

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 2331 - L2 Version 3  
Chandra X-Ray Center

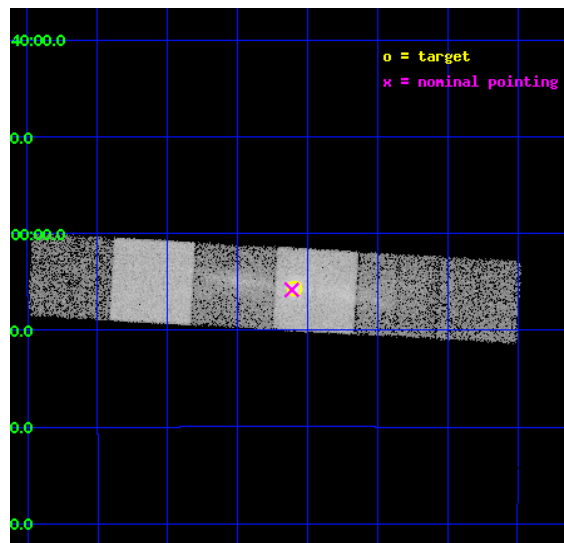
L2 Processing Date : Oct 11 2012

## 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

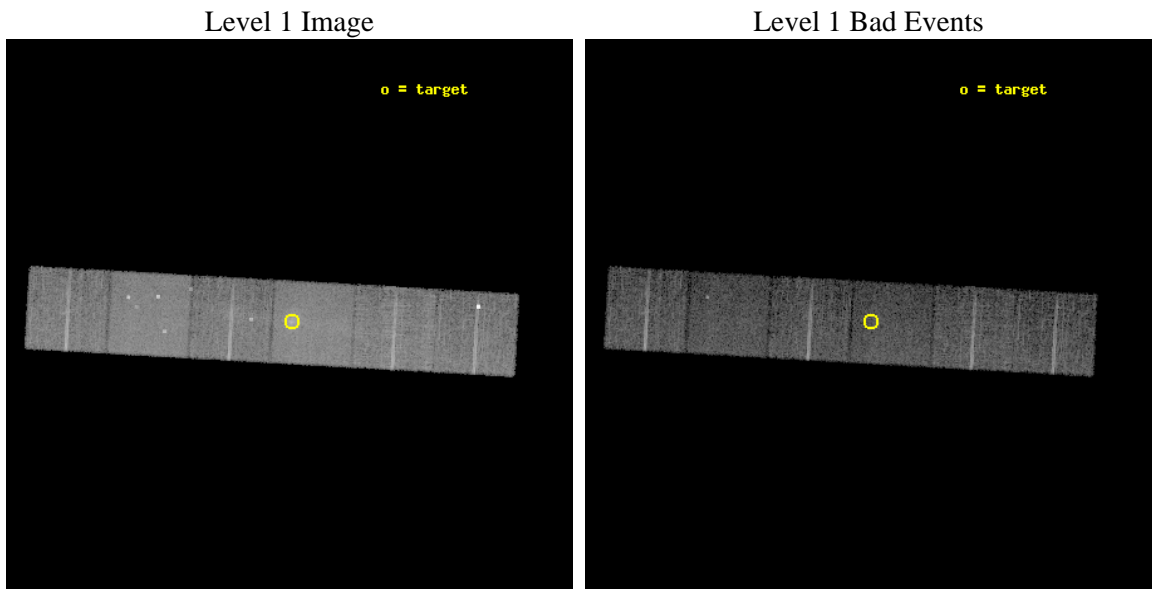
seq_num	800174	Sequence number
obs_id	2331	Observation id
title	ACIS-S/HETG OBSERVATIONS OF THE CENTRAL REGION OF THE HYDRA A CLUSTER OF GALAXIES	Proposal title
observer	Dr. J. Jernigan	Principal investigator
object	HYDRA A	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	139.52375	Observer's specified target RA [deg]
dec_targ	-12.095833	Observer's specified target Dec [deg]
ra_nom	139.52809426103	Nominal RA [deg]
dec_nom	-12.097314705688	Nominal Dec [deg]
roll_nom	3.1924733071272	Nominal Roll [deg]
revision	3	Processing version of data
ontime	9636.9287789613	Sum of GTIs [s]
livetime	9514.9001841002	Livetime [s]
ontime4	9636.9698189646	Sum of GTIs [s]
ontime5	9636.887738958	Sum of GTIs [s]
ontime6	9636.8466989696	Sum of GTIs [s]
ontime7	9636.9287789613	Sum of GTIs [s]
ontime8	9636.8056589663	Sum of GTIs [s]
ontime9	9636.764618963	Sum of GTIs [s]
l2events	107399	Number of level 2 events



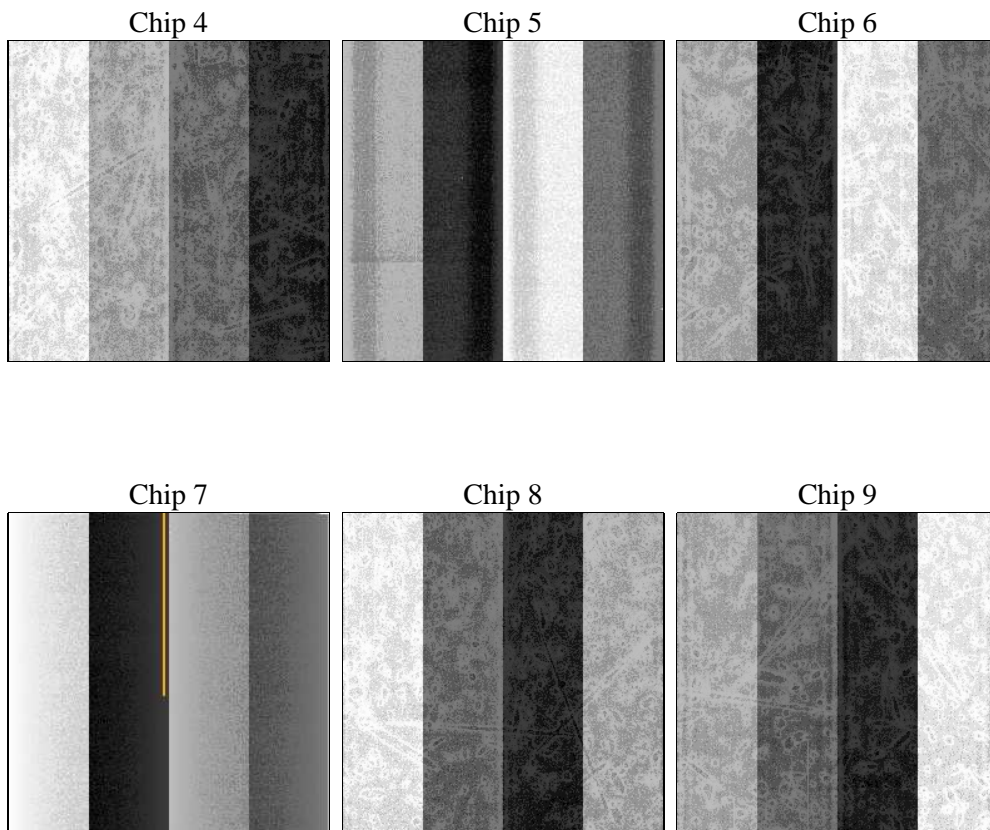
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	9700.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	9636.9287789613	Sum of GTIs [s]
caldbver	4.5.1.1	&#160	ontime4	9636.9698189646	Sum of GTIs [s]
date	2012-09-16T03:00:14	Date and time of file creation	ontime5	9636.887738958	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	9636.8466989696	Sum of GTIs [s]
			ontime7	9636.9287789613	Sum of GTIs [s]
			ontime8	9636.8056589663	Sum of GTIs [s]
			ontime9	9636.764618963	Sum of GTIs [s]
			l1events	444751	Number of level 1 events

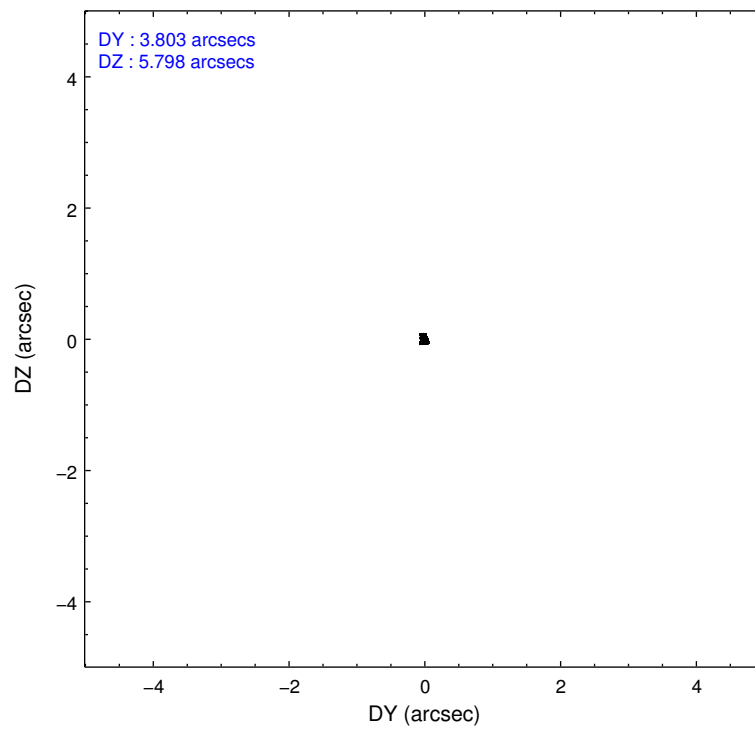
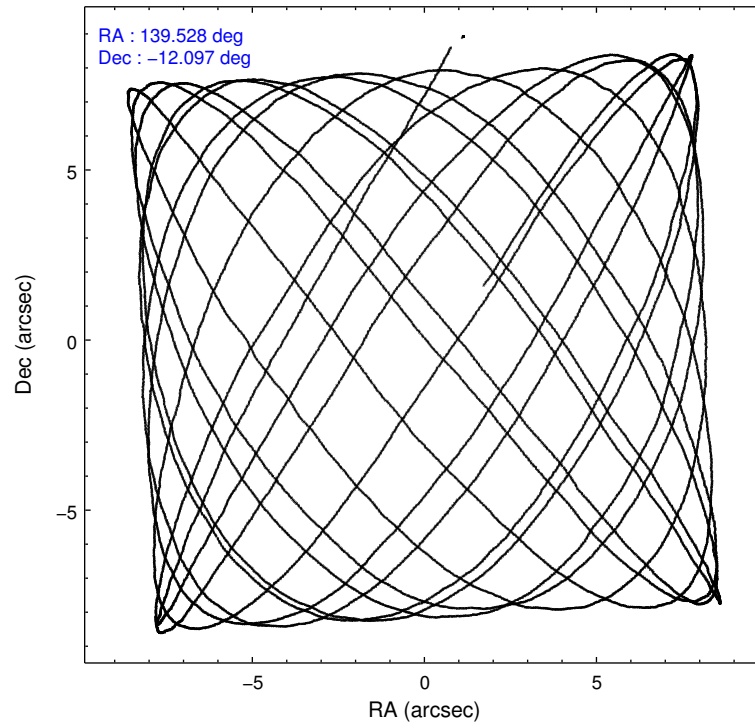
### 2.1.4 Events

