

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 3573 - L2 Version 3  
Chandra X-Ray Center

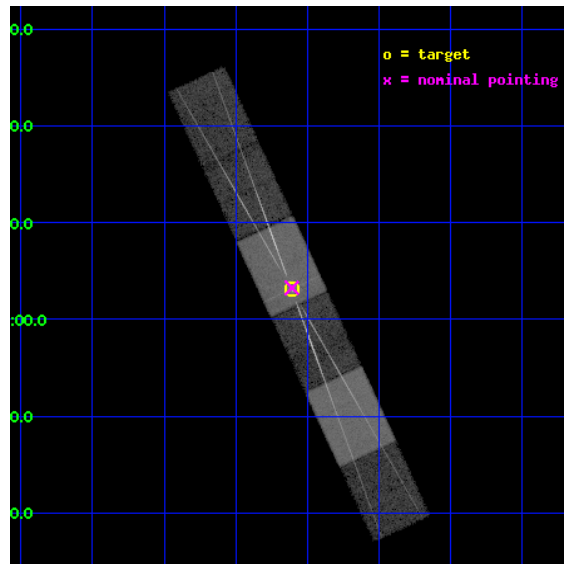
L2 Processing Date : Oct 9 2012

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# 1 Front

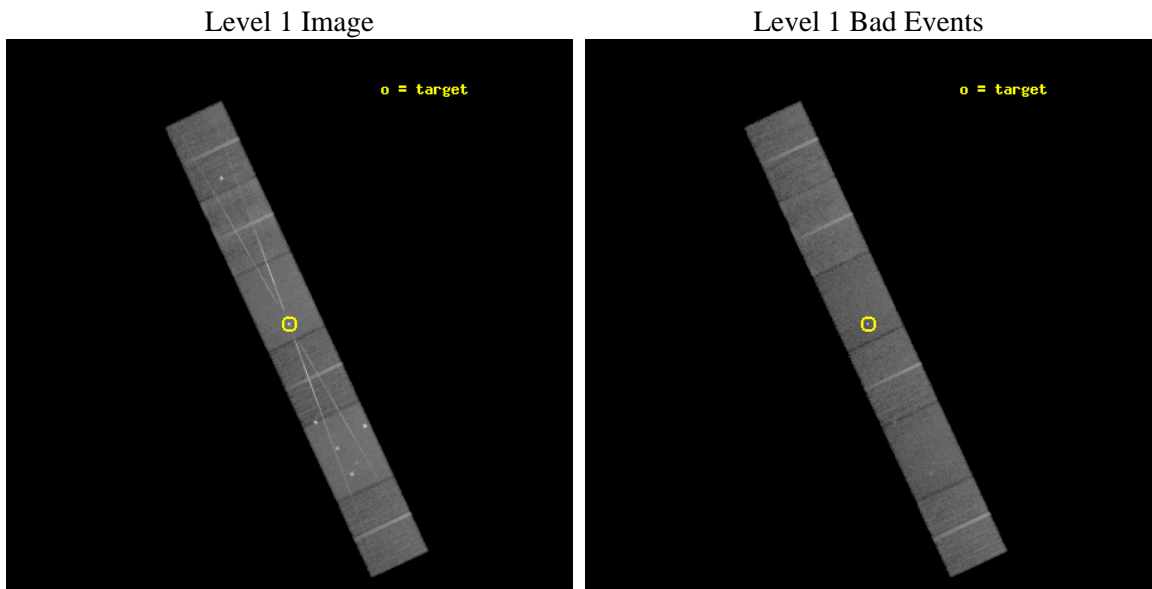
seq_num	790076	Sequence number
obs_id	3573	Observation id
title	AO4 CALIBRATION OBSERVATIONS OF 3C273	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	3C273	Source name
dtycycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	187.277917	Observer's specified target RA [deg]
dec_targ	2.052389	Observer's specified target Dec [deg]
ra_nom	187.27699635745	Nominal RA [deg]
dec_nom	2.05440511339	Nominal Dec [deg]
roll_nom	245.06387547174	Nominal Roll [deg]
revision	3	Processing version of data
ontime	30162.5	Sum of GTIs [s]
livetime	29675.349463212	Livetime [s]
ontime4	30162.5	Sum of GTIs [s]
ontime5	30162.5	Sum of GTIs [s]
ontime6	30162.5	Sum of GTIs [s]
ontime7	30162.5	Sum of GTIs [s]
ontime8	30162.5	Sum of GTIs [s]
ontime9	30162.5	Sum of GTIs [s]
l2events	319184	Number of level 2 events



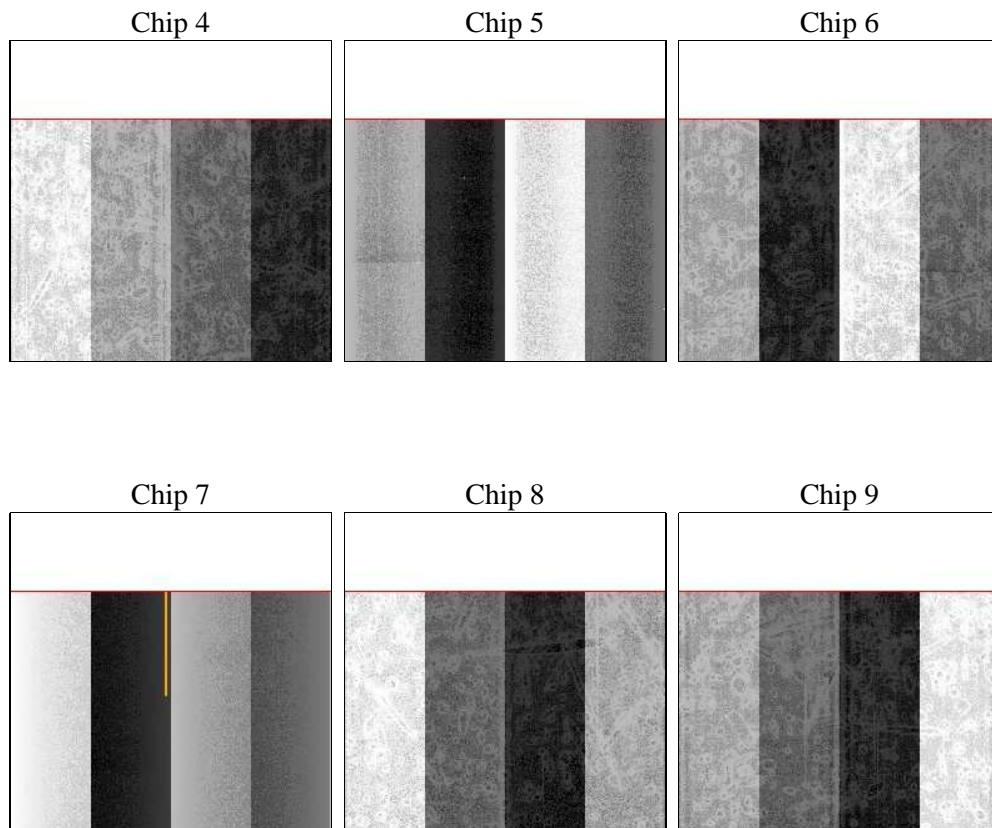
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	30162.5	Sum of GTIs [s]
caldsver	4.5.2	&#160	ontime4	30162.5	Sum of GTIs [s]
date	2012-10-09T02:53:01	Date and time of file creation	ontime5	30162.5	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	30162.5	Sum of GTIs [s]
			ontime7	30162.5	Sum of GTIs [s]
			ontime8	30162.5	Sum of GTIs [s]
			ontime9	30162.5	Sum of GTIs [s]
			l1events	1187569	Number of level 1 events

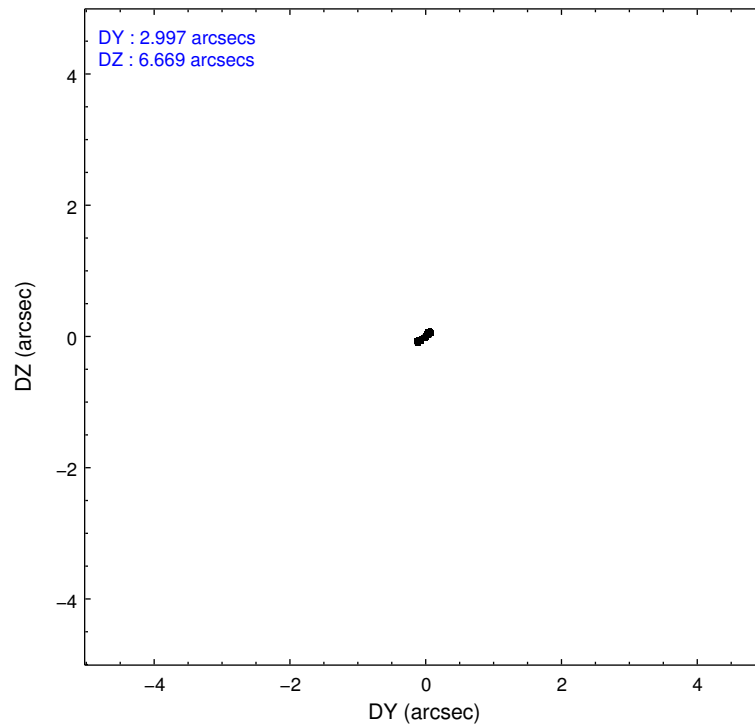
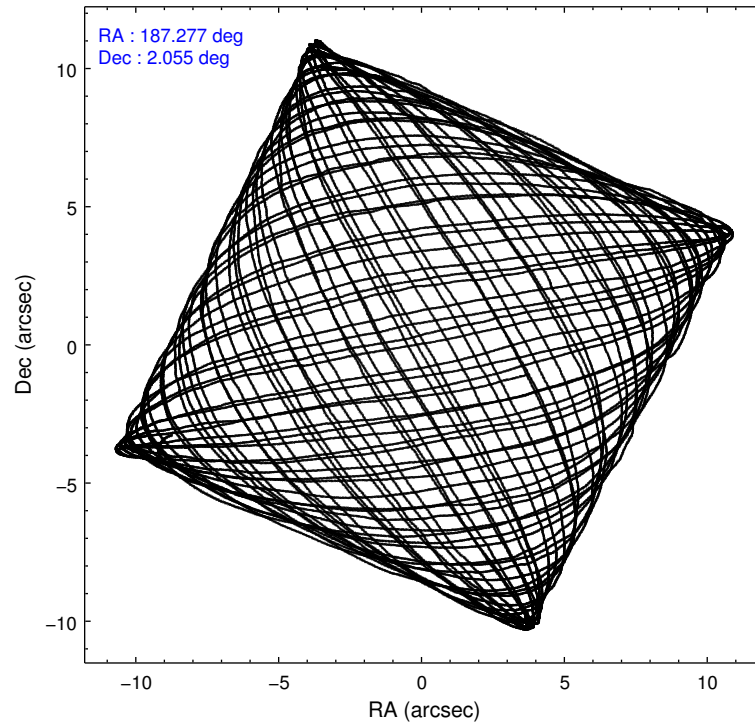
### 2.1.4 Events

