

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 4413 - L2 Version 3  
Chandra X-Ray Center

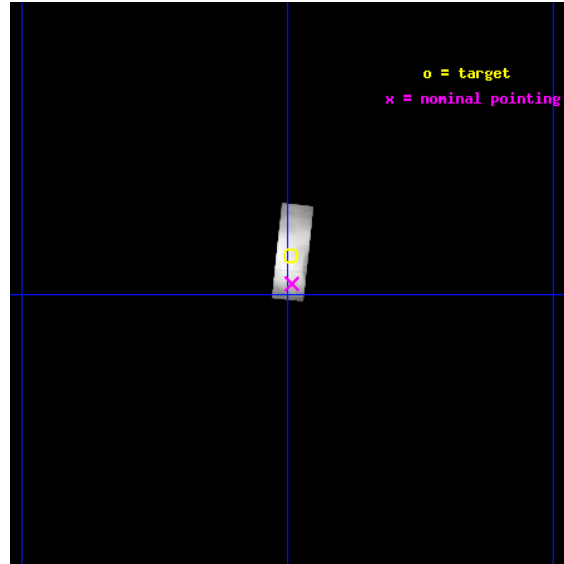
L2 Processing Date : Oct 20 2012

## 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	Parameters . . . . .	4
2.1.3	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

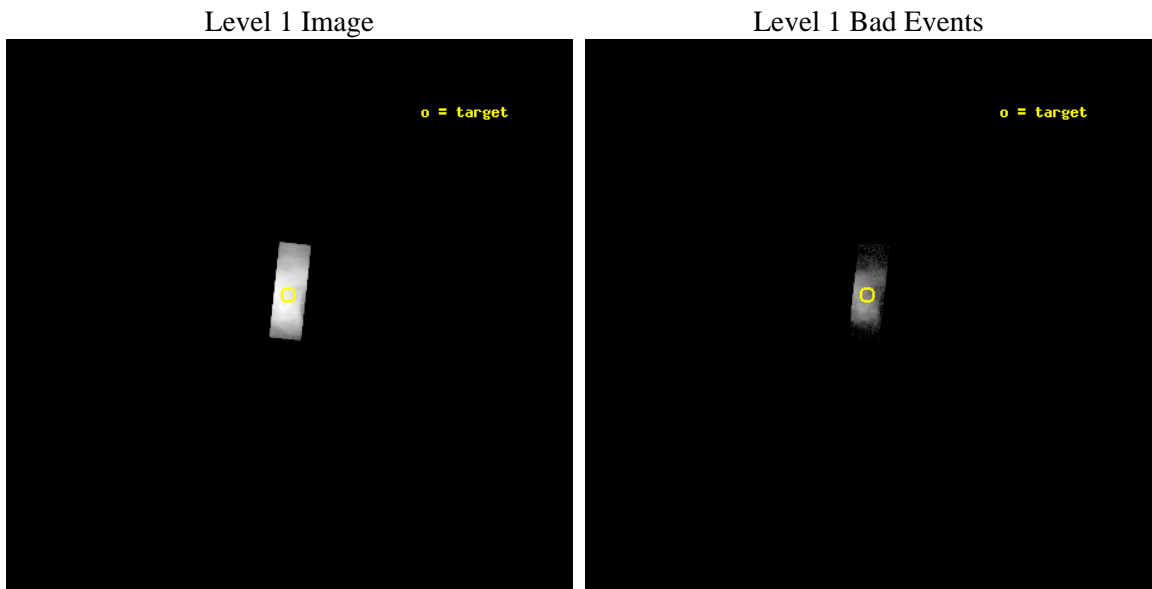
seq_num	100037	Sequence number
obs_id	4413	Observation id
title	OBSERVATION OF SATURN AND TITAN PASSING IN FRONT OF THE CRAB NEBULA	&#160
observer	PROFESSOR HIROSHI TSUNEMI	Principal investigator
object	TITAN	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.62353	Observer's specified target RA [deg]
dec_targ	22.01685	Observer's specified target Dec [deg]
ra_nom	83.62314503741	Nominal RA [deg]
dec_nom	22.004403844913	Nominal Dec [deg]
roll_nom	276.15174816395	Nominal Roll [deg]
revision	3	Processing version of data
ontime	10256.100407541	Sum of GTIs [s]
livetime	9021.90394752	Livetime [s]
ontime7	10256.100407541	Sum of GTIs [s]
l2events	2163551	Number of level 2 events



## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



### 2.1.2 Parameters

obi_num	1	Obi number	sched_exp_time	10399.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	10256.100407541	Sum of GTIs [s]
caldsver	4.5.2	&#160	ontime7	10256.100407541	Sum of GTIs [s]
date	2012-10-20T18:02:27	Date and time of file creation	l1events	2261307	Number of level 1 events
revision	3	Processing version of data			

### 2.1.3 Events

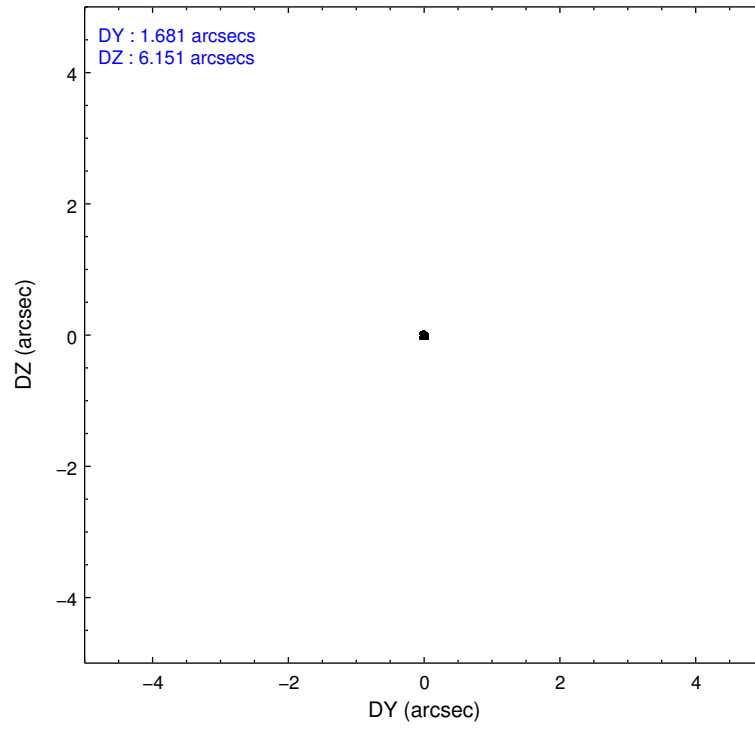
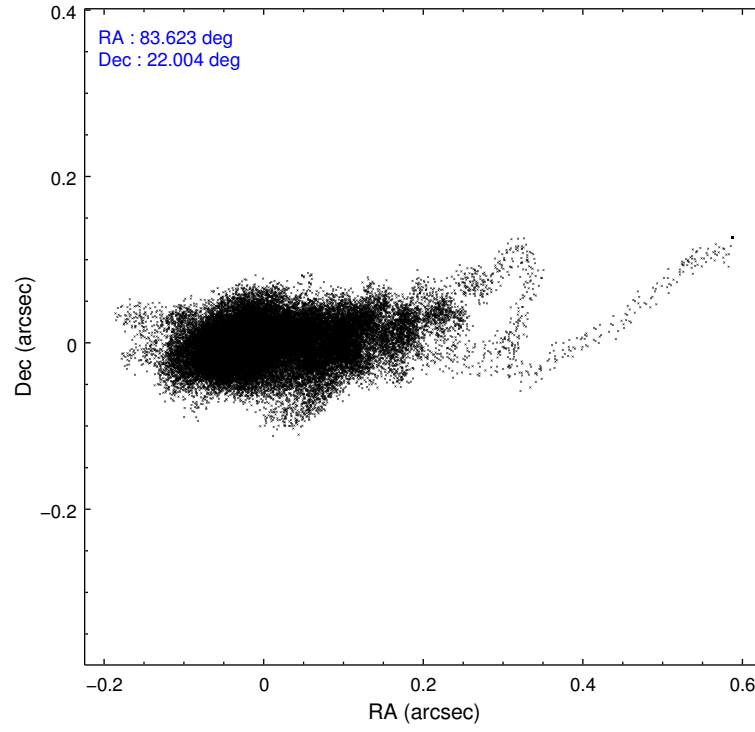
	<b>ccd 7</b>
level 1 events	2261307
rejected events	67833
rejected %	2%

