

# V&V Reference Report

## L2 ASCDS Version : 7.6.9

Observation 3480 - L2 Version 001  
Chandra X-Ray Center

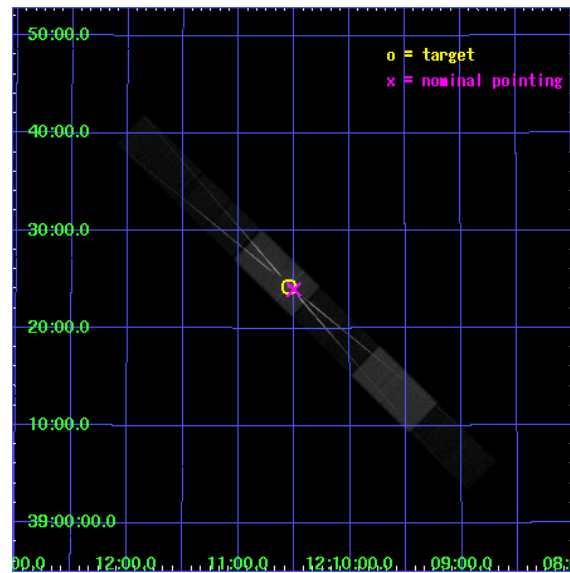
L2 Processing Date : Sep 15 2006

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# 1 Front

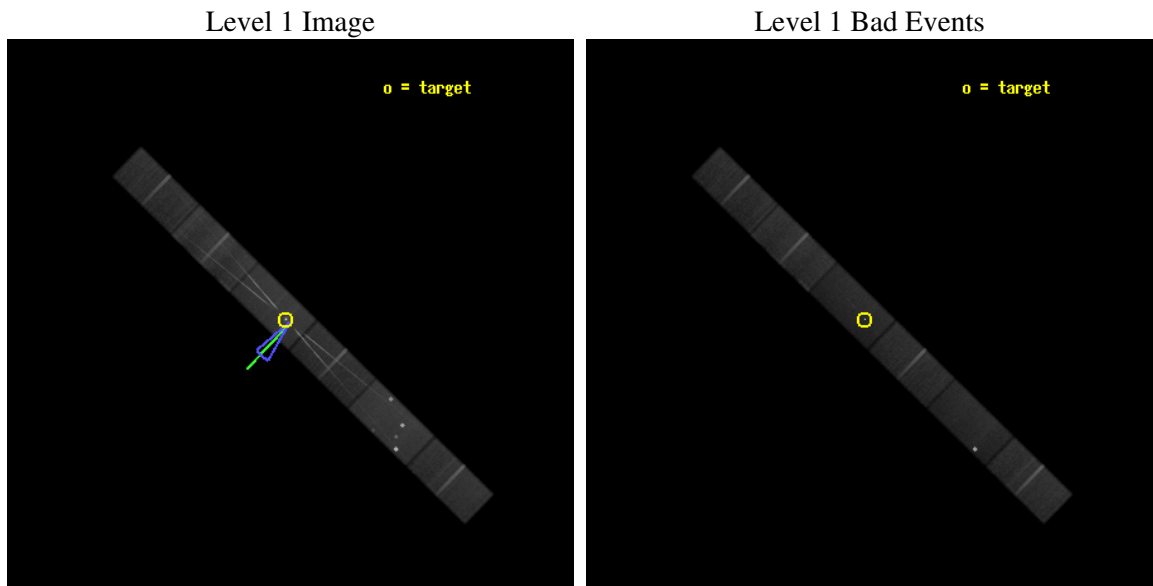
seq_num	700491
obs_id	3480
title	REVEALING THE NATURE OF THE X-RAY ABSORPTION IN NGC 4151
observer	PROF. STEVEN KRAEMER
object	NGC 4151
dtcycle	0
cycle	P
ra_targ	182.63625
dec_targ	39.405444
ra_nom	182.62584731325
dec_nom	39.400017345554
roll_nom	224.16312846819
revision	2
ontime	92888.959625036
livetime	90818.302331869
ontime4	92885.277594864
ontime5	92888.959625036
ontime6	92888.959625036
ontime7	92888.959625036
ontime8	92888.959625036
ontime9	92885.27758491
l2events	674826



## 2 OBI

### 2.1 OBI

#### 2.1.1 Images

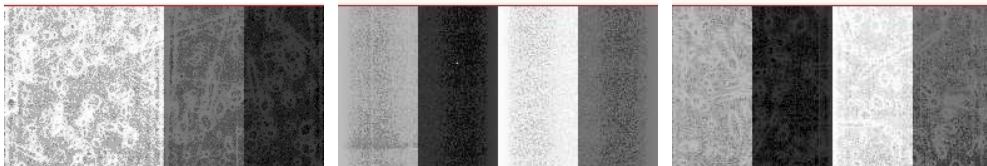


#### 2.1.2 Bias

Chip 4

Chip 5

Chip 6



Chip 7

Chip 8

Chip 9



### 2.1.3 Parameters

obi_num	0
ascdsver	7.6.9
caldsver	3.2.3
date	2006-09-15T07:11:28
revision	2

sched_exp_time	92753.733000
ontime	92892.228166282
ontime4	92888.546136111
ontime5	92892.228166282
ontime6	92894.069176406
ontime7	92892.228166282
ontime8	92894.069176406
ontime9	92890.387136281
l1events	2654476

### 2.1.4 Events

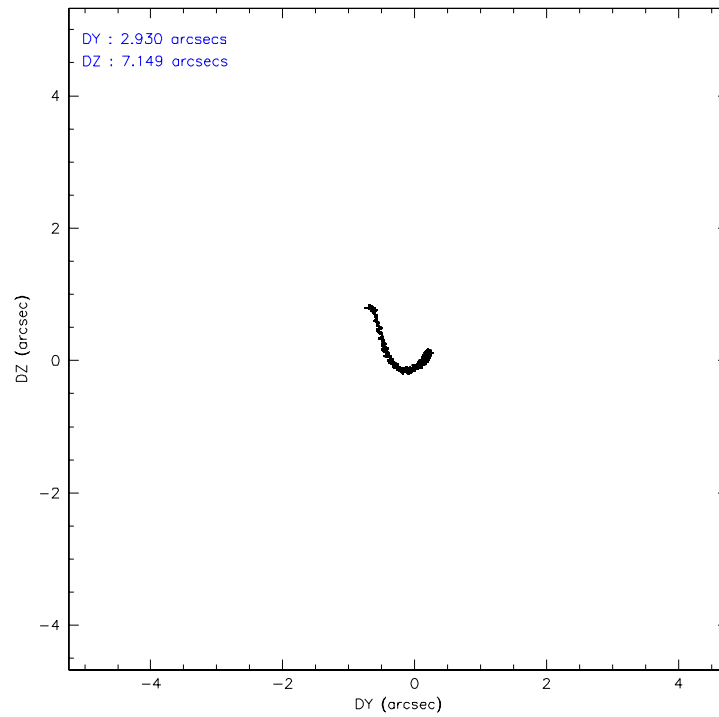
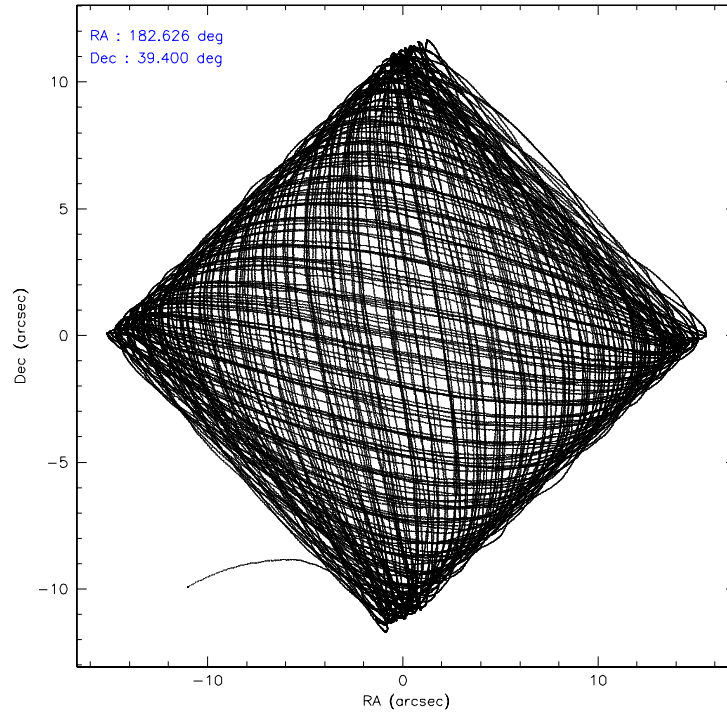
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	375861	547056	395291	555475	444769	336024	grade 0 events	16255	63632	56236	30066	38520	17437
rejected events	333932	278397	299601	273792	343945	293650		4%	11%	14%	5%	8%	5%
rejected %	88%	50%	75%	49%	77%	87%	grade 1 events	133	417	272	1238	246	126
								0%	0%	0%	0%	0%	0%
							grade 2 events	9628	82913	14837	70835	19716	7903
								2%	15%	3%	12%	4%	2%
							grade 3 events	4383	5437	6887	20808	10078	4654
								1%	0%	1%	3%	2%	1%
							grade 4 events	4284	5056	6952	20418	9430	4548
								1%	0%	1%	3%	2%	1%
							grade 5 events	11902	42081	13388	35755	17338	13723
								3%	7%	3%	6%	3%	4%
							grade 6 events	7379	111631	10785	139560	23084	7841
								1%	20%	2%	25%	5%	2%
							grade 7 events	321897	235889	285934	236795	326357	279792
								85%	43%	72%	42%	73%	83%

