

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 2708 - L2 Version 3  
Chandra X-Ray Center

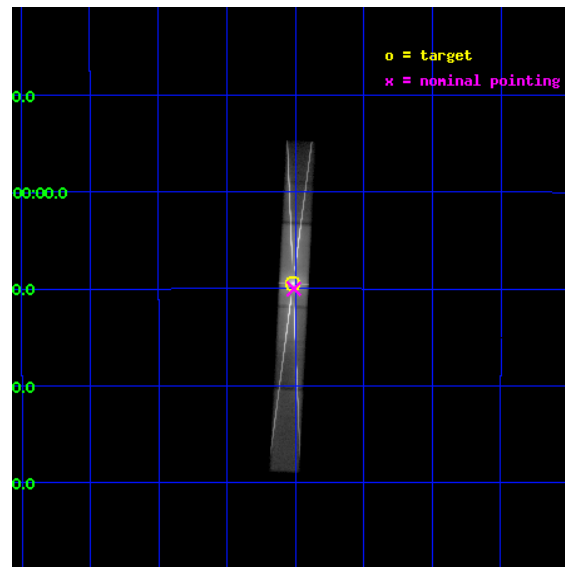
L2 Processing Date : Oct 15 2012

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# 1 Front

seq_num	400188	Sequence number
obs_id	2708	Observation id
title	RESOLVING IRON K-ABSORPTION LINE FEATURES IN THE X-RAY SPECTRA OF THE LOW MASS X-RAY BINARY GX 13+1	Proposal title
observer	Dr Yoshihiro Ueda	Principal investigator
object	GX 13+1	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	273.629167	Observer's specified target RA [deg]
dec_targ	-17.157222	Observer's specified target Dec [deg]
ra_nom	273.62788273227	Nominal RA [deg]
dec_nom	-17.166806326195	Nominal Dec [deg]
roll_nom	272.87074880639	Nominal Roll [deg]
revision	3	Processing version of data
ontime	30357.599698424	Sum of GTIs [s]
livetime	29353.703053978	Livetime [s]
ontime5	30357.599698424	Sum of GTIs [s]
ontime6	30357.599698424	Sum of GTIs [s]
ontime7	30357.599698424	Sum of GTIs [s]
ontime8	30357.599698424	Sum of GTIs [s]
l2events	3248386	Number of level 2 events

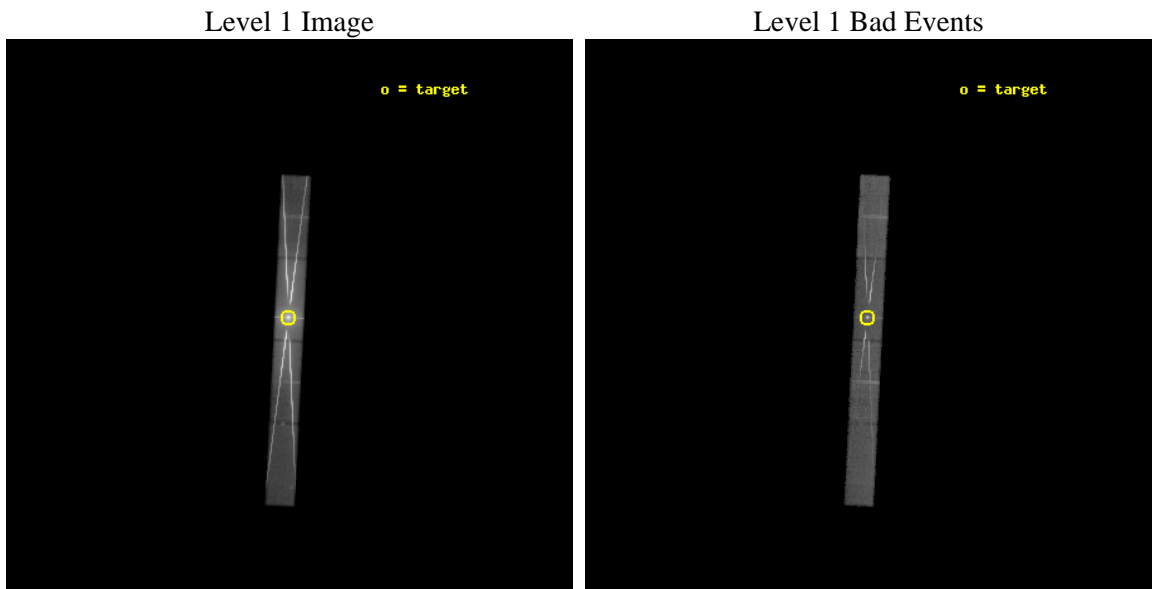




## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



### 2.1.2 Parameters

obi_num	0	Obi number	sched_exp_time	30200.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	30357.599698424	Sum of GTIs [s]
caldsver	4.5.2	&#160	ontime5	30357.599698424	Sum of GTIs [s]
date	2012-10-15T14:44:16	Date and time of file creation	ontime6	30357.599698424	Sum of GTIs [s]
revision	3	Processing version of data	ontime7	30357.599698424	Sum of GTIs [s]
			ontime8	30357.599698424	Sum of GTIs [s]
			l1events	3777617	Number of level 1 events

### 2.1.3 Events

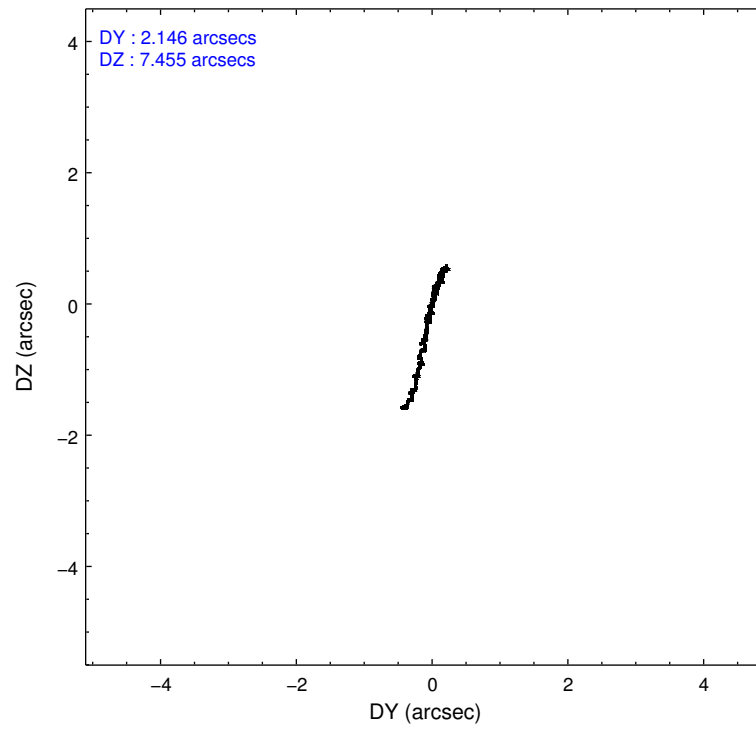
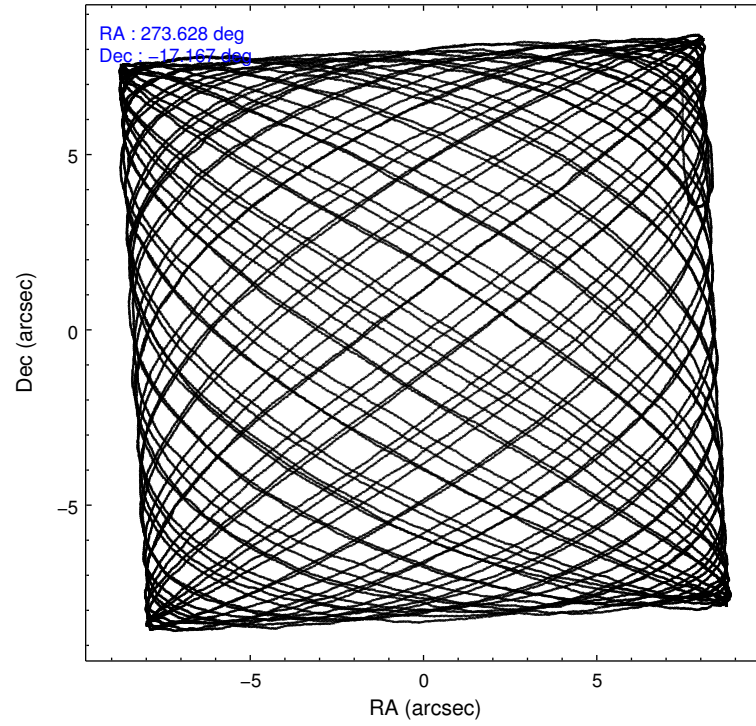
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	183104	1142484	2053946	398083
rejected events	59845	103796	171679	88664
rejected %	32%	9%	8%	22%

