

# V&V Reference Report

## L2 ASCDS Version : 10.6

Observation 20105 - L2 Version 2  
Chandra X-Ray Center

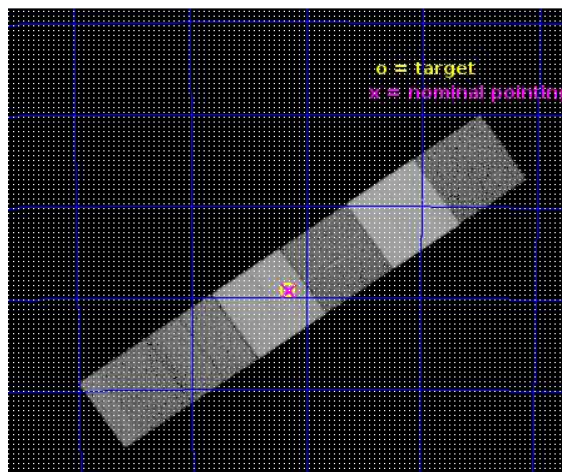
L2 Processing Date : Jul 10 2017

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# 1 Front

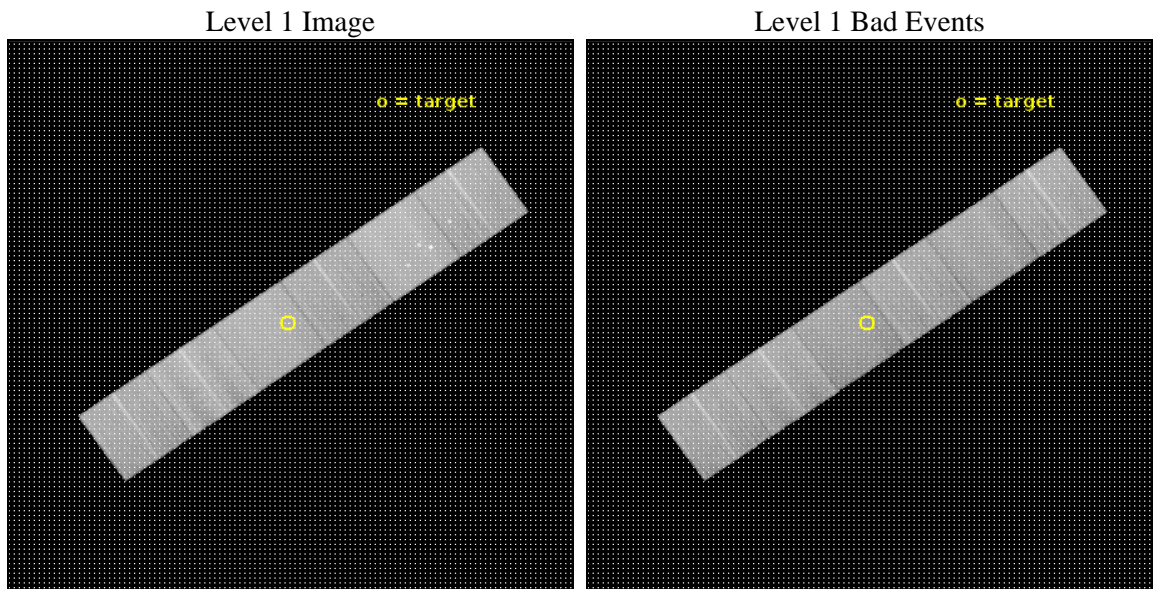
seq_num	401882	Sequence number
obs_id	20105	Observation id
title	HETG Spectroscopy of the Ultra-Luminous X-ray Source NGC 1313 X-1	&#160
observer	Claude Canizares	Principal investigator
object	NGC 1313 X-1	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	49.583333	Observer's specified target RA [deg]
dec_targ	-66.486389	Observer's specified target Dec [deg]
ra_nom	49.573351438175	Nominal RA [deg]
dec_nom	-66.487994200678	Nominal Dec [deg]
roll_nom	145.14746532955	Nominal Roll [deg]
revision	2	Processing version of data
ontime	31504.000469446	Sum of GTIs [s]
livetime	31105.07784607	Livetime [s]
ontime4	31504.000469446	Sum of GTIs [s]
ontime5	31504.000469446	Sum of GTIs [s]
ontime6	31504.000469446	Sum of GTIs [s]
ontime7	31504.000469446	Sum of GTIs [s]
ontime8	31503.99924612	Sum of GTIs [s]
ontime9	31503.958206177	Sum of GTIs [s]
l2events	377516	Number of level 2 events



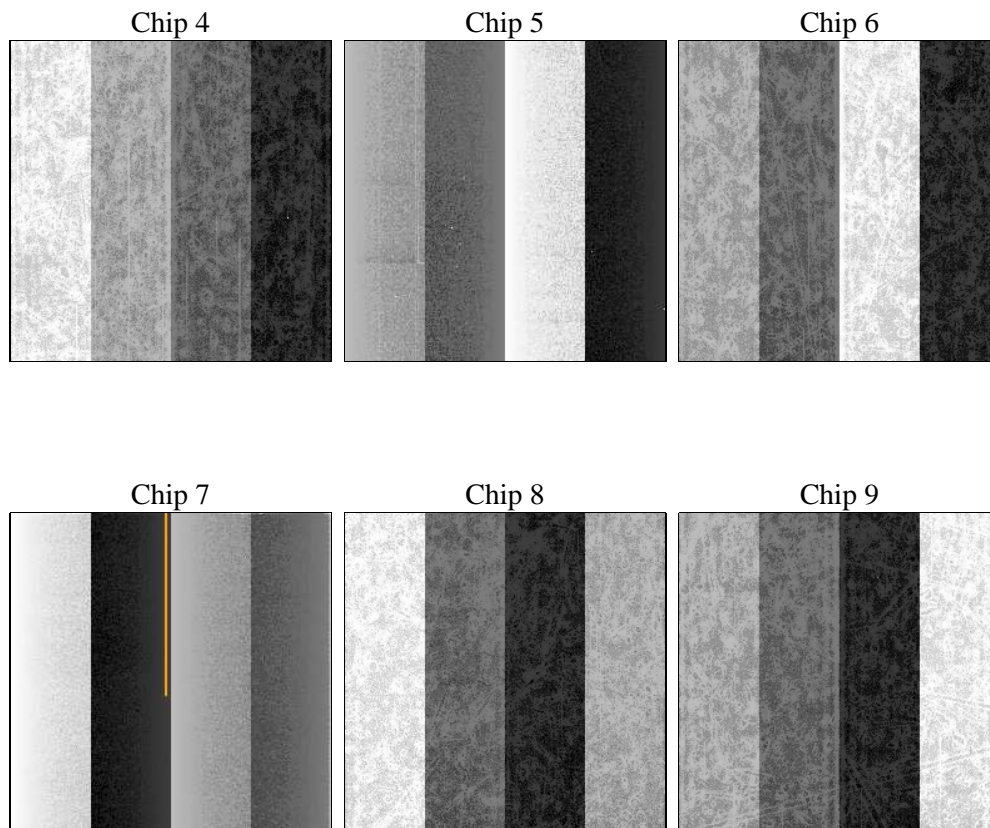
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	31558.085000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	31504.000469446	Sum of GTIs [s]
caldbver	4.7.5	&#160	ontime4	31504.000469446	Sum of GTIs [s]
date	2017-07-10T23:48:57	Date and time of file creation	ontime5	31504.000469446	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	31504.000469446	Sum of GTIs [s]
			ontime7	31504.000469446	Sum of GTIs [s]
			ontime8	31503.99924612	Sum of GTIs [s]
			ontime9	31503.958206177	Sum of GTIs [s]
			l1events	1711769	Number of level 1 events
			tgmethod	TGDETECT	Method used to create src1a file
			z0_pos	(4068.66, 4108.57)	src1a sky central position

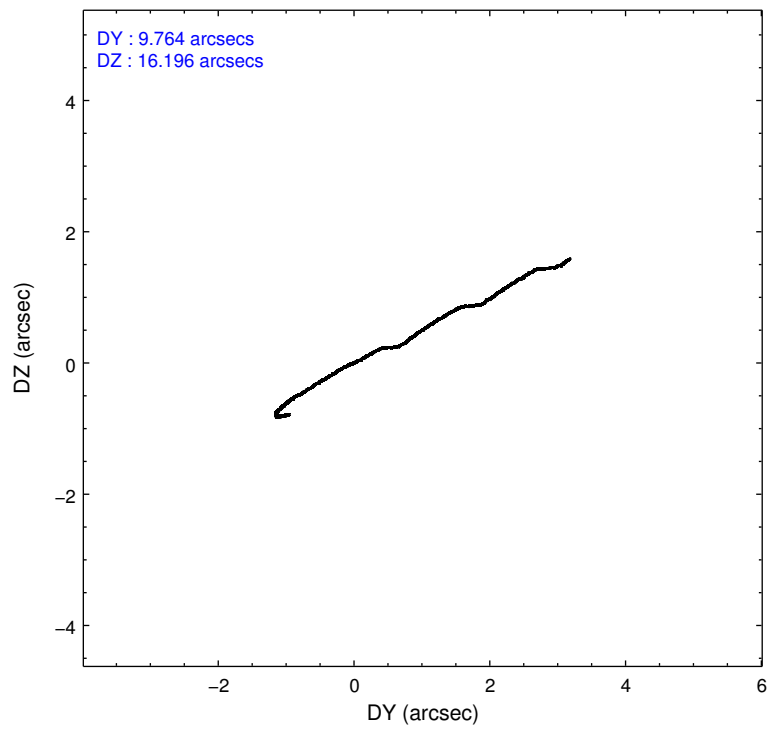
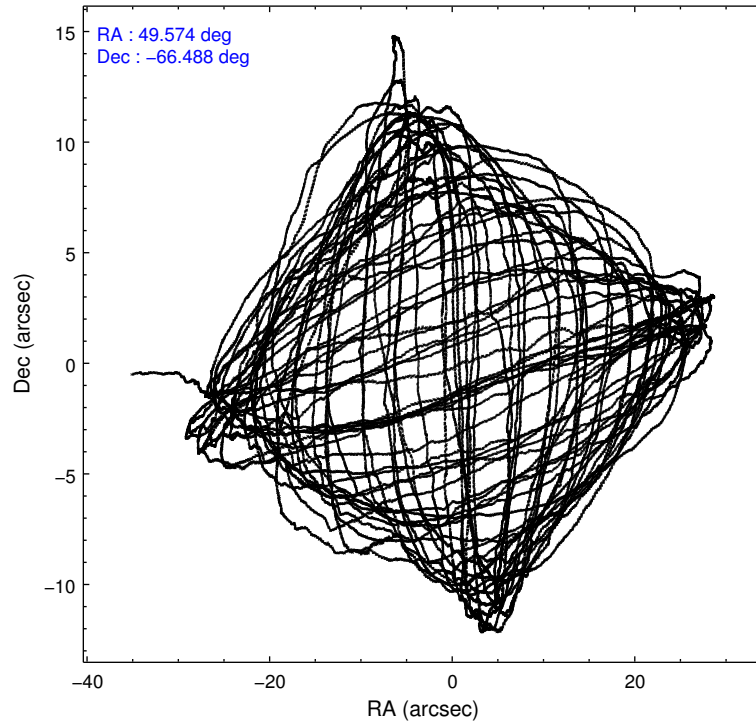
### 2.1.4 Events