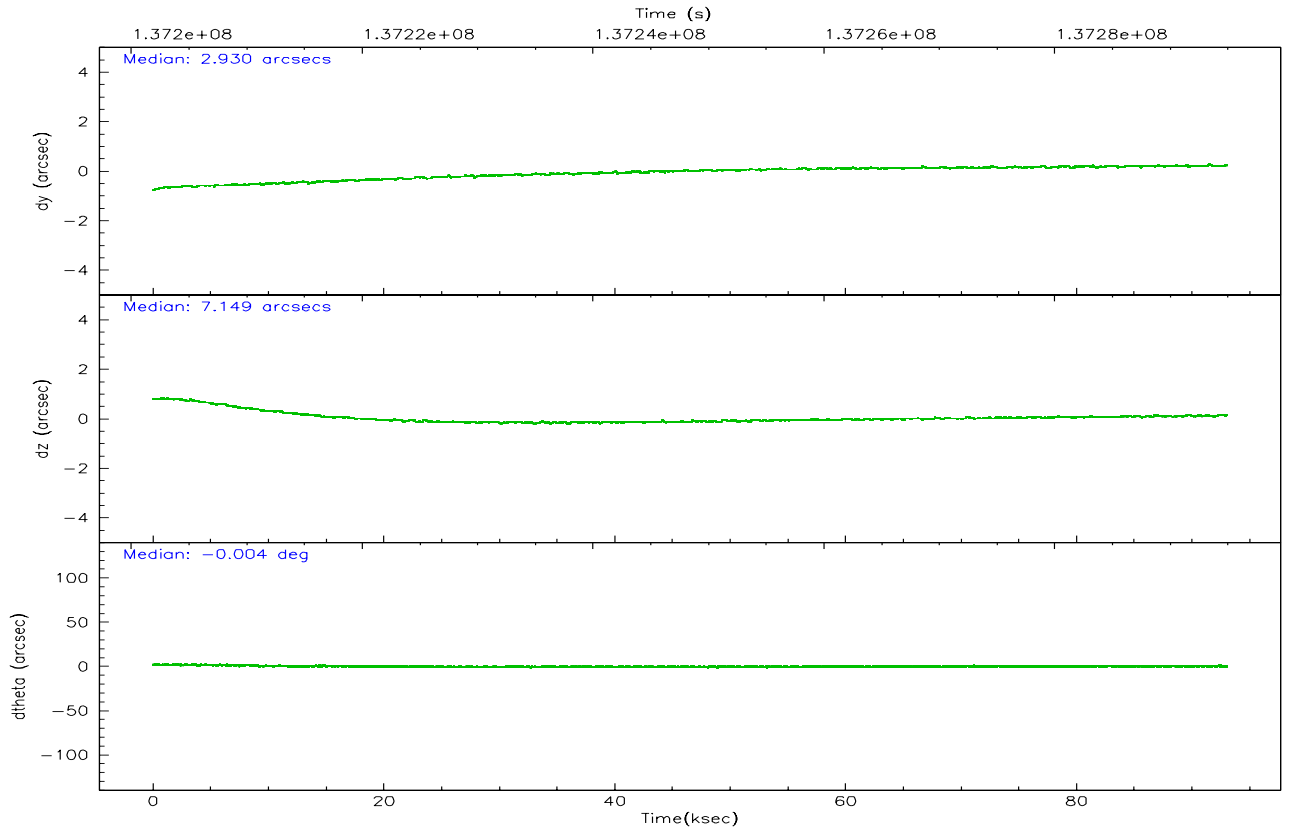
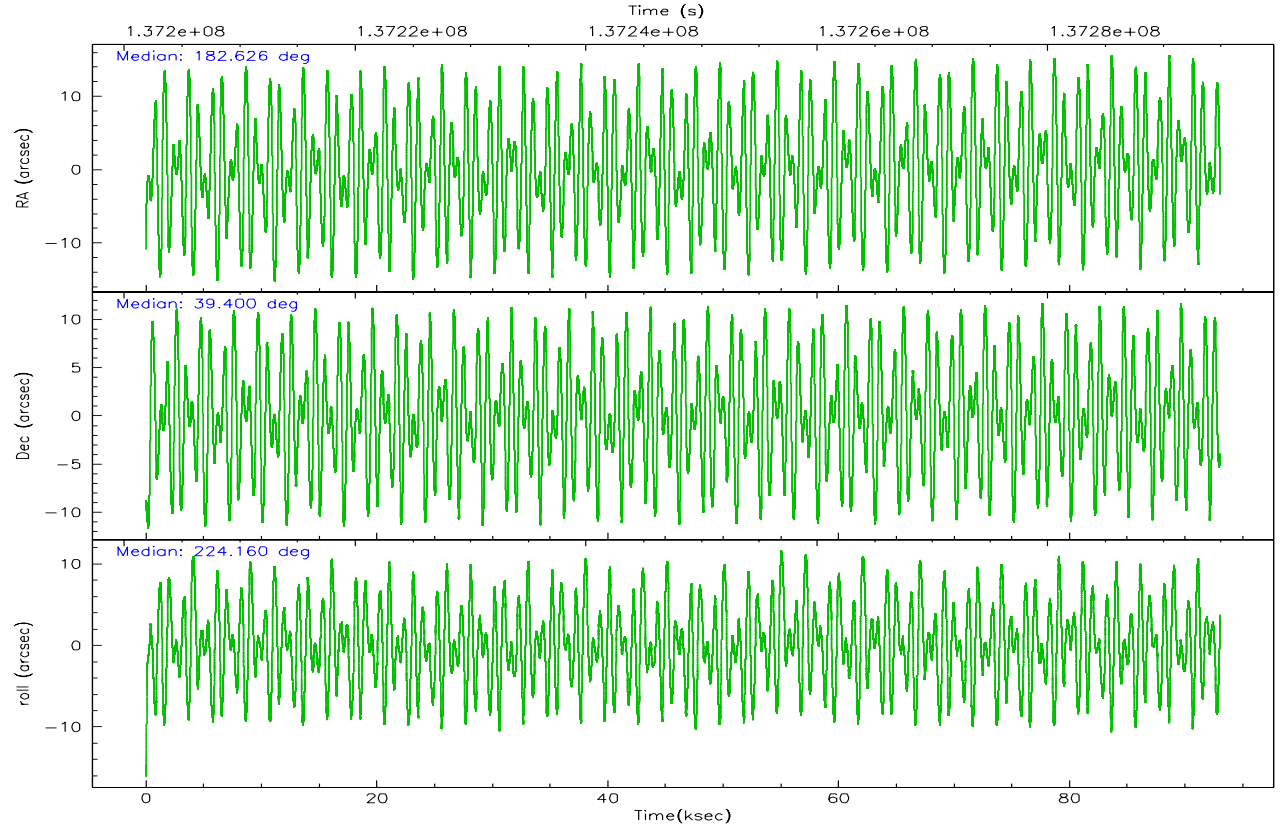


## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	6	6
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
Pointing RA	182.635039	182.6258473132547	Subarray requested	1/2	1/2
Pointing Dec	39.426317	39.40001734555418	Subarray start row	0	257
Pointing Roll	224.000663	224.1631284681879	Subarray row count	1024	512
Roll angle	220.000000	220.000000	Alternating exposures requested	N	N
Roll tolerance	10.000000	10.000000	Primary exposure time	0.000000	1.8
Roll constraint allows 180D rotation	N	N			
Window start time	137196064.184000	137196064.184000			
Window stop time	137296864.184000	137296864.184000			
SIM focus pos (mm)	-0.684267	-0.6828225247311905			
SIM defocus (mm)	0	0.001444936568705701			
SIM translation stage pos (mm)	-190.132523	-190.1425803651734			
SIM translation stage offset (mm)	0	0.01005778216563158			
Observation start time	137202172.184000	137201158.55572			
Observation start date	2002-05-07T23:41:48	2002-05-07T23:25:58			
Observation end time	137294925.184000	137295240.23456			
Observation end date	2002-05-09T01:27:41	2002-05-09T01:34:00			
Read mode	TIMED	TIMED			