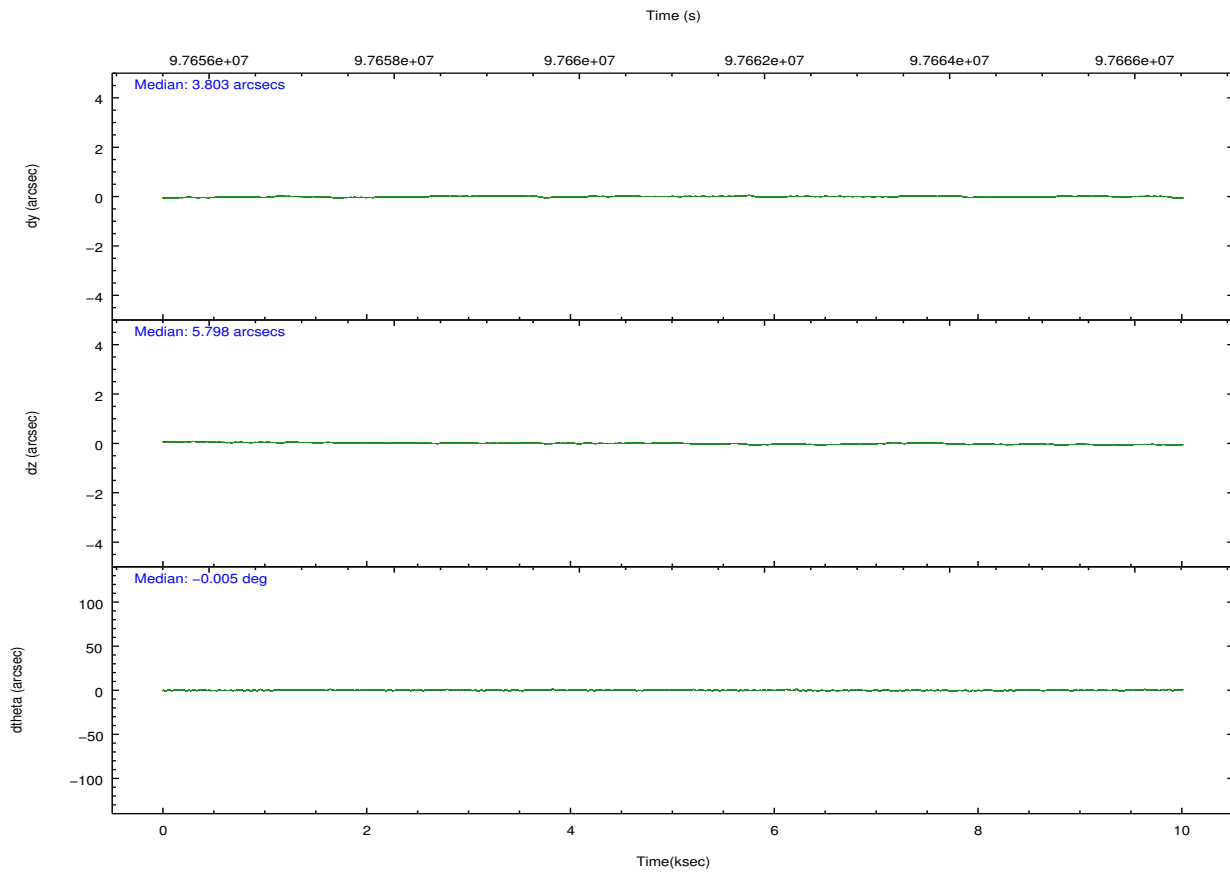
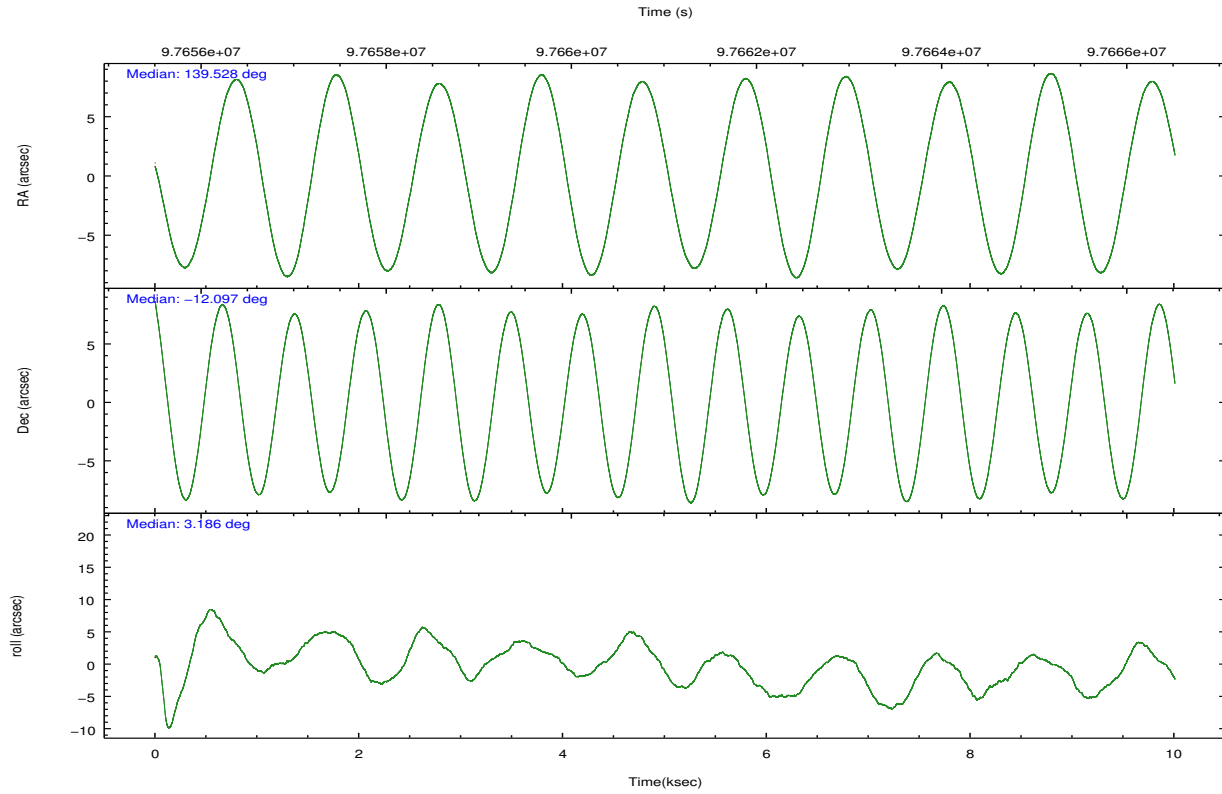
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	64768	83947	64754	85834	75836	69612	grade 0 events	3011	6577	7460	5609	6789	7705
rejected events	57650	44152	52324	44216	58689	51922		4%	7%	11%	6%	8%	11%
rejected %	89%	52%	80%	51%	77%	74%	grade 1 events	31	423	43	64	46	37
								0%	0%	0%	0%	0%	0%
							grade 2 events	1647	10763	1888	8758	3358	7209
								2%	12%	2%	10%	4%	10%
							grade 3 events	681	1721	798	4012	1605	749
								1%	2%	1%	4%	2%	1%
							grade 4 events	614	1635	854	4019	1519	671
								0%	1%	1%	4%	2%	0%
							grade 5 events	2105	6162	2391	7264	3191	2480
								3%	7%	3%	8%	4%	3%
							grade 6 events	1168	19130	1435	19250	3881	1368
								1%	22%	2%	22%	5%	1%
							grade 7 events	55511	37536	49885	36858	55447	49393
								85%	44%	77%	42%	73%	70%

## 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	139.504853	139.5280942610297	Subarray requested	NONE	NONE
[deg] Pointing Dec	-12.112497	-12.09731470568773	Alternating exposures requested	N	N
[deg] Pointing Roll	3.030971	3.192473307127171	[s] Primary exposure time	0.000000	3.2
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	97656319.184000	97655305.527536			
Observation start date	2001-02-04T06:44:15	2001-02-04T06:28:25			
[s] Observation end time (MET)	97666019.184000	97667312.890498			
Observation end date	2001-02-04T09:25:55	2001-02-04T09:48:32			
Read mode	TIMED	TIMED			

## 2.3 Aspect



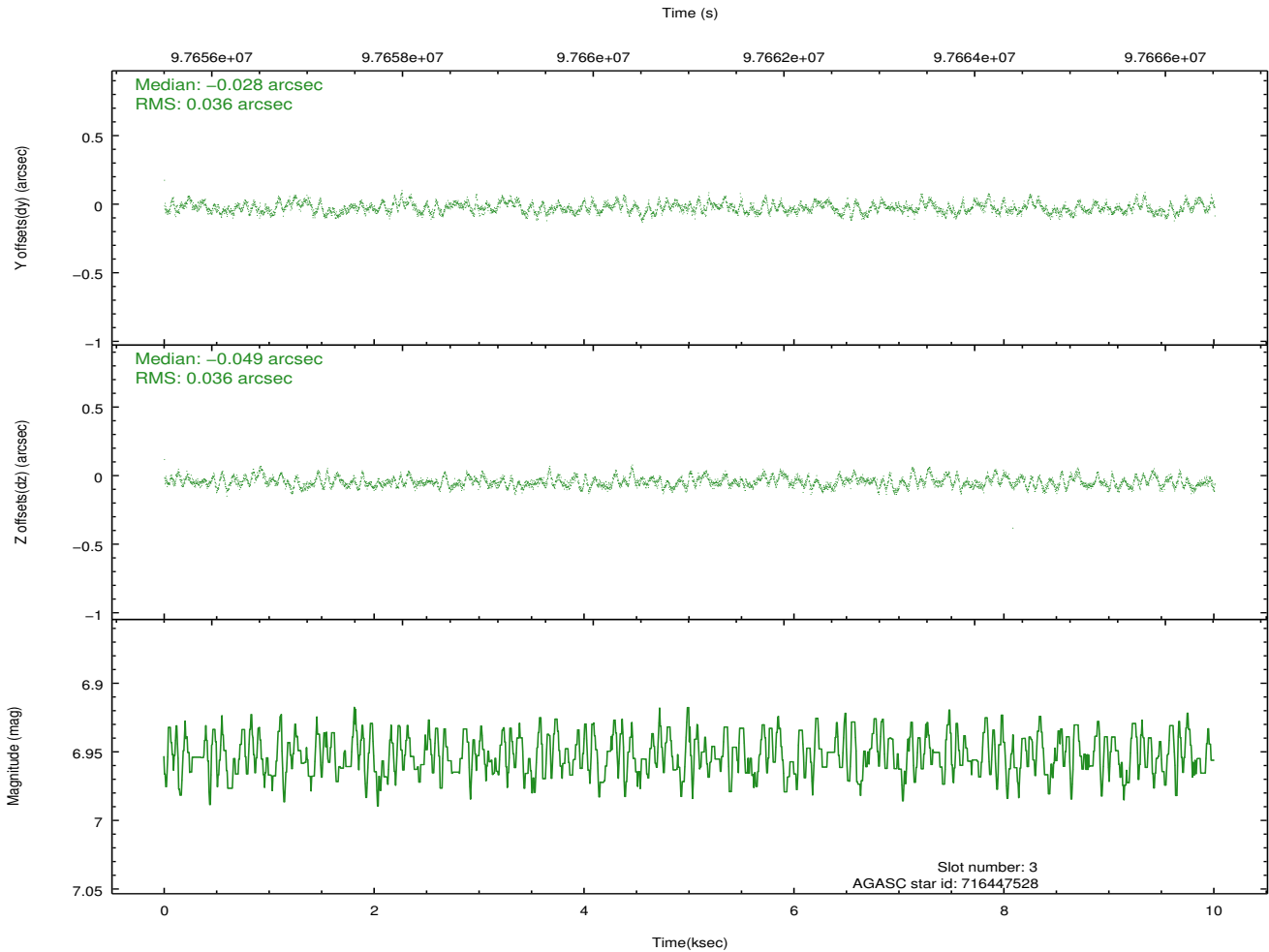
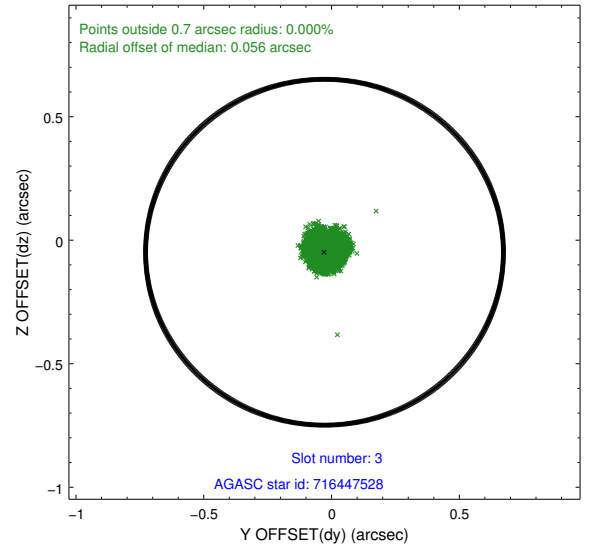
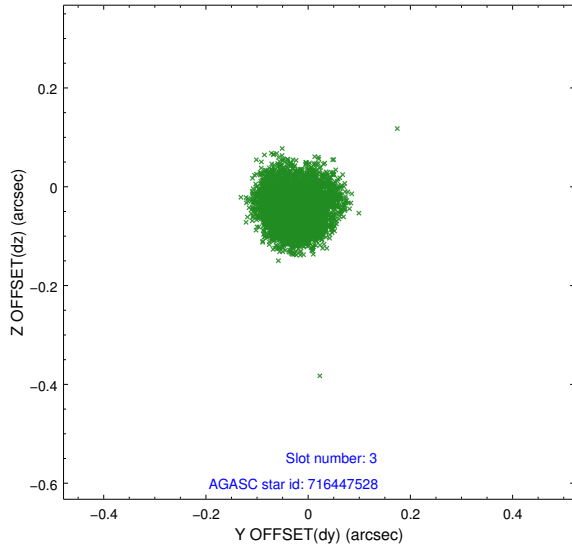