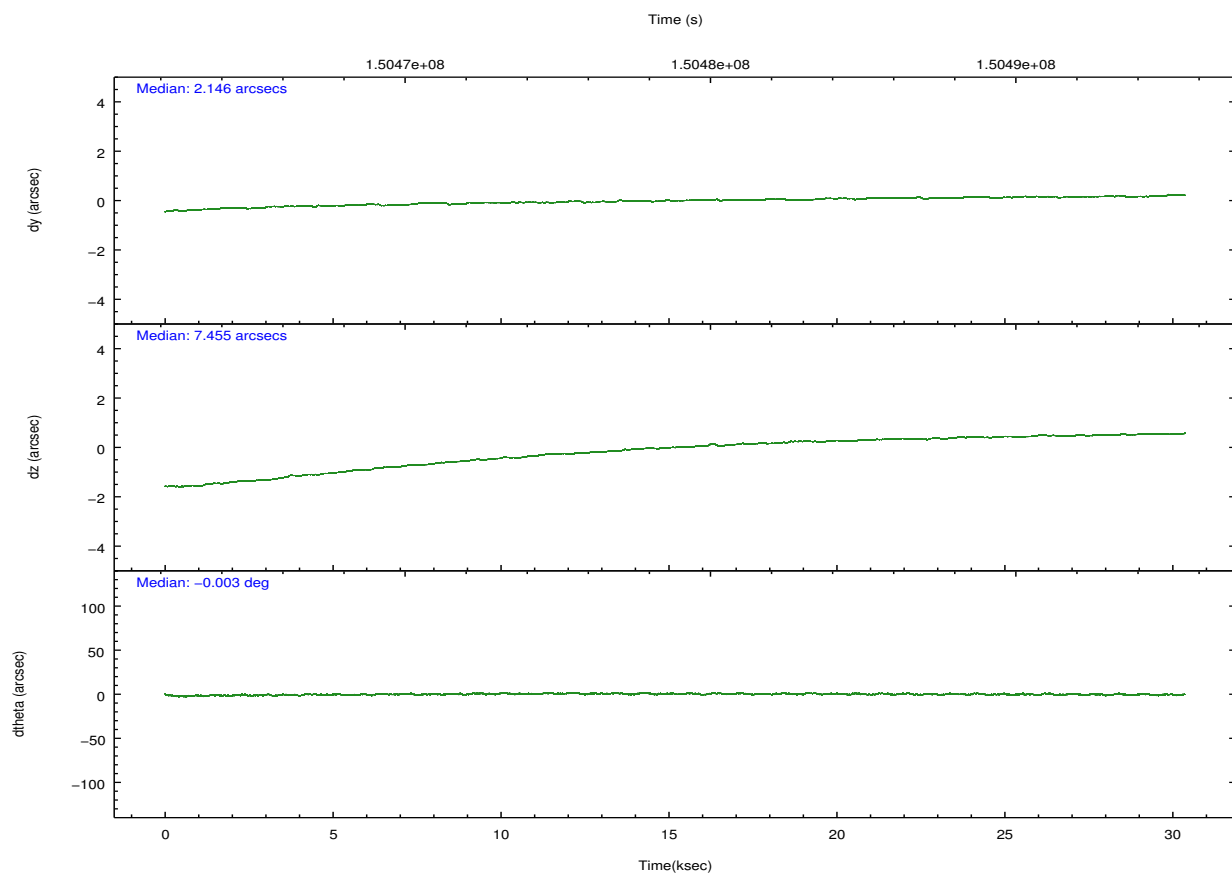
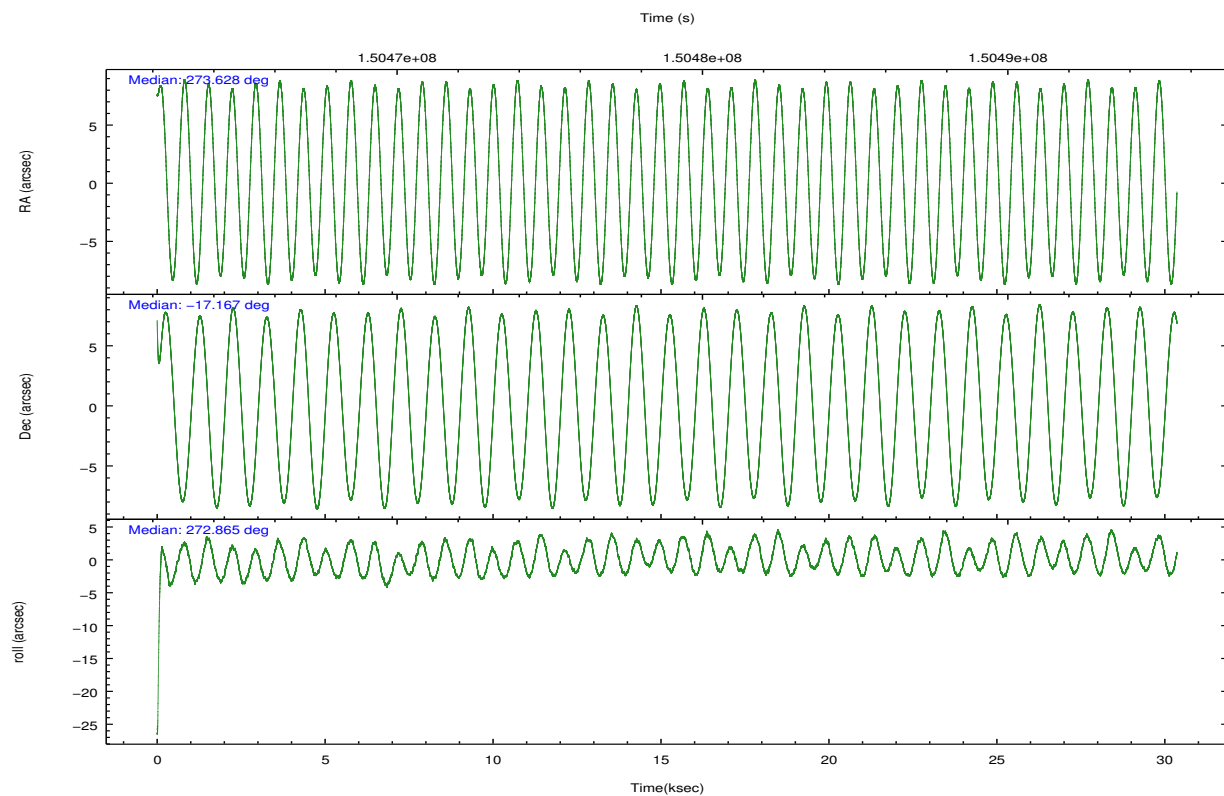
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	21854	743185	310631	229731
	11%	65%	15%	57%
grade 1 events	246	11006	6818	1155
	0%	0%	0%	0%
grade 2 events	41534	140895	472853	38593
	22%	12%	23%	9%
grade 3 events	8422	48815	187484	13522
	4%	4%	9%	3%
grade 4 events	8343	48380	183400	13280
	4%	4%	8%	3%
grade 5 events	6800	12448	43549	4511
	3%	1%	2%	1%
grade 6 events	44521	61234	736873	15577
	24%	5%	35%	3%
grade 7 events	51384	76521	112338	81714
	28%	6%	5%	20%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	273.612107	273.6278827322672	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	-17.144140	-17.16680632619467	Subarray start row	1	1
[deg] Pointing Roll	272.709481	272.8707488063878	Subarray row count	350	350
[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	1.2
[mm] SIM translation stage pos	-182.132523	-182.1370004450064			
[mm] SIM translation stage offset	-8	-7.995522138001405			
[s] Observation start time (MET)	150463824.184000	150462840.23823			
Observation start date	2002-10-08T11:29:20	2002-10-08T11:14:00			
[s] Observation end time (MET)	150494024.184000	150494680.83955			
Observation end date	2002-10-08T19:52:40	2002-10-08T20:04:40			
Read mode	TIMED	TIMED			