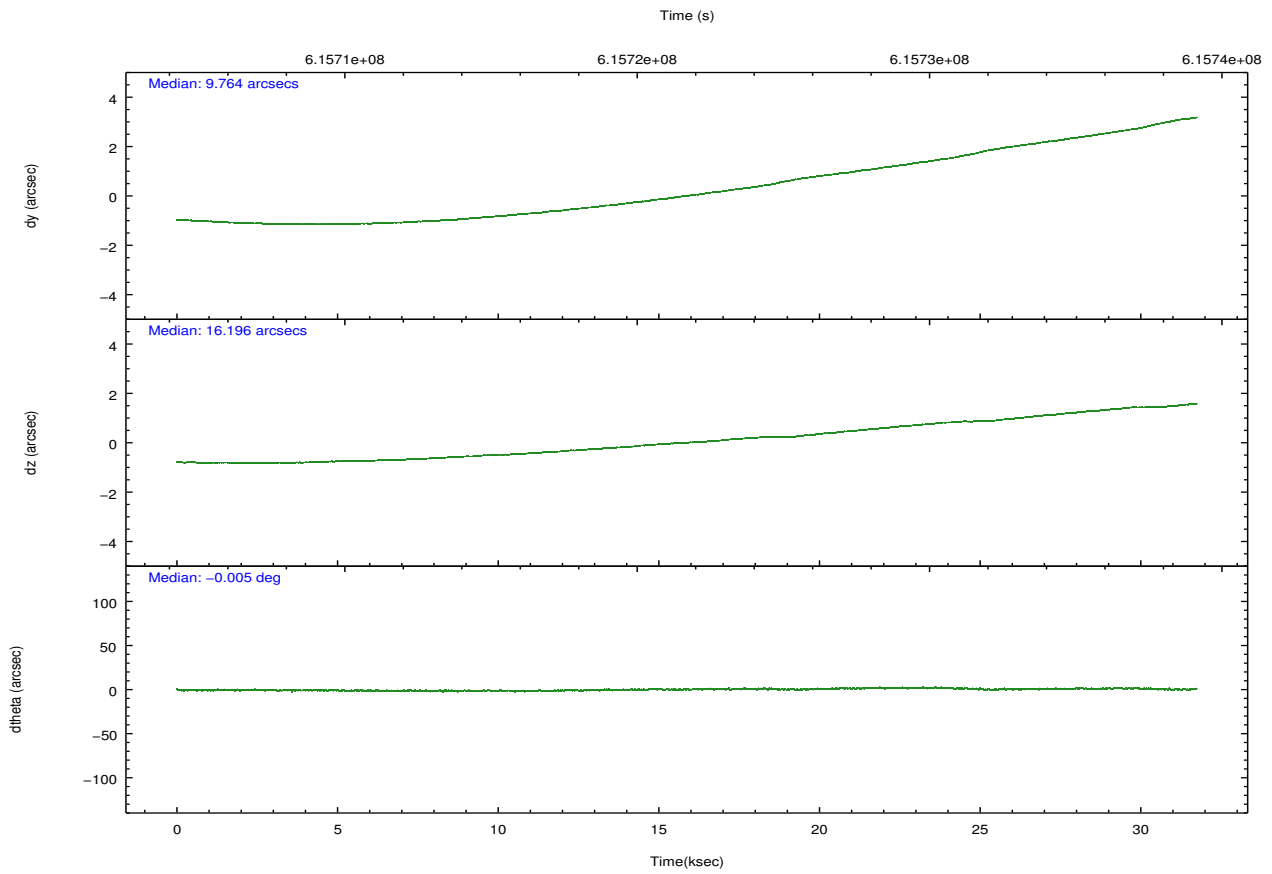
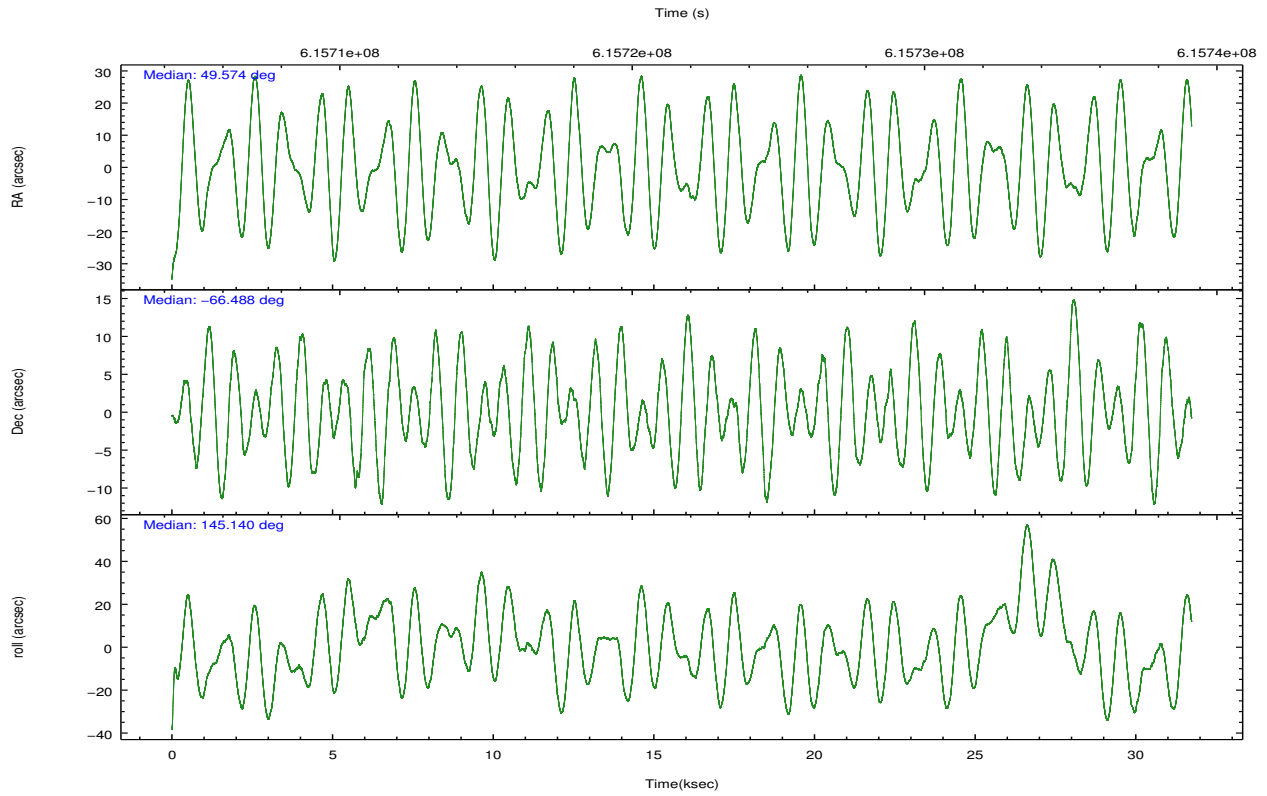
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	278621	363224	241360	288847	300859	238858	grade 0 events	11232	15590	8214	10804	21396	9246
rejected events	250958	186744	215580	163047	223738	211842		4%	4%	3%	3%	7%	3%
rejected %	90%	51%	89%	56%	74%	88%	grade 1 events	244	1056	99	388	231	171
								0%	0%	0%	0%	0%	0%
							grade 2 events	6386	54729	6424	26335	18999	6290
								2%	15%	2%	9%	6%	2%
							grade 3 events	2736	5232	2281	9937	7942	2724
								0%	1%	0%	3%	2%	1%
							grade 4 events	2699	4840	2329	9903	7254	2525
								0%	1%	0%	3%	2%	1%
							grade 5 events	10762	23510	9809	28400	15829	11557
								3%	6%	4%	9%	5%	4%
							grade 6 events	4613	96121	6534	68850	21564	6236
								1%	26%	2%	23%	7%	2%
							grade 7 events	239949	162146	205670	134230	207644	200109
								86%	44%	85%	46%	69%	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	HETG	HETG	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	49.641963	49.57335143817534	CCD I2 on	N	N
[deg] Pointing Dec	-66.489923	-66.48799420067836	CCD I3 on	N	N
[deg] Pointing Roll	145.053767	145.1474653295491	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	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	615706020.184000	615704773.83506	CCD S5 on	Y	Y
Observation start date	2017-07-06T05:25:51	2017-07-06T05:06:13	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	615737578.184000	615737798.8244801	On-chip summing requested	N	N
Observation end date	2017-07-06T14:11:49	2017-07-06T14:16:38	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.2

