

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 4559 - L2 Version 3  
Chandra X-Ray Center

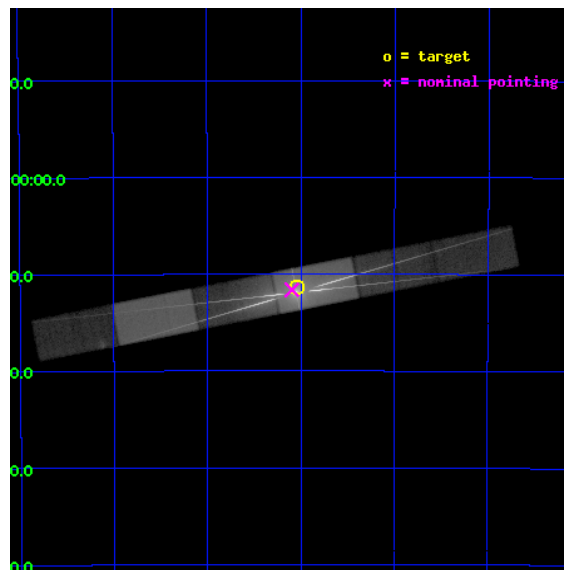
L2 Processing Date : Dec 15 2012

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# 1 Front

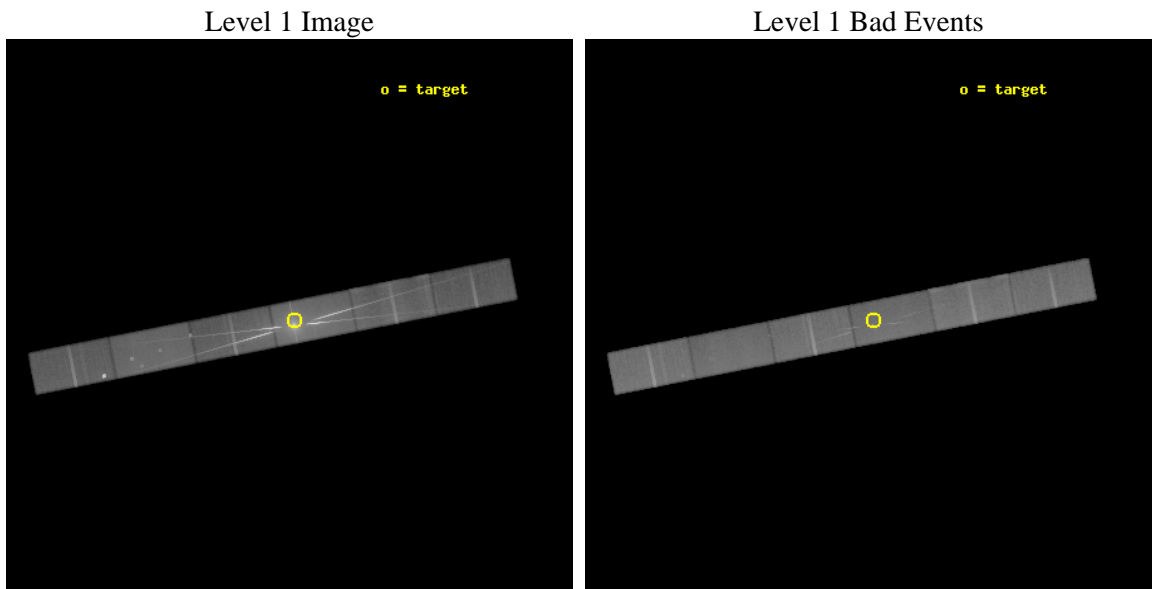
seq_num	400342	Sequence number
obs_id	4559	Observation id
title	The Near Eddington Neutron Star 4U 1624-460: A Probe of Disk, Wind, and ISM structure	Proposal title
observer	Prof. Julia Lee	Principal investigator
object	4U 1624-49	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	247.01	Observer's specified target RA [deg]
dec_targ	-49.190306	Observer's specified target Dec [deg]
ra_nom	247.02381519316	Nominal RA [deg]
dec_nom	-49.193799984565	Nominal Dec [deg]
roll_nom	348.89785524009	Nominal Roll [deg]
revision	3	Processing version of data
ontime	75136.599473119	Sum of GTIs [s]
livetime	73365.470698147	Livetime [s]
ontime4	75134.858472943	Sum of GTIs [s]
ontime5	75134.858472914	Sum of GTIs [s]
ontime6	75136.599473119	Sum of GTIs [s]
ontime7	75136.599473119	Sum of GTIs [s]
ontime8	75134.858472943	Sum of GTIs [s]
ontime9	75136.599473119	Sum of GTIs [s]
l2events	1439217	Number of level 2 events



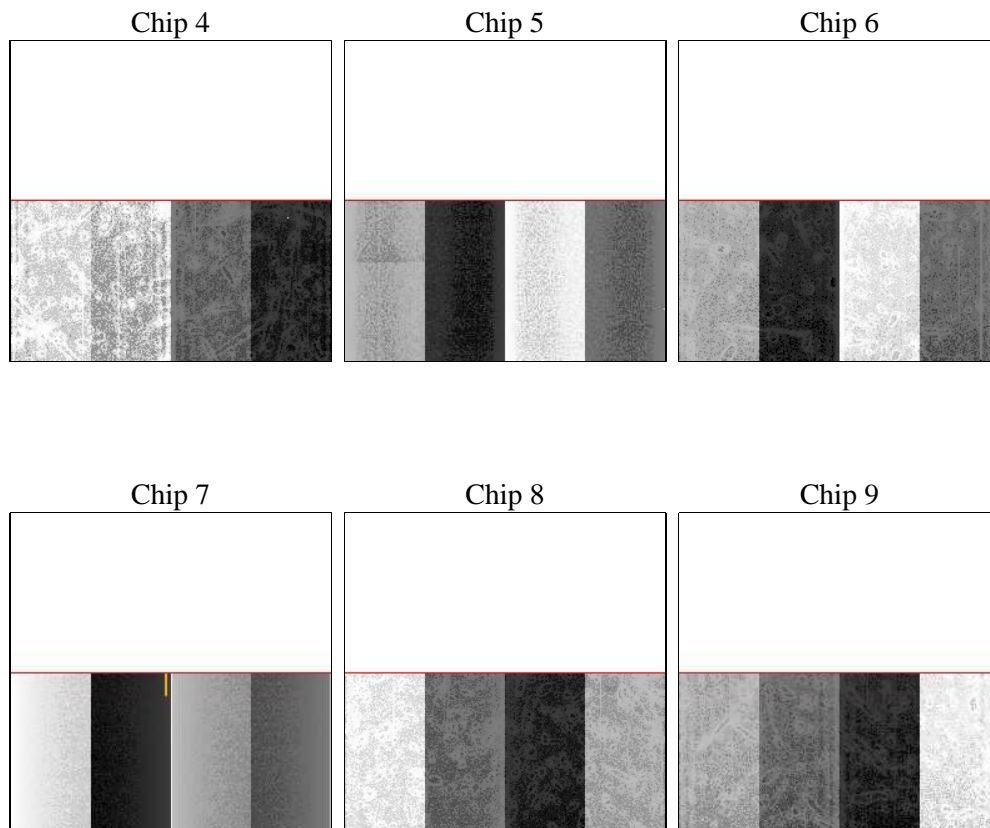
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	75000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	75136.599473119	Sum of GTIs [s]
caldbver	4.5.2	&#160	ontime4	75134.858472943	Sum of GTIs [s]
date	2012-12-03T04:49:19	Date and time of file creation	ontime5	75134.858472914	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	75136.599473119	Sum of GTIs [s]
			ontime7	75136.599473119	Sum of GTIs [s]
			ontime8	75134.858472943	Sum of GTIs [s]
			ontime9	75136.599473119	Sum of GTIs [s]
			l1events	3192074	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	379241	442598	581046	1060353	428174	300662	grade 0 events	59965	23943	191716	148707	56544	21087
rejected events	295840	229801	278640	241753	302065	255110		15%	5%	32%	14%	13%	7%
rejected %	78%	51%	47%	22%	70%	84%	grade 1 events	454	688	1142	2194	311	152
								0%	0%	0%	0%	0%	0%
							grade 2 events	8779	61848	46580	188617	23258	8043
								2%	13%	8%	17%	5%	2%
							grade 3 events	4423	12649	17669	84753	11467	4608
								1%	2%	3%	7%	2%	1%
							grade 4 events	4396	11833	17620	83883	10904	4548
								1%	2%	3%	7%	2%	1%
							grade 5 events	11968	34462	14040	44830	16099	12946
								3%	7%	2%	4%	3%	4%
							grade 6 events	6212	103547	29713	314964	24360	7464
								1%	23%	5%	29%	5%	2%
							grade 7 events	283044	193628	262566	192405	285231	241814
								74%	43%	45%	18%	66%	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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	246.984553	247.0238151931551	Subarray requested	CUSTOM	1/2
[deg] Pointing Dec	-49.202951	-49.19379998456517	Subarray start row	1	1
[deg] Pointing Roll	348.711503	348.8978552400887	Subarray row count	512	512
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	1.7
[mm] SIM translation stage pos	-183.992523	-183.985022191653			
[mm] SIM translation stage offset	-6.14	-6.147500391354811			
Phase constraints	Y	Y			
[d] Phase period	0.869907	0.869907			
[d] Phase epoch (MJD)	50454.000000	50454.000000			
Phase start	0.000000	0.000000			
Phase end	1.000000	1.000000			
Phase start error	0.000000	0.000000			
Phase end error	0.000000	0.000000			
[s] Observation start time (MET)	202718715.184000	202717566.4367			
Observation start date	2004-06-04T06:44:11	2004-06-04T06:26:06			
[s] Observation end time (MET)	202793715.184000	202794377.8901			
Observation end date	2004-06-05T03:34:11	2004-06-05T03:46:17			
Read mode	TIMED	TIMED			