## 2.3 Aspect



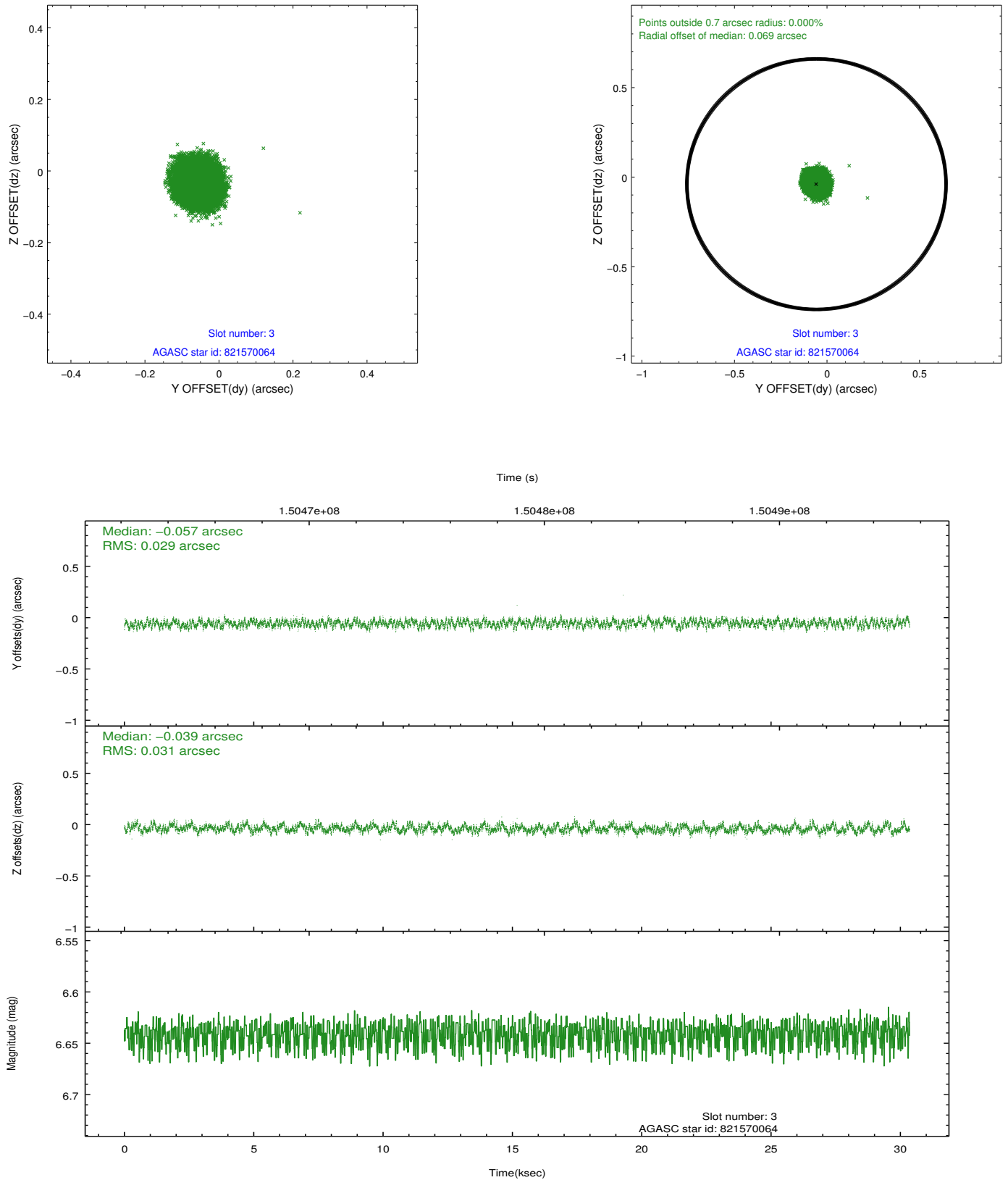


### Slot Statistics

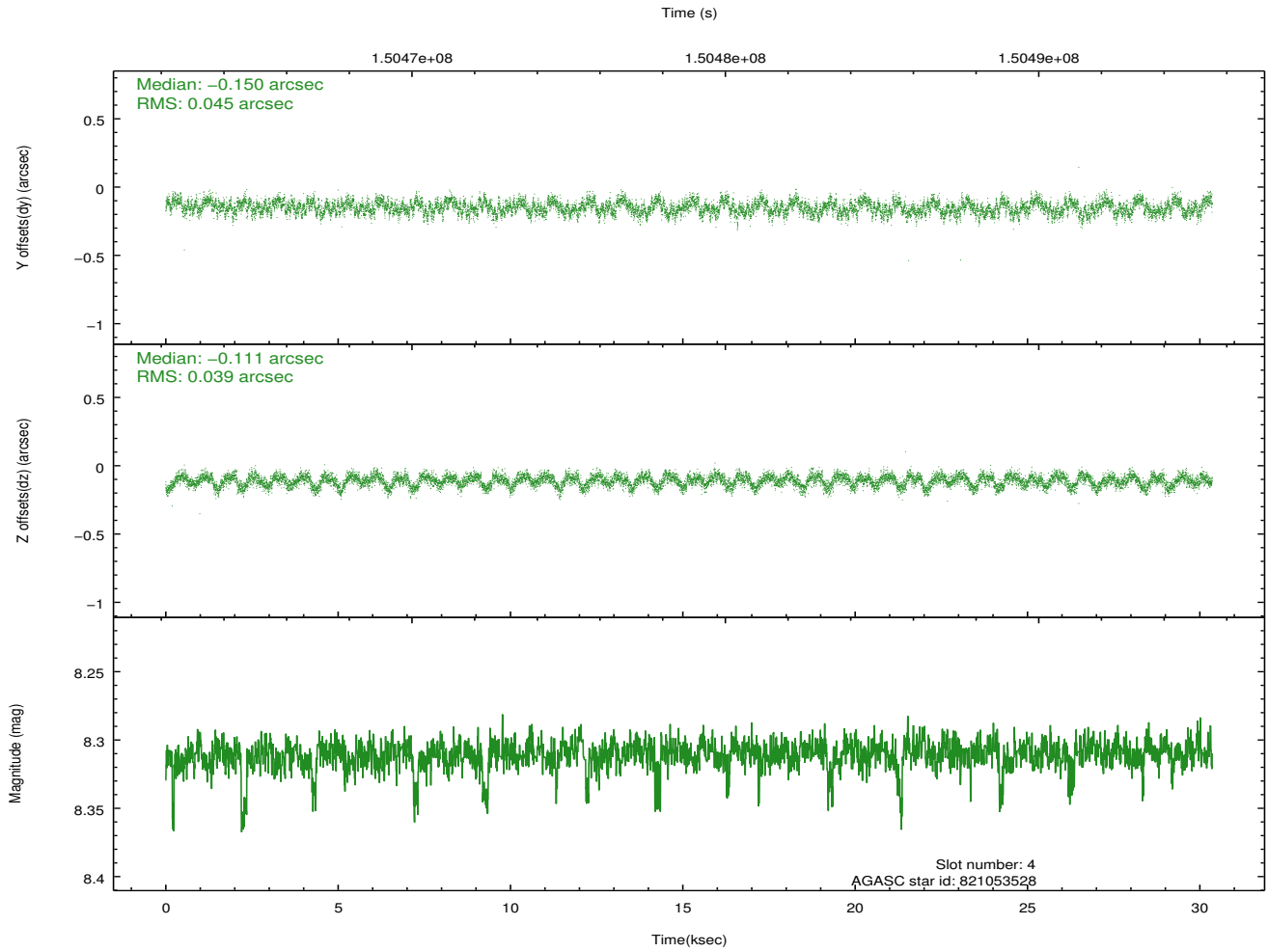
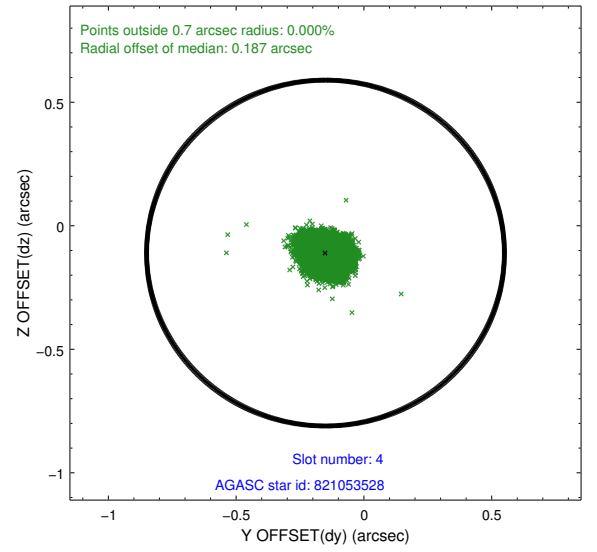
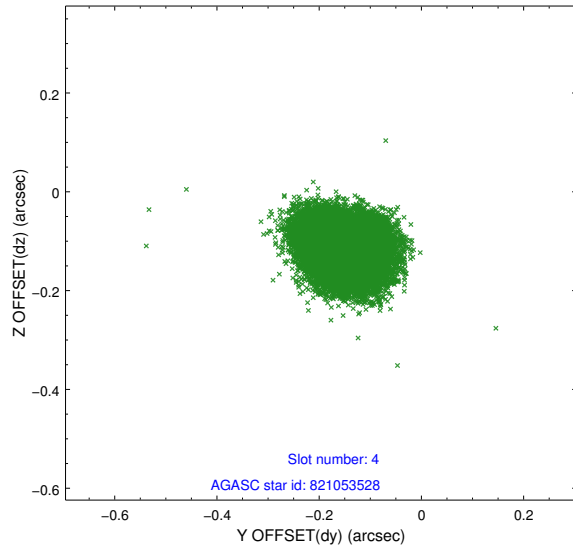
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	7405	-0.046	-0.146	0.013	0.054	0.000000	0.000000	-754.23	-1893.26
1	FID	ACIS-S-4	7.17	7405	0.074	0.060	0.009	0.015	0.000000	0.000000	2159.16	15.27
2	FID	ACIS-S-5	7.23	7405	-0.058	0.094	0.013	0.047	0.000000	0.000000	-1806.97	9.10
3	GUIDE	821570064	6.64	14810	-0.057	-0.039	0.046	0.071	273.185111	-17.414521	905.38	-1510.47
4	GUIDE	821053528	8.31	14805	-0.150	-0.111	0.064	0.100	273.625019	-16.498449	-2319.13	154.61
5	GUIDE	821561440	7.92	14803	0.222	0.086	0.105	0.151	273.991252	-17.607934	1731.25	1221.50
6	GUIDE	821568752	8.28	14809	0.097	-0.076	0.065	0.106	273.050073	-17.733446	2032.03	-2024.67
7	GUIDE	821183504	8.38	14809	-0.104	0.148	0.079	0.128	274.206900	-16.517860	-2151.48	2157.63