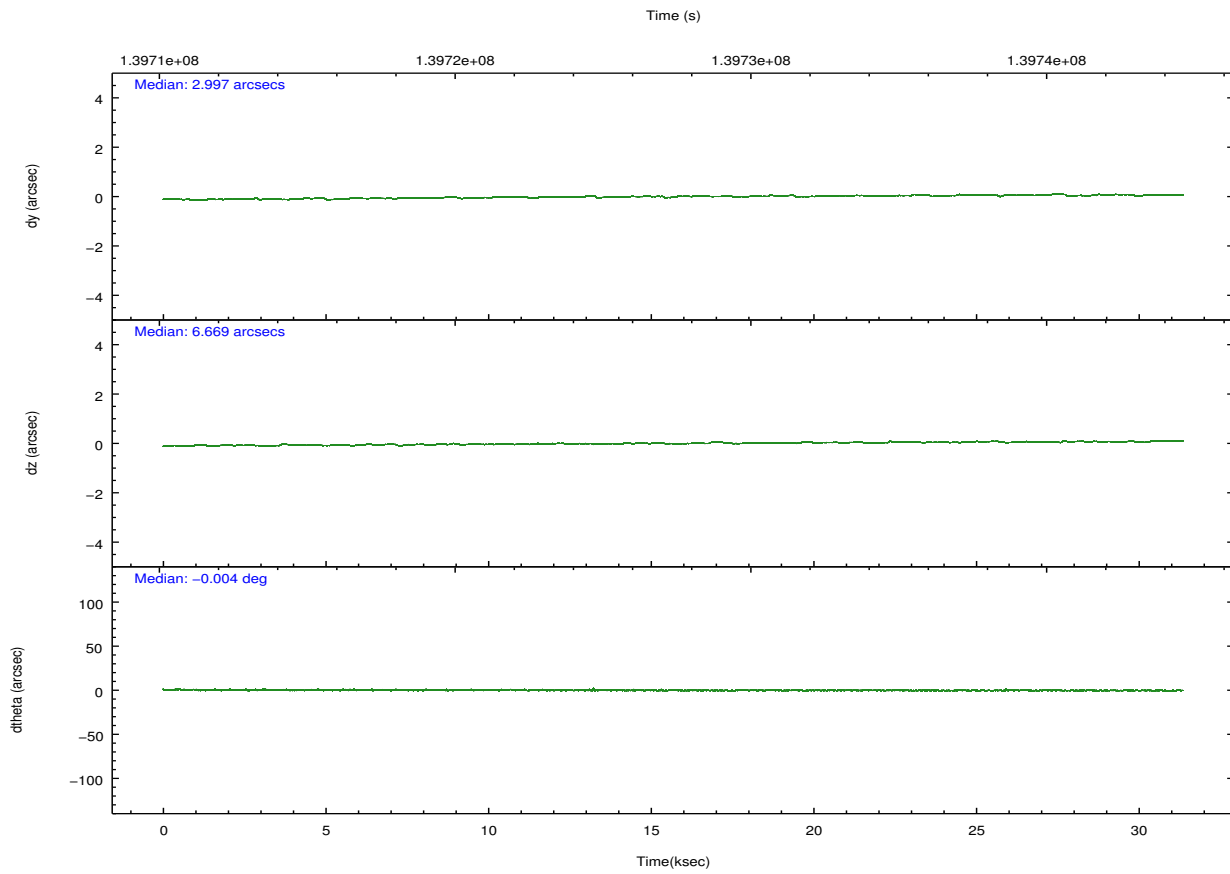
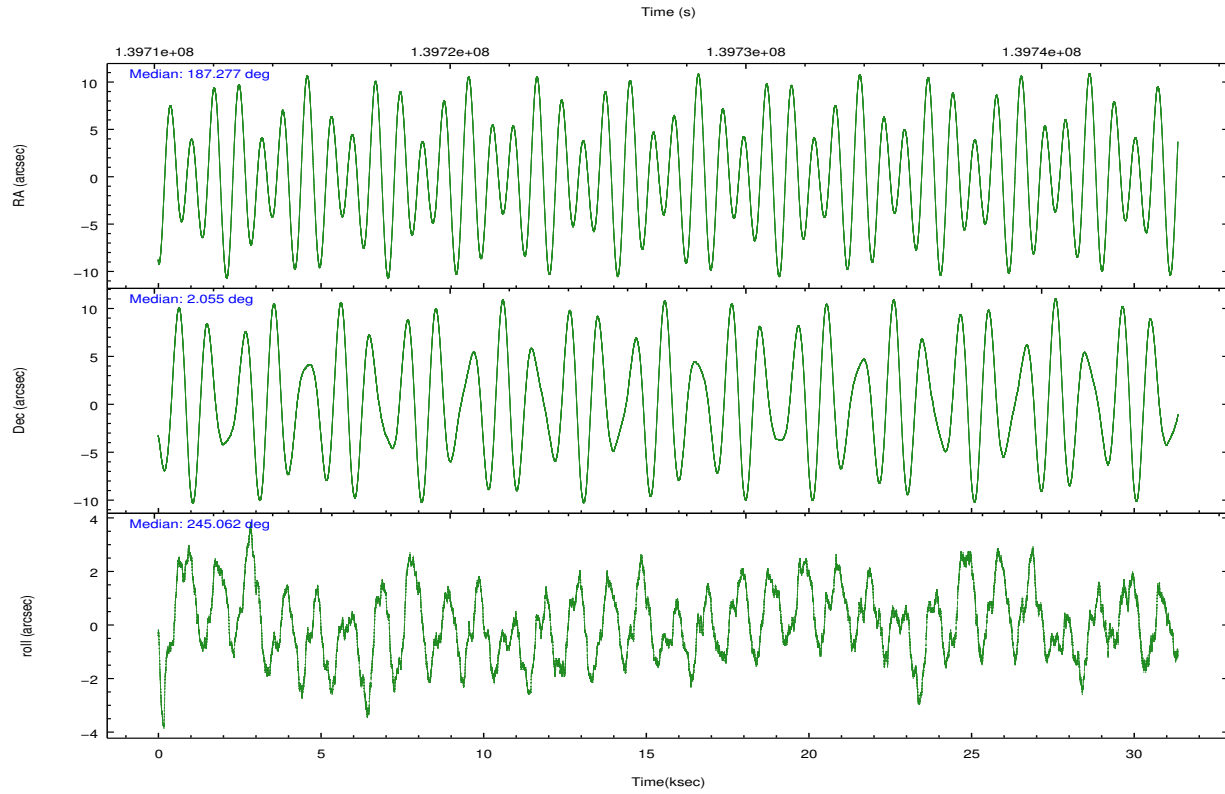
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	166460	240624	179792	234045	207125	159523	grade 0 events	9219	30698	28721	14913	23348	14211
rejected events	145684	116229	134475	119803	153869	133962		5%	12%	15%	6%	11%	8%
rejected %	87%	48%	74%	51%	74%	83%	grade 1 events	76	653	148	463	139	104
								0%	0%	0%	0%	0%	0%
							grade 2 events	4594	30851	6711	24304	10059	3845
								2%	12%	3%	10%	4%	2%
							grade 3 events	1846	5897	2860	10862	4519	1930
								1%	2%	1%	4%	2%	1%
							grade 4 events	1794	5849	2803	10966	4141	1923
								1%	2%	1%	4%	1%	1%
							grade 5 events	5271	16830	6392	20072	8117	6506
								3%	6%	3%	8%	3%	4%
							grade 6 events	3325	51111	4229	53212	11192	3654
								1%	21%	2%	22%	5%	2%
							grade 7 events	140335	98735	127928	99253	145610	127350
								84%	41%	71%	42%	70%	79%

## 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	187.274261	187.2769963574496	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	2.081523	2.054405113389989	Subarray start row	1	1
[deg] Pointing Roll	244.907347	245.0638754717365	Subarray row count	774	774
[s] Window start time (MET)	139276864.184000	139276864.184000	Alternating exposures requested	N	N
[s] Window stop time (MET)	141782464.184000	141782464.184000	[s] Primary exposure time	0.000000	2.5
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-187.132523	-187.1228876879999			
[mm] SIM translation stage offset	-3	-3.009634895007935			
[s] Observation start time (MET)	139713041.184000	139711495.38315			
Observation start date	2002-06-06T01:09:37	2002-06-06T00:44:55			
[s] Observation end time (MET)	139743041.184000	139743514.84696			
Observation end date	2002-06-06T09:29:37	2002-06-06T09:38:34			
Read mode	TIMED	TIMED			

