

# V&V Reference Report

## L2 ASCDS Version : 8.5.1.1

Observation 5514 - L2 Version 4  
Chandra X-Ray Center

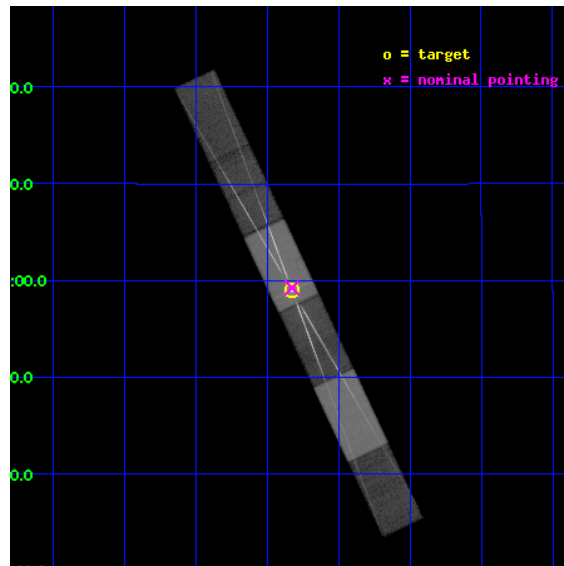
L2 Processing Date : Feb 28 2013

## Contents

<b>1</b>	<b>Front</b>	<b>2</b>
<b>2</b>	<b>OBI</b>	<b>3</b>
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
<b>3</b>	<b>Gratings</b>	<b>17</b>
3.1	HEG Arm . . . . .	17
3.2	MEG Arm . . . . .	19
<b>A</b>	<b>Summary</b>	<b>21</b>
A.1	Status . . . . .	21
A.2	Comments . . . . .	21

# 1 Front

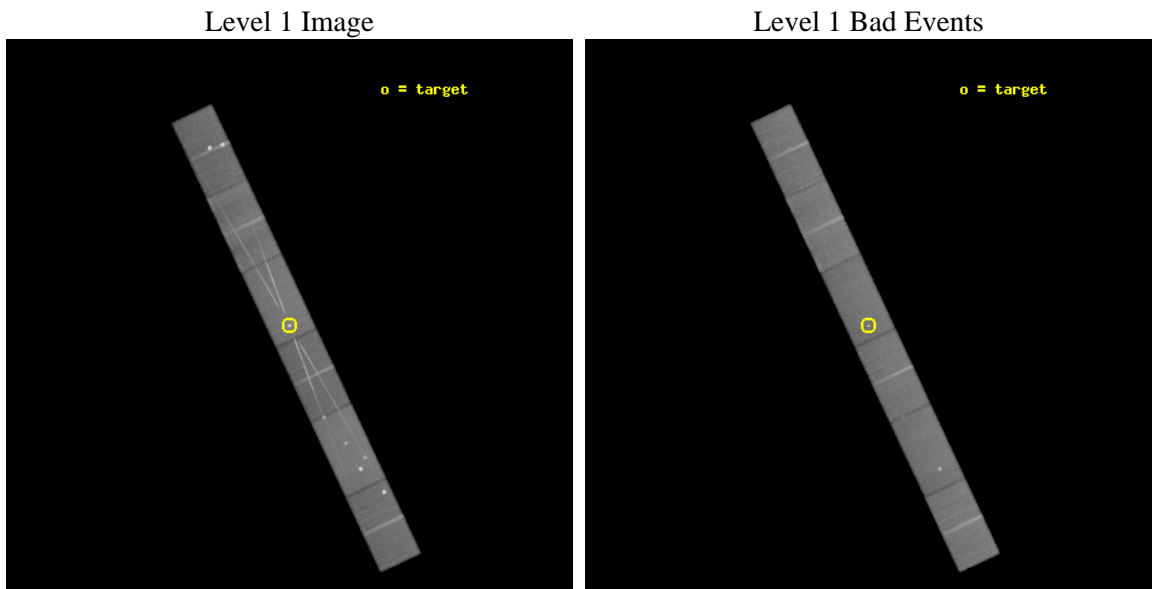
seq_num	400444	Sequence number
obs_id	5514	Observation id
title	Detailed Studies of the Jets in SS 433	Proposal title
observer	Prof Claude Canizares	Principal investigator
object	SS 433	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	287.95625	Observer's specified target RA [deg]
dec_targ	4.982778	Observer's specified target Dec [deg]
ra_nom	287.9565900181	Nominal RA [deg]
dec_nom	4.9873692251858	Nominal Dec [deg]
roll_nom	244.75659729994	Nominal Roll [deg]
revision	4	Processing version of data
ontime	74752.200495064	Sum of GTIs [s]
livetime	73085.843268542	Livetime [s]
ontime4	74752.200495064	Sum of GTIs [s]
ontime5	74752.200495064	Sum of GTIs [s]
ontime6	74752.200495064	Sum of GTIs [s]
ontime7	74752.200495064	Sum of GTIs [s]
ontime8	74752.200495064	Sum of GTIs [s]
ontime9	74750.359474987	Sum of GTIs [s]
l2events	750755	Number of level 2 events



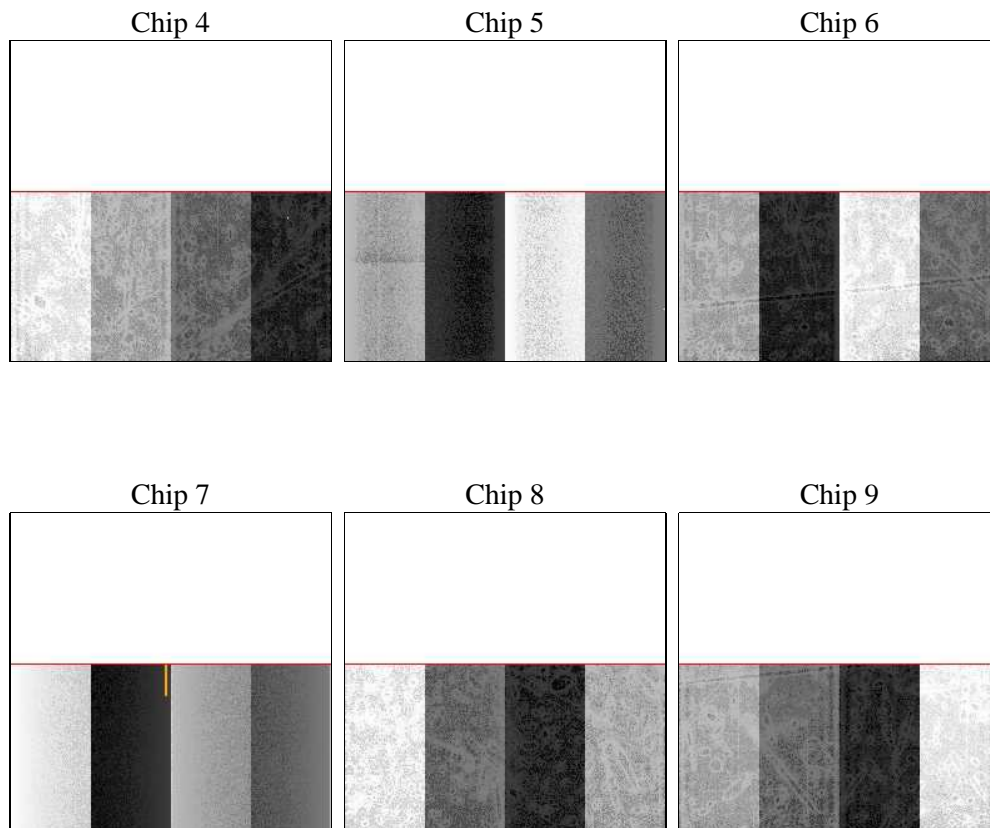
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	74641.799000	[s] Scheduled observation exposure time
ascdsver	8.5.1.1	Processing system revision	ontime	74752.200495064	Sum of GTIs [s]
caldbver	4.5.6	&#160	ontime4	74752.200495064	Sum of GTIs [s]
date	2013-02-28T00:15:40	Date and time of file creation	ontime5	74752.200495064	Sum of GTIs [s]
revision	4	Processing version of data	ontime6	74752.200495064	Sum of GTIs [s]
			ontime7	74752.200495064	Sum of GTIs [s]
			ontime8	74752.200495064	Sum of GTIs [s]
			ontime9	74750.359474987	Sum of GTIs [s]
			l1events	2640519	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	380504	503606	398124	554166	416085	388034	grade 0 events	56326	49968	77674	40609	44758	58250
rejected events	299724	250056	272744	254377	307291	265982		14%	9%	19%	7%	10%	15%
rejected %	78%	49%	68%	45%	73%	68%	grade 1 events	361	8718	350	1405	234	317
								0%	1%	0%	0%	0%	0%
							grade 2 events	8900	69775	18864	64550	20877	46889
								2%	13%	4%	11%	5%	12%
							grade 3 events	4679	12491	7964	29249	10036	4736
								1%	2%	2%	5%	2%	1%
							grade 4 events	4336	12034	7956	29102	9599	4482
								1%	2%	1%	5%	2%	1%
							grade 5 events	12708	35832	13736	43306	17744	14480
								3%	7%	3%	7%	4%	3%
							grade 6 events	6540	109286	12924	136288	23527	7697
								1%	21%	3%	24%	5%	1%
							grade 7 events	286654	205502	258656	209657	289310	251183
								75%	40%	64%	37%	69%	64%

## 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	287.953957	287.956590018095	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	5.014495	4.987369225185806	Subarray start row	1	1
[deg] Pointing Roll	244.600205	244.7565972999352	Subarray row count	542	542
[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	1.8
[mm] SIM translation stage pos	-184.532523	-184.5306286120915			
[mm] SIM translation stage offset	-5.6	-5.601893970916279			
Phase constraints	Y	Y			
[d] Phase period	13.082110	13.082110			
[d] Phase epoch (MJD)	52377.900000	52377.900000			
Phase start	0.200000	0.200000			
Phase end	0.800000	0.800000			
Phase start error	0.050000	0.050000			
Phase end error	0.050000	0.050000			
[s] Observation start time (MET)	240489105.184000	240488132.92666			
Observation start date	2005-08-15T10:30:41	2005-08-15T10:15:32			
[s] Observation end time (MET)	240563746.184000	240563962.43014			
Observation end date	2005-08-16T07:14:42	2005-08-16T07:19:22			
Read mode	TIMED	TIMED			