## 2.3 Aspect





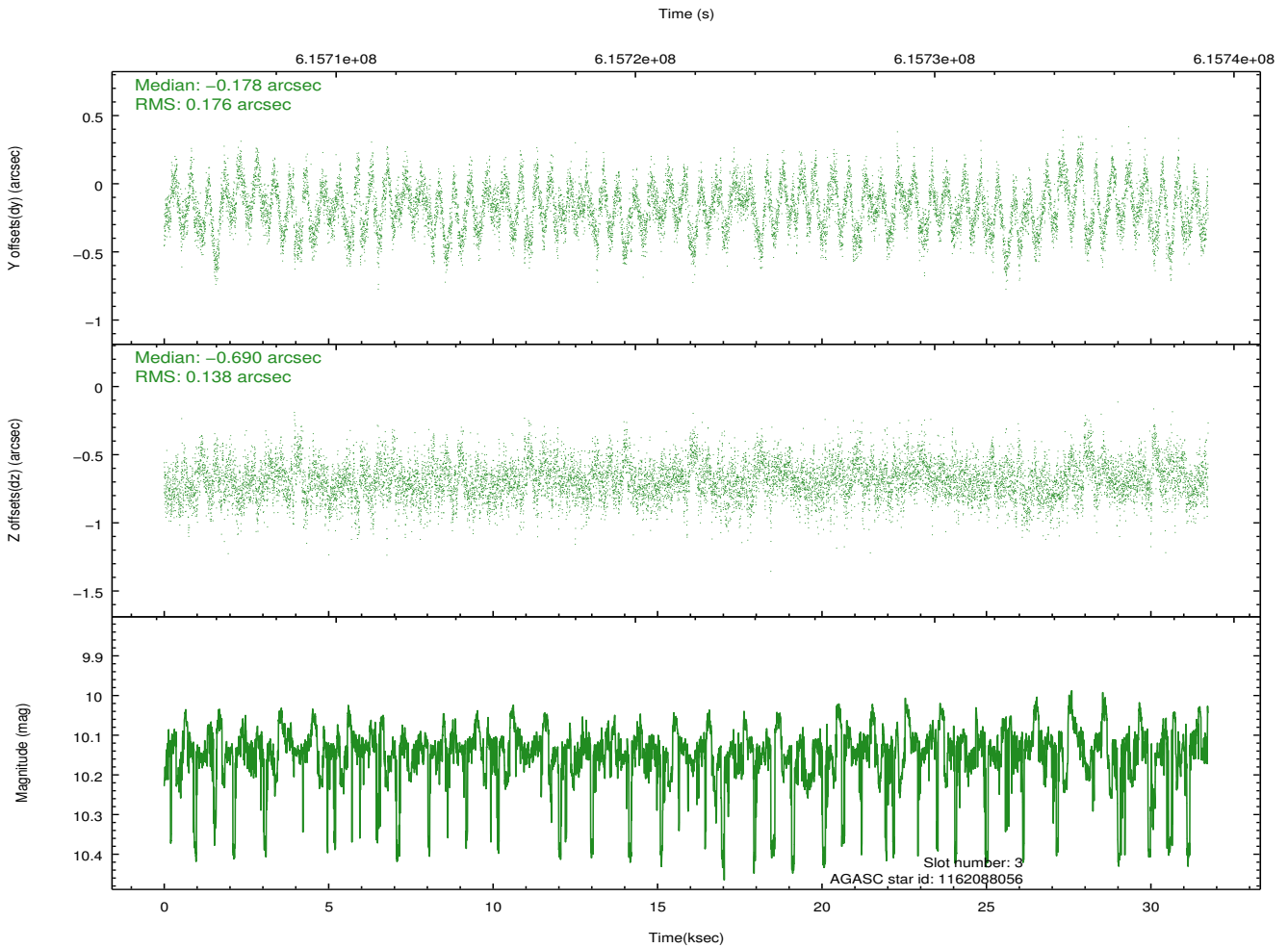
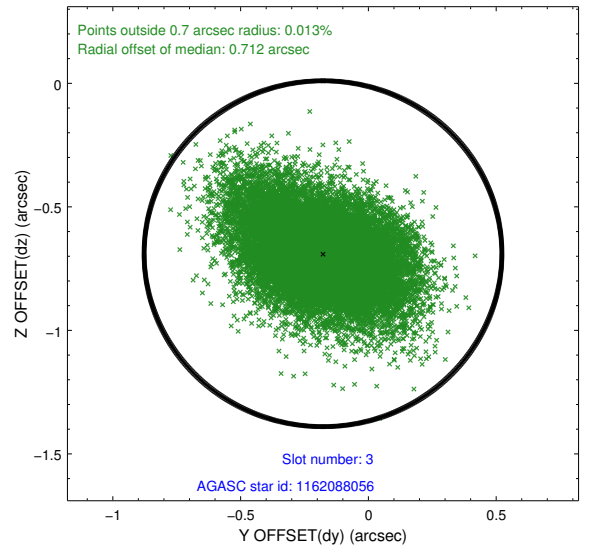
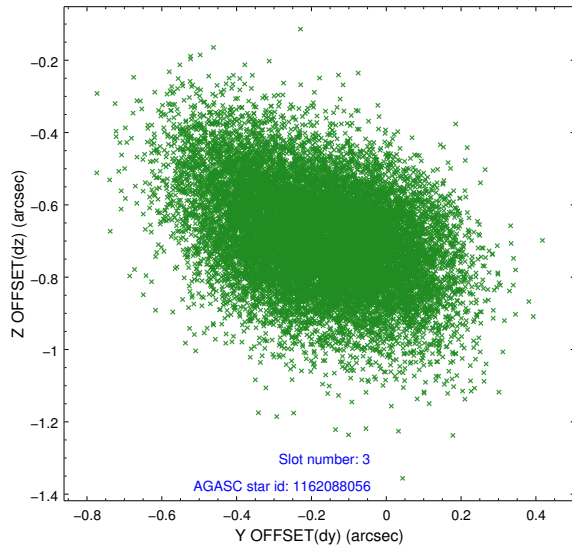
### Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	7.09	7742	-0.154	-0.064	0.019	0.057	0.000000	0.000000	-763.07	-1737.76
1	FID		ACIS-S-4	7.22	7741	0.389	0.091	0.012	0.021	0.000000	0.000000	2150.68	170.88
2	FID		ACIS-S-5	7.22	7742	-0.266	-0.020	0.017	0.068	0.000000	0.000000	-1815.99	164.44
3	GUIDE	used	1162088056	10.14	15402	-0.178	-0.690	0.238	0.394	48.729349	-66.949806	100.37	2101.15
4	GUIDE	used	1162088248	7.55	15477	-0.428	1.174	0.154	0.263	49.751966	-65.888113	1108.29	-1866.78
5	GUIDE	used	1162089104	9.49	15459	0.218	-0.199	0.208	0.323	48.422126	-66.410699	1594.27	786.95
6	GUIDE	used	1162090824	9.21	15473	-0.068	-0.435	0.166	0.275	48.677982	-66.885202	295.48	1955.27
7	GUIDE	used	1162094224	9.67	15384	0.452	0.136	0.186	0.304	49.638584	-66.701903	-432.64	628.70

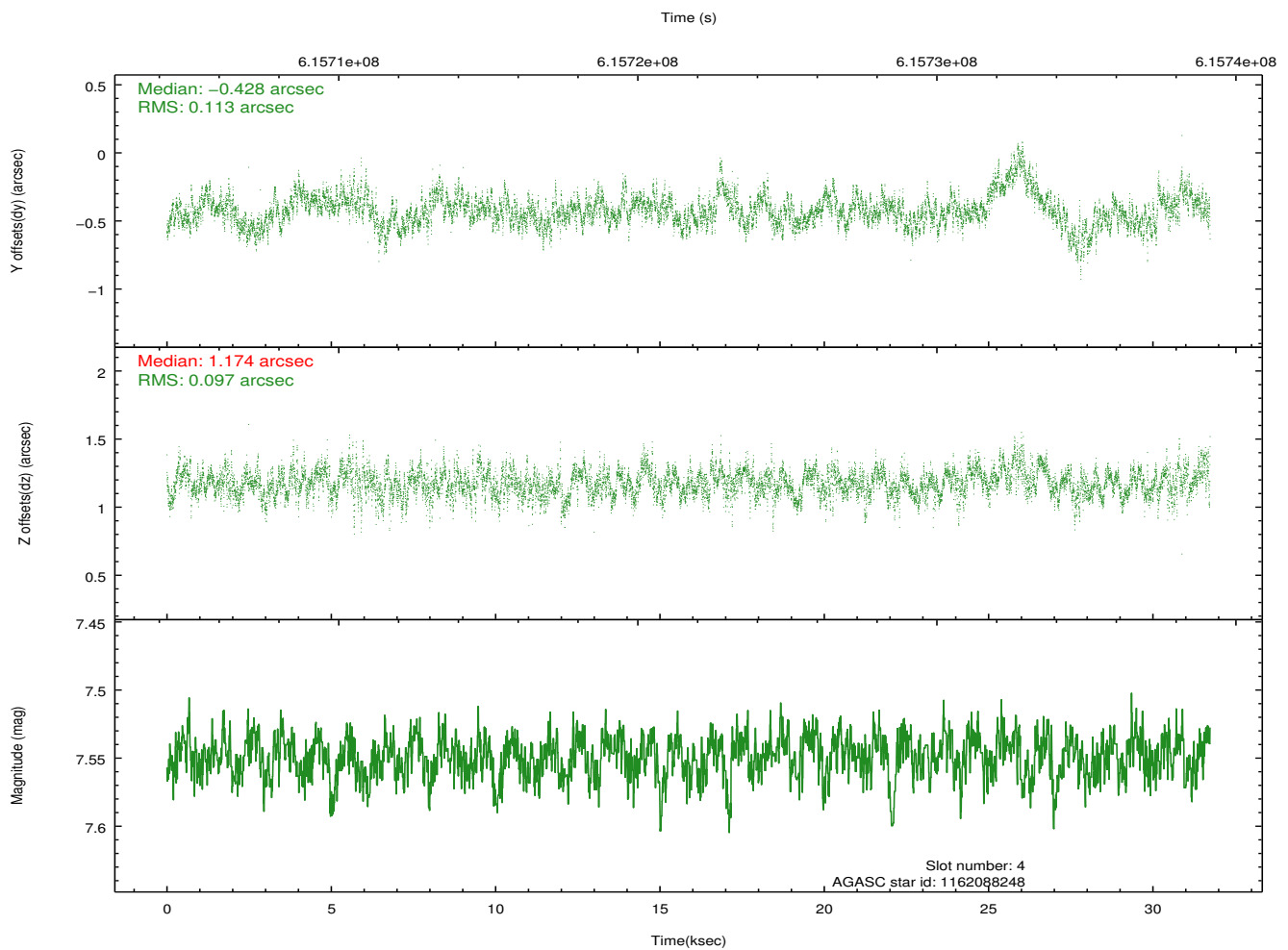
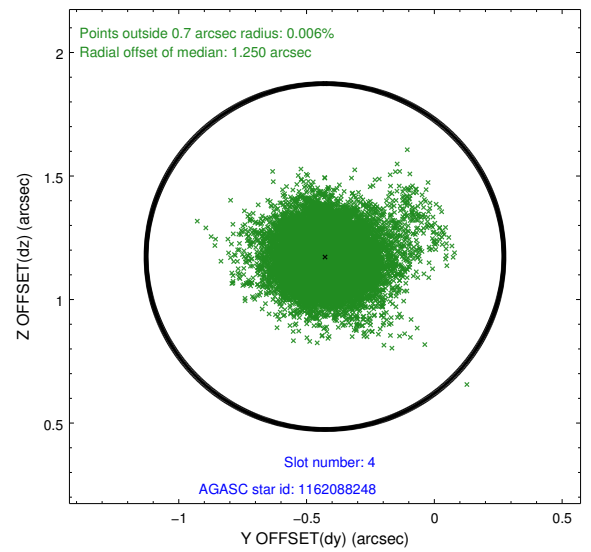
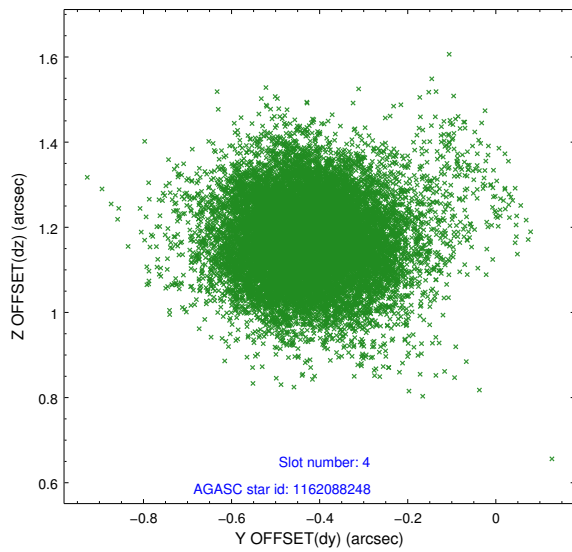
∞