## 2.3 Aspect



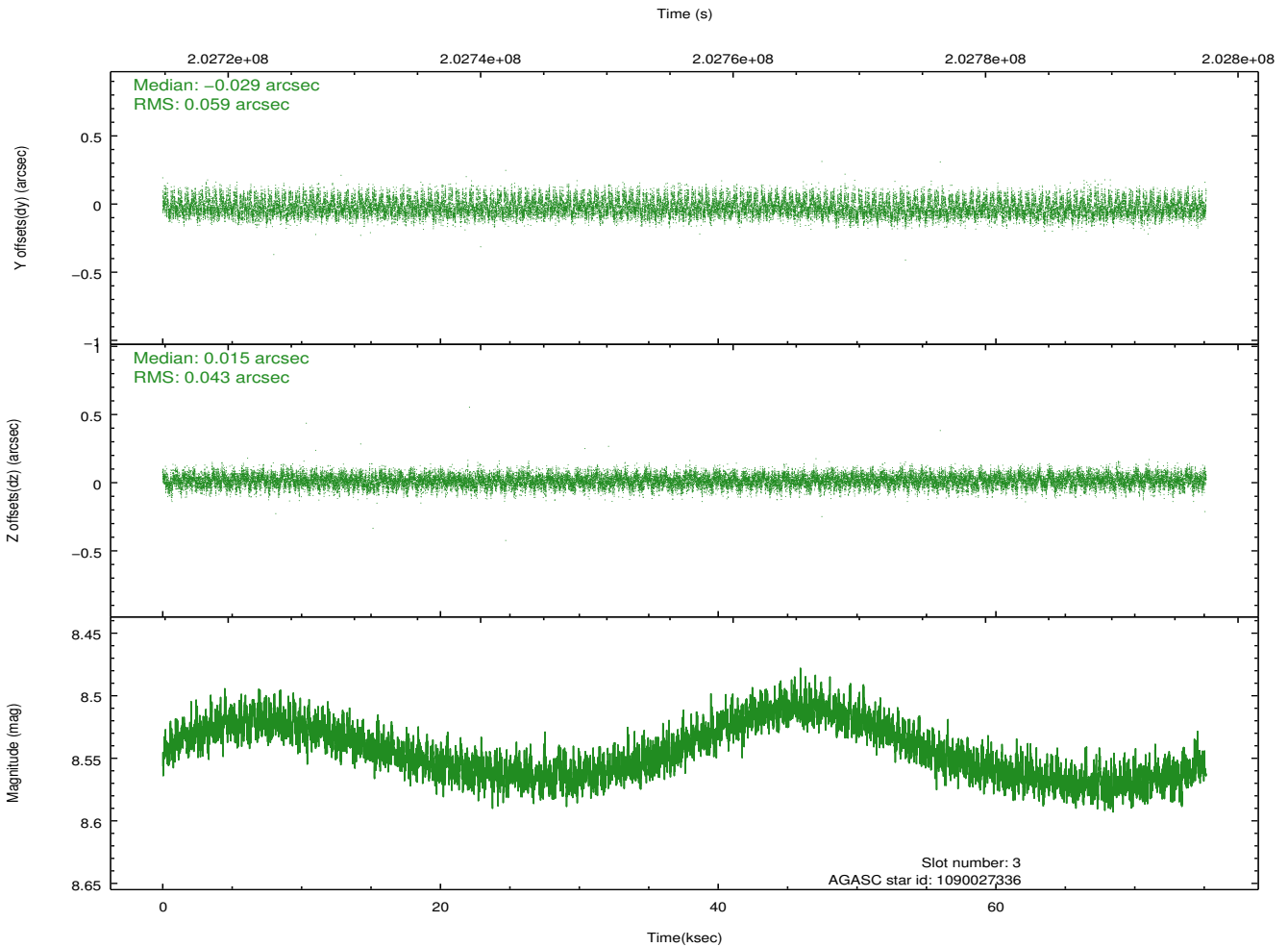
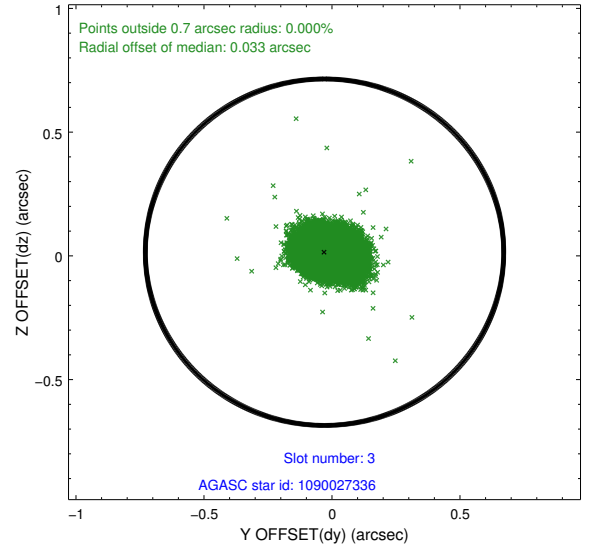
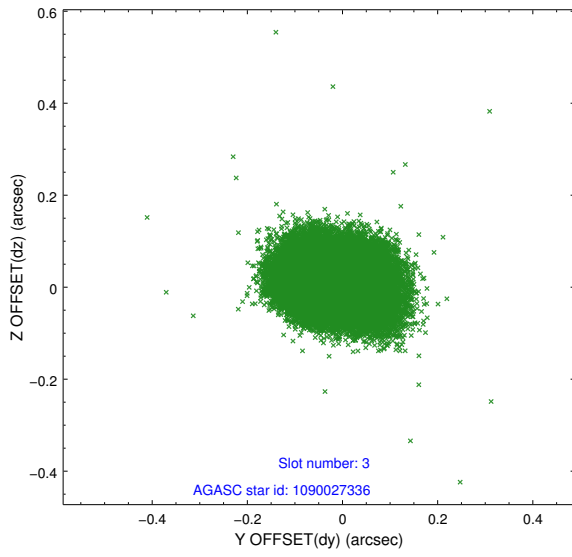
### Slot Statistics

slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.08	18327	-0.070	-0.084	0.025	0.049	0.000000	0.000000	-759.49	-1857.50
1	FID	ACIS-S-4	7.18	18327	0.095	0.057	0.027	0.040	0.000000	0.000000	2153.99	51.17
2	FID	ACIS-S-5	7.22	18325	-0.063	0.031	0.021	0.048	0.000000	0.000000	-1812.40	44.76
3	GUIDE	1090027336	8.55	36650	-0.029	0.015	0.077	0.127	246.243090	-48.601393	-2153.39	1769.67
4	GUIDE	1090028832	8.43	36650	-0.000	0.020	0.060	0.098	247.053685	-48.746399	-160.78	1644.00
5	GUIDE	1090527696	7.23	36650	0.000	0.023	0.055	0.090	246.414931	-49.424565	-1150.72	-1048.35
6	GUIDE	1090534672	9.32	36478	0.046	0.041	0.102	0.165	247.311518	-48.955183	583.72	1024.57
7	GUIDE	1090029704	9.39	36628	-0.015	-0.095	0.118	0.193	247.219940	-48.584716	114.14	2291.60

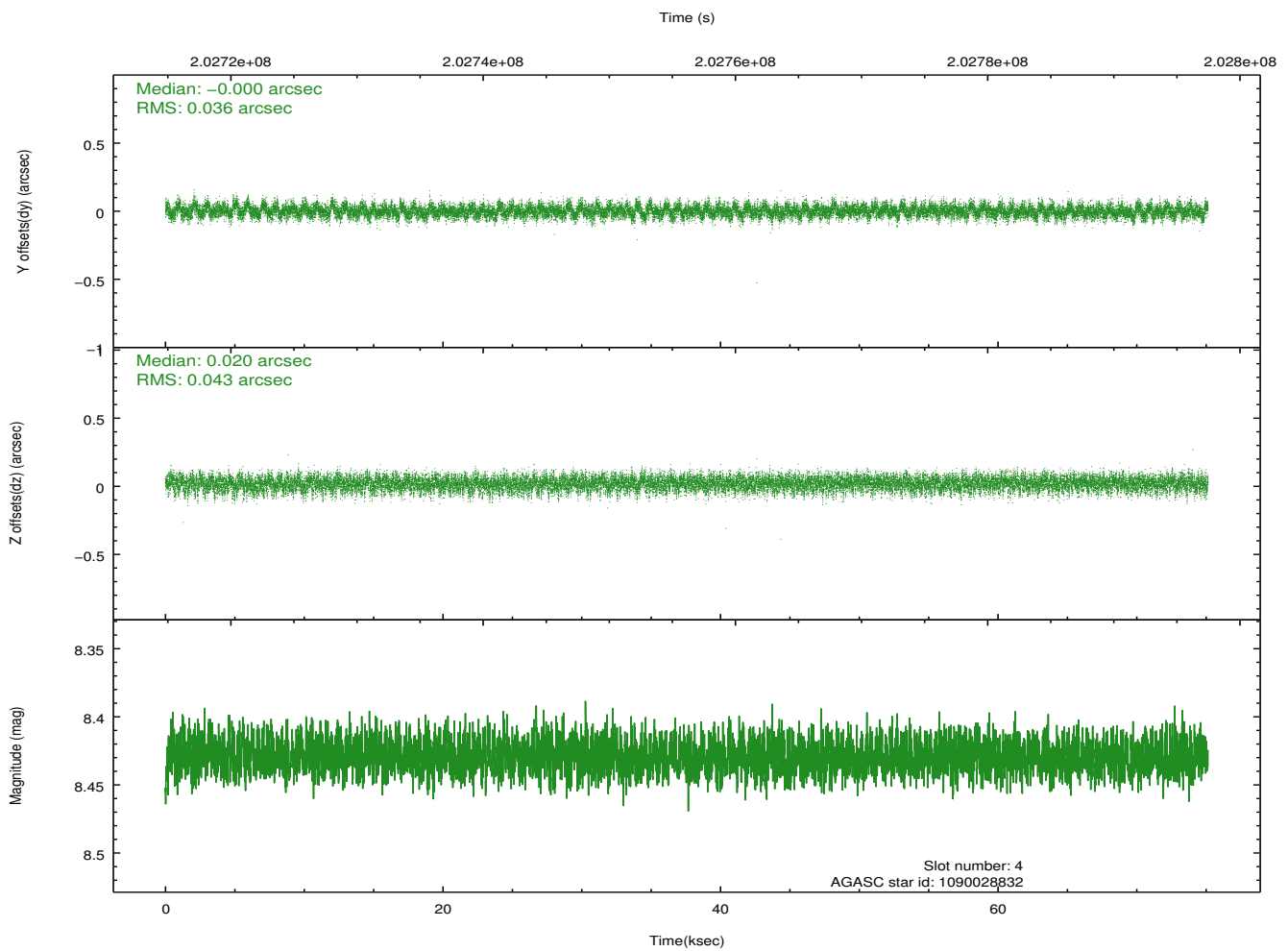
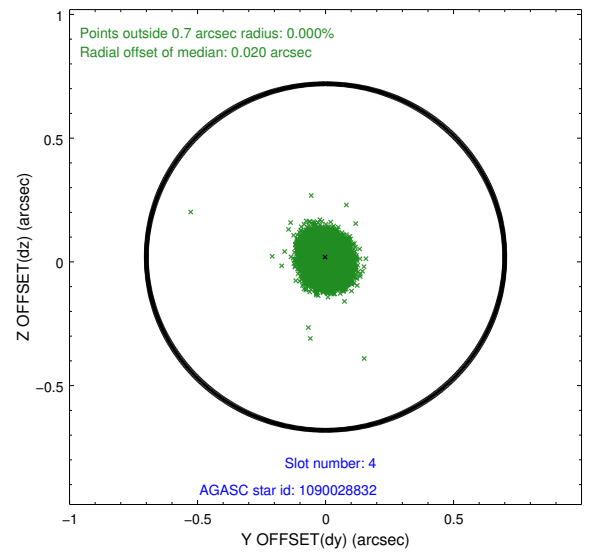
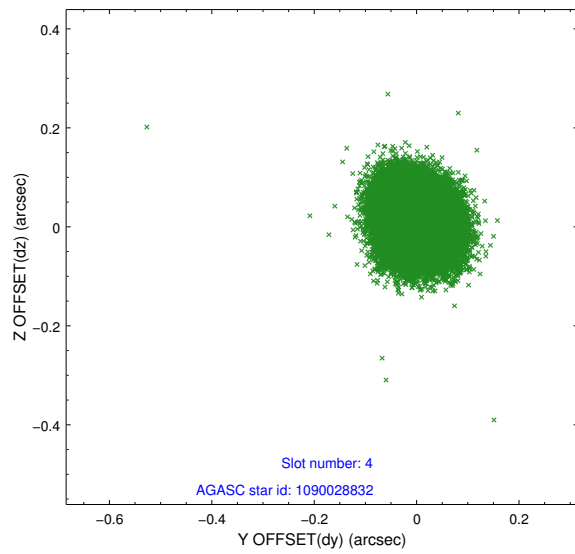
∞