## 2.3 Aspect



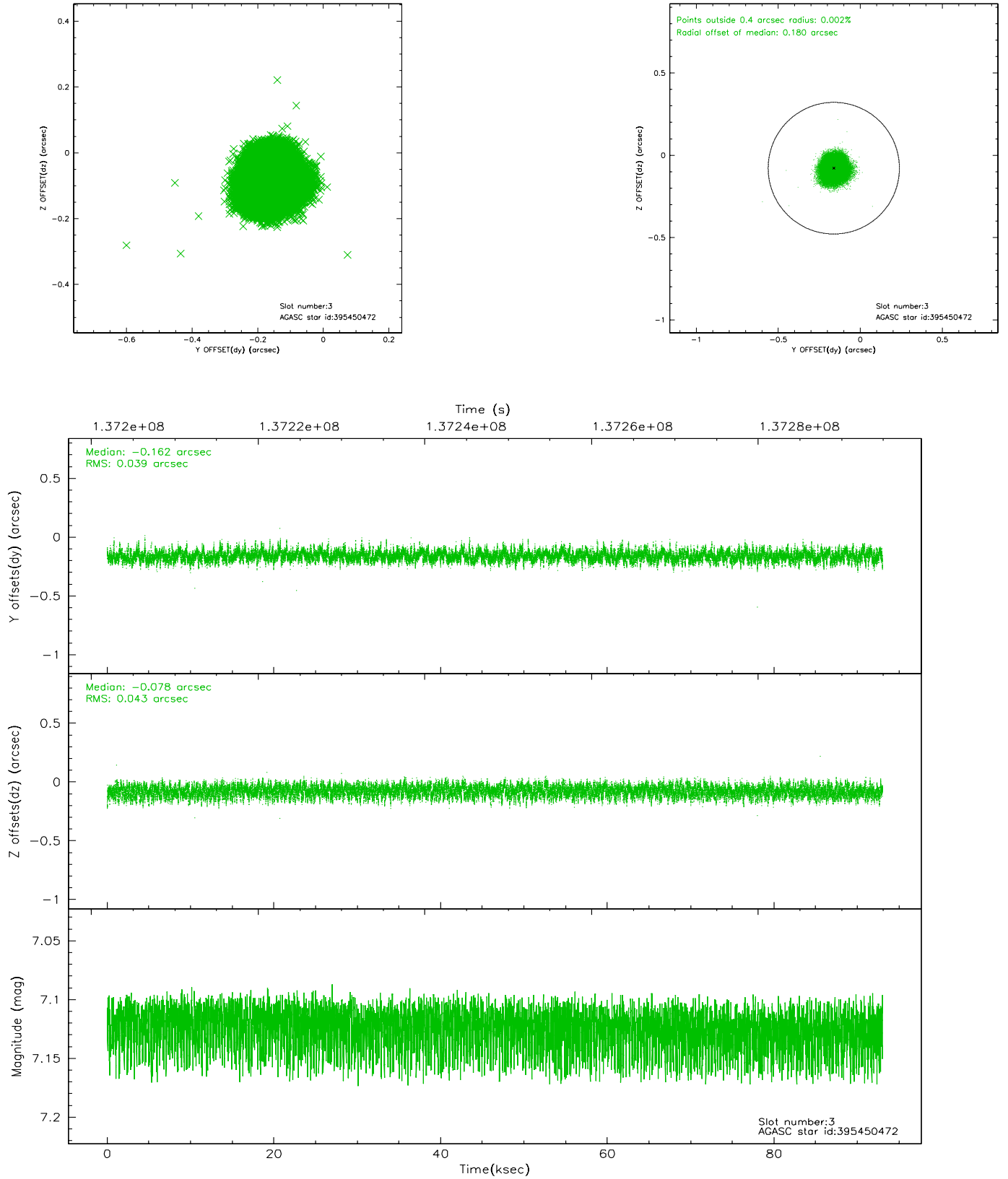


### Slot Statistics

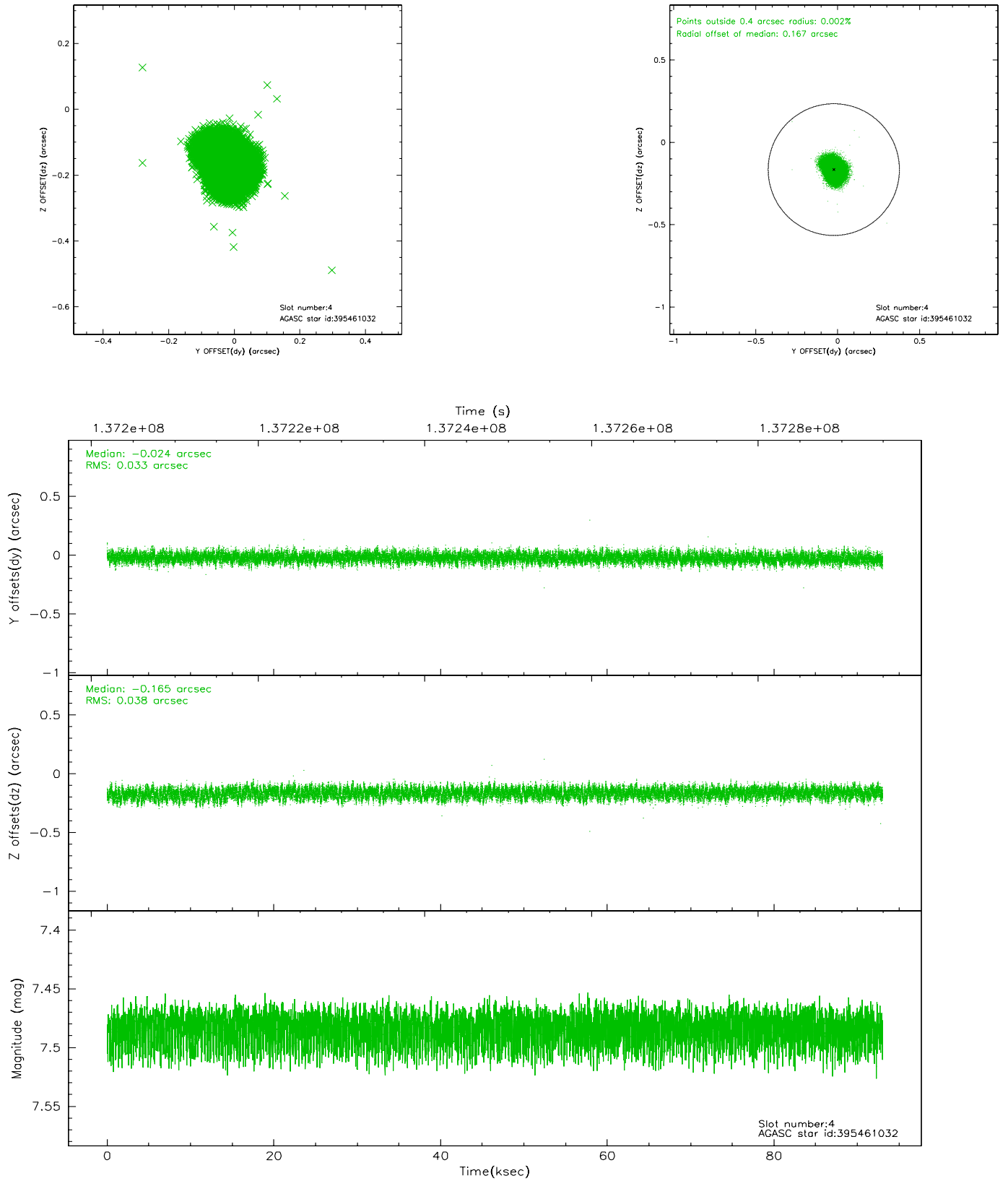
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	22692	-0.004	0.030	0.009	0.020	0.000000	0.000000	-755.49	-1728.29
1	FID	ACIS-S-4	7.20	22685	-0.071	-0.006	0.010	0.019	0.000000	0.000000	2157.75	180.25
2	FID	ACIS-S-5	7.24	22688	0.044	-0.014	0.013	0.021	0.000000	0.000000	-1808.39	173.80
3	GUIDE	395450472	7.12	45380	-0.162	-0.078	0.063	0.099	182.697135	39.891512	-1286.27	-1085.59
4	GUIDE	395461032	7.48	45383	-0.024	-0.165	0.054	0.084	182.028999	39.655498	632.06	-1764.62
5	GUIDE	395458176	8.22	45373	0.029	-0.042	0.063	0.098	182.790485	39.130199	428.56	1068.22
6	GUIDE	395460552	8.97	45369	0.010	0.148	0.073	0.118	183.182835	39.403608	-1042.03	1114.31
7	GUIDE	395459952	9.41	45372	0.142	0.145	0.103	0.162	181.854255	39.210518	2100.82	-960.51