## 2.4 Star Slots

### 2.4.1 Slot 3

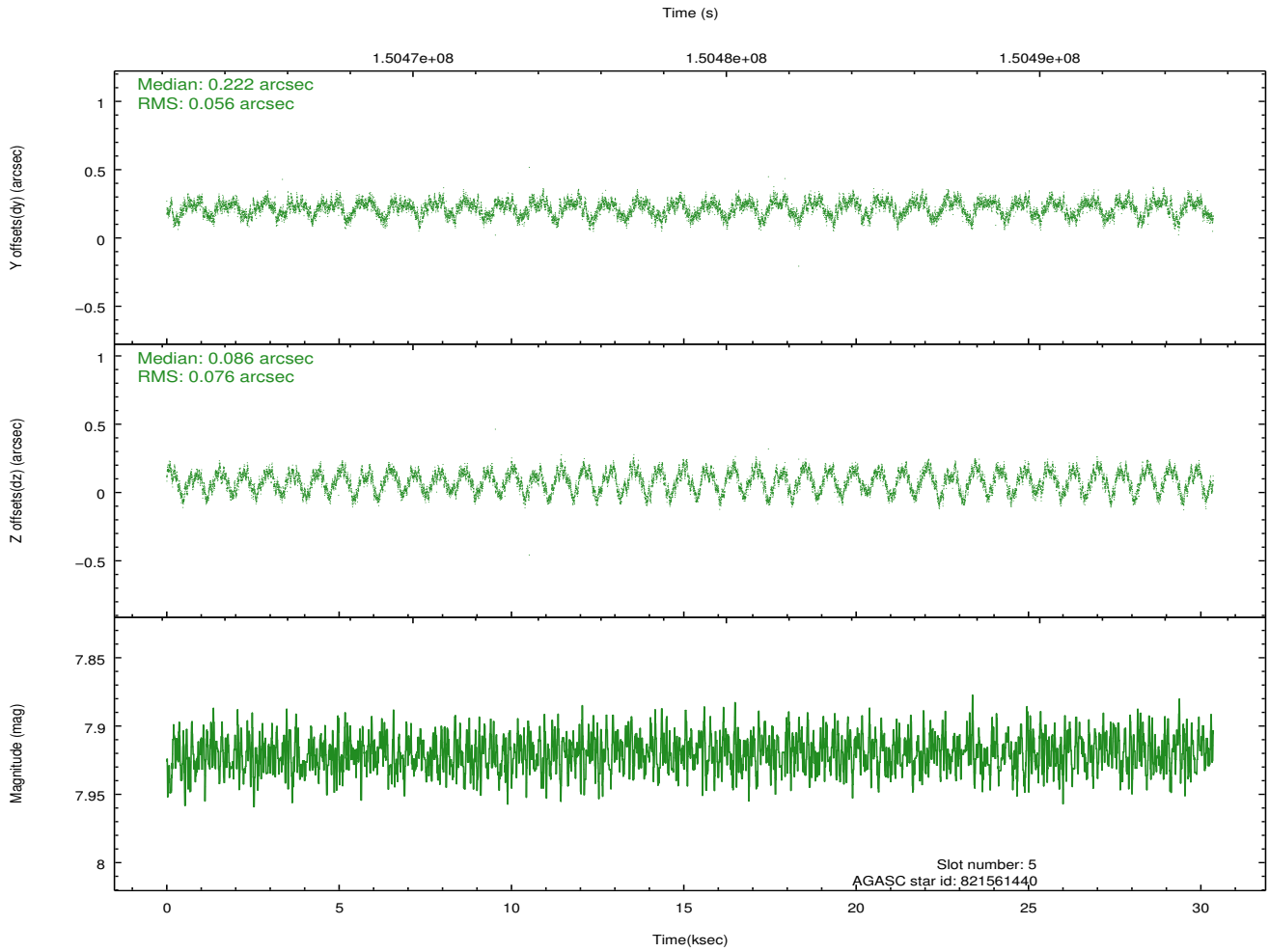
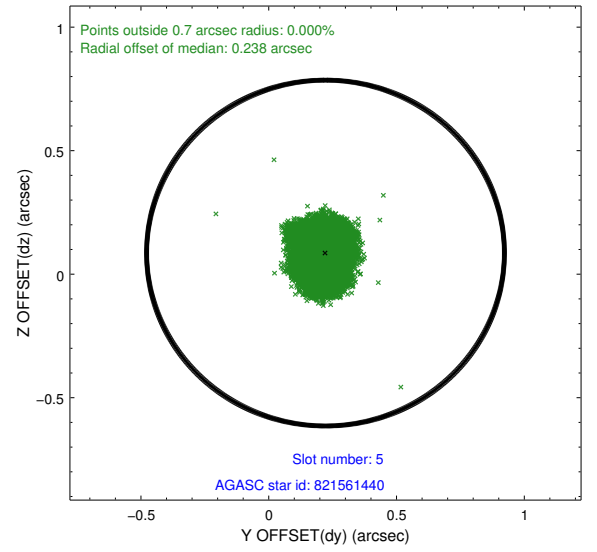
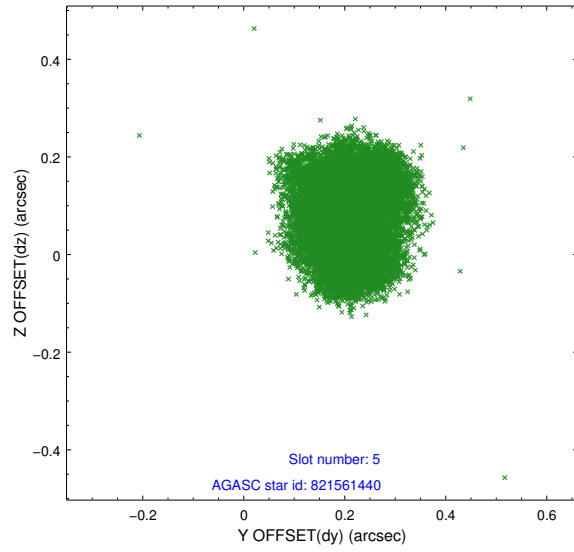


## 2.4.2 Slot 4

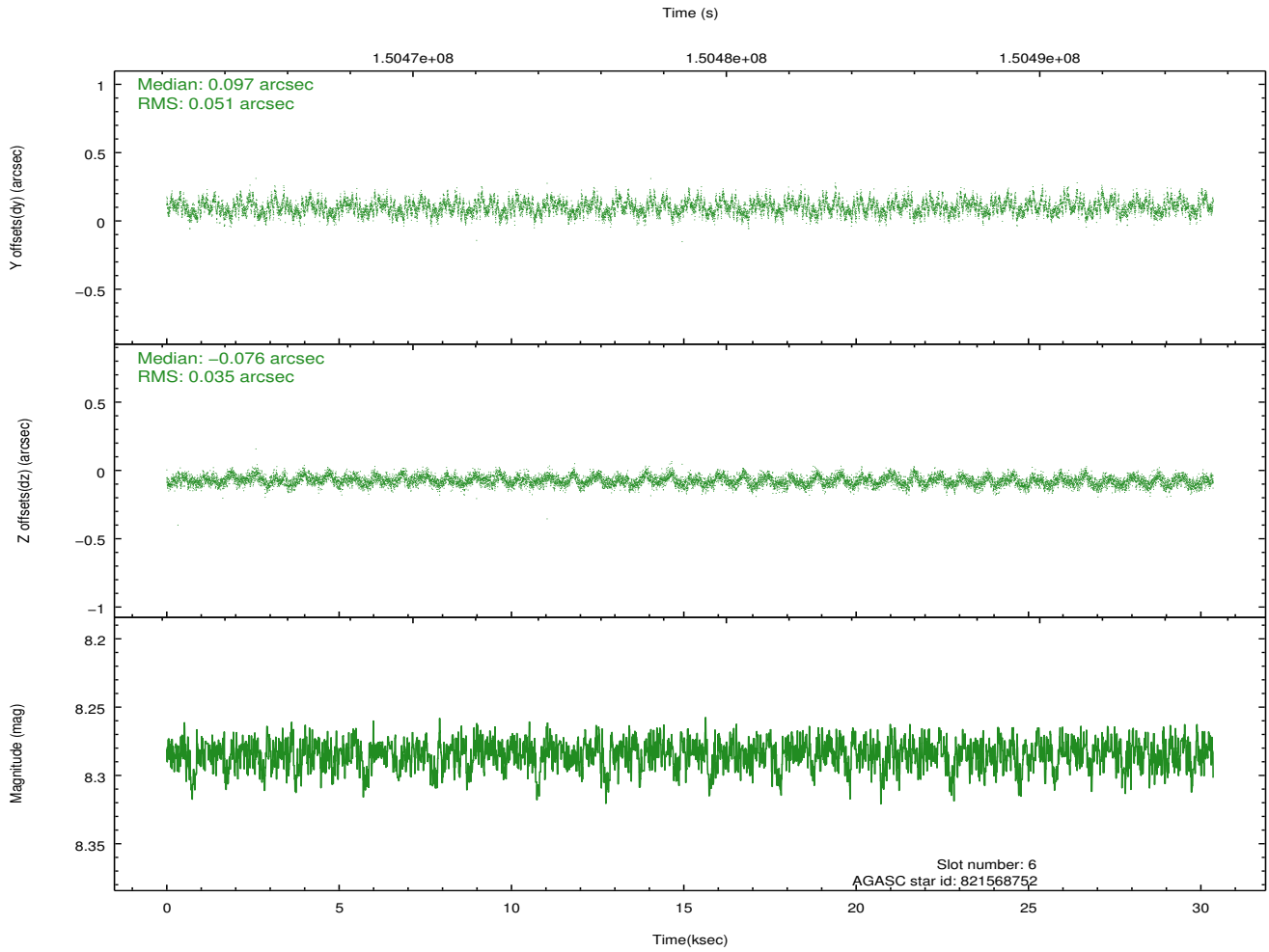
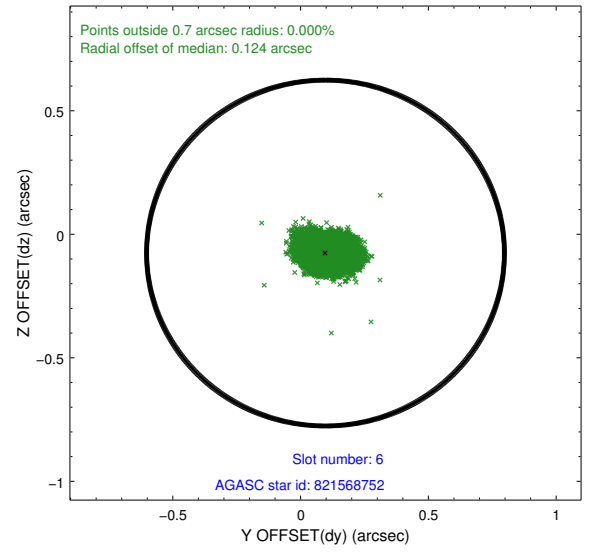
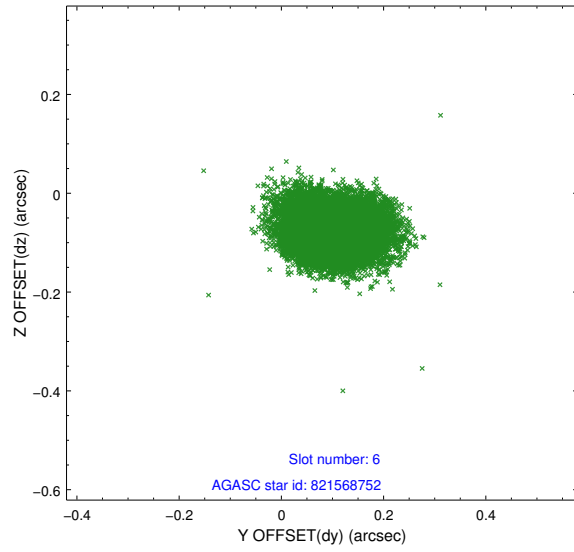




