

# V&V Reference Report

## L2 ASCDS Version : 8.4.4

Observation 10858 - L2 Version 3  
Chandra X-Ray Center

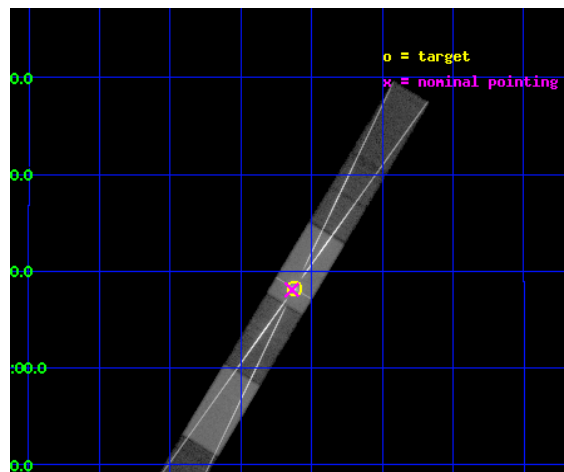
L2 Processing Date : May 29 2012

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# 1 Front

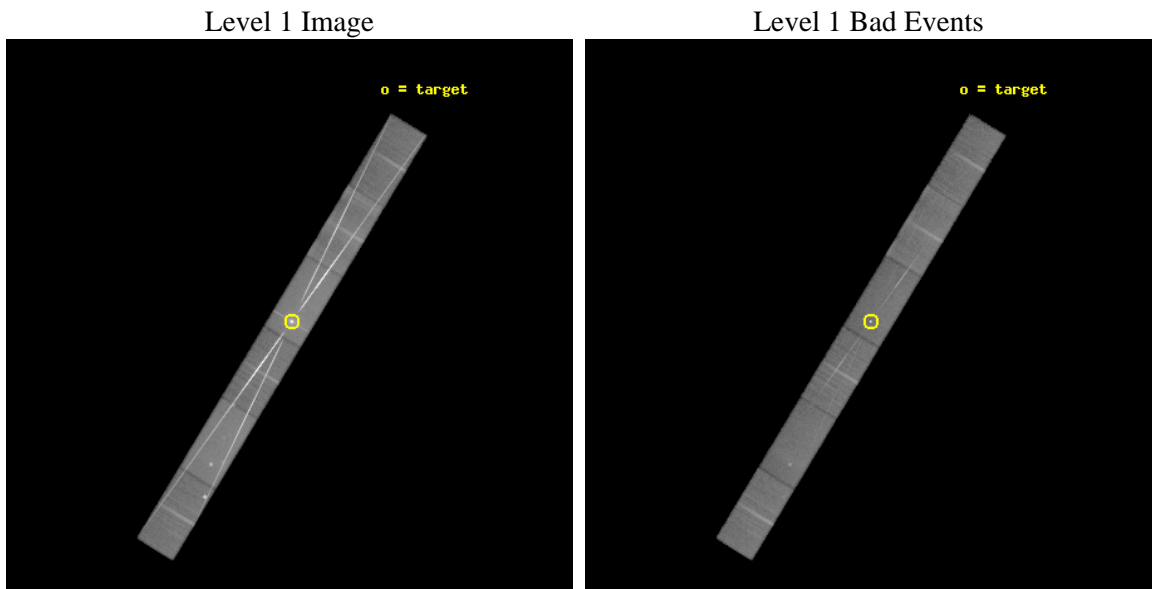
seq_num	900906	Sequence number
obs_id	10858	Observation id
title	Absorption and Abundances in the Ultracompact Binary 4U 0614+091	P
observer	Prof Claude Canizares	Principal investigator
object	4U 0614+091	Source name
dtycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	94.280417	Observer's specified target RA [deg]
dec_targ	9.136944	Observer's specified target Dec [deg]
ra_nom	94.284782407195	Nominal RA [deg]
dec_nom	9.1347185303994	Nominal Dec [deg]
roll_nom	301.15593797084	Nominal Roll [deg]
revision	3	Processing version of data
ontime	35188.299753308	Sum of GTIs [s]
livetime	34358.837005826	Livetime [s]
ontime4	35186.558713198	Sum of GTIs [s]
ontime5	35188.299753308	Sum of GTIs [s]
ontime6	35188.299753308	Sum of GTIs [s]
ontime7	35188.299753308	Sum of GTIs [s]
ontime8	35188.299753308	Sum of GTIs [s]
ontime9	35188.299753308	Sum of GTIs [s]
l2events	1340543	Number of level 2 events



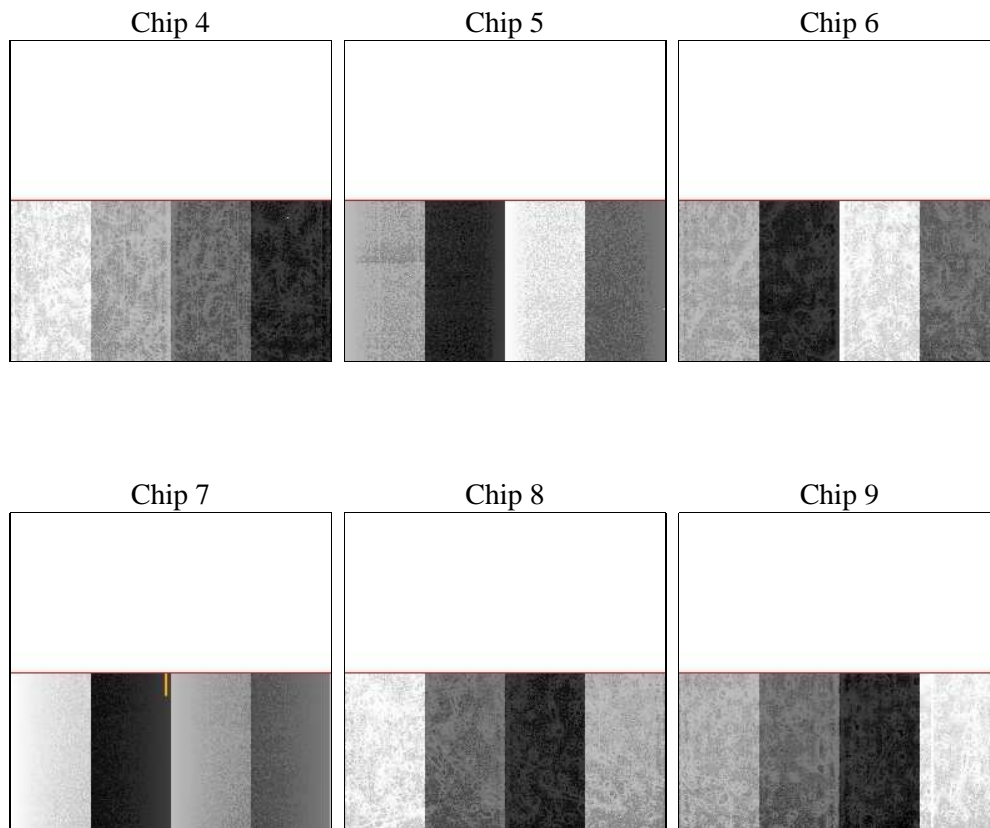
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	35000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.4	Processing system revision	ontime	35188.299753308	Sum of GTIs [s]
caldbver	4.4.9	&#160	ontime4	35186.558713198	Sum of GTIs [s]
date	2012-05-29T04:12:26	Date and time of file creation	ontime5	35188.299753308	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	35188.299753308	Sum of GTIs [s]
			ontime7	35188.299753308	Sum of GTIs [s]
			ontime8	35188.299753308	Sum of GTIs [s]
			ontime9	35188.299753308	Sum of GTIs [s]
			l1events	2468388	Number of level 1 events

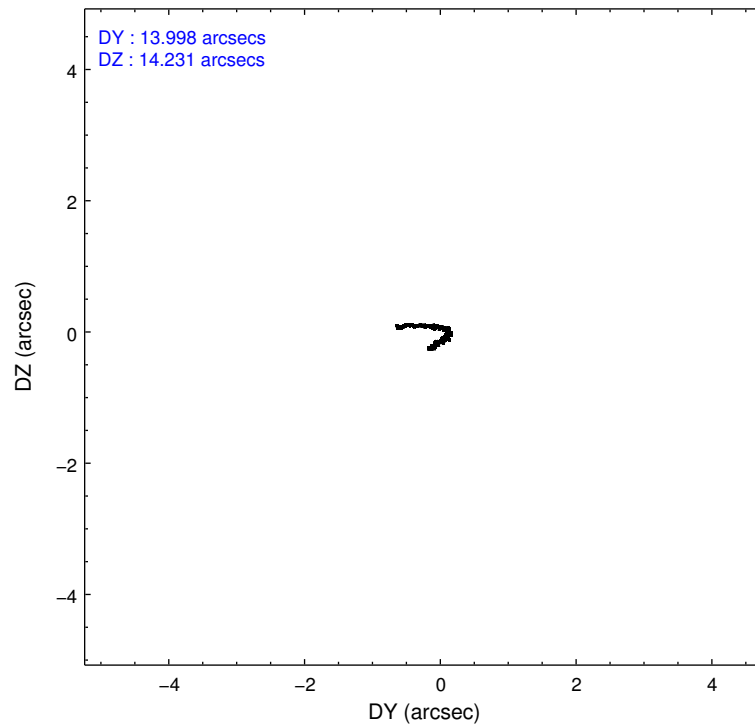
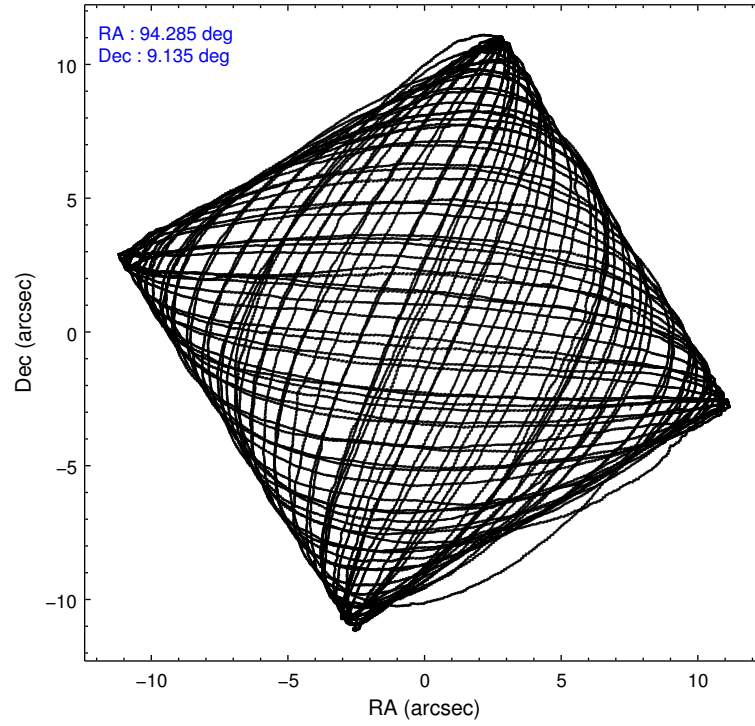
### 2.1.4 Events

