

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 706 - L2 Version 7
Chandra X-Ray Center

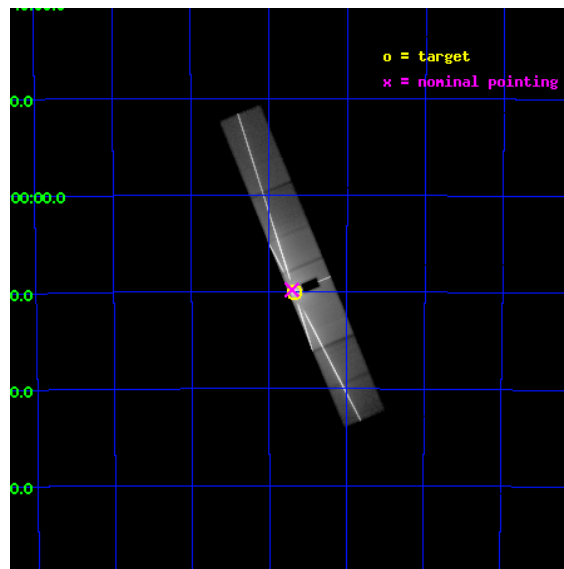
L2 Processing Date : Aug 24 2012

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Parameters	4
2.1.3	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	400073	Sequence number
obs_id	706	Observation id
title	HETG ZERO PHASE SPECTROSCOPY OF CIRCINUS X-1	Proposal title
observer	Prof. William Brandt	Principal investigator
object	CIR X-1	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	230.170833	Observer's specified target RA [deg]
dec_targ	-57.166667	Observer's specified target Dec [deg]
ra_nom	230.17707558785	Nominal RA [deg]
dec_nom	-57.163296715078	Nominal Dec [deg]
roll_nom	67.507885163571	Nominal Roll [deg]
revision	7	Processing version of data
ontime	27945.313495874	Sum of GTIs [s]
livetime	27286.583273783	Livetime [s]
ontime5	29204.011113673	Sum of GTIs [s]
ontime6	28267.314104185	Sum of GTIs [s]
ontime7	27945.313495874	Sum of GTIs [s]
ontime8	29203.929033682	Sum of GTIs [s]
l2events	8169298	Number of level 2 events

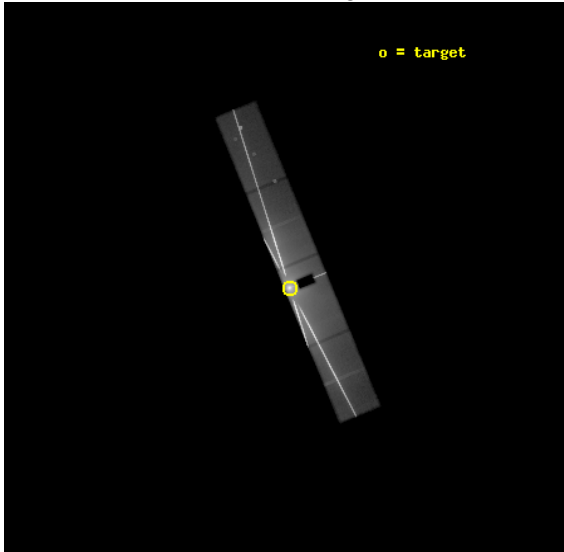


2 OBI

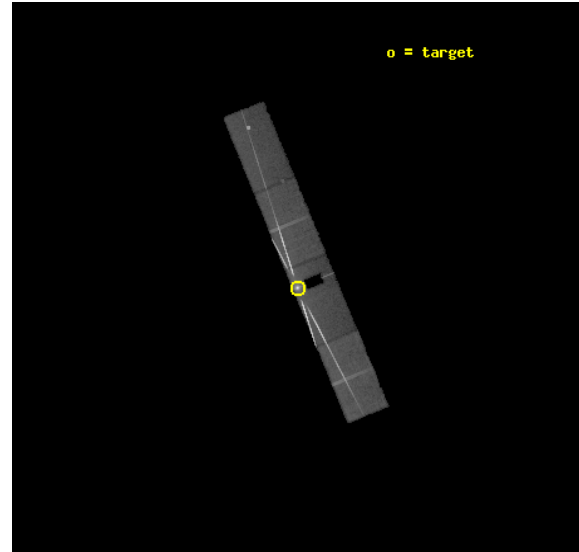
2.1 OBI

2.1.1 Images

Level 1 Image



Level 1 Bad Events



2.1.2 Parameters

obi_num	0	Obi number	sched_exp_time	29600.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	27945.313495874	Sum of GTIs [s]
caldbver	4.5.1.1	 	ontime5	29204.011113673	Sum of GTIs [s]
date	2012-08-24T03:47:12	Date and time of file creation	ontime6	28267.314104185	Sum of GTIs [s]
revision	5	Processing version of data	ontime7	27945.313495874	Sum of GTIs [s]
			ontime8	29203.929033682	Sum of GTIs [s]
			l1events	10424317	Number of level 1 events

2.1.3 Events

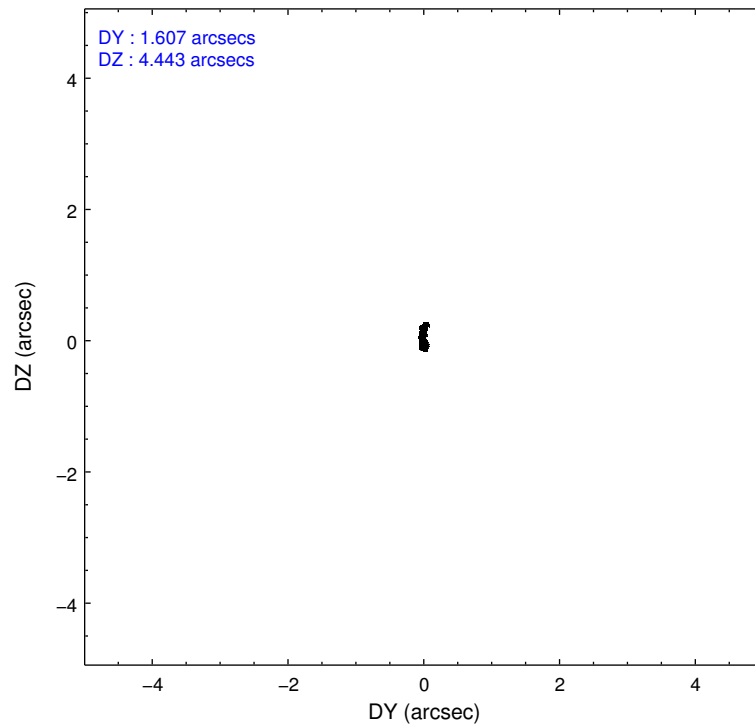
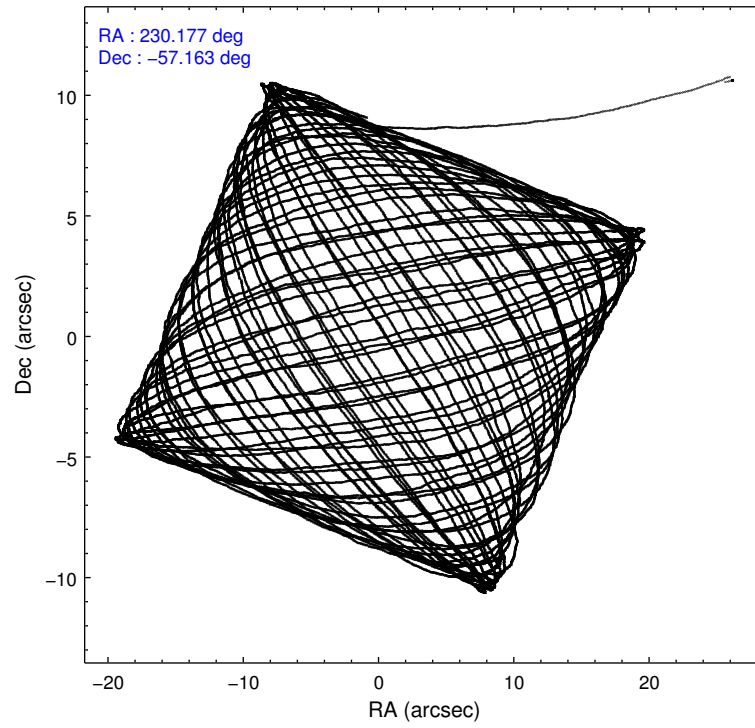
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	526097	3285804	5164621	1447795
rejected events	106543	543959	1073291	195855
rejected %	20%	16%	20%	13%