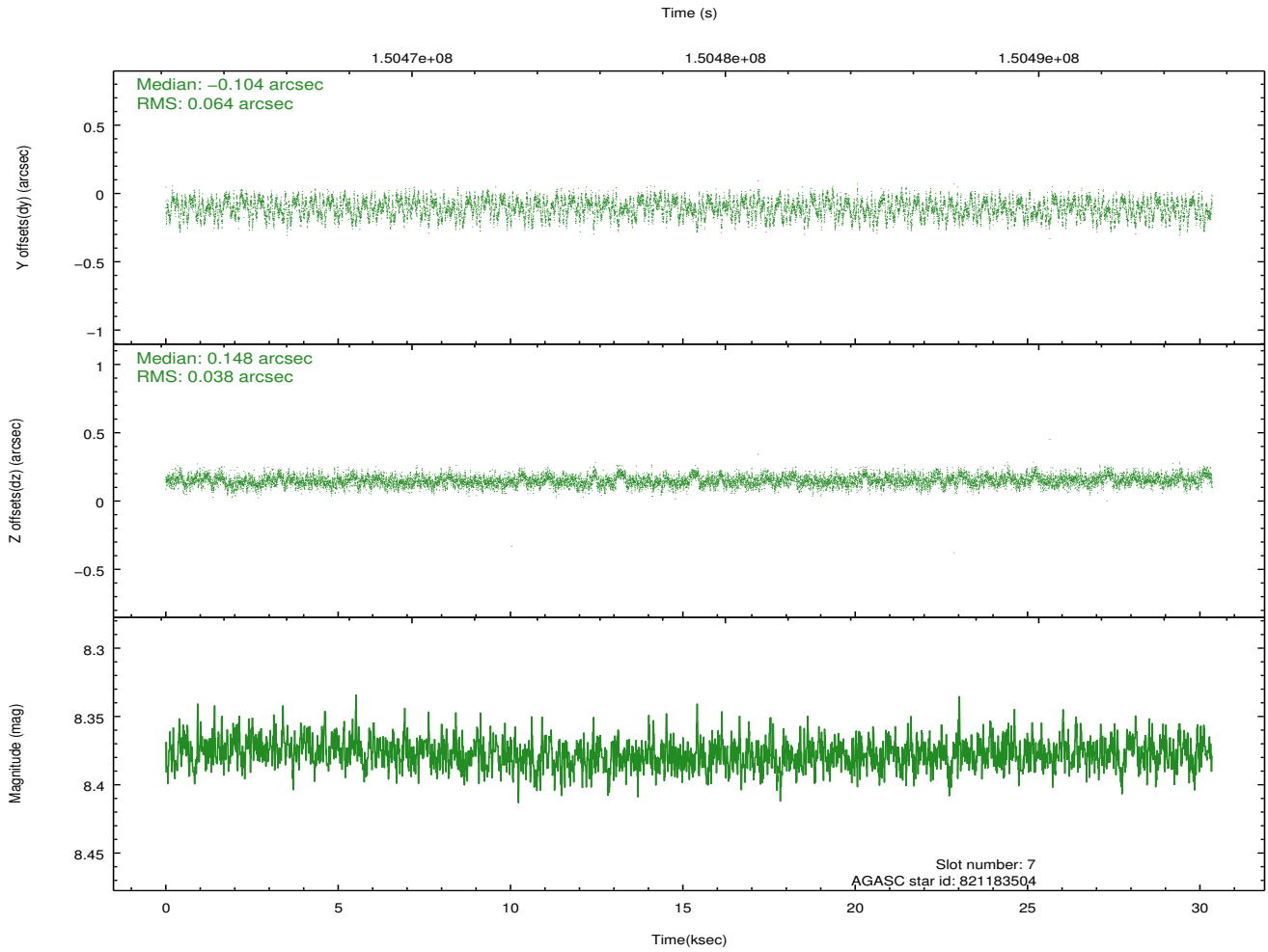
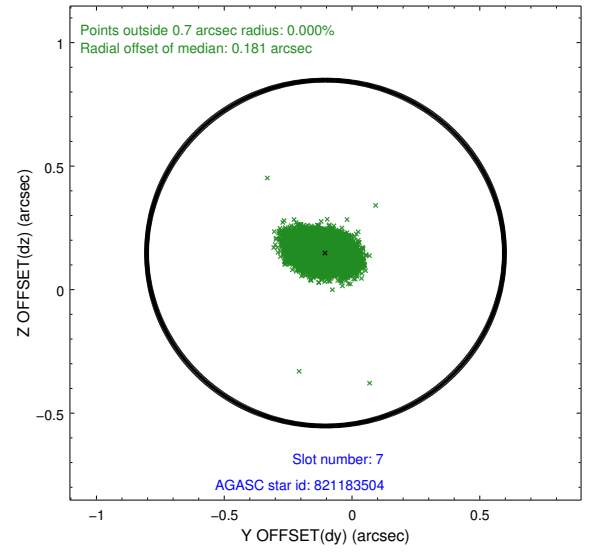
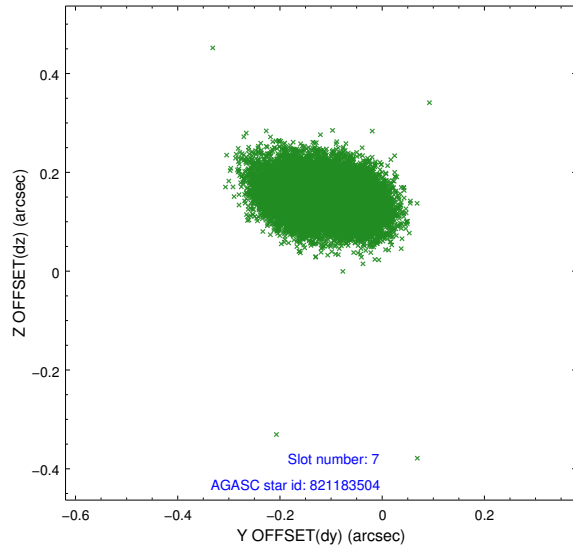
### 2.4.3 Slot 5