## 2.3 Aspect



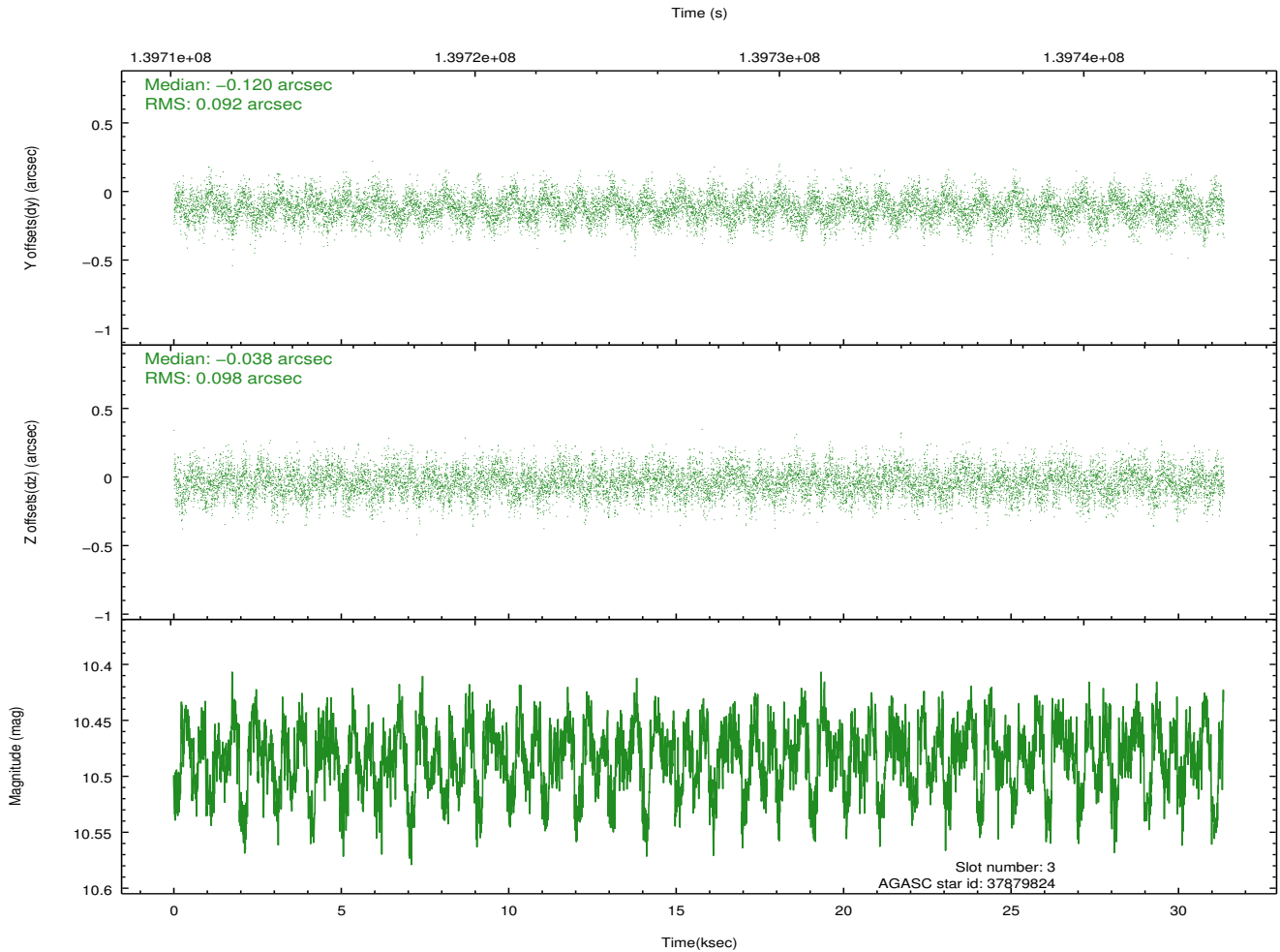
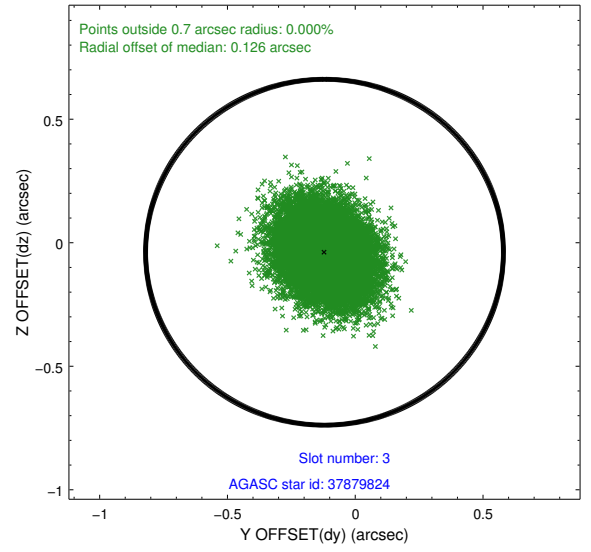
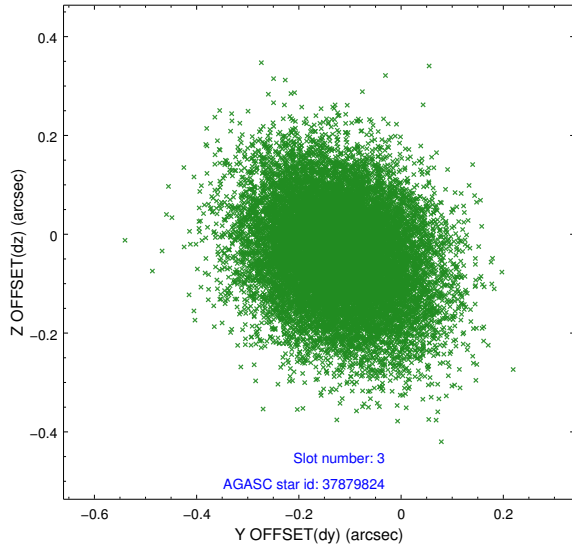


### Slot Statistics

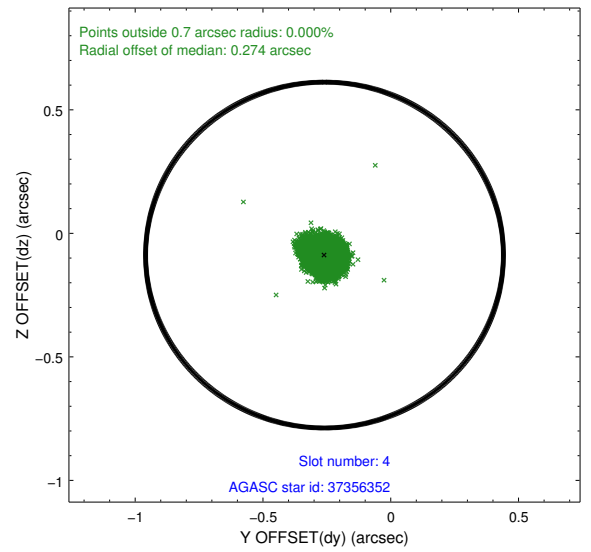
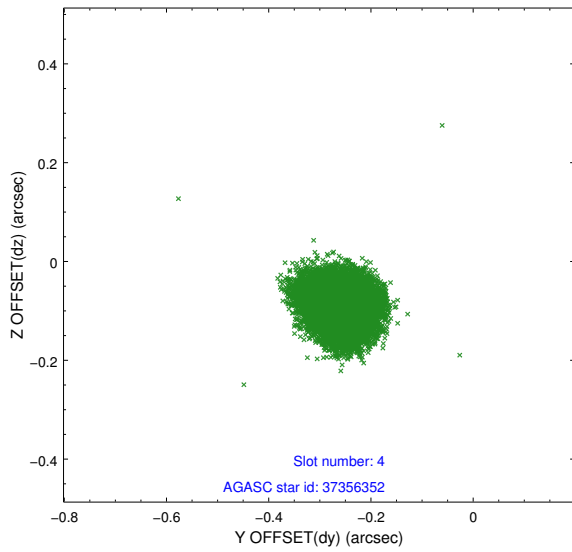
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	7646	-0.036	-0.054	0.007	0.012	0.000000	0.000000	-755.45	-1790.02
1	FID	ACIS-S-4	7.19	7646	0.006	0.032	0.007	0.013	0.000000	0.000000	2157.83	118.49
2	FID	ACIS-S-5	7.24	7647	-0.001	0.031	0.007	0.012	0.000000	0.000000	-1808.18	112.21
3	GUIDE	37879824	10.48	15272	-0.120	-0.038	0.143	0.234	187.728661	2.497183	-2048.35	845.81
4	GUIDE	37356352	7.68	15290	-0.259	-0.088	0.052	0.082	187.433784	2.618460	-1993.98	-299.79
5	GUIDE	36965296	9.09	15283	0.059	-0.064	0.076	0.125	186.926292	1.837429	1326.89	-760.86
6	GUIDE	36965816	9.27	15281	0.016	-0.011	0.075	0.122	186.823353	1.771455	1699.19	-995.58
7	GUIDE	37883040	10.03	15287	0.309	0.202	0.117	0.192	187.575516	1.280402	2152.69	2205.80