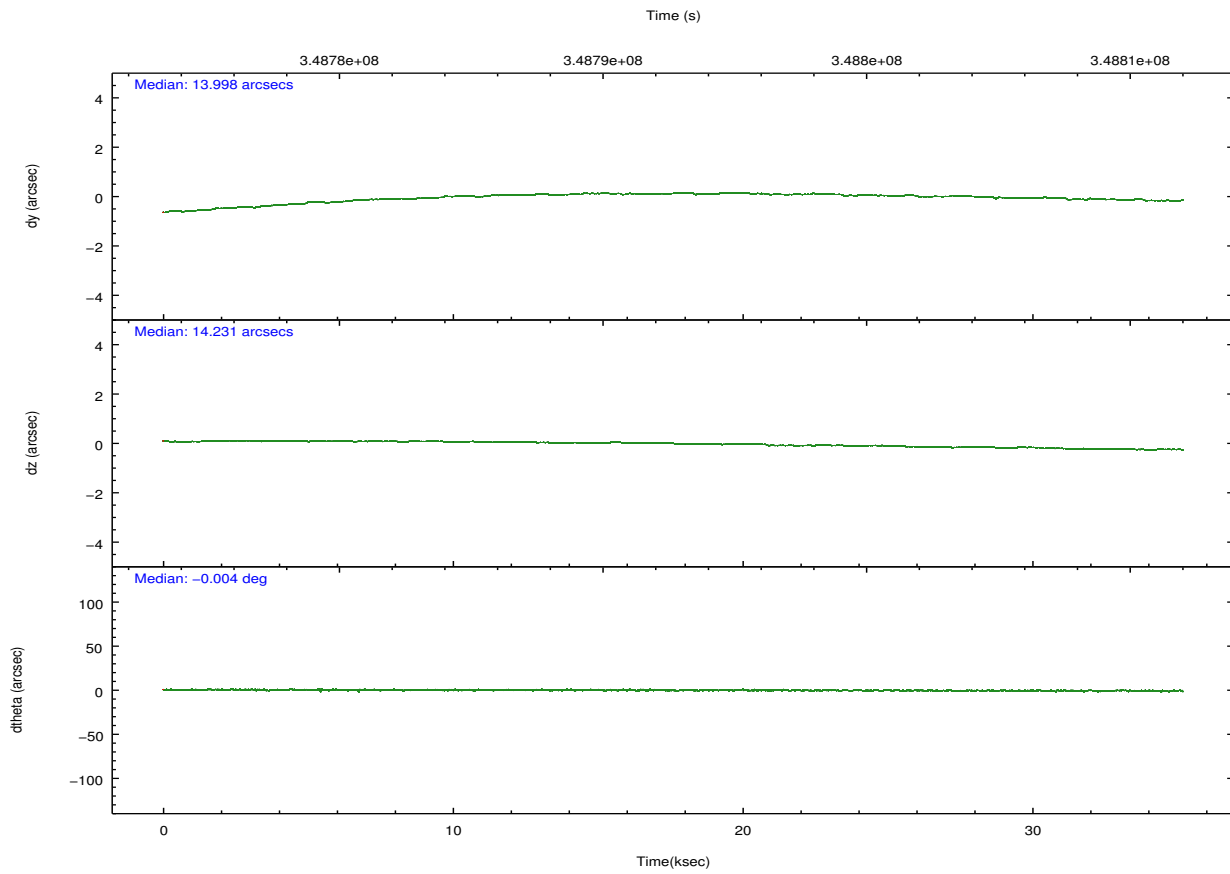
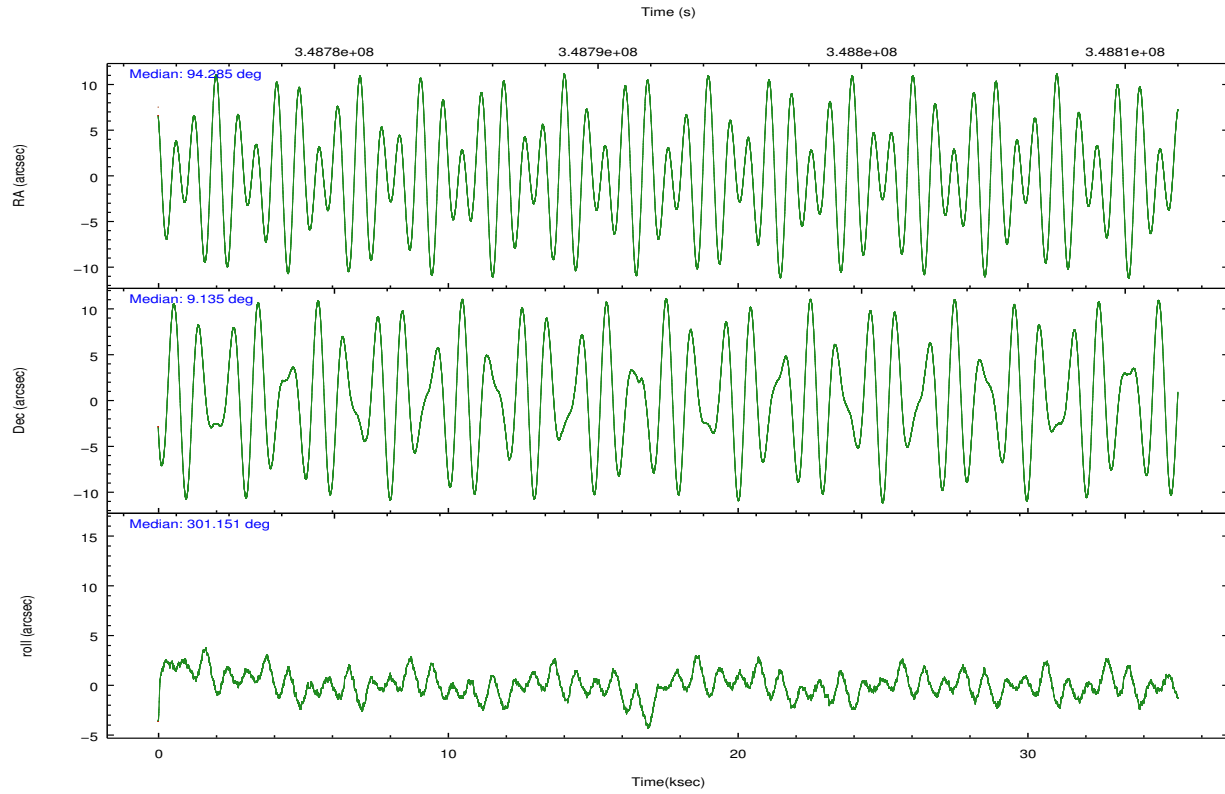
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	231287	400167	562591	621392	437459	215492	grade 0 events	34930	57481	296186	92238	174157	40272
rejected events	178545	153430	172686	159658	189973	154641		15%	14%	52%	14%	39%	18%
rejected %	77%	38%	30%	25%	43%	71%	grade 1 events	266	508	3077	1764	1104	191
								0%	0%	0%	0%	0%	0%
							grade 2 events	7327	72353	46996	113131	31222	8218
								3%	18%	8%	18%	7%	3%
							grade 3 events	3154	17931	16214	49731	12176	3665
								1%	4%	2%	8%	2%	1%
							grade 4 events	3125	17851	15743	49949	11406	3686
								1%	4%	2%	8%	2%	1%
							grade 5 events	8111	23464	10381	29780	11854	8876
								3%	5%	1%	4%	2%	4%
							grade 6 events	4313	81734	15607	157749	19103	5149
								1%	20%	2%	25%	4%	2%
							grade 7 events	170061	128845	158387	127050	176437	145435
								73%	32%	28%	20%	40%	67%

## 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	94.260349	94.28478240719538	Subarray requested	CUSTOM	1/2
[deg] Pointing Dec	9.147589	9.134718530399416	Subarray start row	1	1
[deg] Pointing Roll	301.003191	301.1559379708362	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	-183.9875365069546			
[mm] SIM translation stage offset	-6.14	-6.144986076053243			
[s] Observation start time (MET)	348775249.184000	348774301.30276			
Observation start date	2009-01-19T17:59:43	2009-01-19T17:45:01			
[s] Observation end time (MET)	348810249.184000	348810987.07958			
Observation end date	2009-01-20T03:43:03	2009-01-20T03:56:27			
Read mode	TIMED	TIMED			