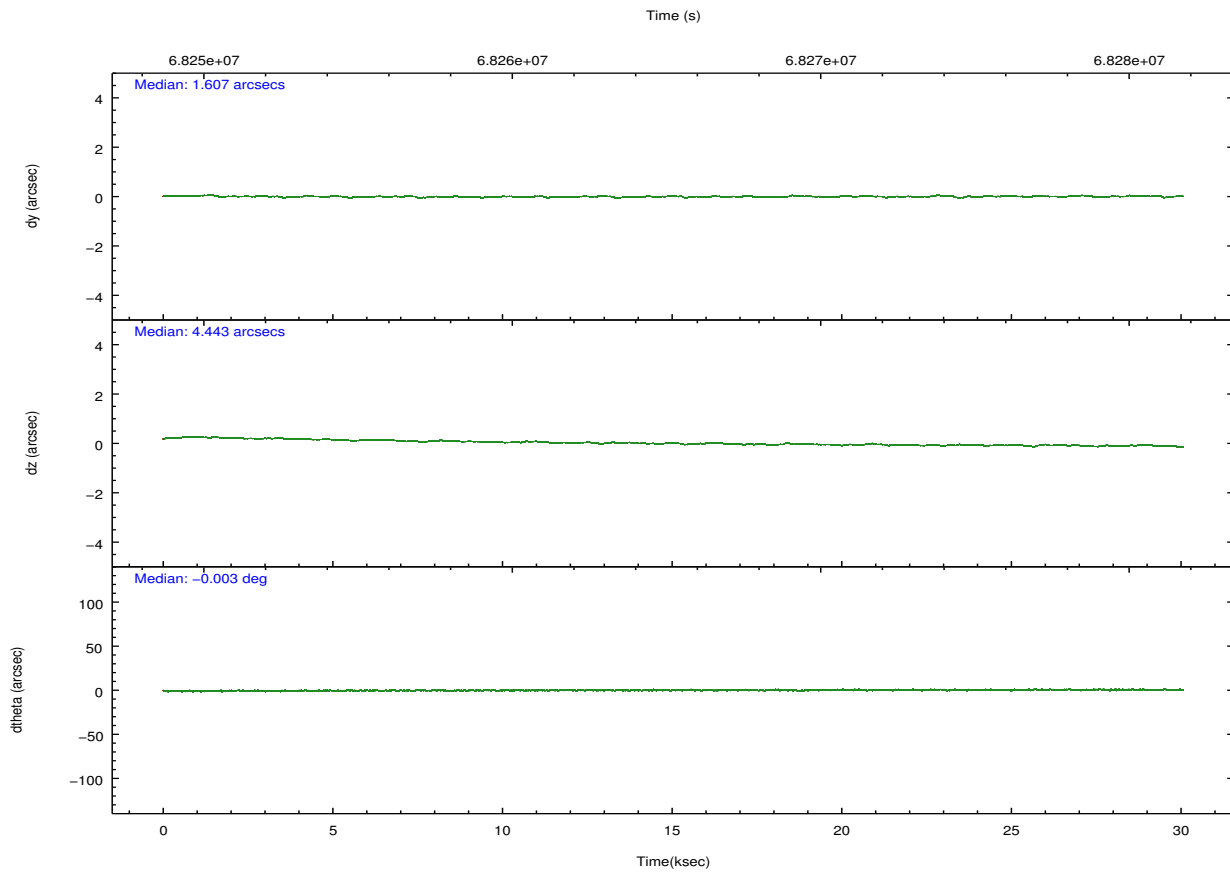
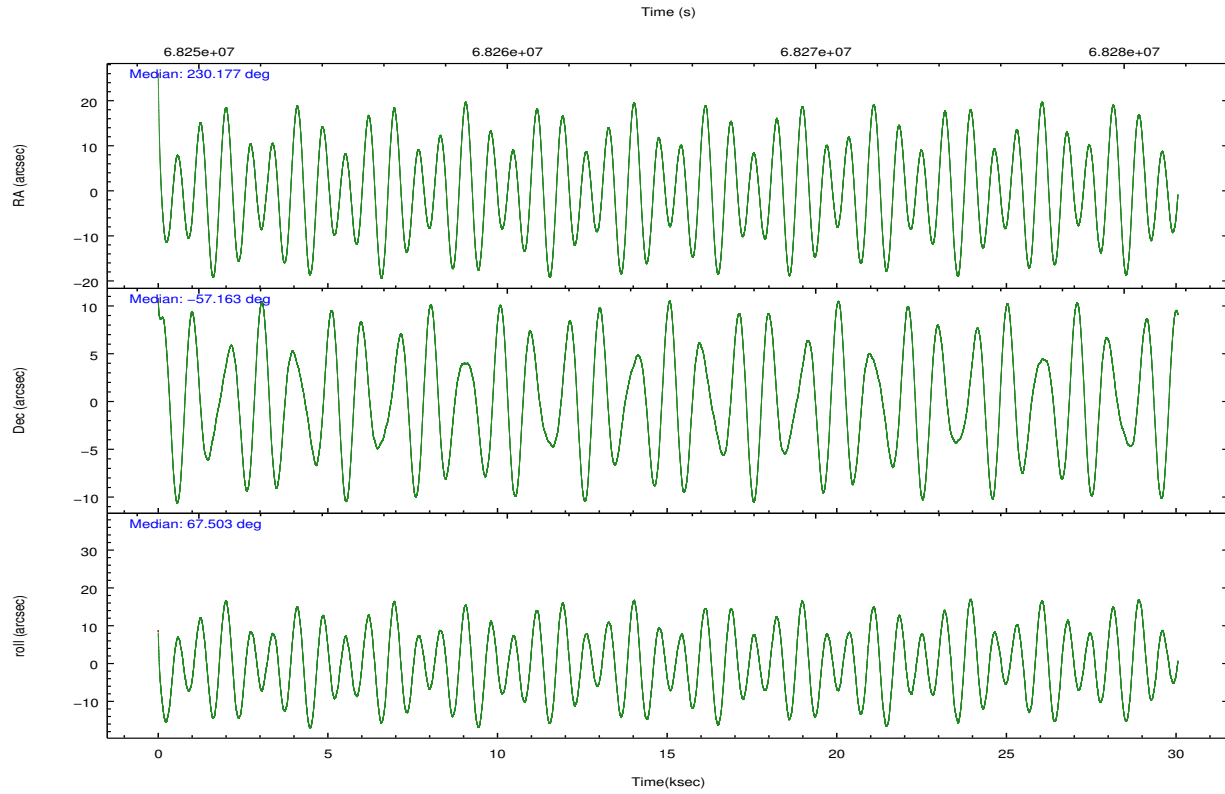
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	97330	1791448	628622	940333
	18%	54%	12%	64%
grade 1 events	13329	176194	46400	32925
	2%	5%	0%	2%
grade 2 events	144883	421726	1079734	157616
	27%	12%	20%	10%
grade 3 events	30404	172402	368554	54252
	5%	5%	7%	3%
grade 4 events	31388	164897	365018	54111
	5%	5%	7%	3%
grade 5 events	13151	153534	250132	22859
	2%	4%	4%	1%
grade 6 events	115624	191719	1649932	45806
	21%	5%	31%	3%
grade 7 events	79988	213884	776229	139893
	15%	6%	15%	9%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	230.183773	230.1770755878511	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	-57.190544	-57.16329671507795	Subarray start row	15	15
[deg] Pointing Roll	67.356889	67.50788516357083	Subarray row count	542	542
[s] Window start time (MET)	67910464.184000	67910464.184000	Alternating exposures requested	N	N
[s] Window stop time (MET)	69721264.184000	69721264.184000	[s] Primary exposure time	0.000000	1.7
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.1425803651734			
[mm] SIM translation stage offset	0	0.01005778216563158			
Phase constraints	Y	Y			
[d] Phase period	16.540100	16.540100			
[d] Phase epoch (MJD)	51355.945000	51355.945000			
Phase start	0.950000	0.950000			
Phase end	0.050000	0.050000			
Phase start error	0.000000	0.000000			
Phase end error	0.000000	0.000000			
[s] Observation start time (MET)	68250639.184000	68249390.515184			
Observation start date	2000-02-29T22:29:35	2000-02-29T22:09:50			
[s] Observation end time (MET)	68280239.184000	68280983.066338			

2.3 Aspect



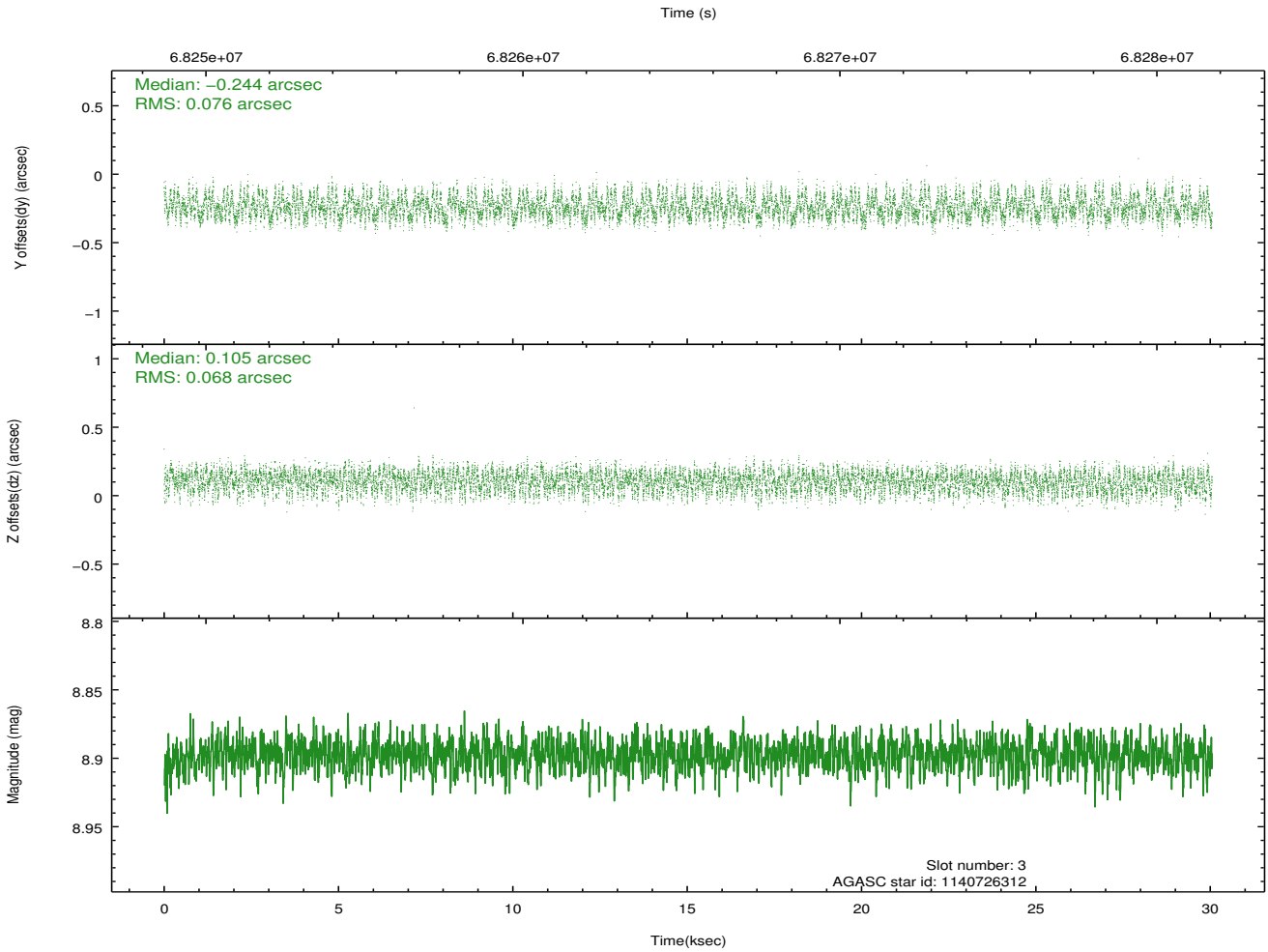
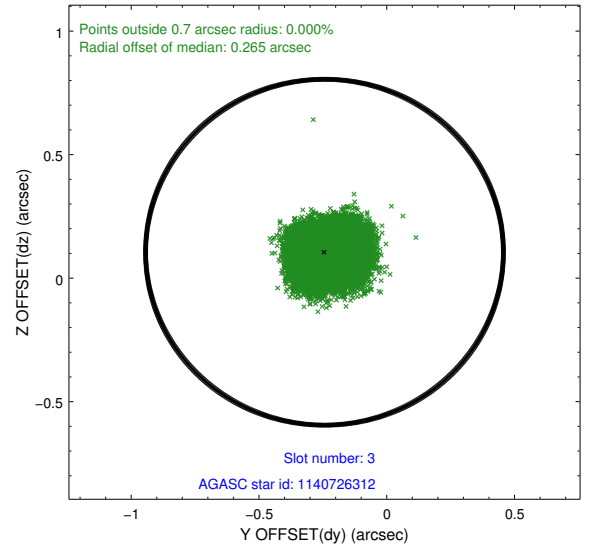
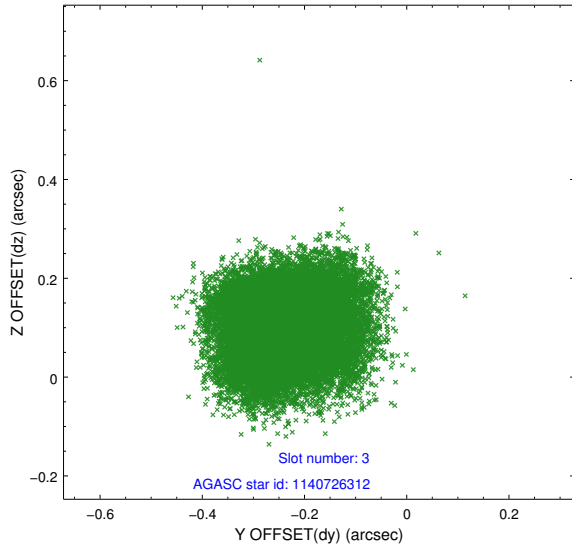