## 2.4 Star Slots

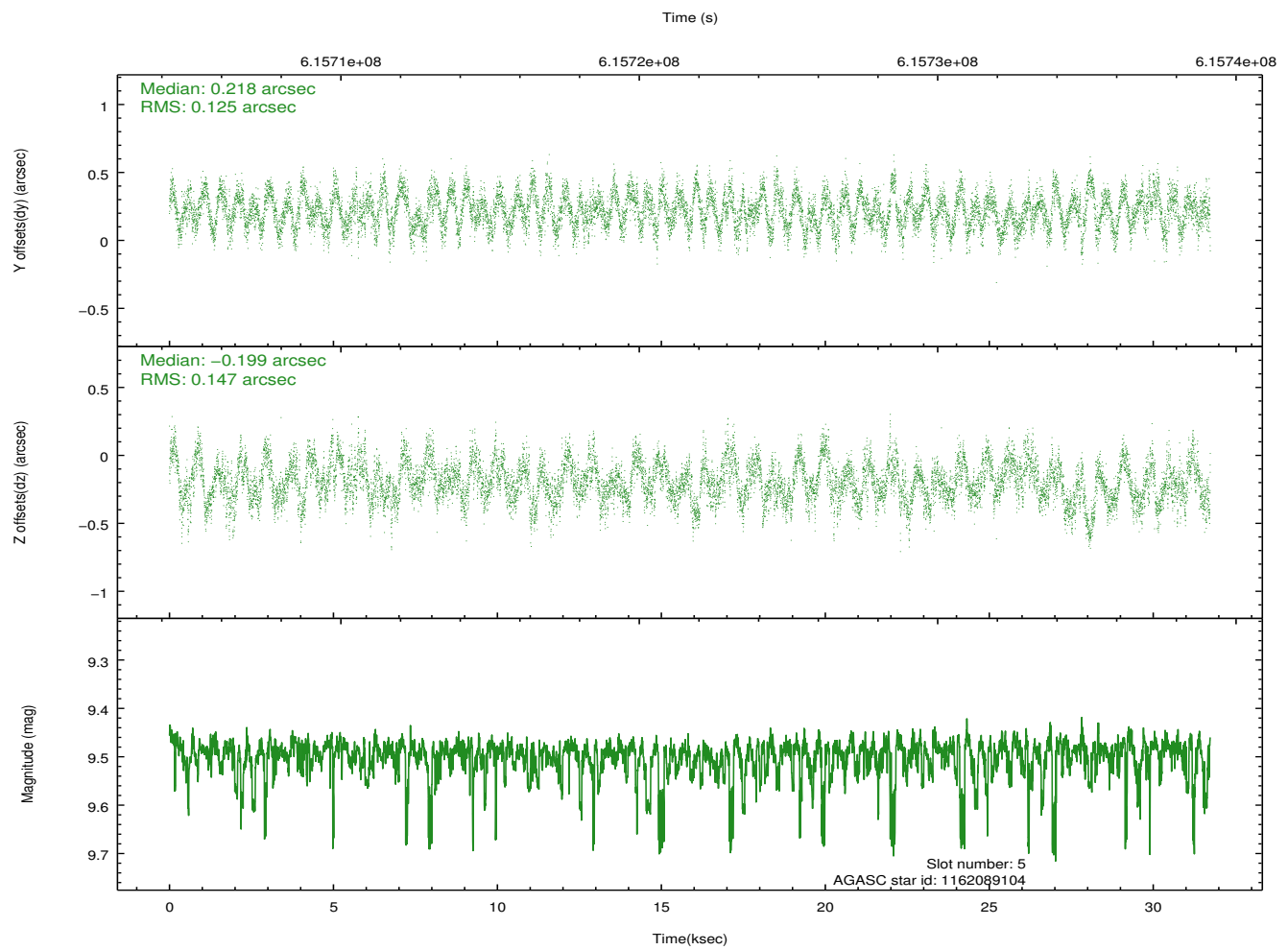
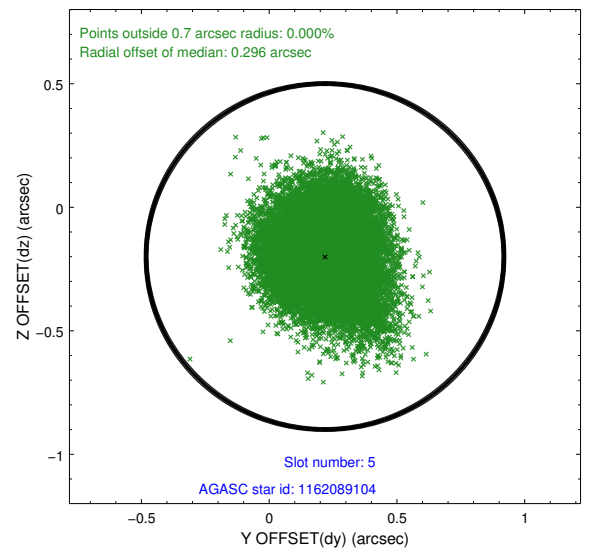
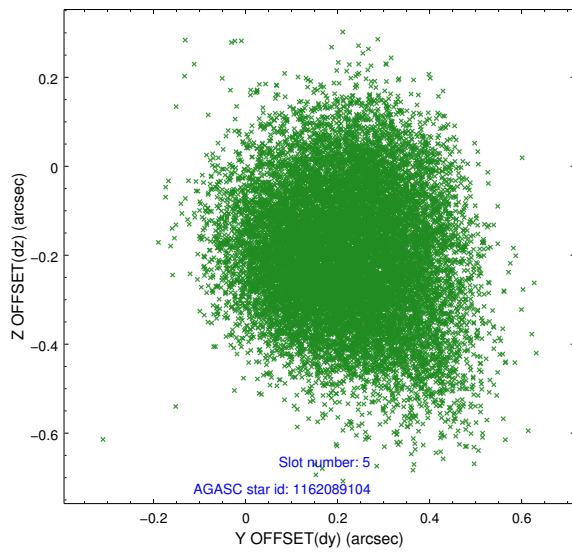
### 2.4.1 Slot 3



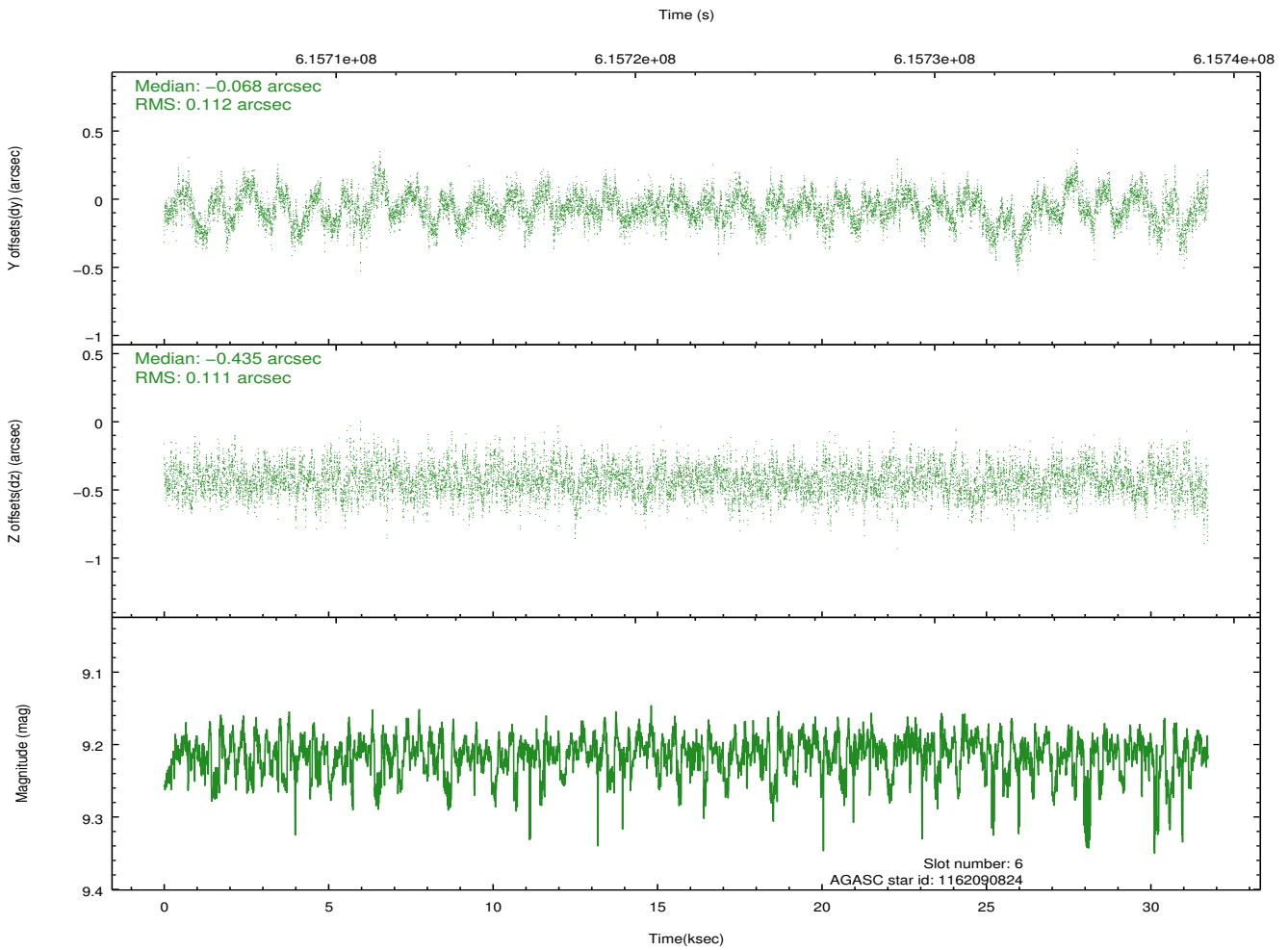
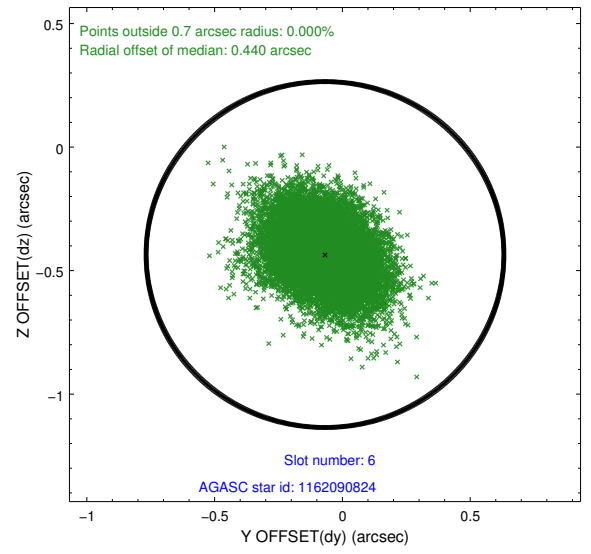
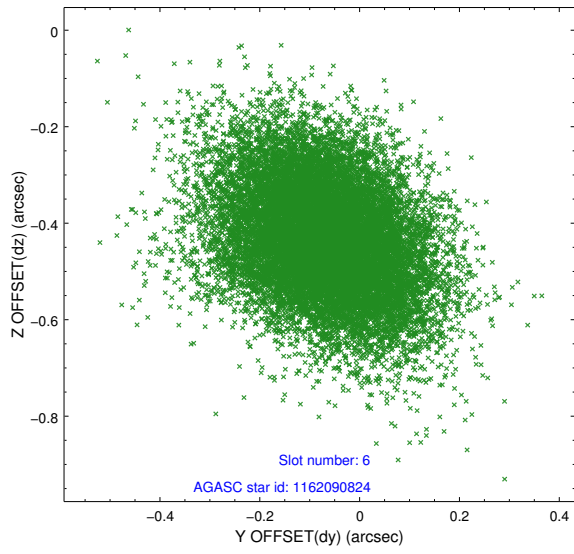
## 2.4.2 Slot 4