## 2.4 Star Slots

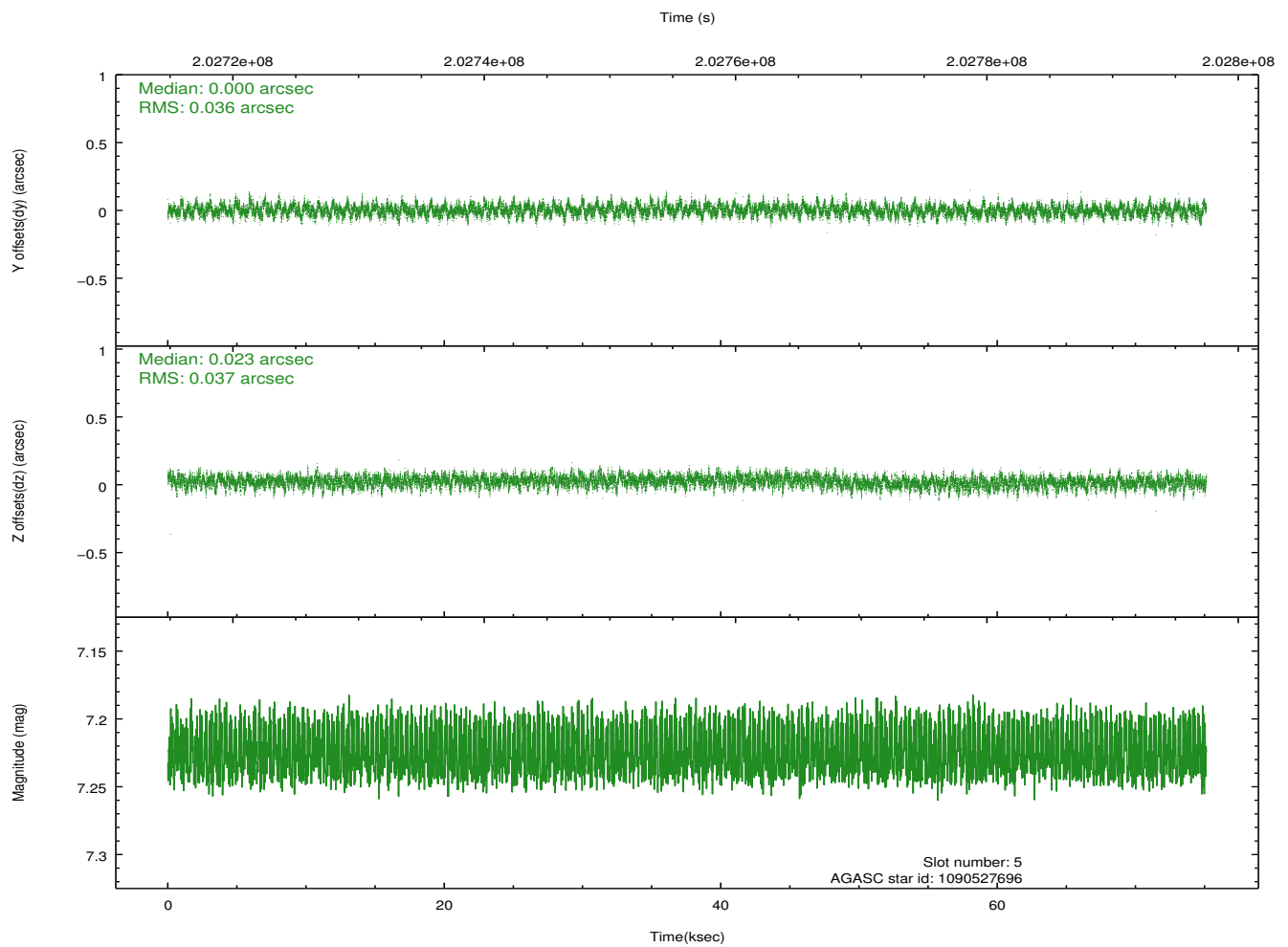
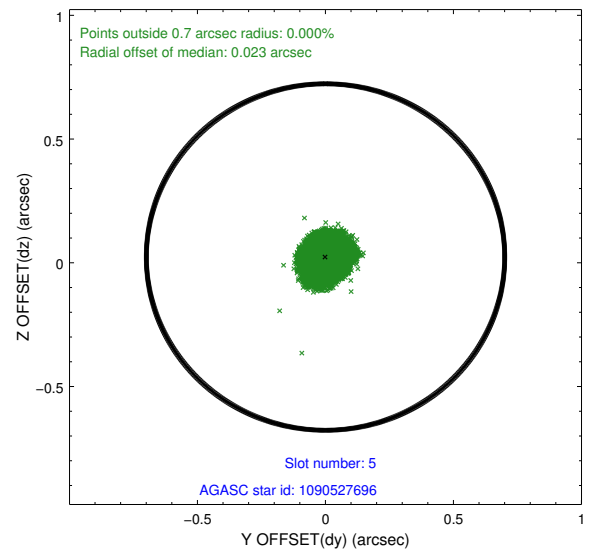
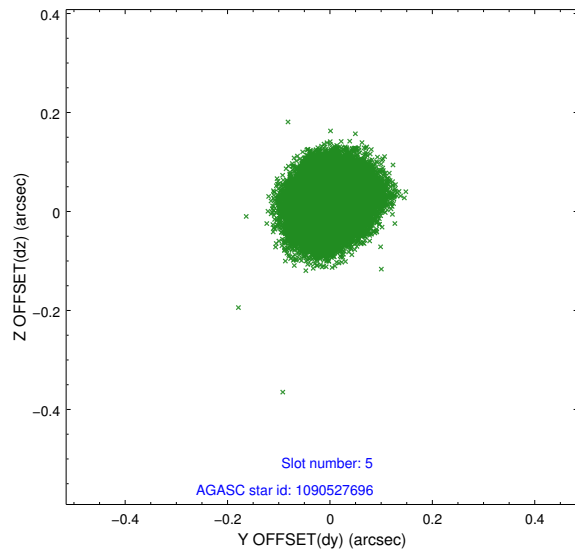
### 2.4.1 Slot 3