## 2.3 Aspect

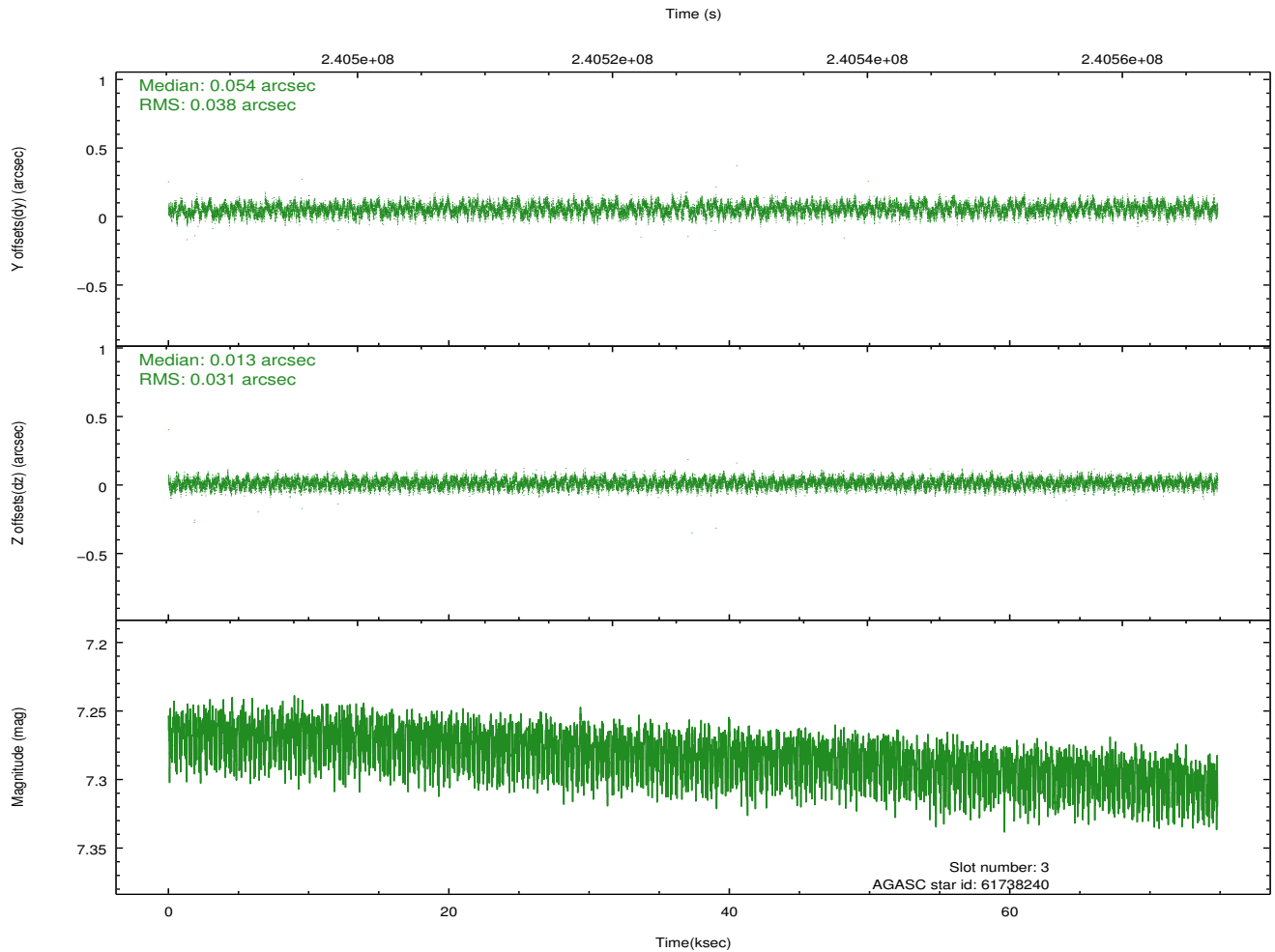
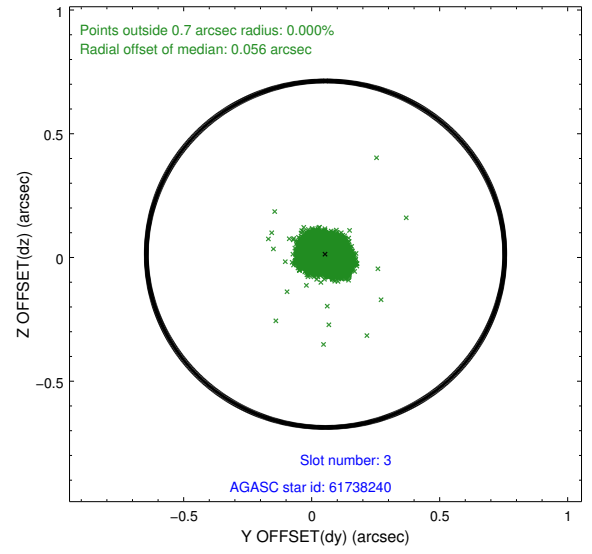
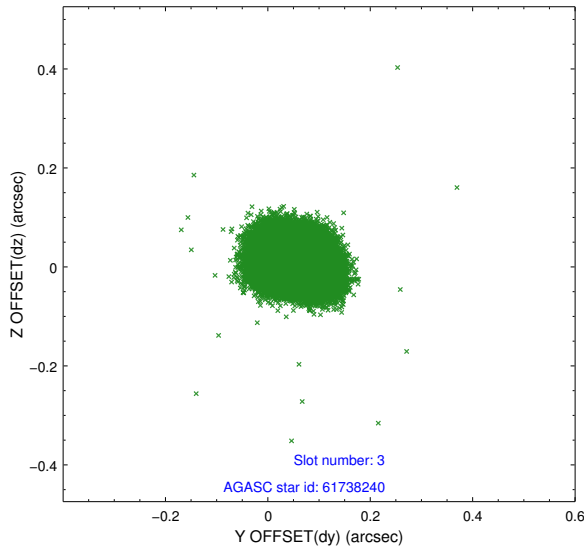


### Slot Statistics

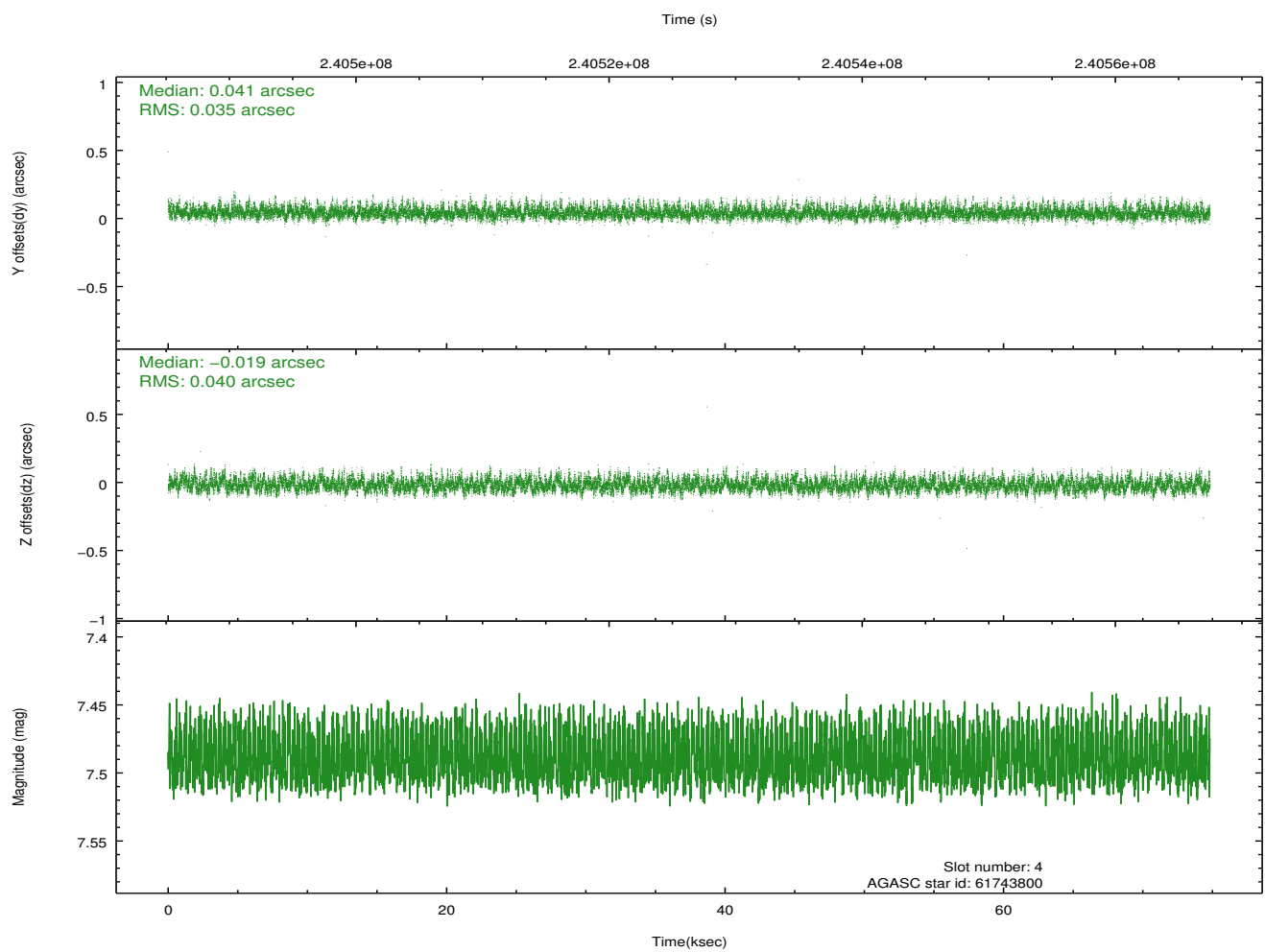
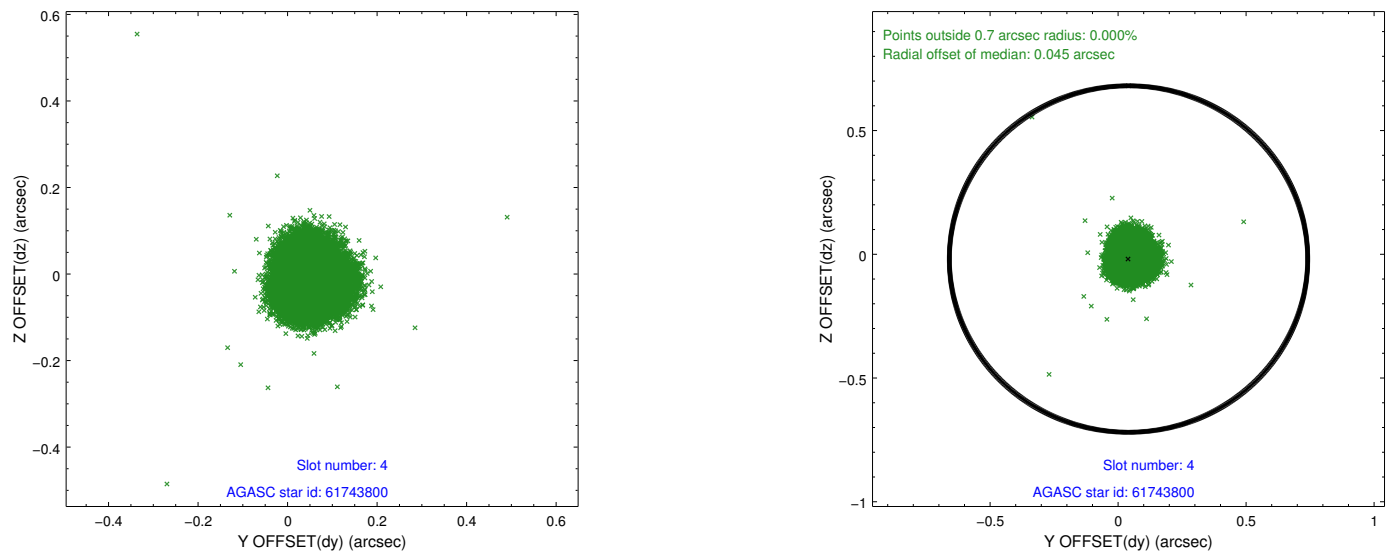
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	18251	-0.059	-0.142	0.010	0.016	0.000000	0.000000	-761.84	-1847.65
1	FID	ACIS-S-4	7.19	18252	0.167	0.066	0.010	0.018	0.000000	0.000000	2151.72	61.06
2	FID	ACIS-S-5	7.23	18251	-0.140	0.084	0.010	0.016	0.000000	0.000000	-1814.82	54.72
3	GUIDE	61738240	7.28	36496	0.054	0.013	0.053	0.084	287.996556	4.354861	2079.63	1156.87
4	GUIDE	61743800	7.49	36500	0.041	-0.019	0.056	0.092	287.776811	5.274666	-573.66	-975.32
5	GUIDE	61744976	7.59	36501	-0.022	0.097	0.049	0.078	288.430364	5.306675	-1683.28	1091.39
6	GUIDE	61745024	7.61	36499	-0.253	-0.165	0.065	0.103	288.156168	5.297362	-1231.18	217.91
7	GUIDE	61745016	8.64	36489	0.176	0.072	0.056	0.090	288.113628	4.368816	1854.09	1515.23