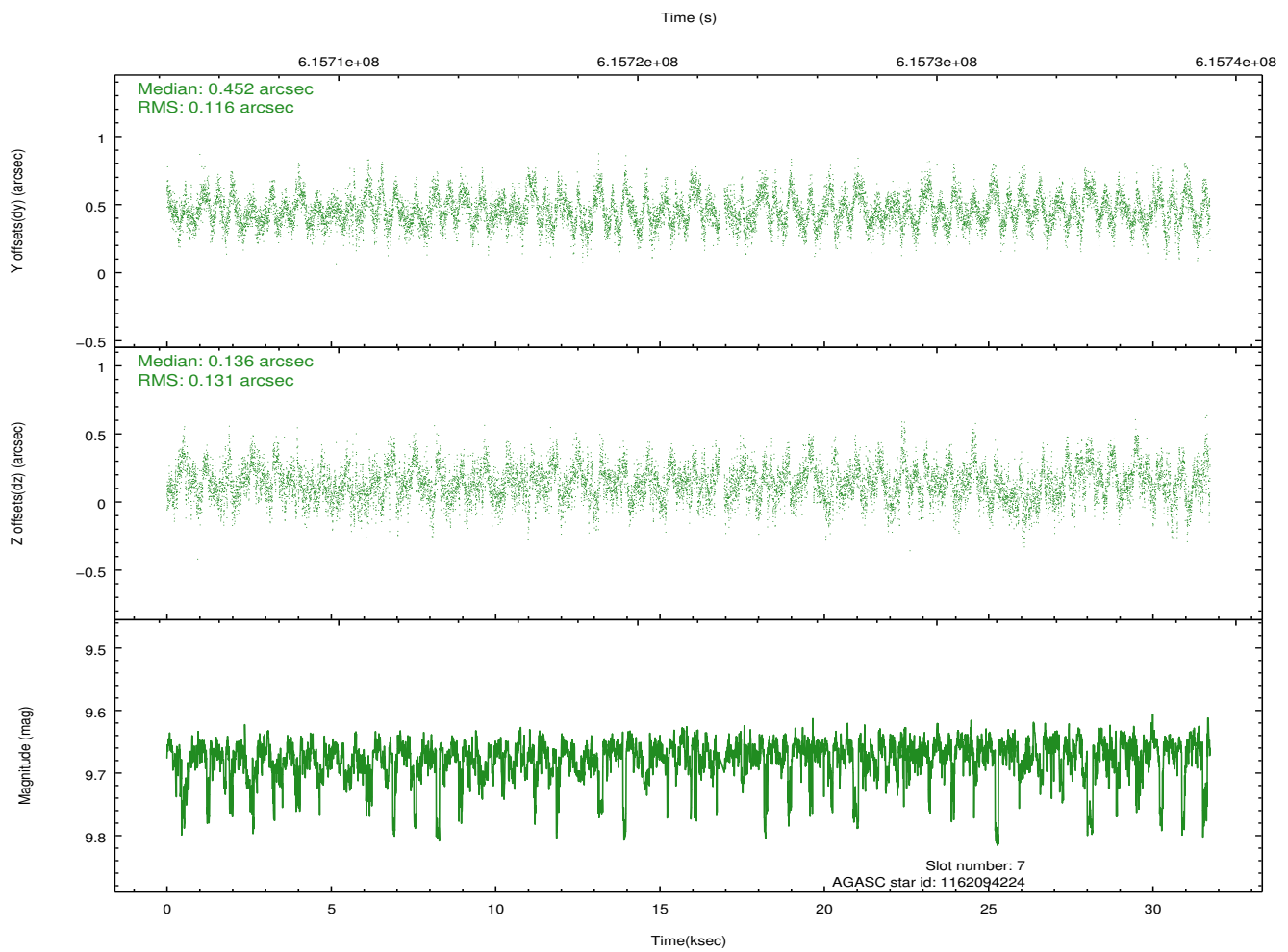
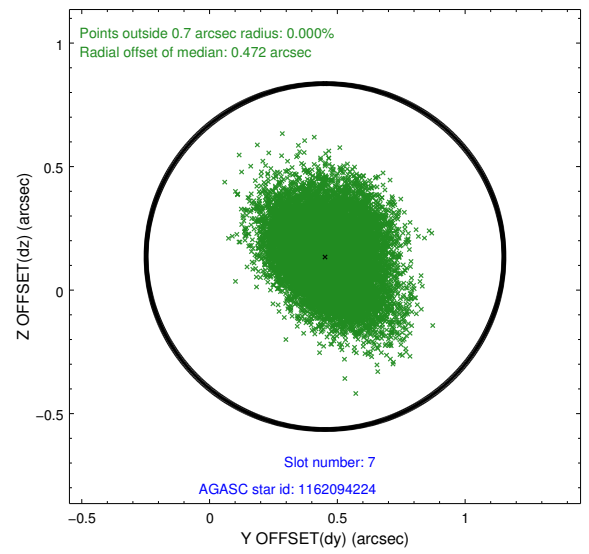
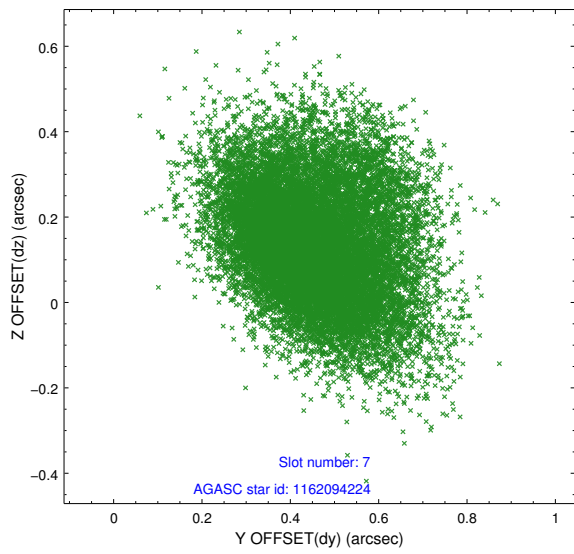
### 2.4.3 Slot 5



## 2.4.4 Slot 6

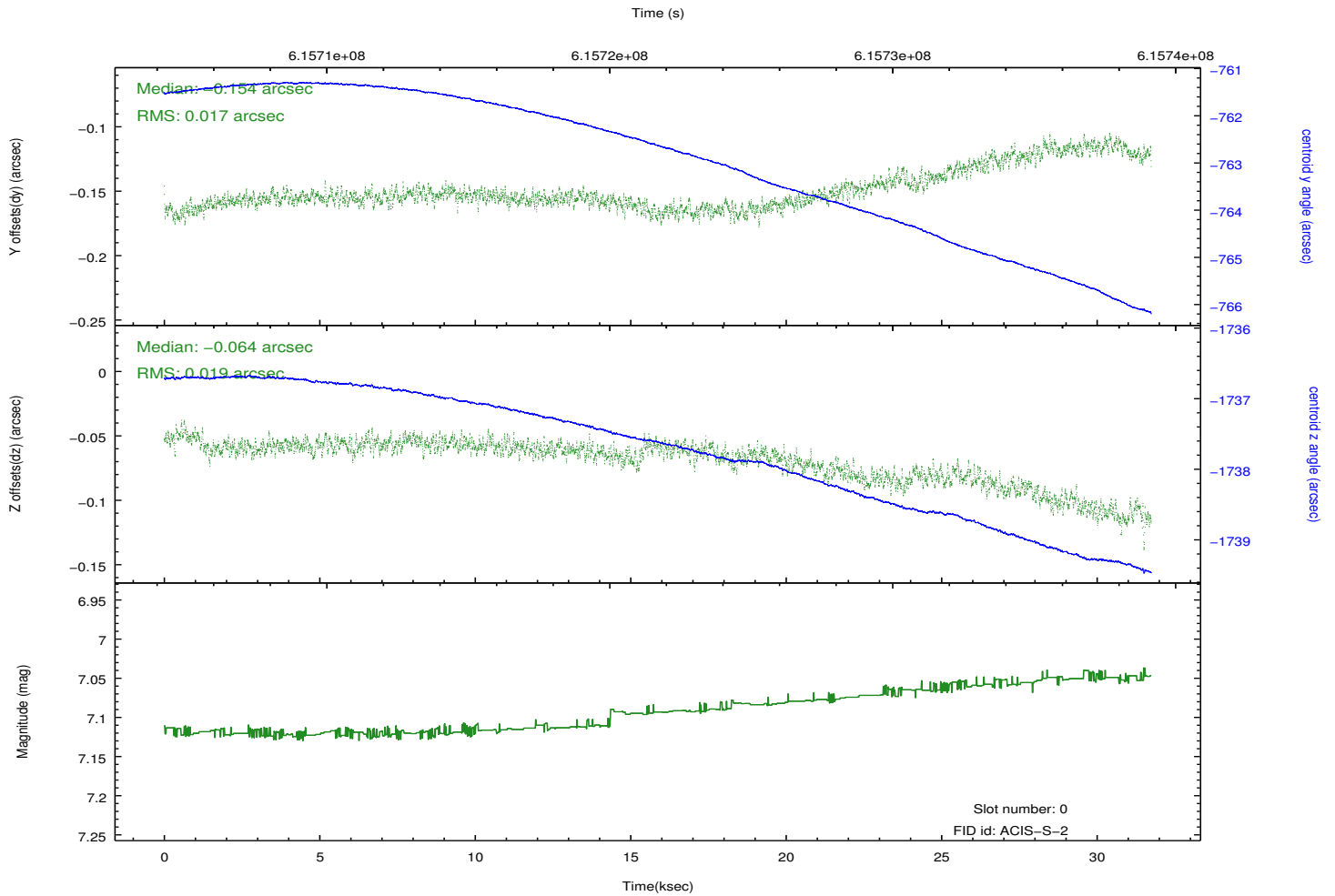
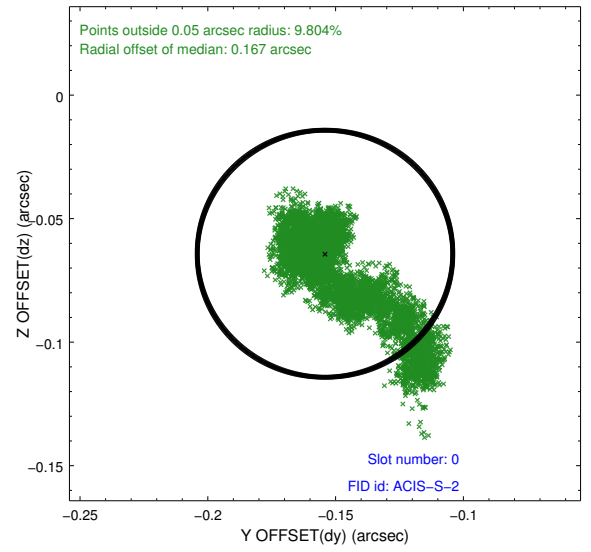
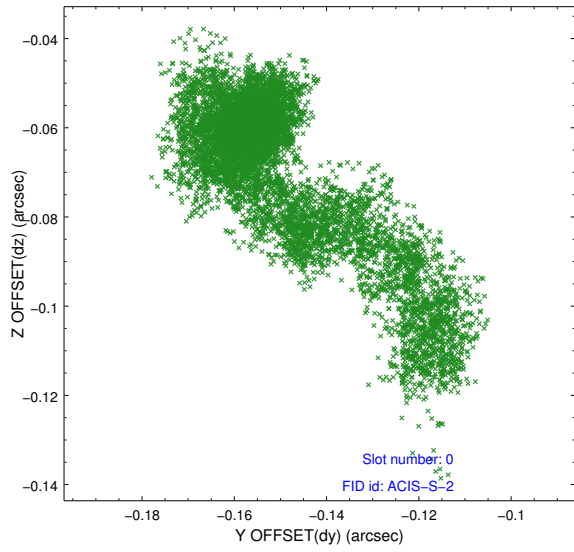