## 2.3 Aspect



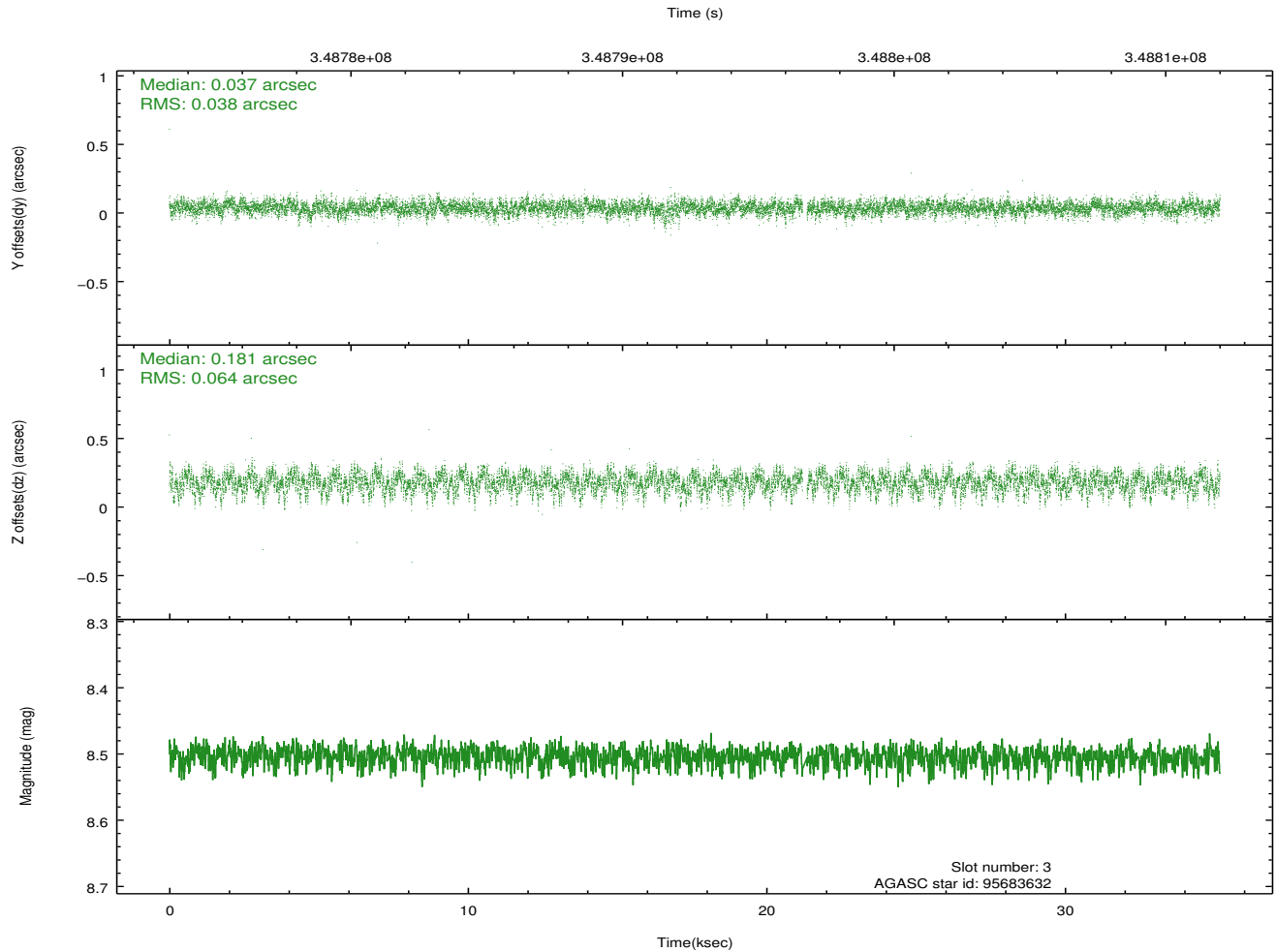
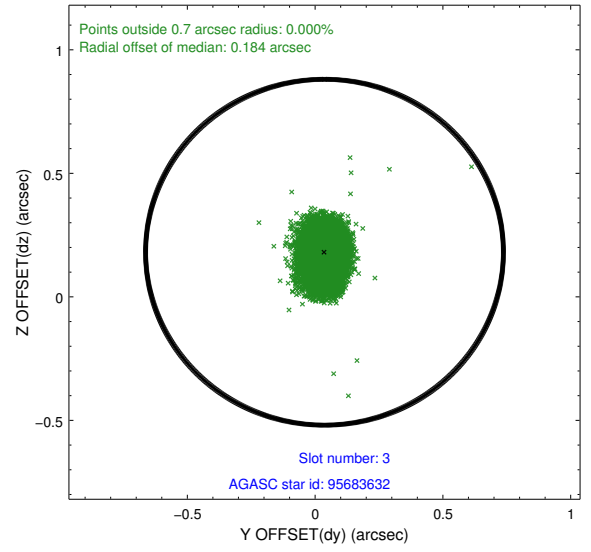
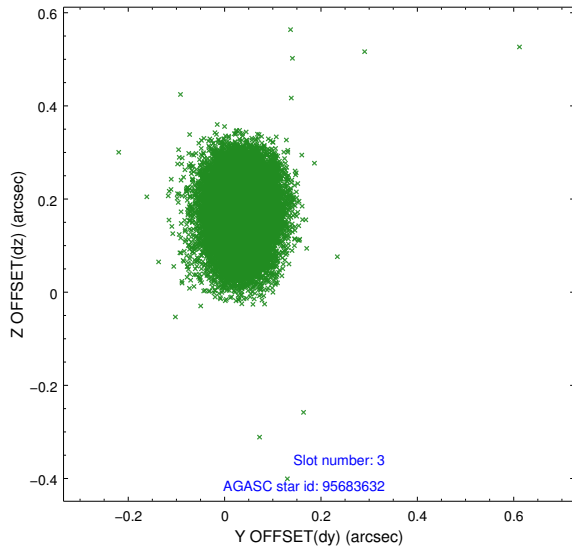


### Slot Statistics

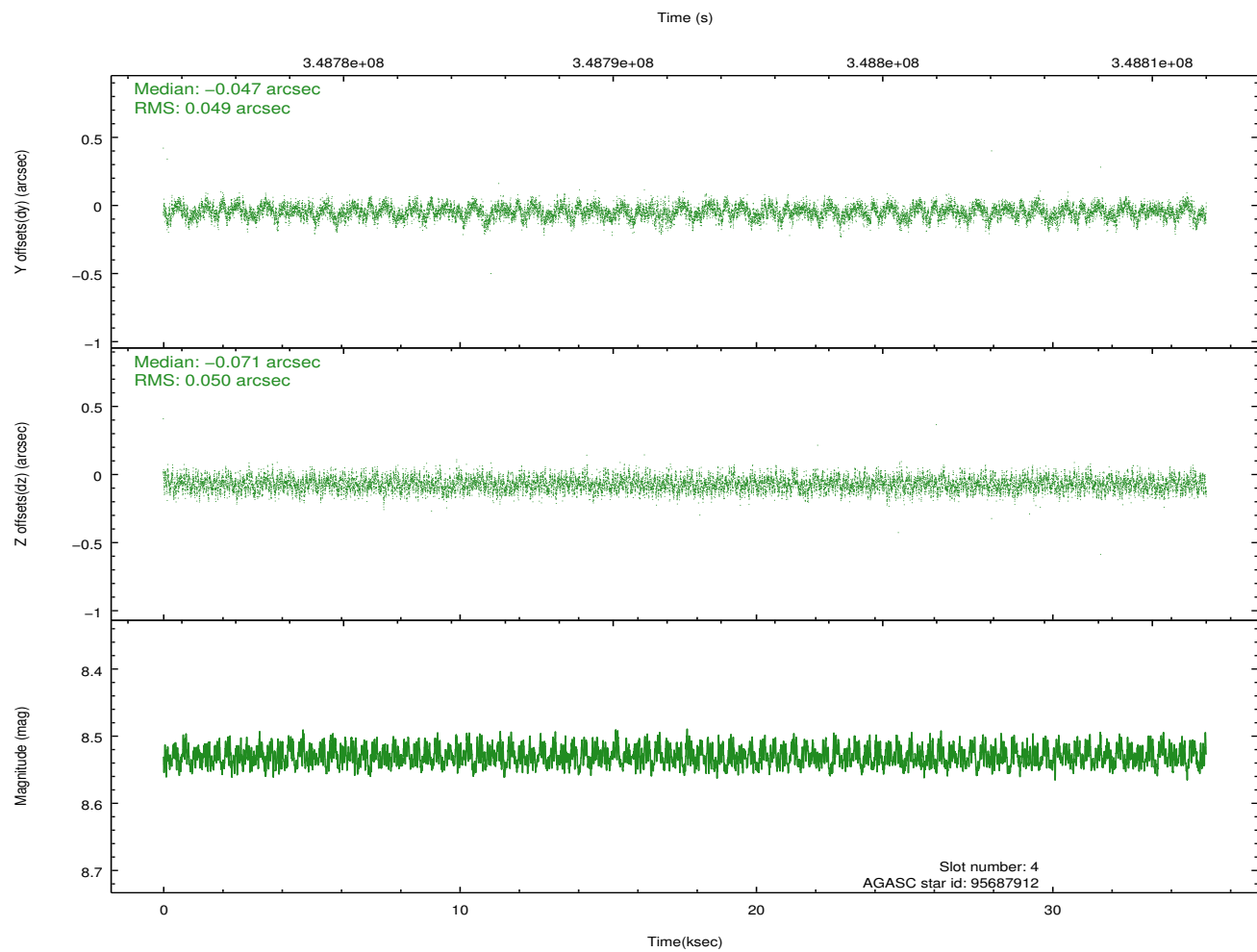
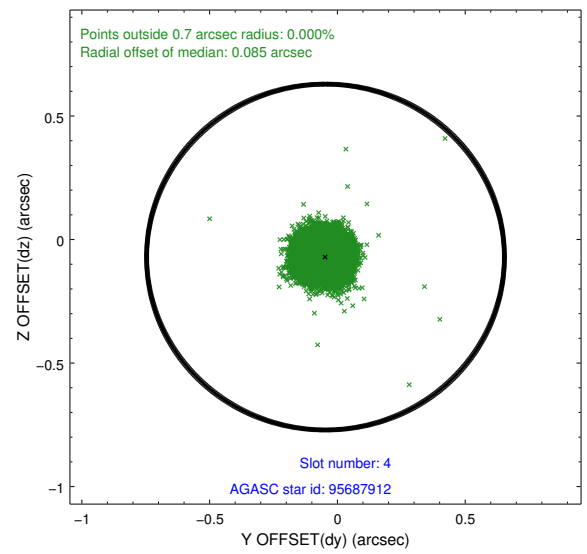
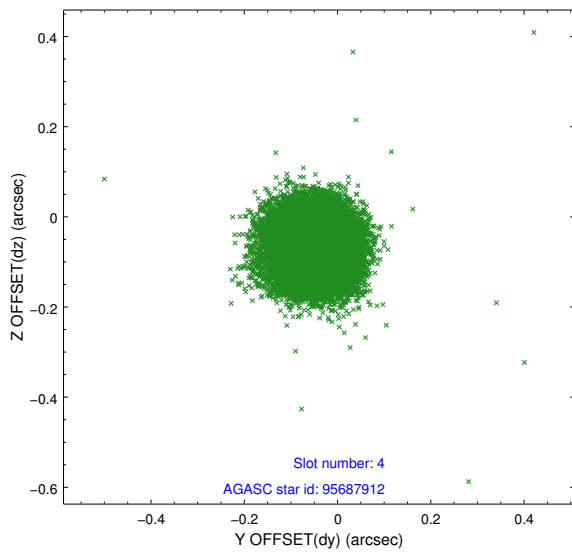
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.94	8584	-0.085	-0.104	0.010	0.016	0.000000	0.000000	-766.54	-1862.31
1	FID	ACIS-S-4	7.02	8584	0.210	0.069	0.009	0.022	0.000000	0.000000	2147.03	46.26
2	FID	ACIS-S-5	7.07	8583	-0.155	0.043	0.011	0.019	0.000000	0.000000	-1819.39	39.98
3	GUIDE	95683632	8.50	17089	0.037	0.181	0.077	0.132	93.465248	9.270074	-1835.15	-2192.37
4	GUIDE	95687912	8.53	17160	-0.047	-0.071	0.075	0.118	93.518845	9.149806	-1366.22	-2253.46
5	GUIDE	95829000	8.95	17154	-0.085	-0.014	0.095	0.149	93.957582	8.850705	361.38	-1473.20
6	GUIDE	95842312	8.48	17153	0.168	-0.038	0.083	0.136	93.940526	8.457435	1543.47	-2255.38
7	GUIDE	95820480	8.91	17155	-0.079	-0.052	0.076	0.121	94.877321	9.017875	1528.92	1641.00