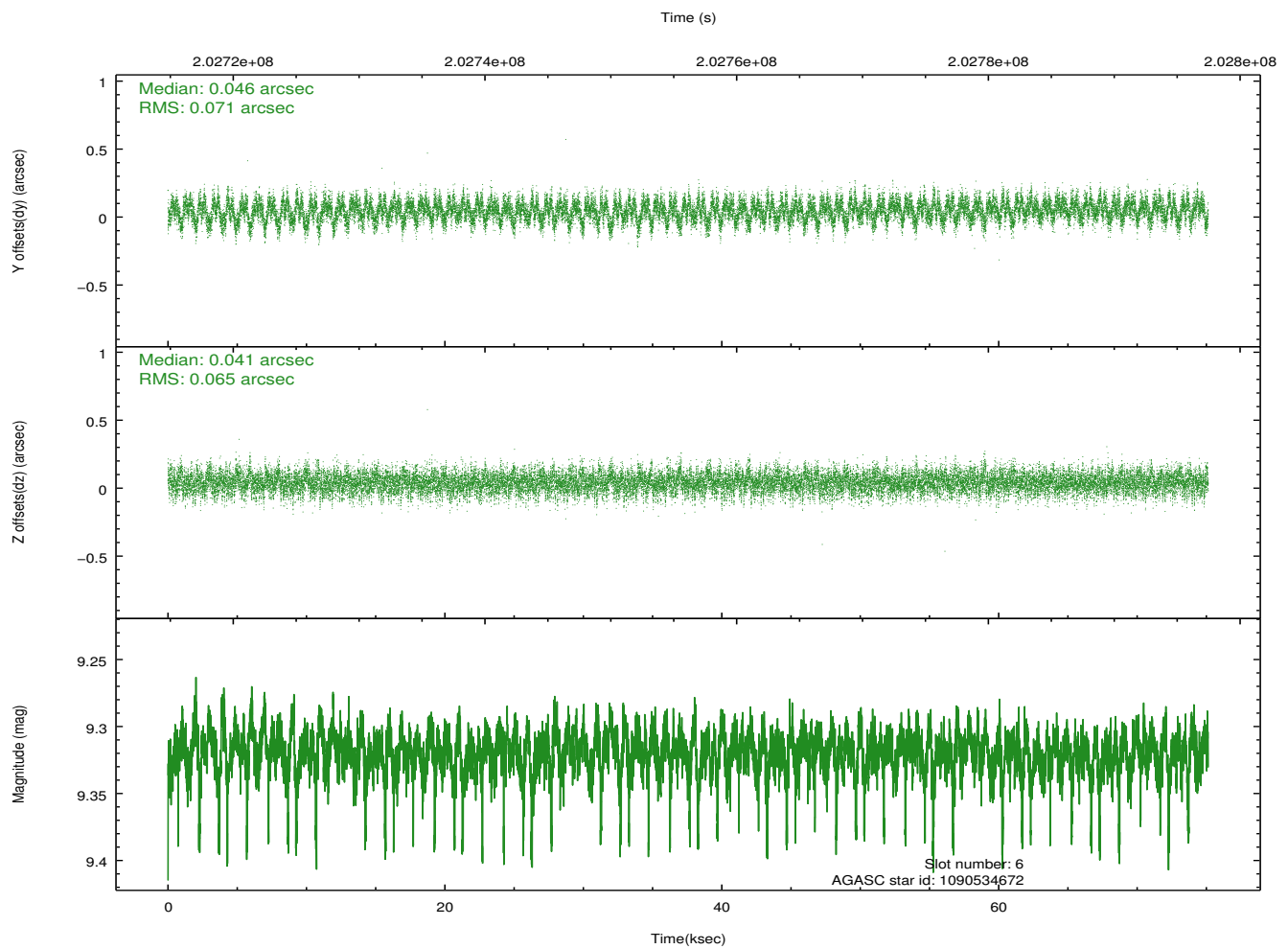
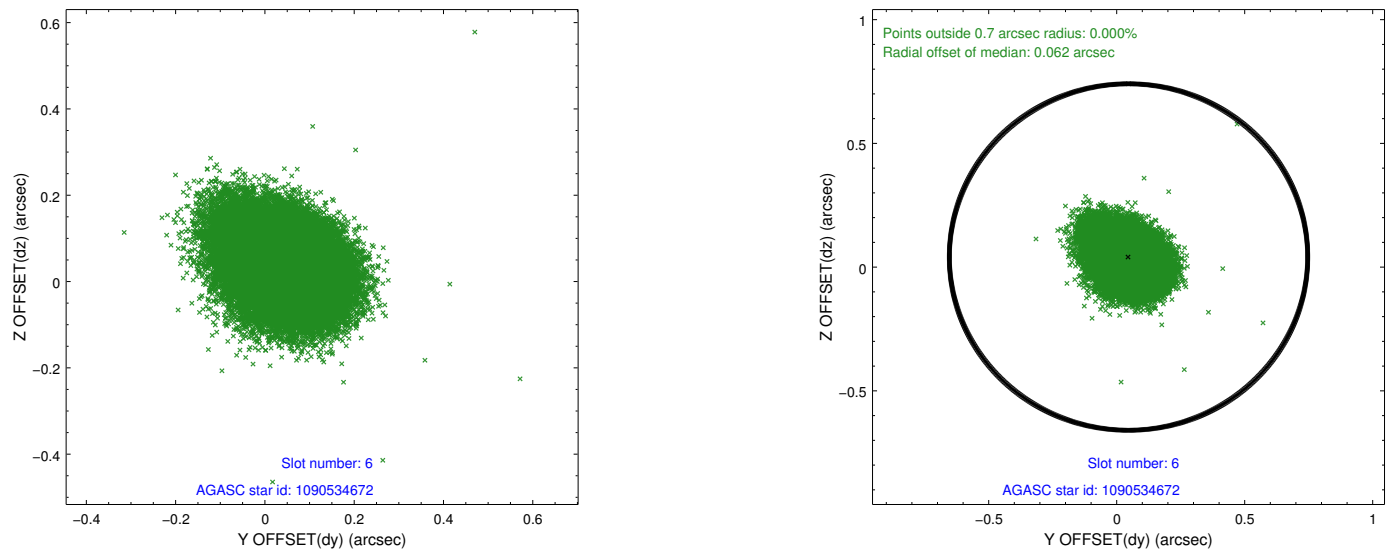
## 2.4.2 Slot 4



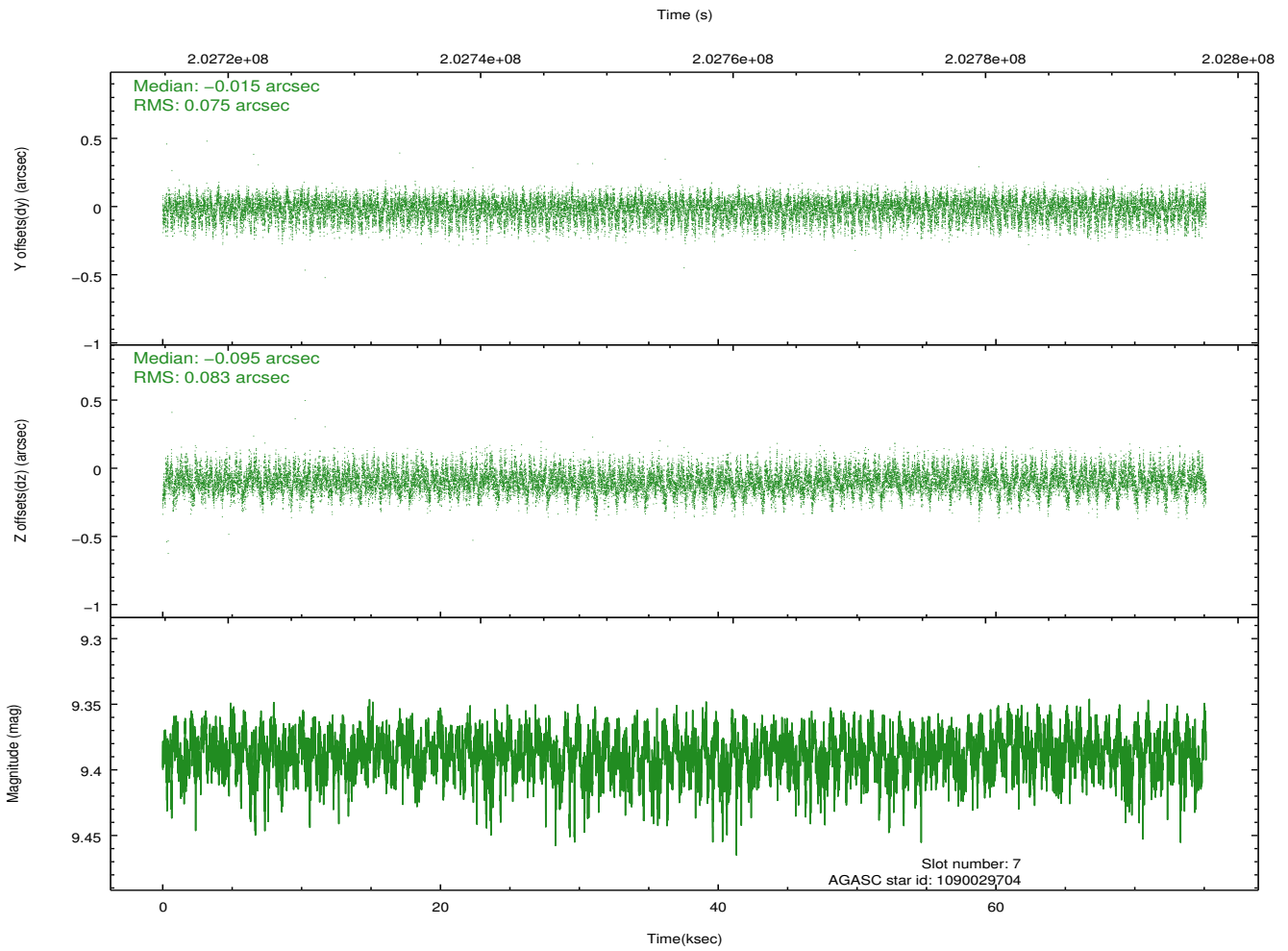
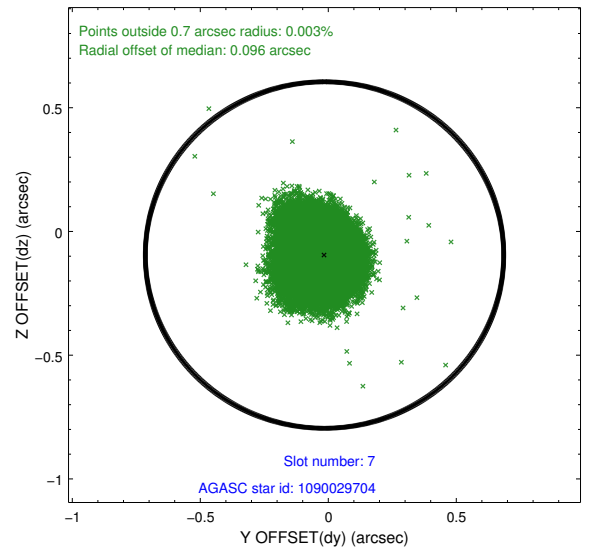
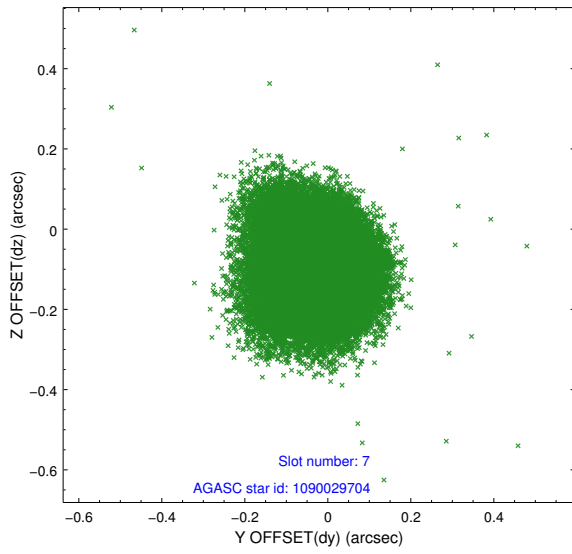
### 2.4.3 Slot 5