## 2.4 Star Slots

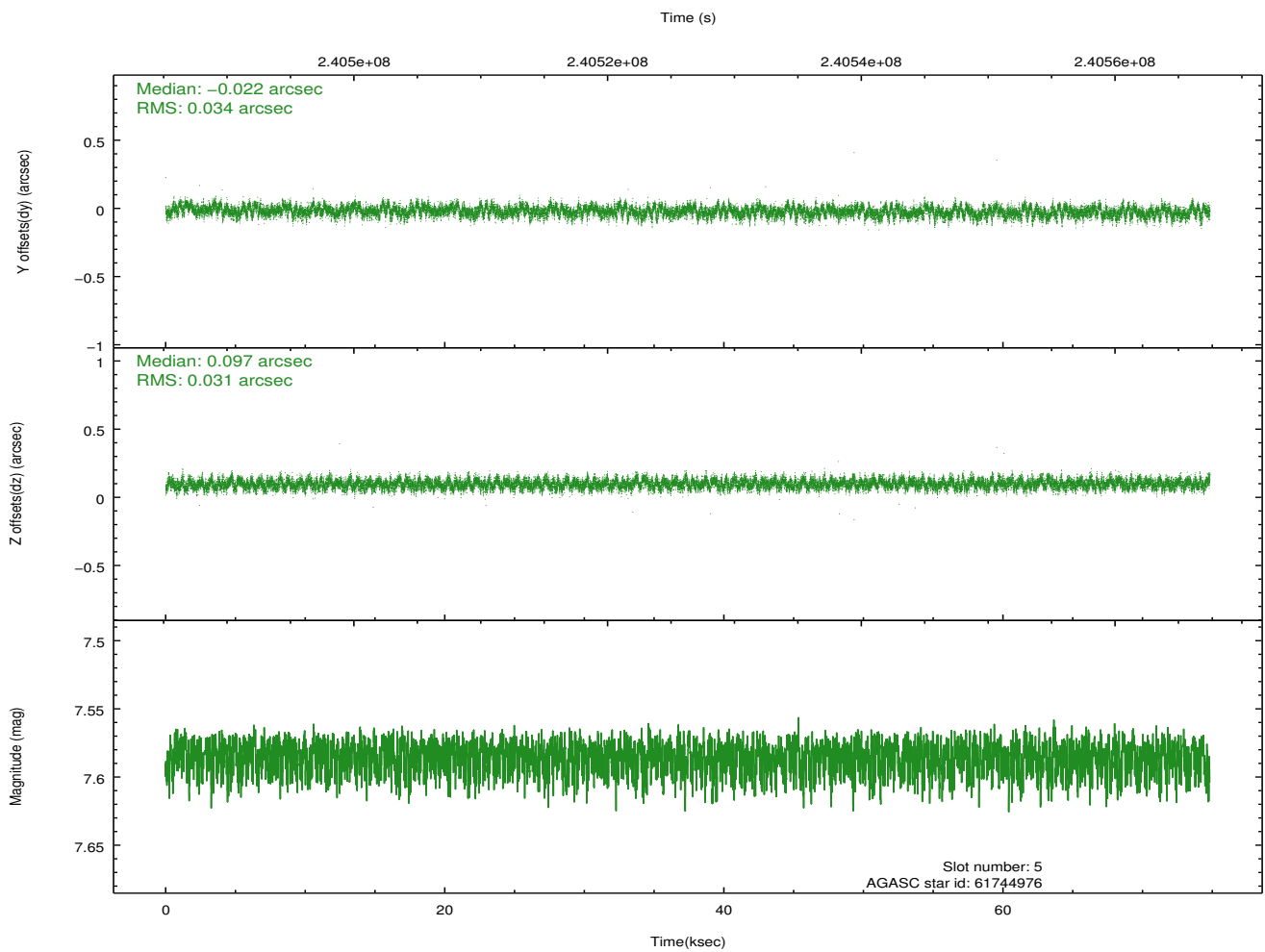
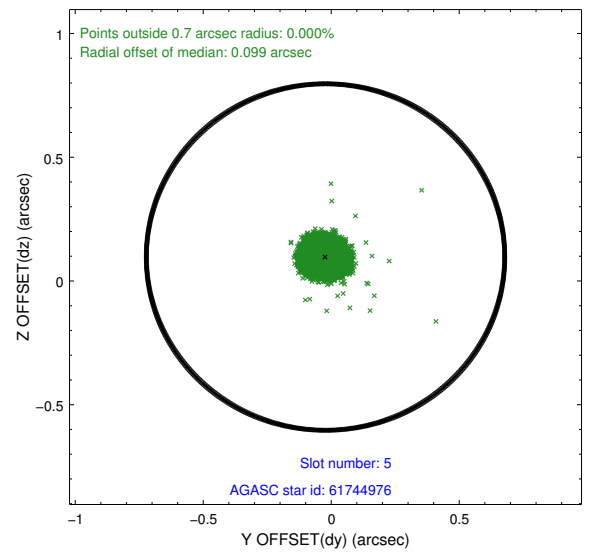
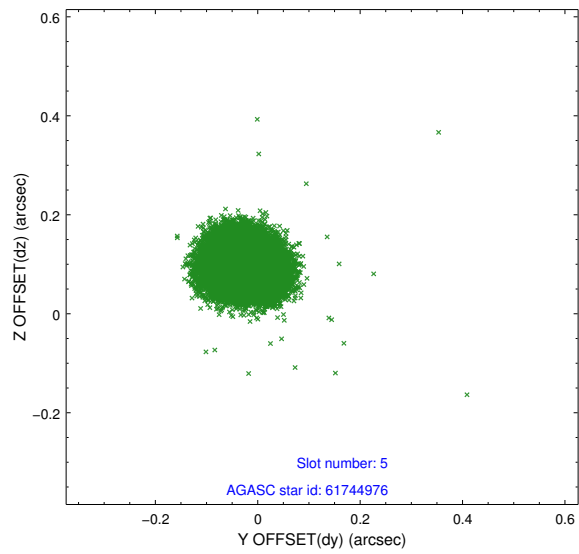
### 2.4.1 Slot 3