## 2.4 Star Slots

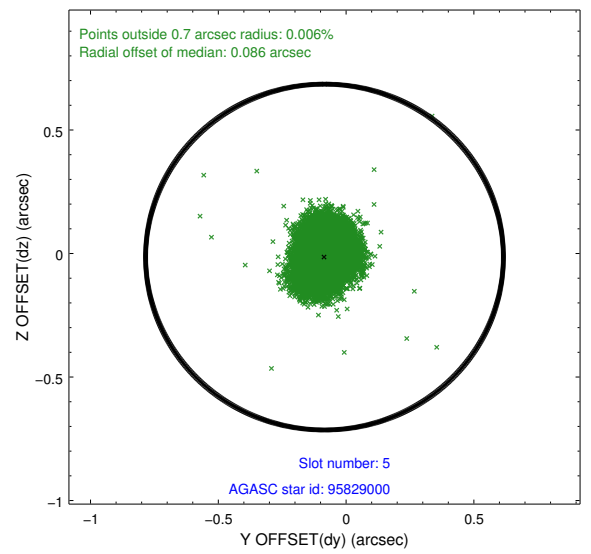
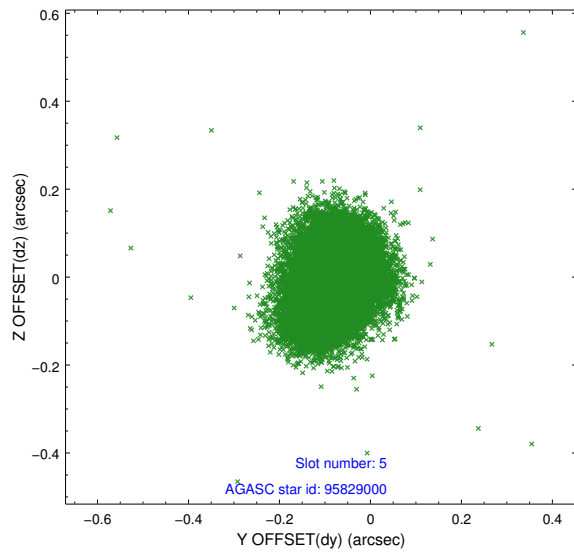
### 2.4.1 Slot 3



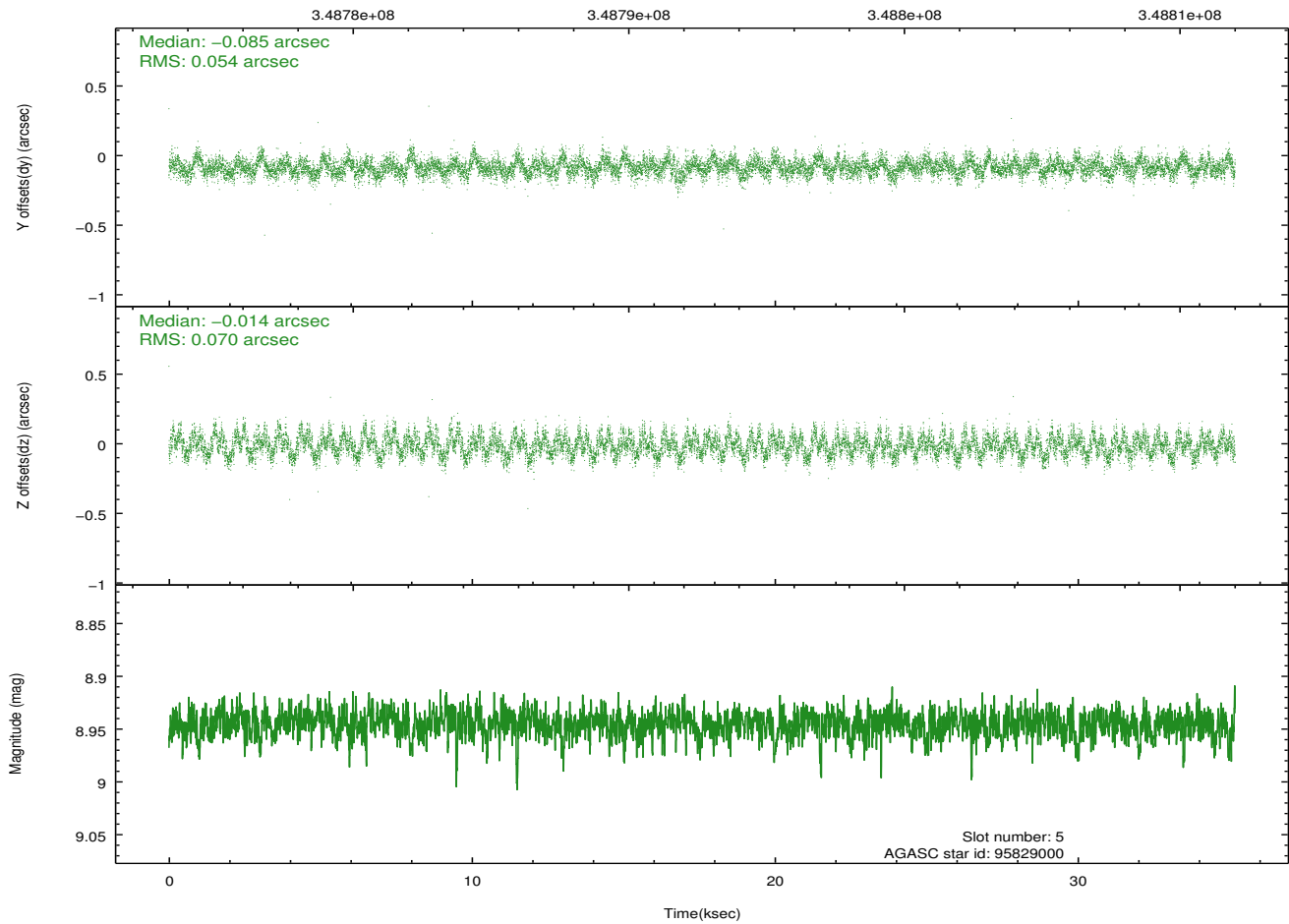
## 2.4.2 Slot 4



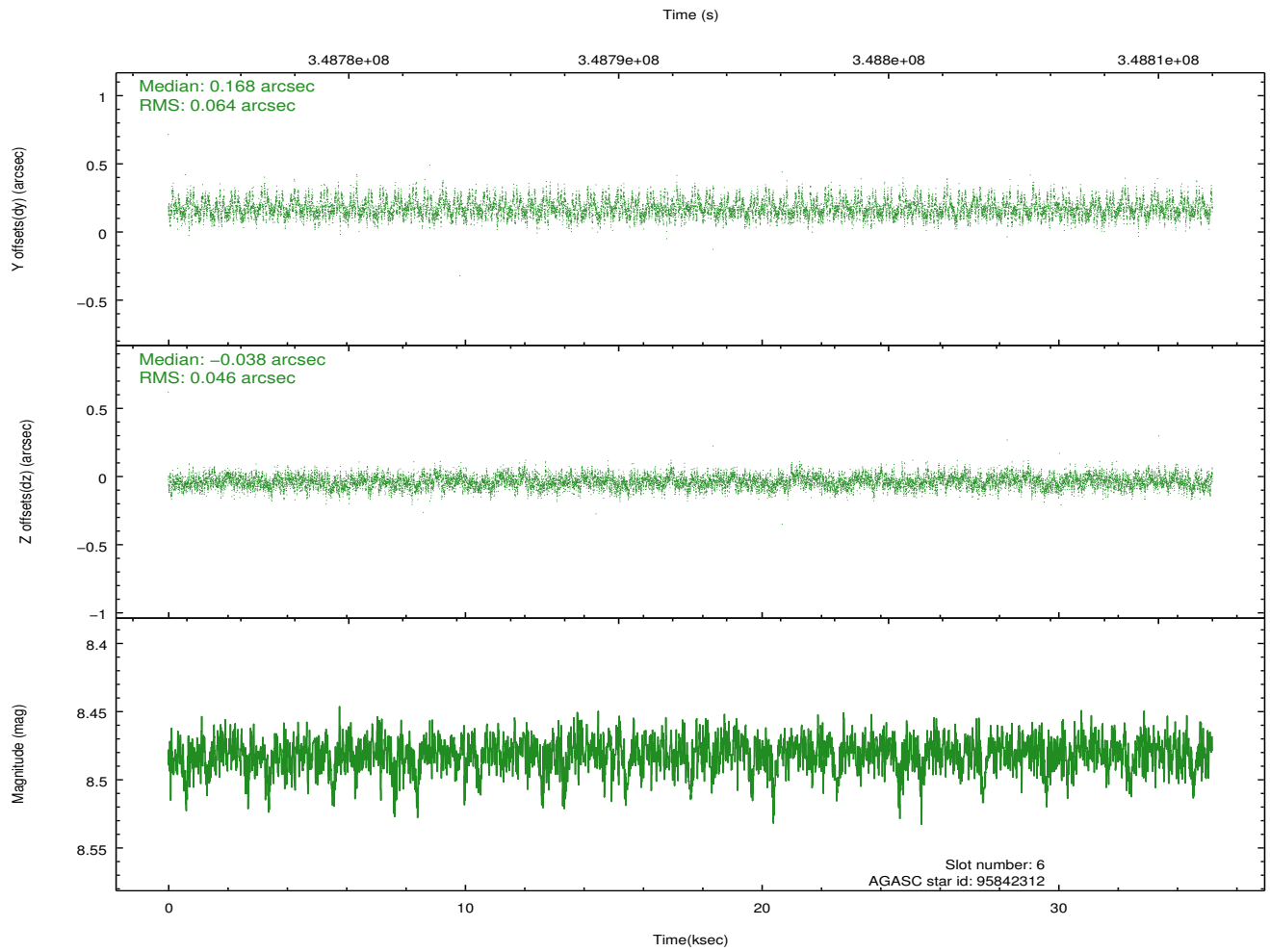
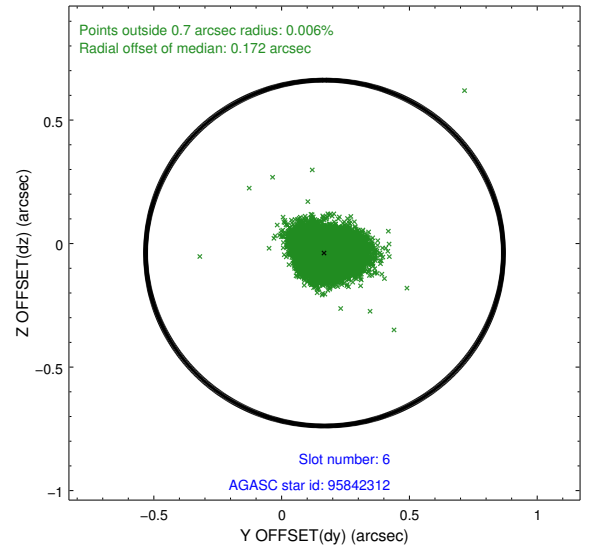
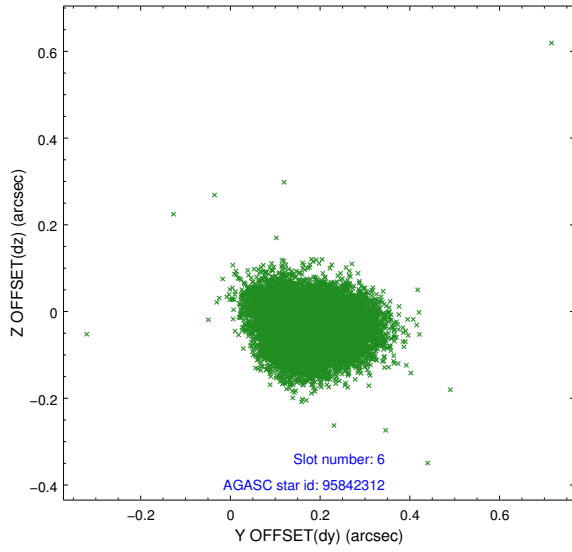
### 2.4.3 Slot 5



