

# V&V Reference Report

## L2 ASCDS Version : 7.6.9

Observation 3724 - L2 Version 001  
Chandra X-Ray Center

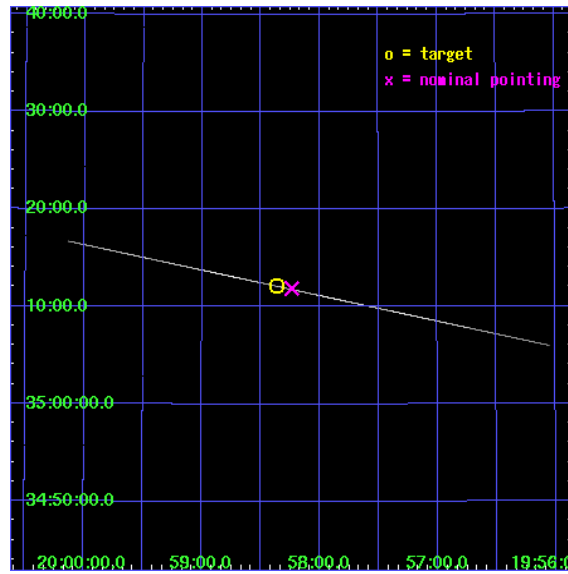
L2 Processing Date : Sep 27 2006

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# 1 Front

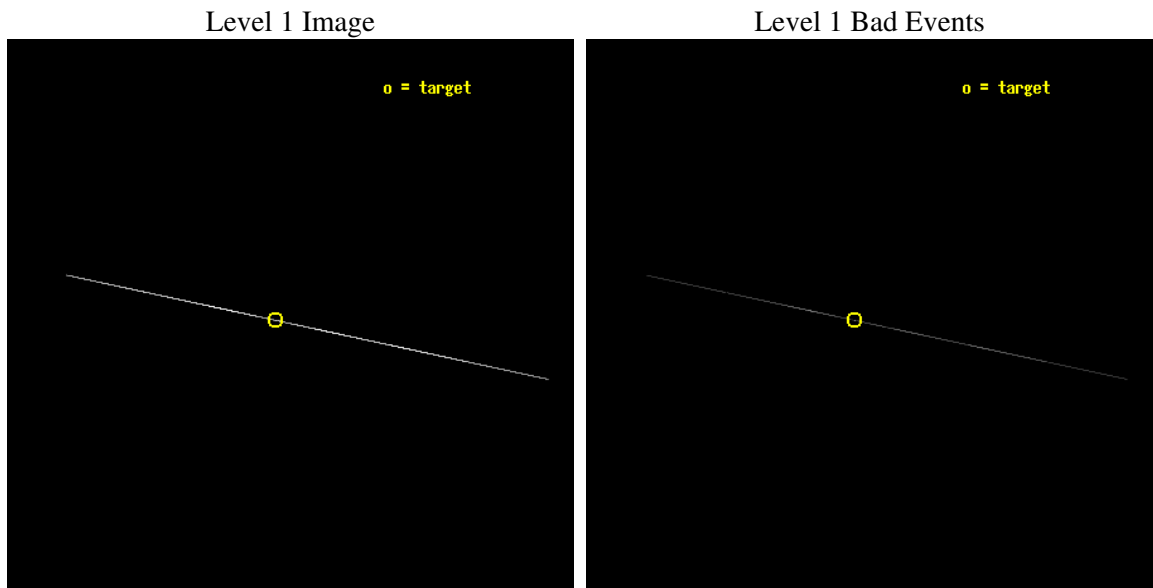
seq_num	400270
obs_id	3724
title	OBSERVATION OF CYG X-1 IN THE HIGH STATE WITH HETG/CHANDRA
observer	Dr. Yuxin Feng
object	CYG X-1
ra_targ	299.590833
dec_targ	35.201806
ra_nom	299.55900882332
dec_nom	35.198057182034
roll_nom	192.01073653226
revision	2
ontime	8135.0636535585
livetime	8103.2860611618
ontime4	18450.078932494
ontime5	26444.453949392
ontime6	5982.7198958397
ontime7	8135.0636535585
ontime8	7000.6496922374
ontime9	16910.100325078
l2events	10403260



## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



## 2.1.2 Parameters

obi_num	0
ascdsver	7.6.9
caldsver	3.2.3
date	2006-09-26T18:39:12
revision	2

sched_exp_time	29000.000000
ontime	8852.9585950971
ontime4	19220.505613983
ontime5	27216.850863129
ontime6	6690.4240645766
ontime7	8852.9585950971
ontime8	7711.8653620481
ontime9	17663.525674999
l1events	11492071

## 2.1.3 Events

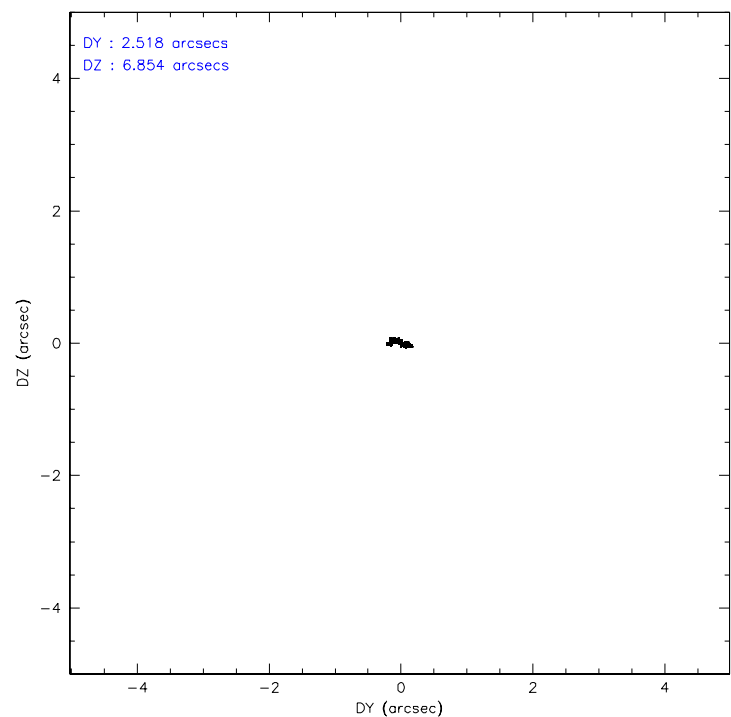
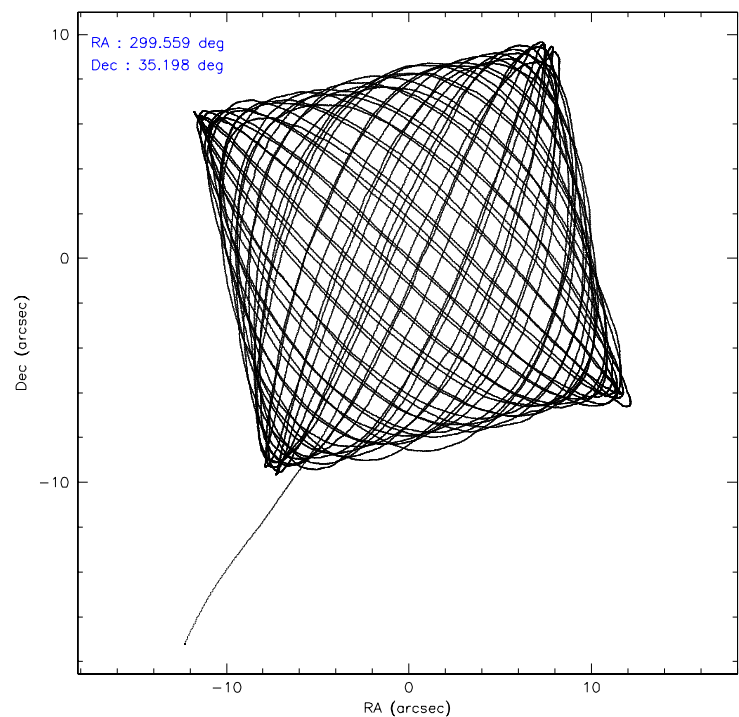
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	585536	2773178	2654972	1857083	2552738	1068564
rejected events	27888	87875	68825	77582	61312	30237
rejected %	4%	3%	2%	4%	2%	2%

