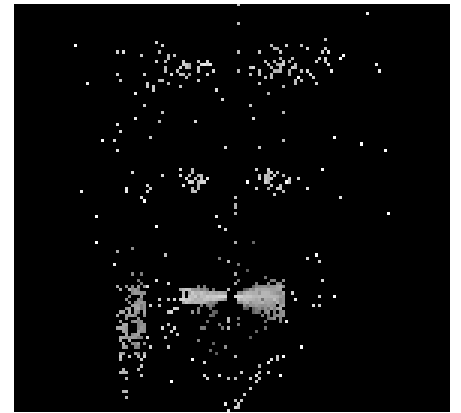
3.1 LETG Arm



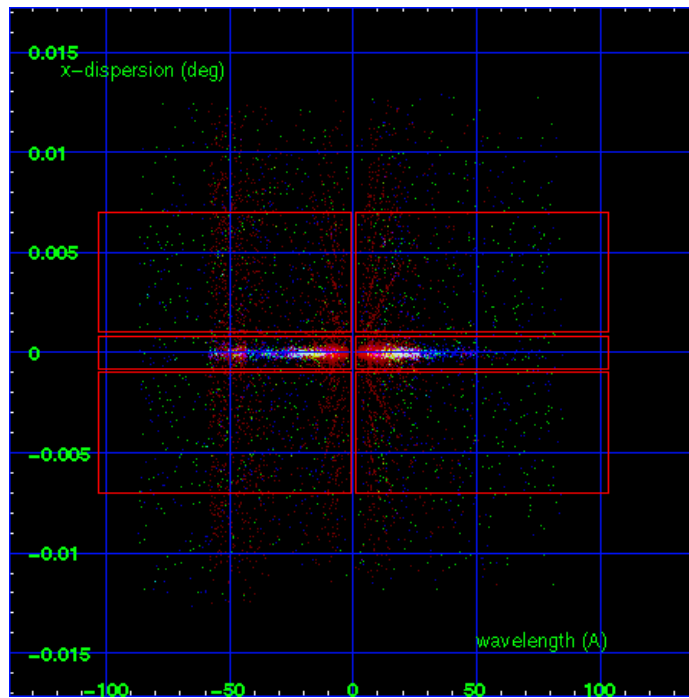
LETG Order Sort 123



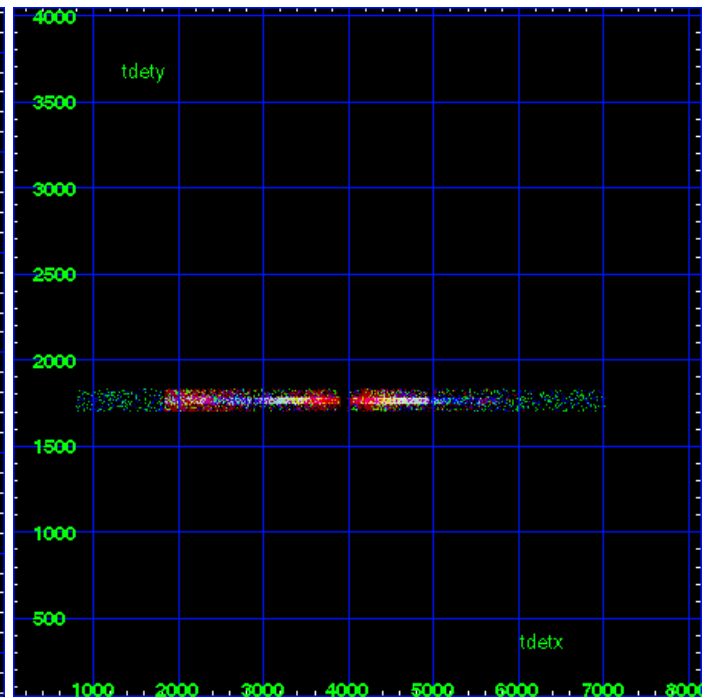
LETG Zero Order



LETG Order Sort ALL

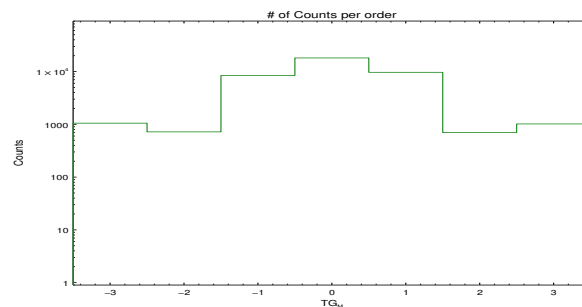


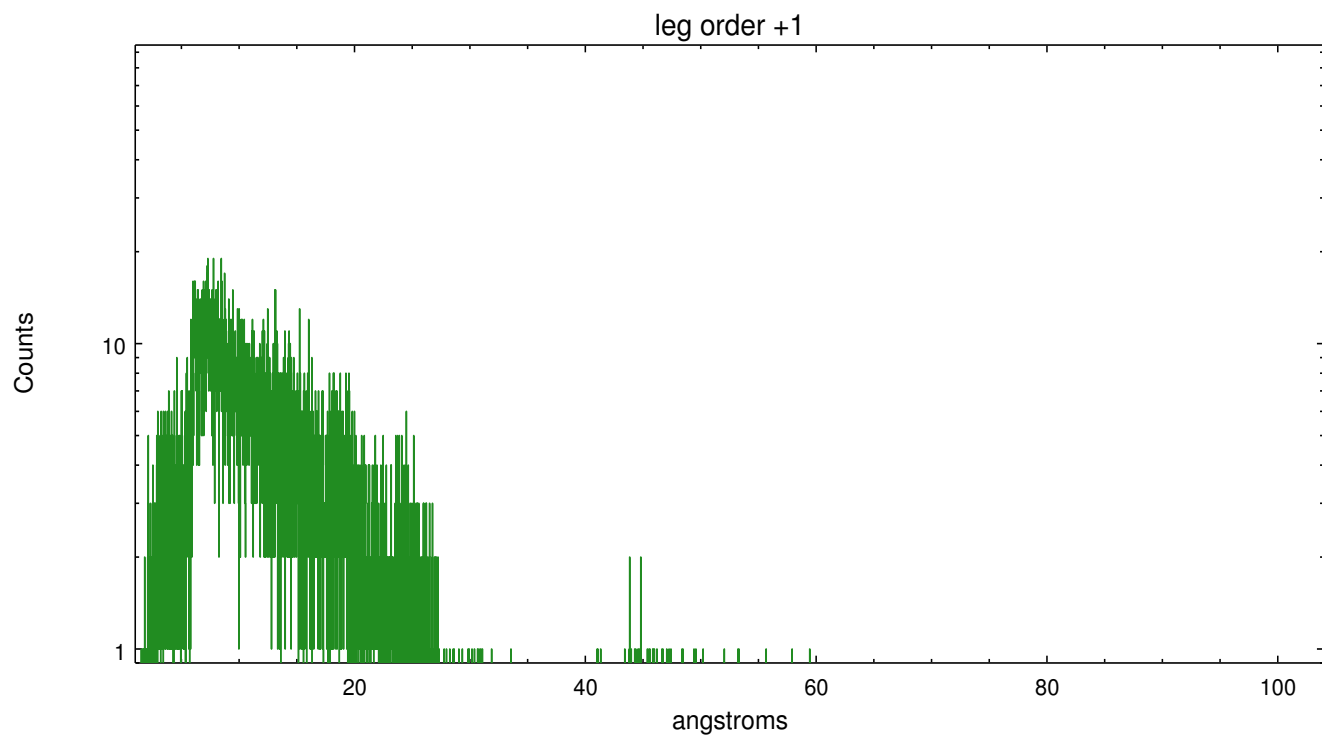
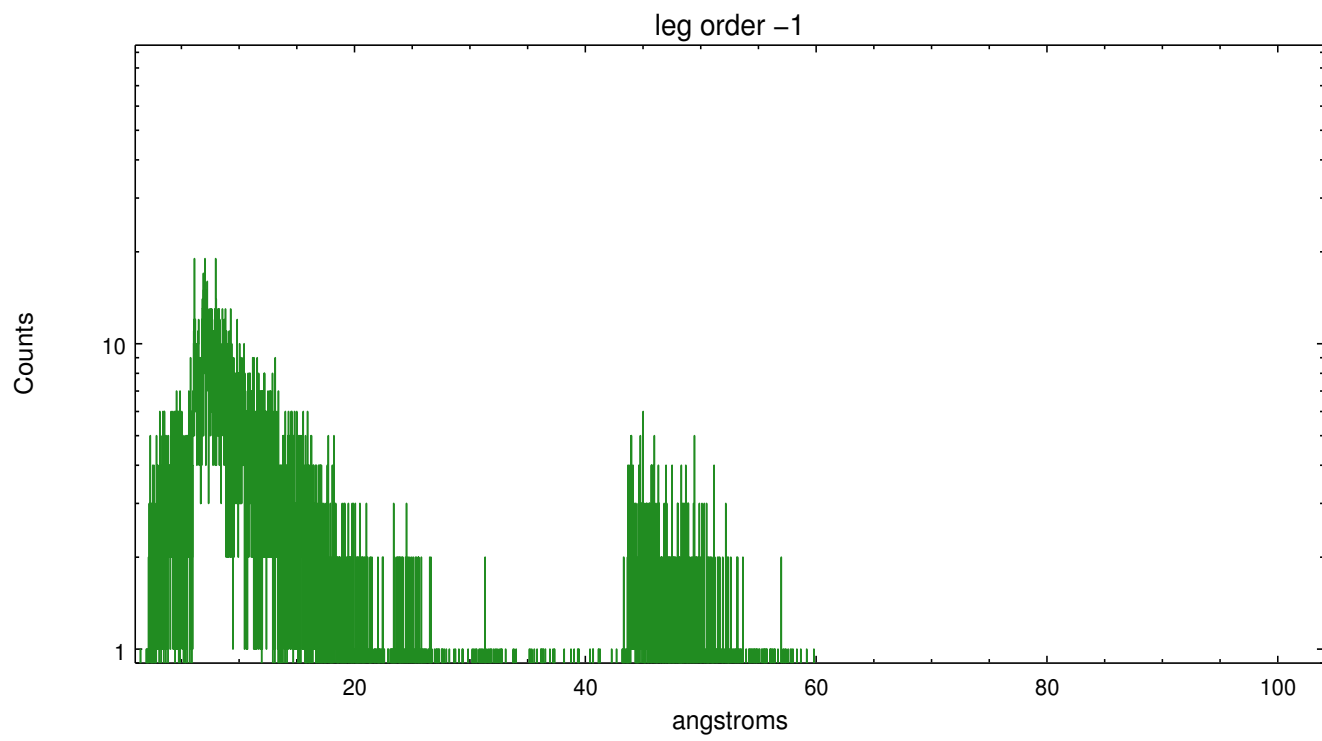
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1052	720	8408	18144	9678	698	1018





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.02.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.064801194668

A.2 Comments

Standard data processing software did not correctly locate the zeroth order. Manual intervention was used to input the correct sky coordinates ($x=4217.080$, $y=4187.50$) into the `*src1a.fits` file table. These corrected coordinates were determined using a software tool developed by CXC called `findzero`, which is expected to be released in CIAO (currently in ISIS). The tool calculates the point of intersection of the readout streak and the left spectral 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.

===

The data for this observation have been processed using the 'EDSER' sub-pixel event-repositioning algorithm of Li et al. (2004, ApJ, 610, 1204). Small-scale features should become sharper for sources near the aim point. The improvement will be less noticeable for off-axis sources where the size of the point-spread function is comparable to or larger than the size of an ACIS pixel. To take full advantage of the improvement, images should be binned on spatial scales smaller than the size of an ACIS pixel. Note that, at present, the point-spread function has not been calibrated for data to which the EDSE algorithm has been applied. If dither was disabled for the observation, then the algorithm can introduce artificial aliasing effects on spatial scales smaller than a pixel. If you would prefer to use no sub-pixel adjustment or to apply a coordinate randomization, then use `acis_process_events` to reprocess the data with the parameter `pix_adj=NONE` or `RANDOMIZE`, respectively.