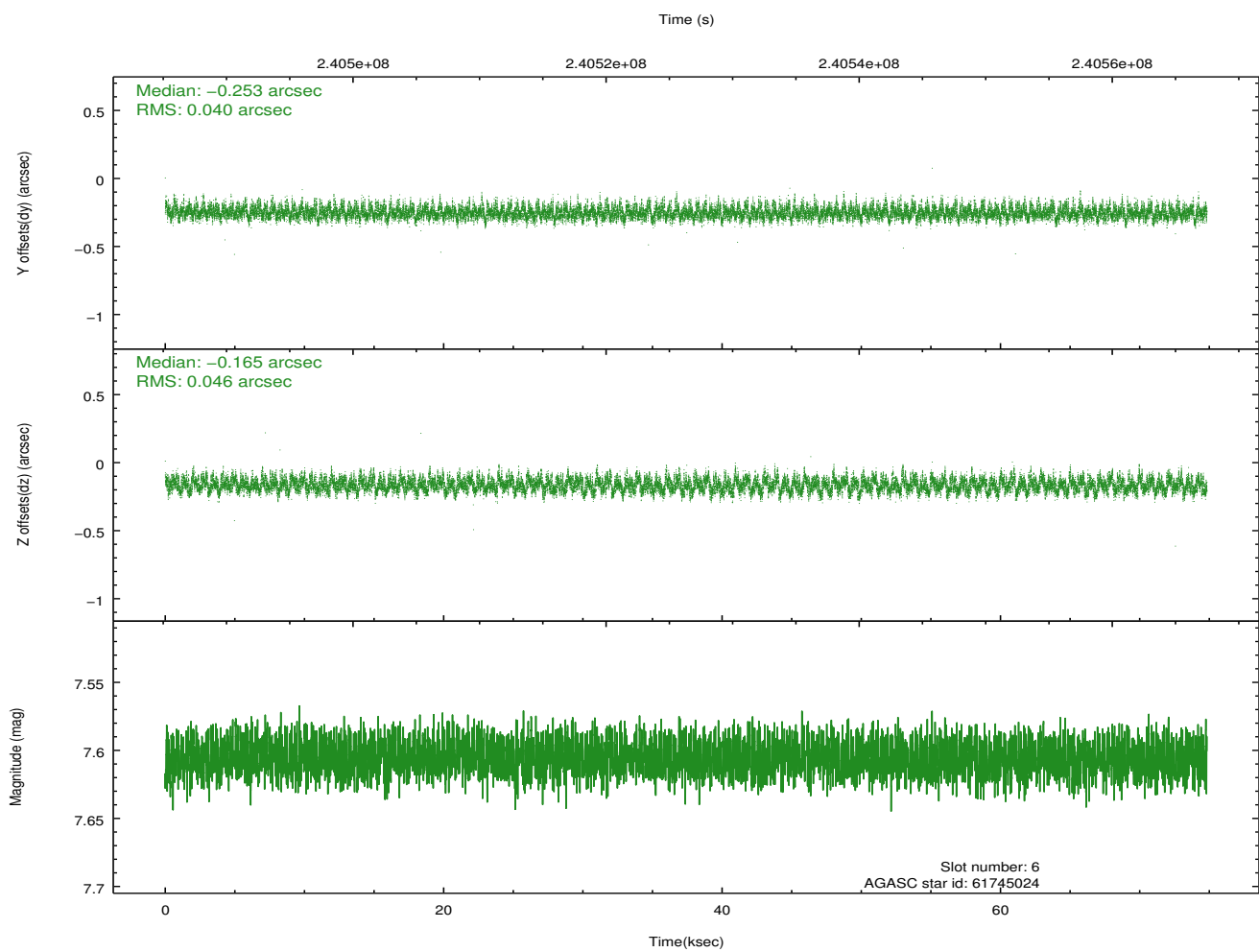
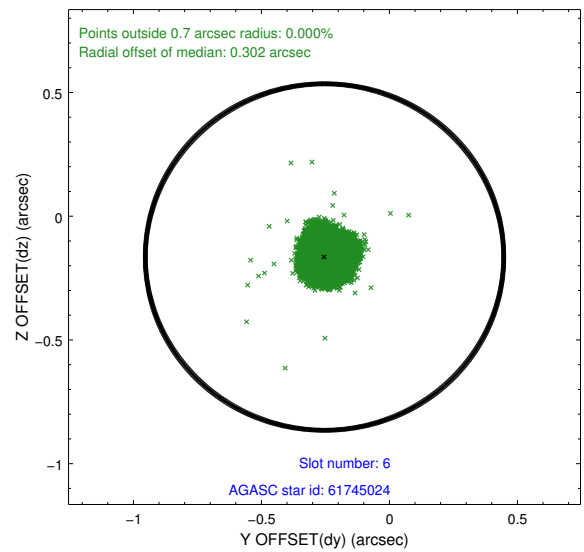
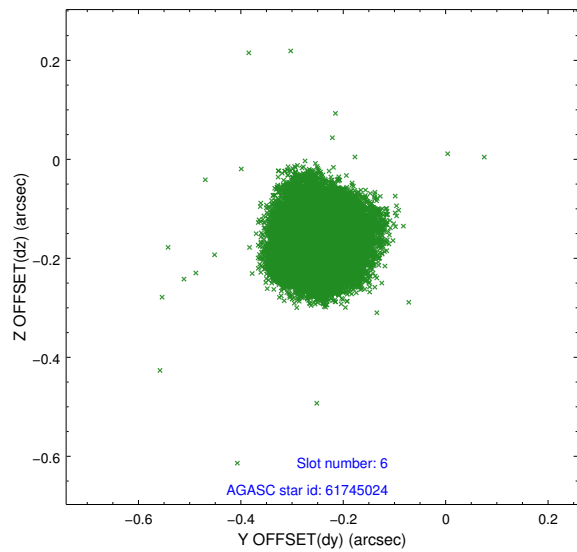
## 2.4.2 Slot 4



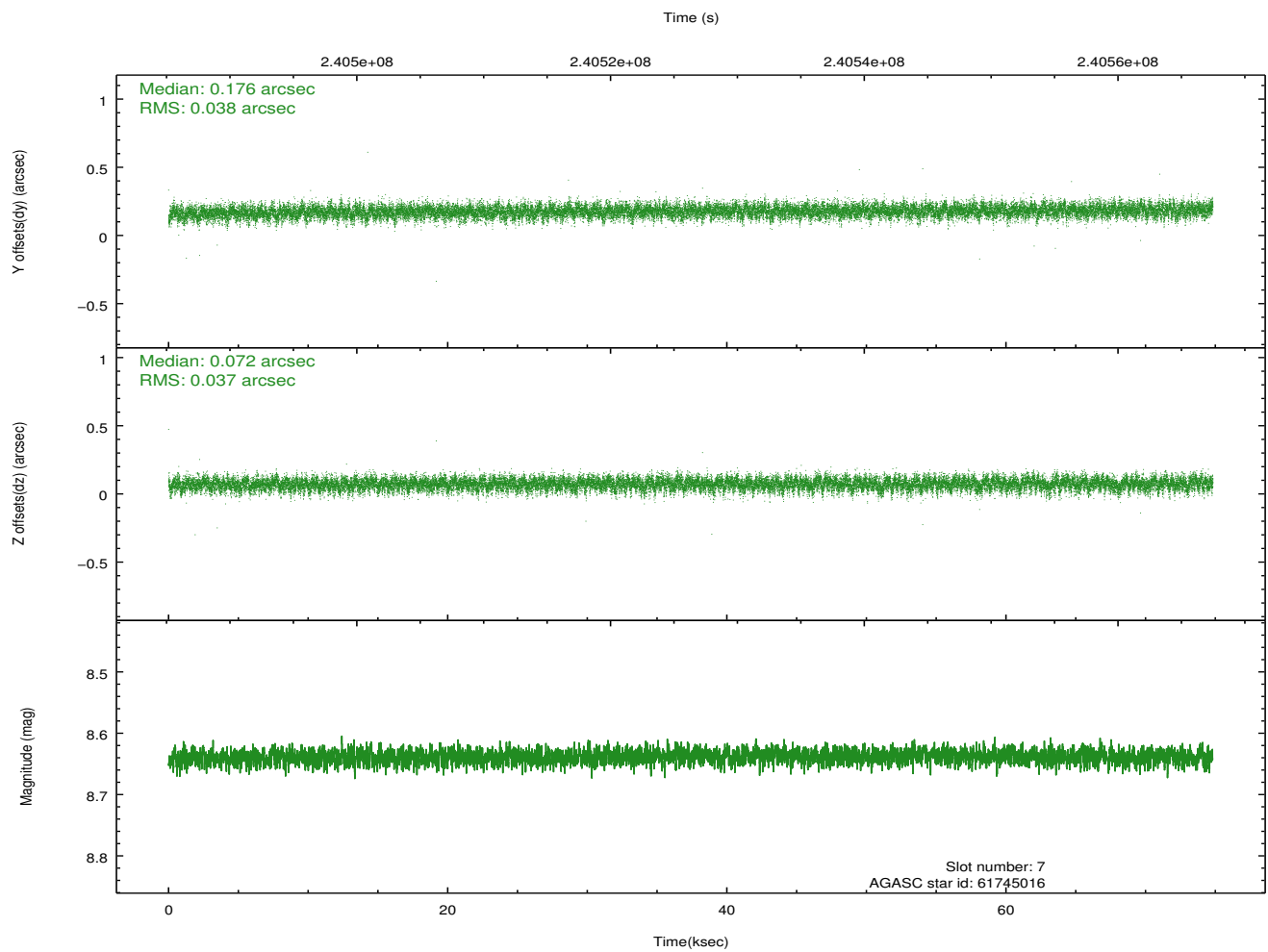
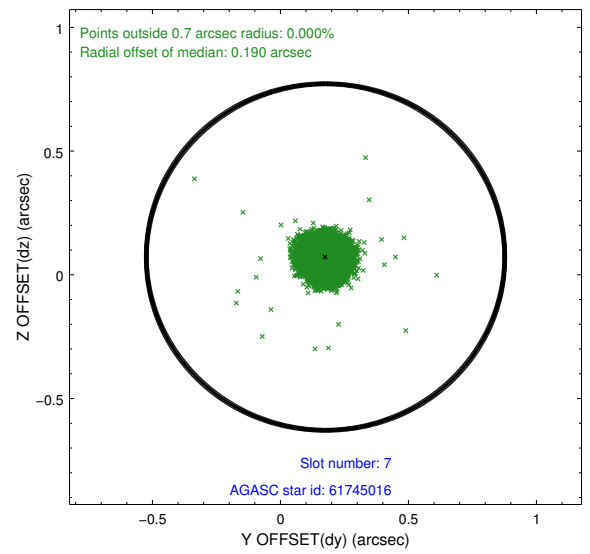
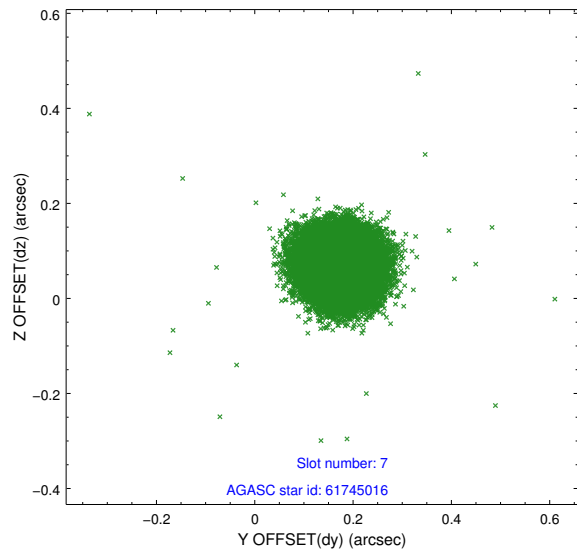
### 2.4.3 Slot 5