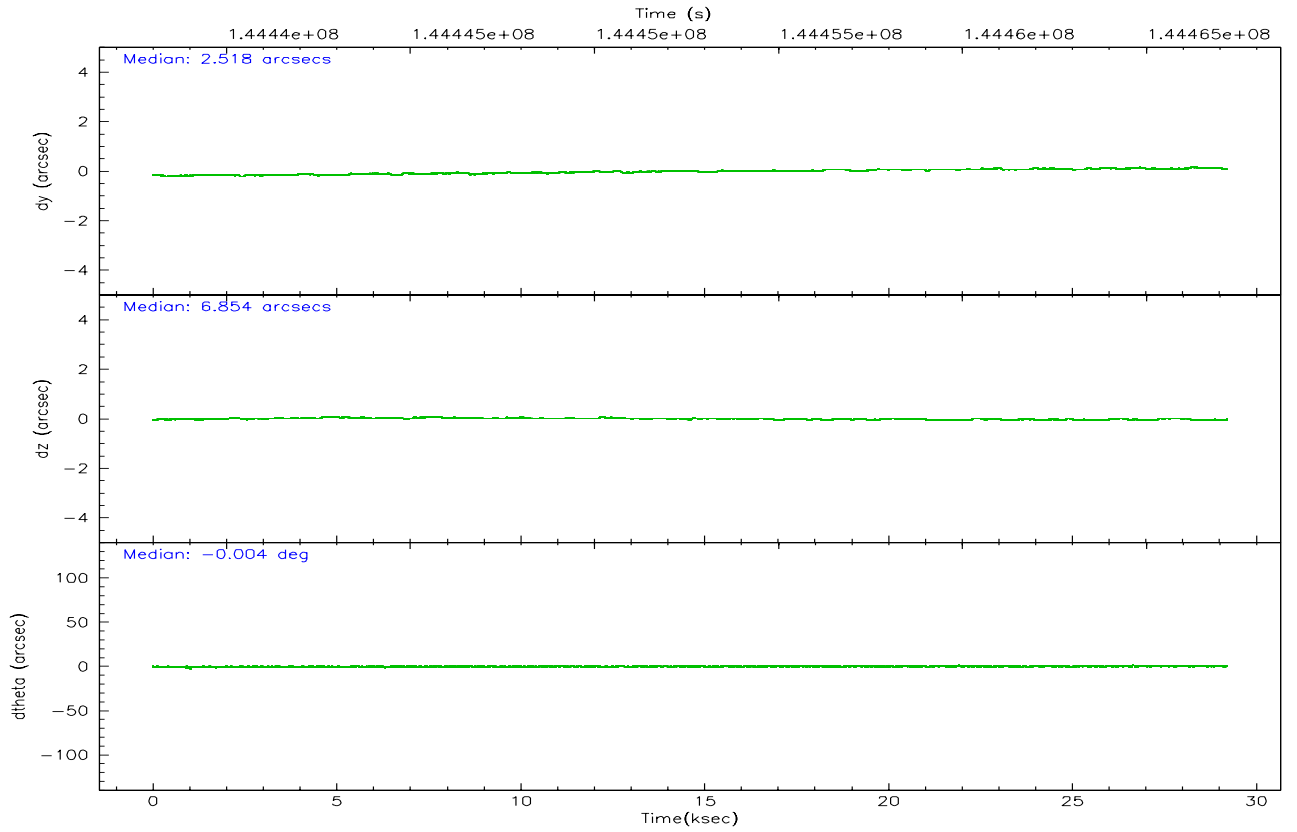
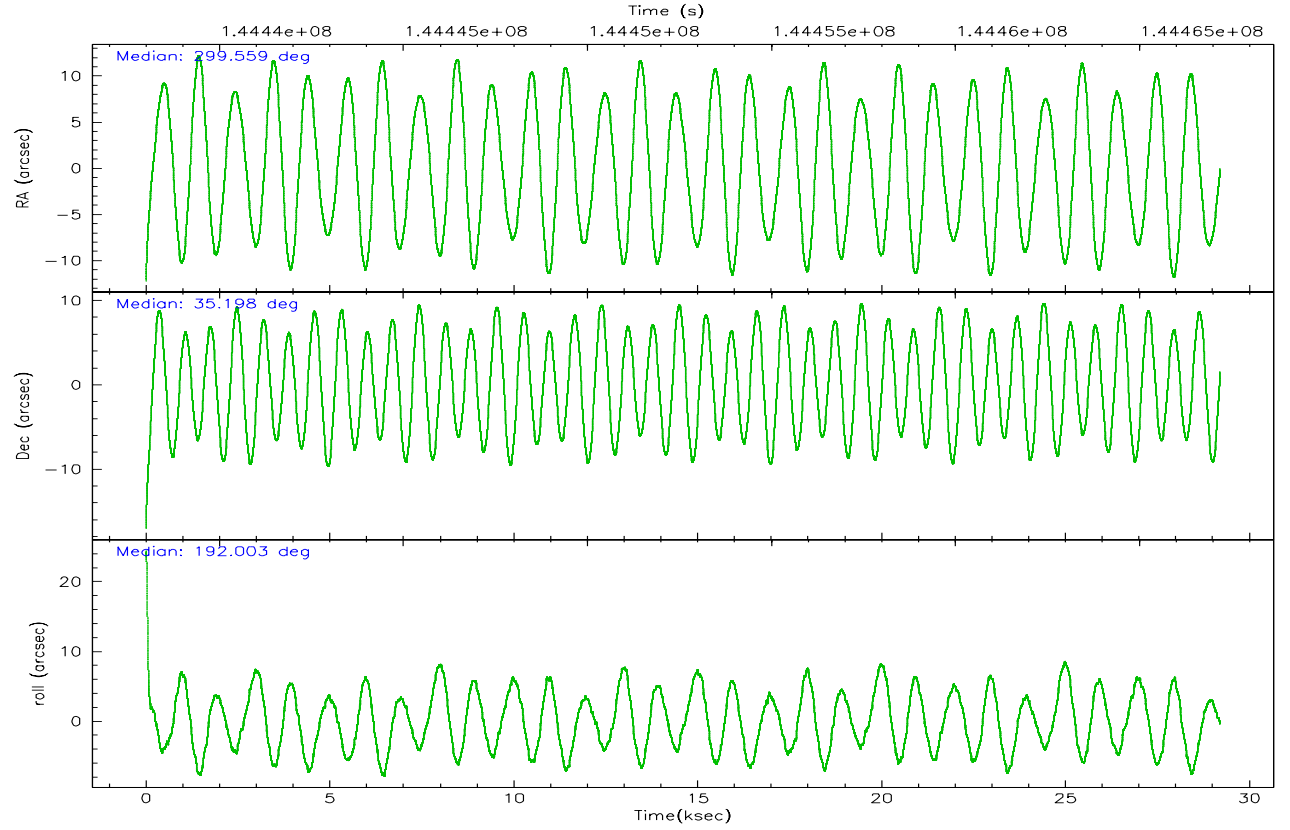
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	6220	314354	11412	207145	23812	20767
	1%	11%	0%	11%	0%	1%
grade 1 events	78	547	82	1731	174	111
	0%	0%	0%	0%	0%	0%
grade 2 events	532904	1500461	2442679	680273	2348481	97112
	91%	54%	92%	36%	91%	90%
grade 3 events	2758	88898	1345	113213	3764	3046
	0%	3%	0%	6%	0%	0%
grade 4 events	2934	87505	1345	109797	3697	3163
	0%	3%	0%	5%	0%	0%
grade 5 events	6282	54912	14041	36959	14537	7614
	1%	1%	0%	1%	0%	0%
grade 6 events	34360	726501	184068	707965	158273	62743
	5%	26%	6%	38%	6%	5%
grade 7 events	0	0	0	0	0	0
	0%	0%	0%	0%	0%	0%

## 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	CC33_GRADED	CC33_GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
Pointing RA	299.583500	299.5590088233163	Subarray requested	NONE	NONE
Pointing Dec	35.216562	35.19805718203377	Alternating exposures requested	N	N
Pointing Roll	191.839980	192.0107365322554	Primary exposure time	0.000000	0
SIM focus pos (mm)	-0.684267	-0.6828225247311905			
SIM defocus (mm)	0	0.001444936568705701			
SIM translation stage pos (mm)	-194.132523	-194.1227414875429			
SIM translation stage offset (mm)	4	3.990218904535112			
Phase constraints	Y	Y			
Phase period	5.599847	5.599847			
Phase epoch	51998.668500	51998.668500			
Phase start	0.000000	0.000000			
Phase end	0.010000	0.010000			
Phase start error	0.050000	0.050000			
Phase end error	0.050000	0.050000			
Observation start time	144438208.184000	144437237.06446			
Observation start date	2002-07-30T17:42:24	2002-07-30T17:27:17			
Observation end time	144467208.184000	144467528.37821			
Observation end date	2002-07-31T01:45:44	2002-07-31T01:52:08			
Read mode	CONTINUOUS	CONTINUOUS			