### Slot Statistics

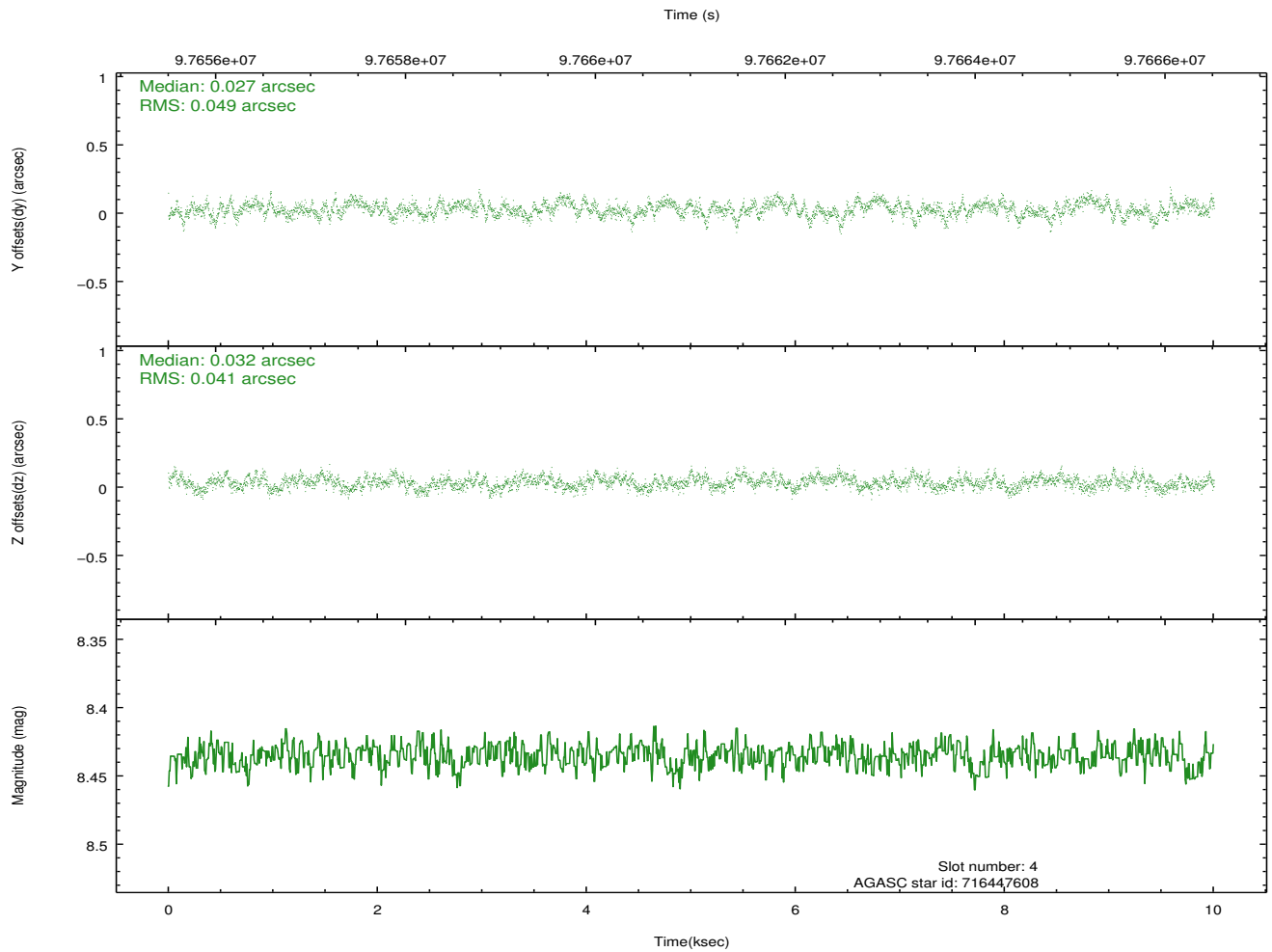
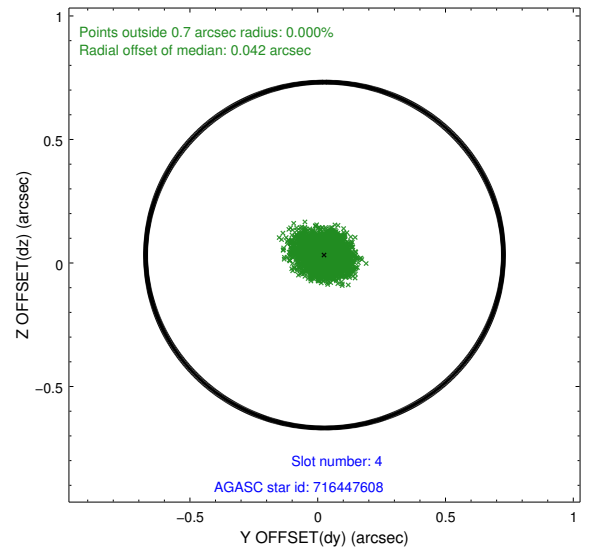
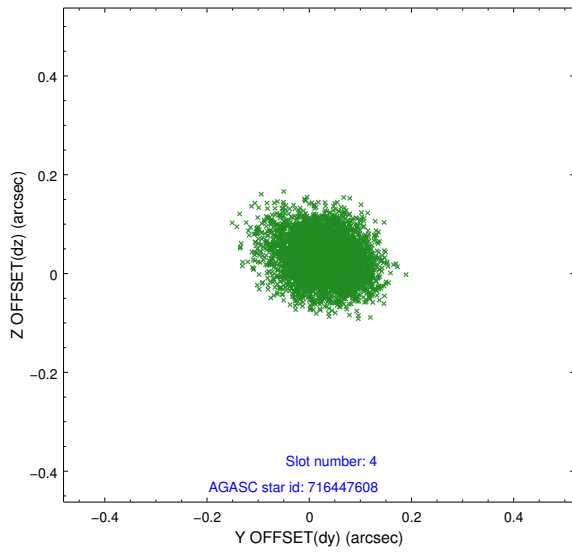
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.12	2442	-0.028	0.000	0.007	0.011	0.000000	0.000000	-756.45	-1726.94
1	FID	ACIS-S-4	7.20	2442	0.001	0.013	0.006	0.011	0.000000	0.000000	2156.58	181.07
2	FID	ACIS-S-5	7.24	2442	-0.004	-0.005	0.007	0.011	0.000000	0.000000	-1808.63	175.24
3	GUIDE	716447528	6.95	4882	-0.028	-0.049	0.055	0.088	139.371683	-11.961966	-439.49	565.64
4	GUIDE	716447608	8.44	4883	0.027	0.032	0.067	0.111	139.107687	-11.923612	-1360.93	751.95
5	GUIDE	716578656	9.09	4878	-0.013	0.019	0.093	0.147	140.216745	-12.561448	2412.65	-1749.24
6	GUIDE	716578888	9.25	4881	-0.073	-0.041	0.082	0.131	139.858876	-11.605741	1343.72	1754.67
7	GUIDE	716452568	9.32	4881	0.076	0.039	0.075	0.122	139.317316	-12.008019	-638.96	410.57