## 2.4 Star Slots

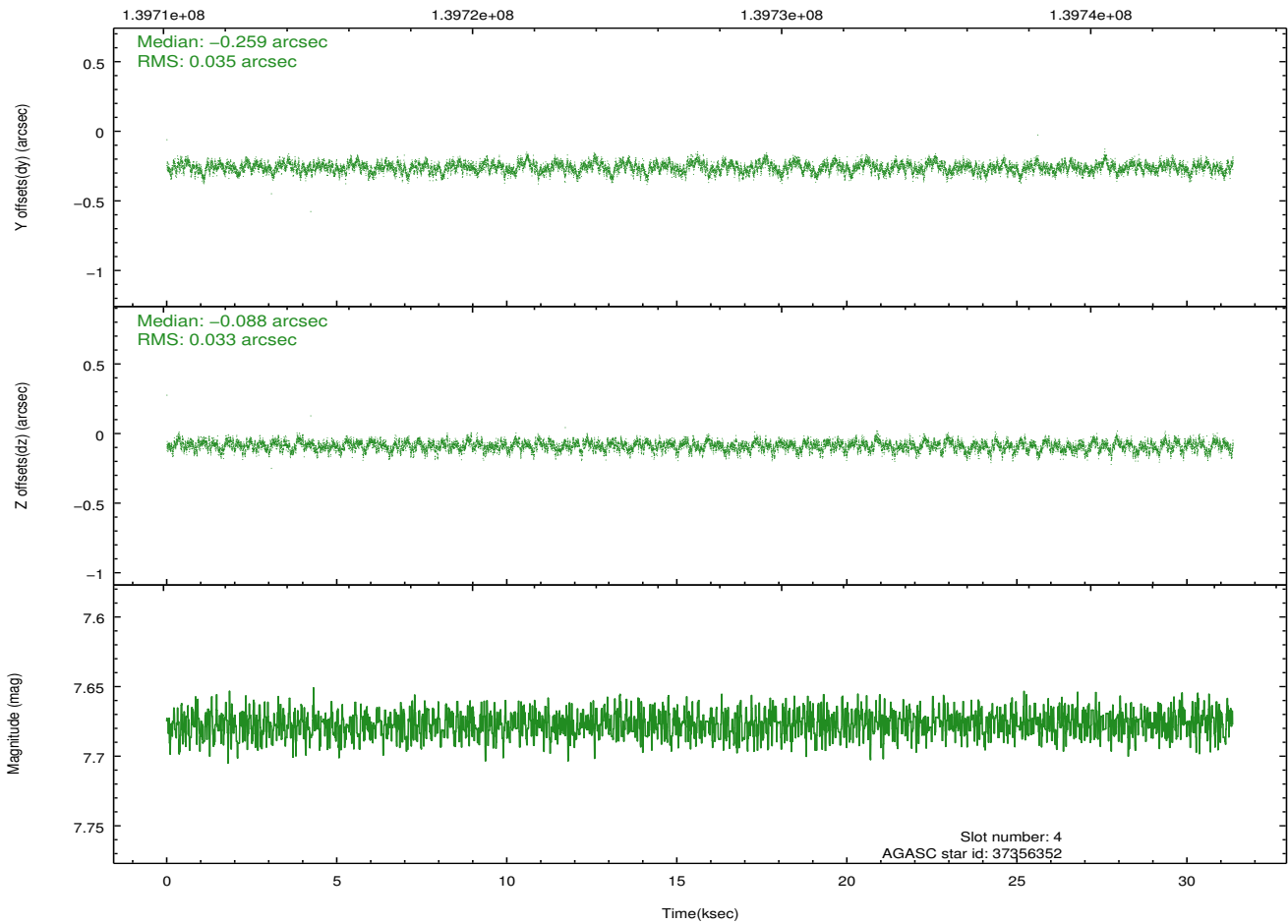
### 2.4.1 Slot 3



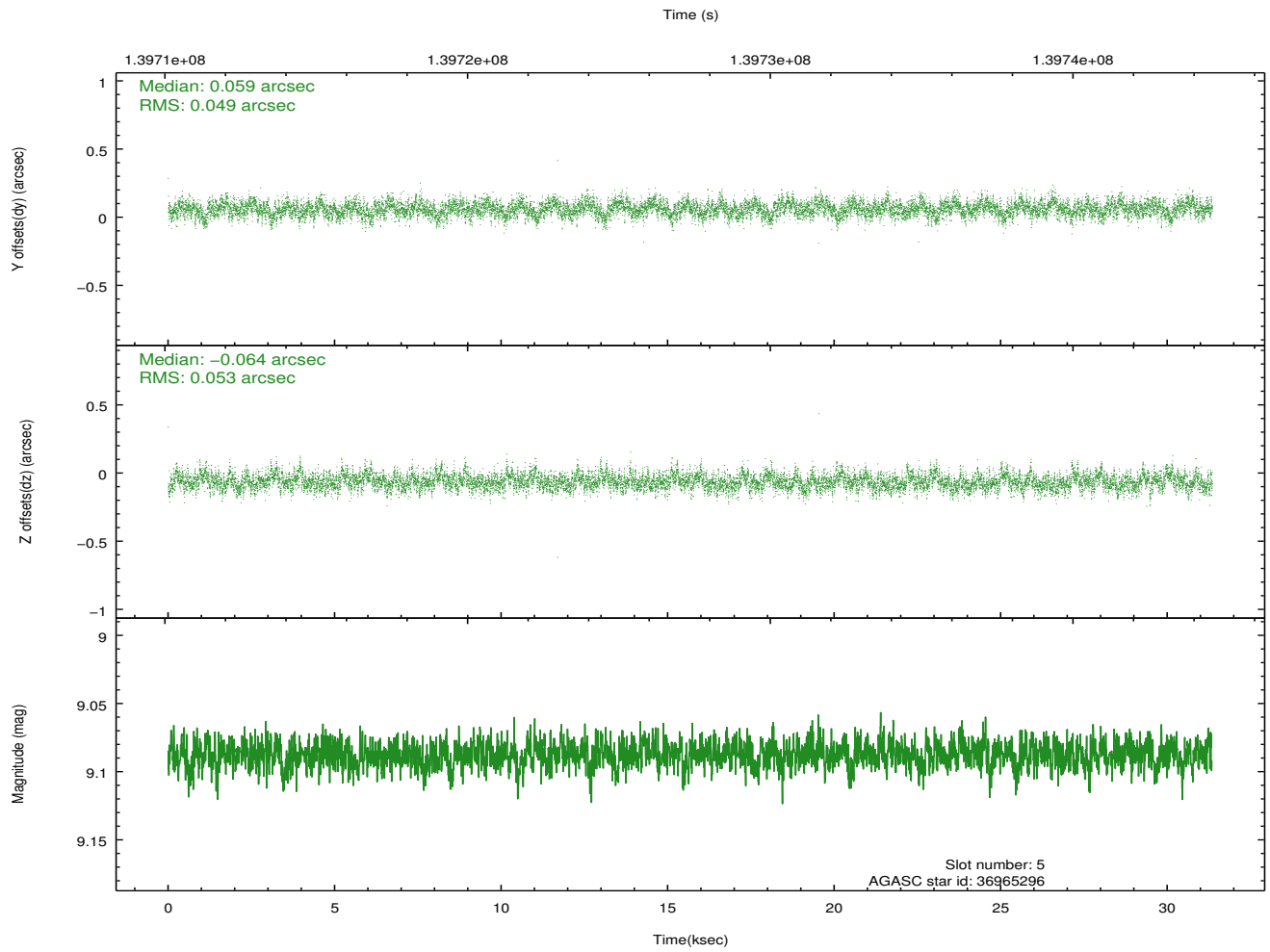
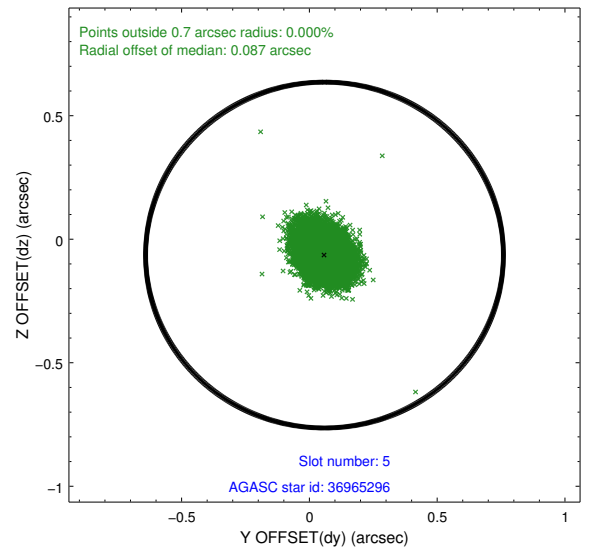
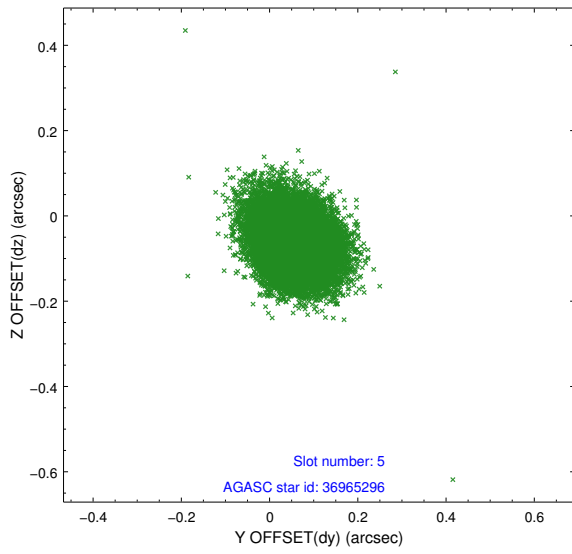
## 2.4.2 Slot 4



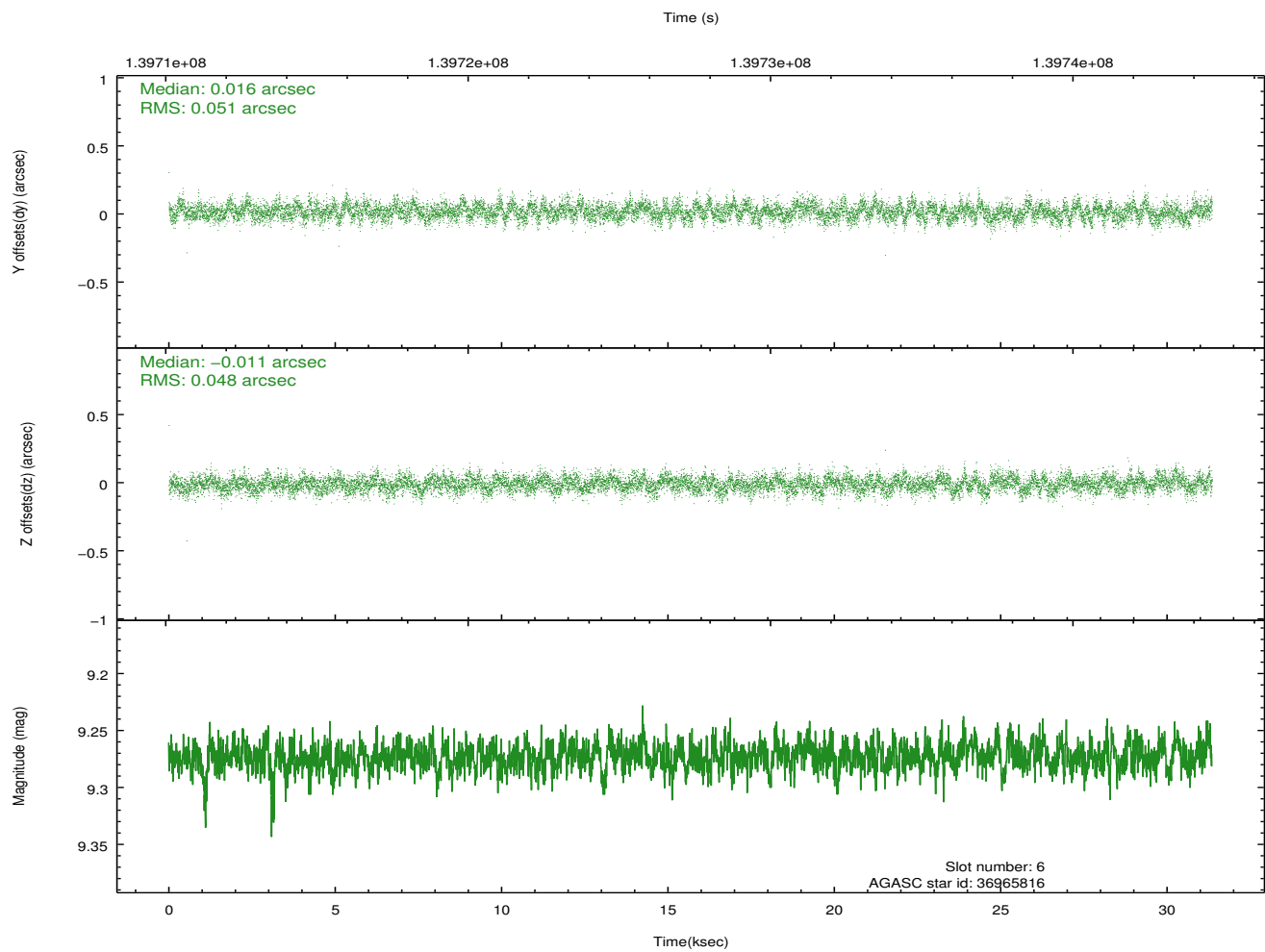
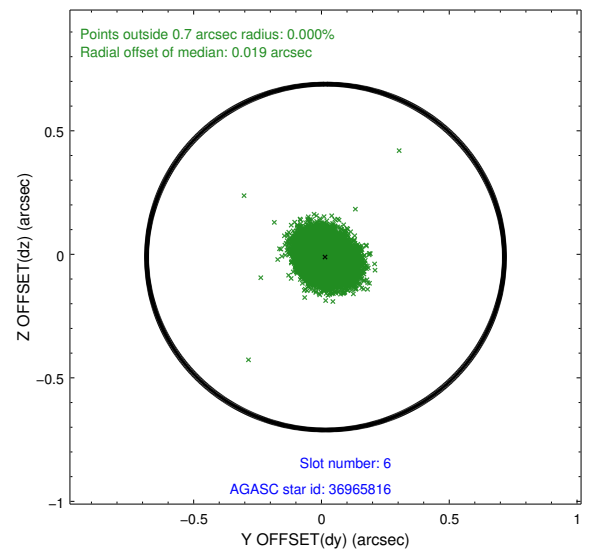
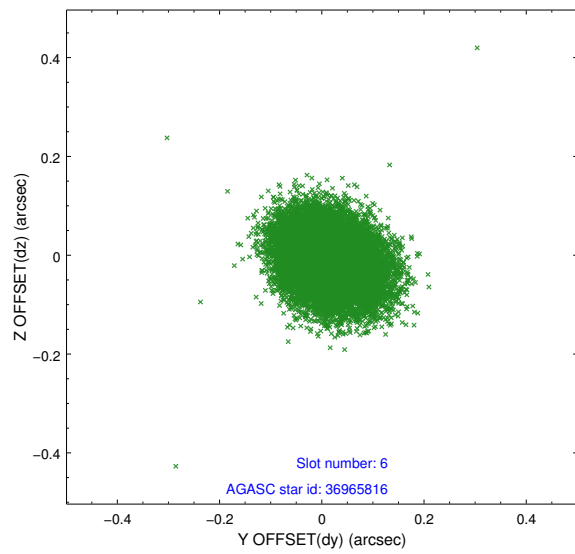
Time (s)