## 2.4.4 Slot 6

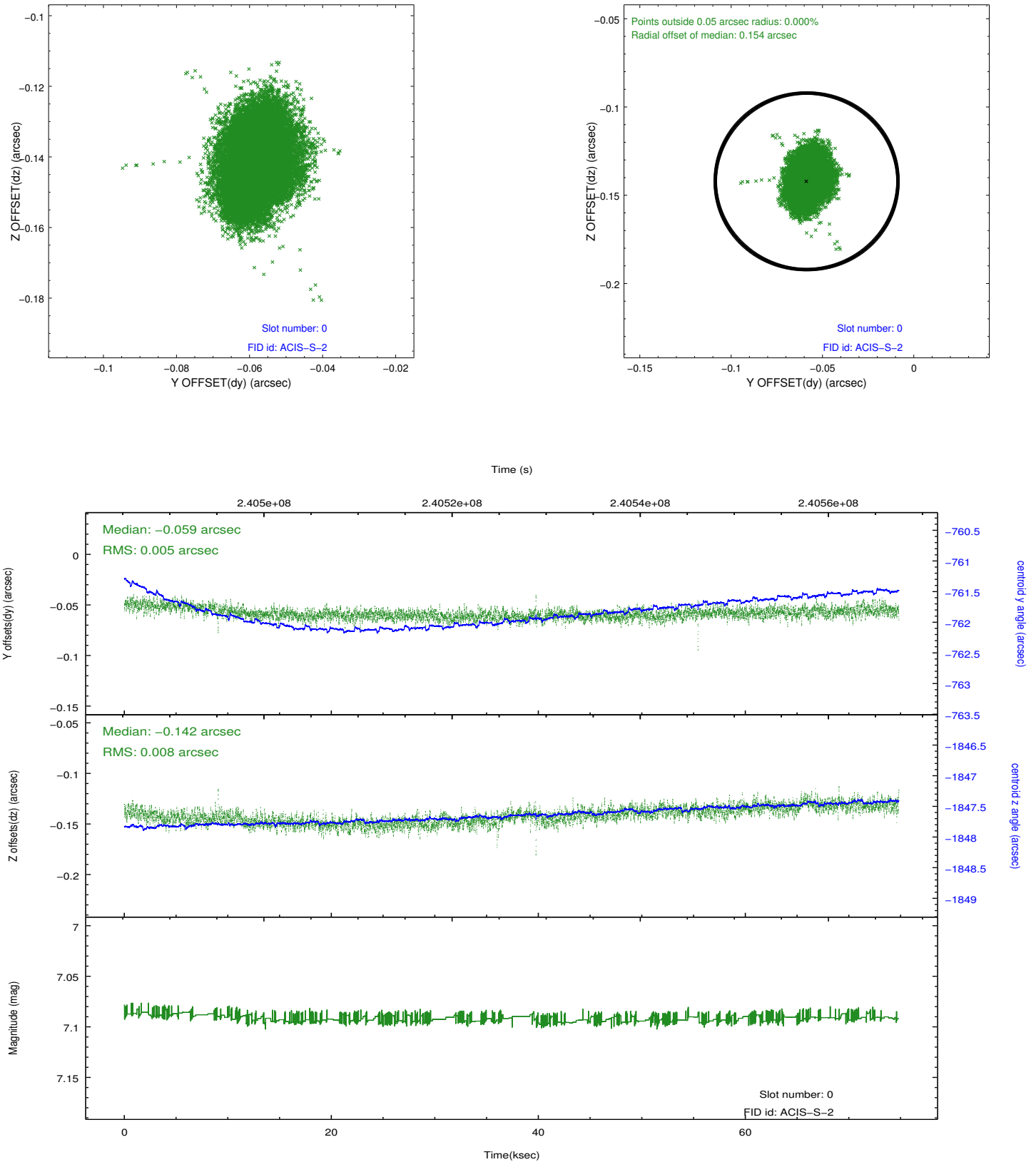


## 2.4.5 Slot 7

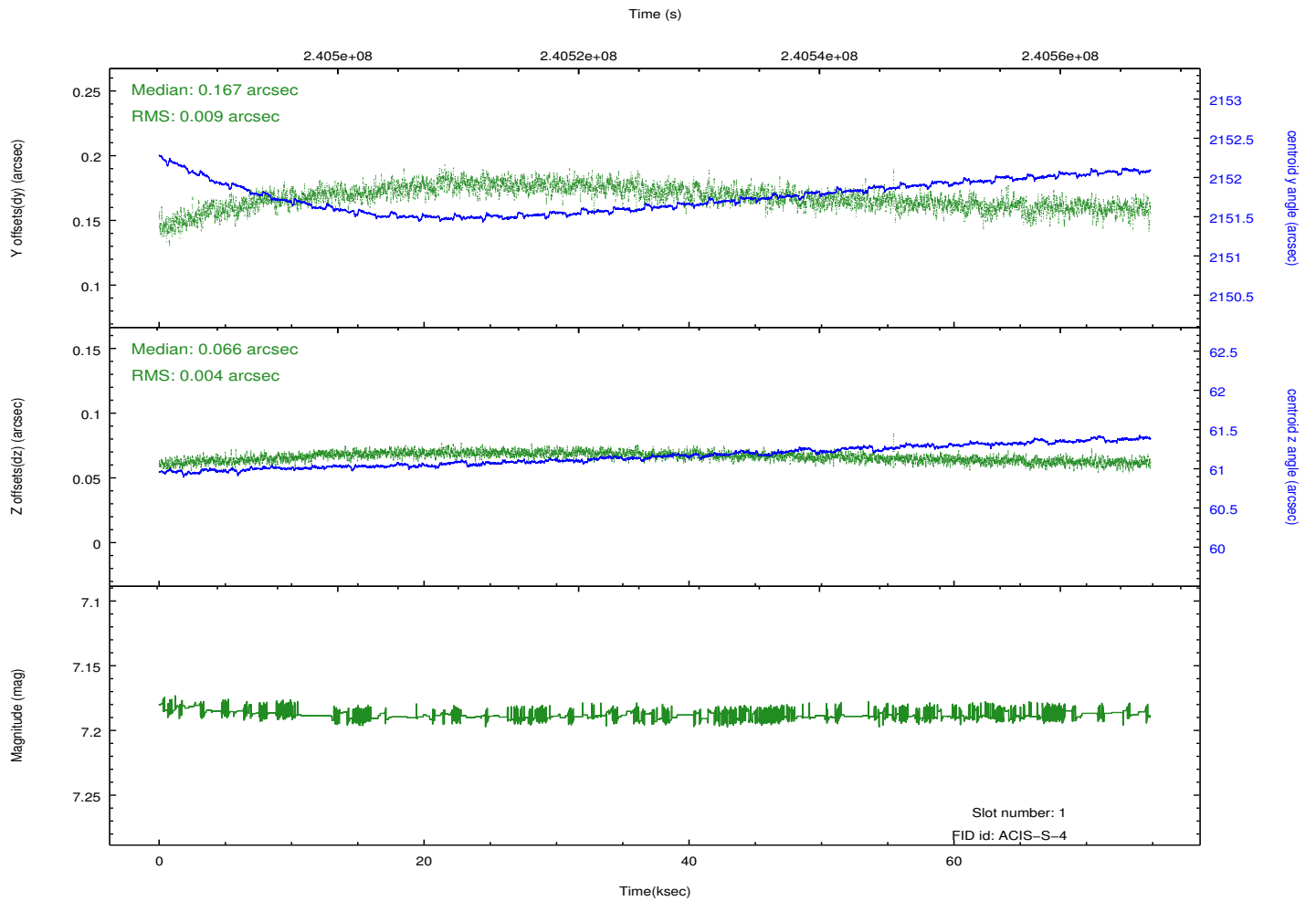
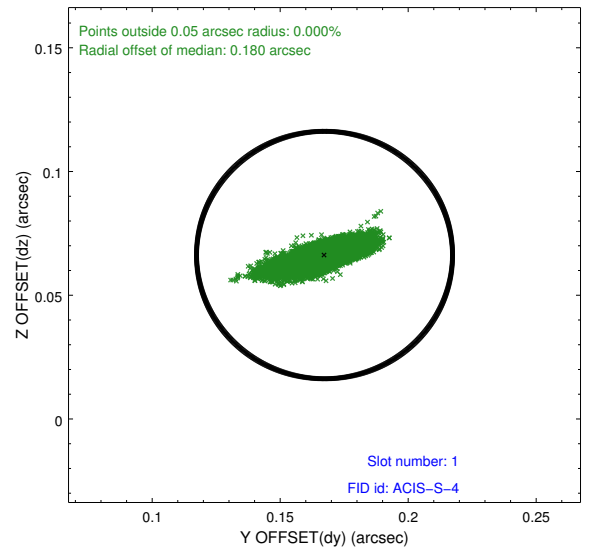
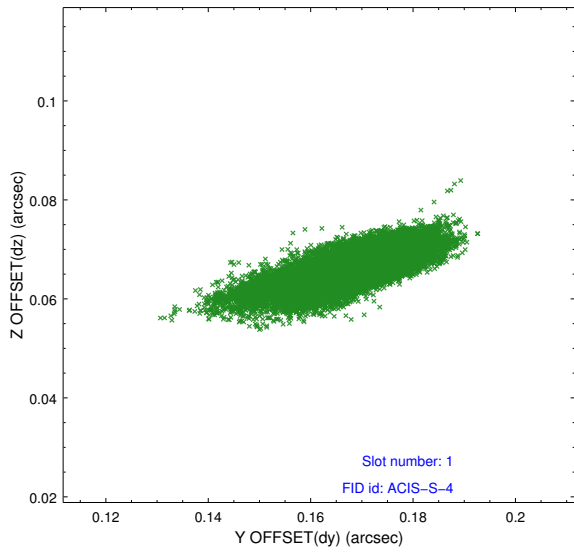