## 2.4.4 Slot 6

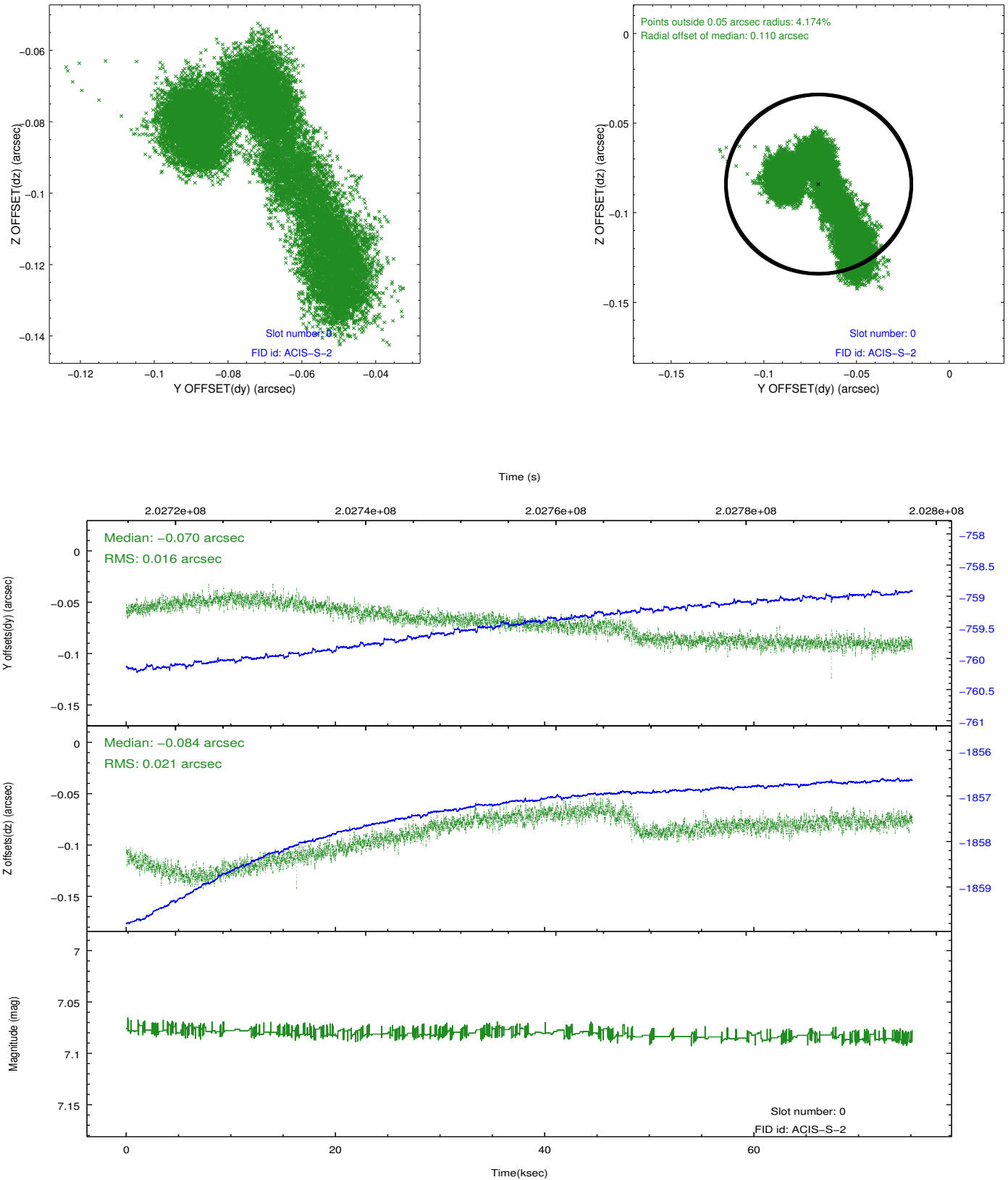


## 2.4.5 Slot 7

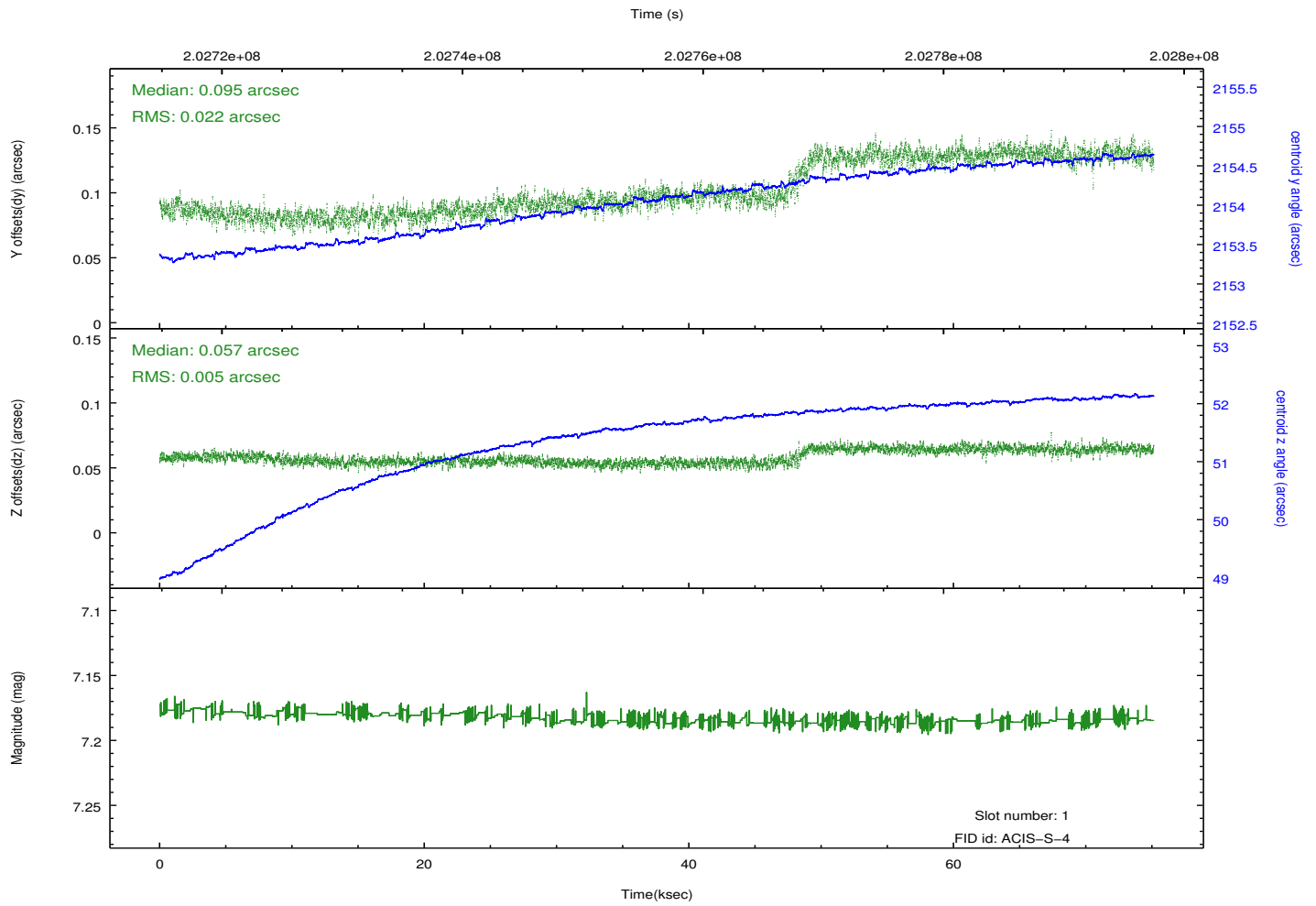
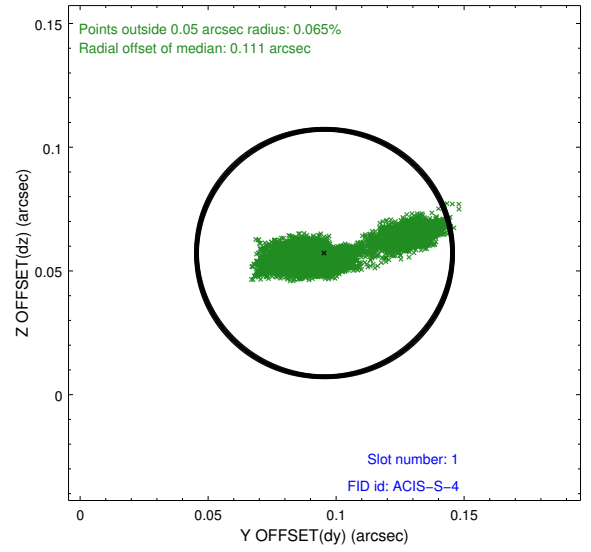
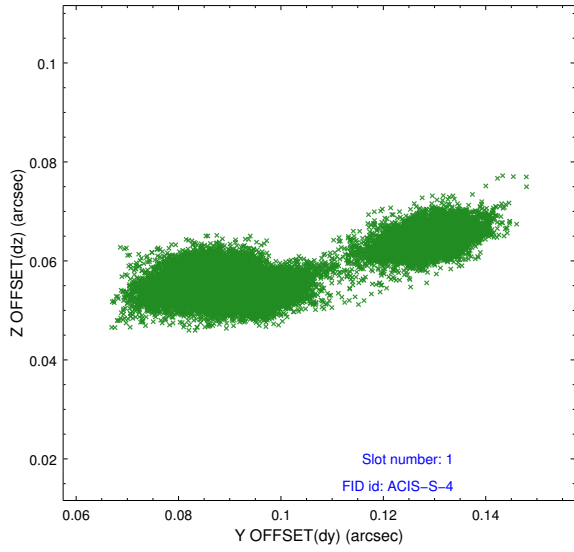