## 2.4 Star Slots

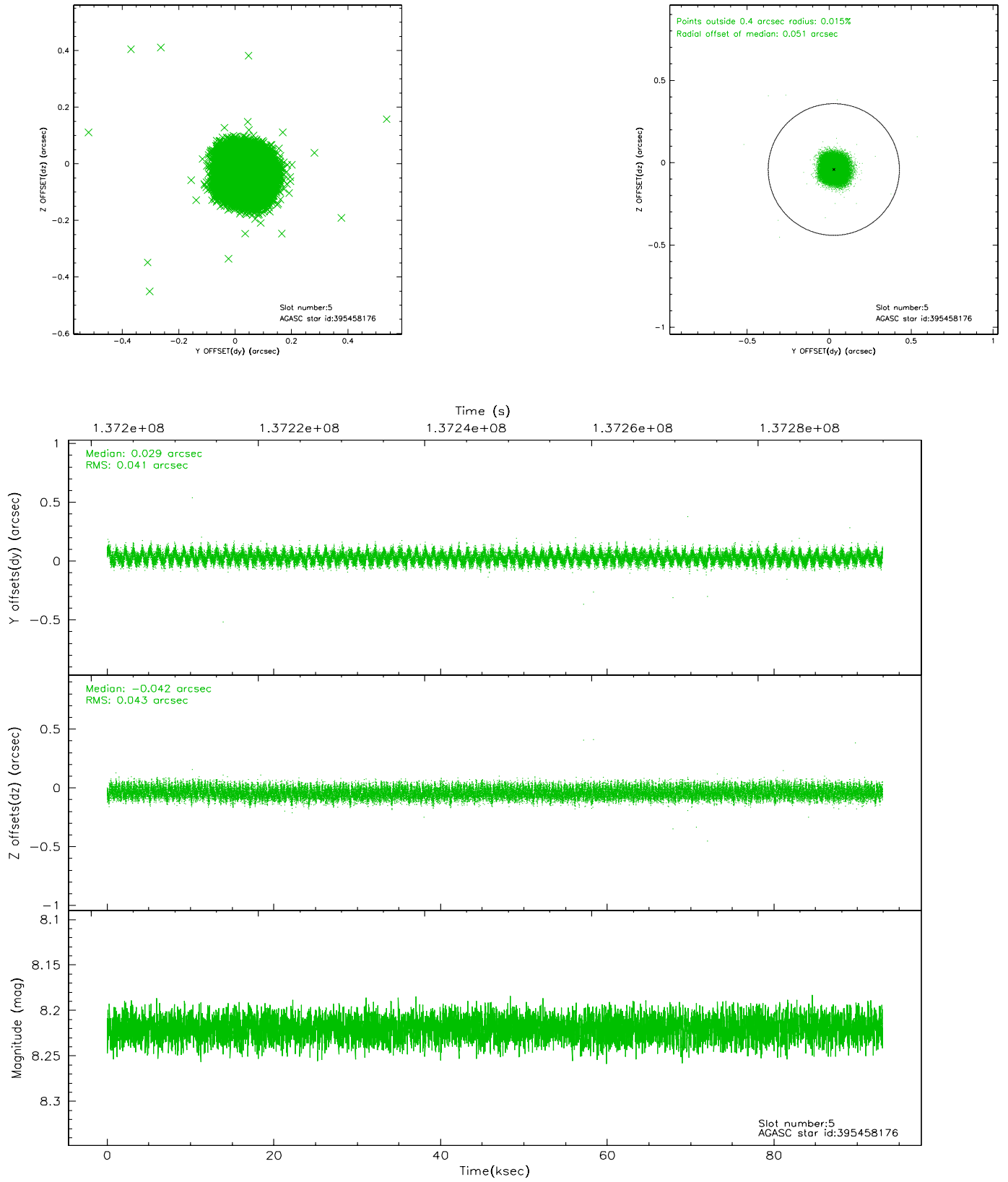
### 2.4.1 Slot 3



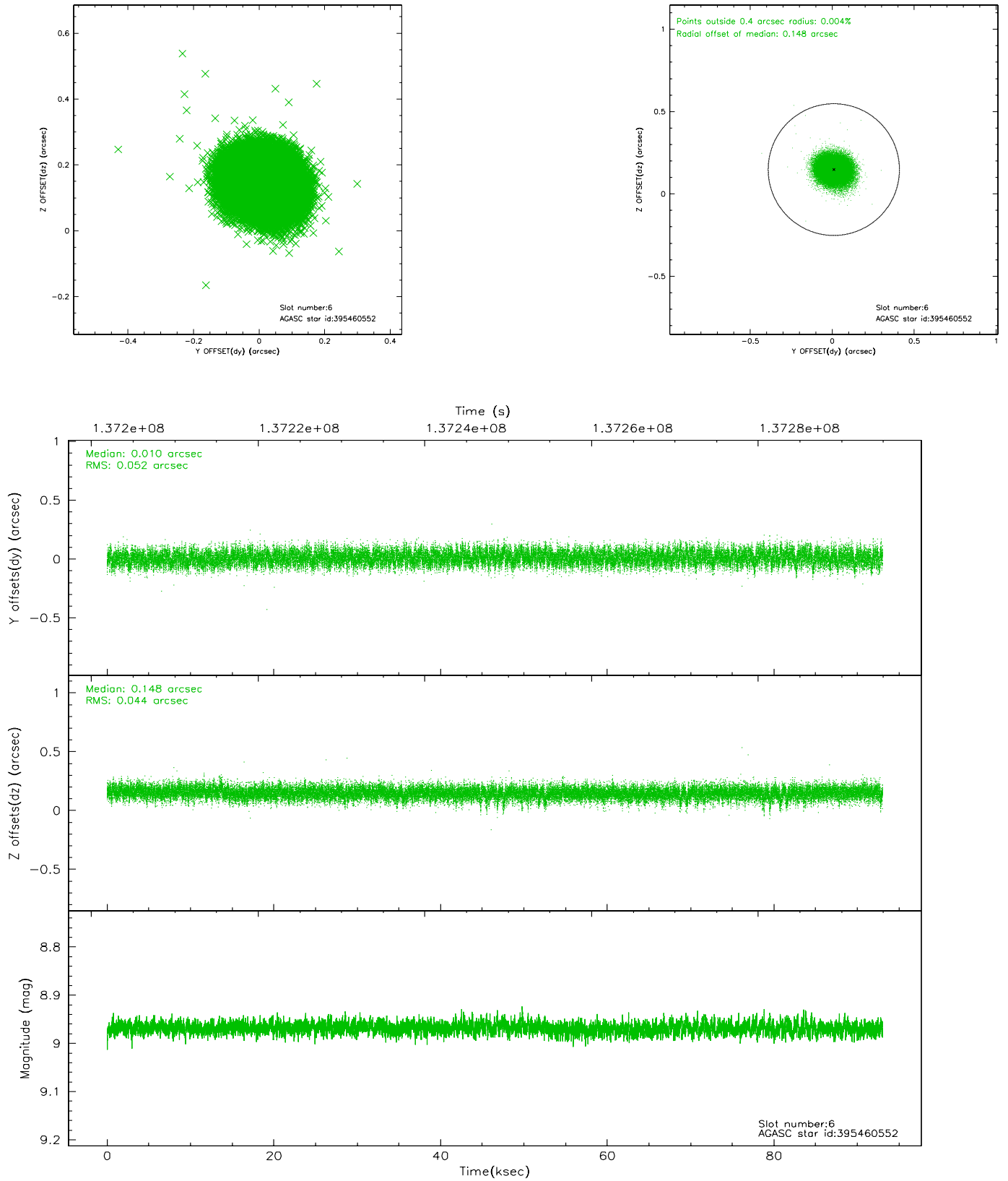
## 2.4.2 Slot 4



### 2.4.3 Slot 5

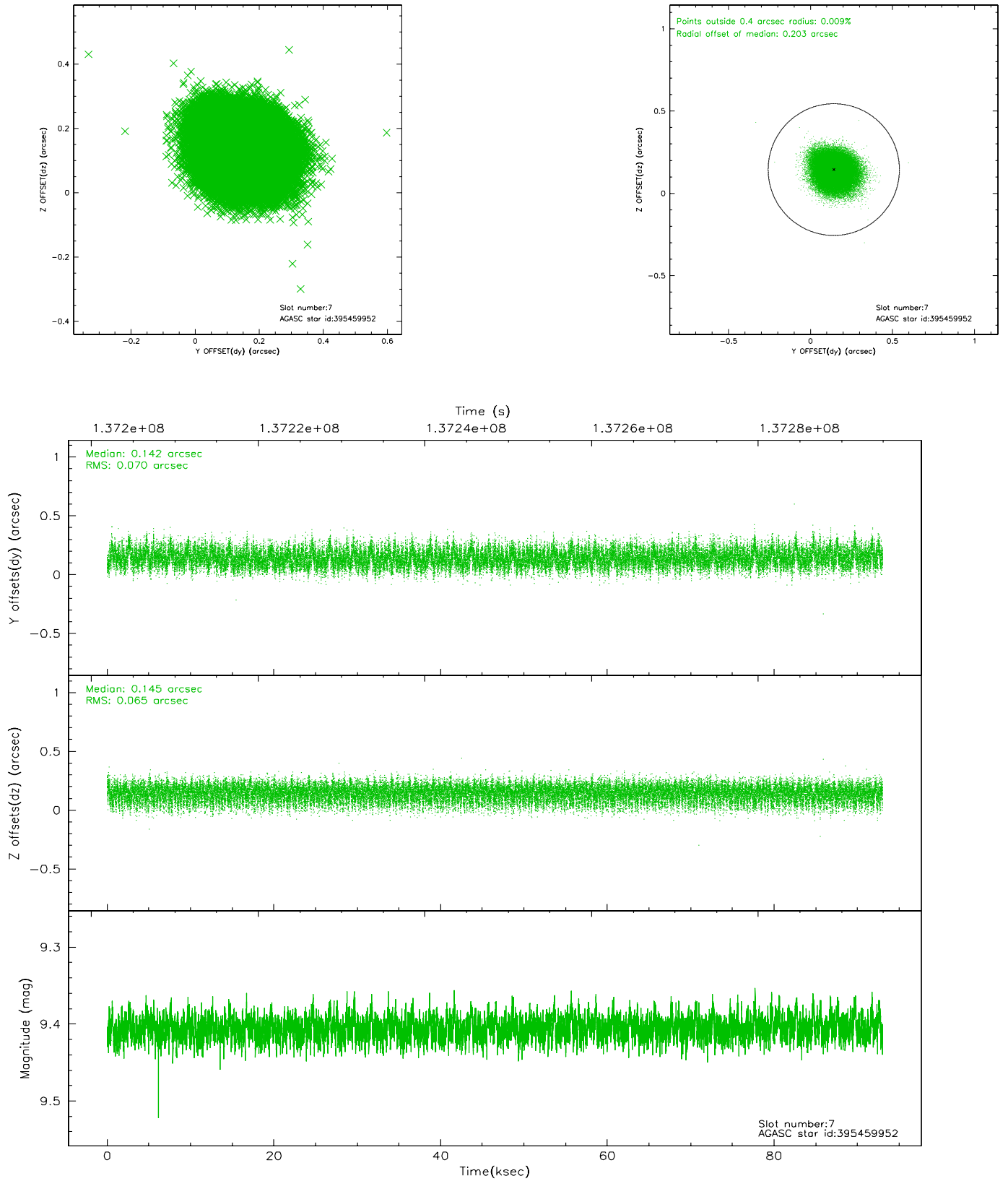


## 2.4.4 Slot 6



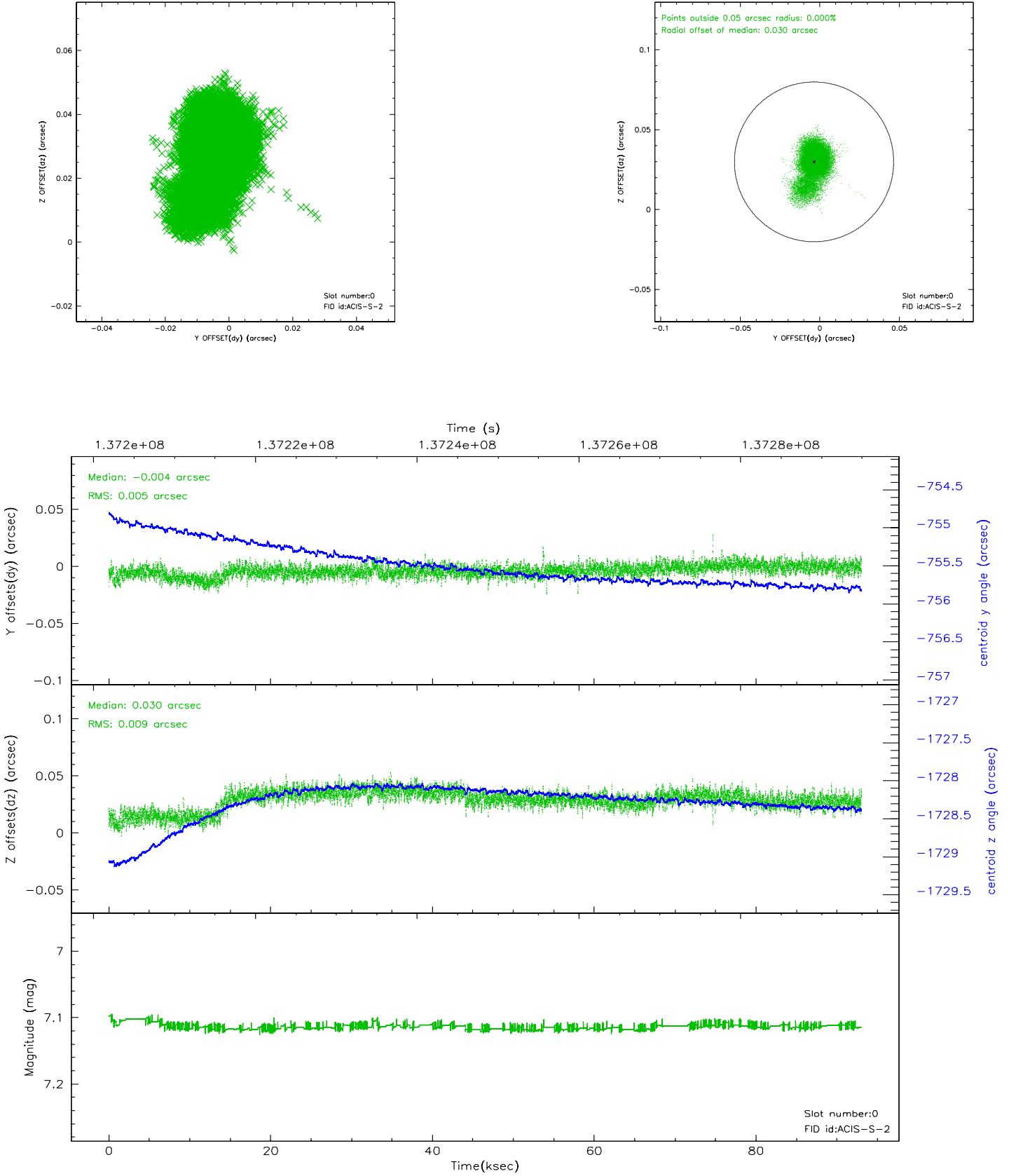