Slot Statistics

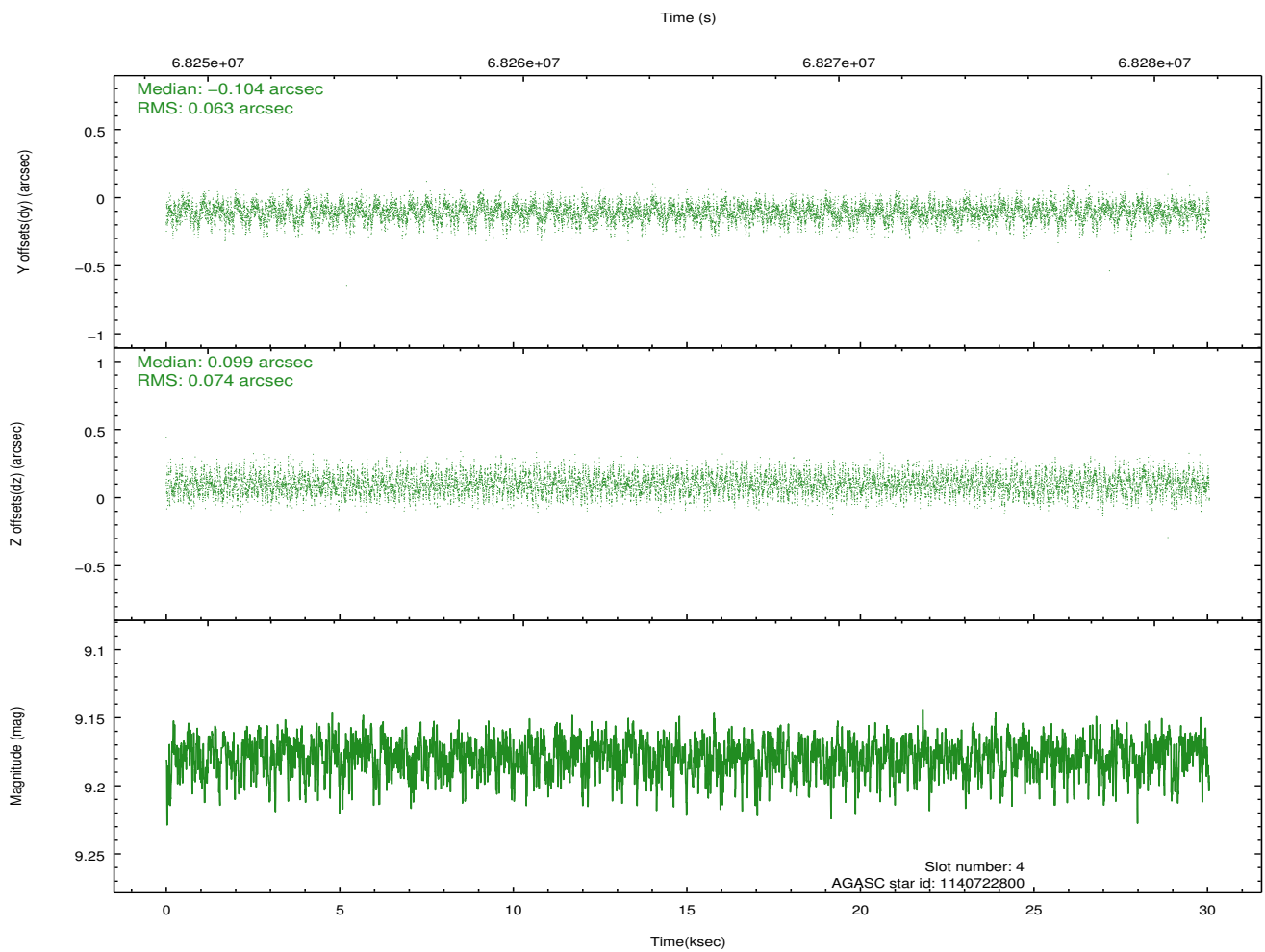
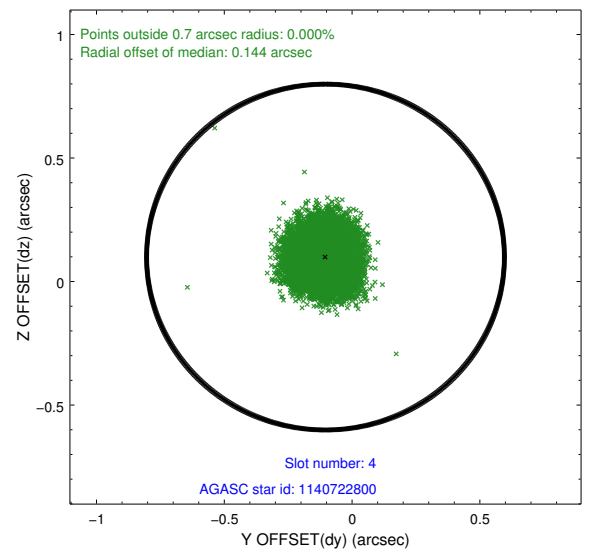
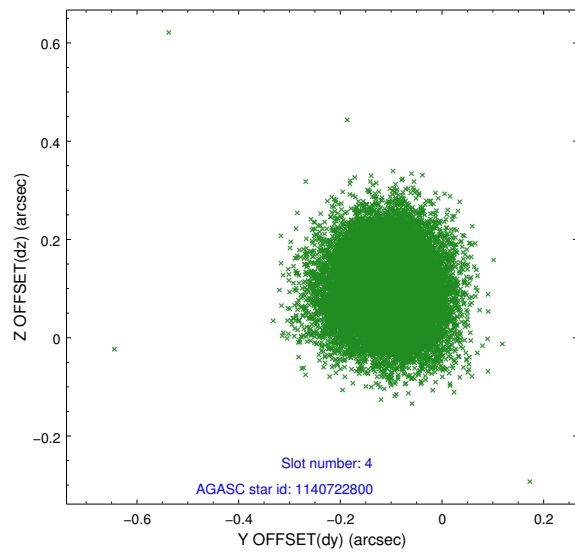
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	7332	-0.022	-0.017	0.007	0.012	0.000000	0.000000	-754.25	-1725.52
1	FID	ACIS-S-4	7.21	7332	0.012	0.015	0.006	0.011	0.000000	0.000000	2159.05	182.89
2	FID	ACIS-S-5	7.24	7331	-0.020	0.011	0.007	0.012	0.000000	0.000000	-1806.98	176.68
3	GUIDE	1140726312	8.90	14659	-0.244	0.105	0.112	0.168	231.010622	-56.676215	2328.32	-800.13
4	GUIDE	1140722800	9.18	14653	-0.104	0.099	0.106	0.162	231.057080	-56.699276	2285.92	-916.41
5	GUIDE	1140590792	9.52	14655	0.208	-0.117	0.103	0.162	229.026611	-57.511083	-1944.57	1612.98
6	GUIDE	1140722584	9.41	14653	0.101	0.181	0.075	0.122	230.638489	-57.945430	-2177.07	-1849.35
7	GUIDE	1140596600	9.90	14654	0.036	-0.267	0.106	0.176	229.121900	-57.183608	-790.51	1914.73

2.4 Star Slots

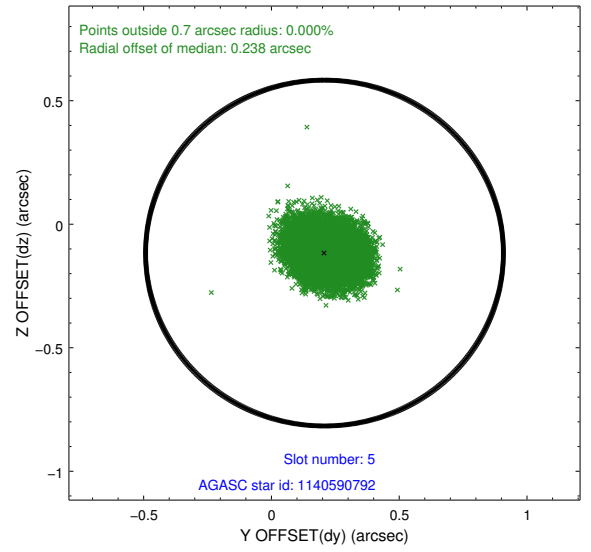
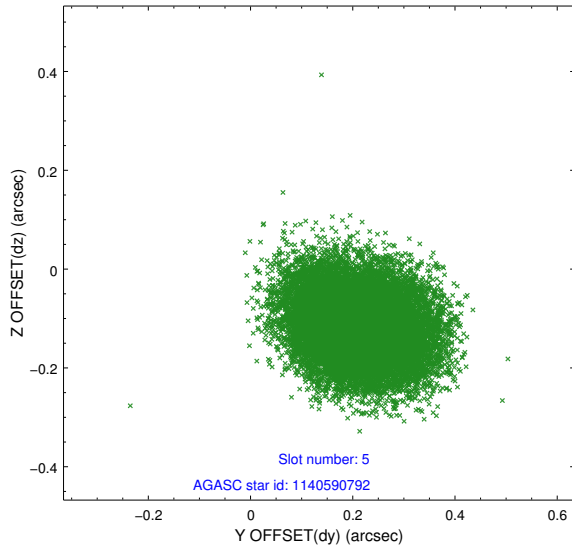
2.4.1 Slot 3