## 2.4 Star Slots

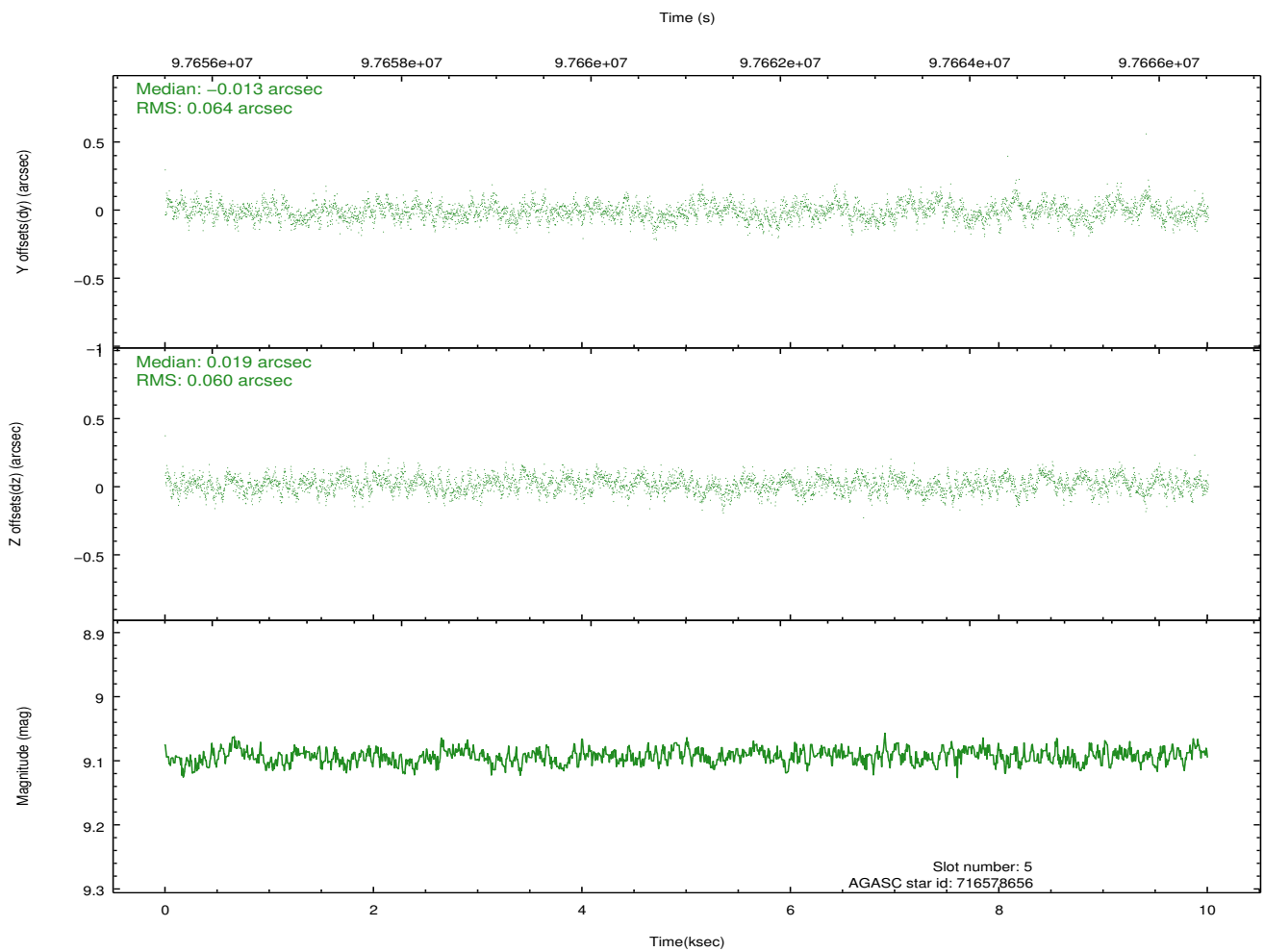
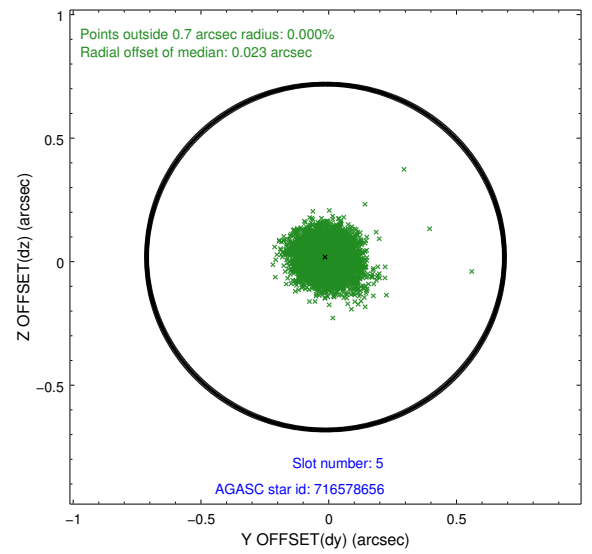
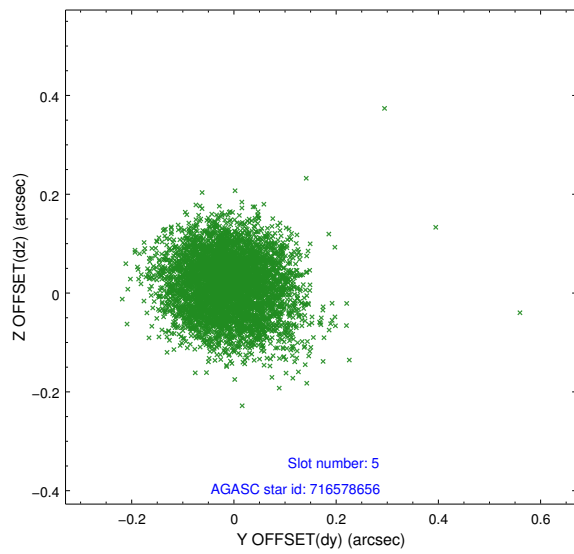
### 2.4.1 Slot 3



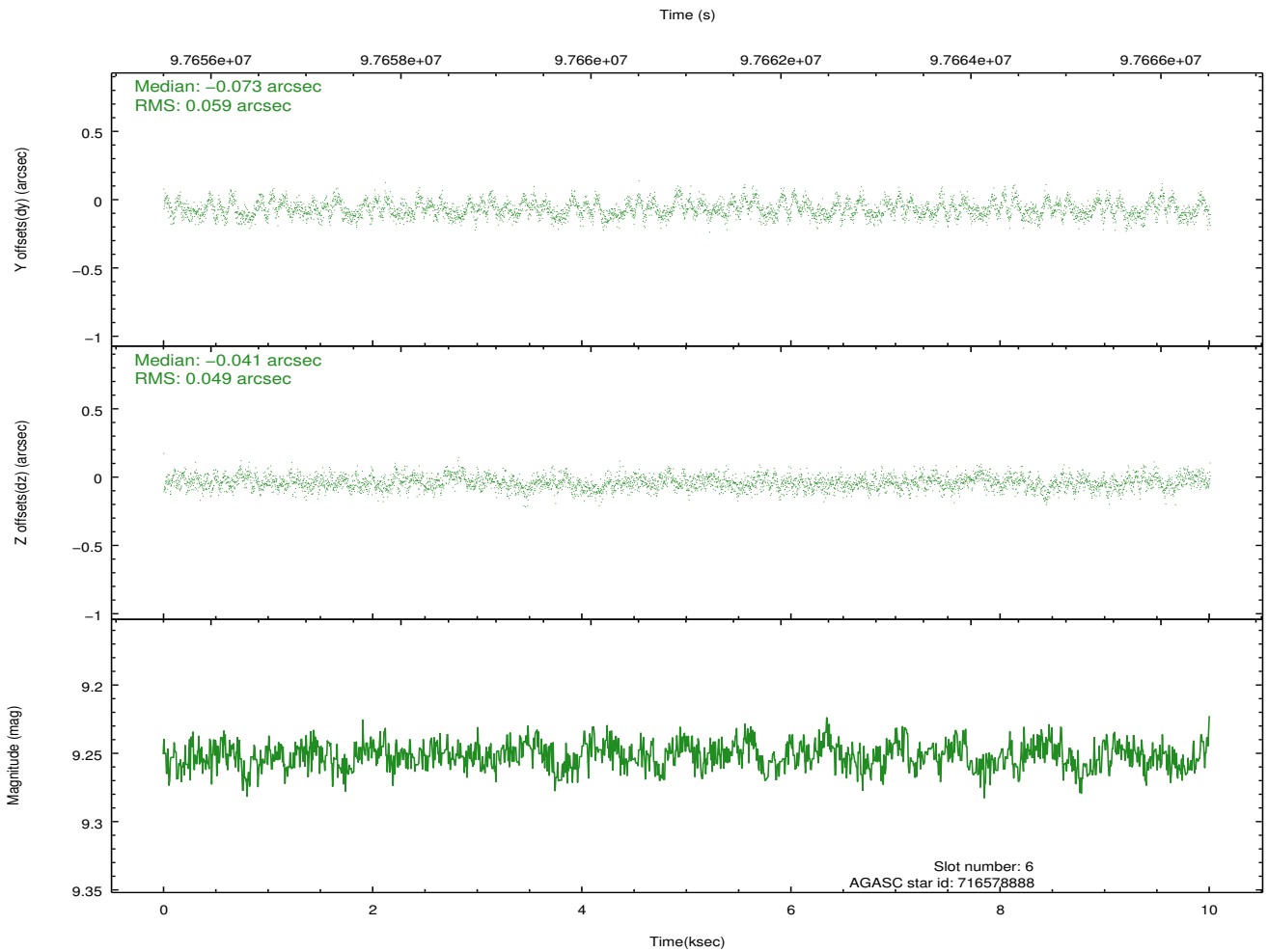
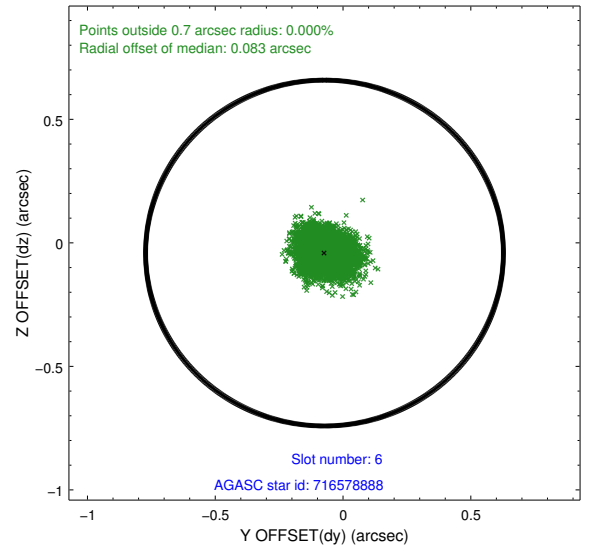
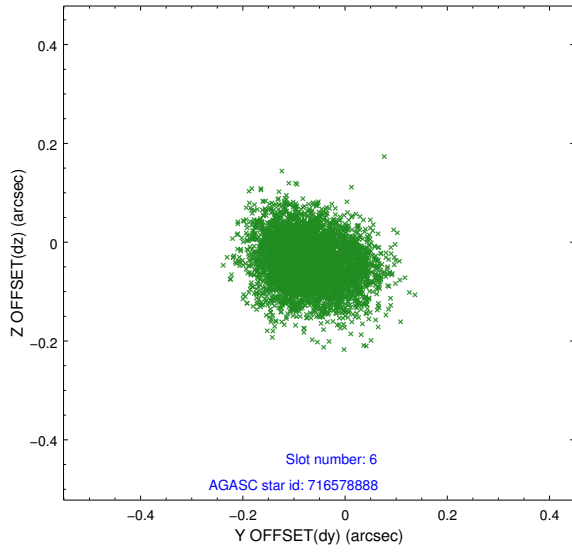
## 2.4.2 Slot 4