## 2.4.5 Slot 7

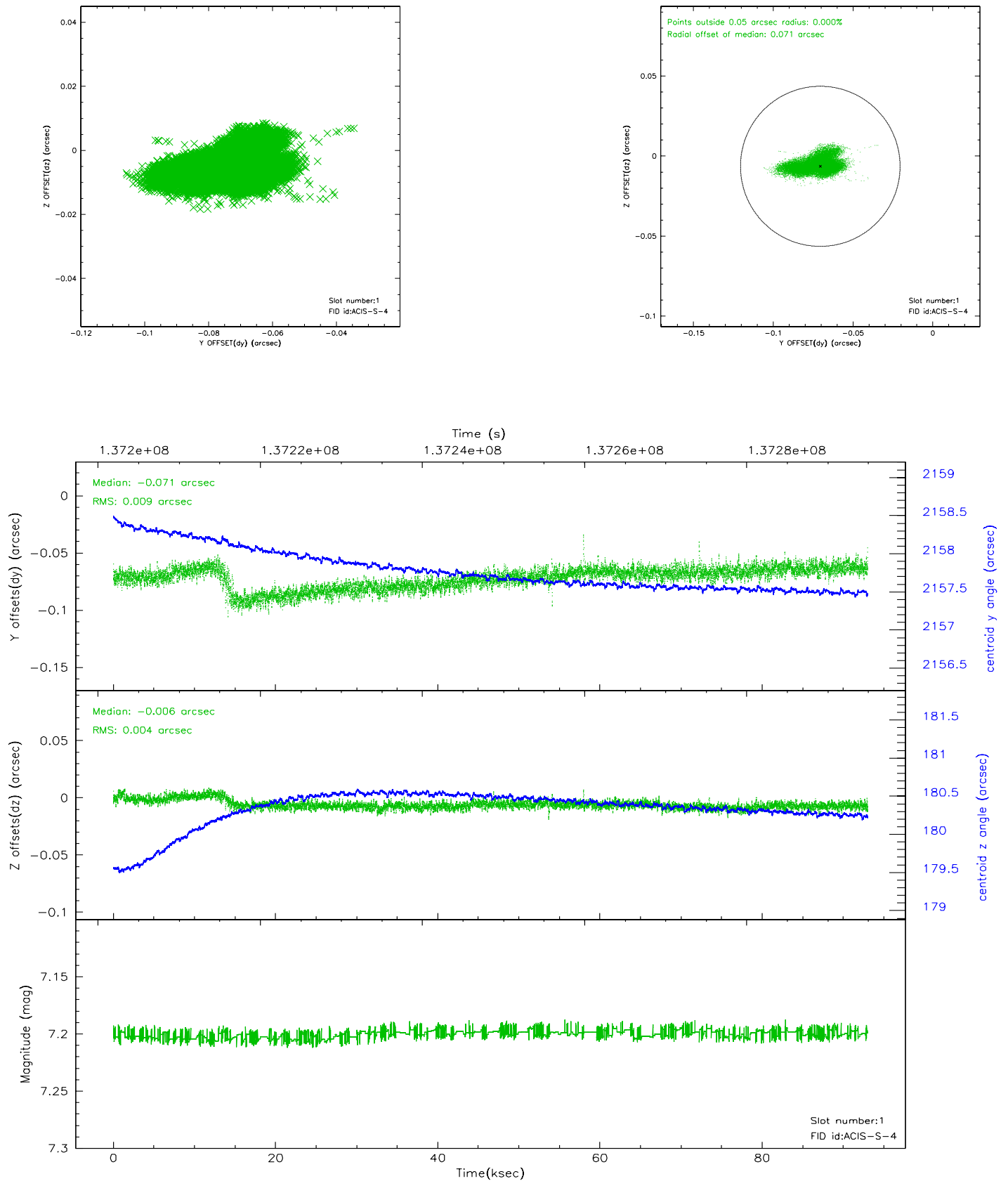


## 2.5 FID Slots

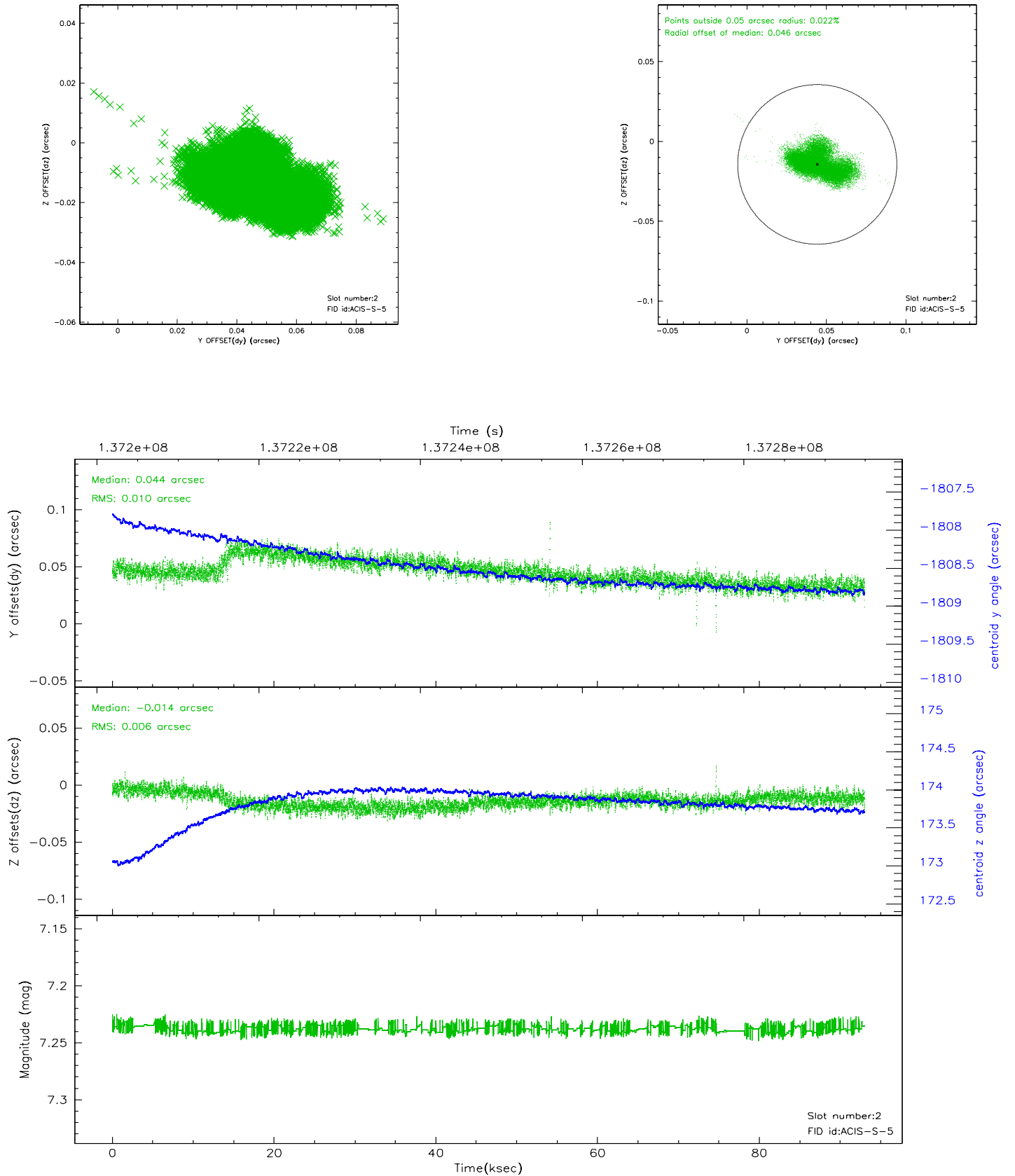
### 2.5.1 Slot 0



## 2.5.2 Slot 1

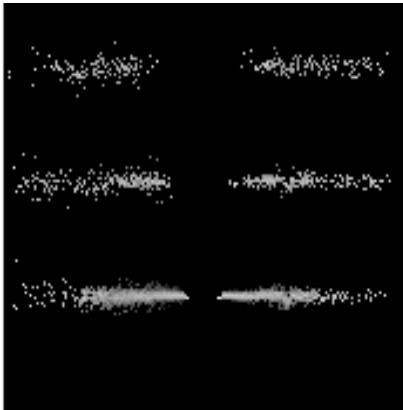


### 2.5.3 Slot 2

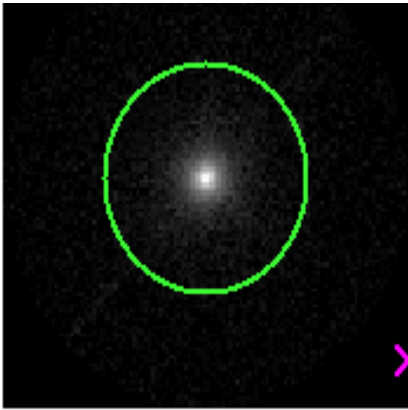