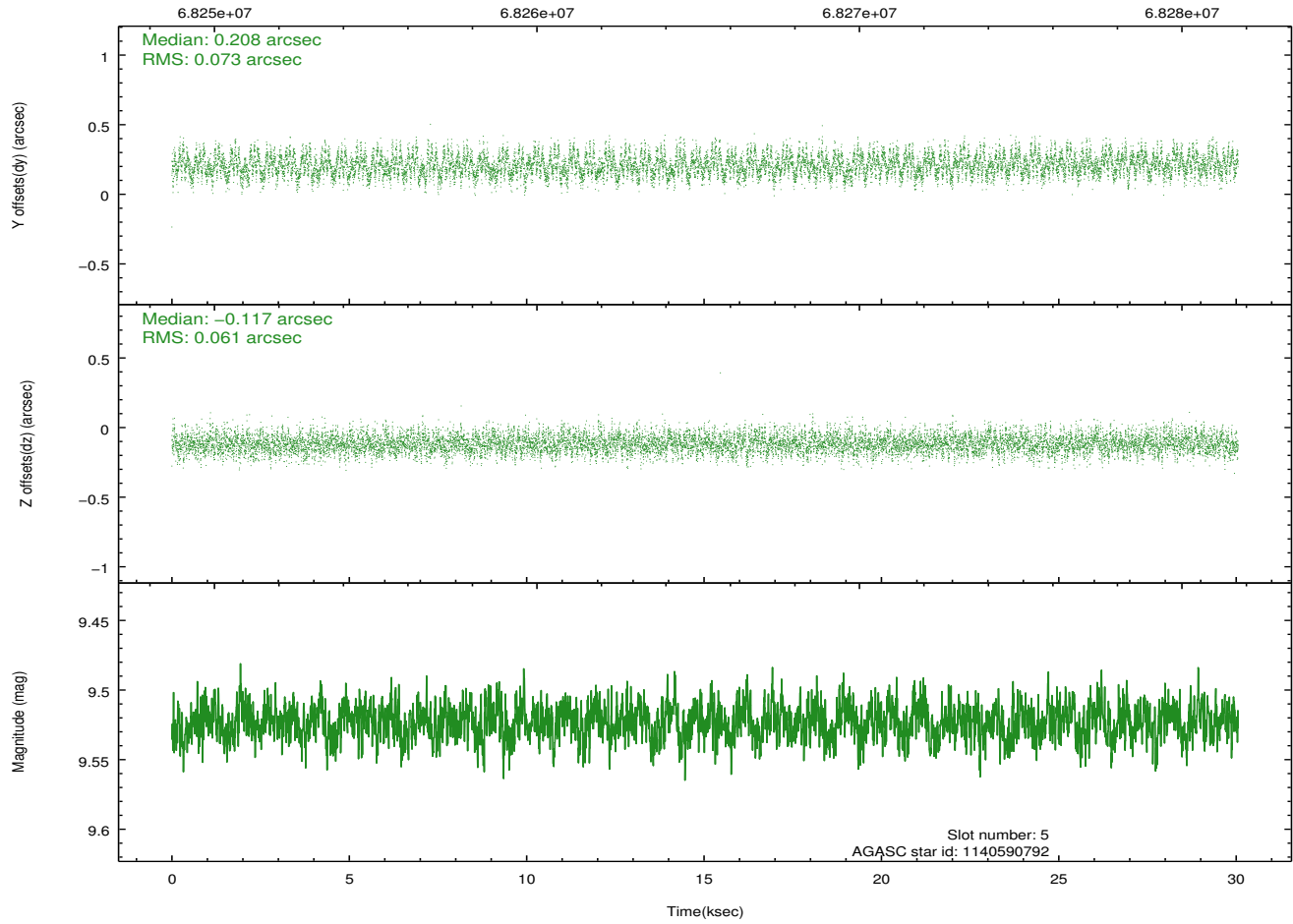
2.4.2 Slot 4



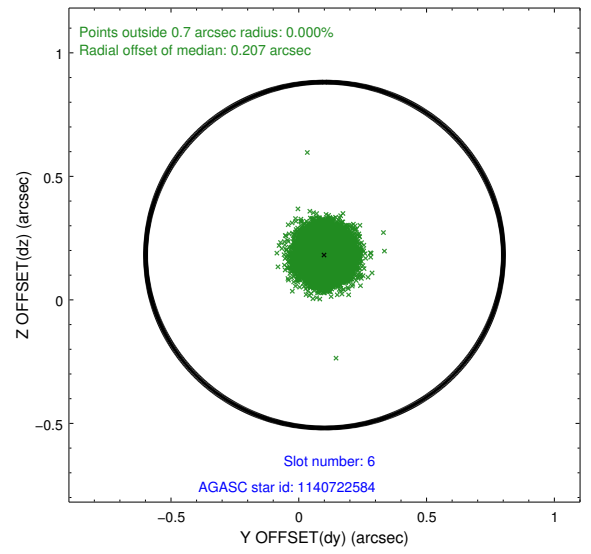
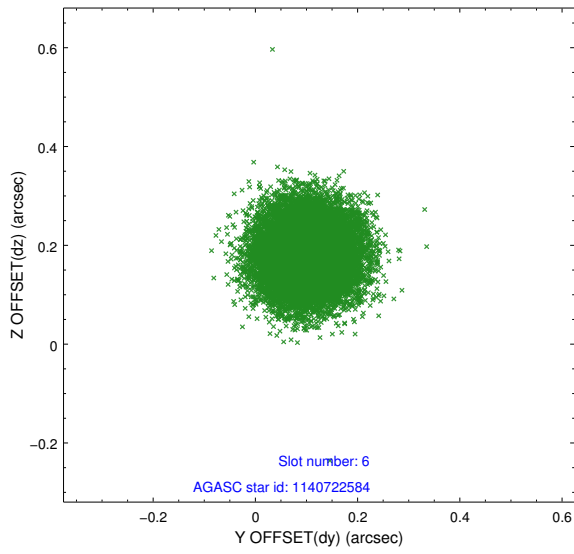
2.4.3 Slot 5



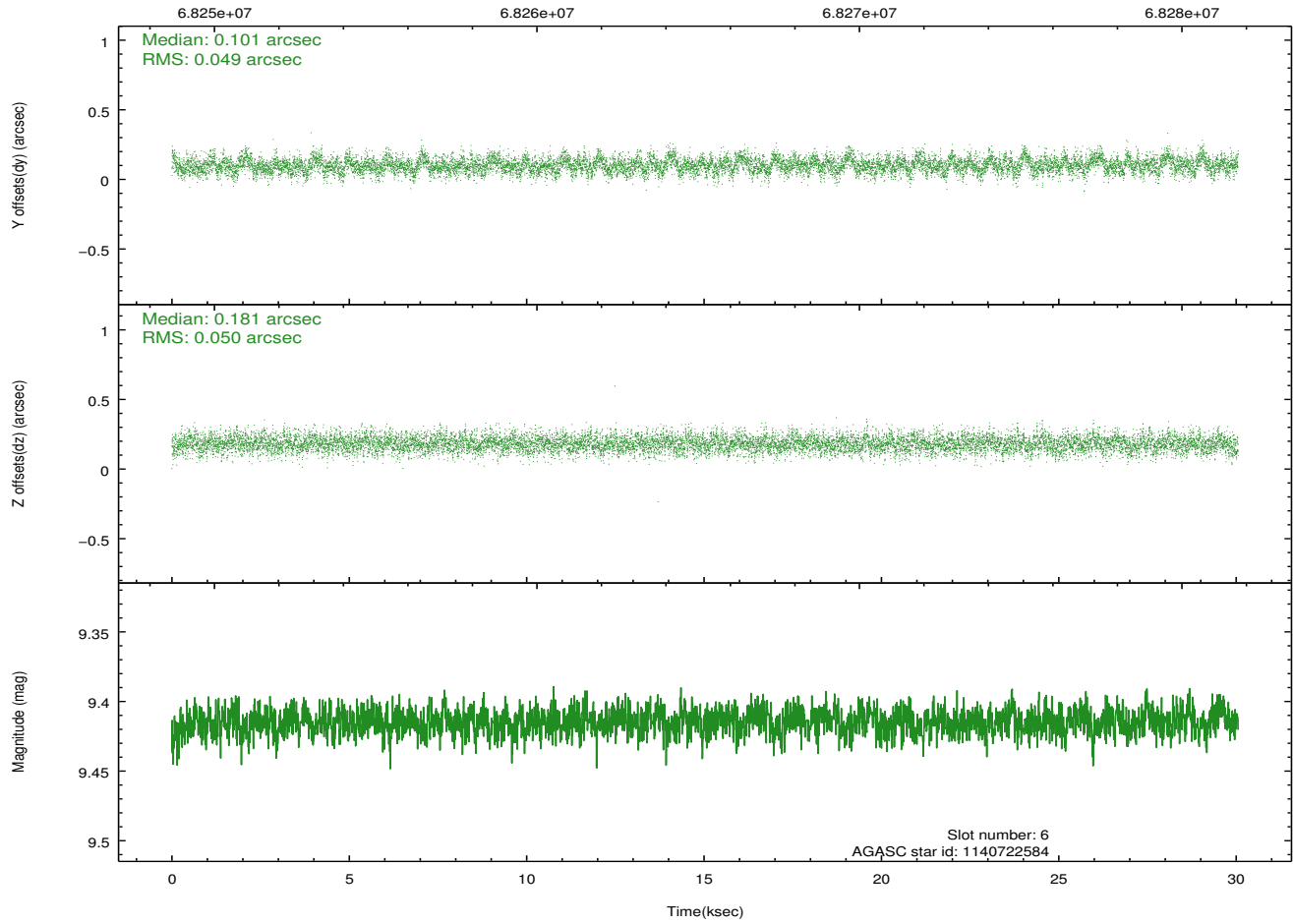
Time (s)



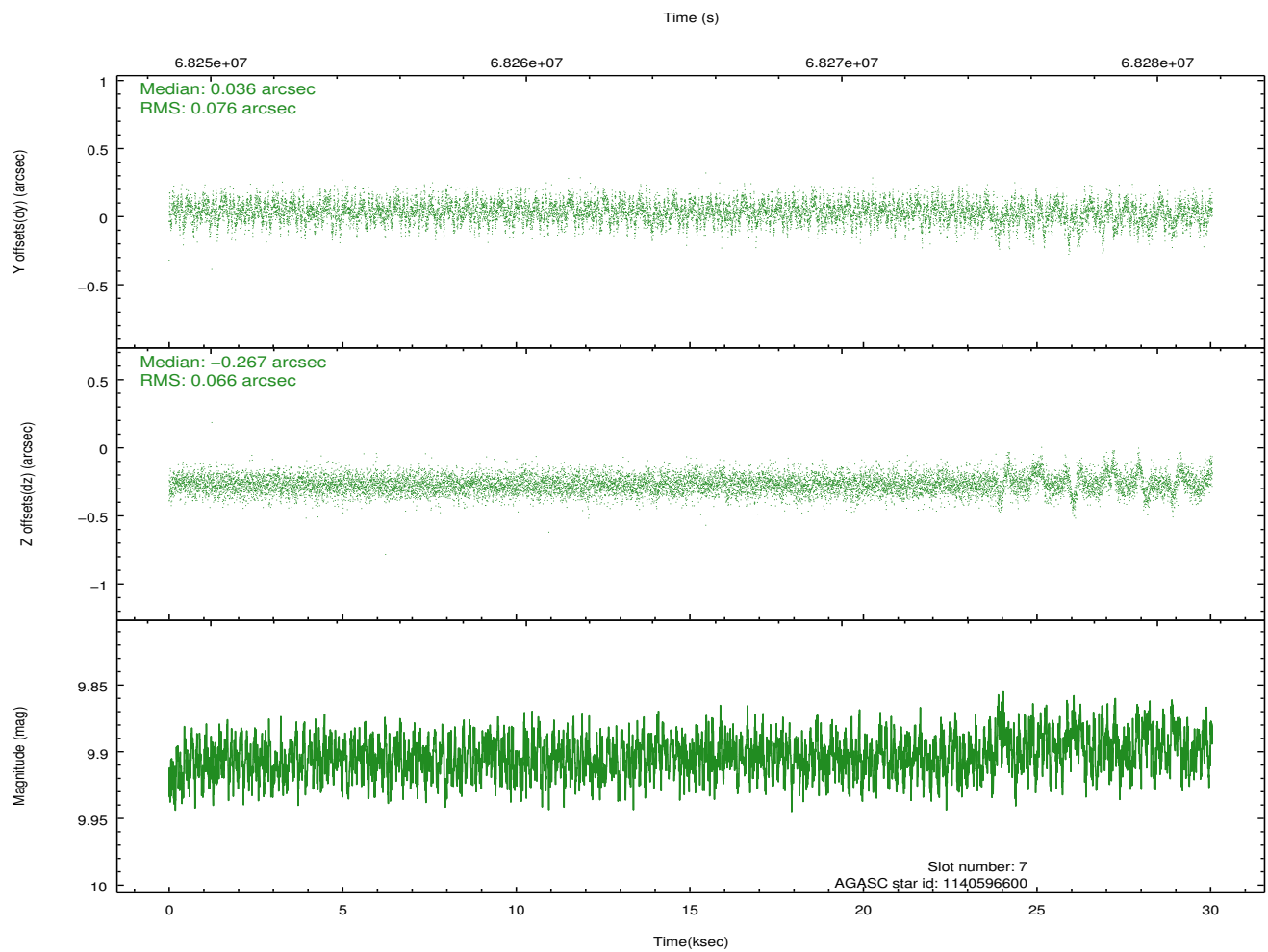
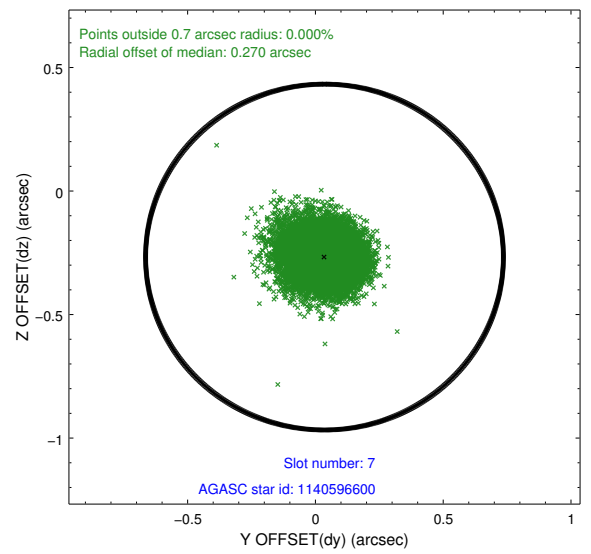
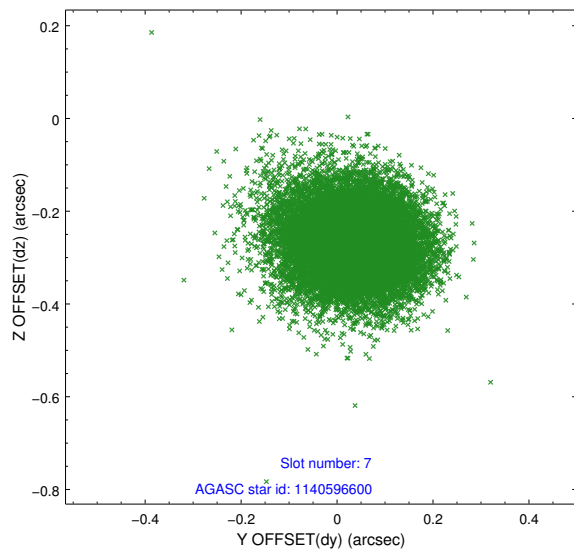
2.4.4 Slot 6