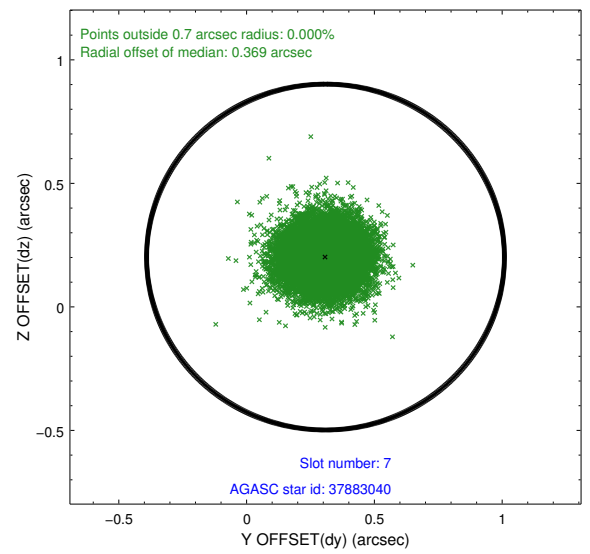
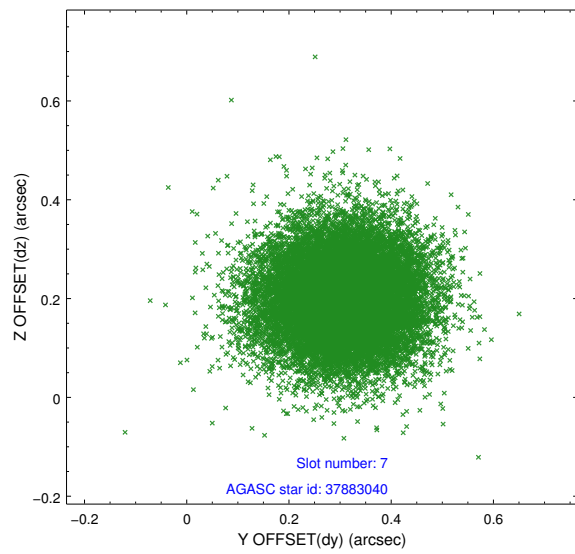
### 2.4.3 Slot 5



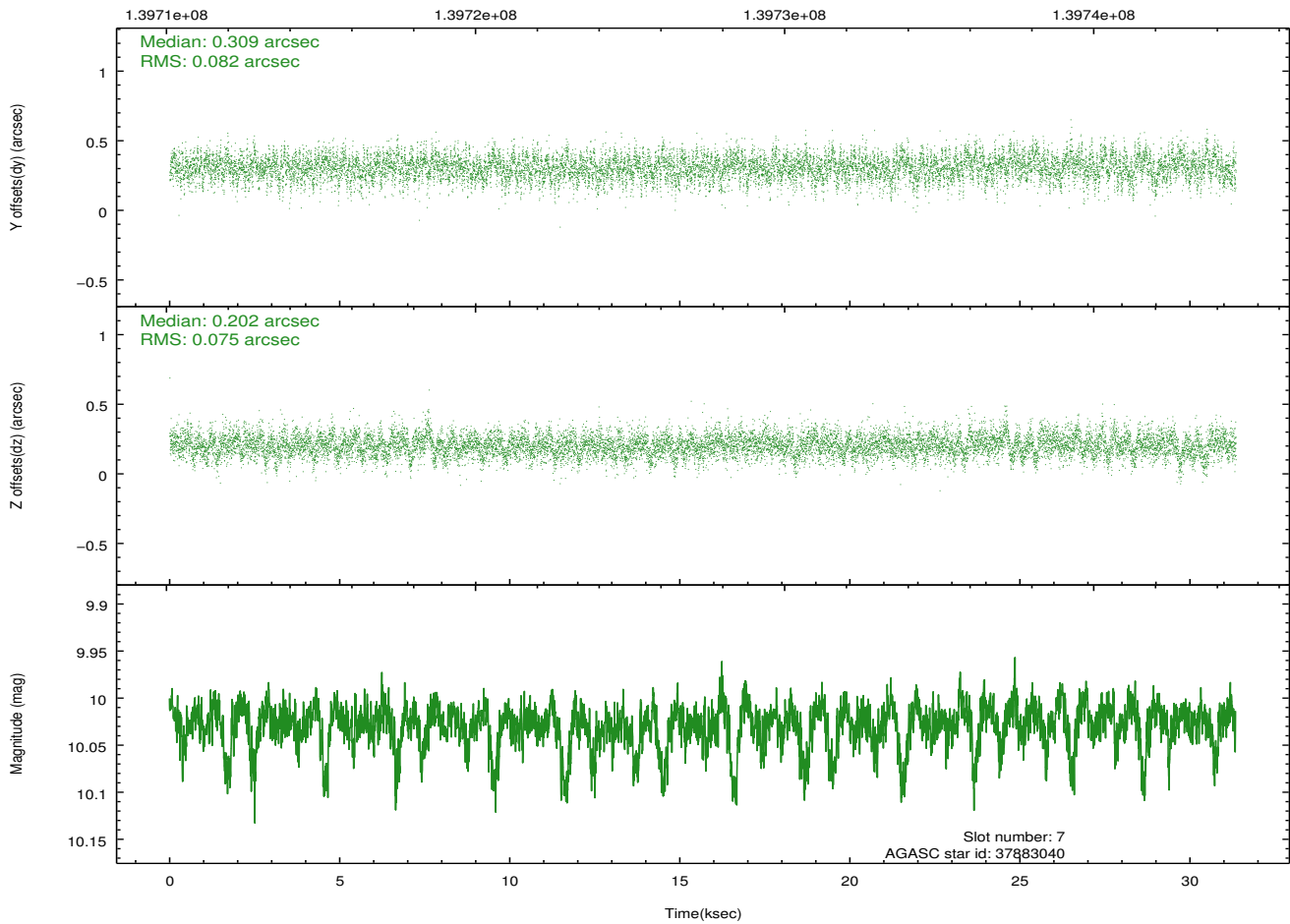
## 2.4.4 Slot 6



## 2.4.5 Slot 7

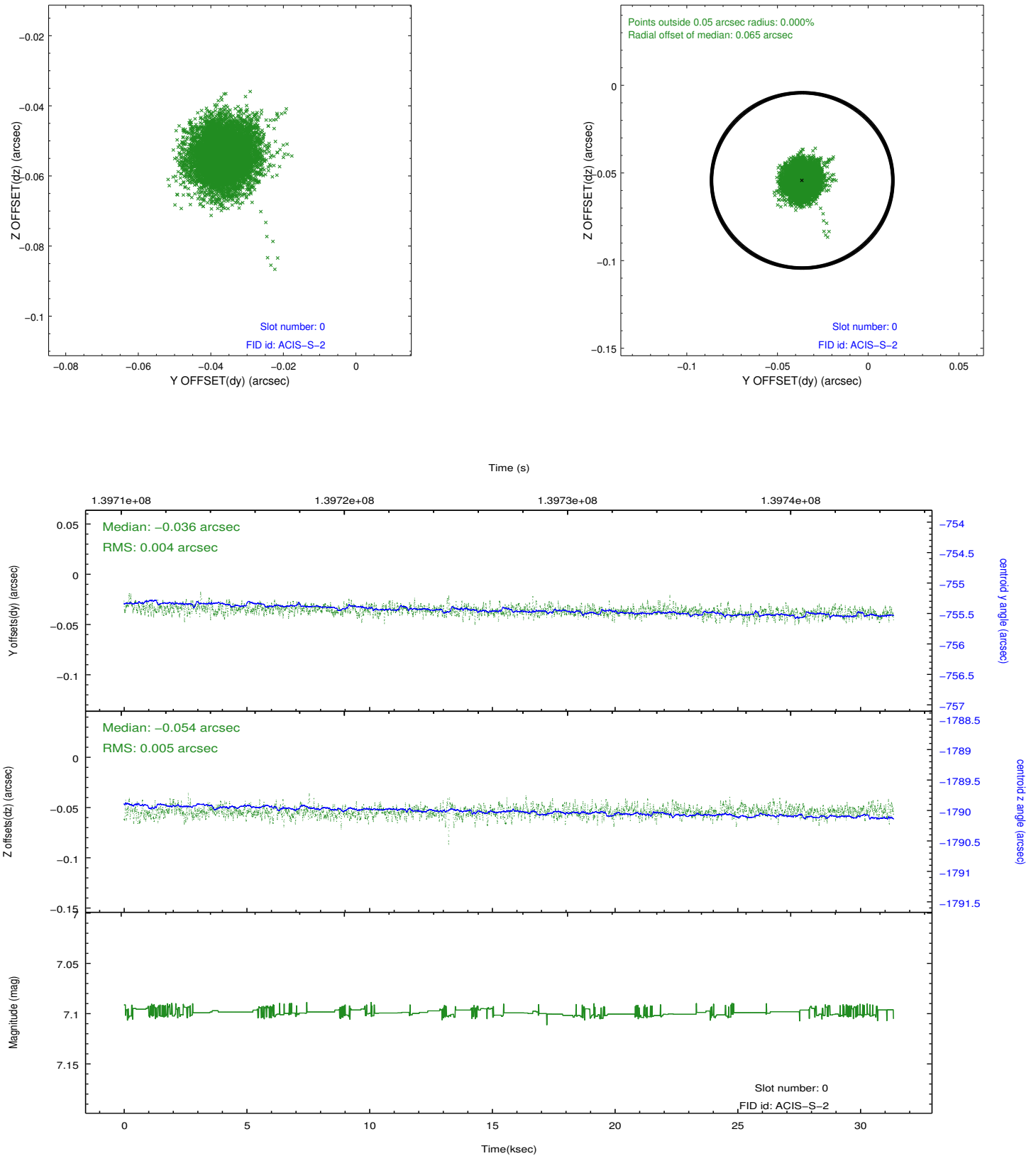


Time (s)