# 3 Gratings

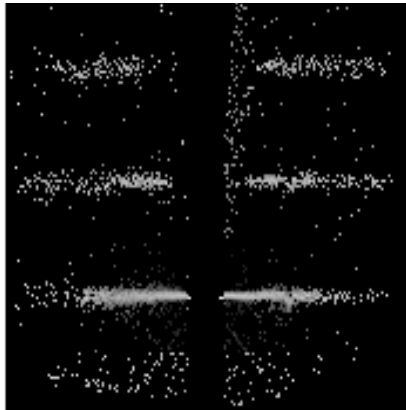
## 3.1 HEG Arm



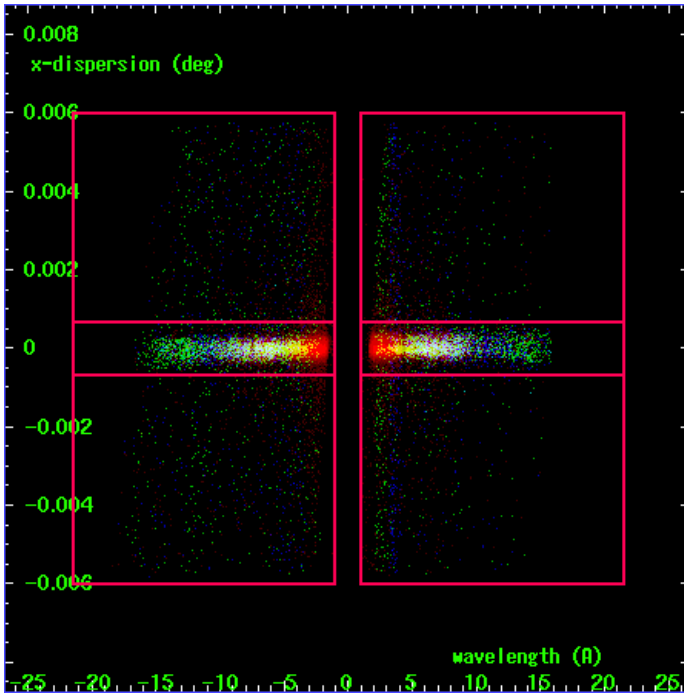
HEG Order Sort 123



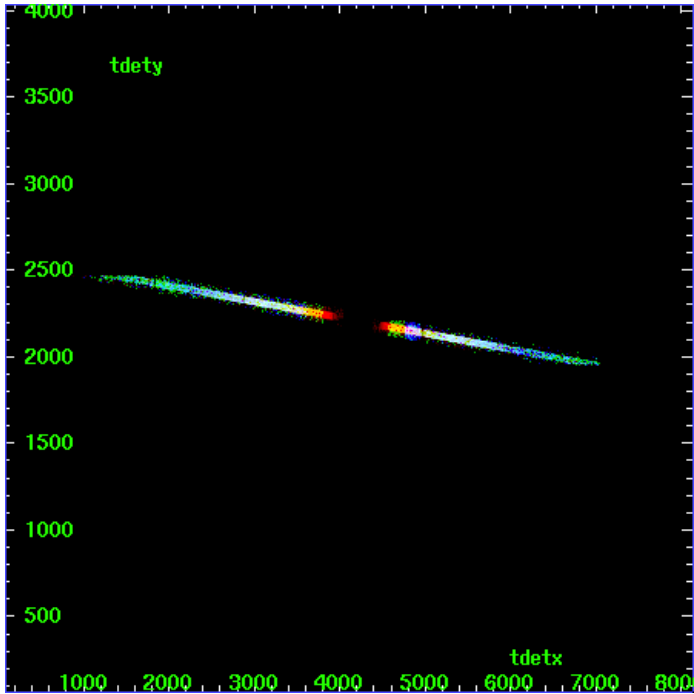
HEG Zero Order



HEG Order Sort ALL