## 2.5 FID Slots

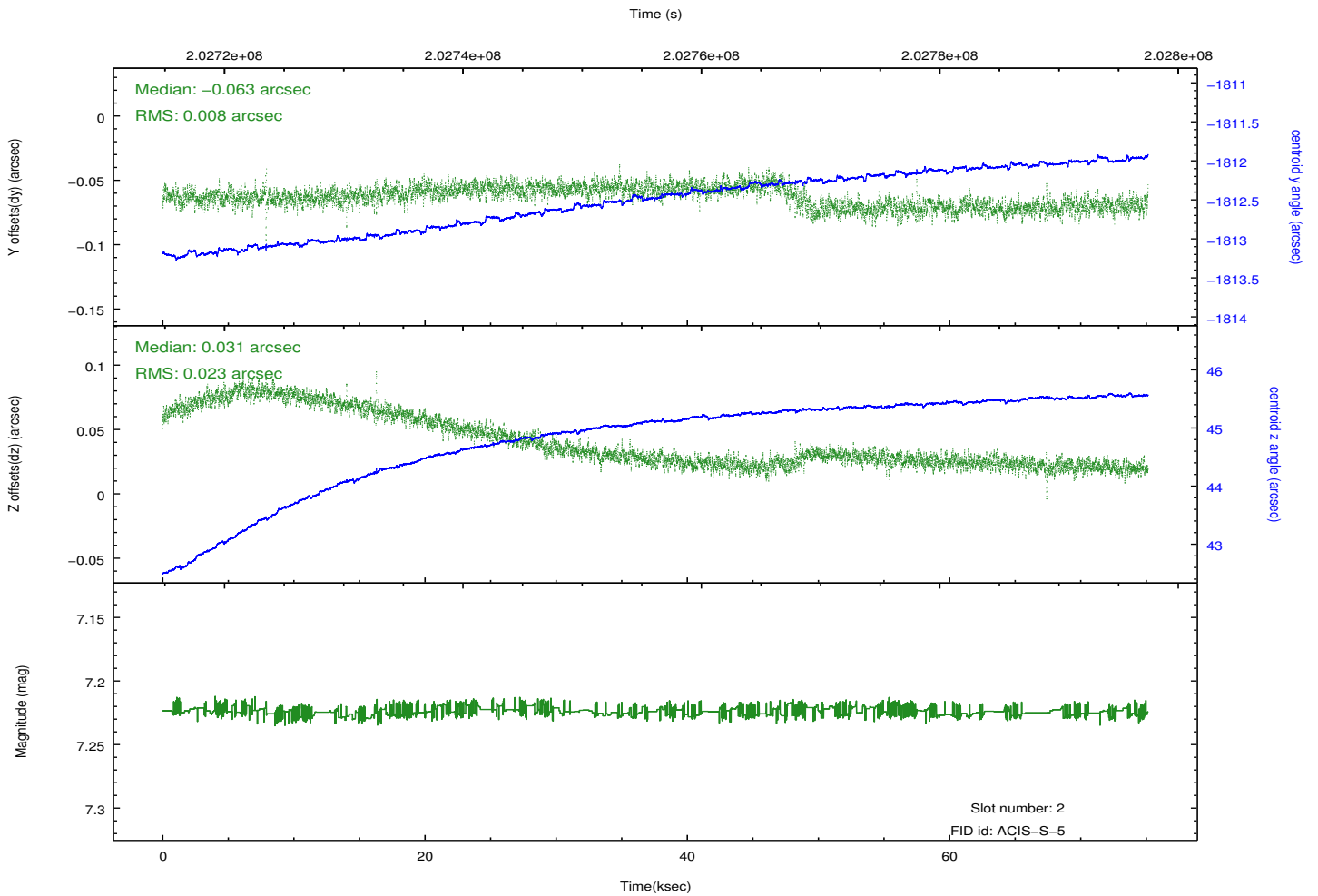
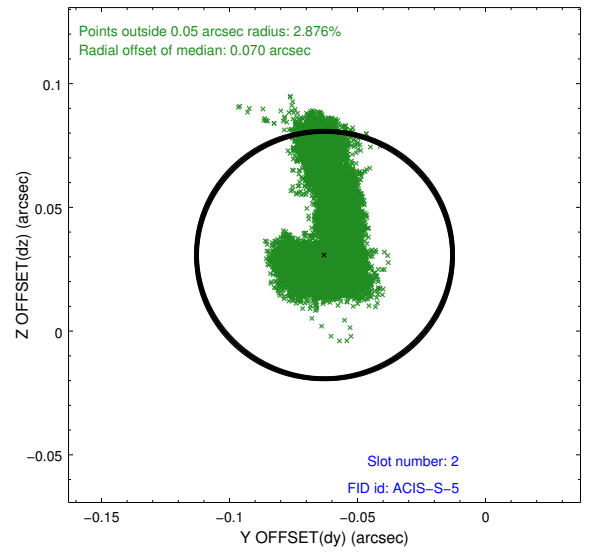
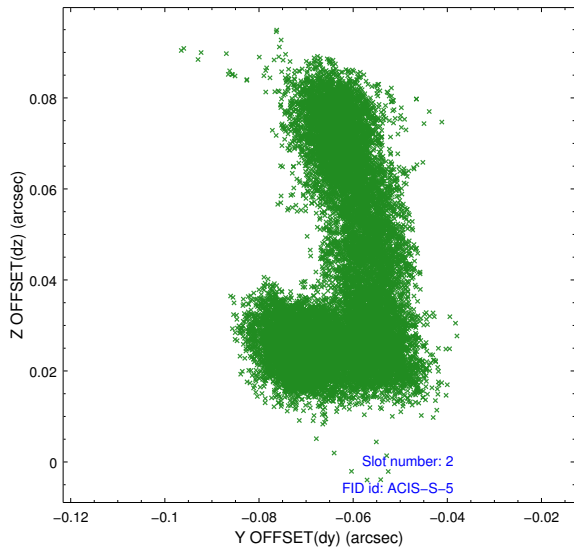
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