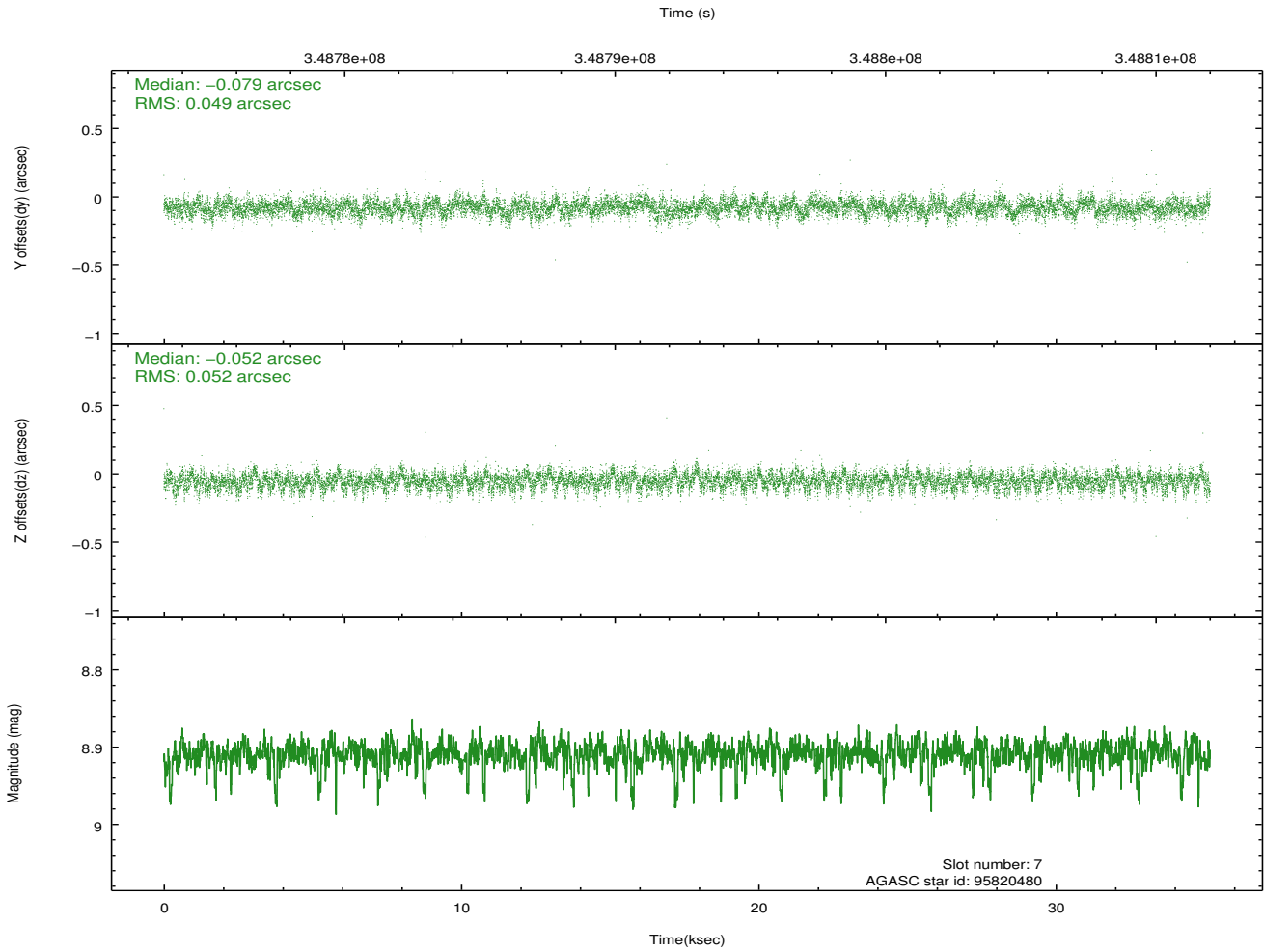
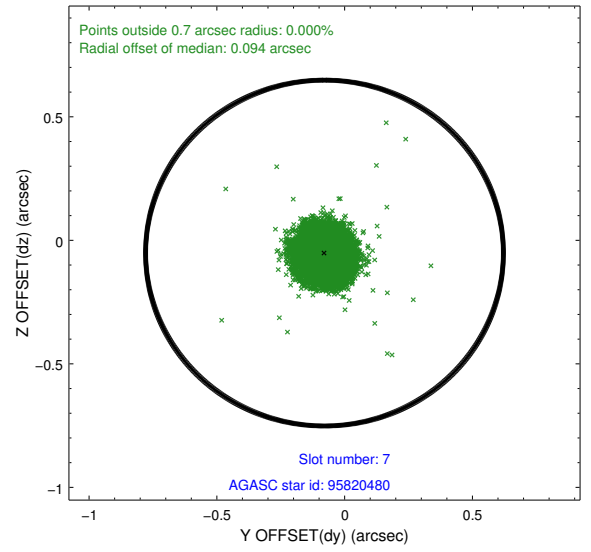
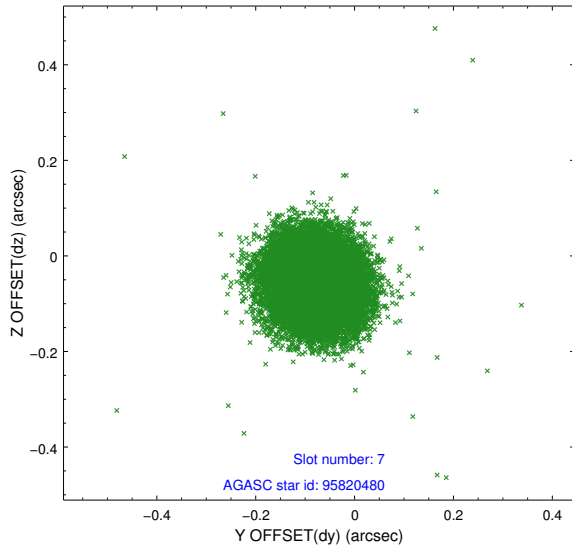
Time (s)