## 2.4.4 Slot 6

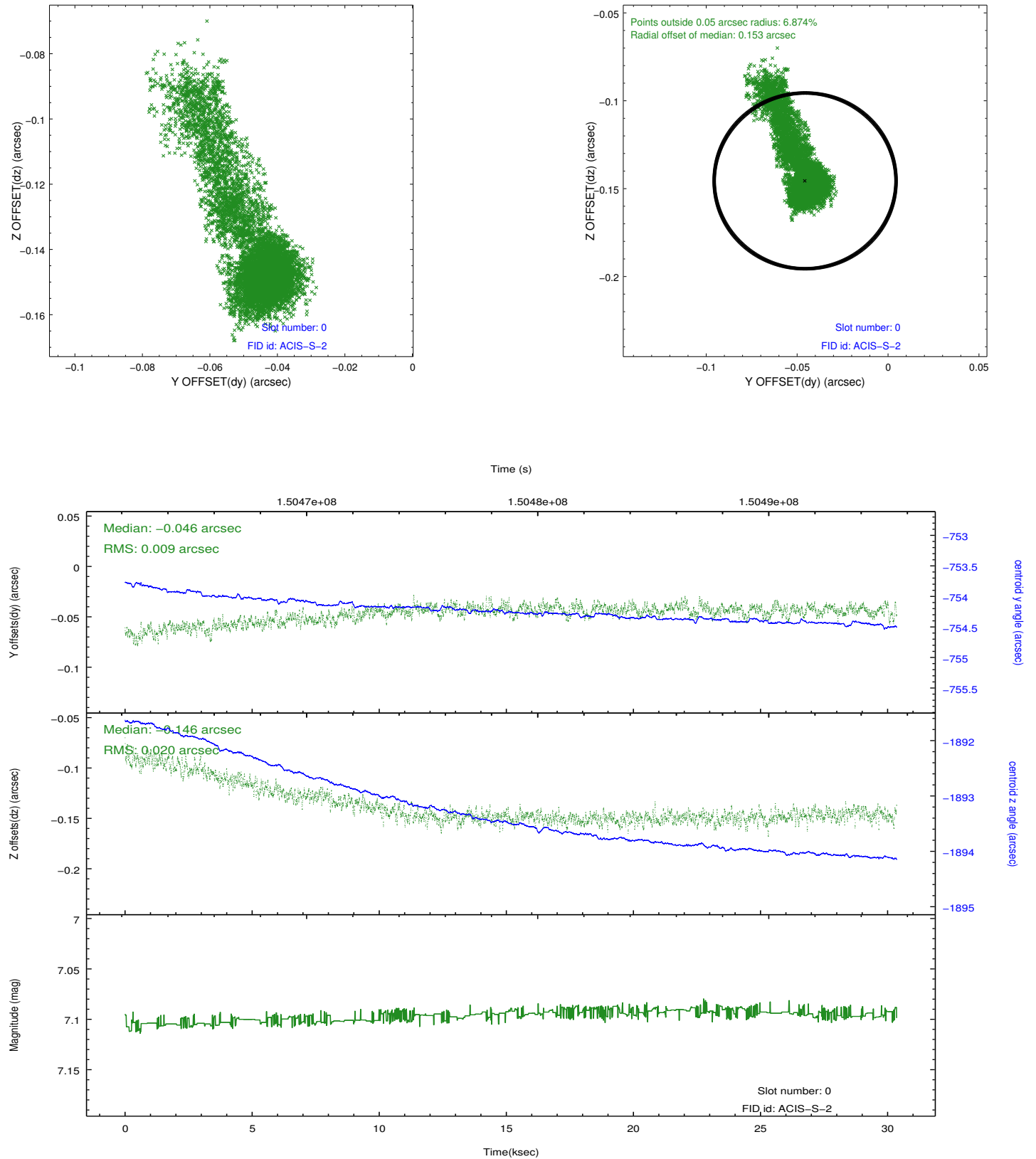


## 2.4.5 Slot 7

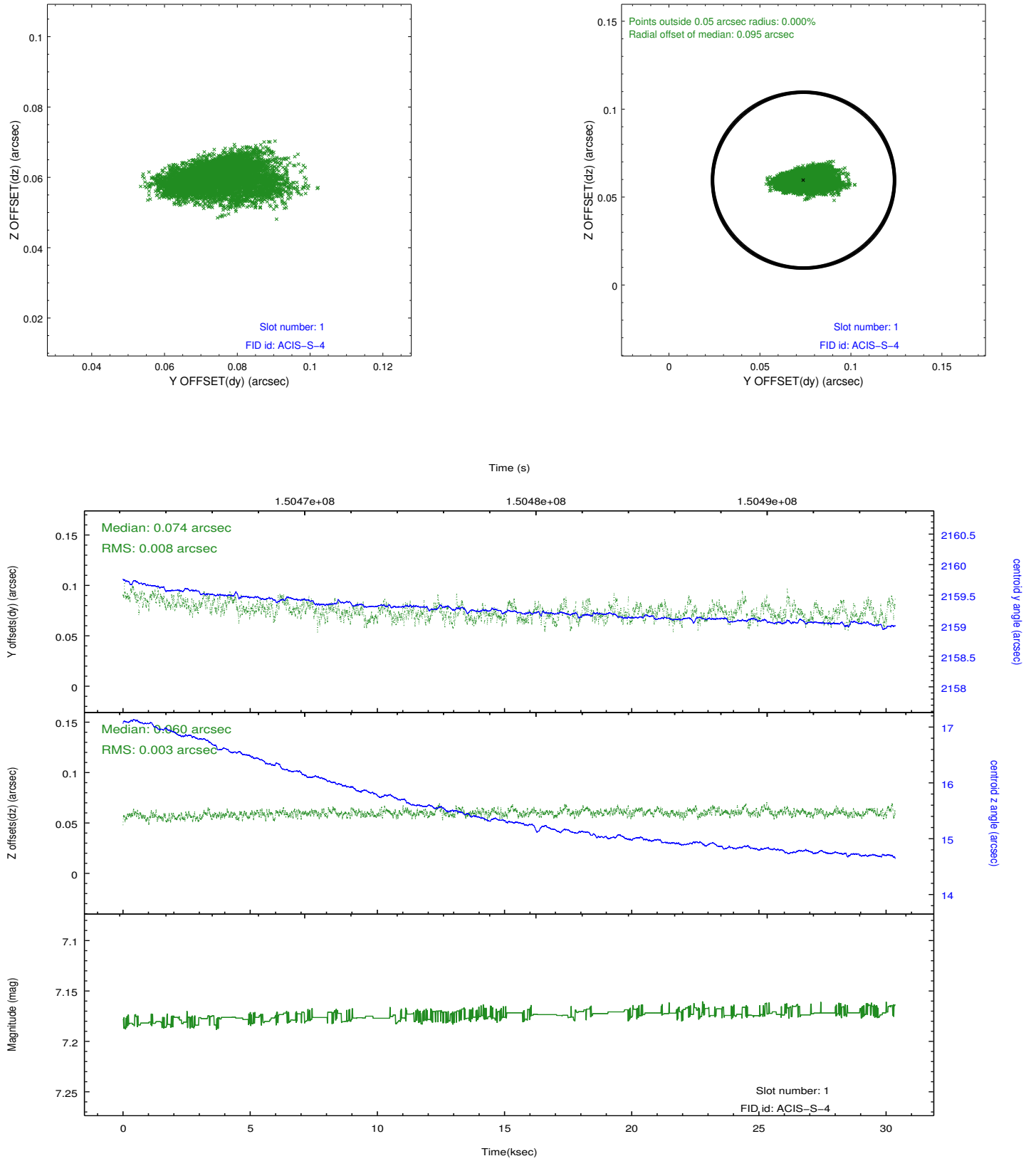


## 2.5 FID Slots

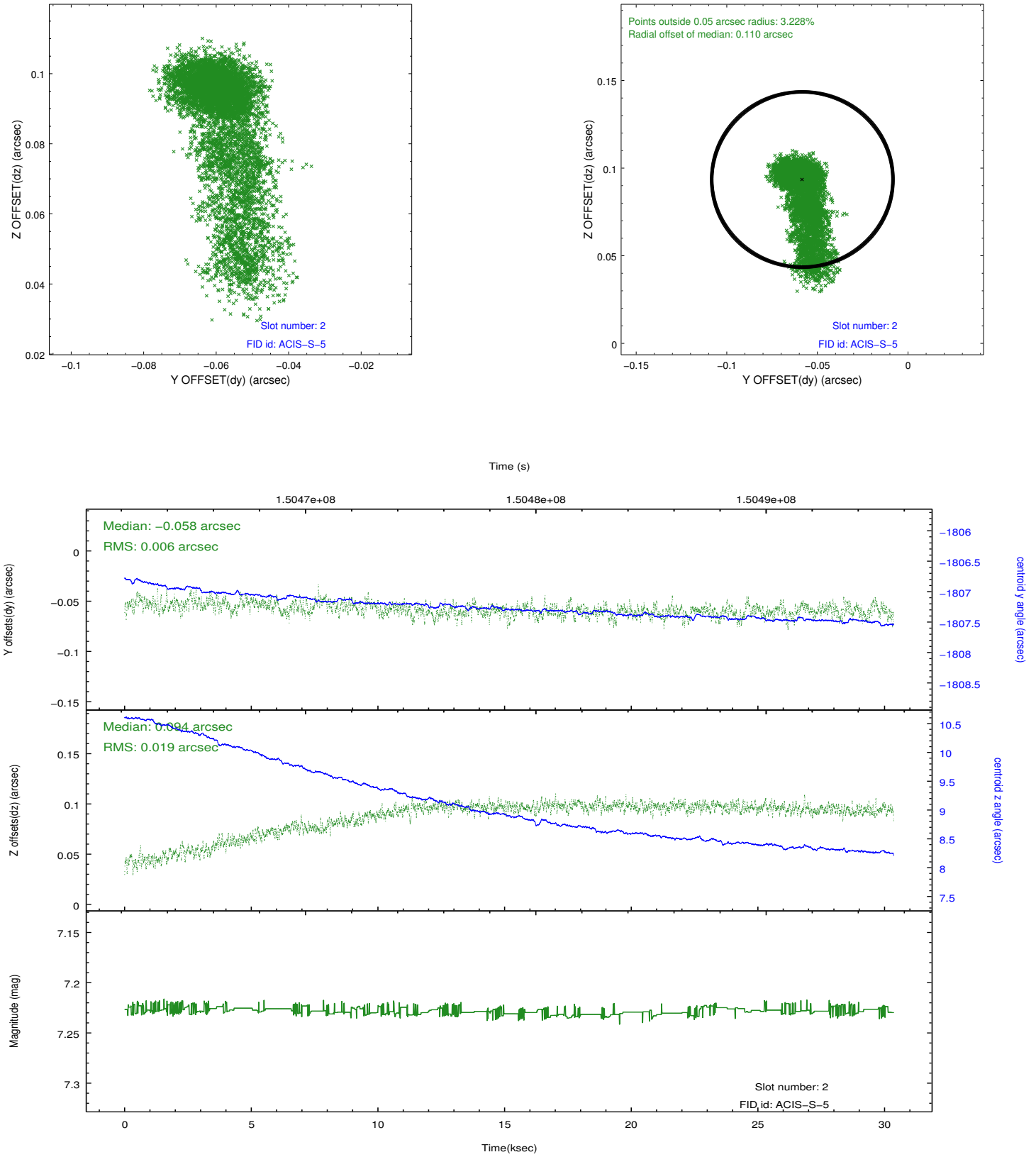
### 2.5.1 Slot 0



## 2.5.2 Slot 1

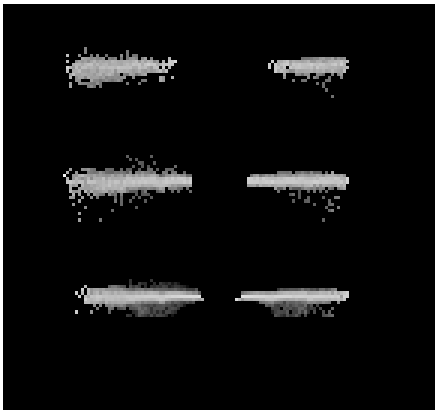


### 2.5.3 Slot 2

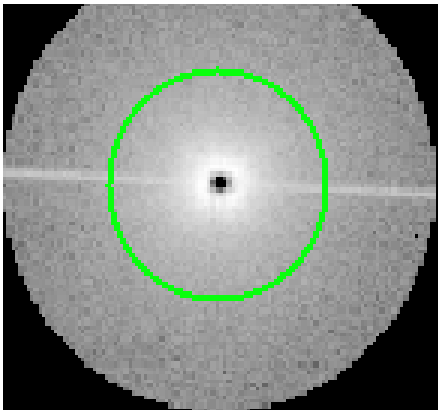


# 3 Gratings

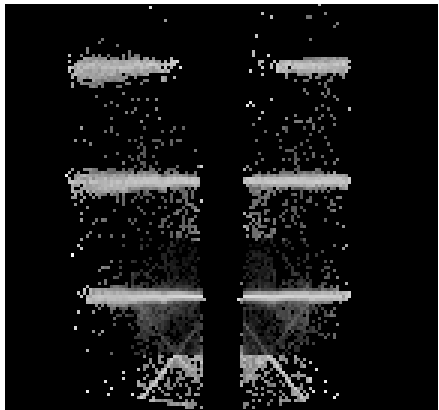
## 3.1 HEG Arm



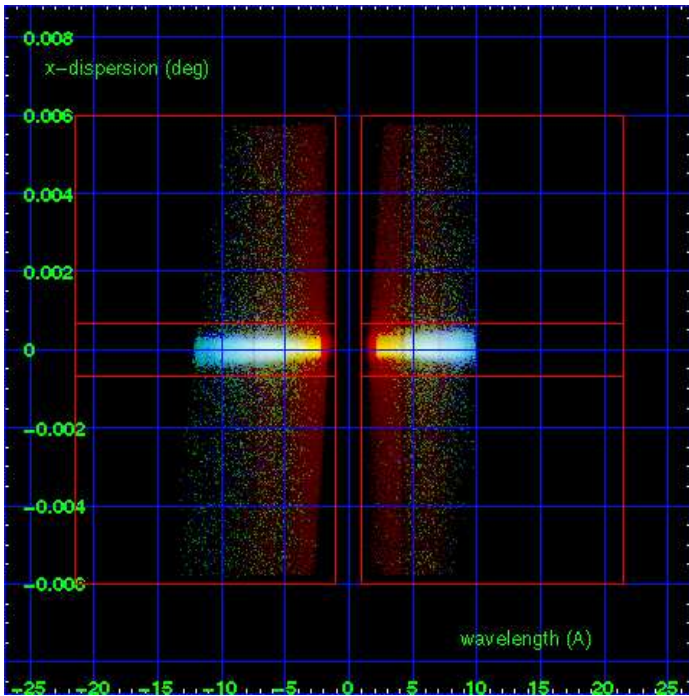