2.3 Aspect





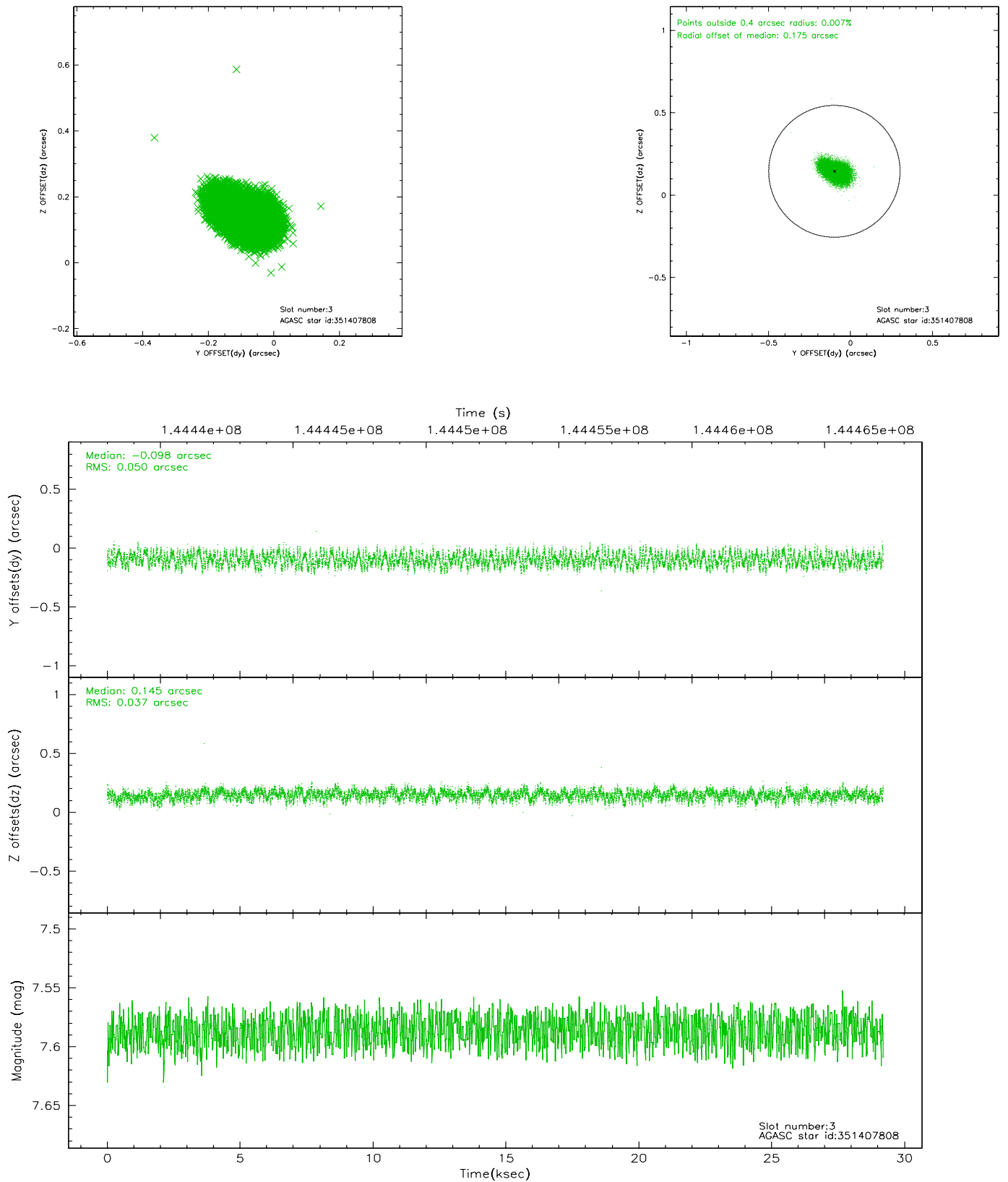
### Slot Statistics

slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.13	7122	-0.001	0.068	0.007	0.015	0.000000	0.000000	-755.38	-1645.86
1	FID	ACIS-S-4	7.21	7121	-0.040	-0.018	0.007	0.022	0.000000	0.000000	2157.82	262.49
2	FID	ACIS-S-5	7.25	7124	0.009	-0.041	0.008	0.015	0.000000	0.000000	-1808.11	256.21
3	GUIDE	351407808	7.59	14245	-0.098	0.145	0.067	0.105	299.102647	35.790086	950.96	-2311.71
4	GUIDE	351018080	8.32	14247	-0.059	-0.087	0.076	0.117	299.327312	34.581247	1212.72	2081.90
5	GUIDE	351016136	8.59	14247	0.120	-0.096	0.081	0.133	300.302636	34.786391	-1764.22	1944.52
6	GUIDE	351024856	8.53	14247	0.099	-0.091	0.065	0.107	300.374482	35.139033	-2223.05	741.93
7	GUIDE	351406096	8.89	14242	-0.068	0.132	0.077	0.126	299.076637	35.711249	1084.72	-2050.14