## 2.4.5 Slot 7

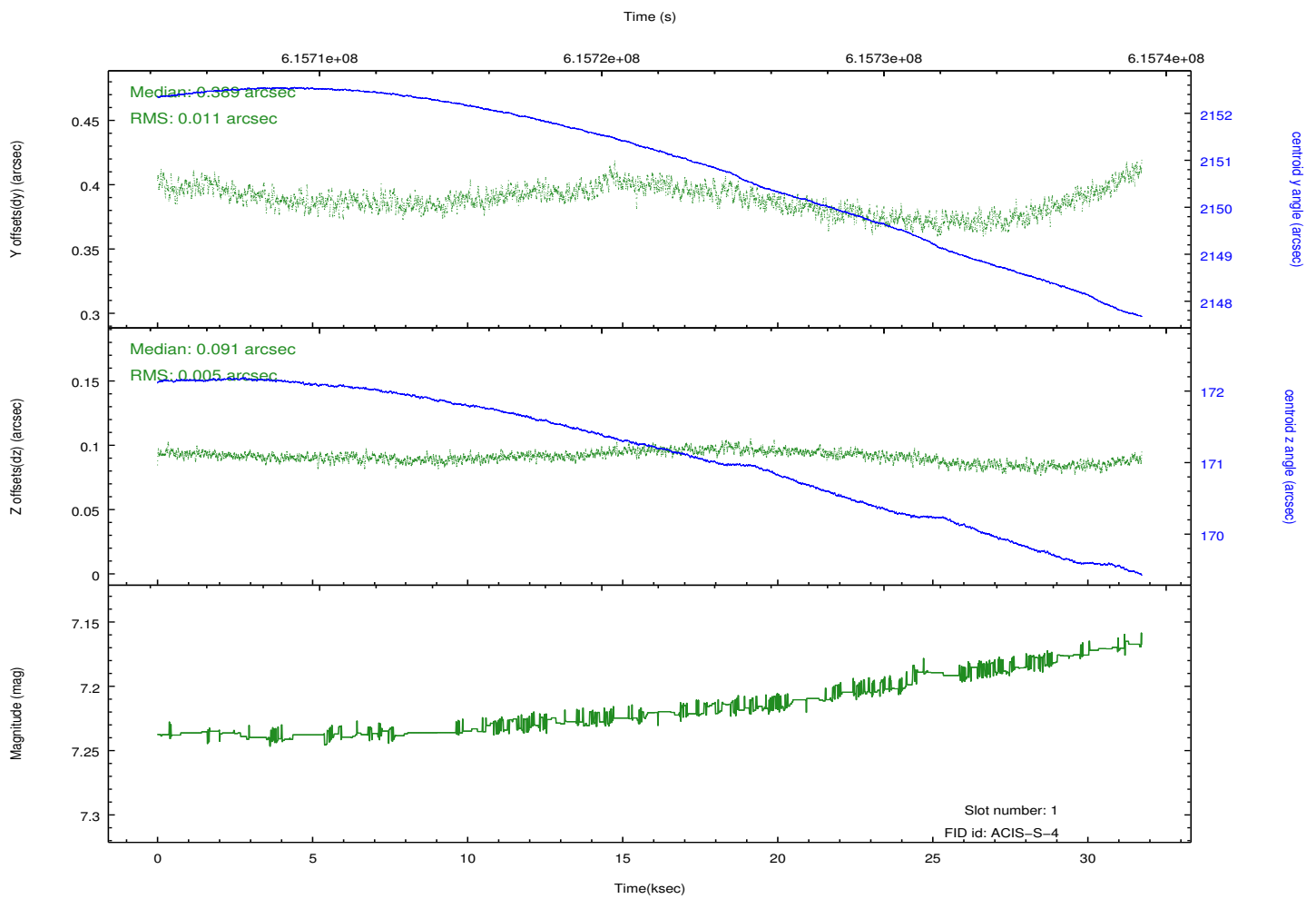
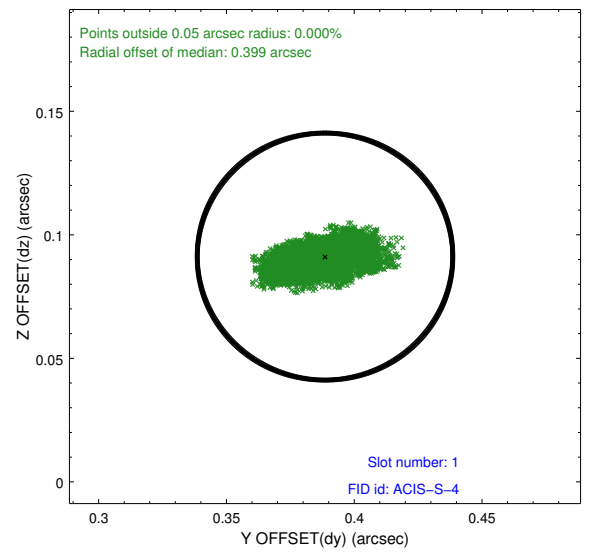
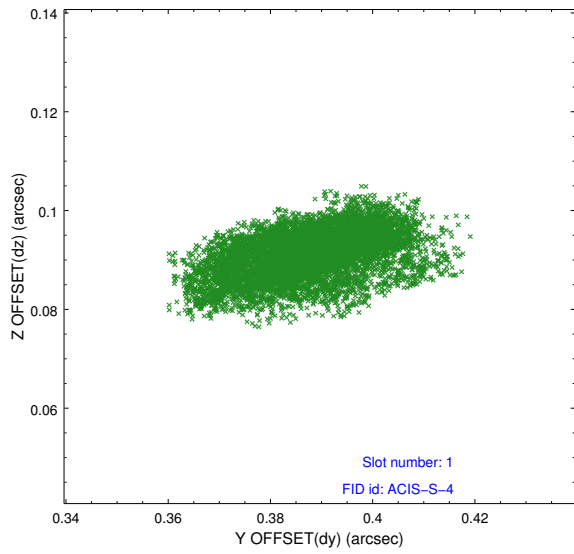


## 2.5 FID Slots

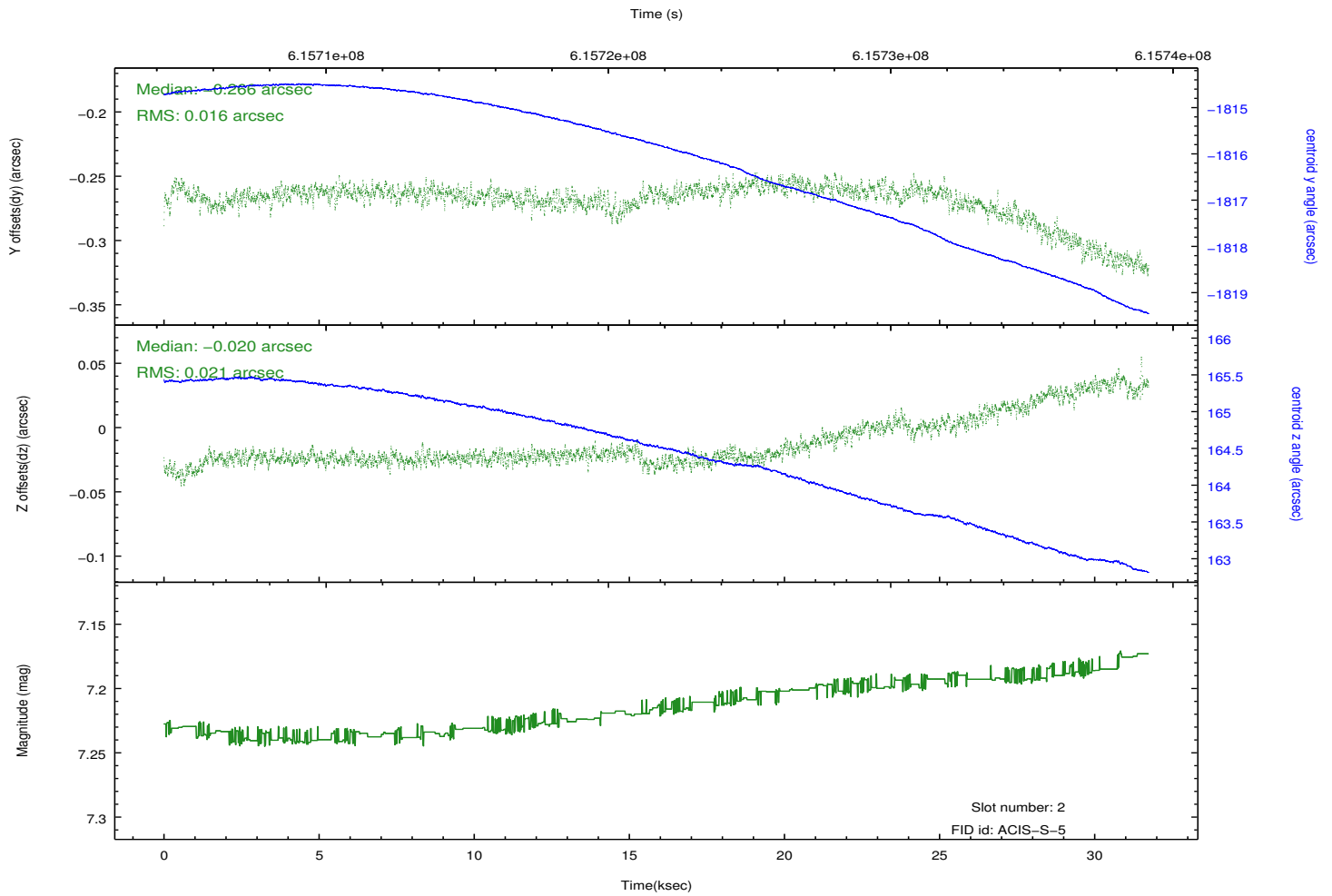
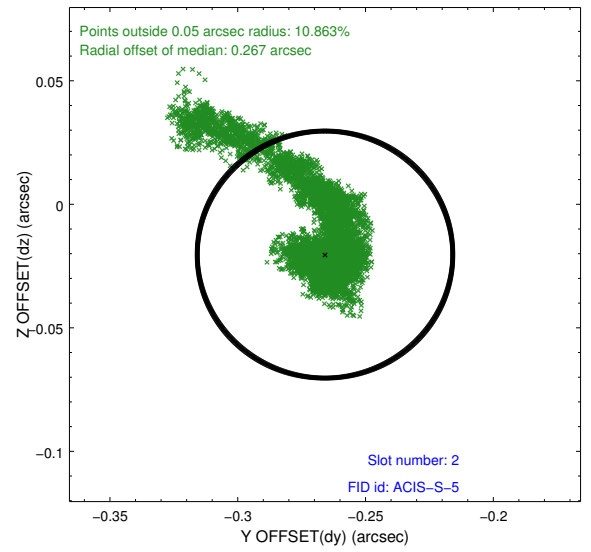
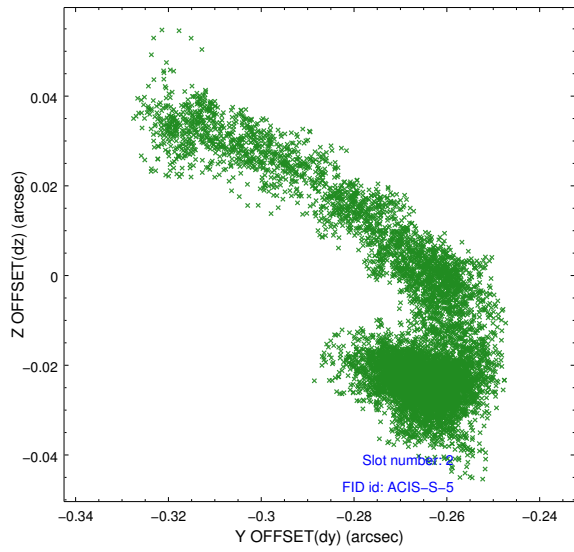
### 2.5.1 Slot 0