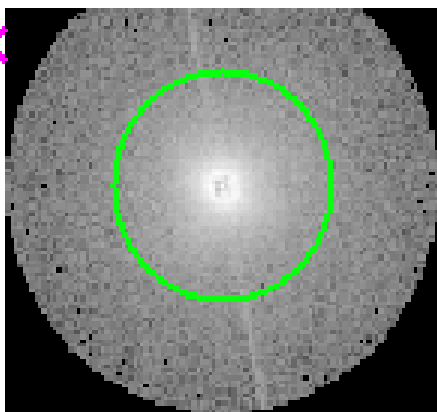


### 3 Gratings

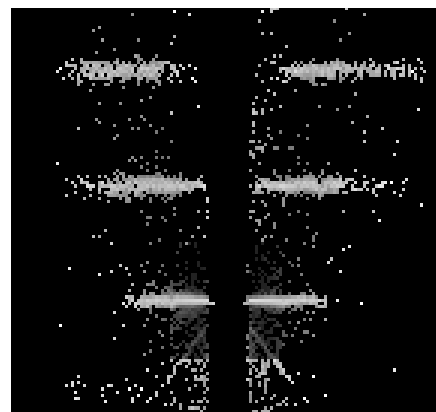
#### 3.1 HEG Arm



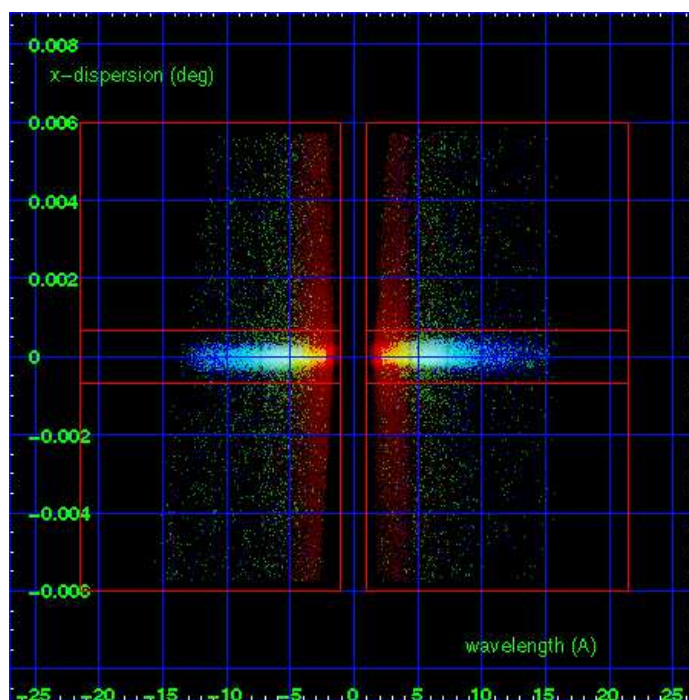
HEG Order Sort 123



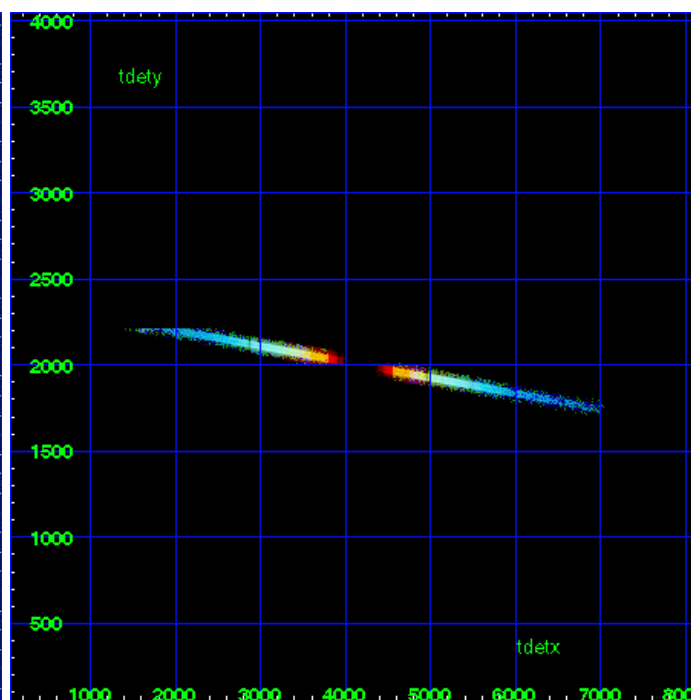
HEG Zero Order



HEG Order Sort ALL

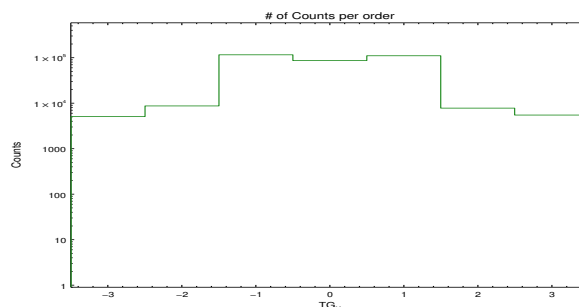


Spot Image HEG

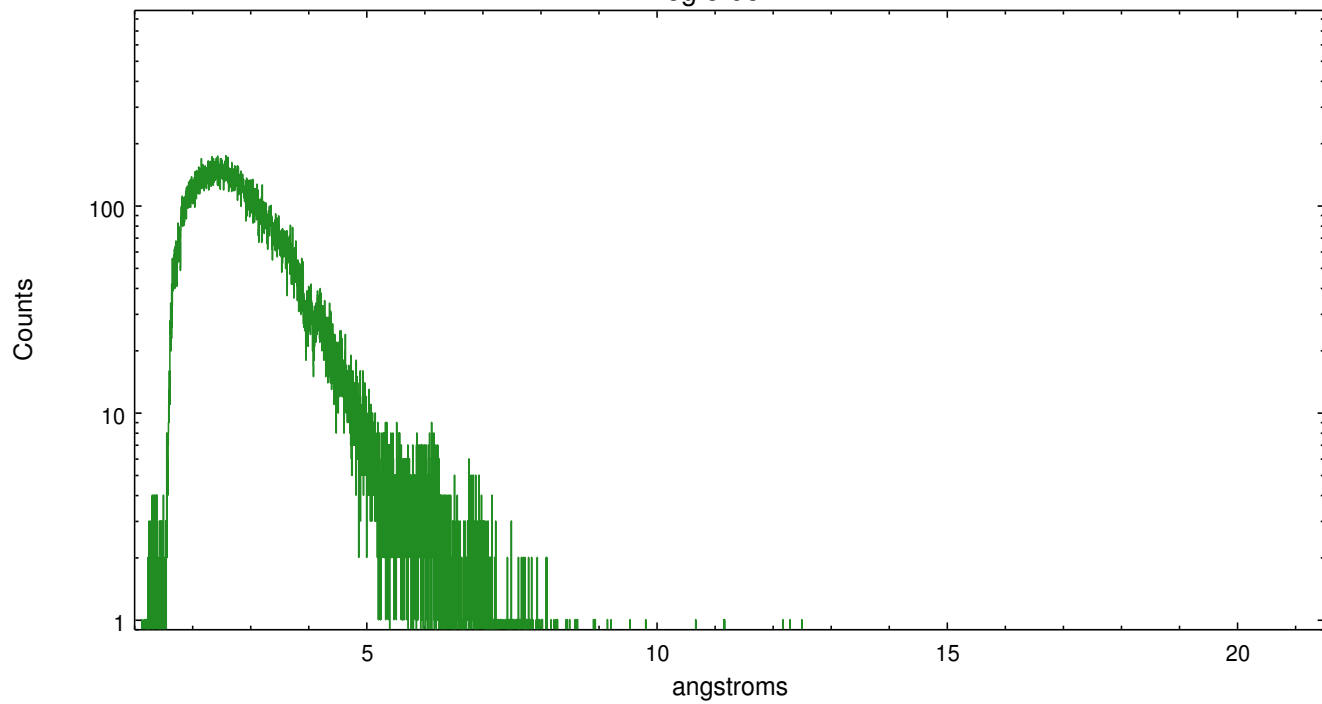


Full Detector HEG

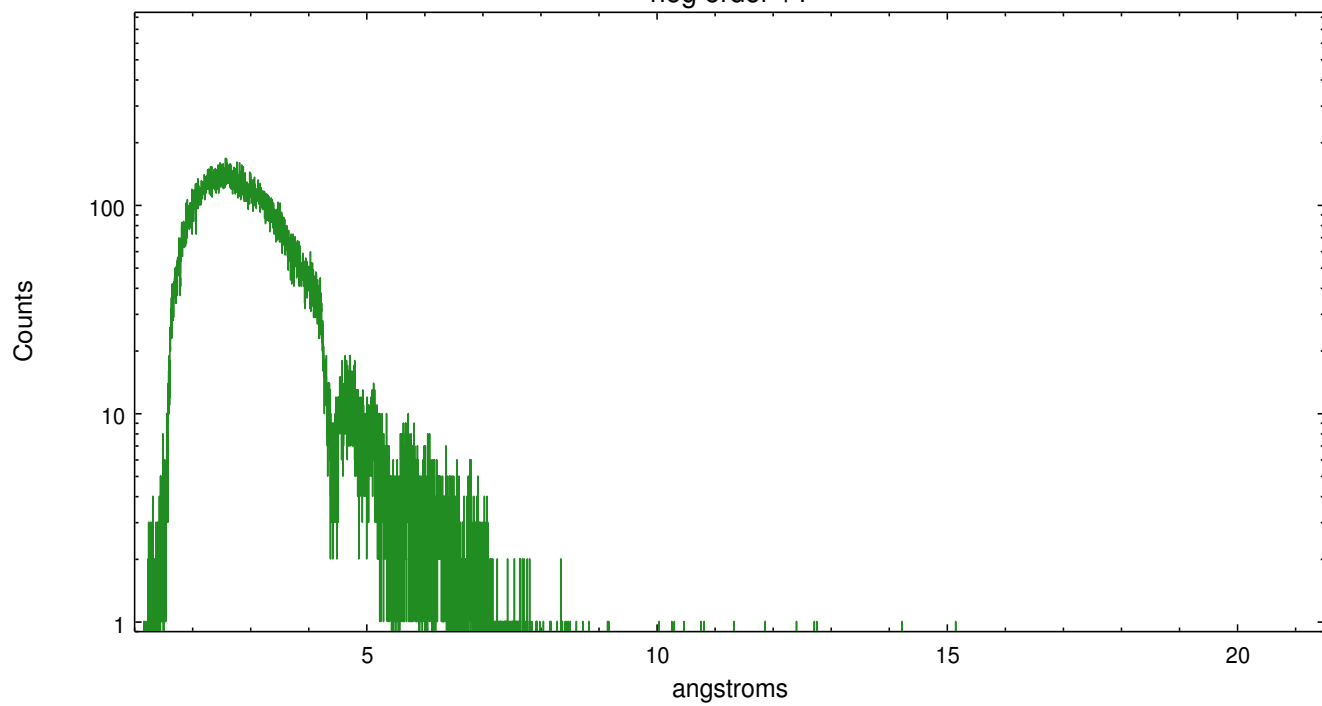
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	5092	8749	116886	87070	111380	7821	5506