### 2.4.4 Slot 6

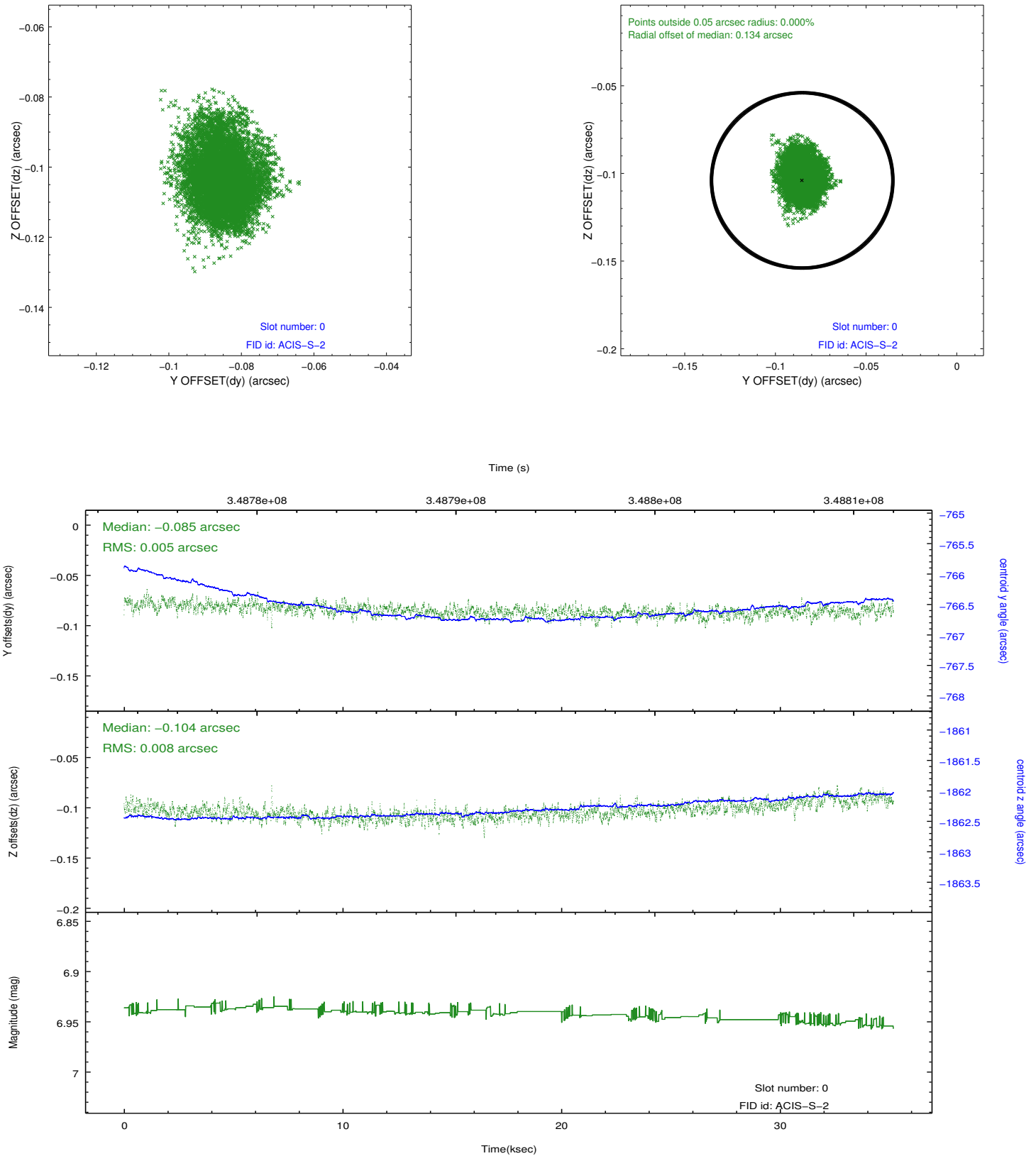


### 2.4.5 Slot 7

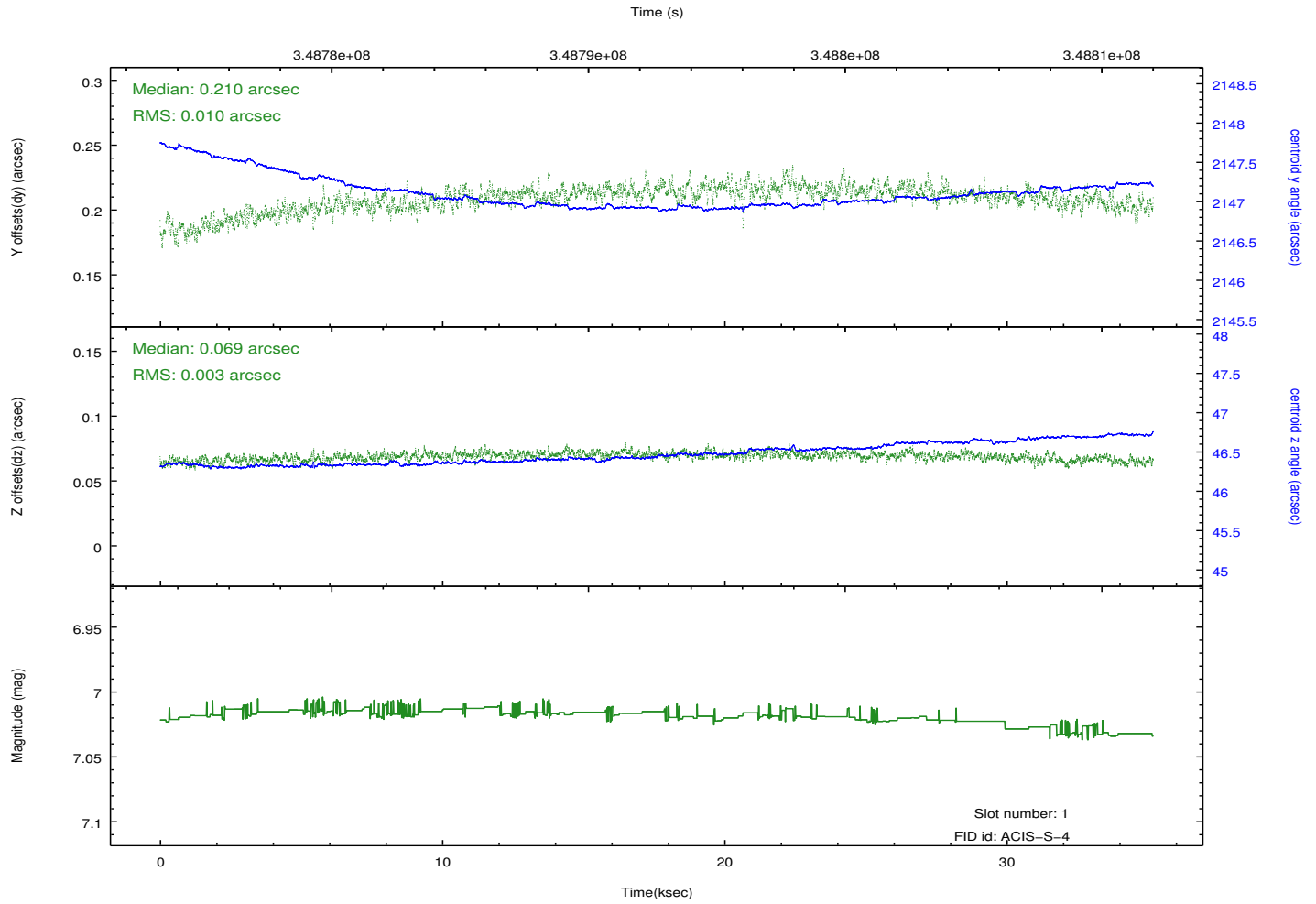
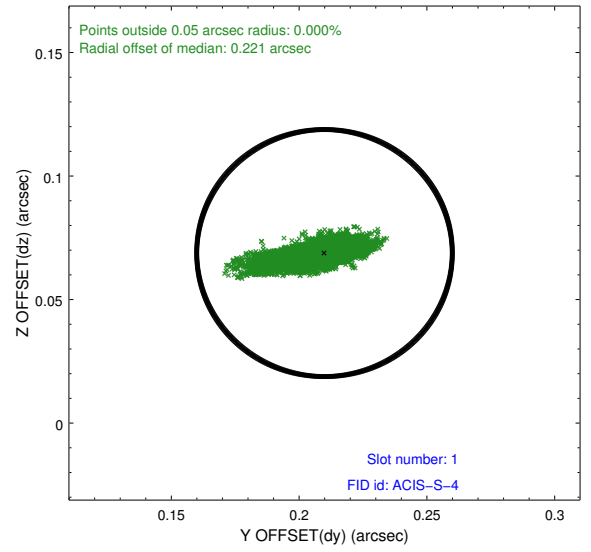
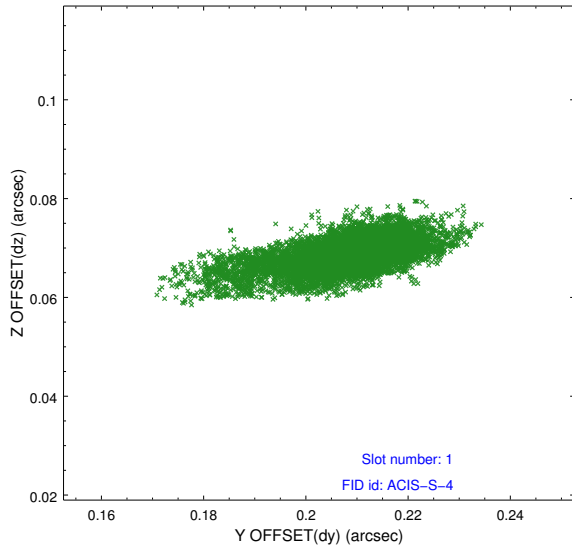