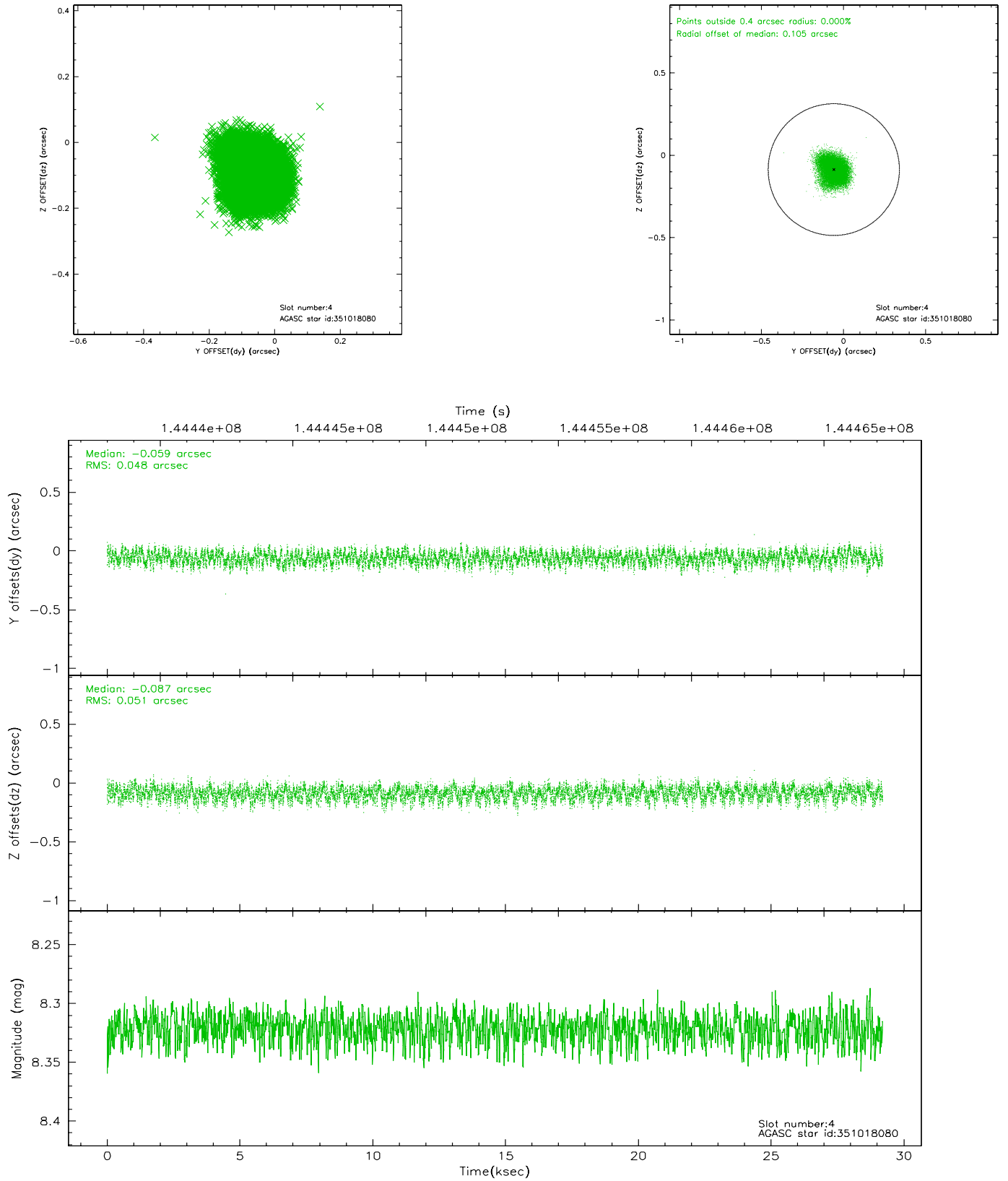


## 2.4 Star Slots

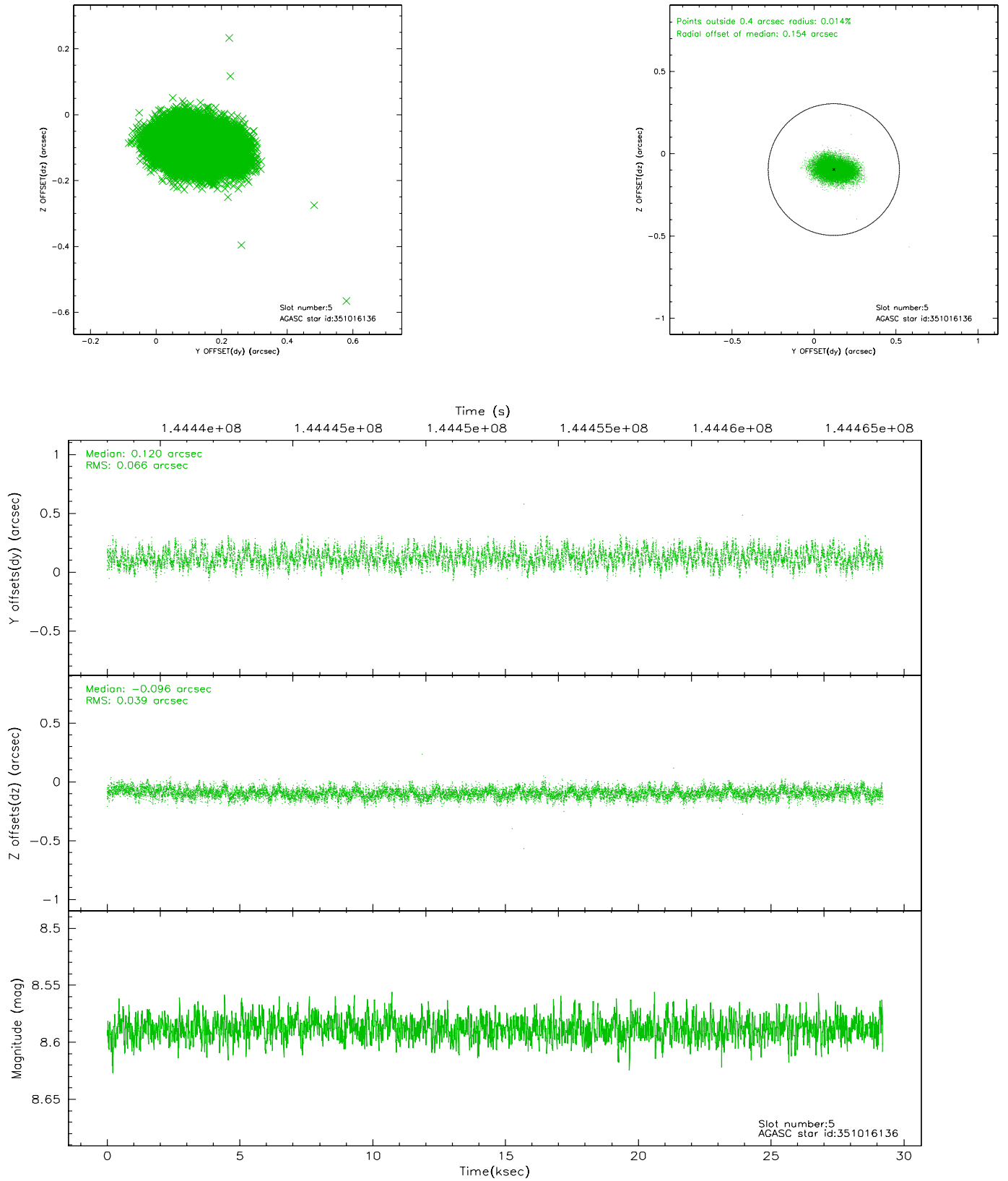
### 2.4.1 Slot 3



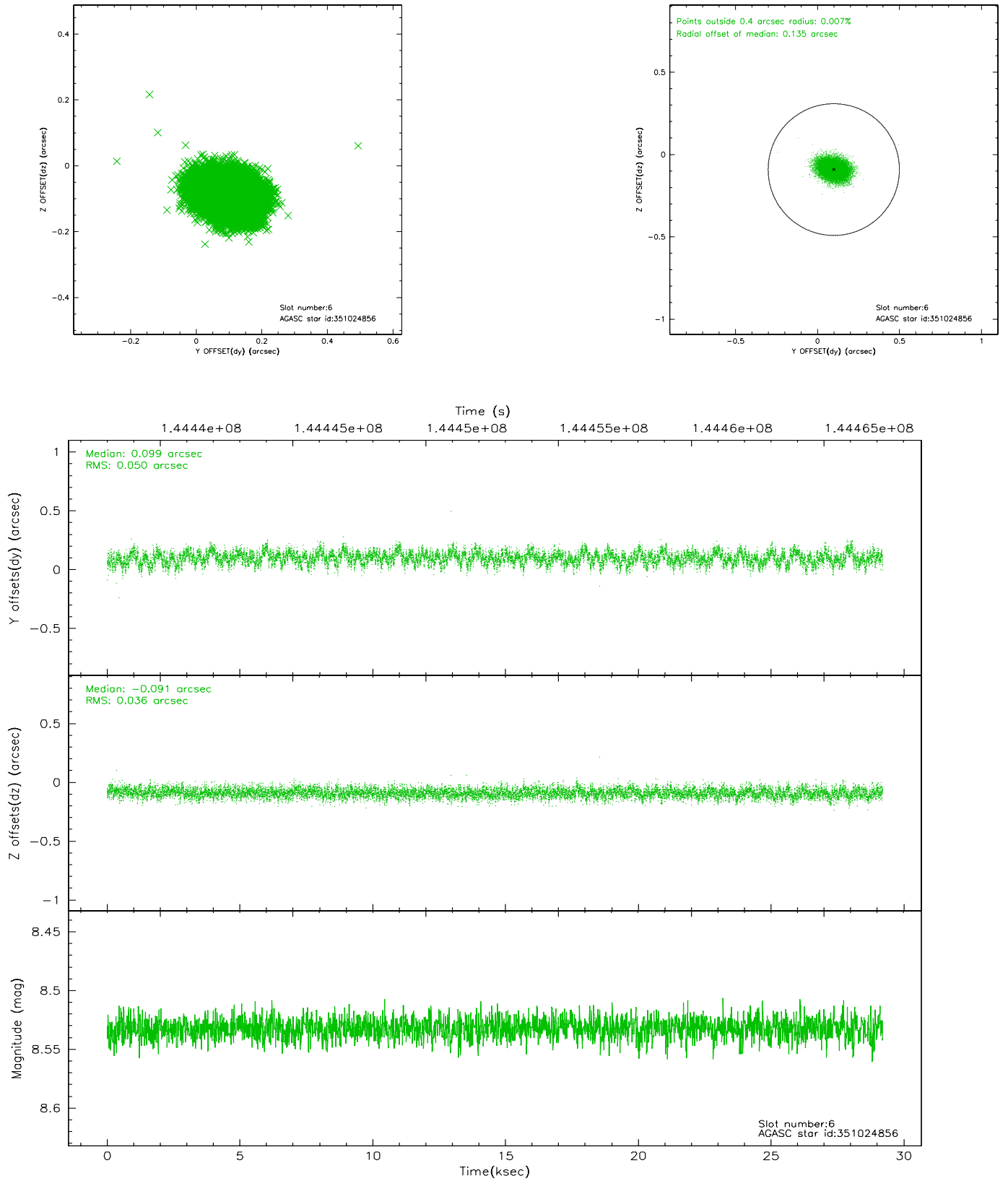