## 2.5 FID Slots

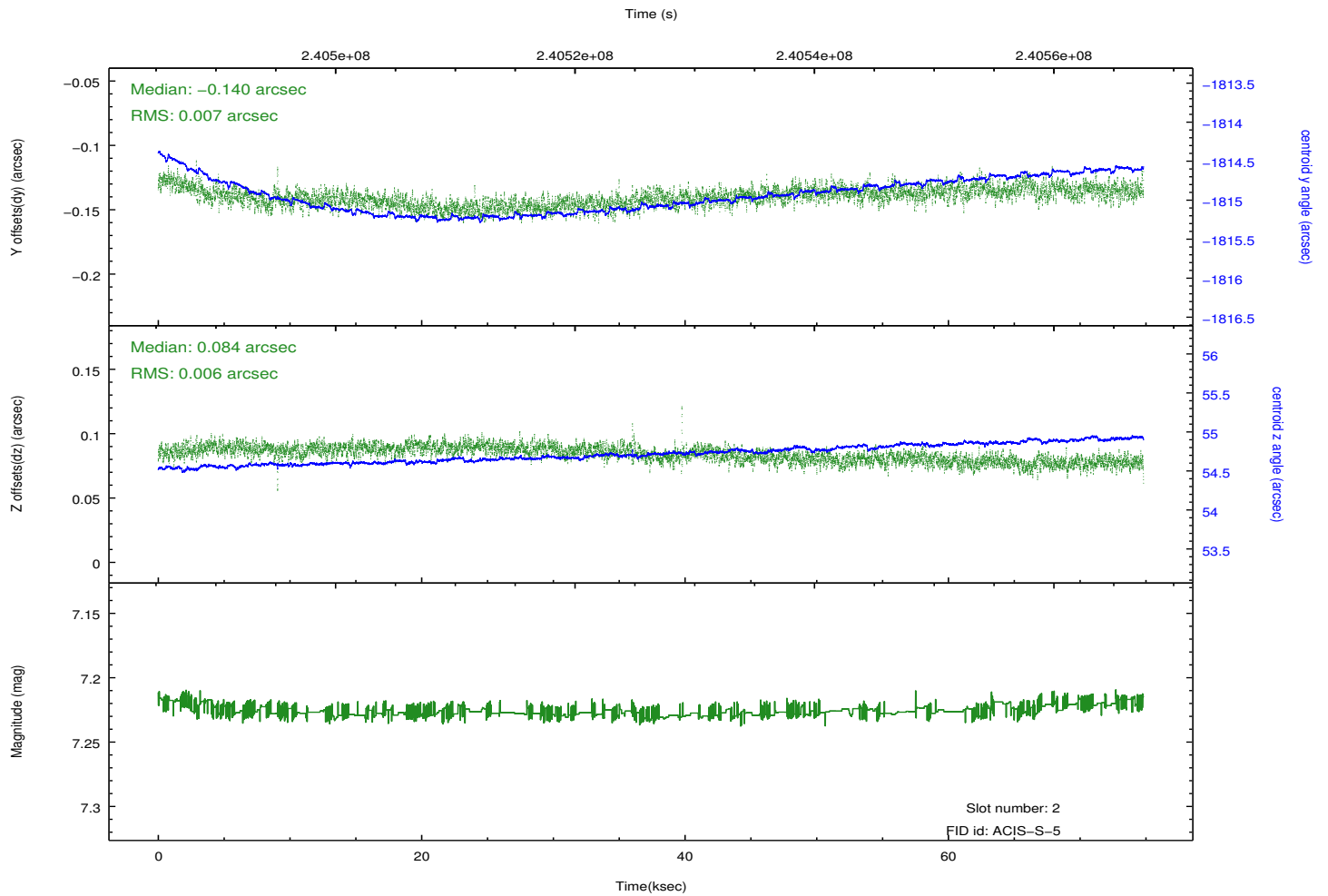
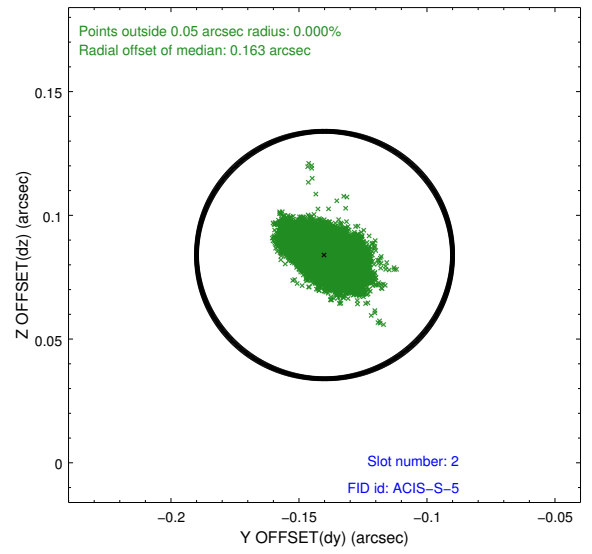
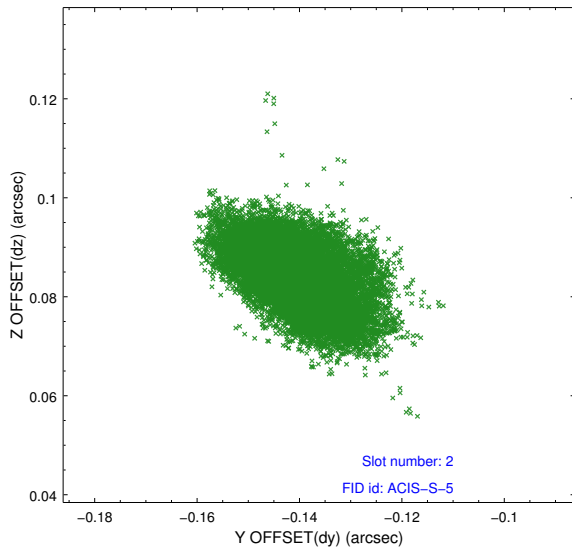
### 2.5.1 Slot 0