Time (s)

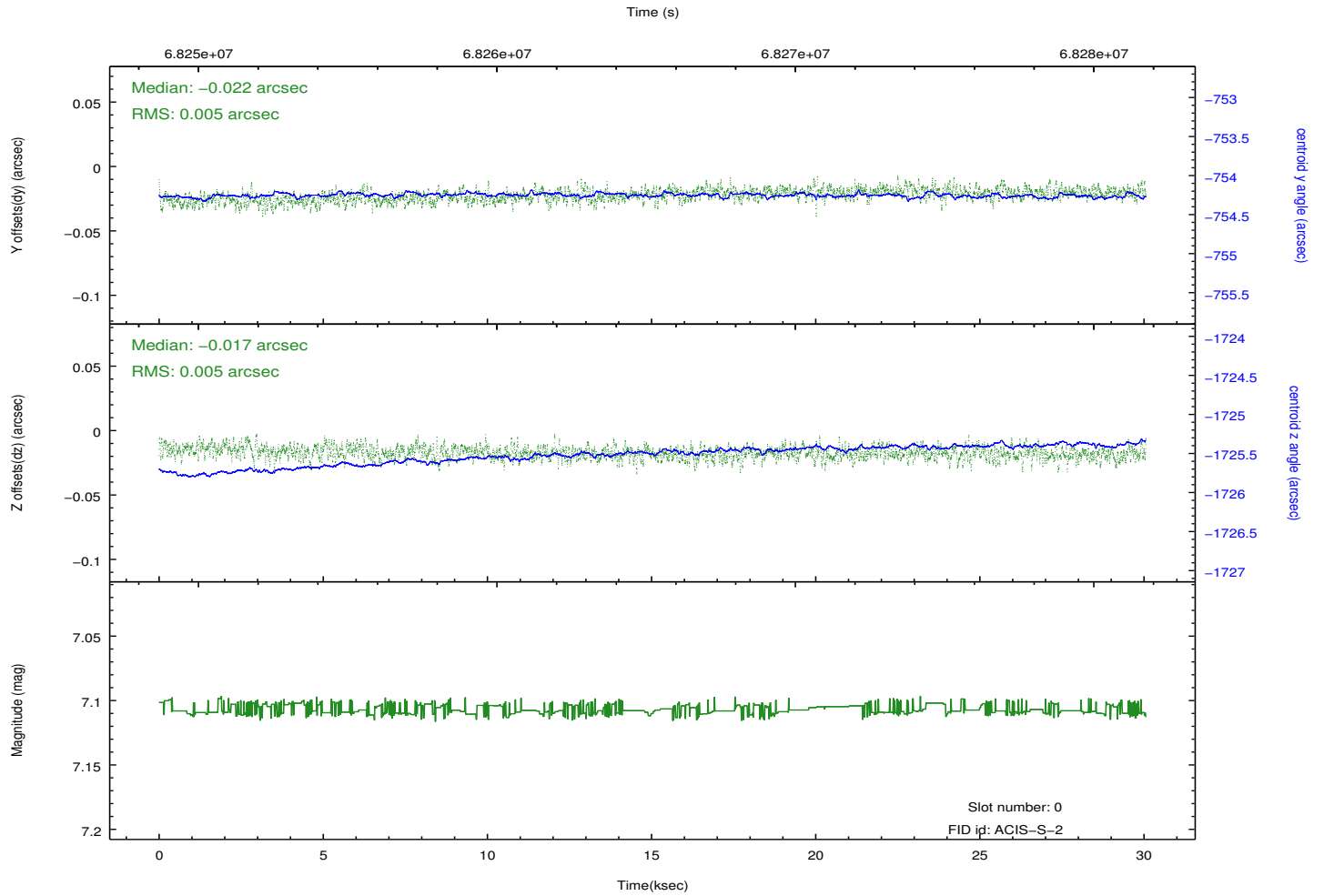
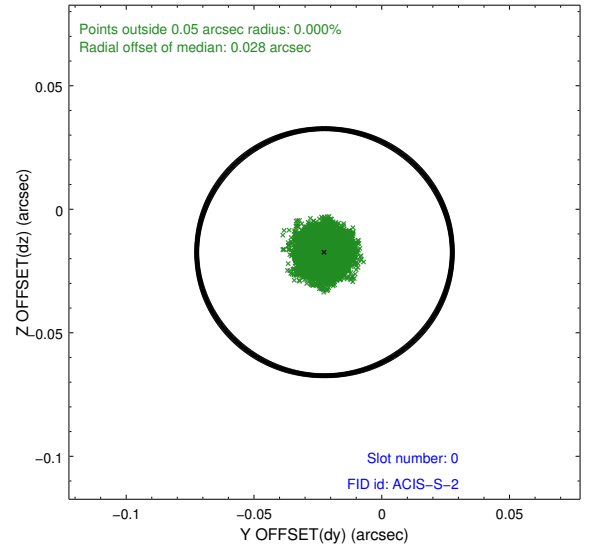
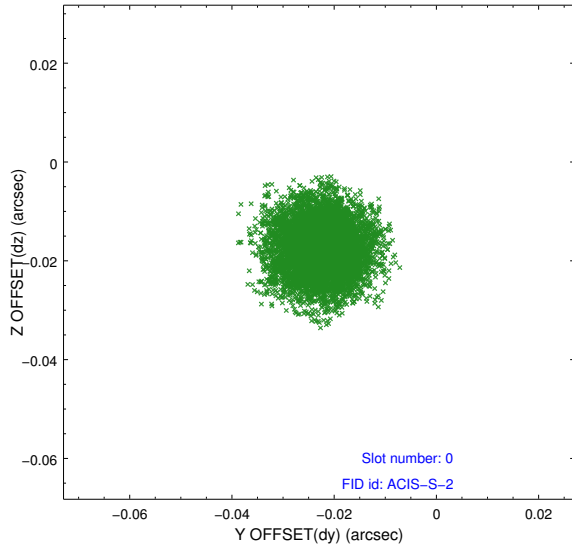