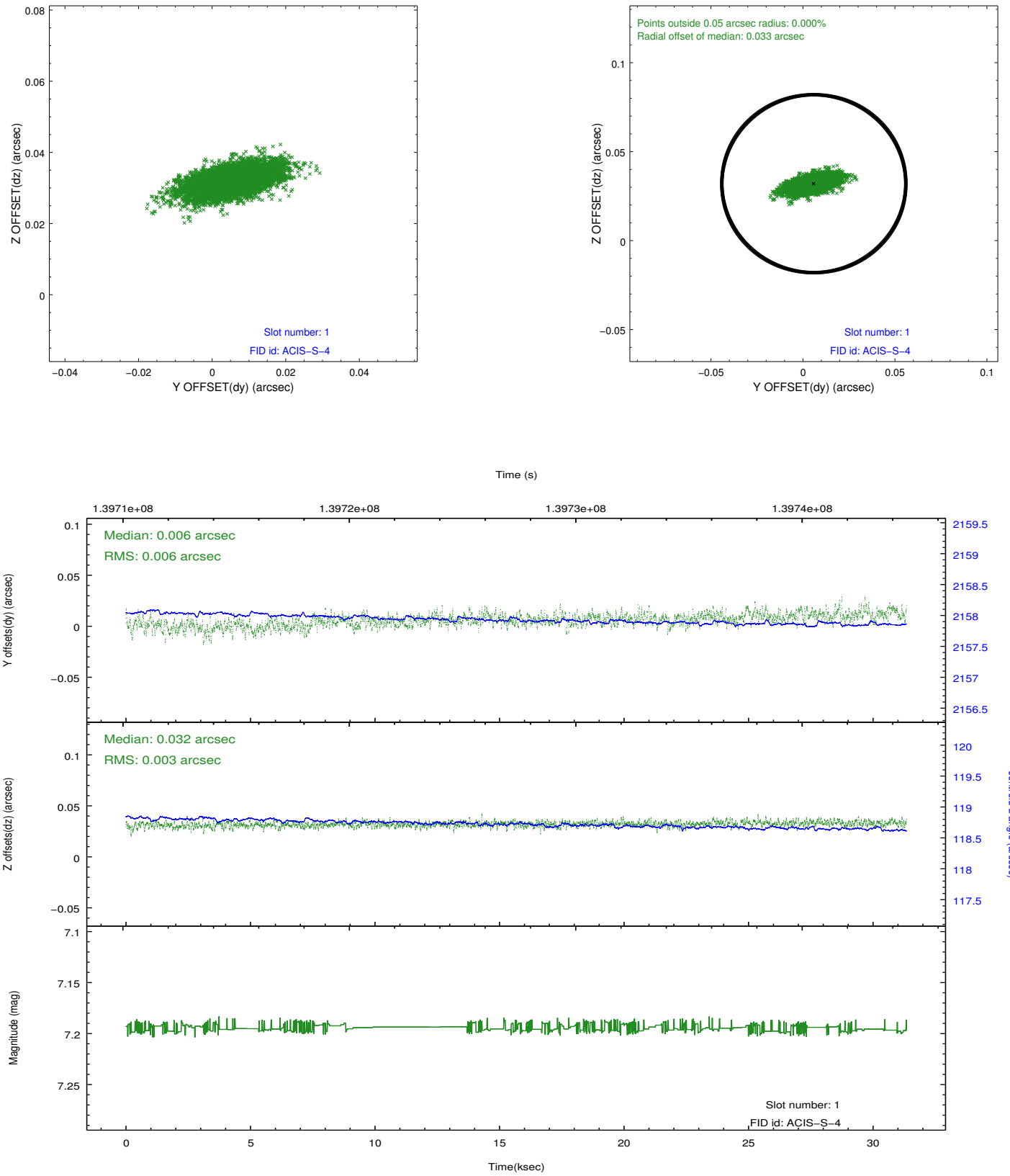


## 2.5 FID Slots

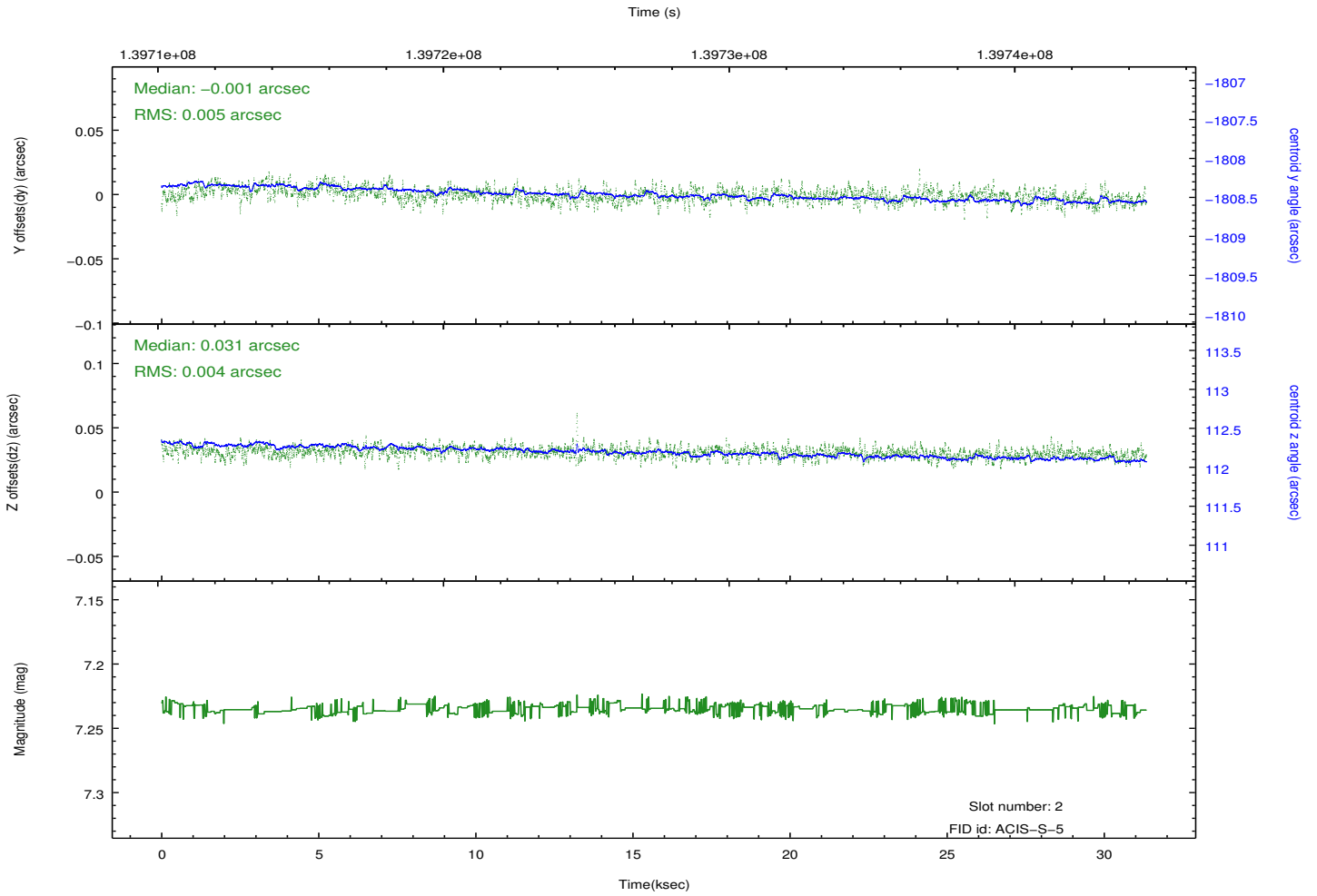
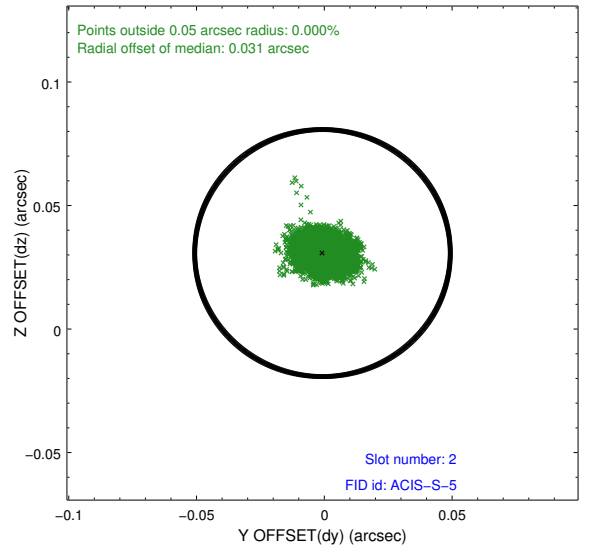
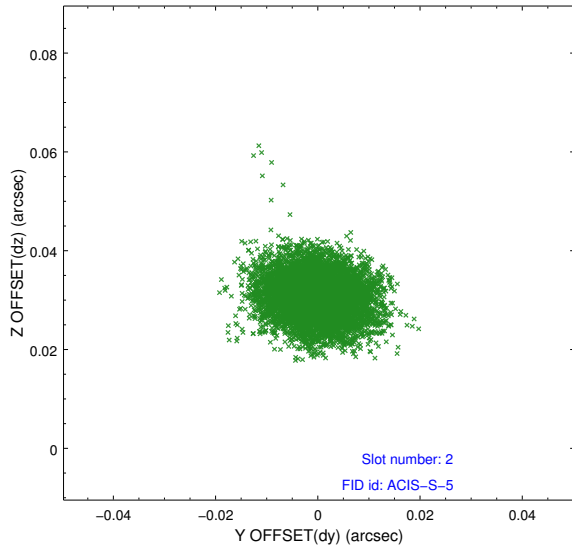
### 2.5.1 Slot 0