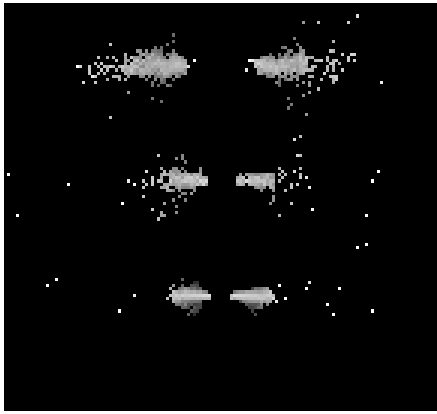
heg order -1



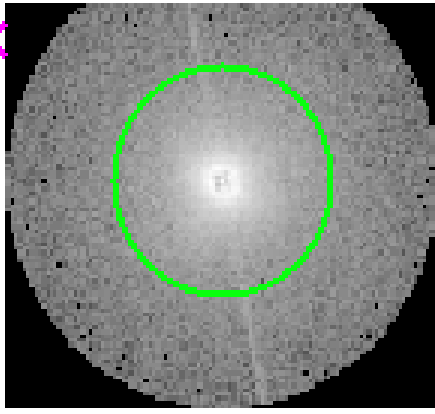
heg order +1



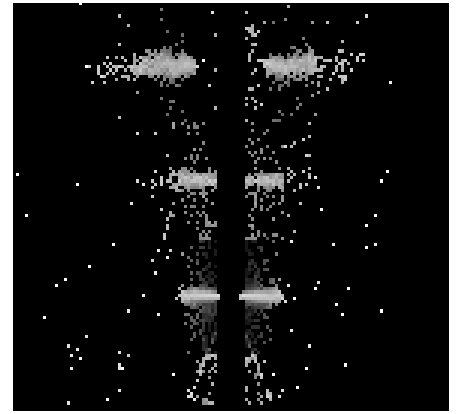
### 3.2 MEG Arm



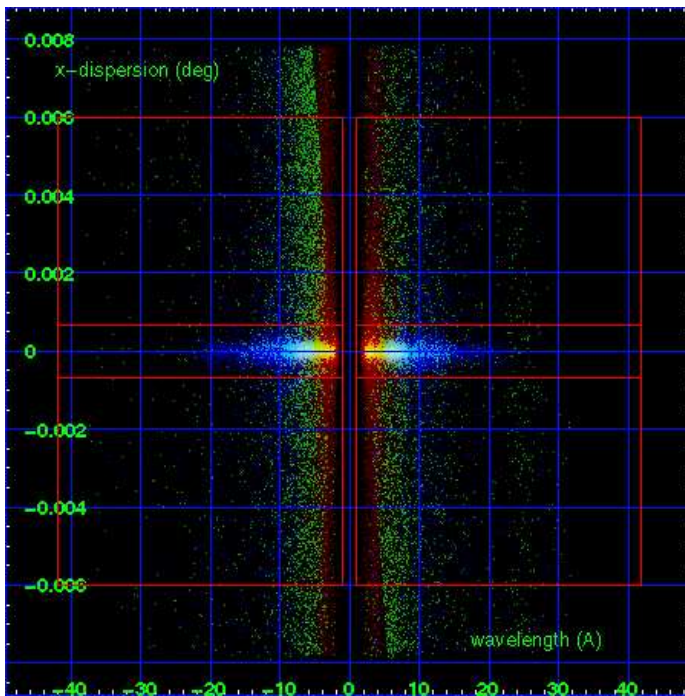
MEG Order Sort 123



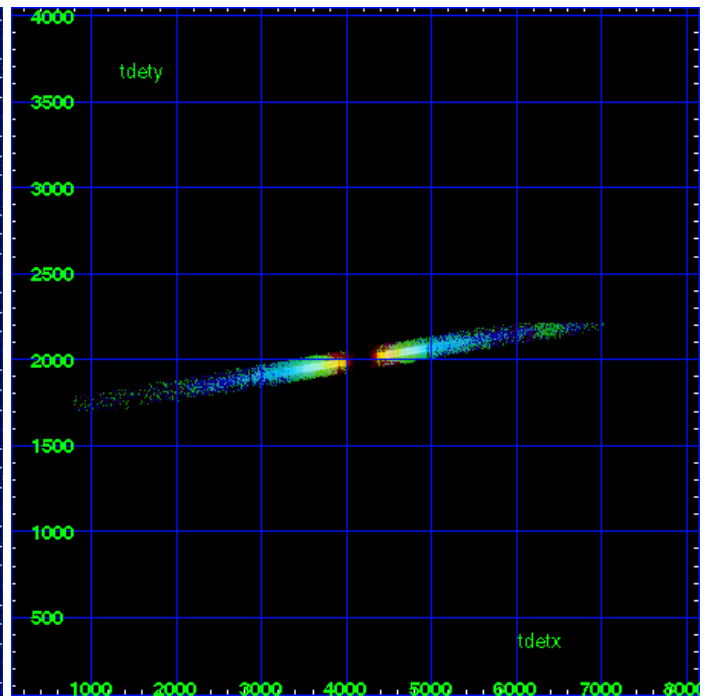
MEG Zero Order



MEG Order Sort ALL

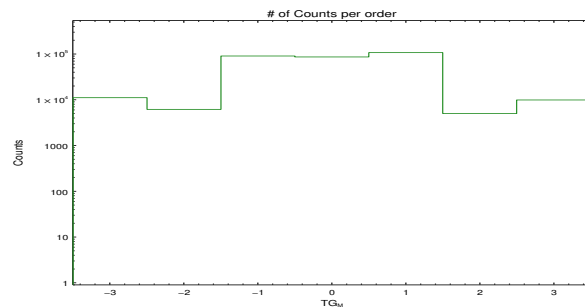


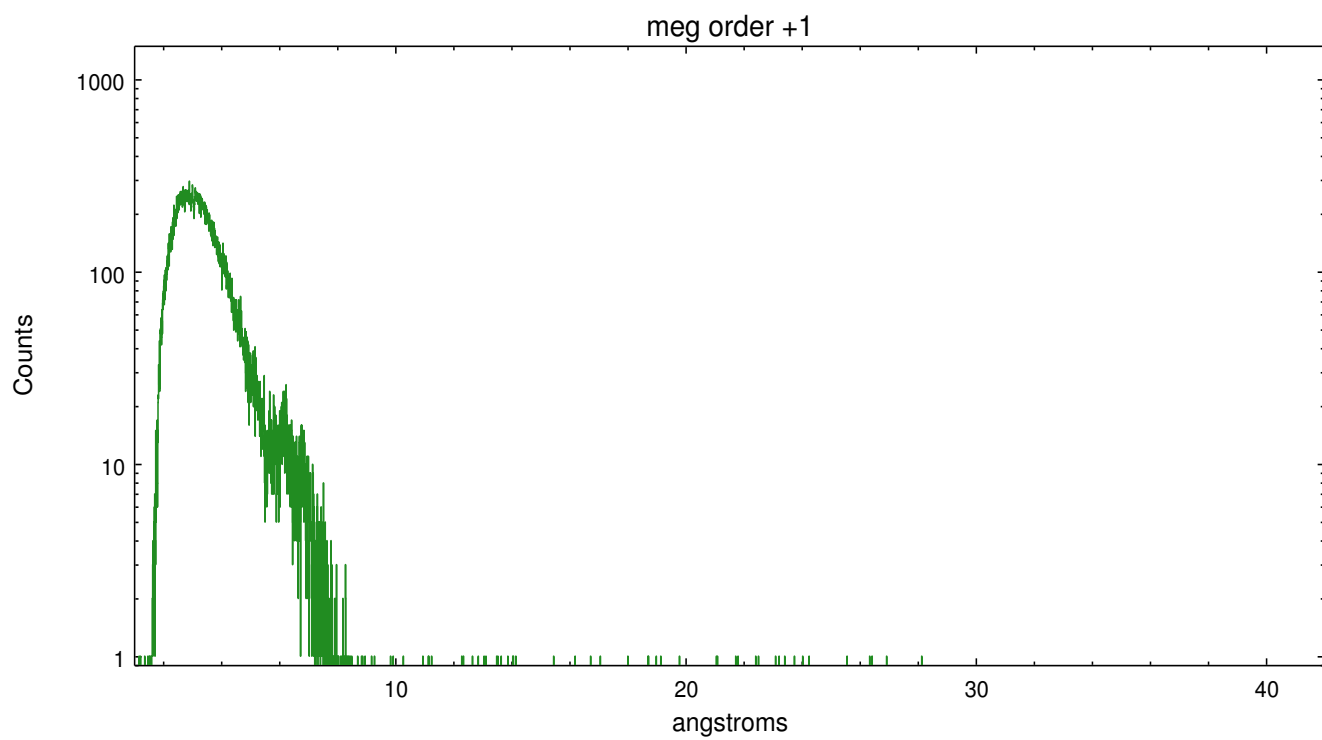
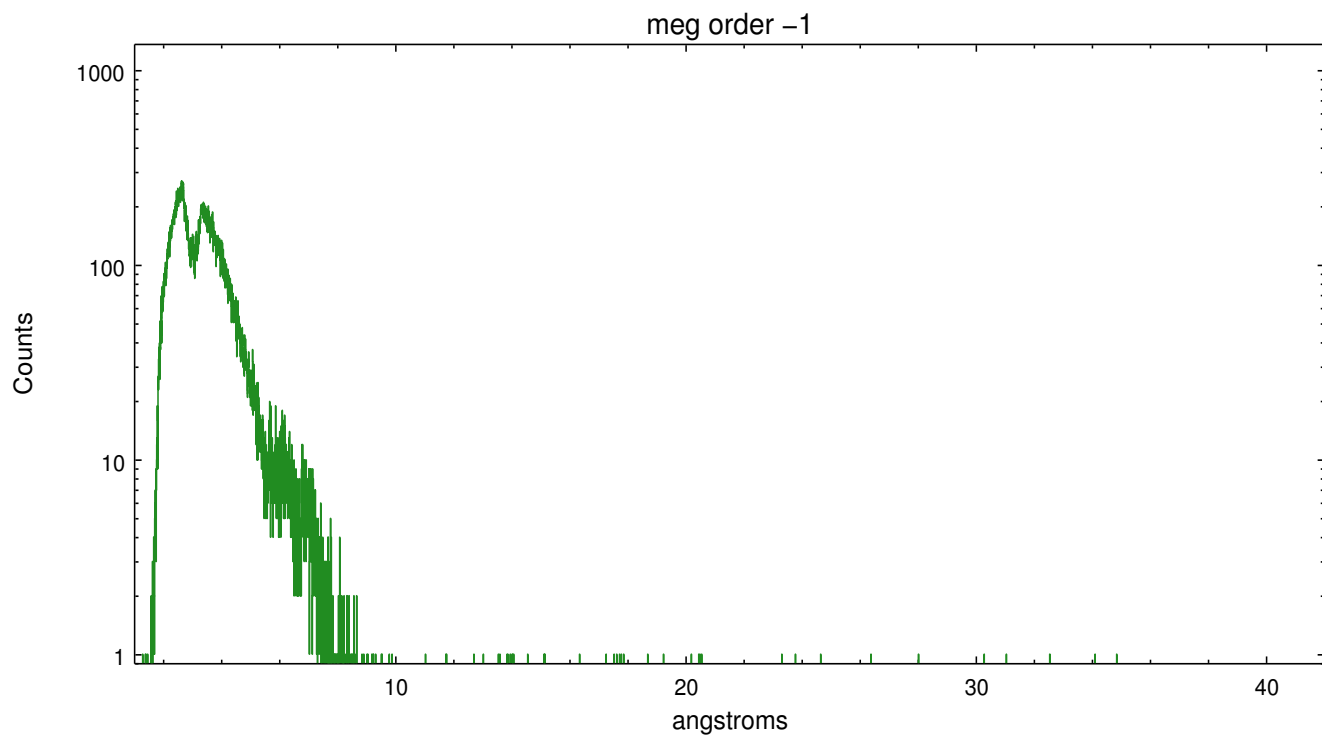
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	11171	6193	91326	87070	108305	5027	9953





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.01.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	75.136

## A.2 Comments

Zeroth order 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=4154.65, y=4062.23) into the \*src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called tg\_findzo, available in CIAO. The tool calculates the point of intersection of the readout streak and the meg arm (in this case, the heg arm due to pileup). 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.

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Zeroth order coordinates off by about +30 arcsec in dec only from the coordinates requested. However, the zeroth order is at the exact coordinates found in SIMBAD for this object. Due to this apparent error in requestd coordinates, the target is not placed precisely in the center of the chip and the dispersed spectral arms do not have equal energy coverage between the + and - arms. The MEG - arm has more low energy coverage than usual and MEG + arm has less low energy coverage than usual. The reverse is true for HEG.