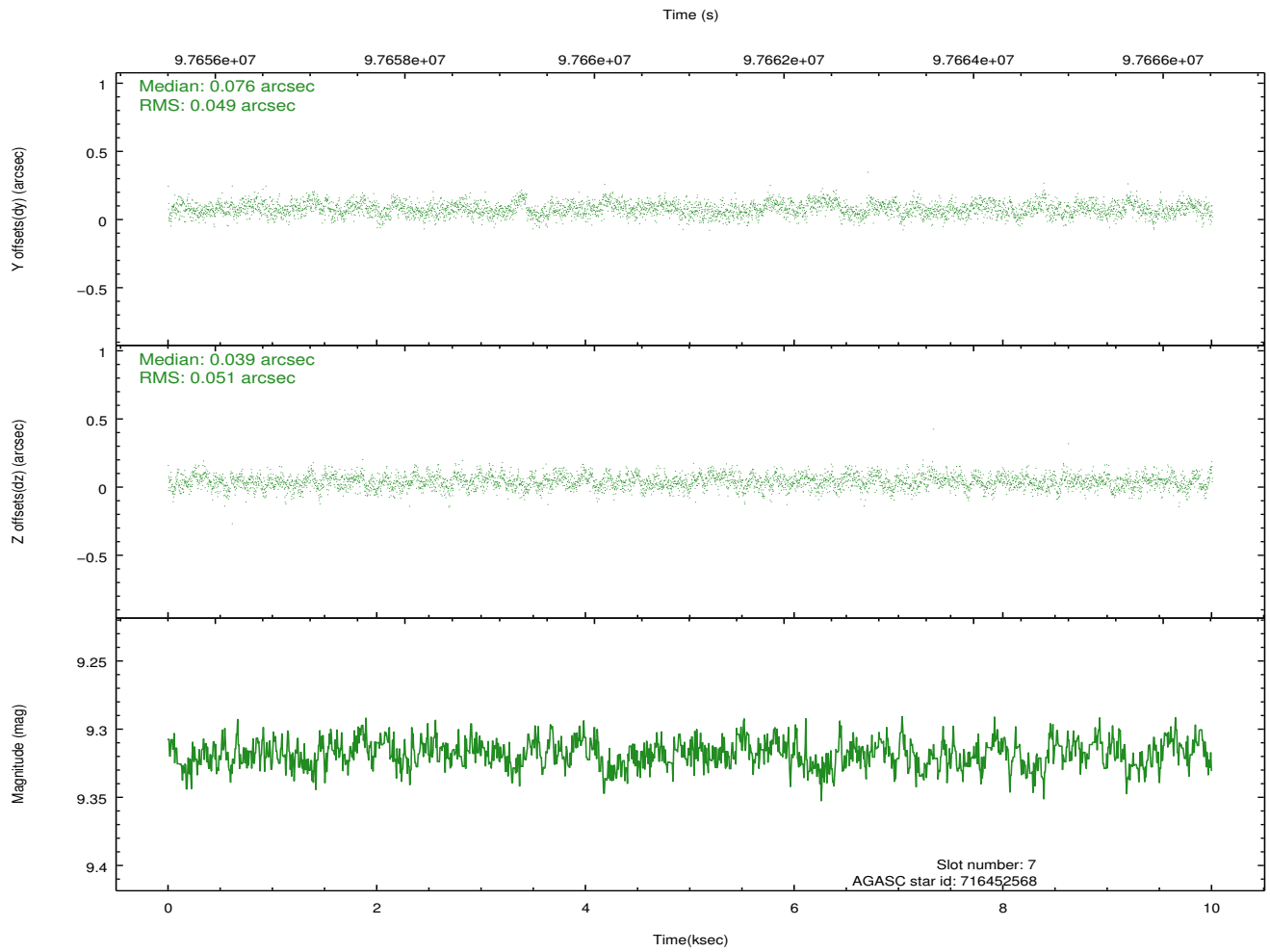
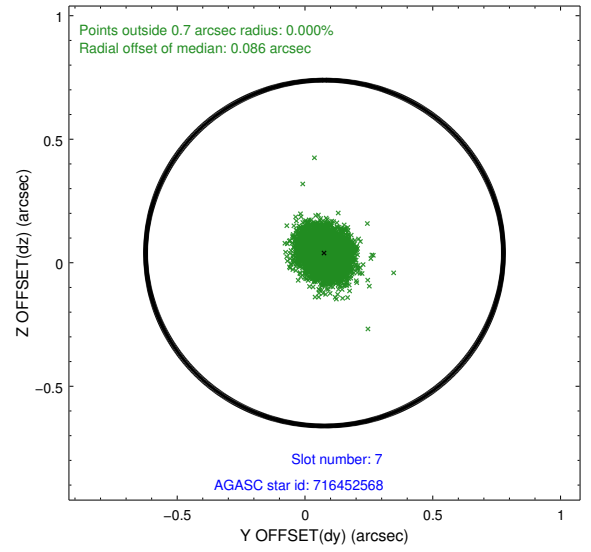
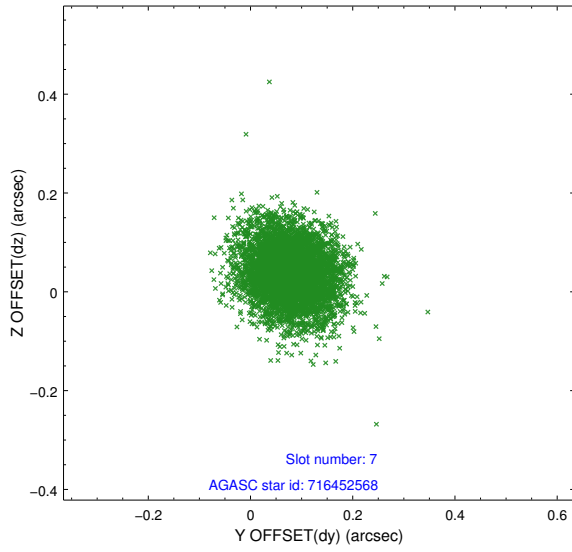
### 2.4.3 Slot 5



### 2.4.4 Slot 6

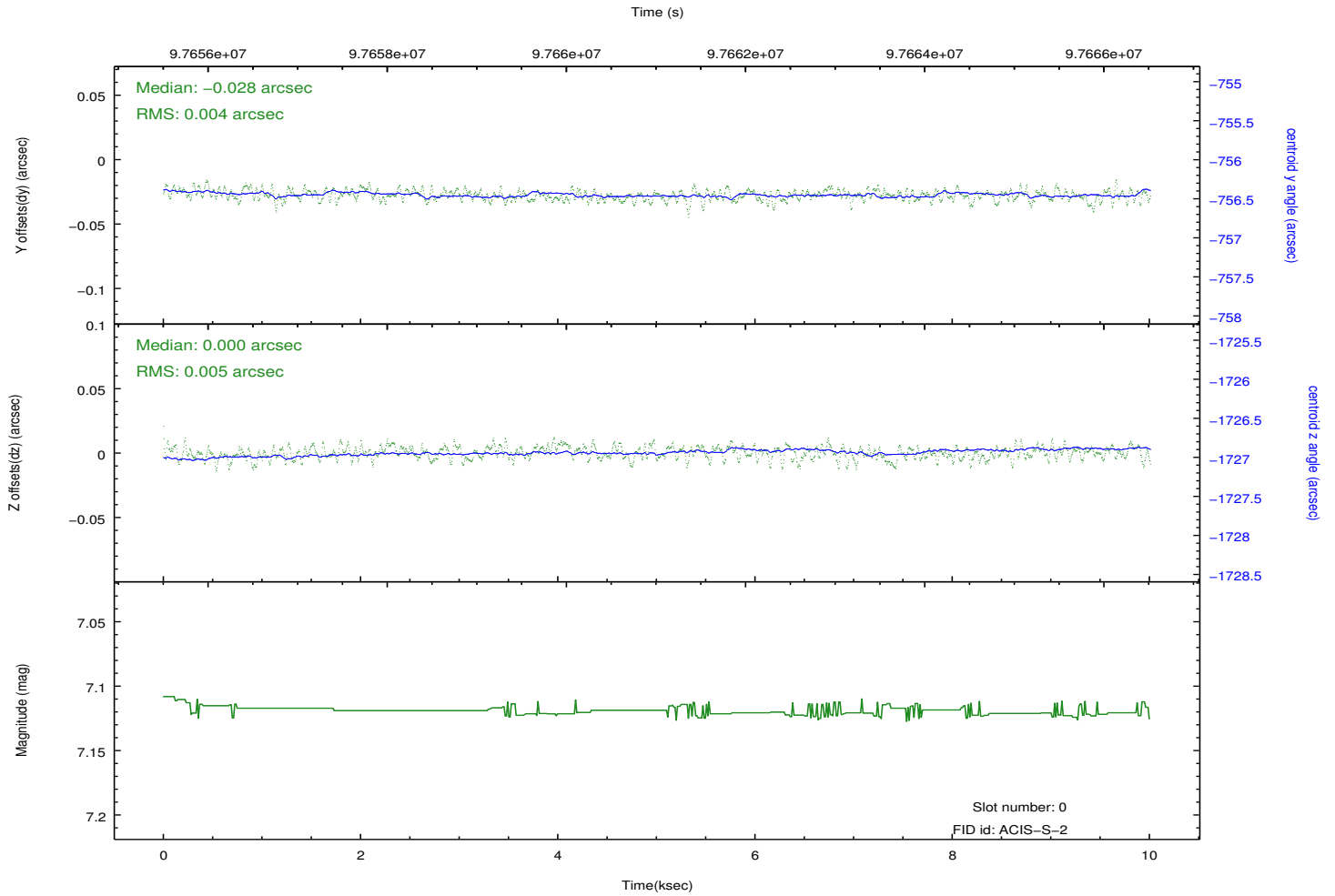
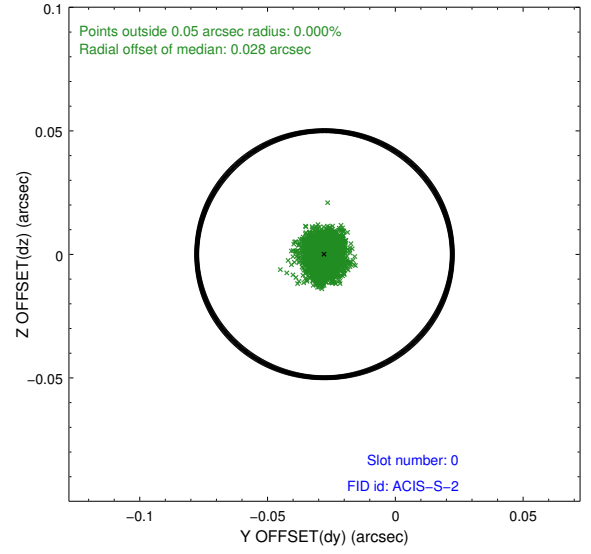
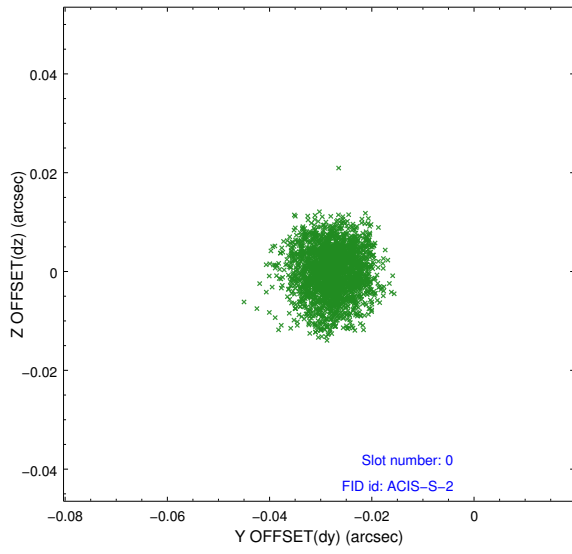