## 2.5.2 Slot 1

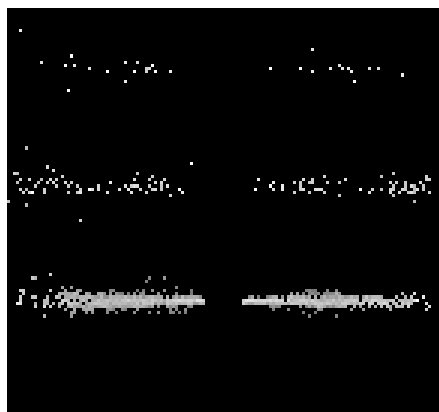


### 2.5.3 Slot 2

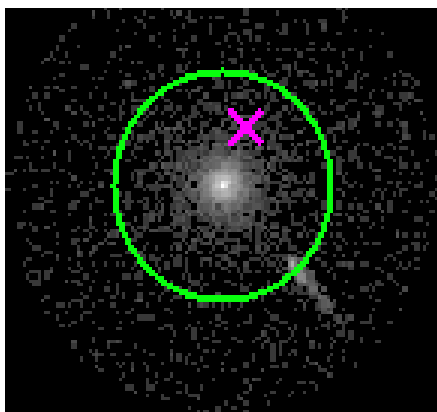


### 3 Gratings

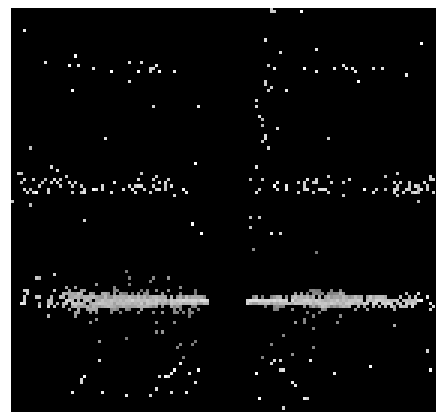
#### 3.1 HEG Arm



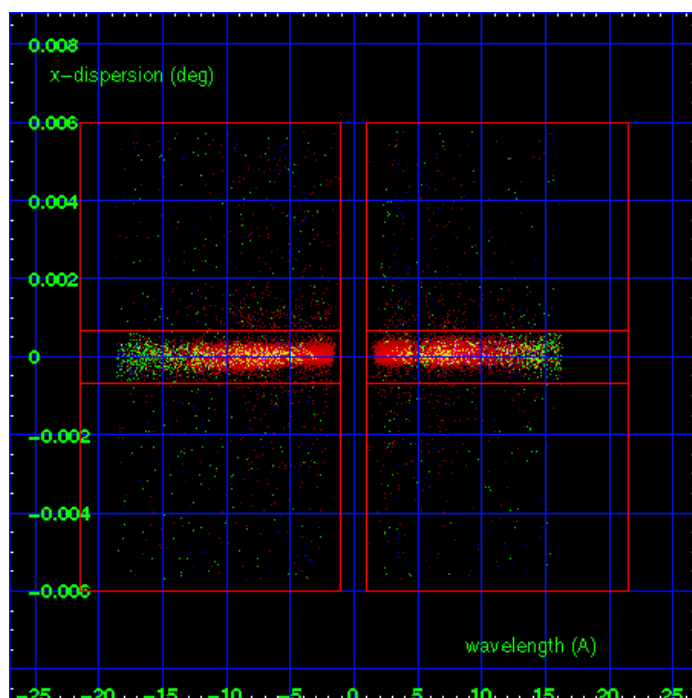
HEG Order Sort 123



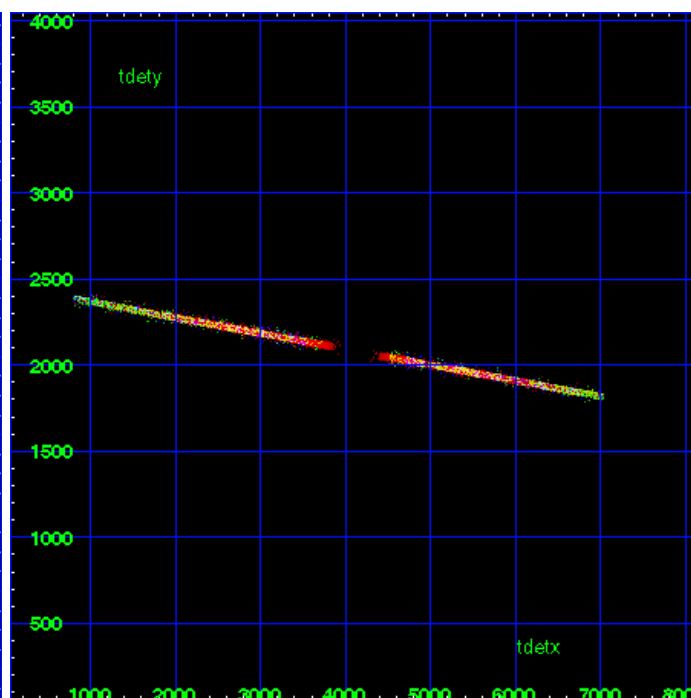
HEG Zero Order



HEG Order Sort ALL

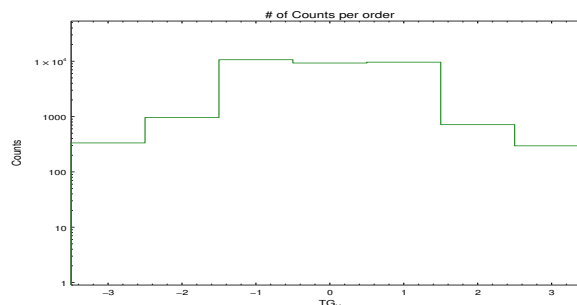


Spot Image HEG

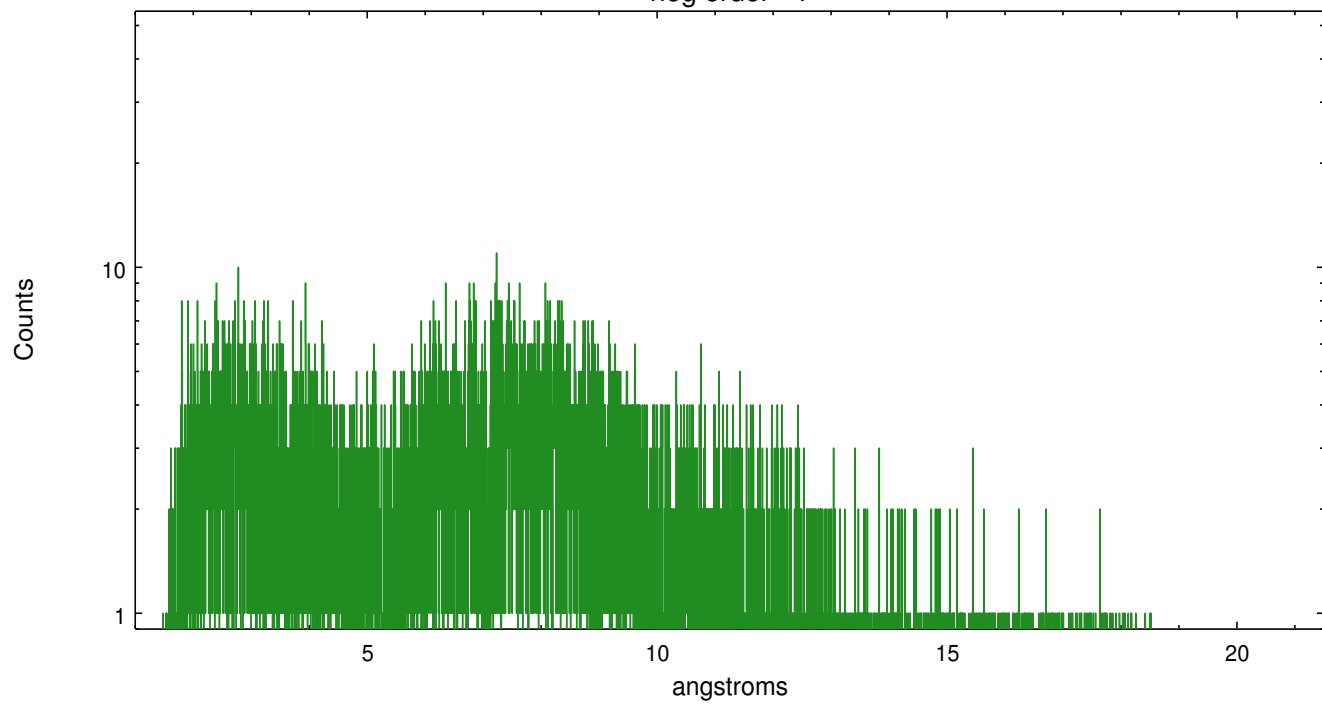


Full Detector HEG

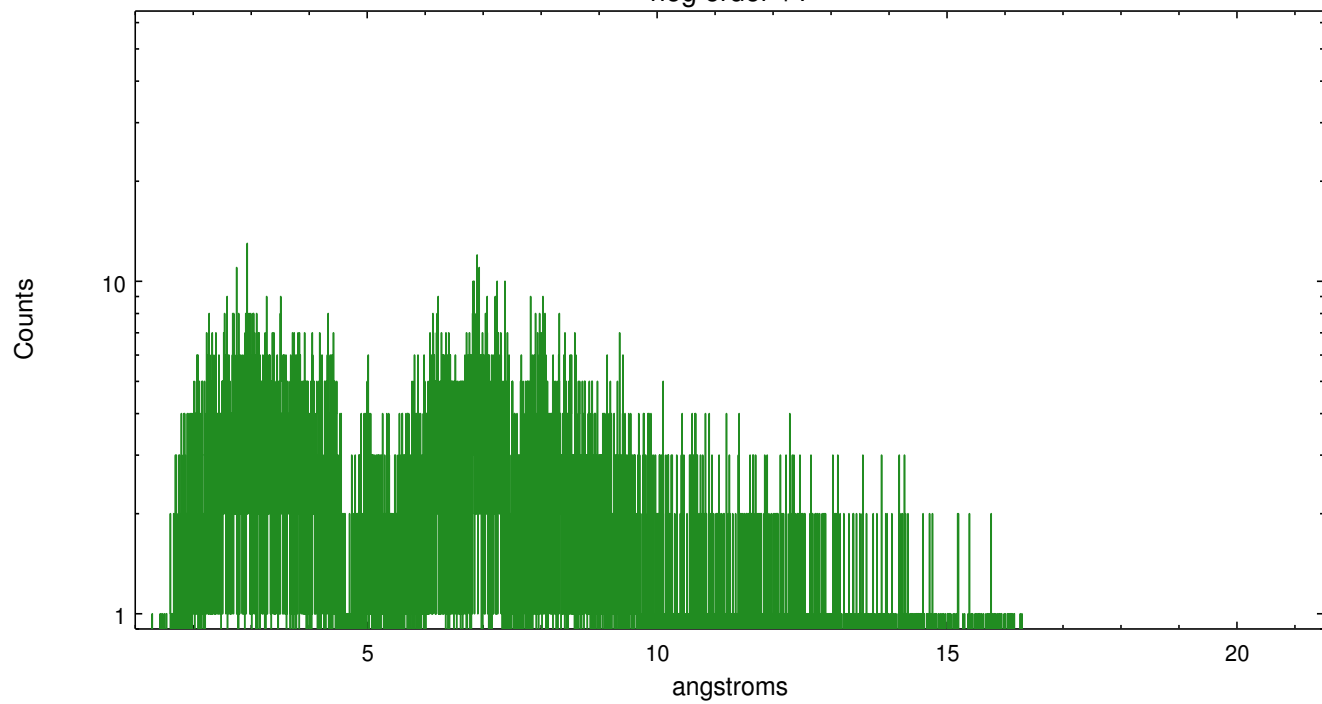
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	334	963	10667	9292	9631	715	296