## 2.4.2 Slot 4



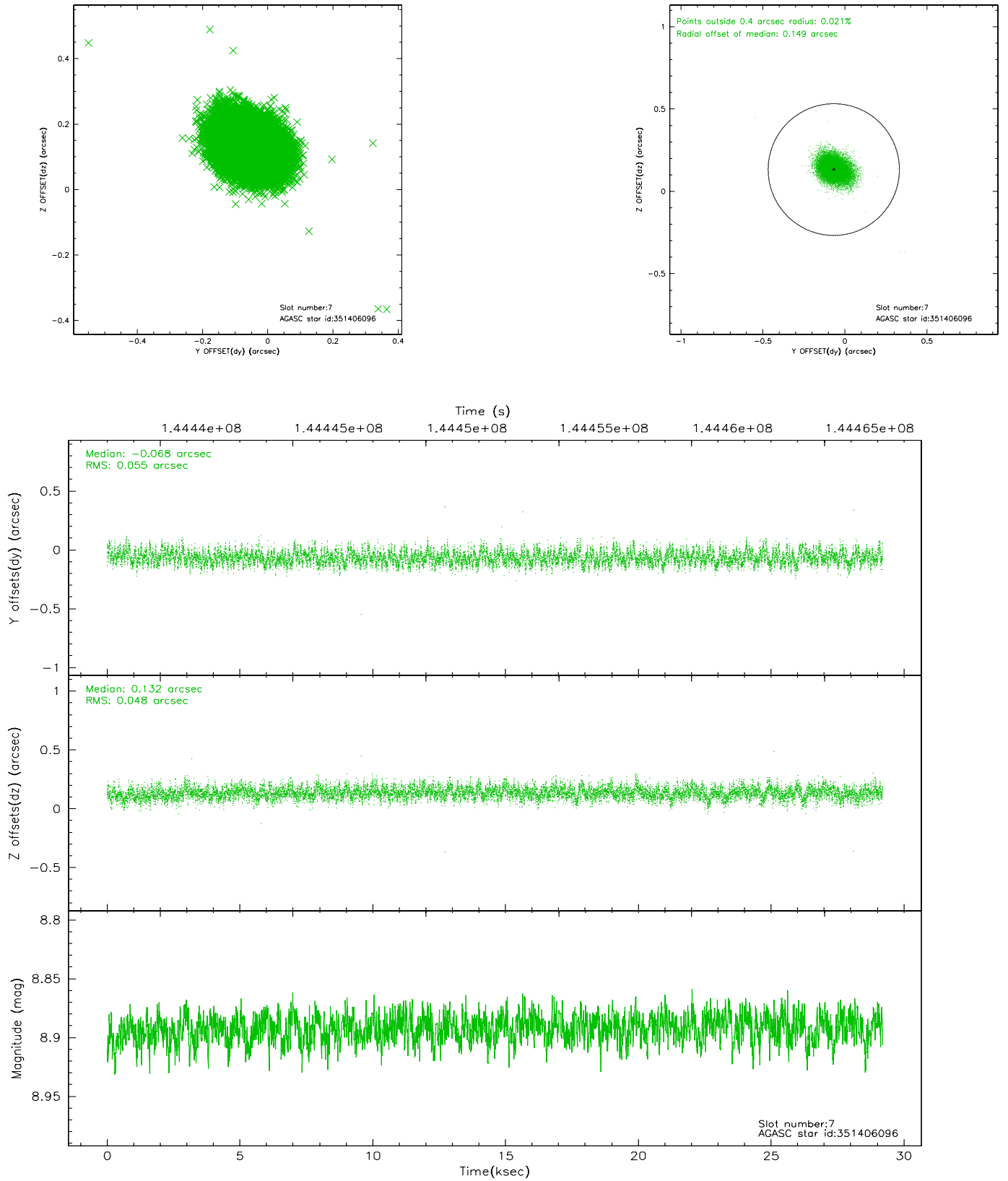
### 2.4.3 Slot 5



## 2.4.4 Slot 6

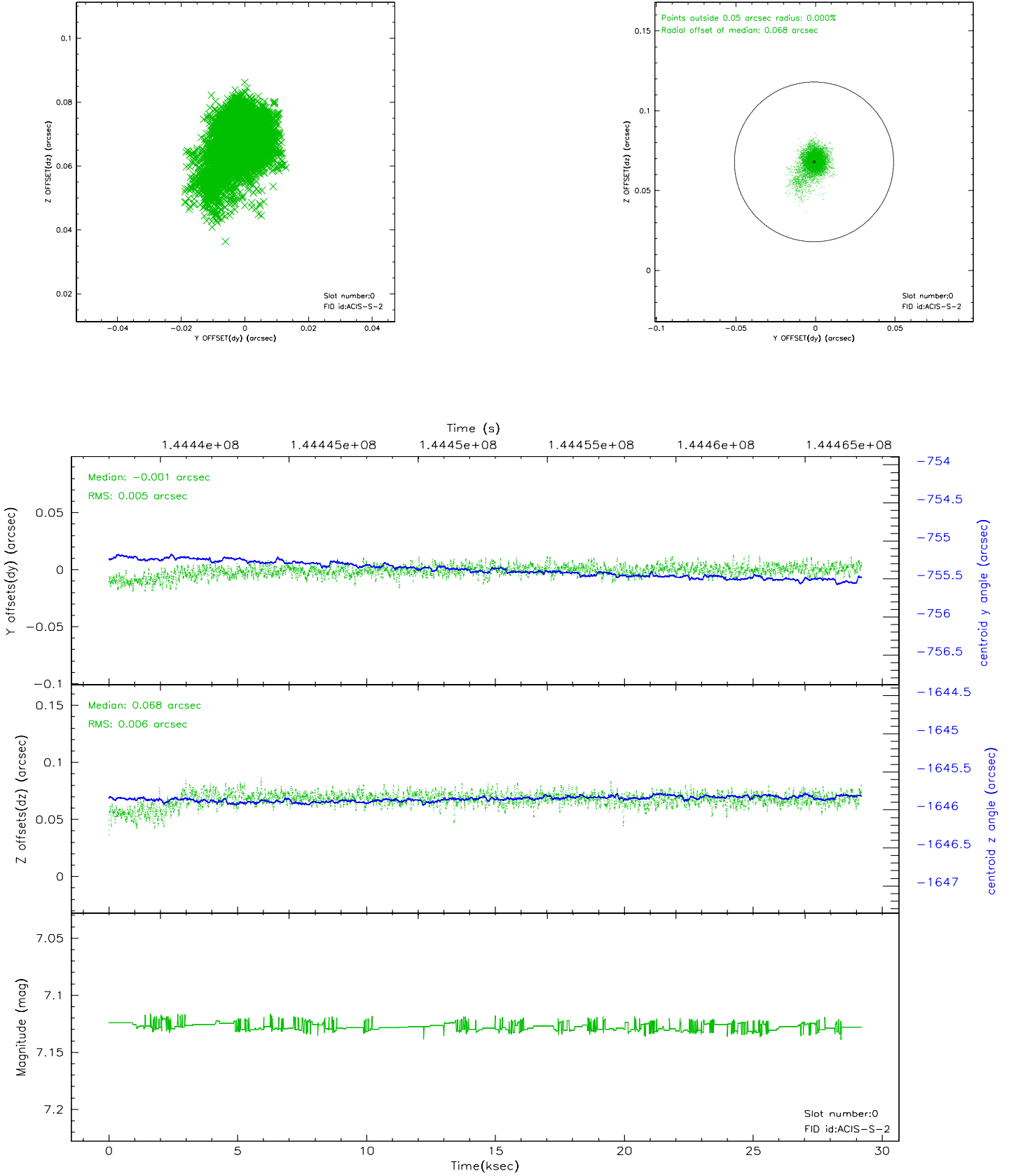