## 2.5.2 Slot 1

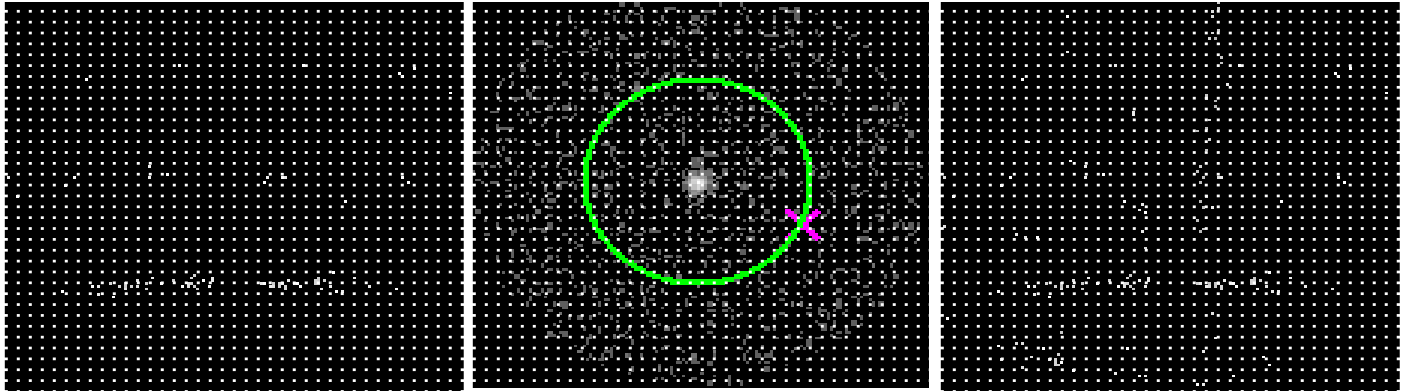


### 2.5.3 Slot 2



# 3 Gratings

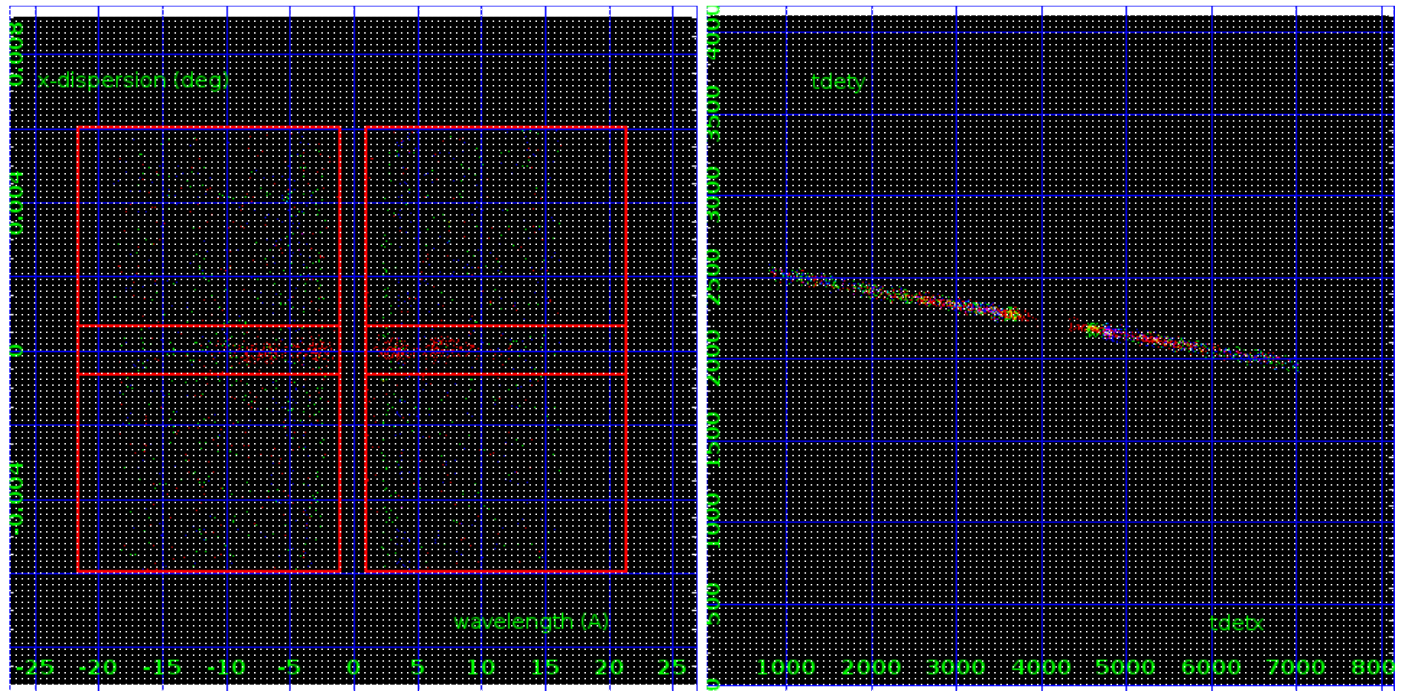
## 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

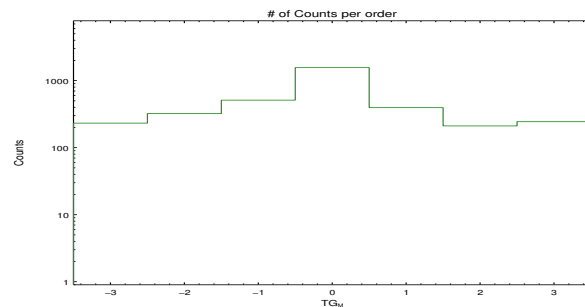
HEG Order Sort ALL

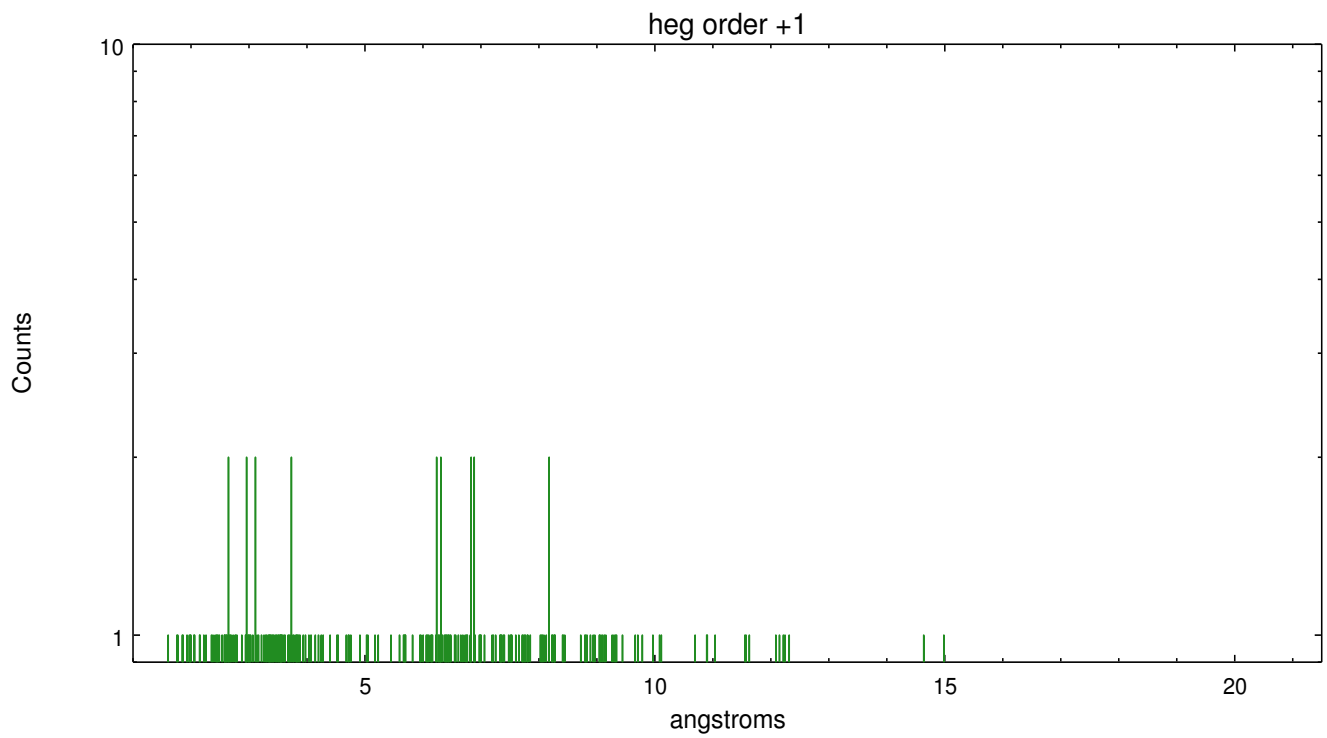
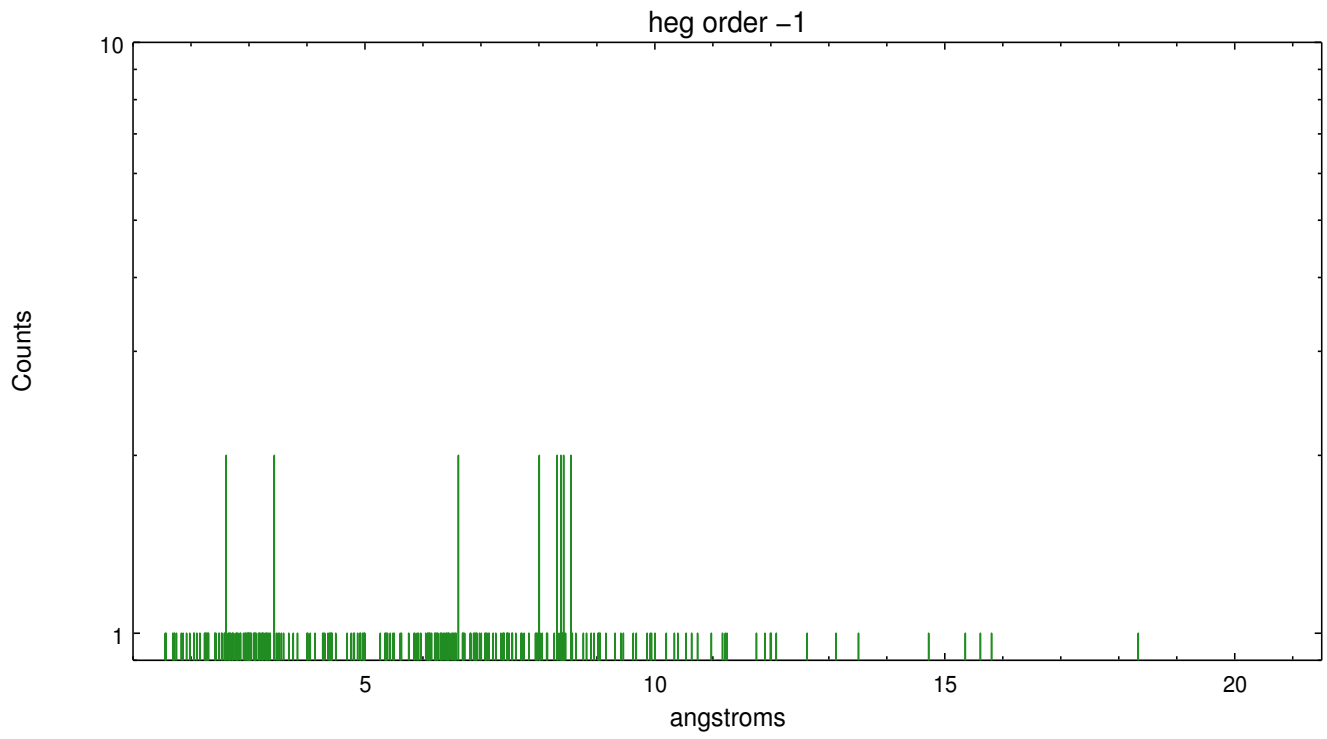