## 2.5.2 Slot 1

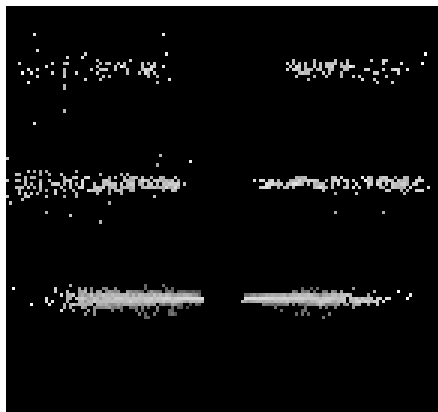


### 2.5.3 Slot 2

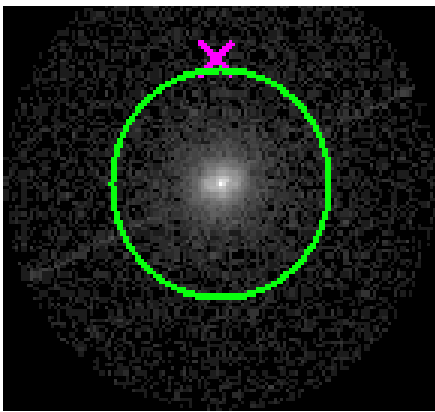


# 3 Gratings

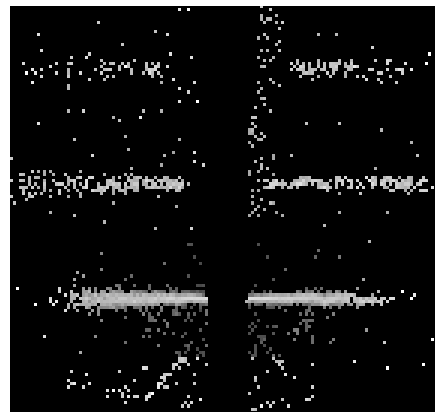
## 3.1 HEG Arm



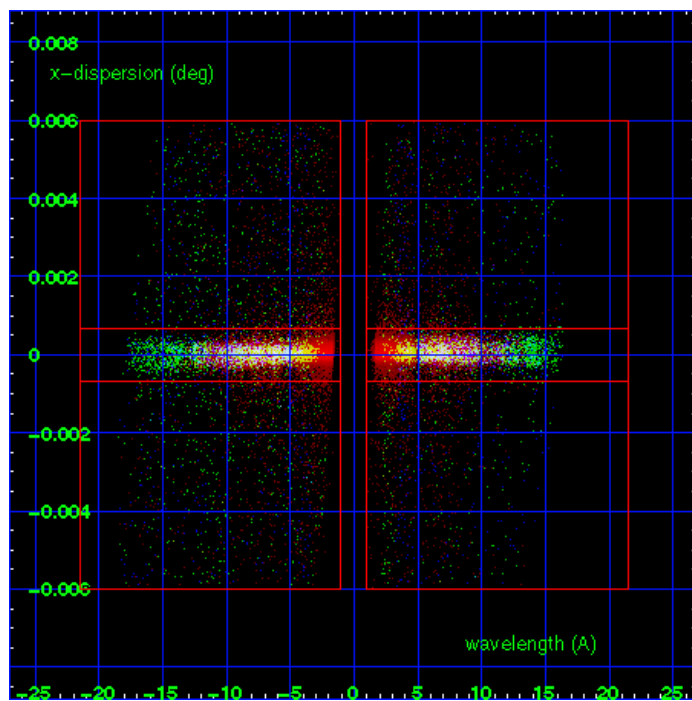
HEG Order Sort 123



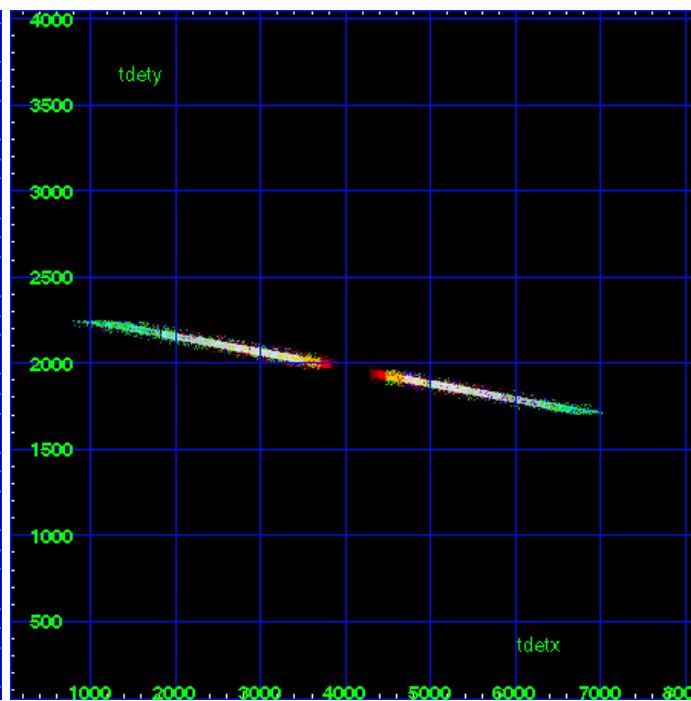
HEG Zero Order



HEG Order Sort ALL

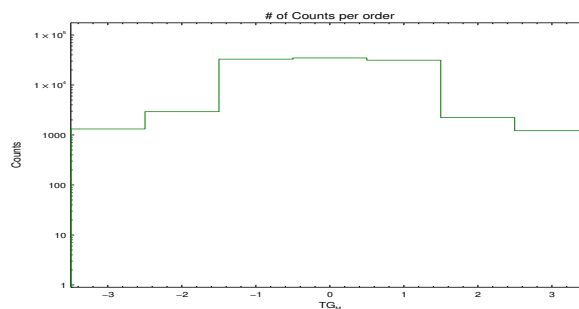


Spot Image HEG

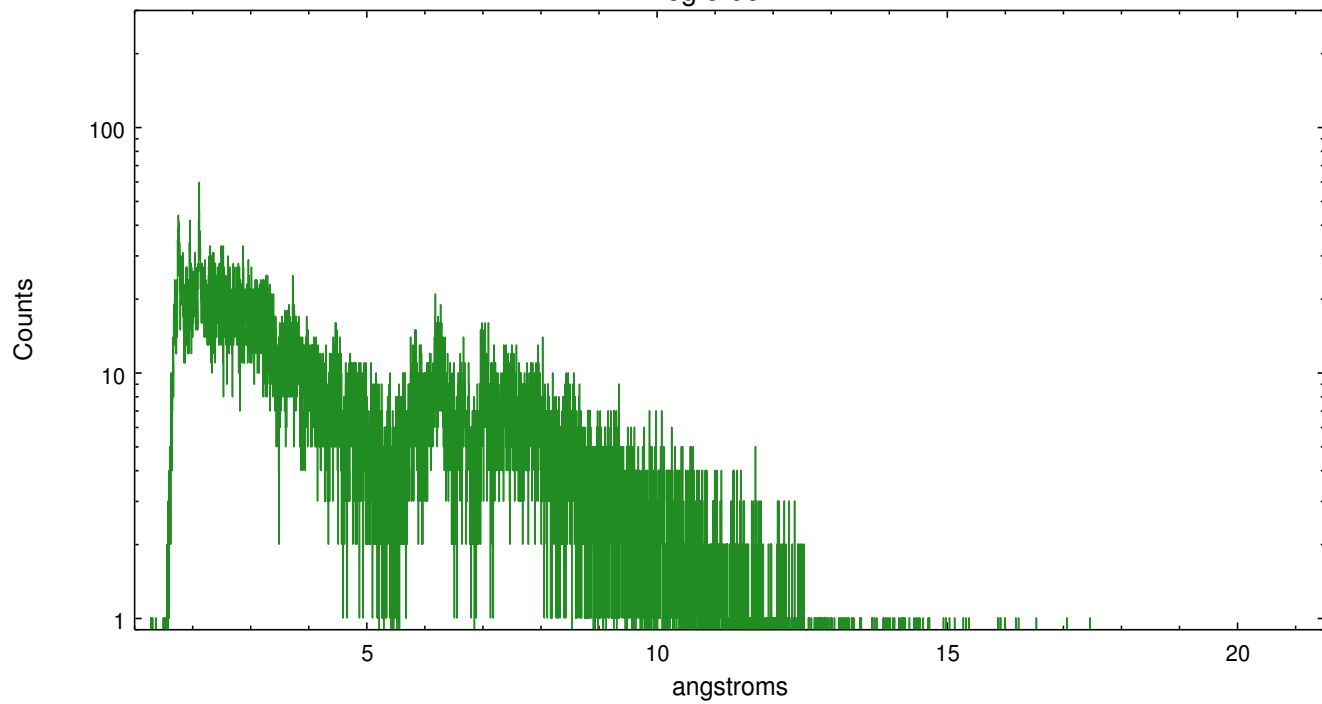


Full Detector HEG

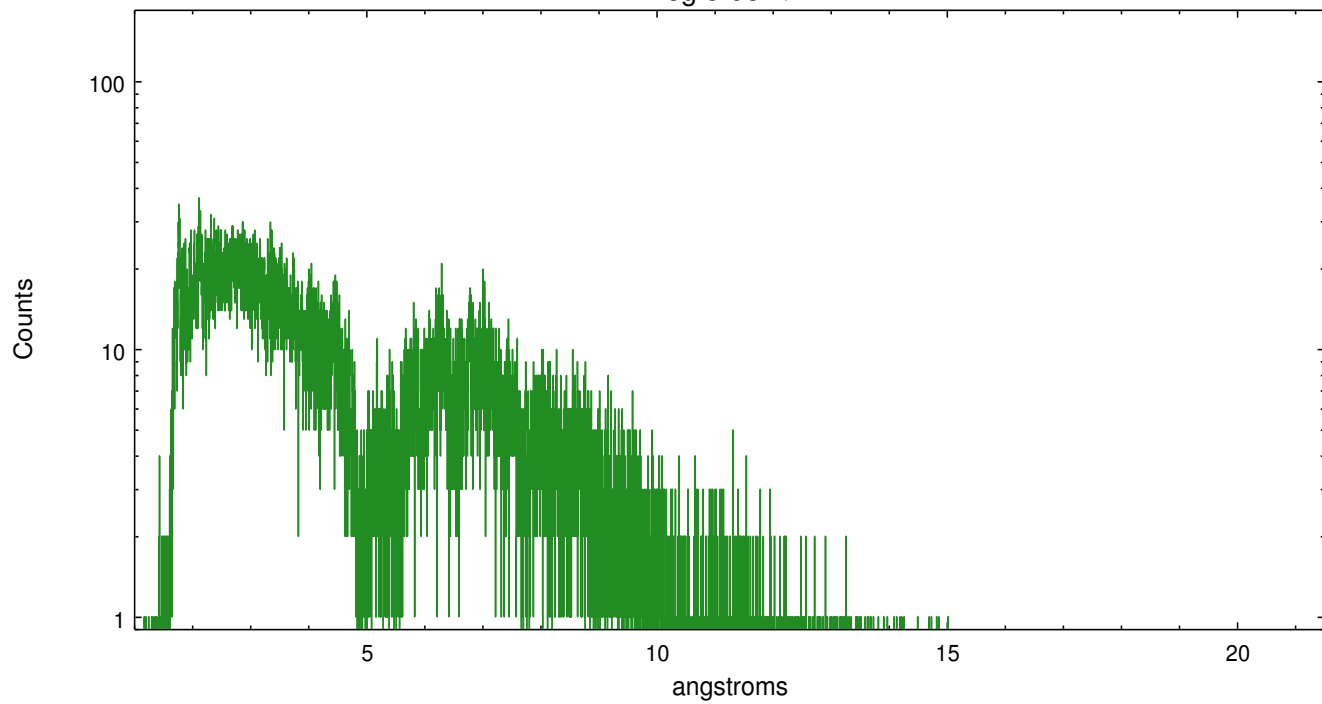
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1320	2937	33093	34993	31489	2237	1221