## 2.4.5 Slot 7

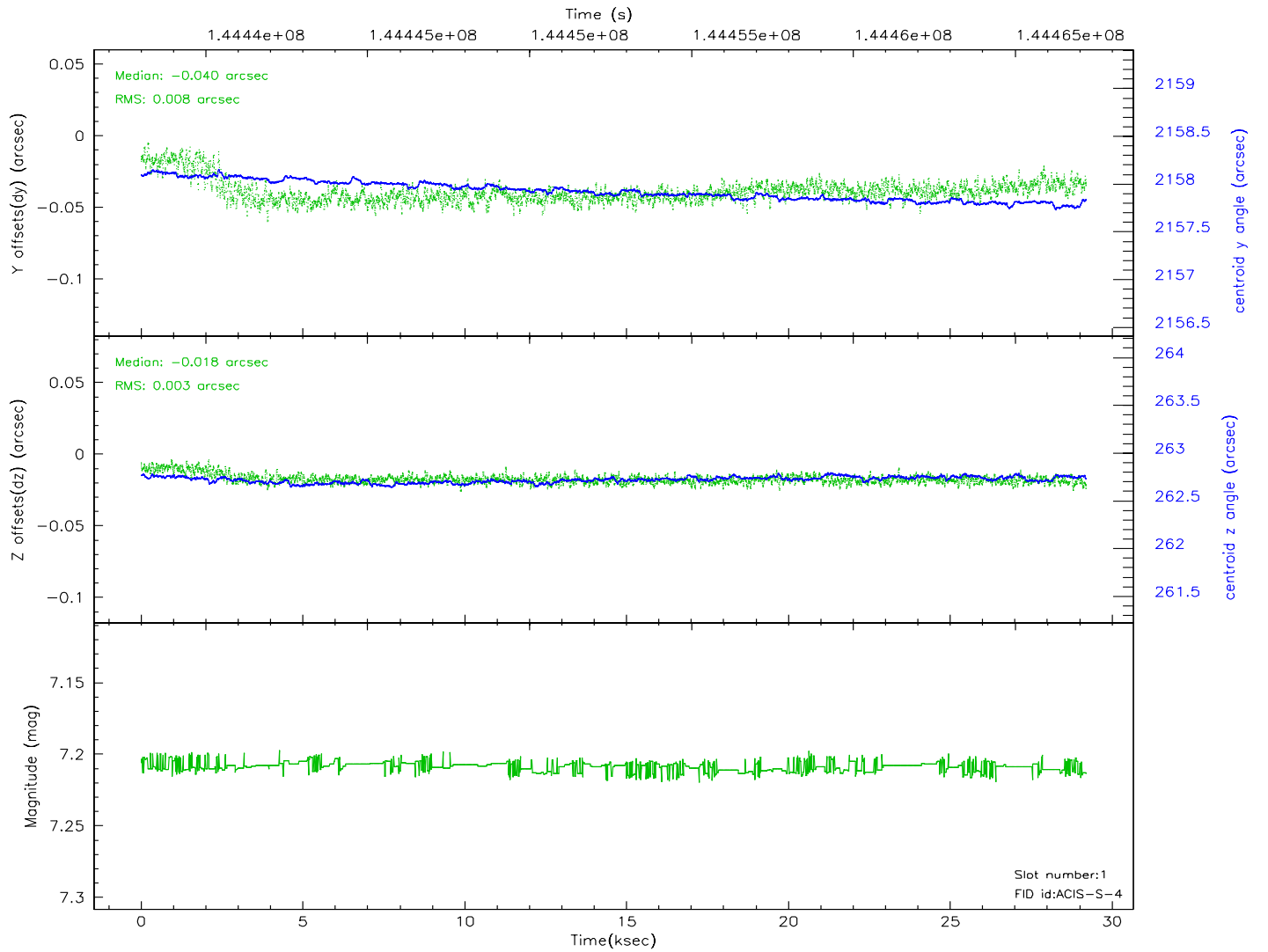
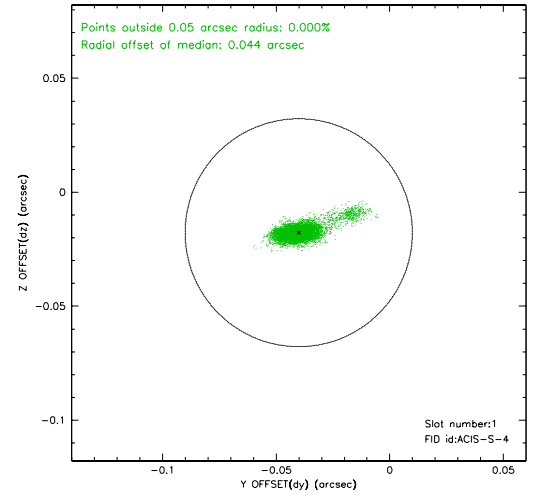
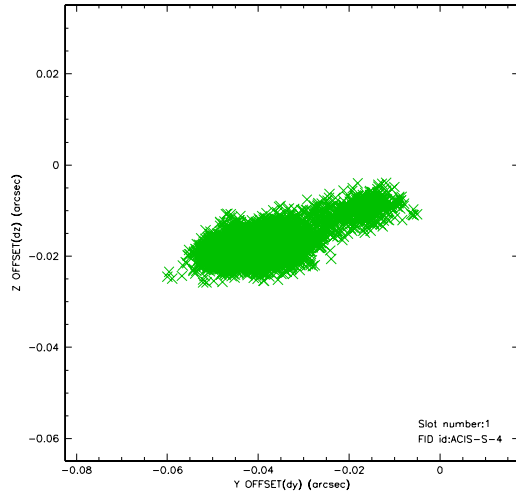