2.4.5 Slot 7

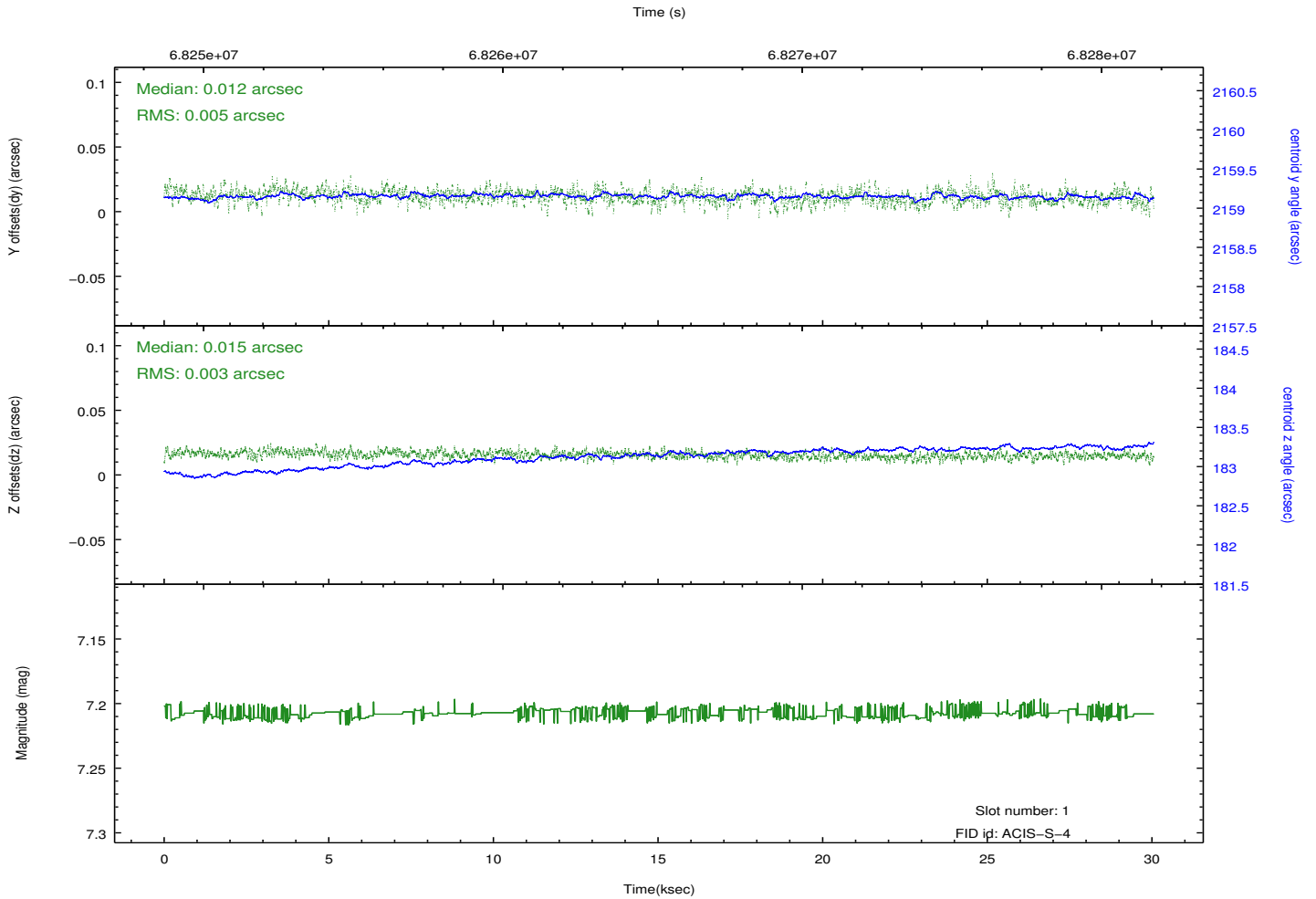
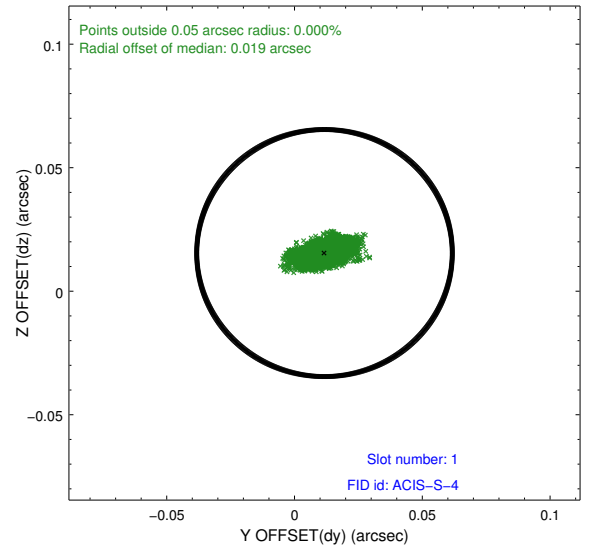
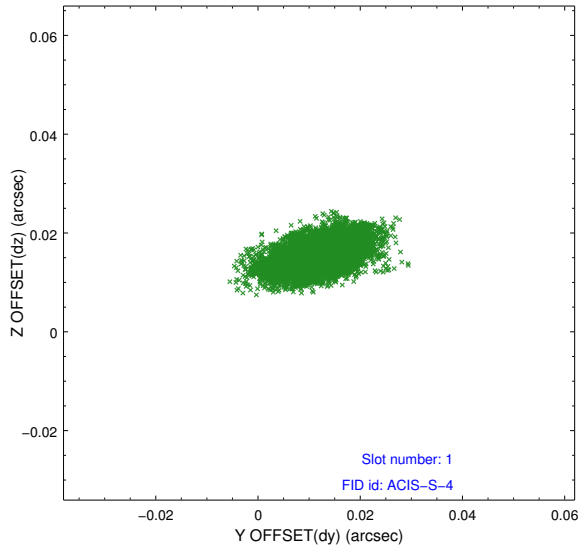


2.5 FID Slots

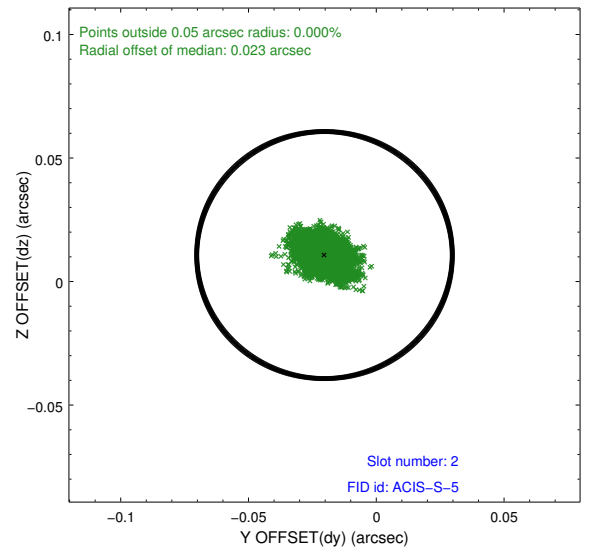
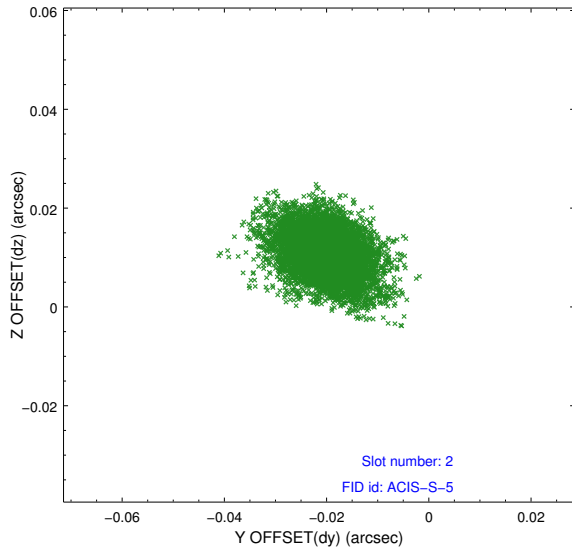
2.5.1 Slot 0



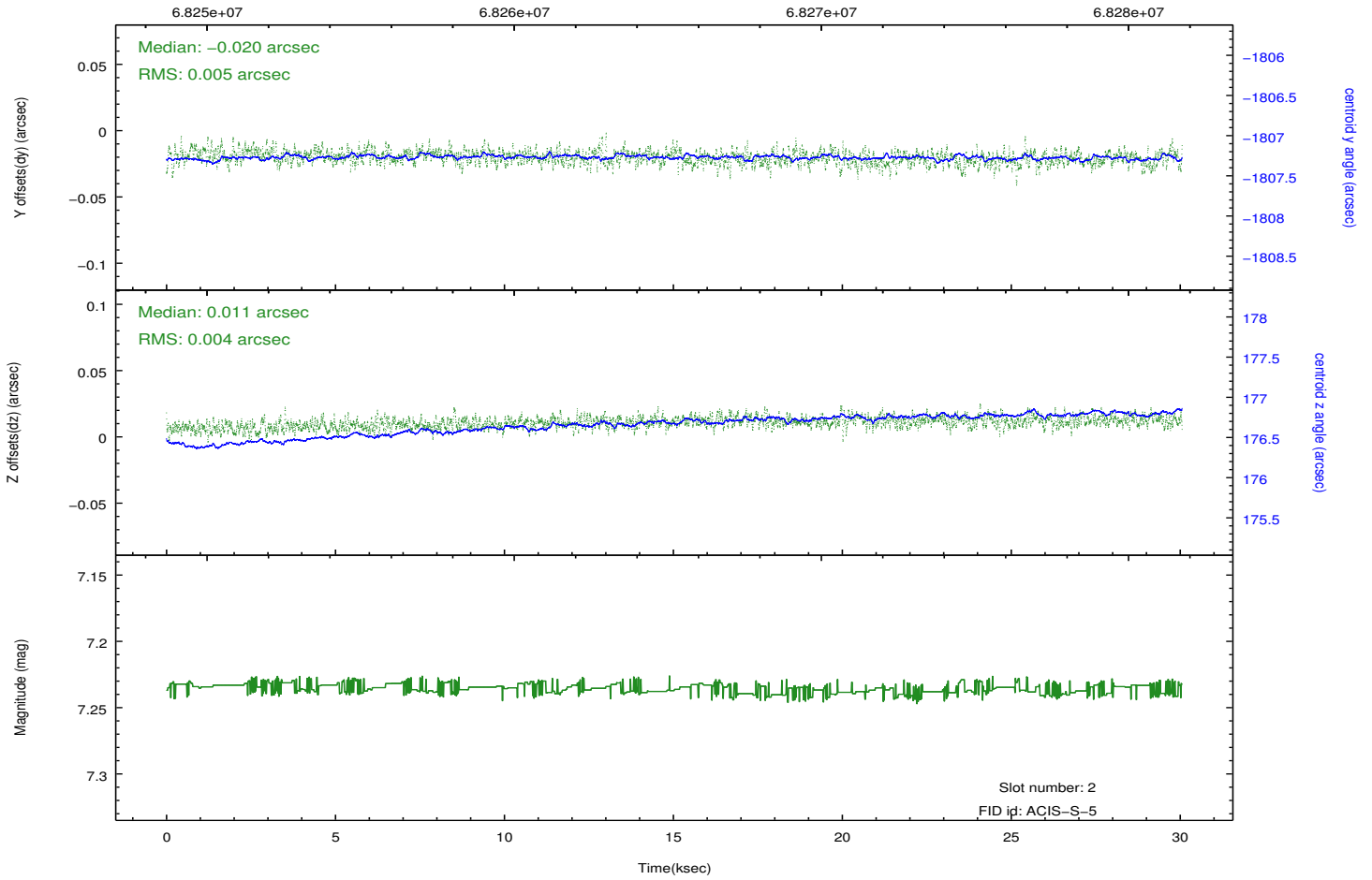
2.5.2 Slot 1



2.5.3 Slot 2

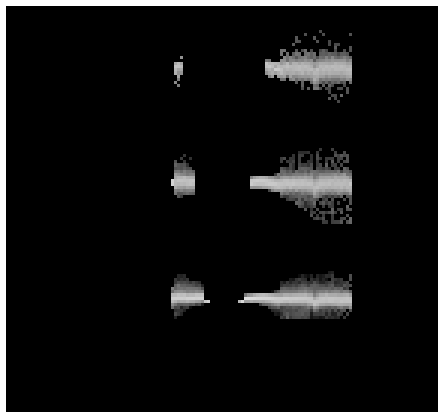


Time (s)