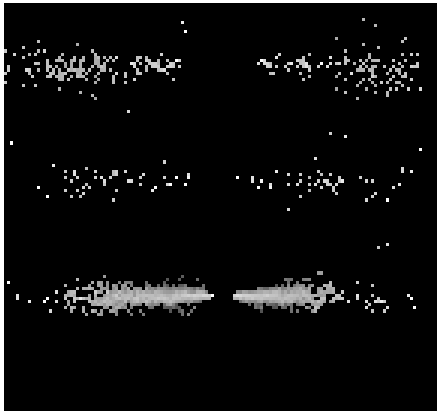
heg order -1



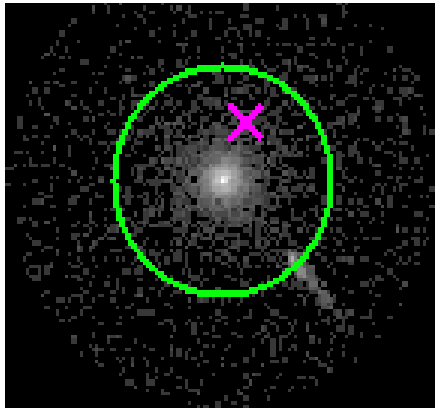
heg order +1



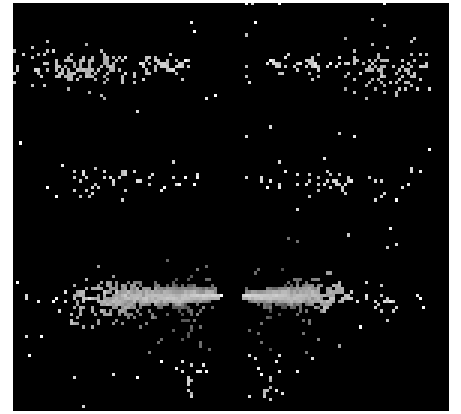
### 3.2 MEG Arm



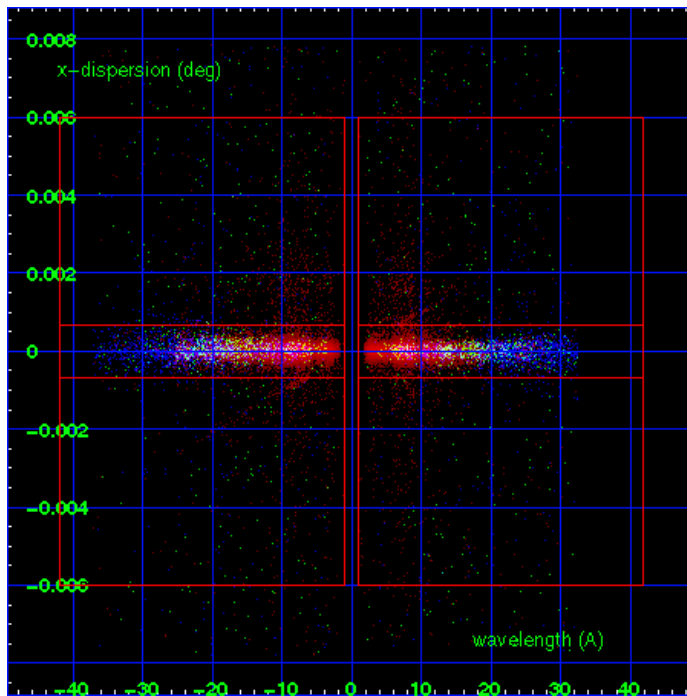
MEG Order Sort 123



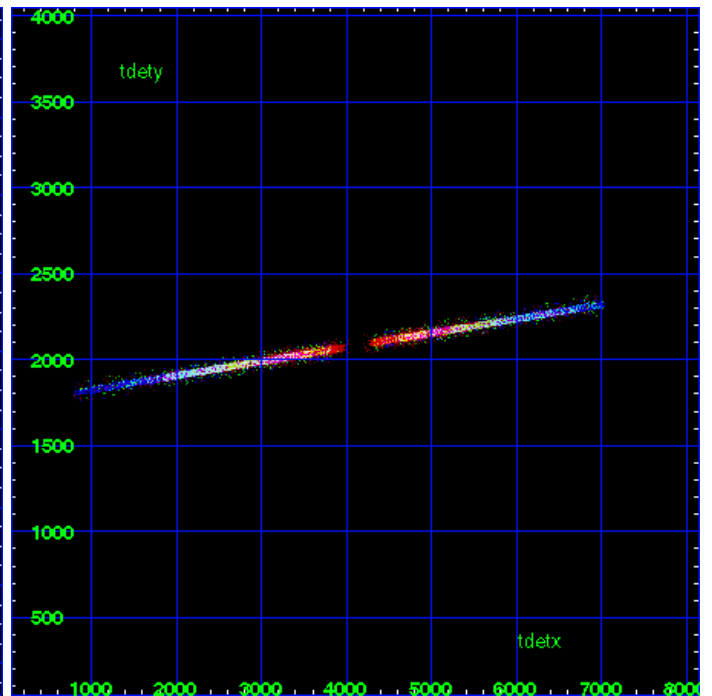
MEG Zero Order



MEG Order Sort ALL

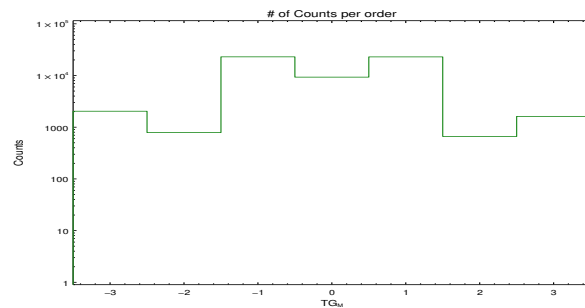


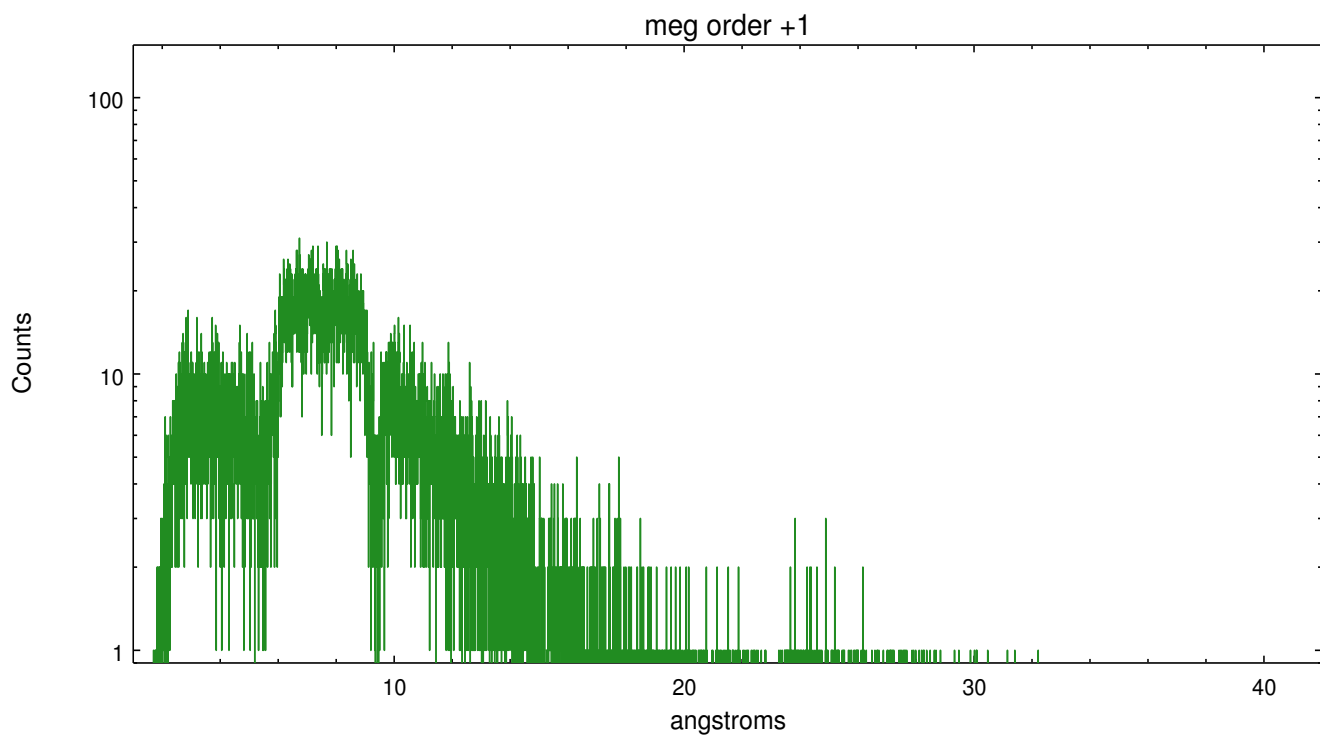
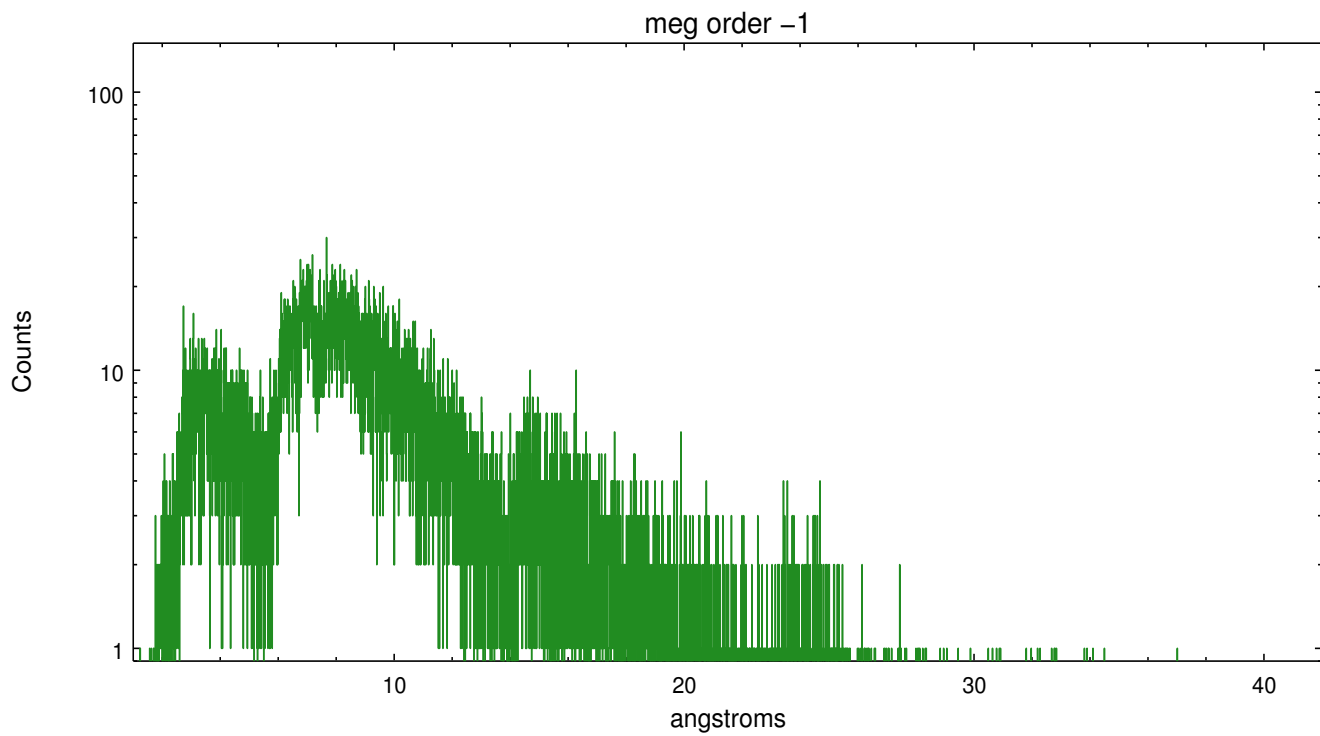
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2036	787	22972	9292	22921	662	1618





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.10.24
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.165

## 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 ( $x=4089.86$ ,  $y=4081.86$ ) 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. In this case, the additional option in `findzo` to use initial guess coordinates was used. 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.