## 2.5 FID Slots

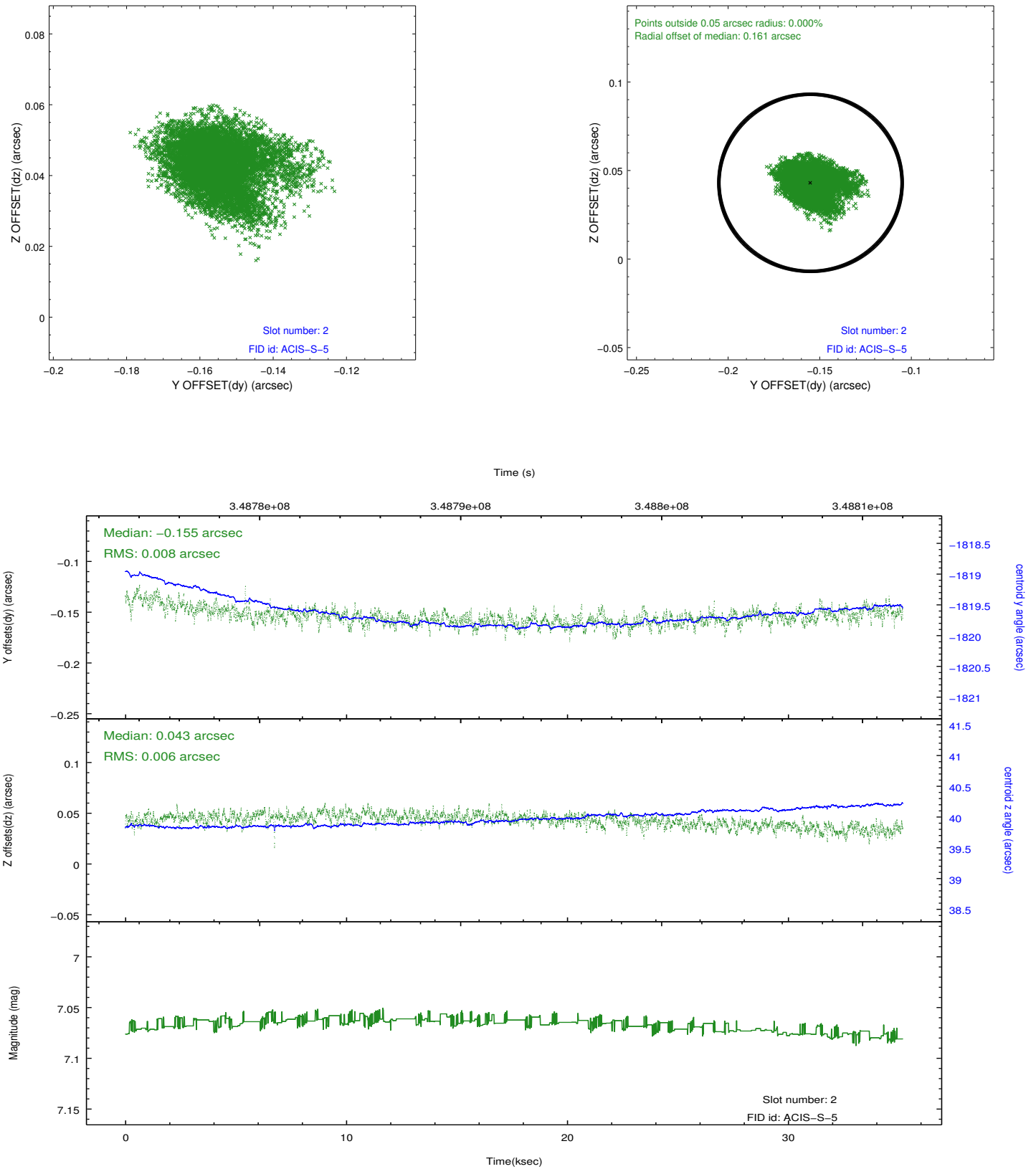
### 2.5.1 Slot 0



## 2.5.2 Slot 1

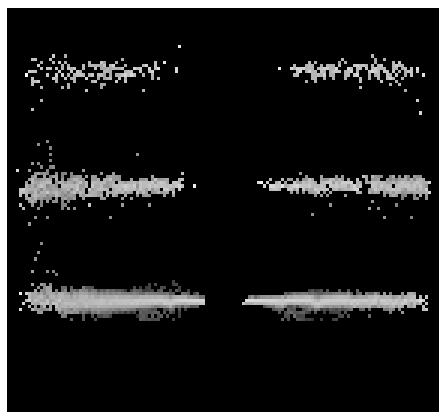


### 2.5.3 Slot 2

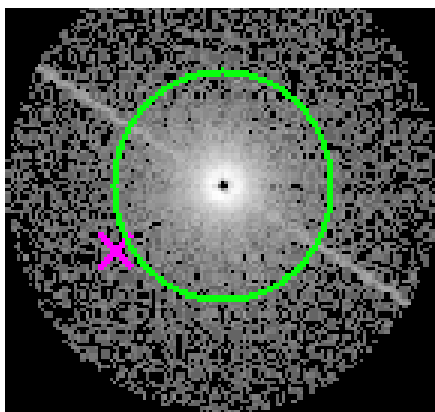


# 3 Gratings

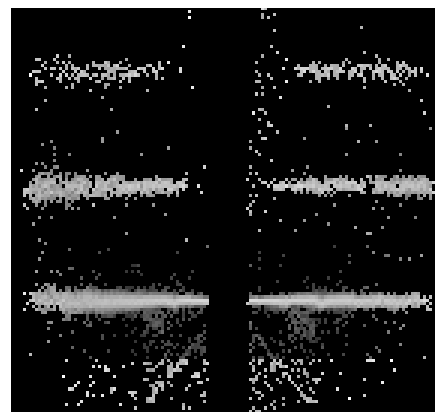
## 3.1 HEG Arm



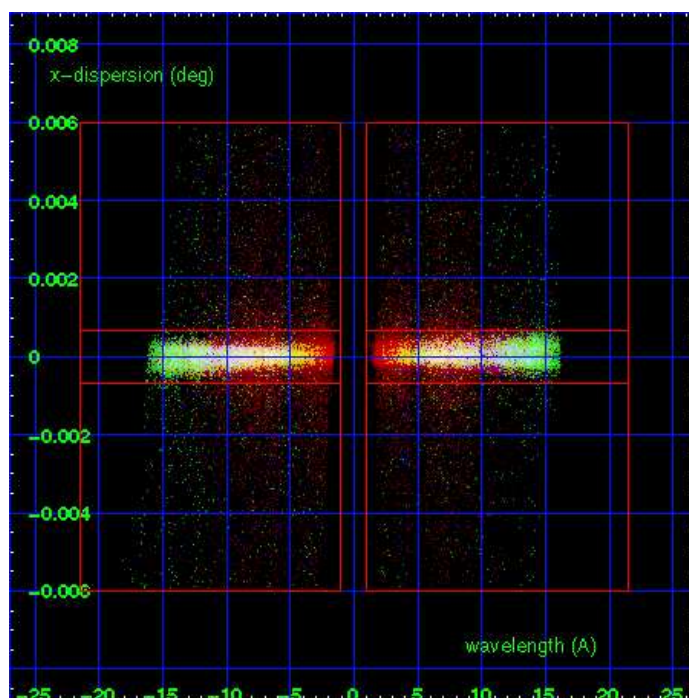
HEG Order Sort 123



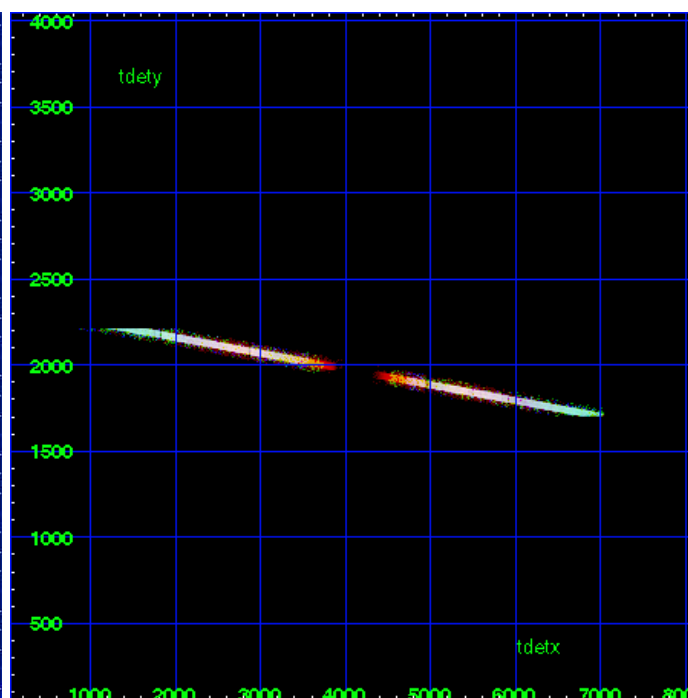
HEG Zero Order



HEG Order Sort ALL

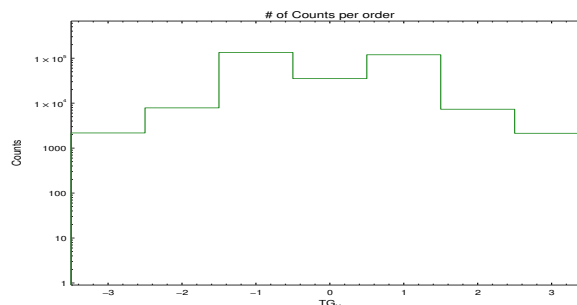


Spot Image HEG

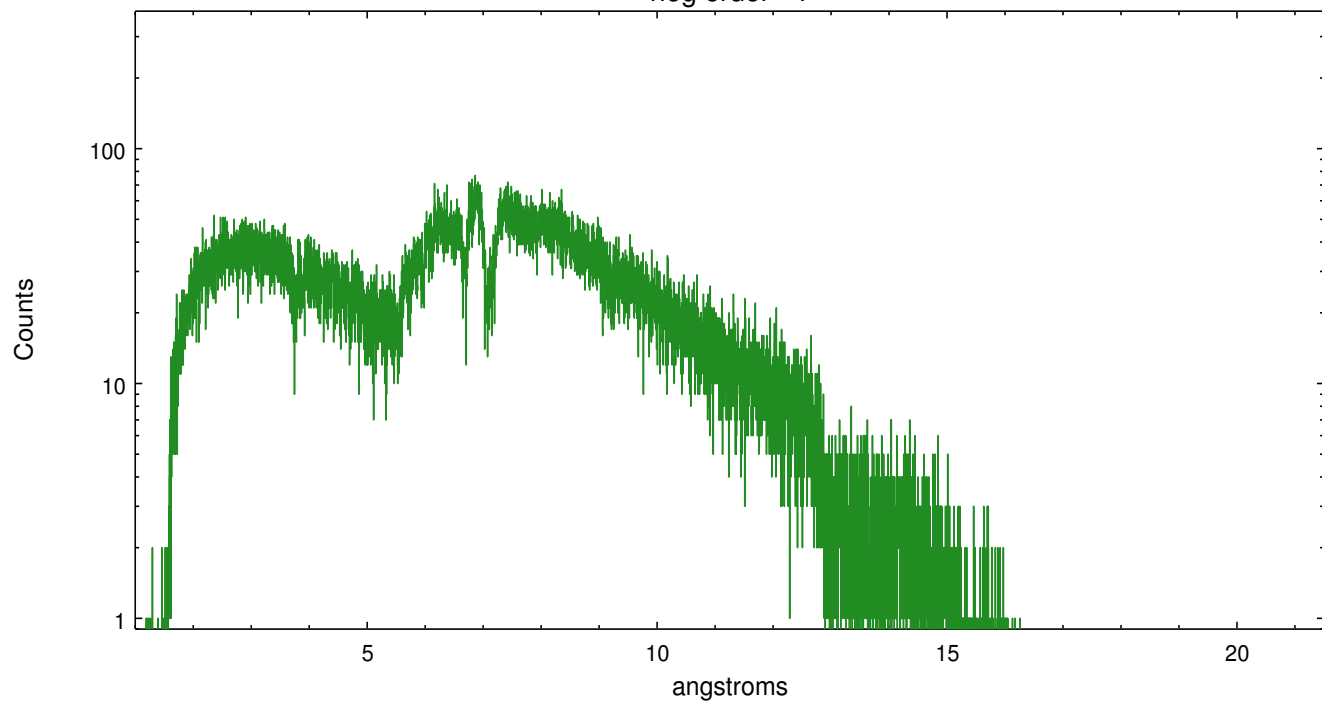


Full Detector HEG

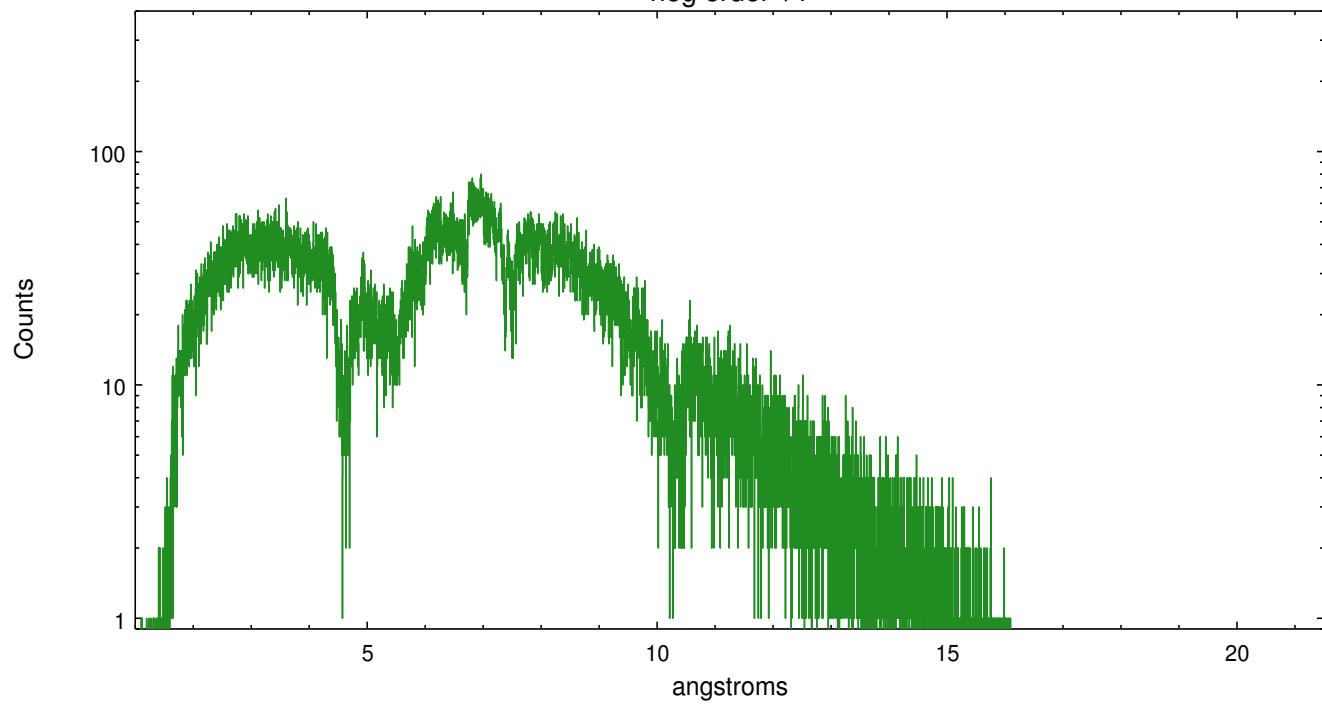
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2175	7857	134085	35159	119226	7320	2135