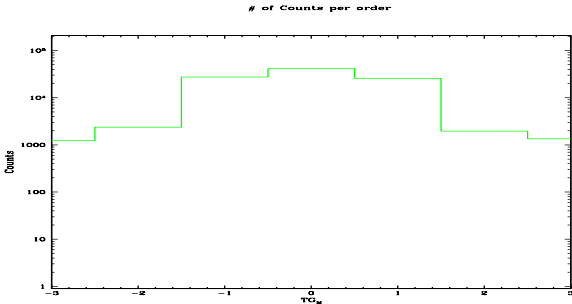


Spot Image HEG

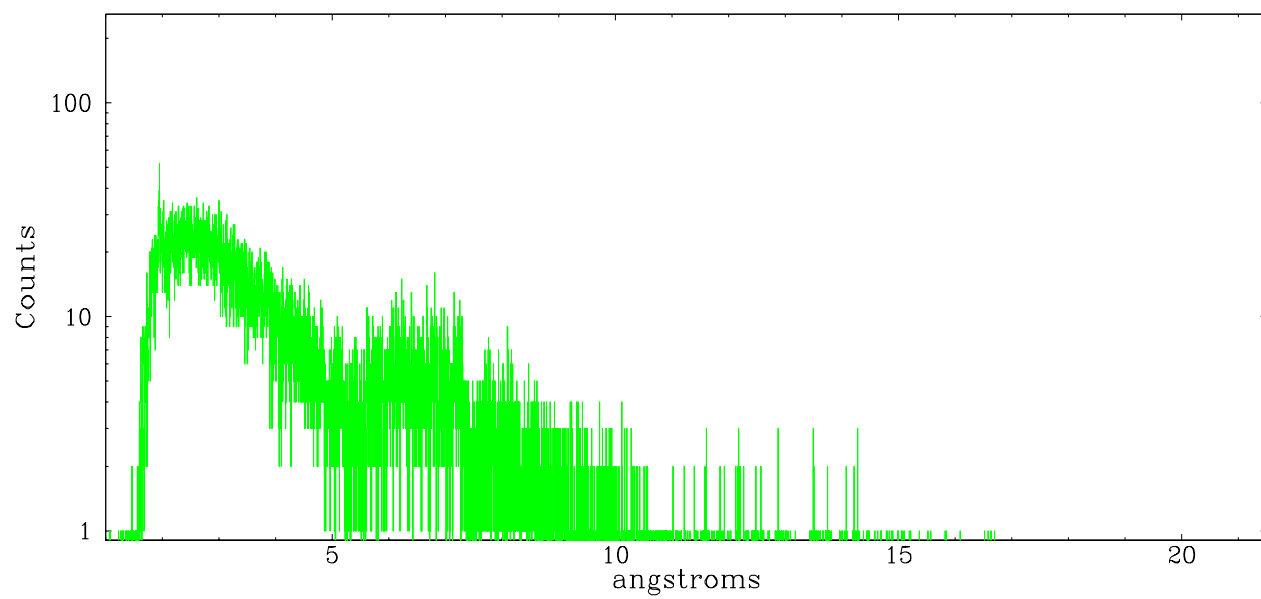


Full Detector HEG

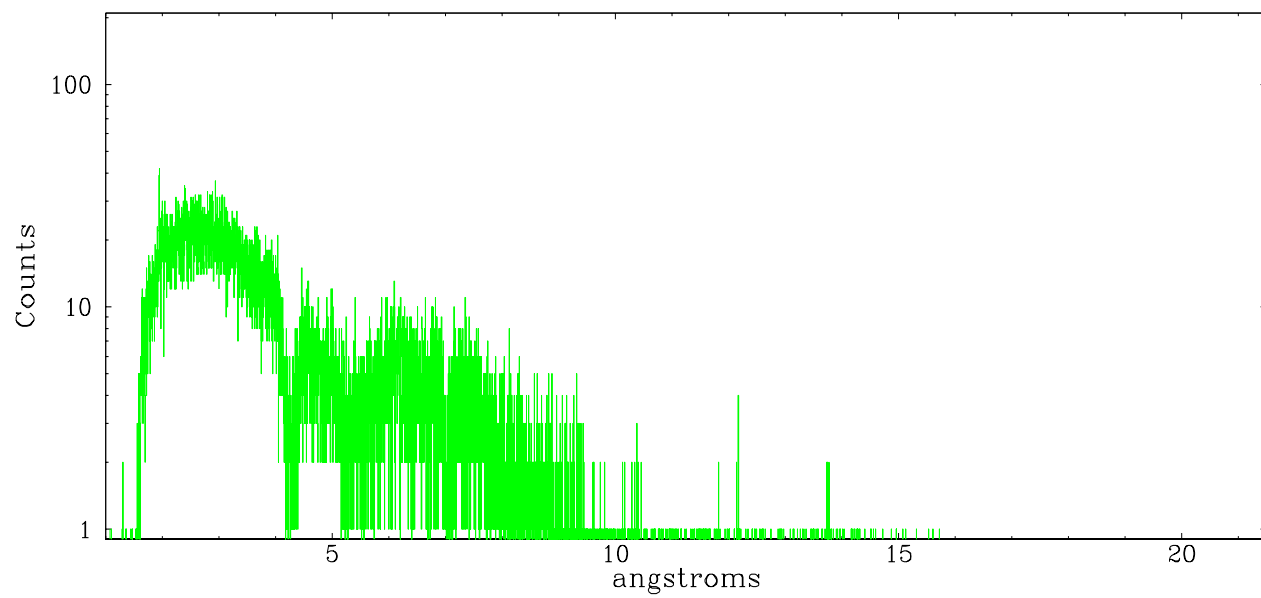
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1235	2373	27472	41250	25844	1949	1346