## 2.5 FID Slots

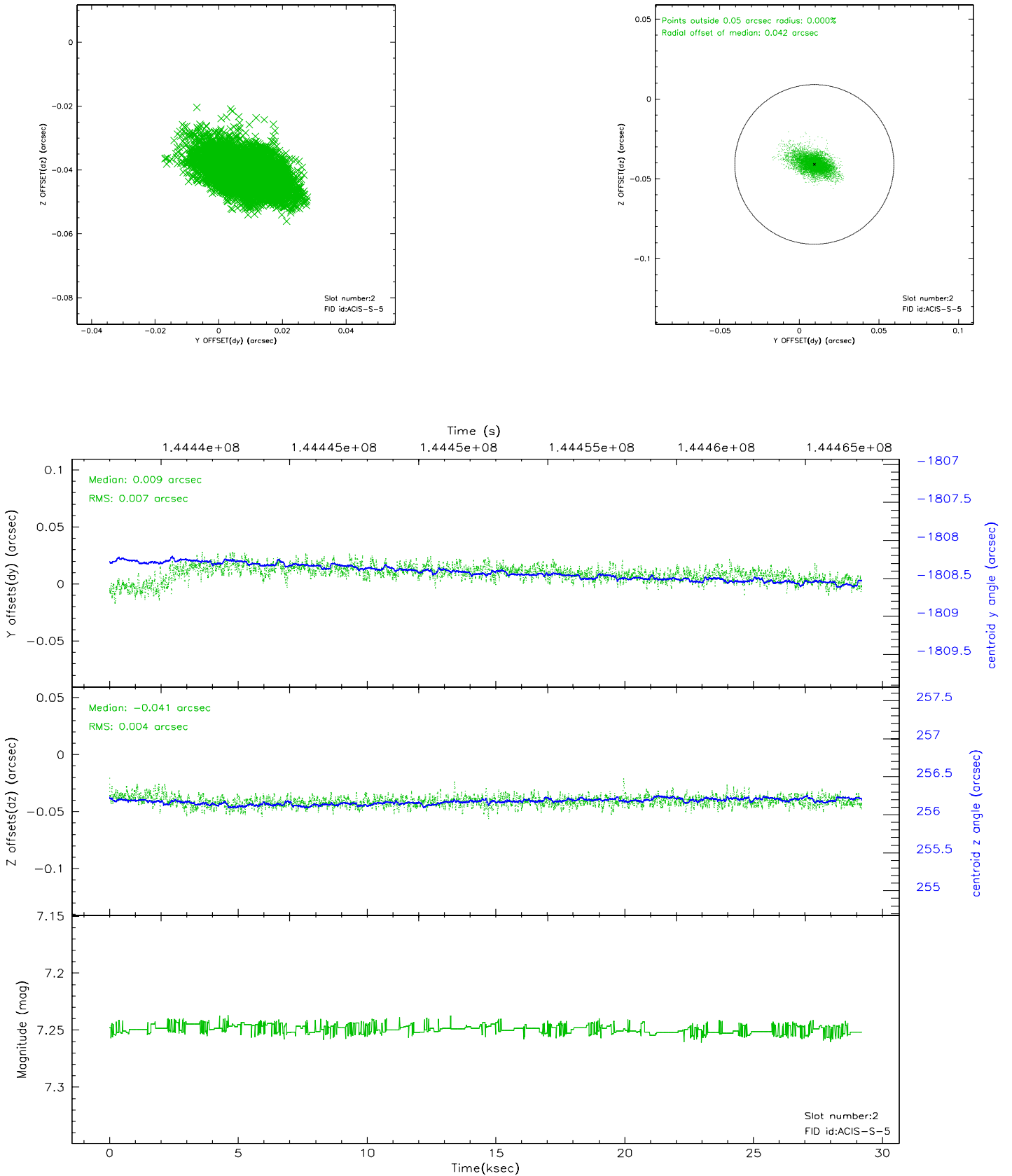
### 2.5.1 Slot 0



## 2.5.2 Slot 1



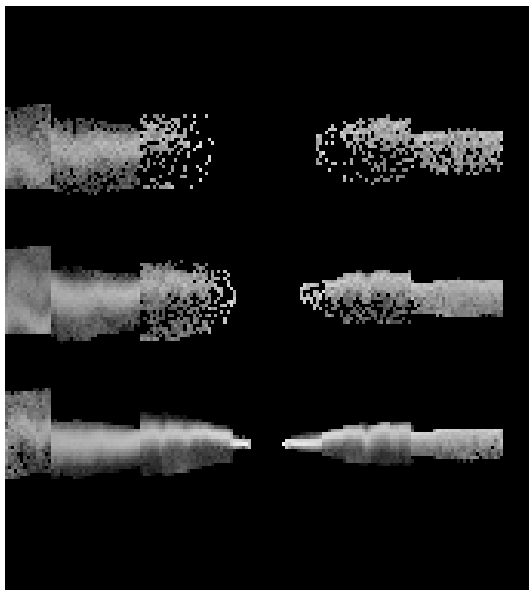
### 2.5.3 Slot 2



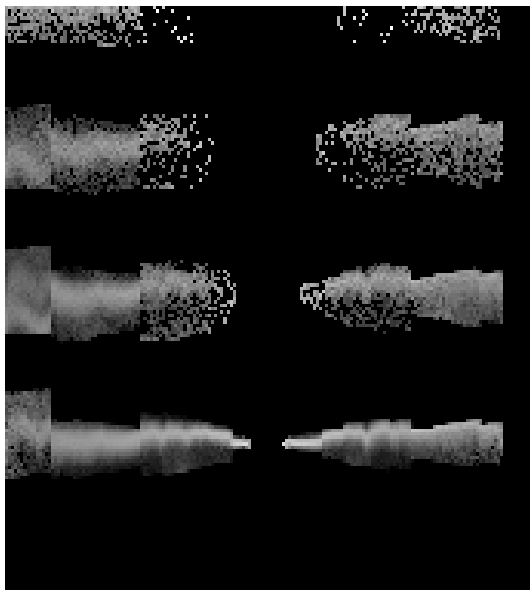


# 3 Gratings

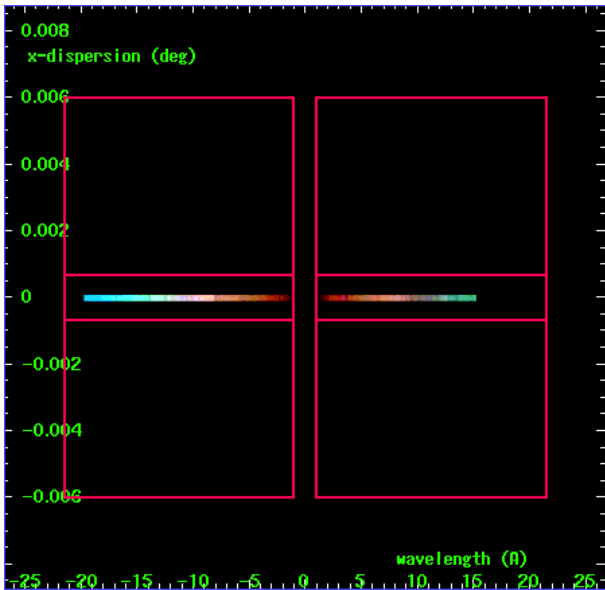
## 3.1 HEG Arm



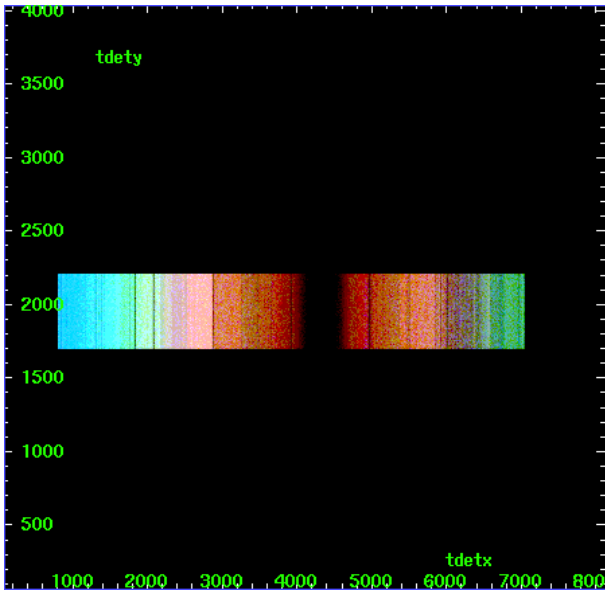
HEG Order Sort 123



HEG Order Sort ALL

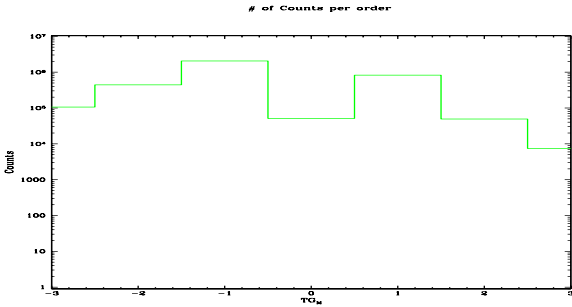


Spot Image HEG

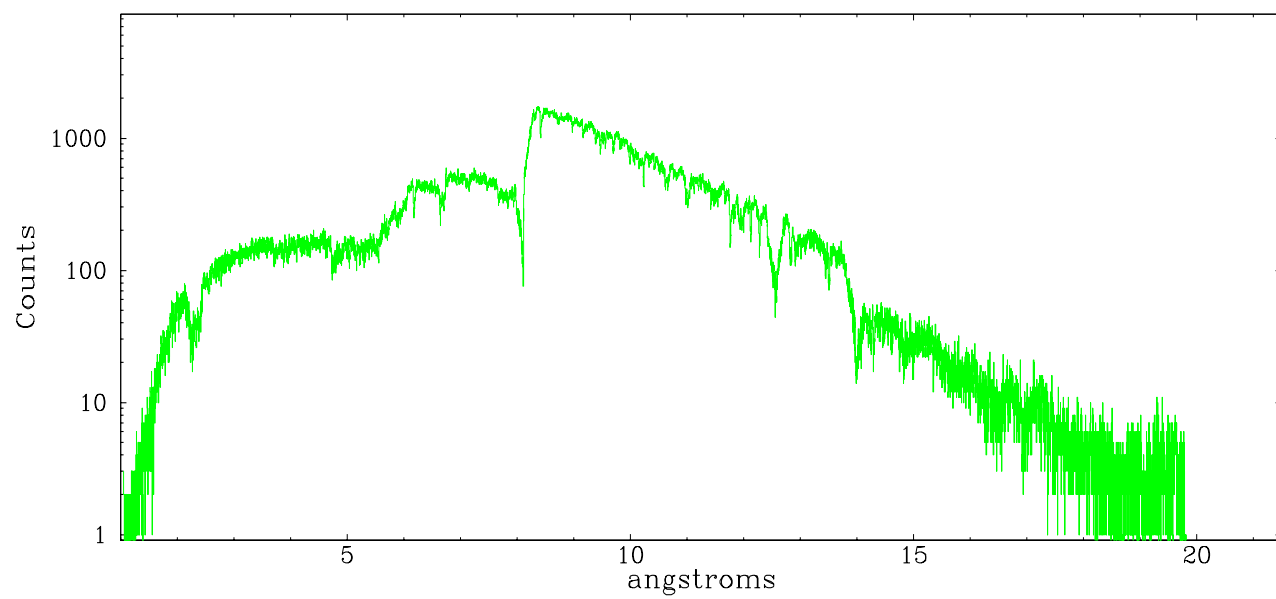


Full Detector HEG

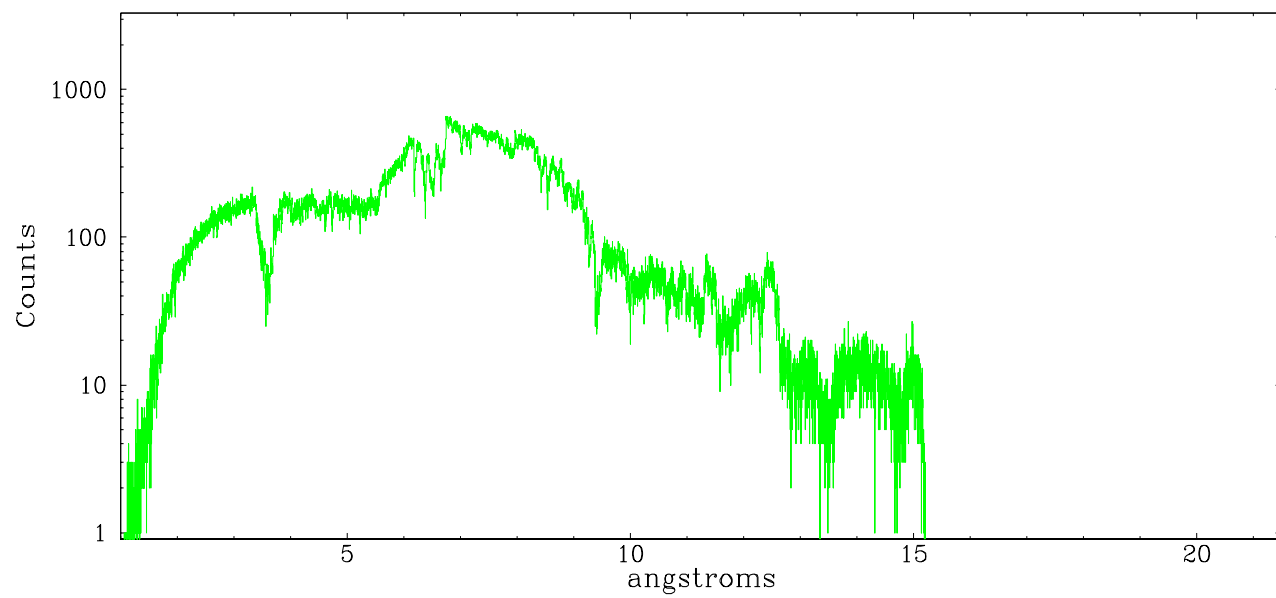
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	105616	439637	2061689	50976	820394	49374	7396