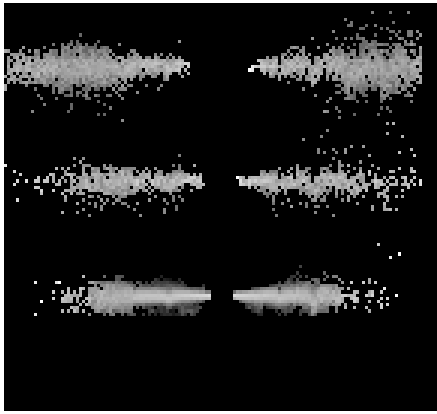
heg order -1



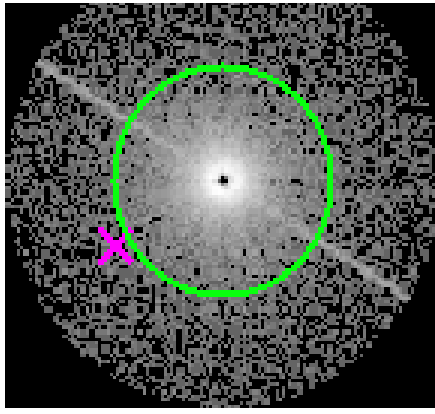
heg order +1



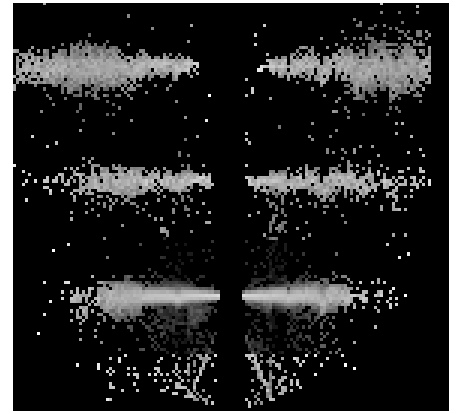
### 3.2 MEG Arm



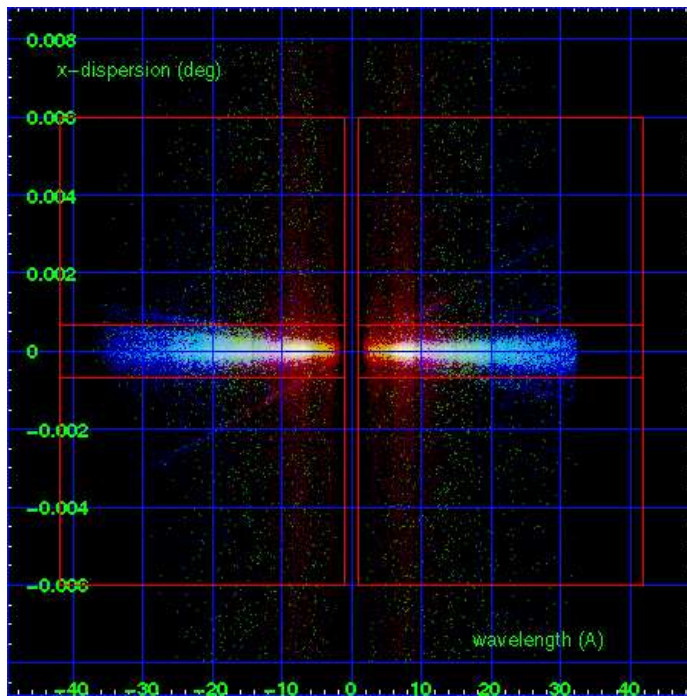
MEG Order Sort 123



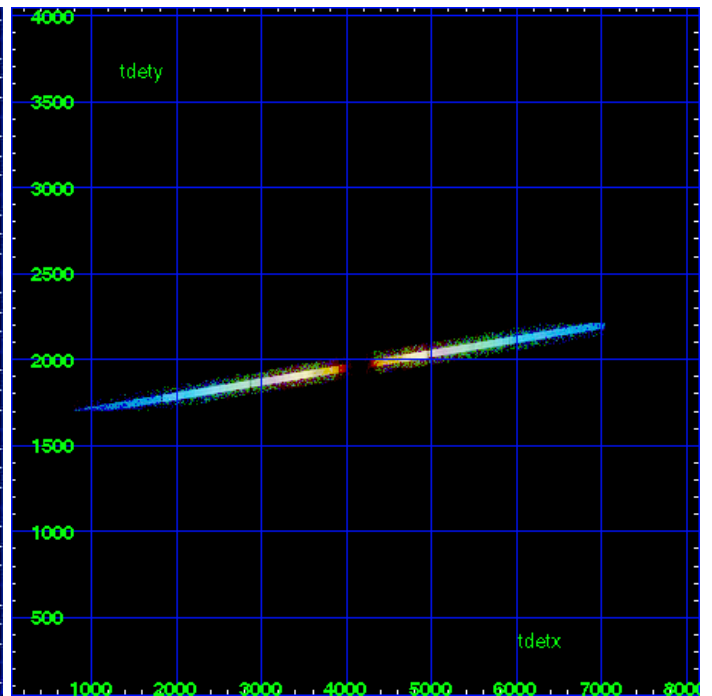
MEG Zero Order



MEG Order Sort ALL

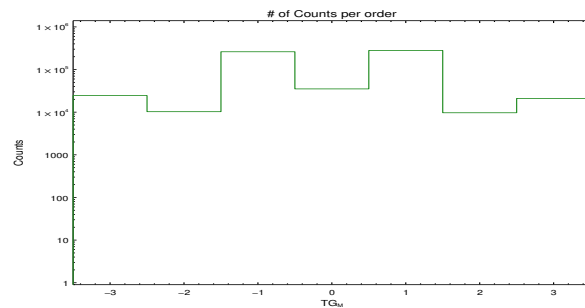


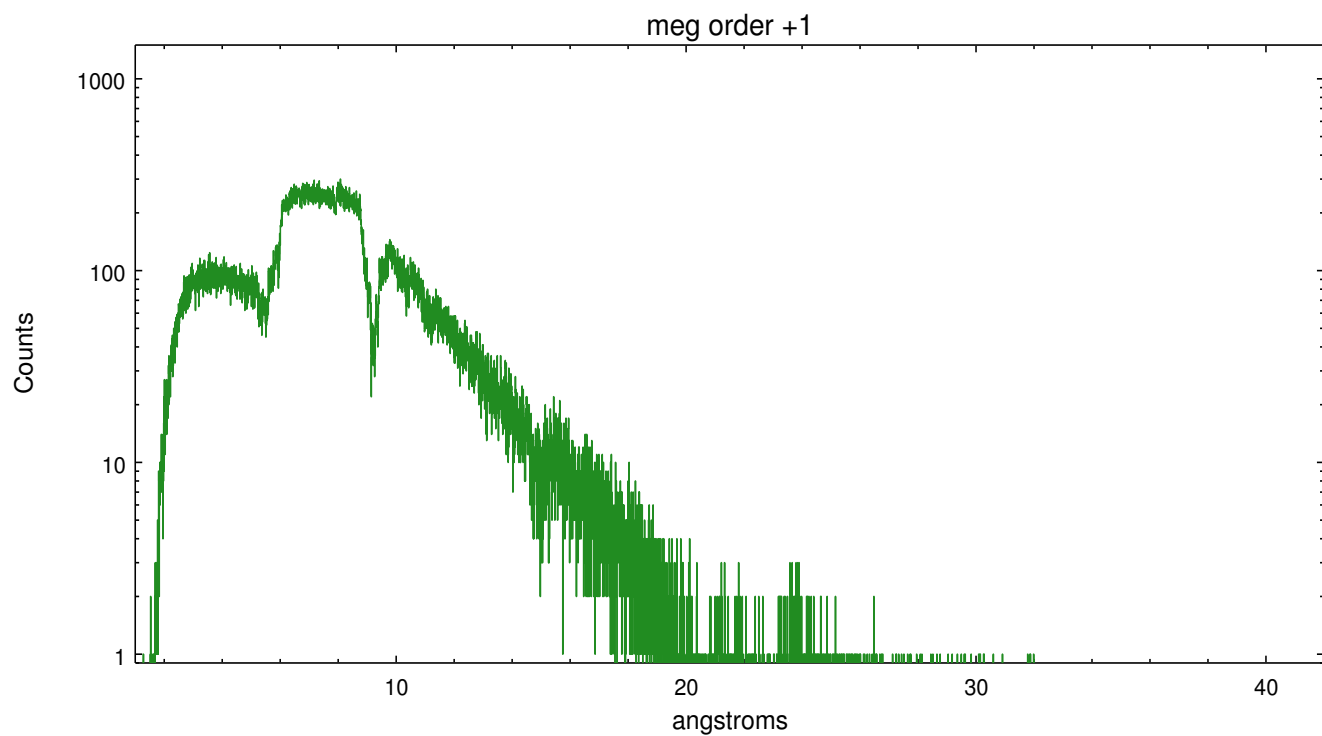
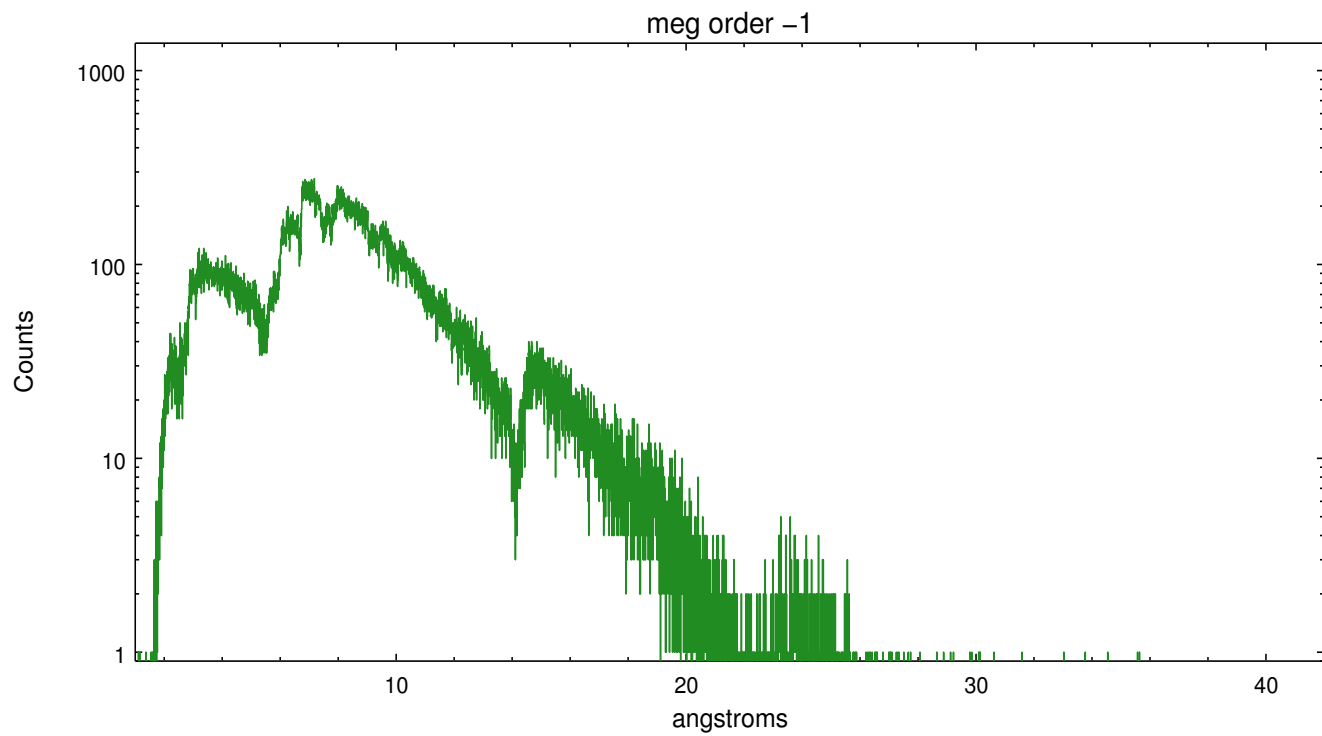
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	24507	10279	261344	35159	279672	9693	21004





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.05.30
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	35.1882997

## 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 ( $x=4126.27$ ,  $y=4113.87$ ) into the `*srcla.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 (currently in ISIS). 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 `*srcla.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.