HEG Order Sort 123



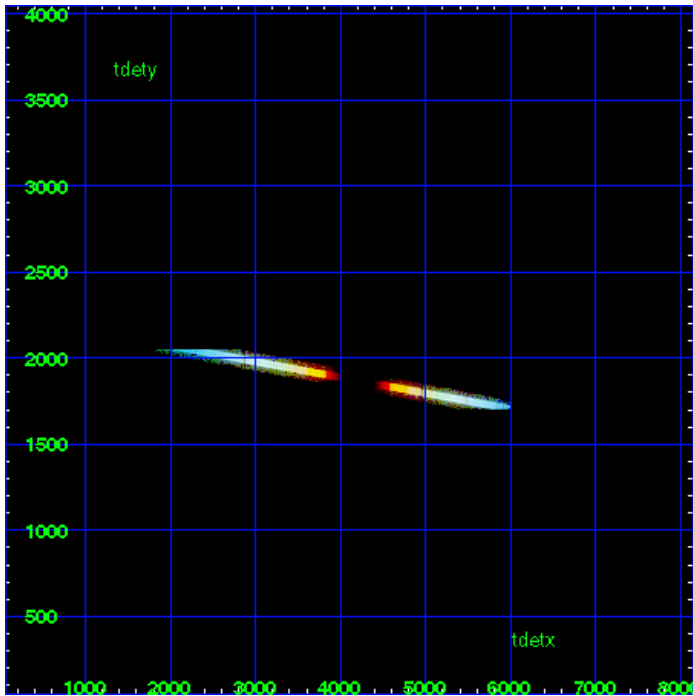
HEG Zero Order



HEG Order Sort ALL

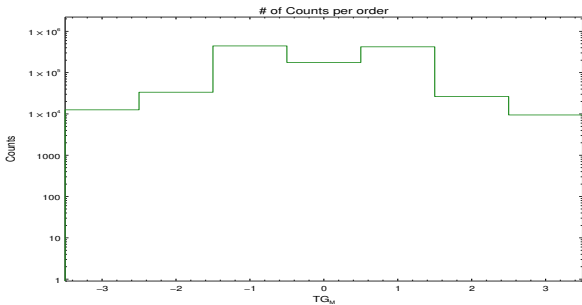


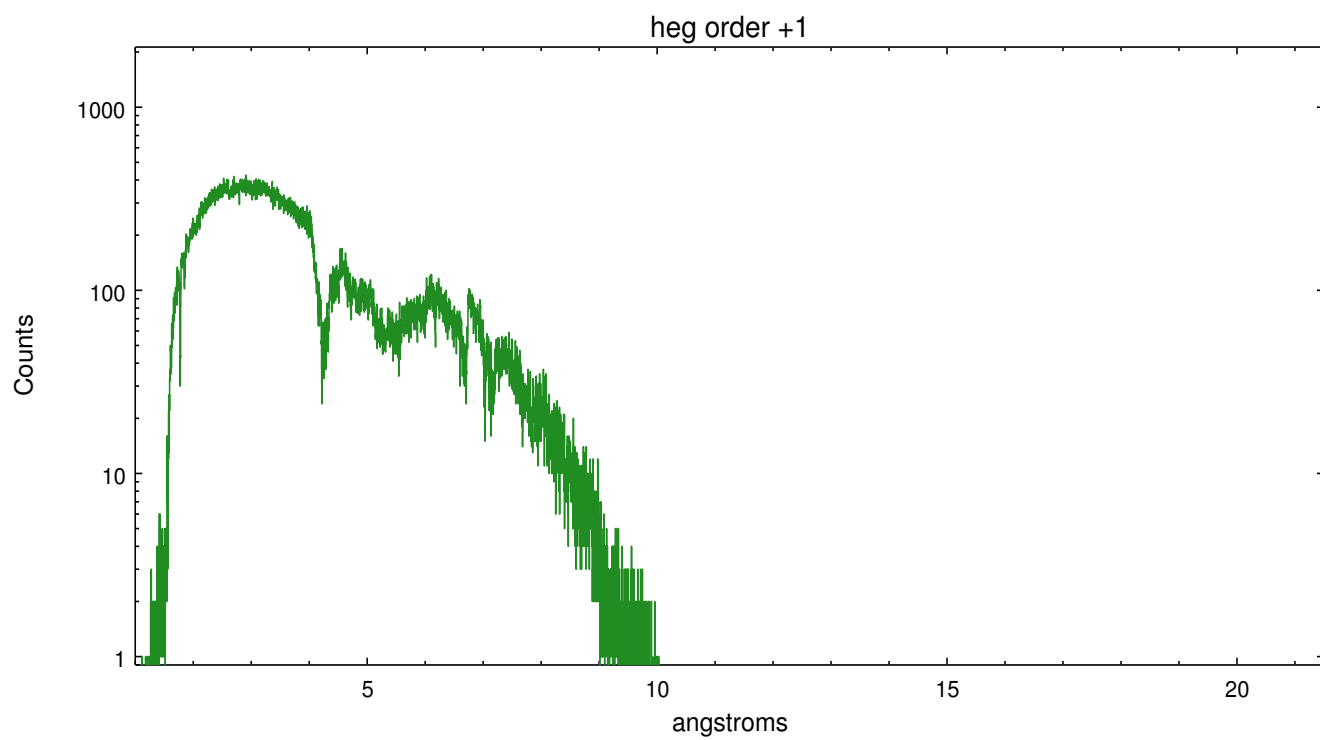
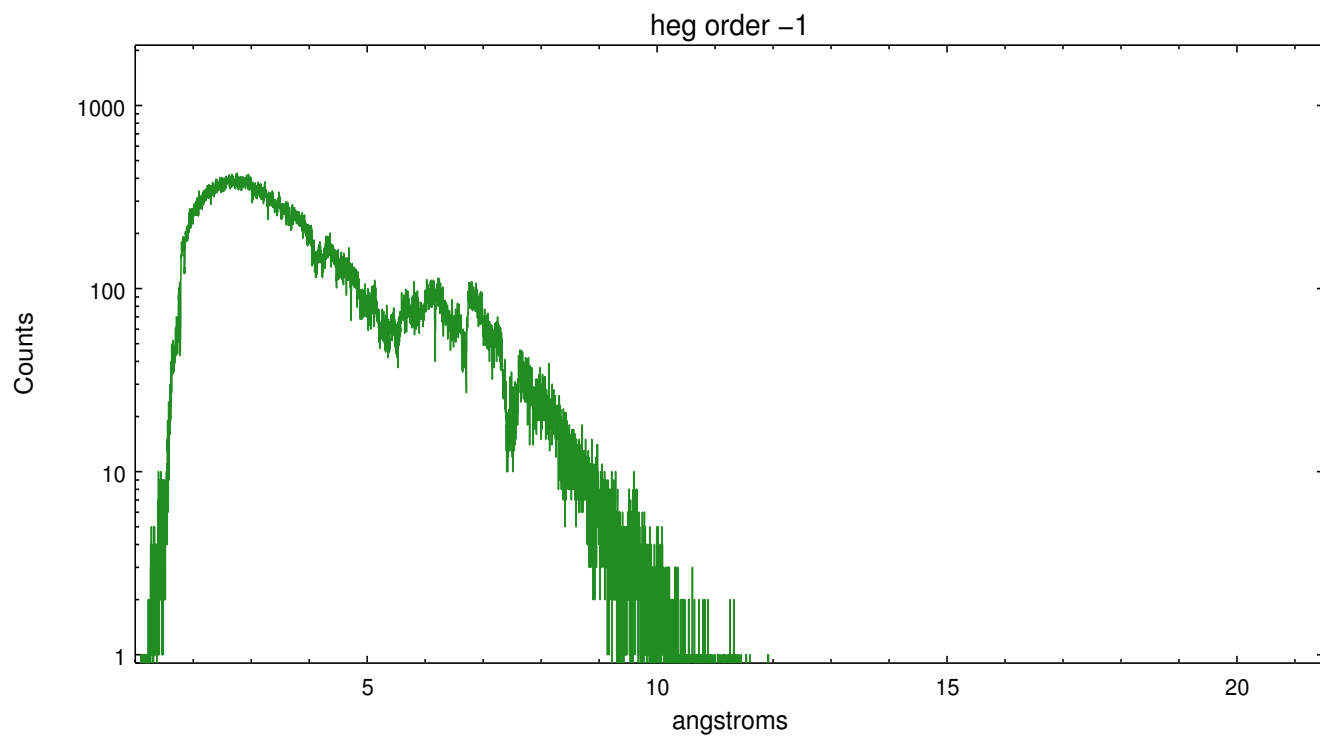
Spot Image HEG



Full Detector HEG

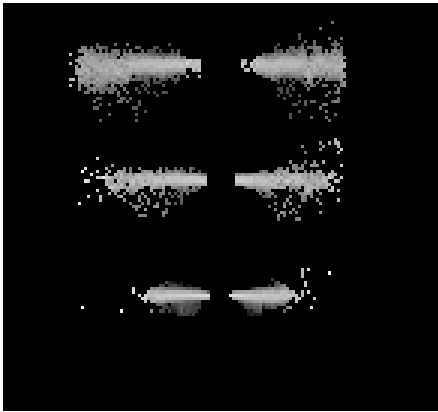
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	12574	33527	443307	176346	421814	26354	9446