### 2.4.5 Slot 7

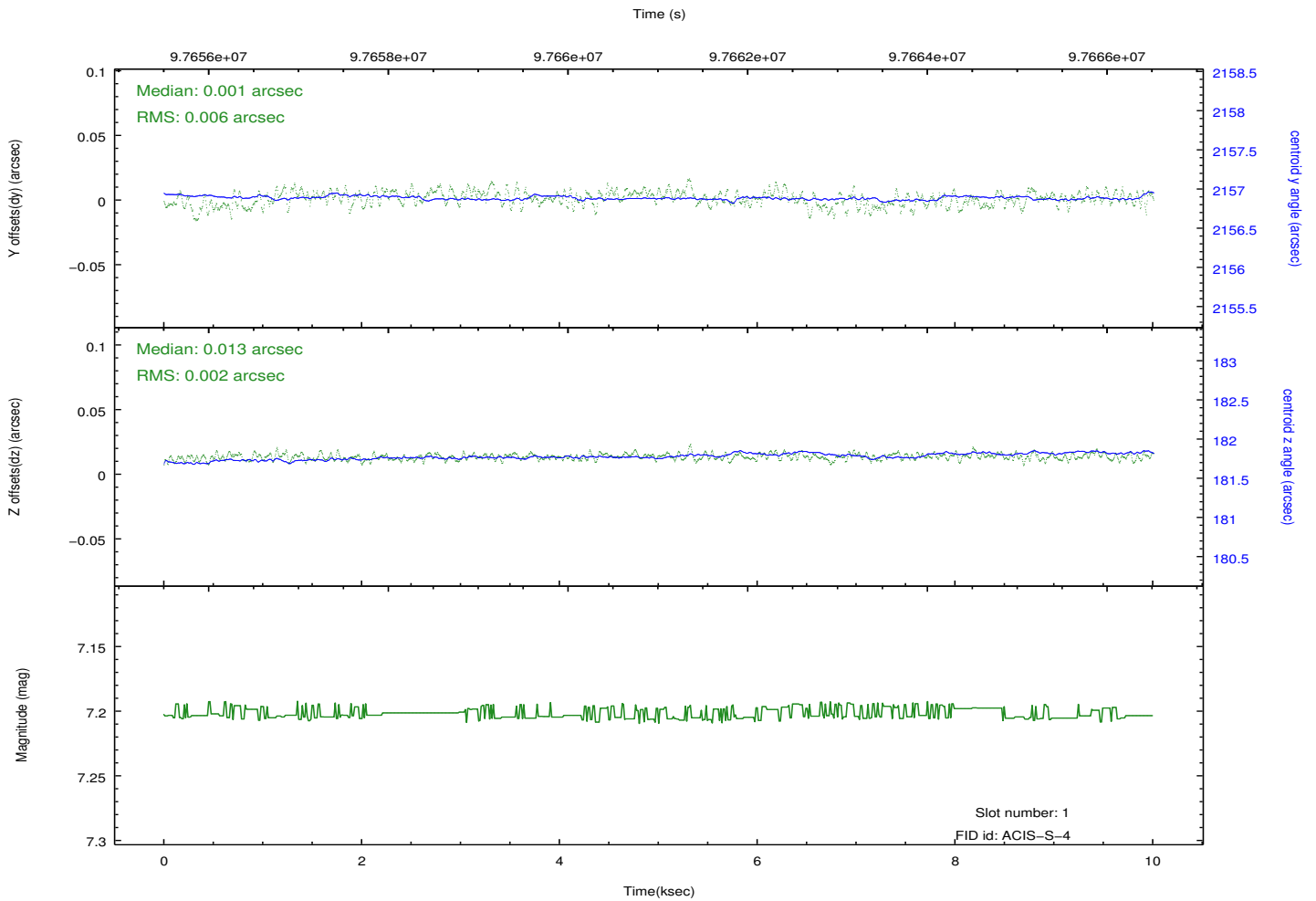
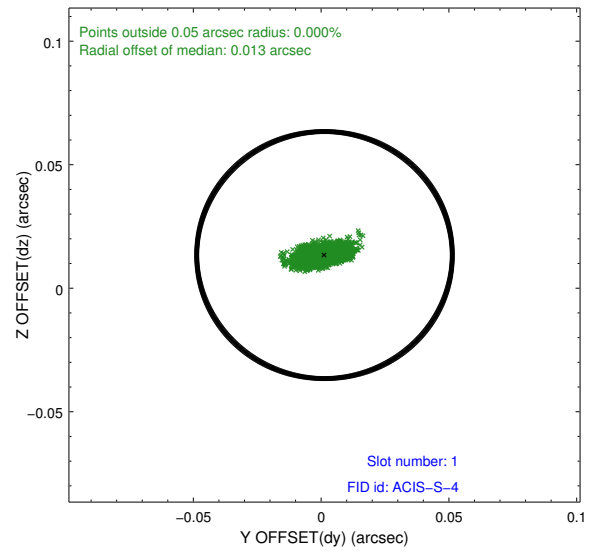
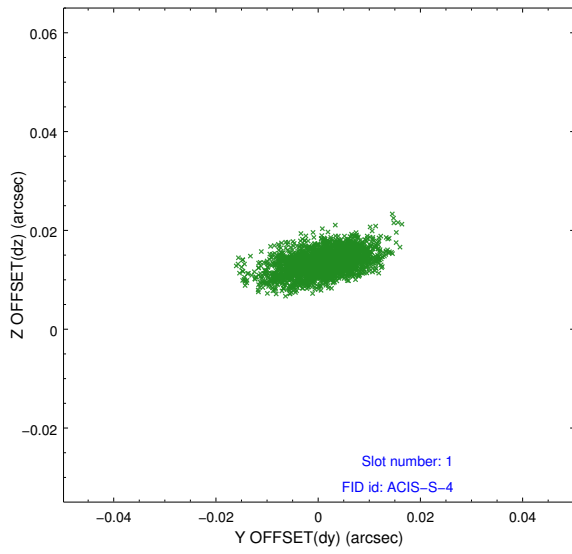


## 2.5 FID Slots

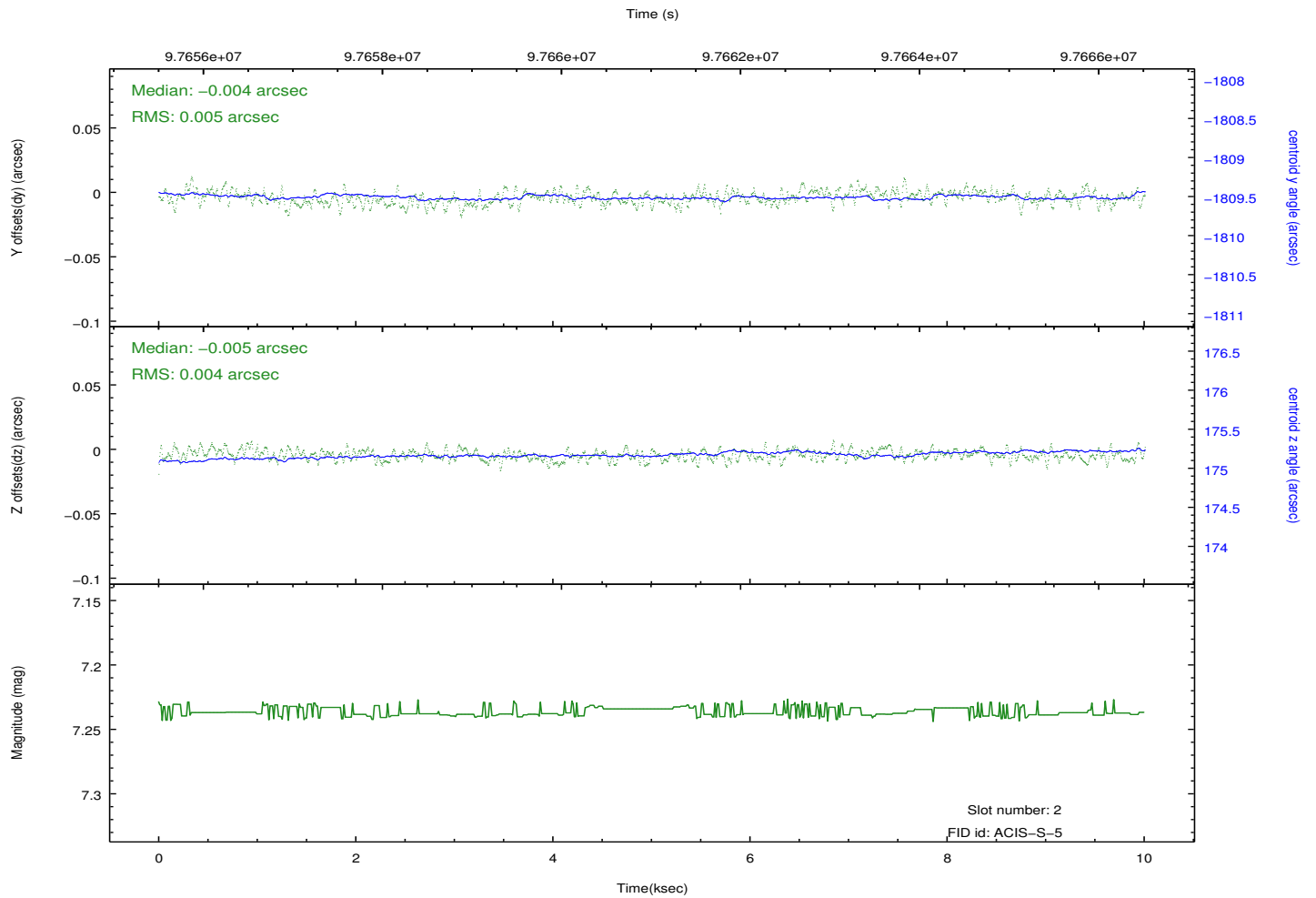
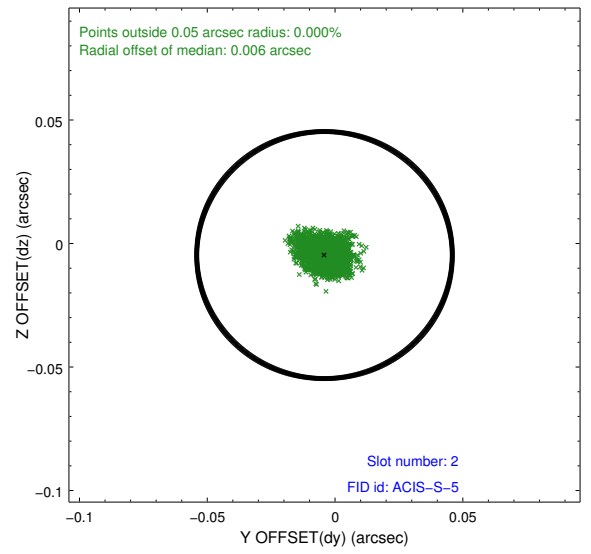
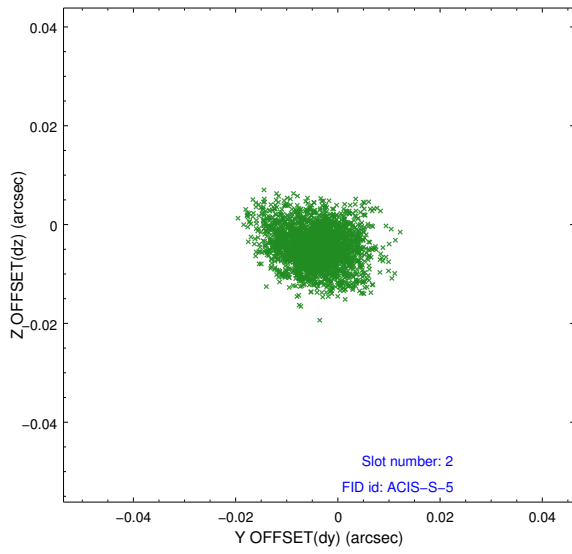
### 2.5.1 Slot 0