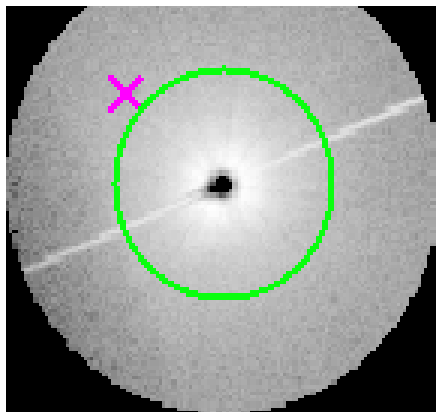


3 Gratings

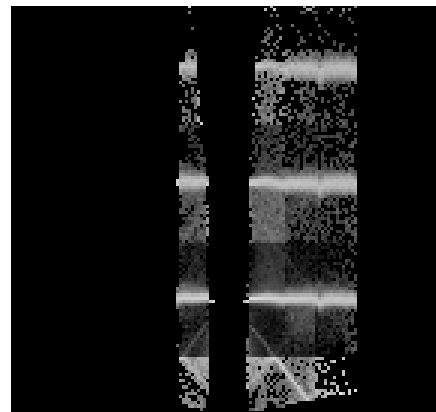
3.1 HEG Arm



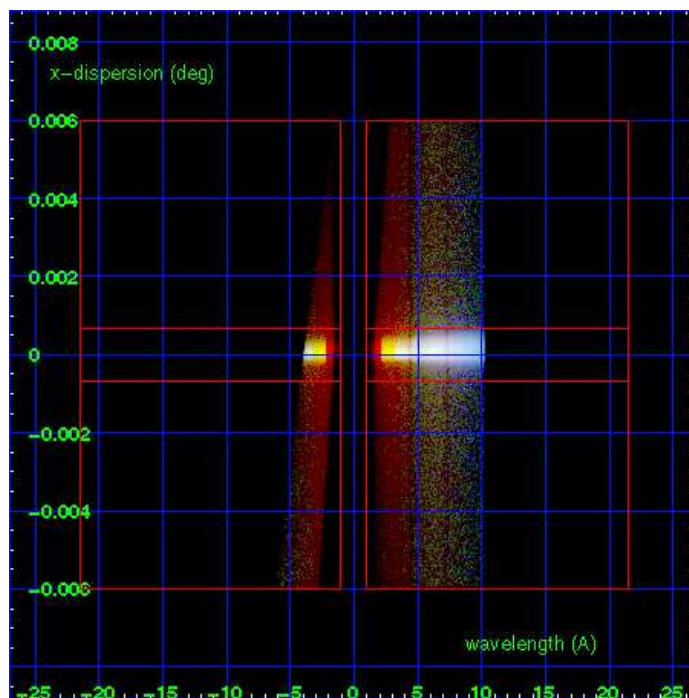
HEG Order Sort 123



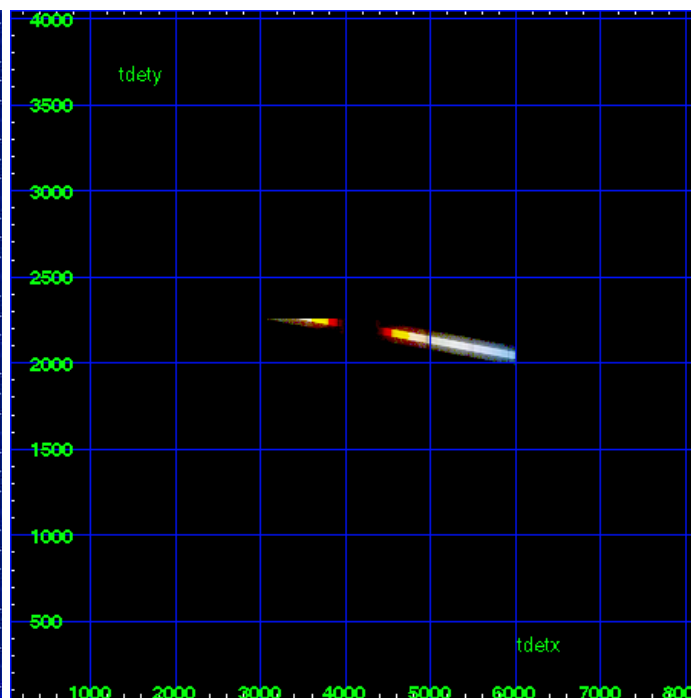
HEG Zero Order



HEG Order Sort ALL

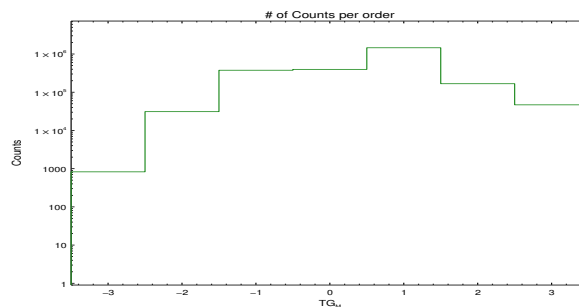


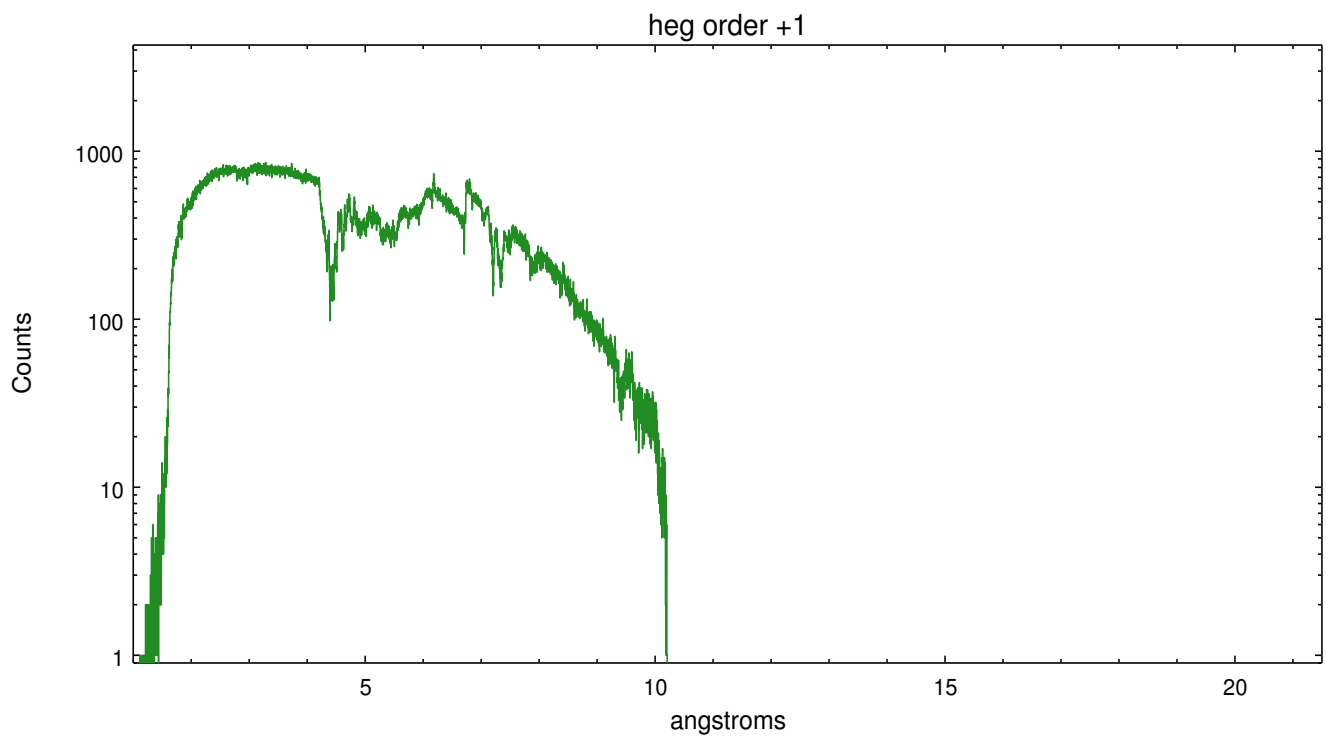
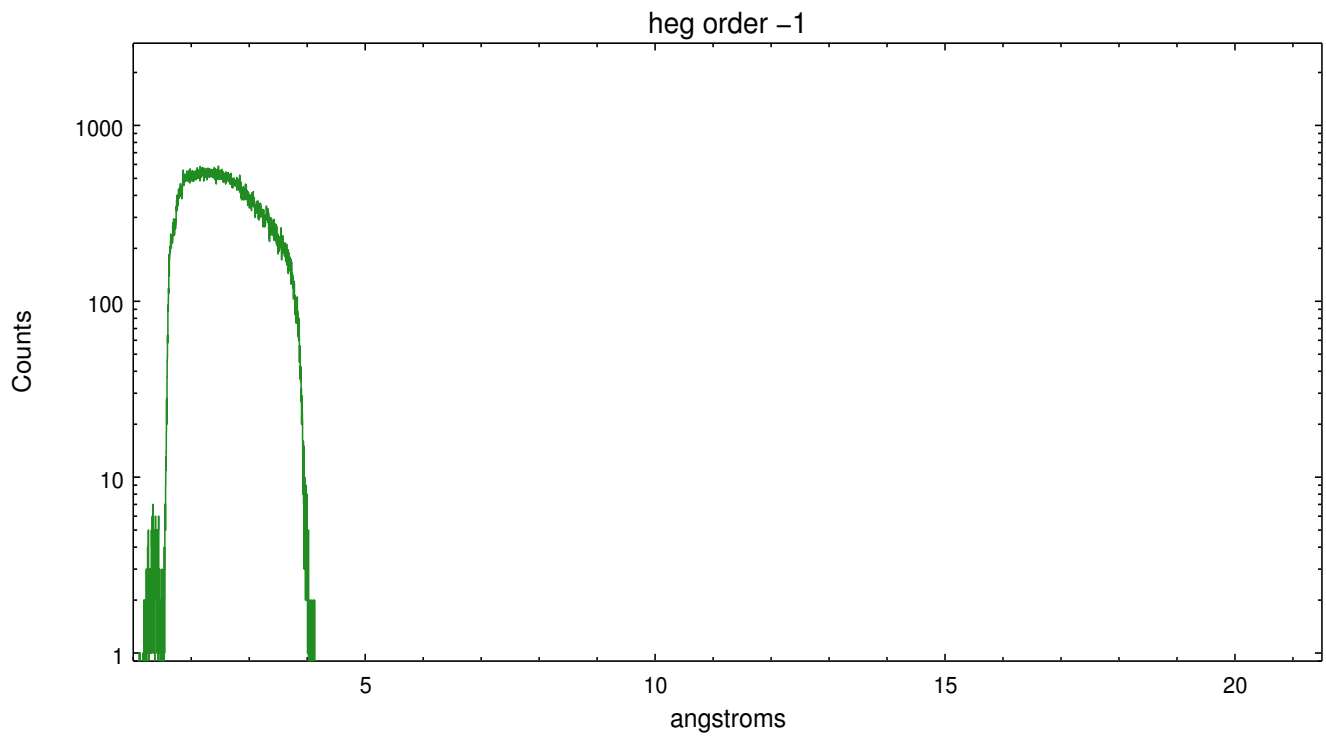
Spot Image HEG



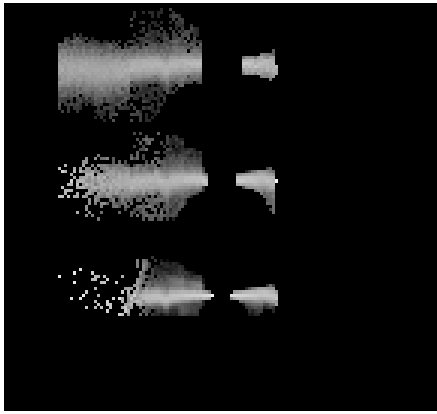
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	826	31059	376133	396153	1458520	167167	46797