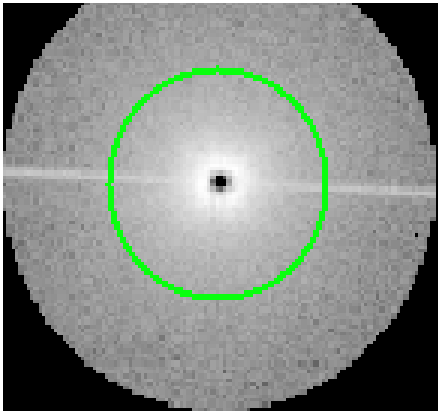




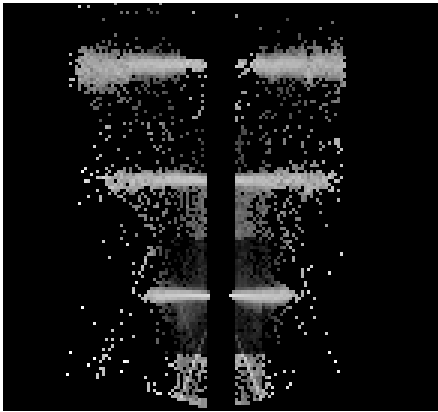
3.2 MEG Arm



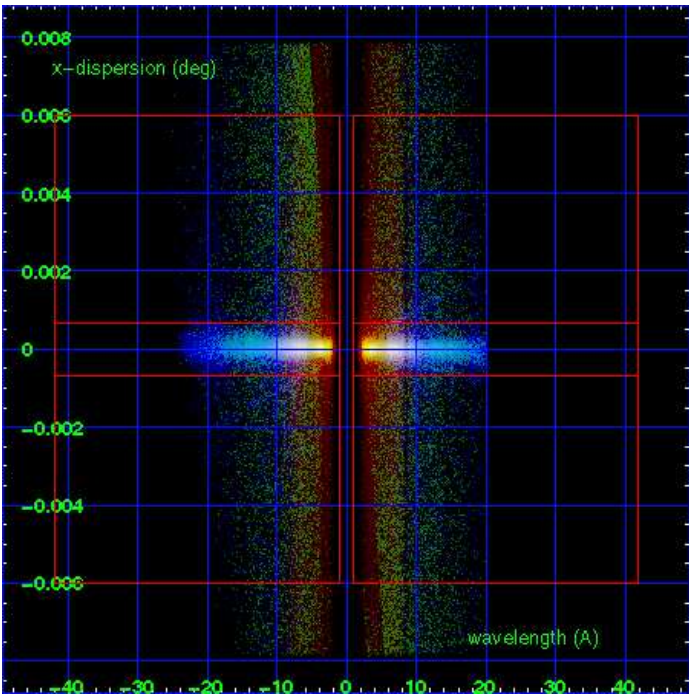
MEG Order Sort 123



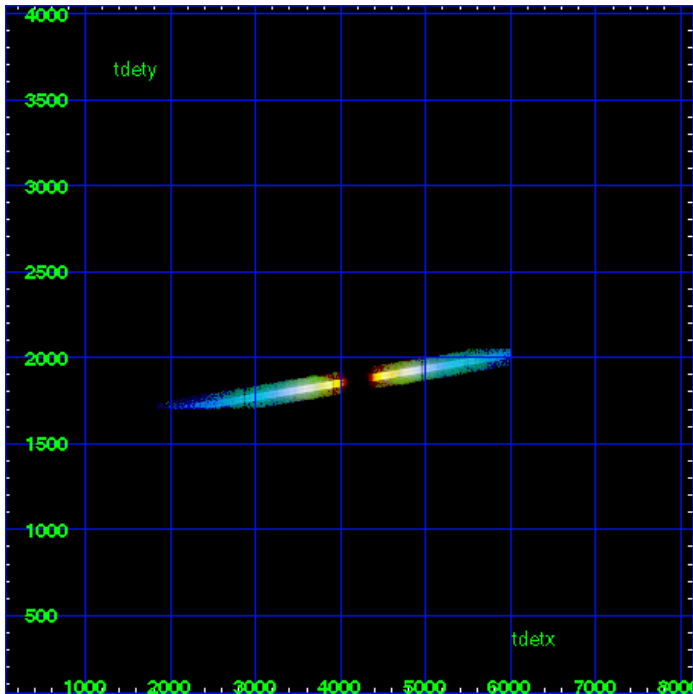
MEG Zero Order



MEG Order Sort ALL

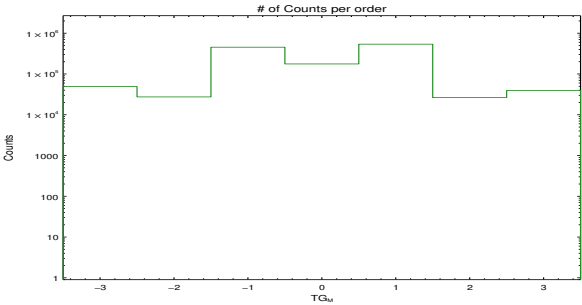


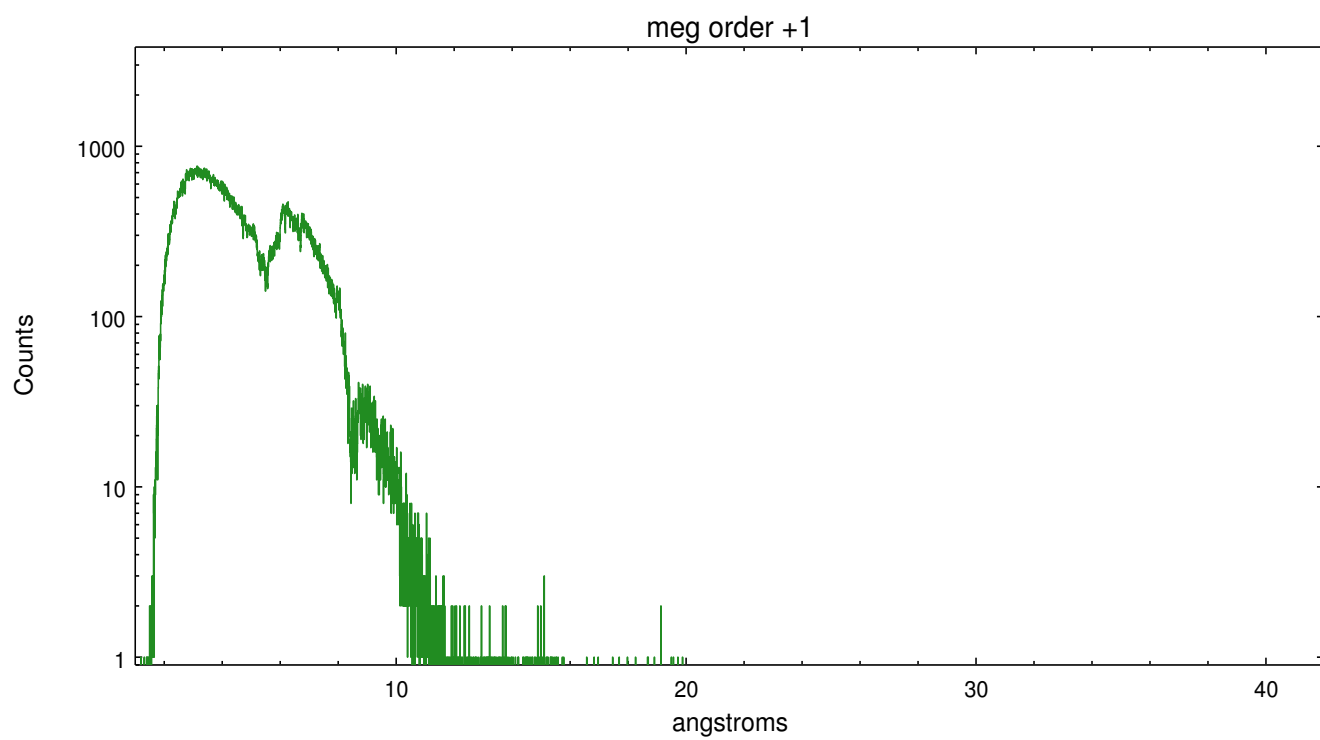
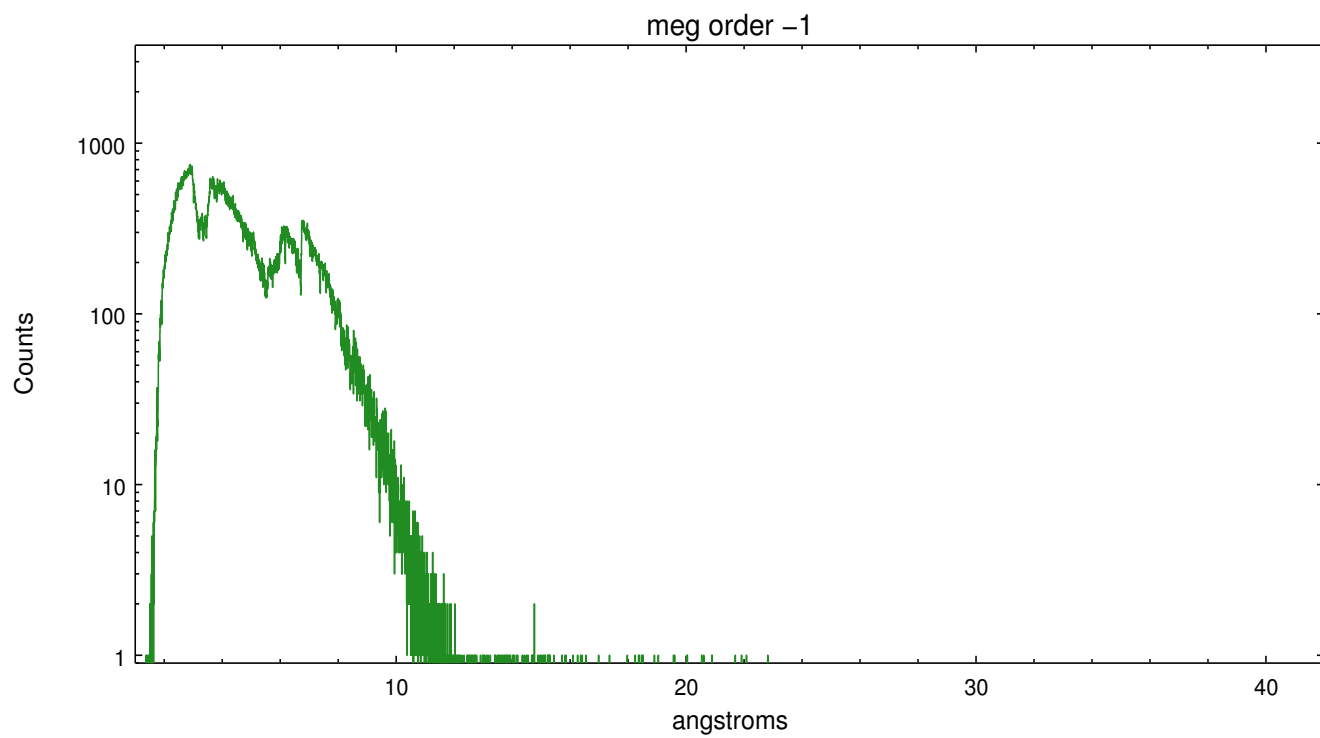
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	49096	27390	453633	176346	538271	26334	39349





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.10.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.357

## A.2 Comments

Zeroth order piled up and cratered. 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=4084.99, y=4166.26) 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. 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.

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Faint grating spectra can be seen in an image of bad events. This is probably due to pileup in the spectrum, causing migration to bad grades. This should be considered in analysis.