Spot Image HEG

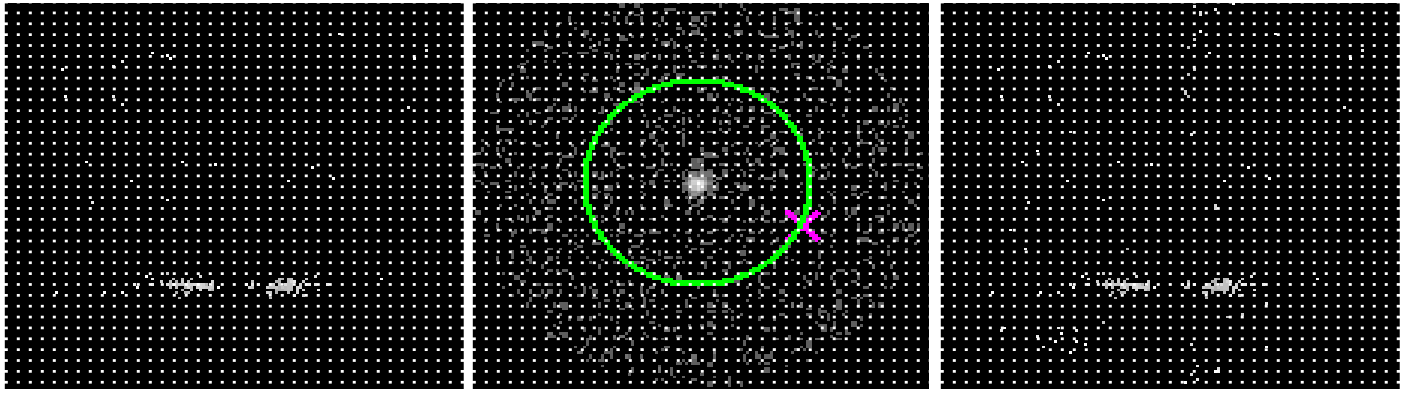
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	232	322	511	1561	395	211	244





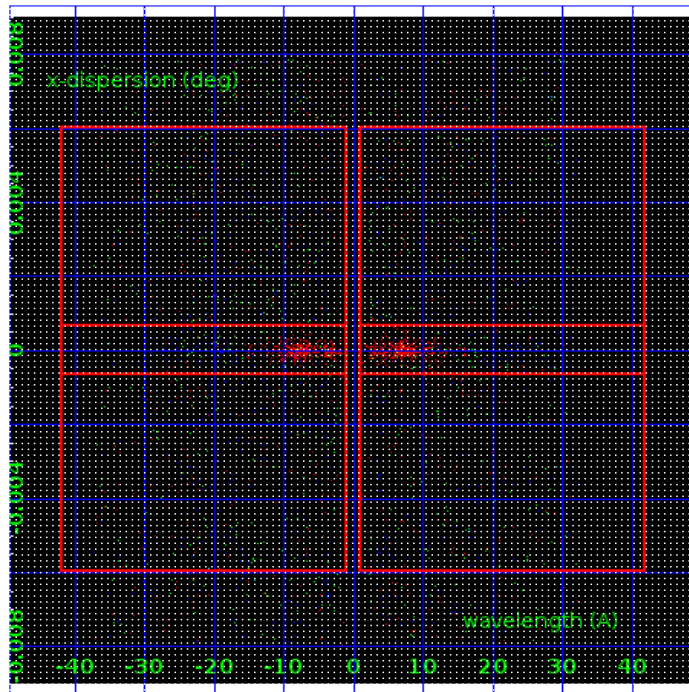
### 3.2 MEG Arm



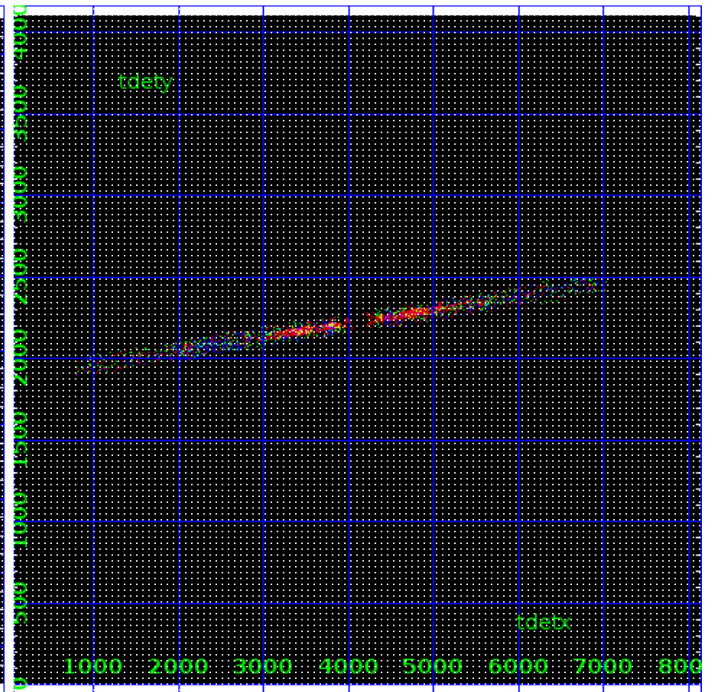
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

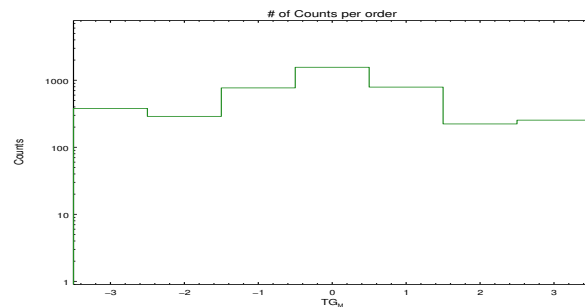


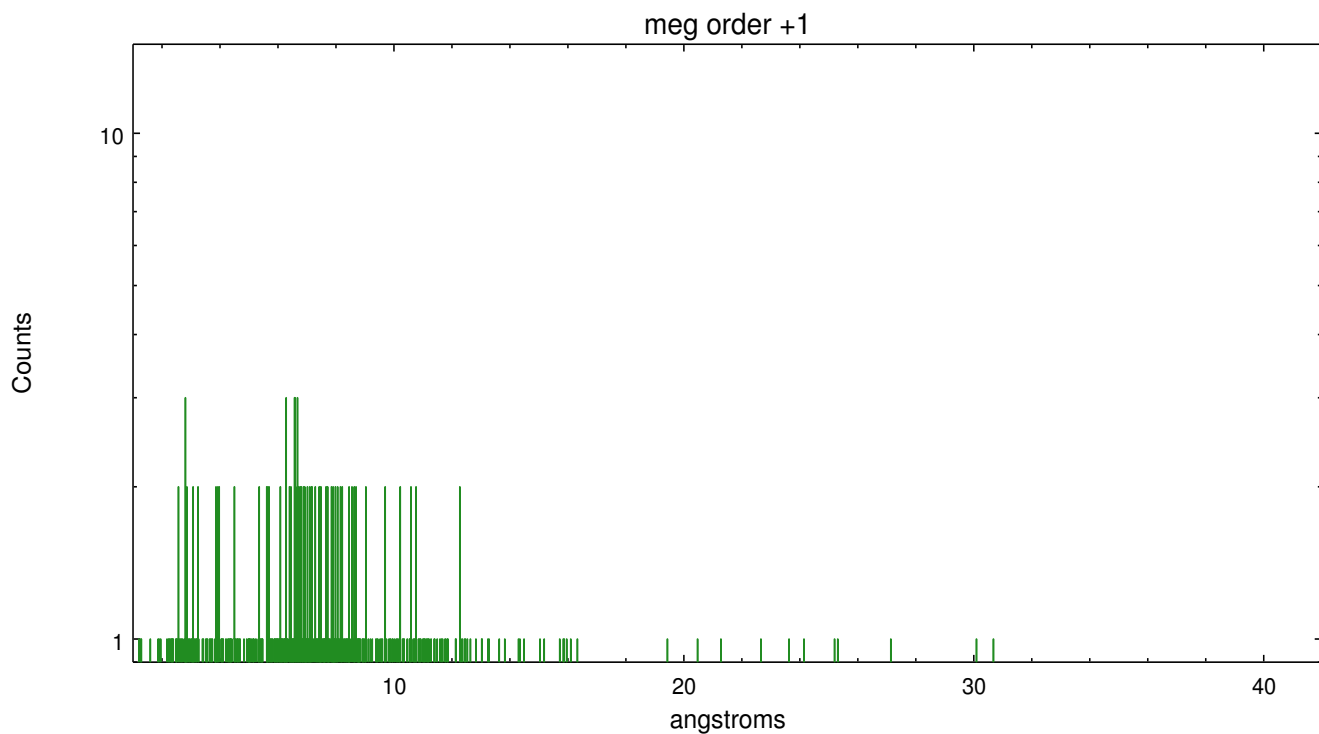
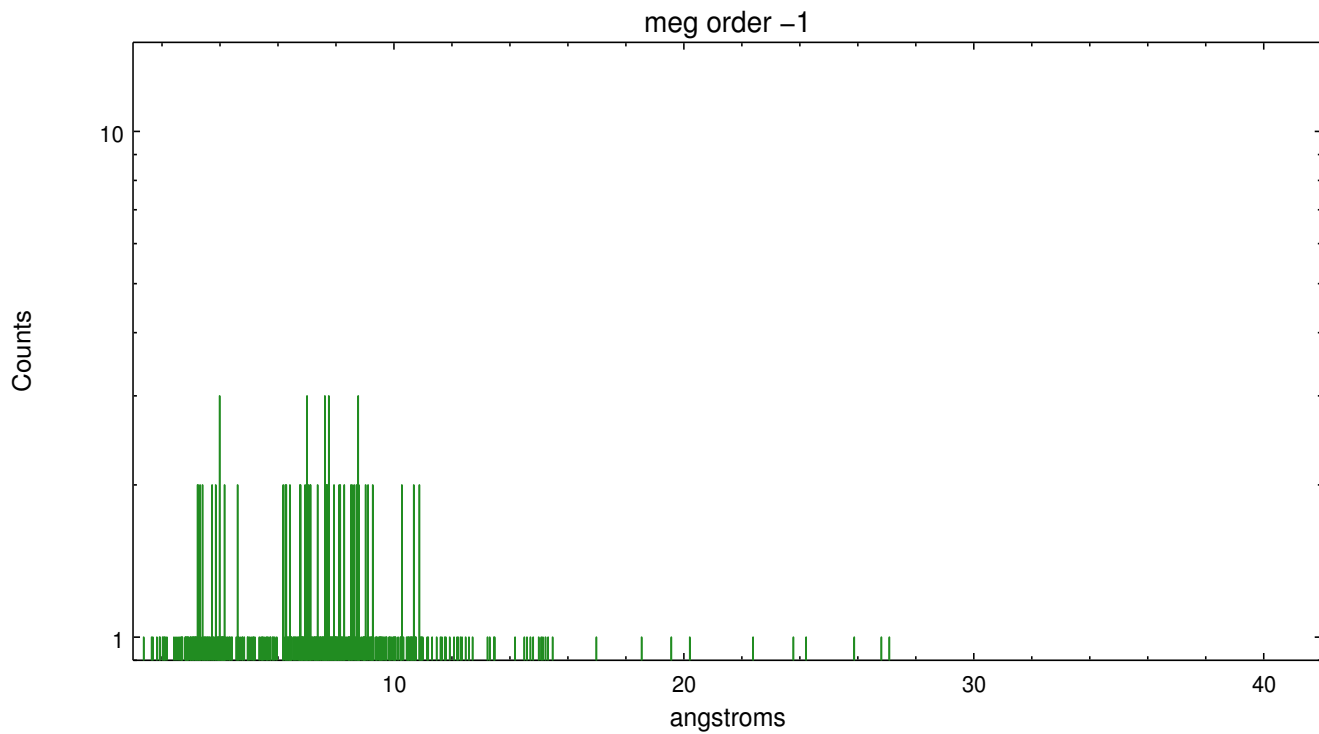
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	380	289	769	1561	790	223	254





# A Summary

## A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2017.07.11
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	31.504000469446

## A.2 Comments

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 ( $\sim 20$  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:

(48.80009, -66.35306), (48.82890, -66.36130), (48.94561, -66.29548),  
(48.95025, -66.26835).