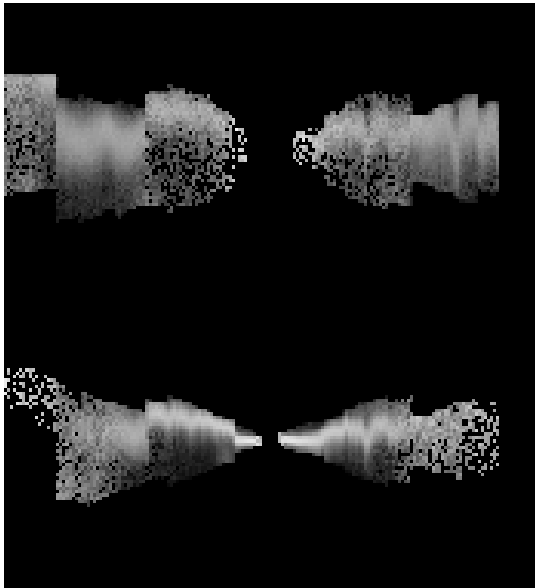
heg order -1



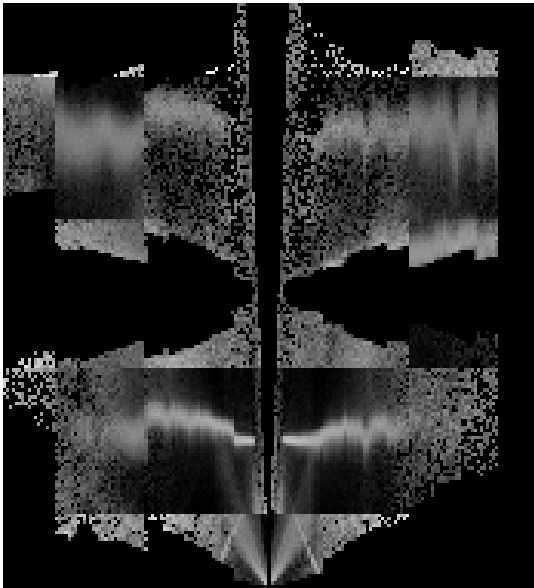
heg order +1



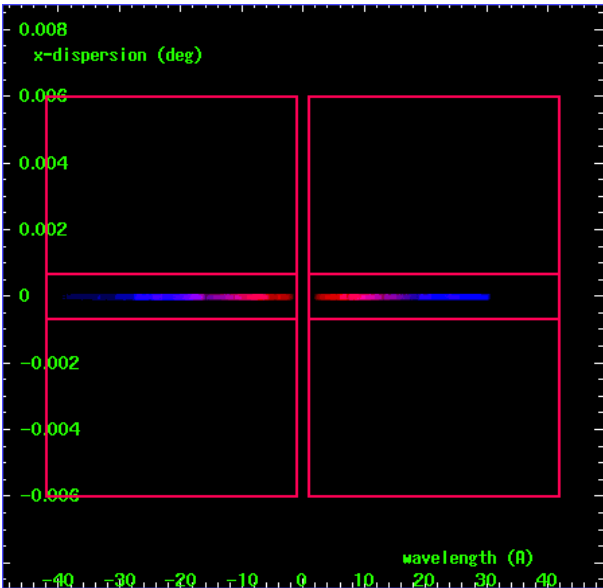
3.2 MEG Arm



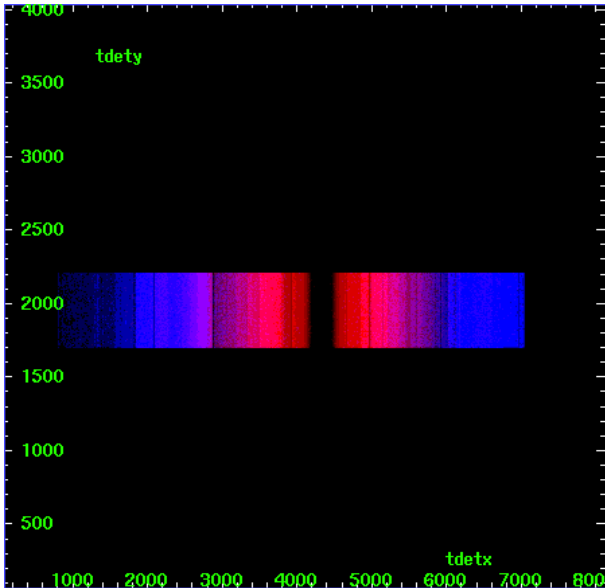
MEG Order Sort 123



MEG Order Sort ALL

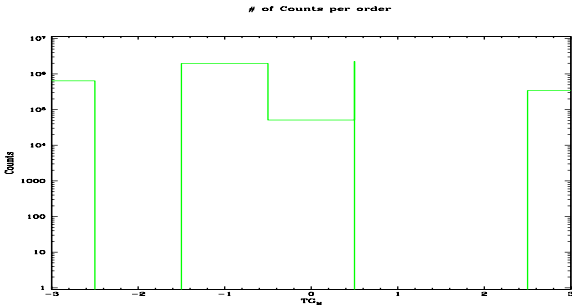


Spot Image MEG

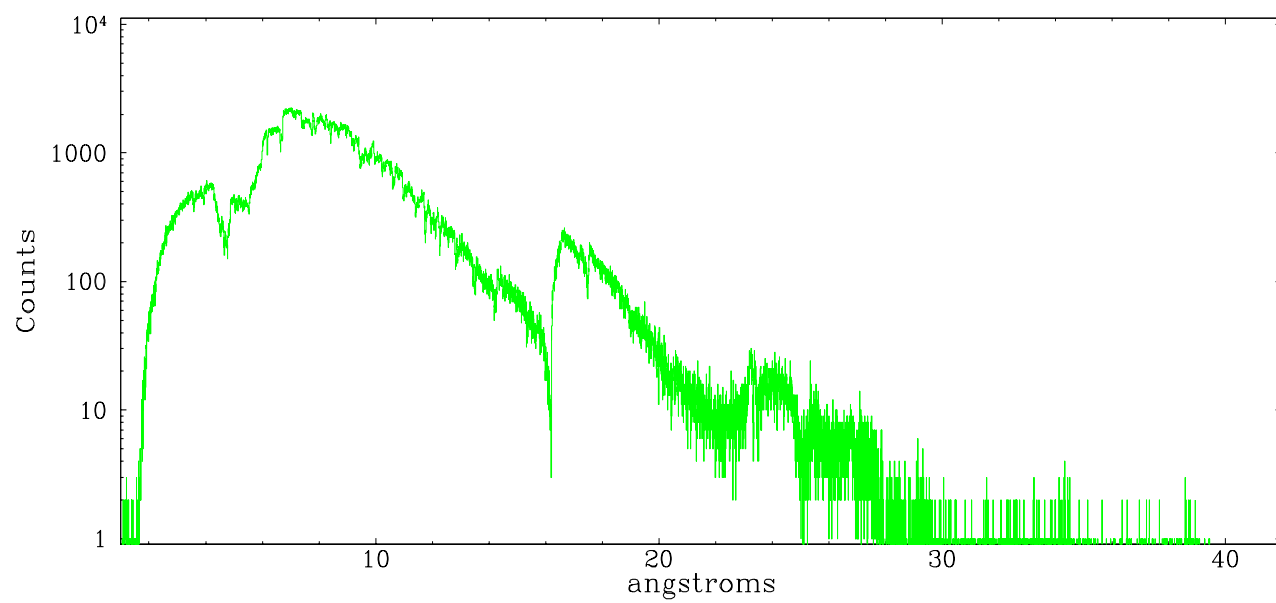


Full Detector MEG

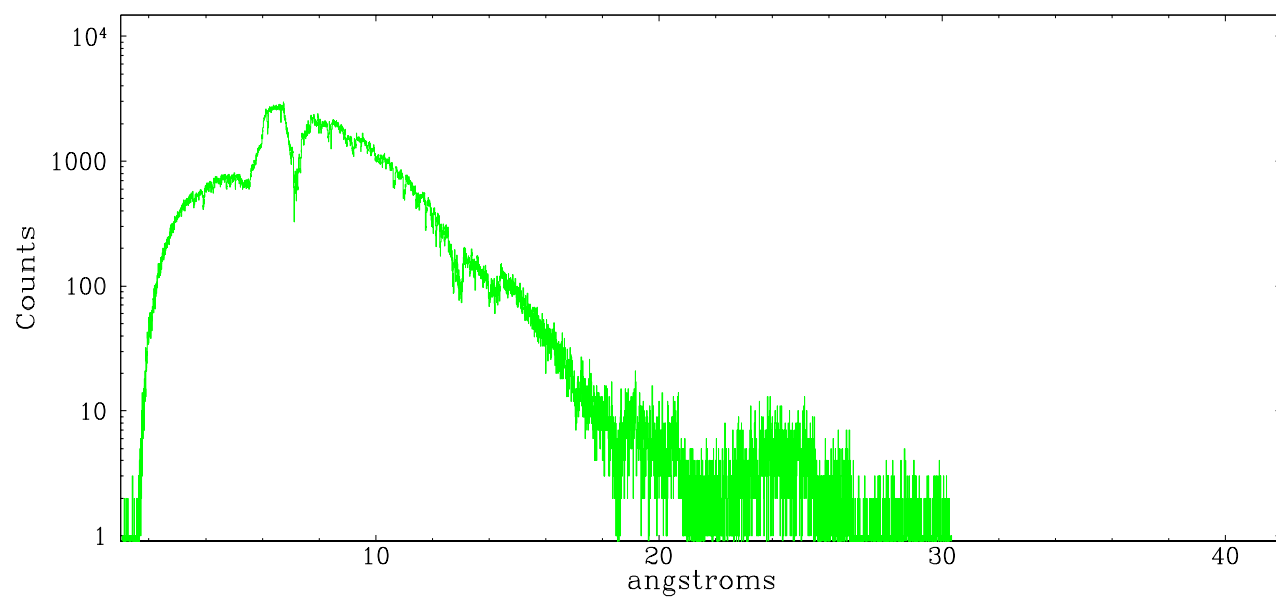
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	645224	0	1973572	50976	2257652	0	344975



meg order -1



meg order +1



# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2006.10.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	26.4

## A.2 Comments

Phase constraint OK: observed: 0.977 - 1.040  
desired: (0.95-1.05) - (0.96-1.06)

Focal plane temperature is warmer than -118 degrees at start of observation. The ACIS calibrations are not verified or necessarily applicable for focal plane temperatures warmer than -118 degrees.

The charge time reflects the time for the ccd with the least saturation,  
and is more indicative of the elapsed exposure. Other chips can saturate  
from bright sources and have less good-time.