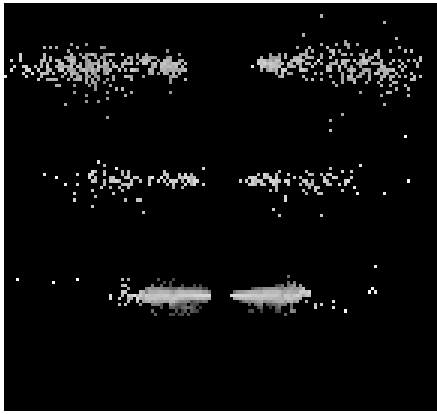
heg order -1



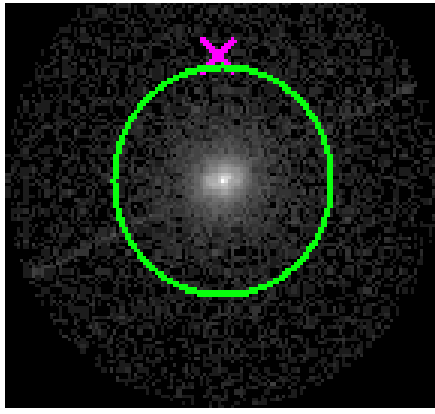
heg order +1



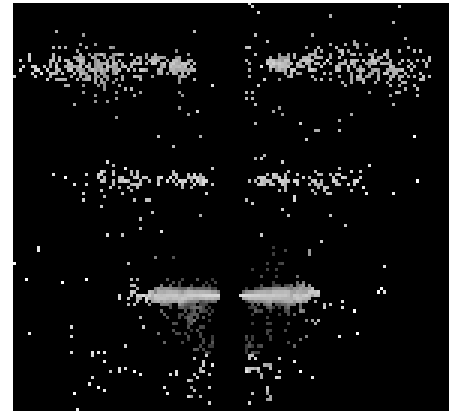
### 3.2 MEG Arm



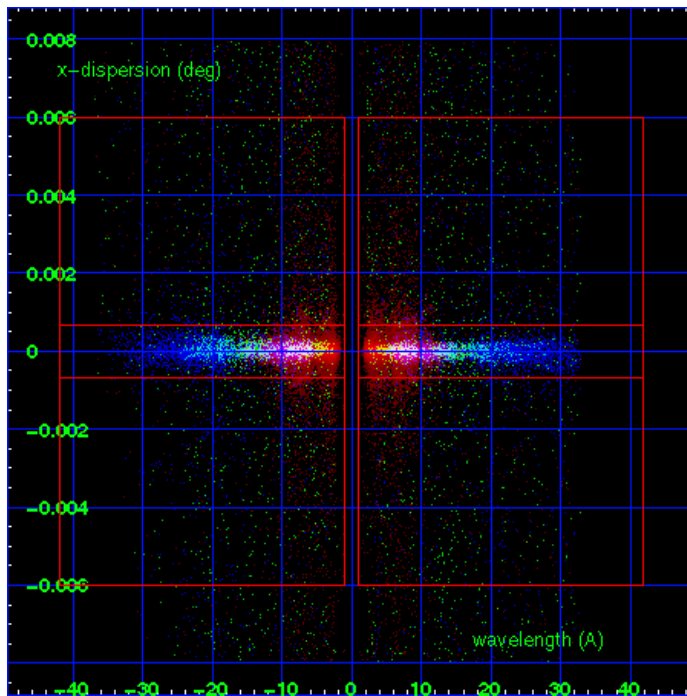
MEG Order Sort 123



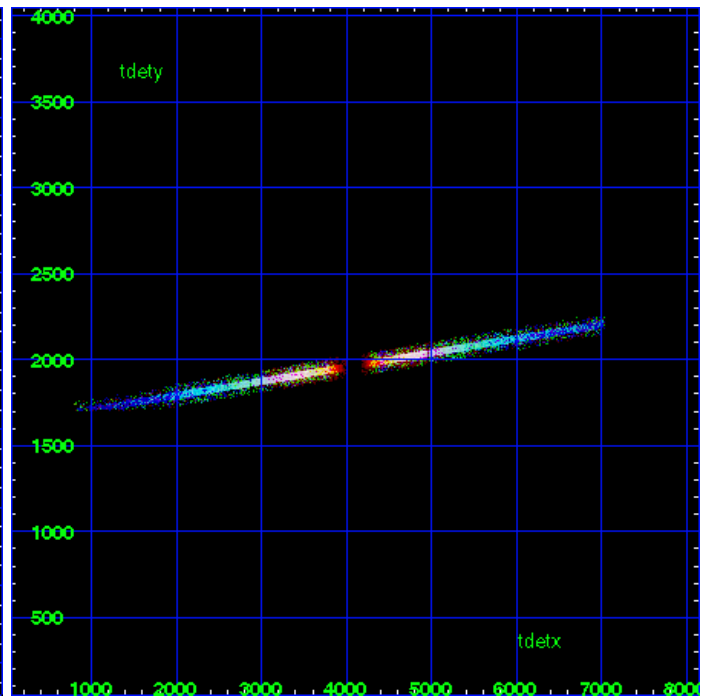
MEG Zero Order



MEG Order Sort ALL

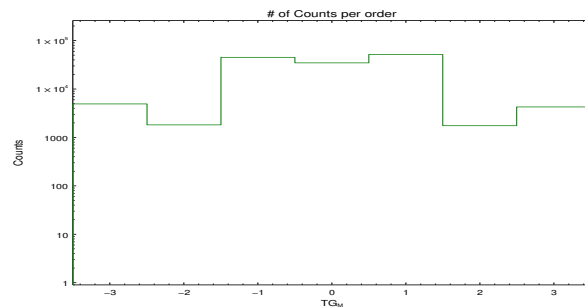


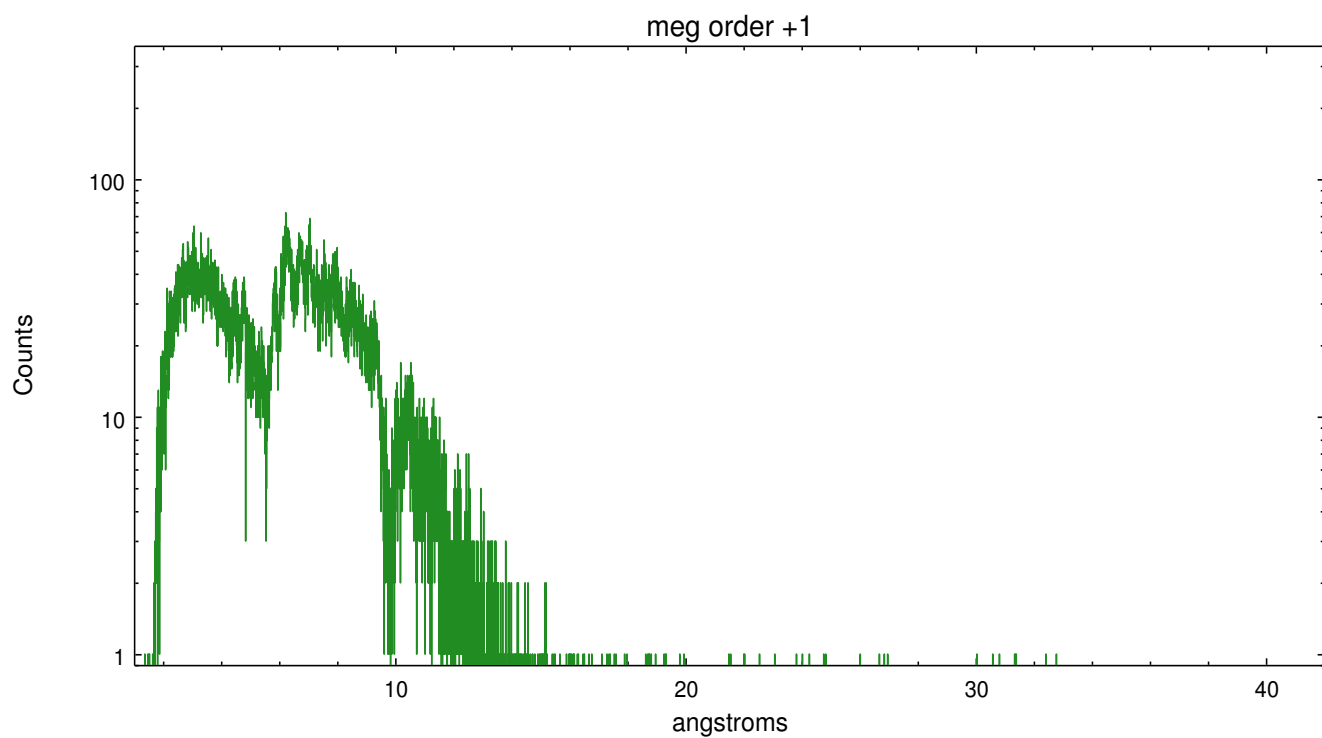
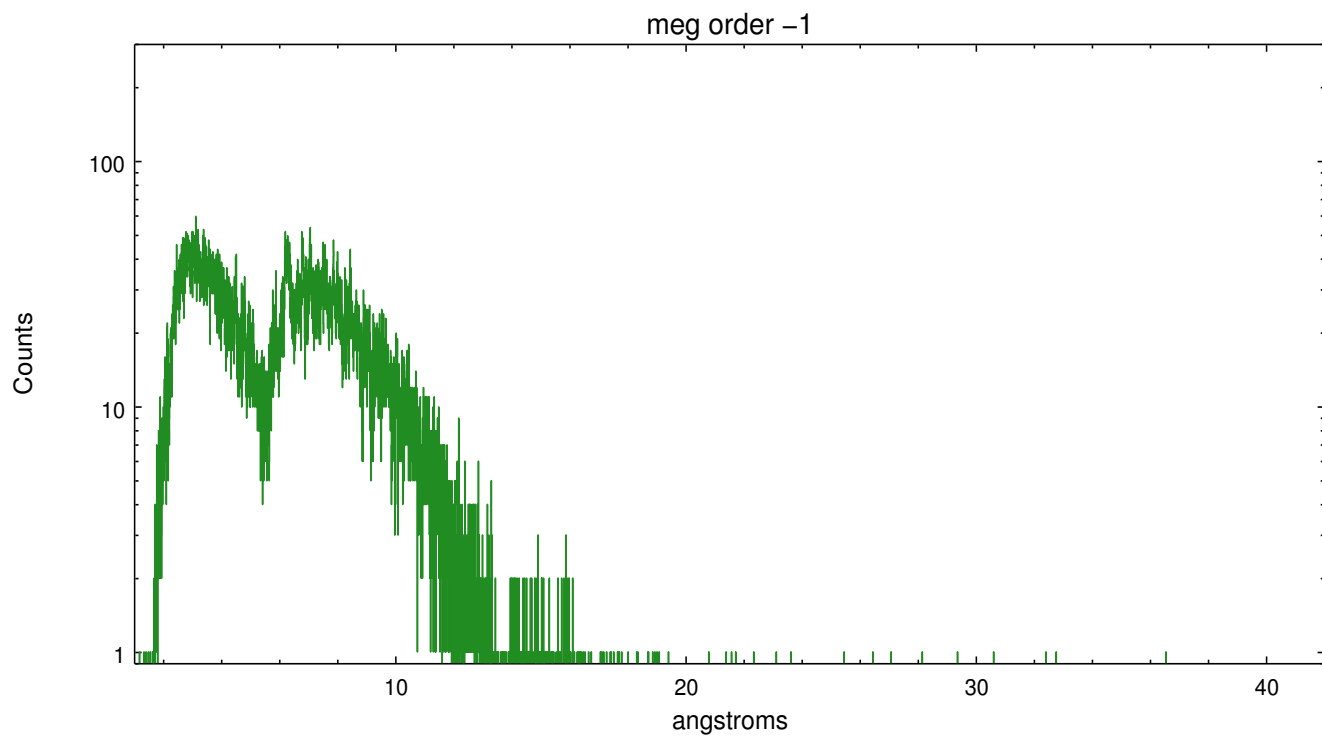
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	4948	1824	45415	34993	52161	1754	4285





# A Summary

## A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2013.03.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	74.7522

## 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=4097.05, y=4062.53) 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. 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.

=====

A spatial region of the original bias map for CCD = 4 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 4 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:  
(287.79647,4.56022), (287.80469,4.57763), (287.78475,4.58699), (287.78322,4.56644)