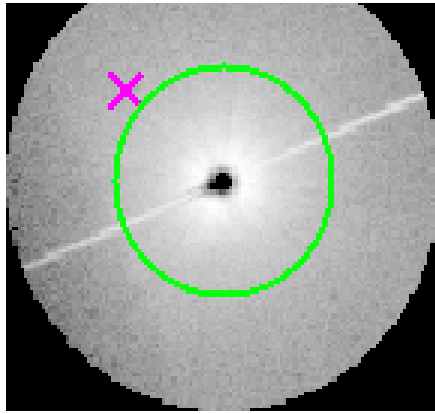




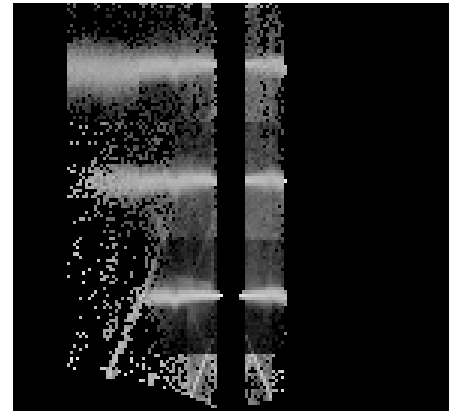
3.2 MEG Arm



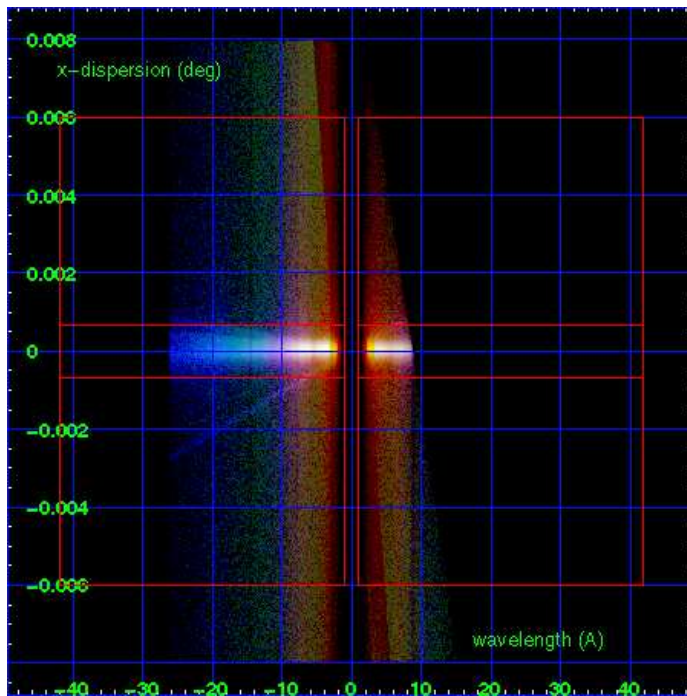
MEG Order Sort 123



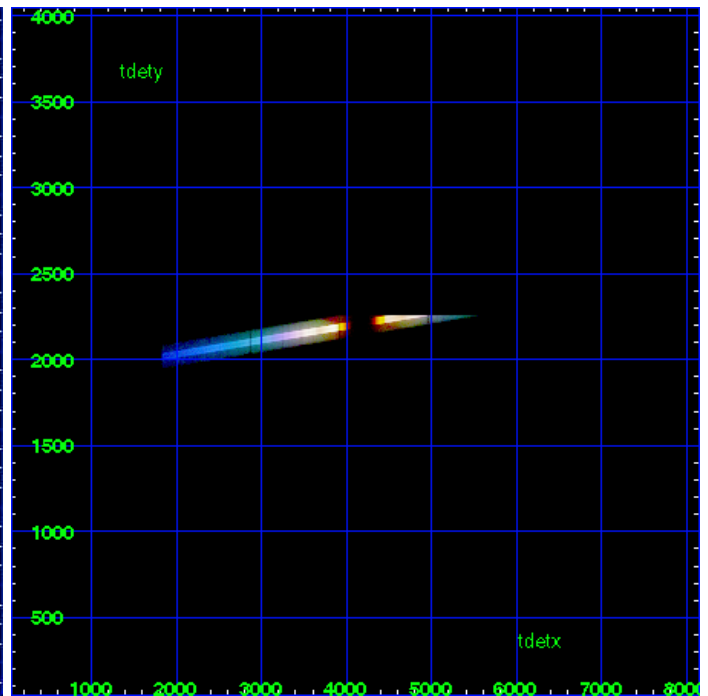
MEG Zero Order



MEG Order Sort ALL

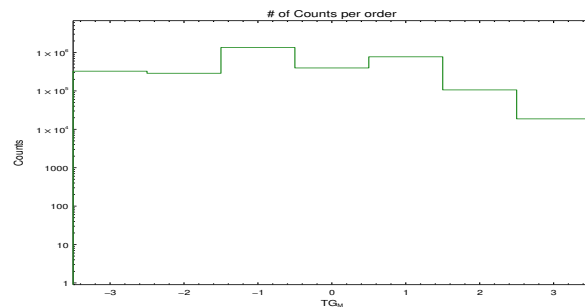


Spot Image MEG

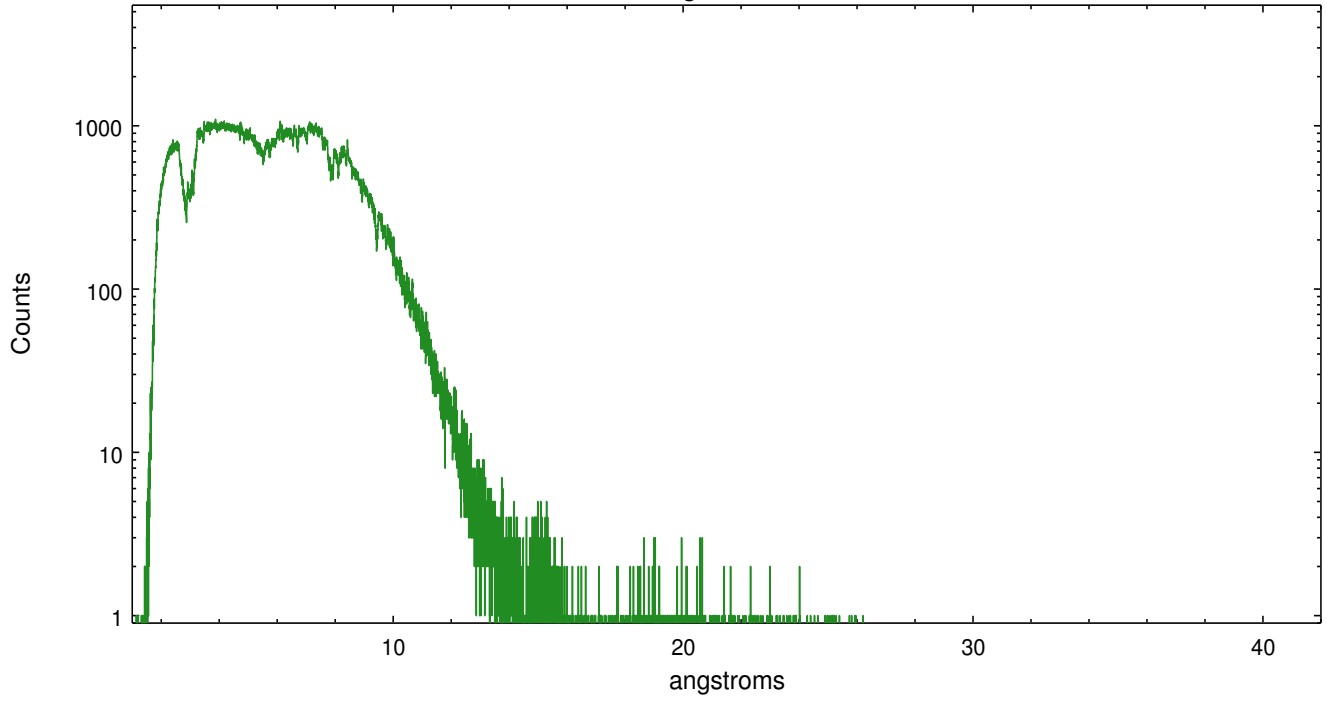


Full Detector MEG

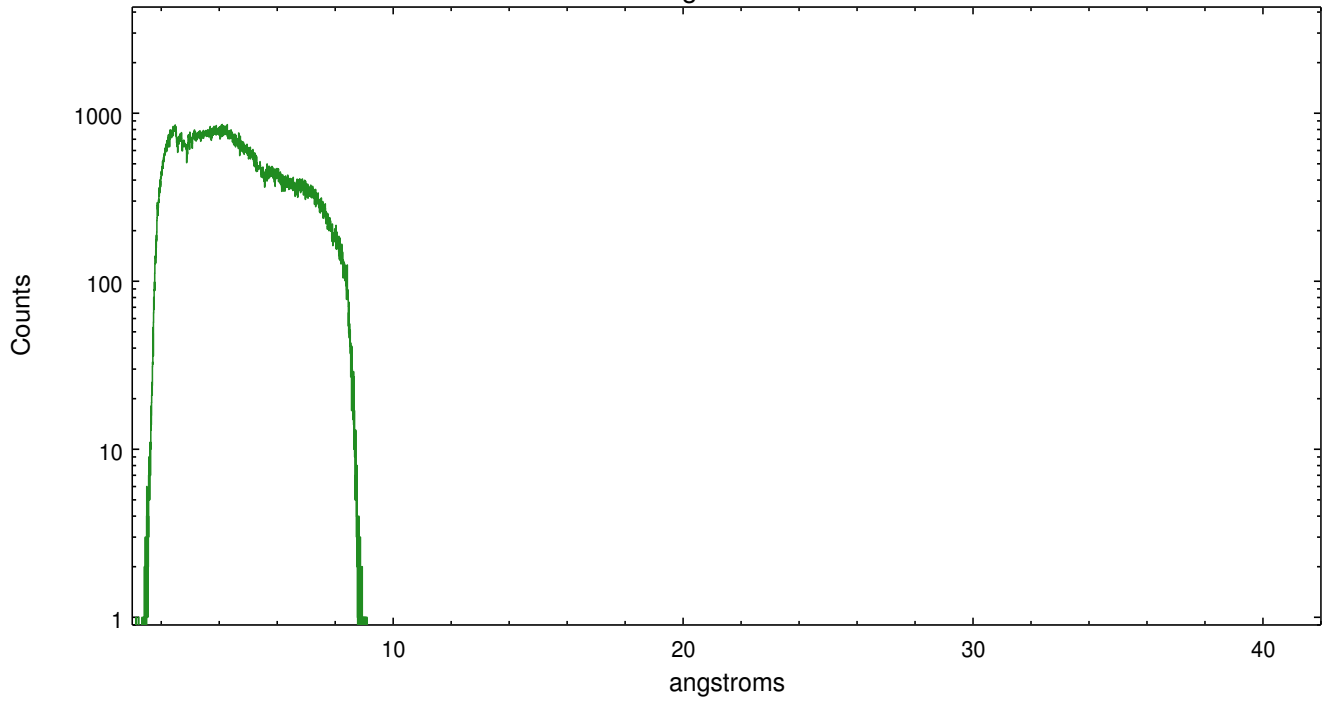
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	326327	287841	1347628	396153	772951	106226	18710



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.08.29
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	27.945

A.2 Comments

Phase and window constraints met.

===

Target location near edge of chip, outside of requested spatial filter window.

Zeroth order not filtered. The placement of the target near the edge of the chip resulted in truncation of the negative HEG spectral arm (at about 4 Å) and positive MEG spectral arm (at about 9 Å).

===

Zeroth order very piled up. 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=4123.76, y=4071.4) 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 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.

===

Possible telemetry saturation. Bad events image shows grating arms, meaning grating spectra are piled.