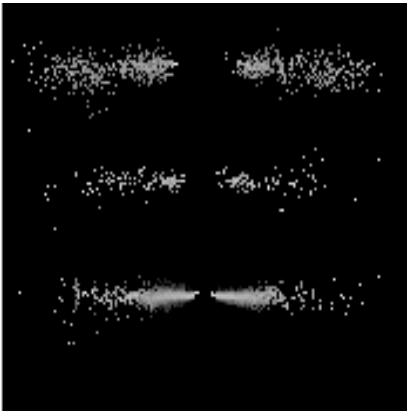
heg order -1



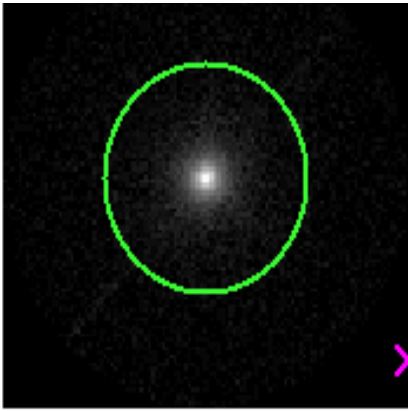
heg order +1



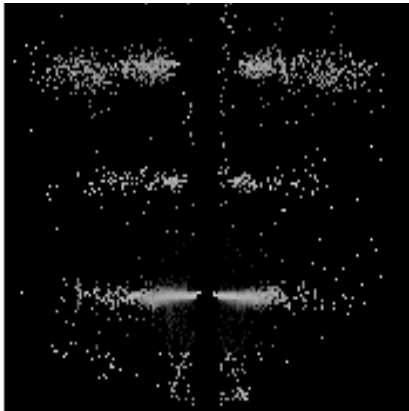
3.2 MEG Arm



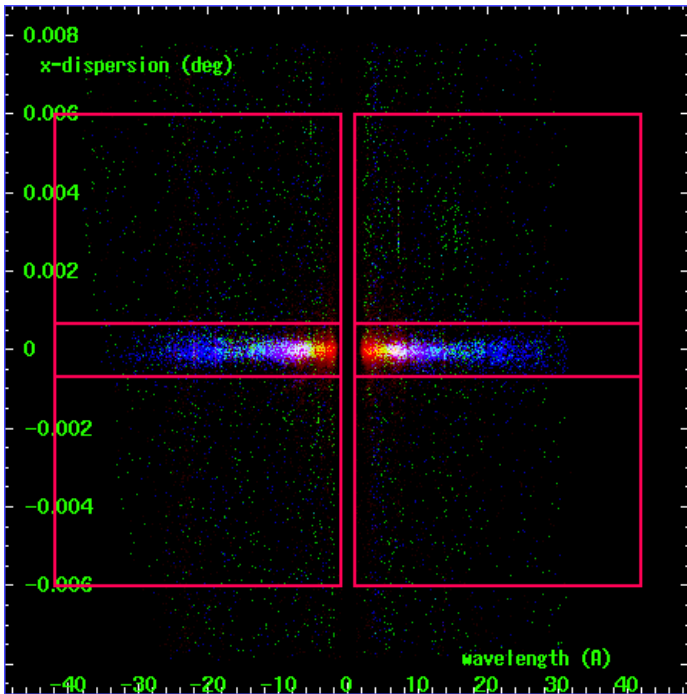
MEG Order Sort 123



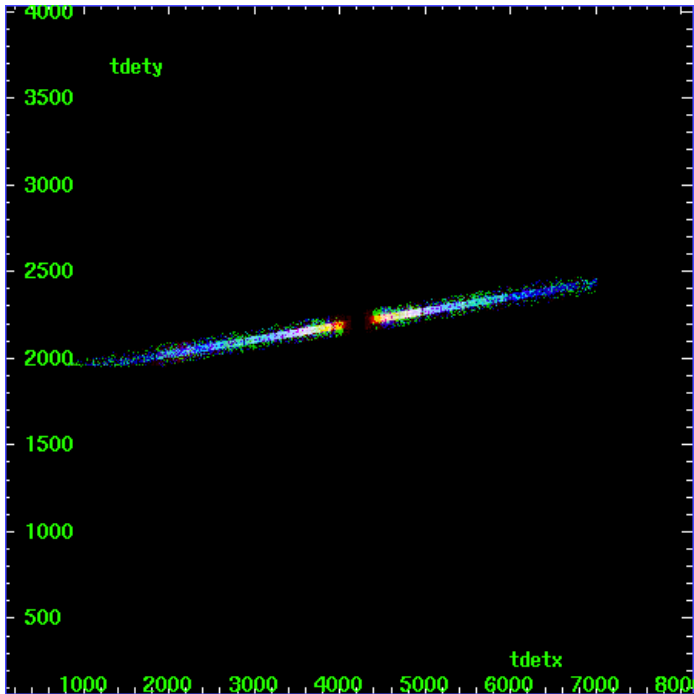
MEG Zero Order



MEG Order Sort ALL

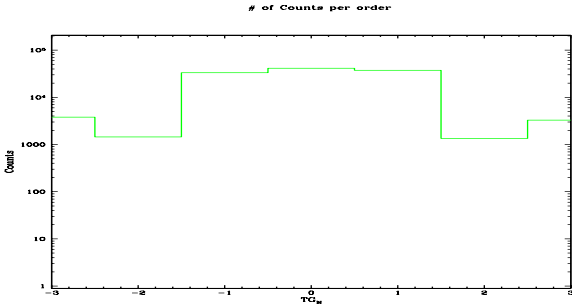


Spot Image MEG

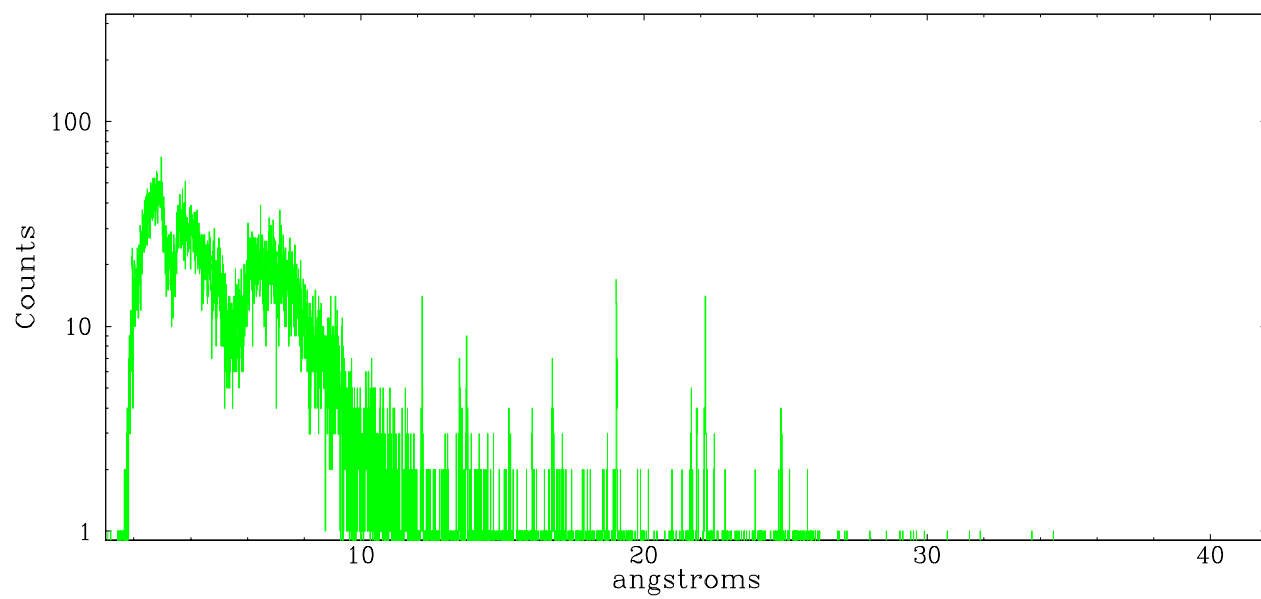


Full Detector MEG

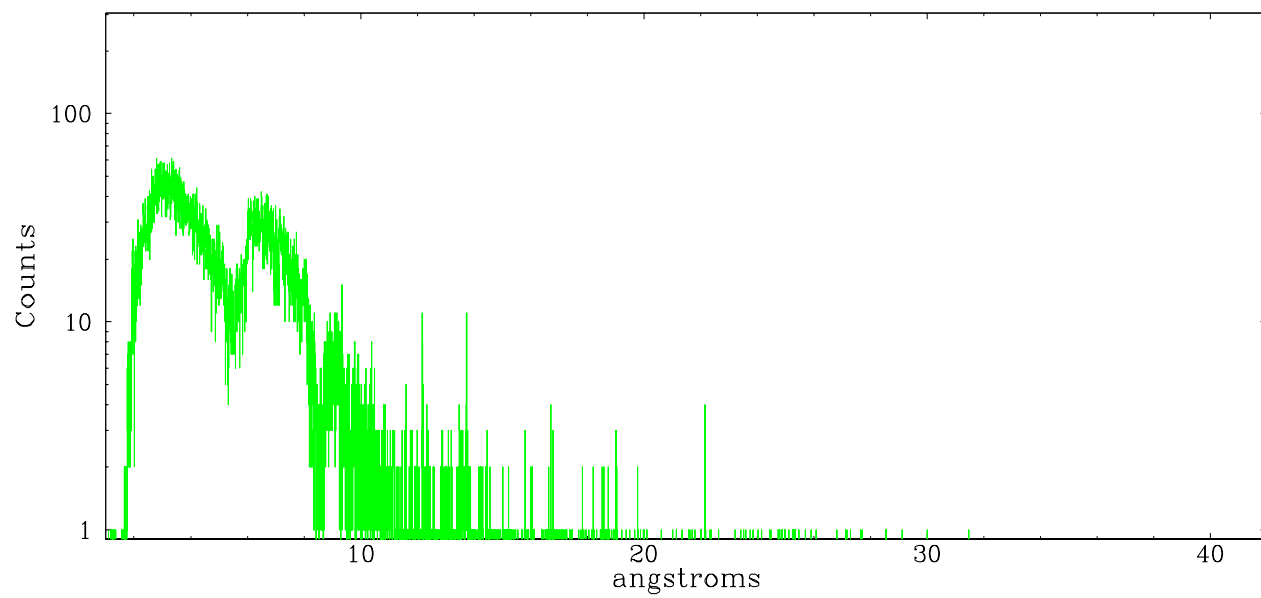
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	3799	1452	33104	41250	37363	1341	3291



meg order -1



meg order +1





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2006.09.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	92.888

## A.2 Comments

Roll constraint specified by PI met. However, the dispersed HETG spectral arms are oriented NE/SW, rather than NW/SE as discussed in the comments by the PI. Therefore, the dispersed spectra are parallel to, rather than perpendicular to, the extended NLR of the source.

Coordinated with HST.