## 2.5.2 Slot 1

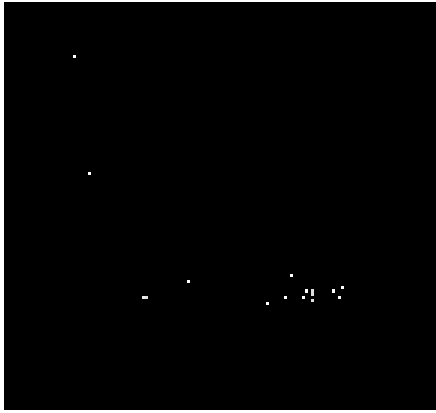


### 2.5.3 Slot 2

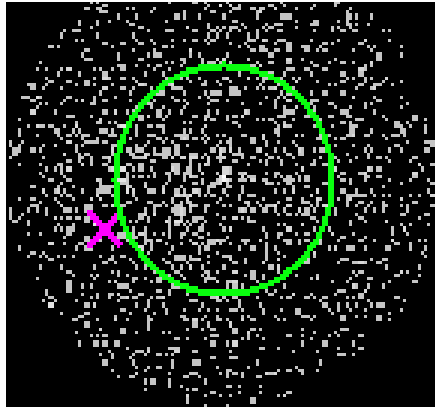


# 3 Gratings

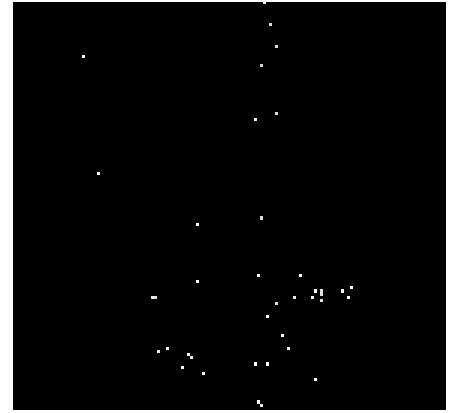
## 3.1 HEG Arm



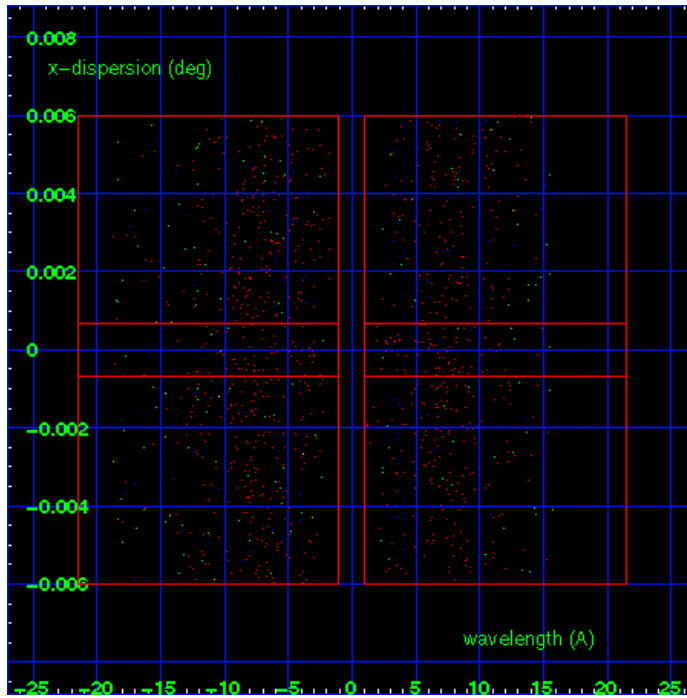
HEG Order Sort 123



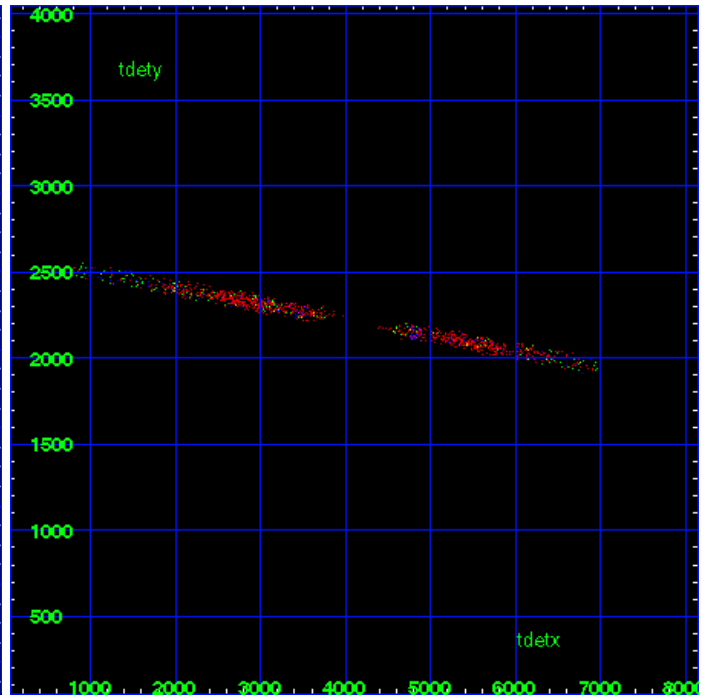
HEG Zero Order



HEG Order Sort ALL

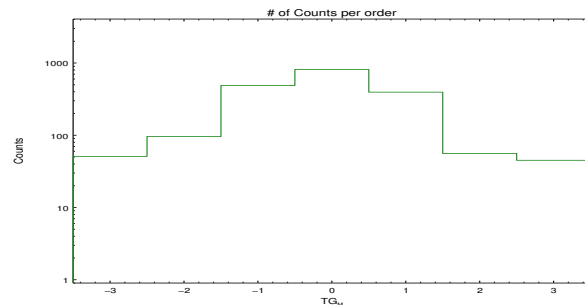


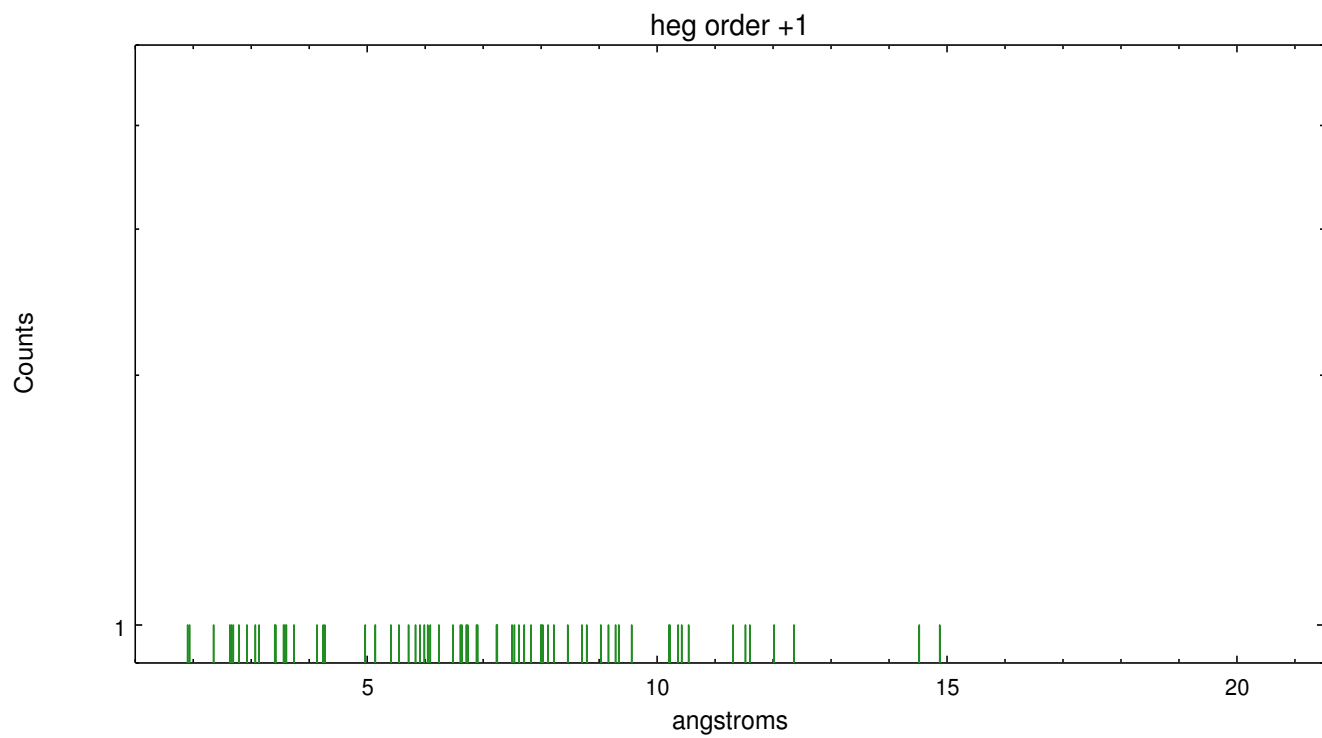
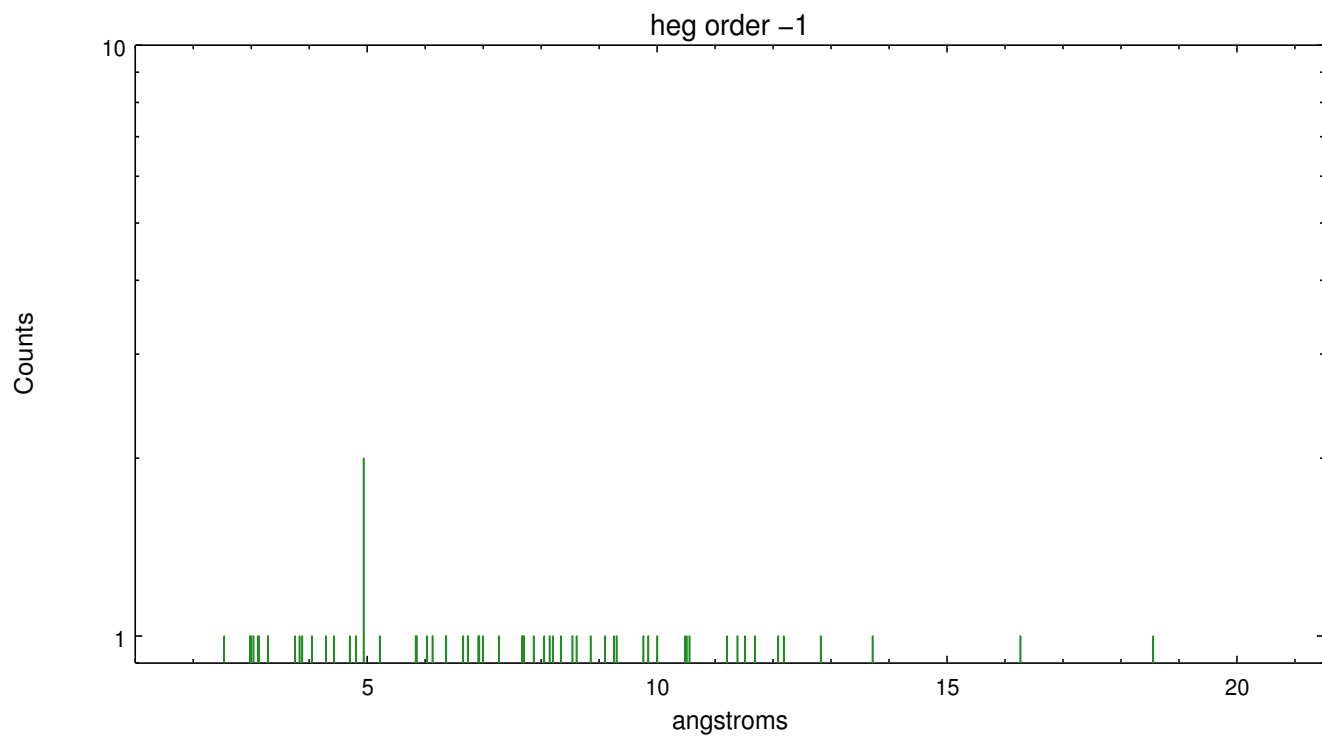
Spot Image HEG



Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	51	96	489	812	395	56	45

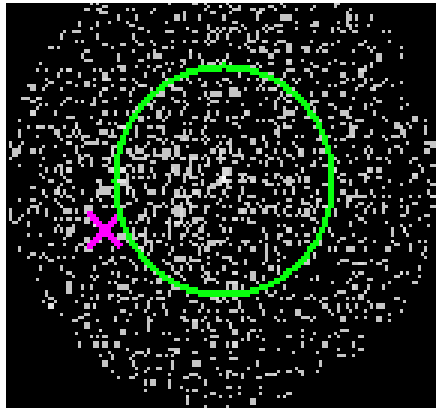




### 3.2 MEG Arm



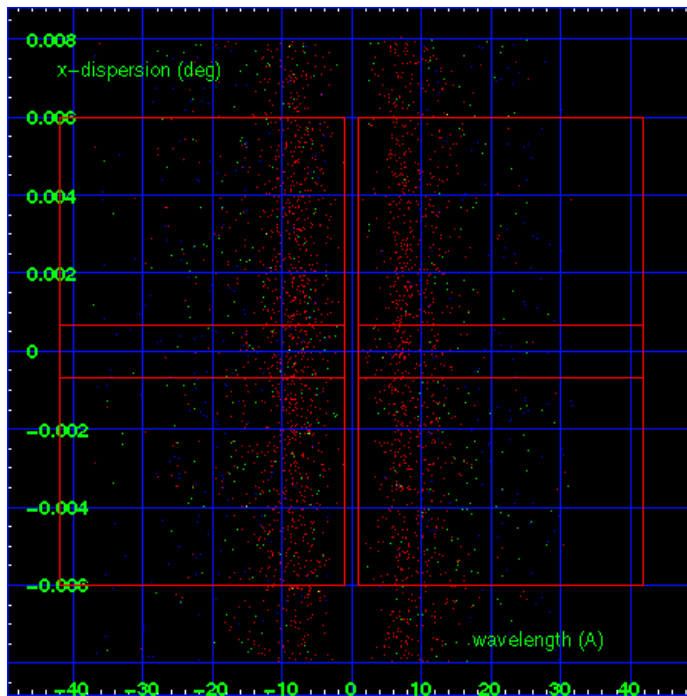
MEG Order Sort 123



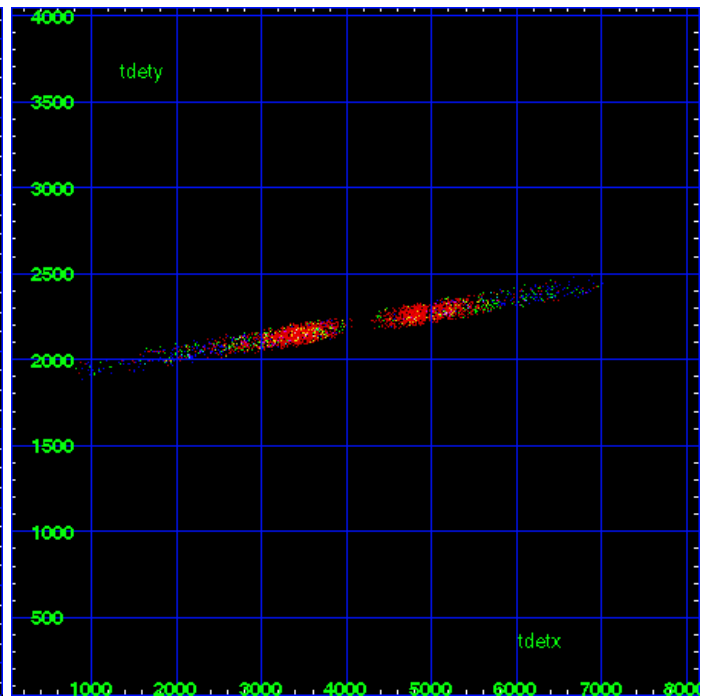
MEG Zero Order



MEG Order Sort ALL

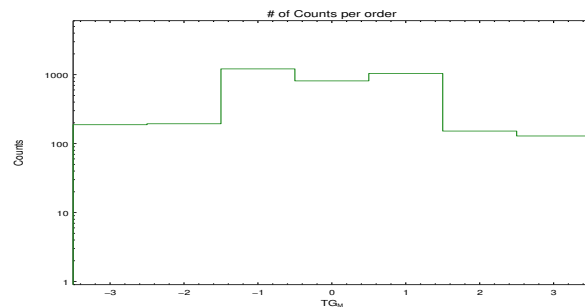


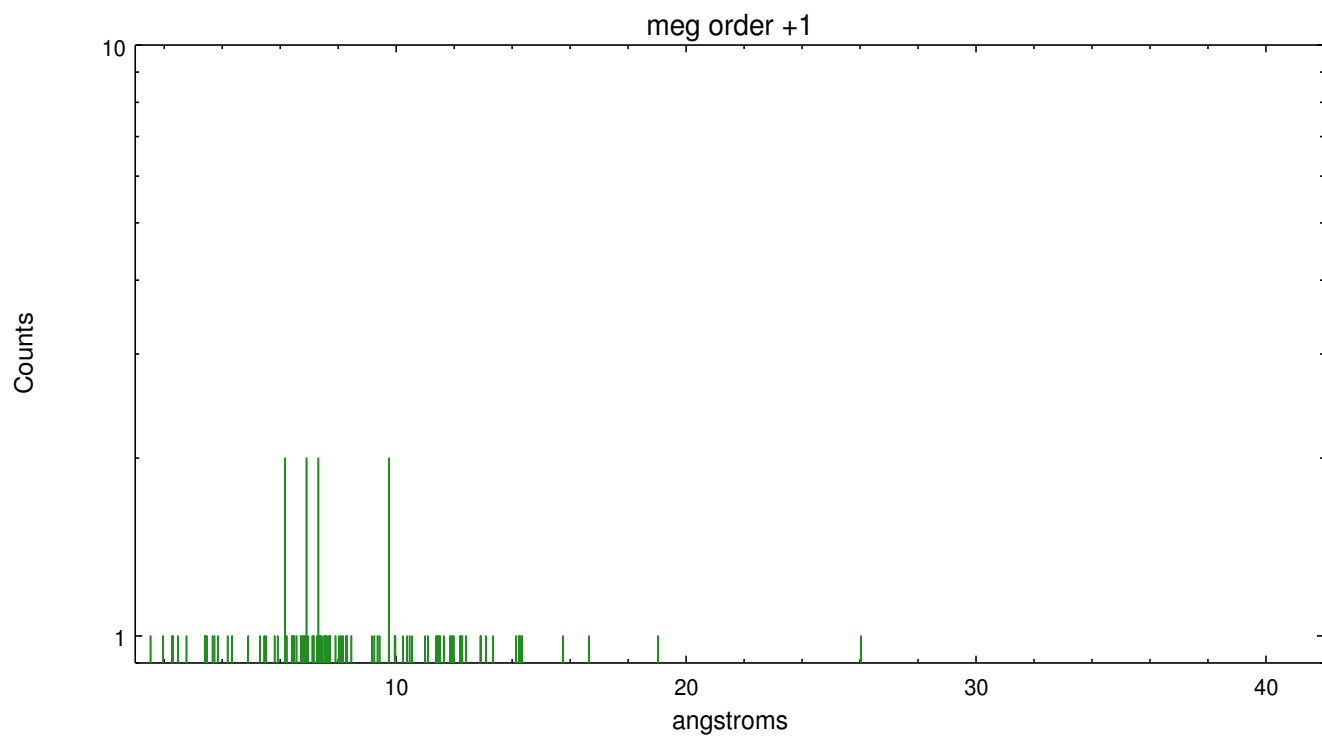
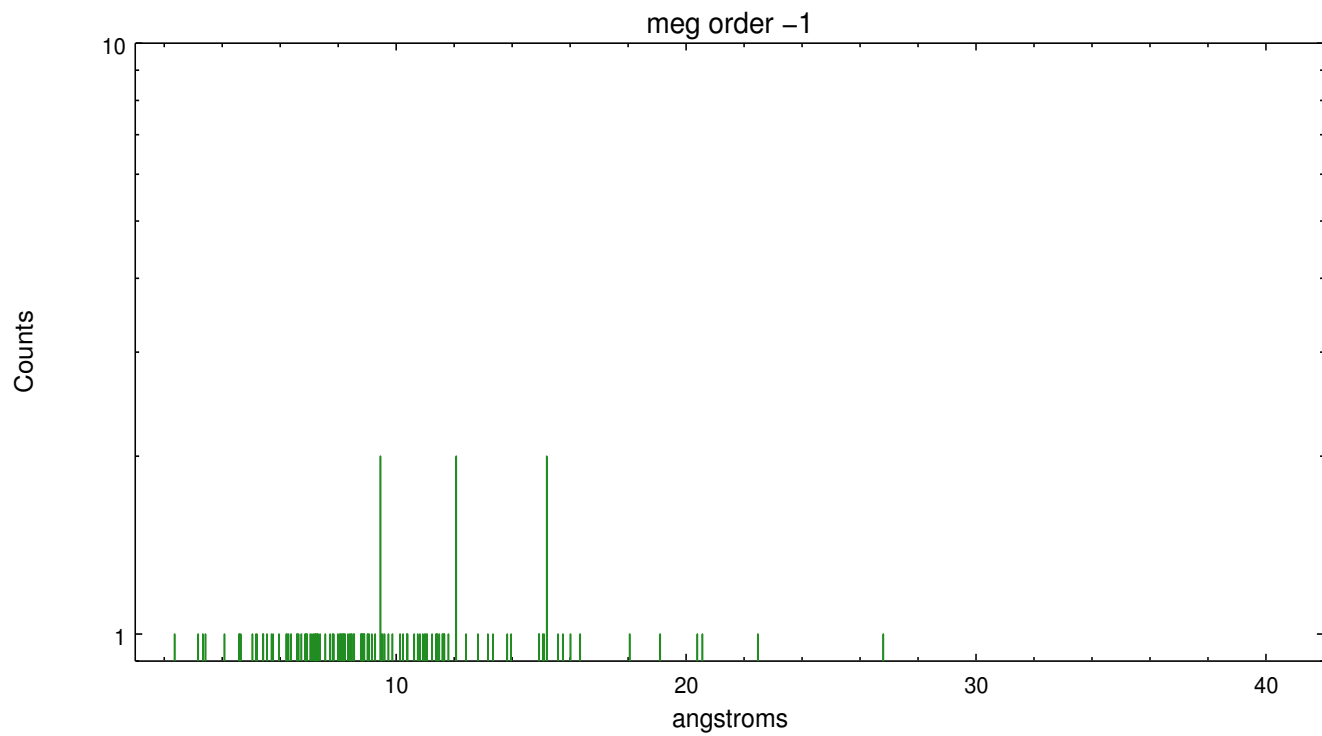
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	188	194	1212	812	1040	152	129





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.10.12
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.638

## A.2 Comments

Standard software processing technique using the tool `tgdetect` failed to determine an accurate position for the zeroth order for this observation. The source is extended. The position of the zeroth order was chosen to be the position of the brightest emission (sky coordinates  $x=4129.0$ ,  $y=4109.25$ ).

Note this is not the same position as used in `TGCat`. For grating analysis of localized X-ray emission within the extended emission, the investigator will need to extract one or more dispersed spectra using user-defined zeroth order positions for all positions of interest. === The spectral data supplied in this processing are only energy-calibrated for the particular zeroth order position selected. WARNING: there are no standard `ciao` tools for analysis of grating spectra from extended sources. The shape of an emission 'line' will be the shape of the zero order spatial structure convolved with the instrumental LSF. Grating extractions can be used, but need to be combined with custom spatial-spectral analysis, since wavelength is multi-valued at any particular diffraction angle. === The spectral lines are spatially-broadened and the `rmfs` are not valid.