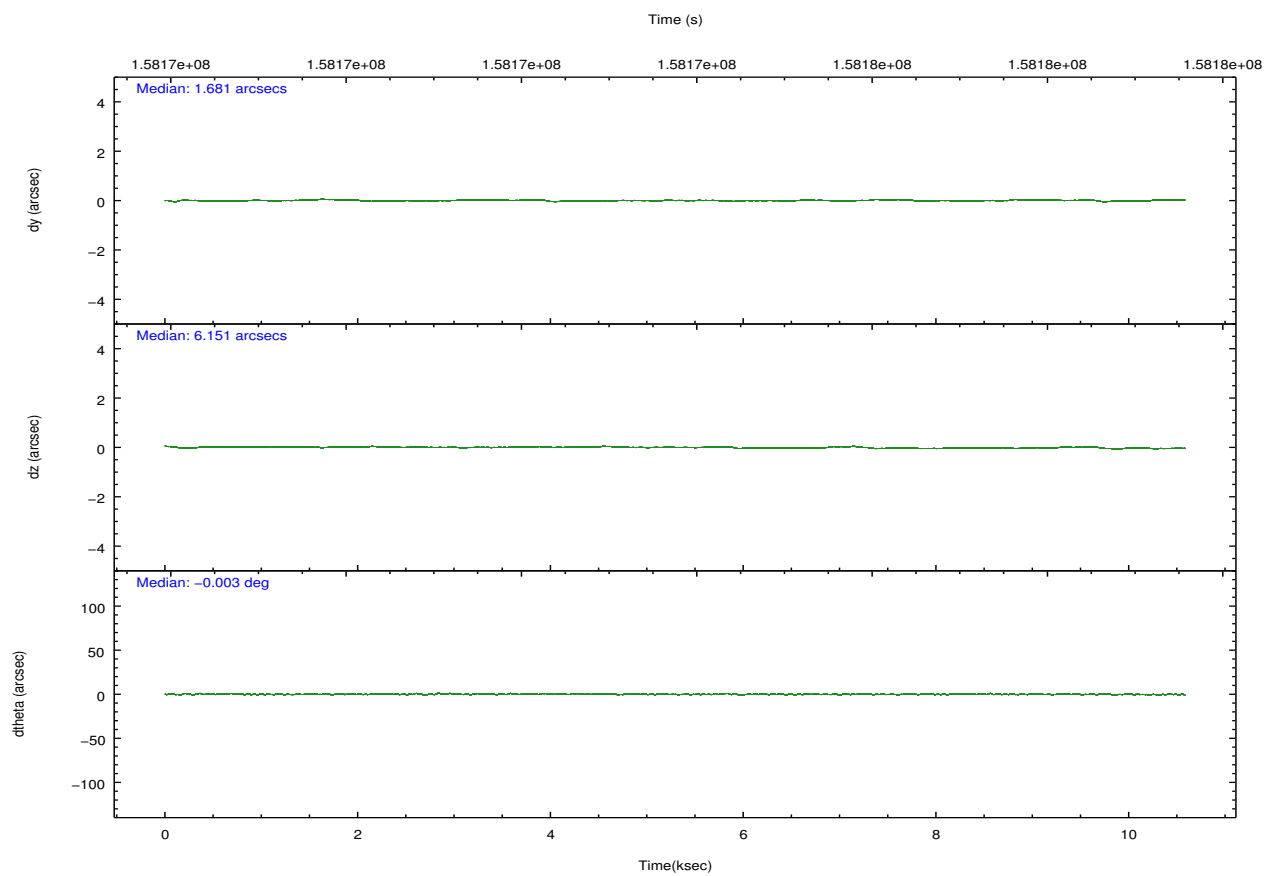
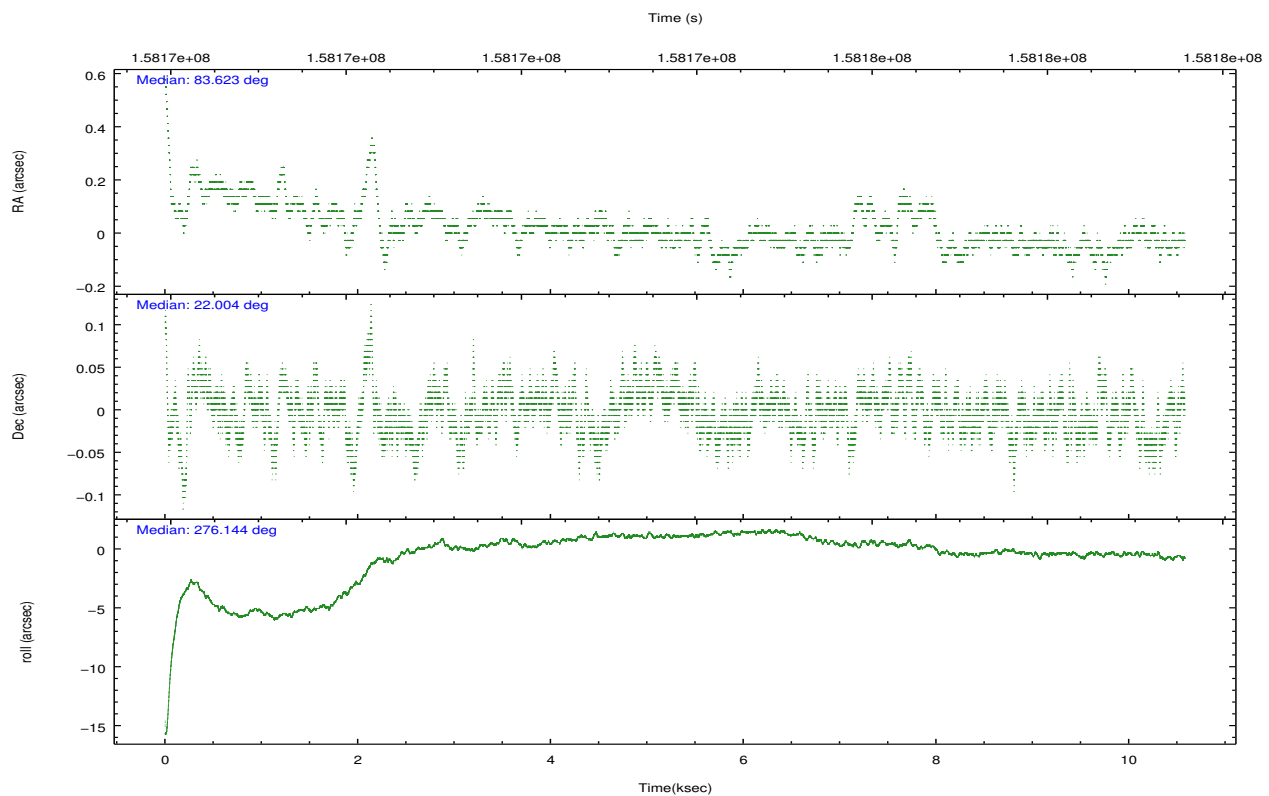
	<b>ccd 7</b>
grade 0 events	450057
	19%
grade 1 events	6946
	0%
grade 2 events	560234
	24%
grade 3 events	252339
	11%
grade 4 events	241878
	10%
grade 5 events	29499
	1%
grade 6 events	689237
	30%
grade 7 events	31117
	1%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-7	ACIS-7	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	83.605482	83.62314503740988	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	22.026145	22.0044038449129	Subarray start row	127	127
[deg] Pointing Roll	276.001740	276.1517481639498	Subarray row count	101	101
[s] Window start time (MET)	158144464.184000	158144464.184000	Alternating exposures requested	N	N
[s] Window stop time (MET)	158185864.184000	158185864.184000	[s] Primary exposure time	0.000000	0.3
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-182.132523	-182.1344861297048			
[mm] SIM translation stage offset	-8	-7.998036453302973			
[s] Observation start time (MET)	158168650.184000	158168273.95908			
Observation start date	2003-01-05T15:43:06	2003-01-05T15:37:53			
[s] Observation end time (MET)	158179049.184000	158179565.35955			
Observation end date	2003-01-05T18:36:25	2003-01-05T18:46:05			
Read mode	TIMED	TIMED			

## 2.3 Aspect



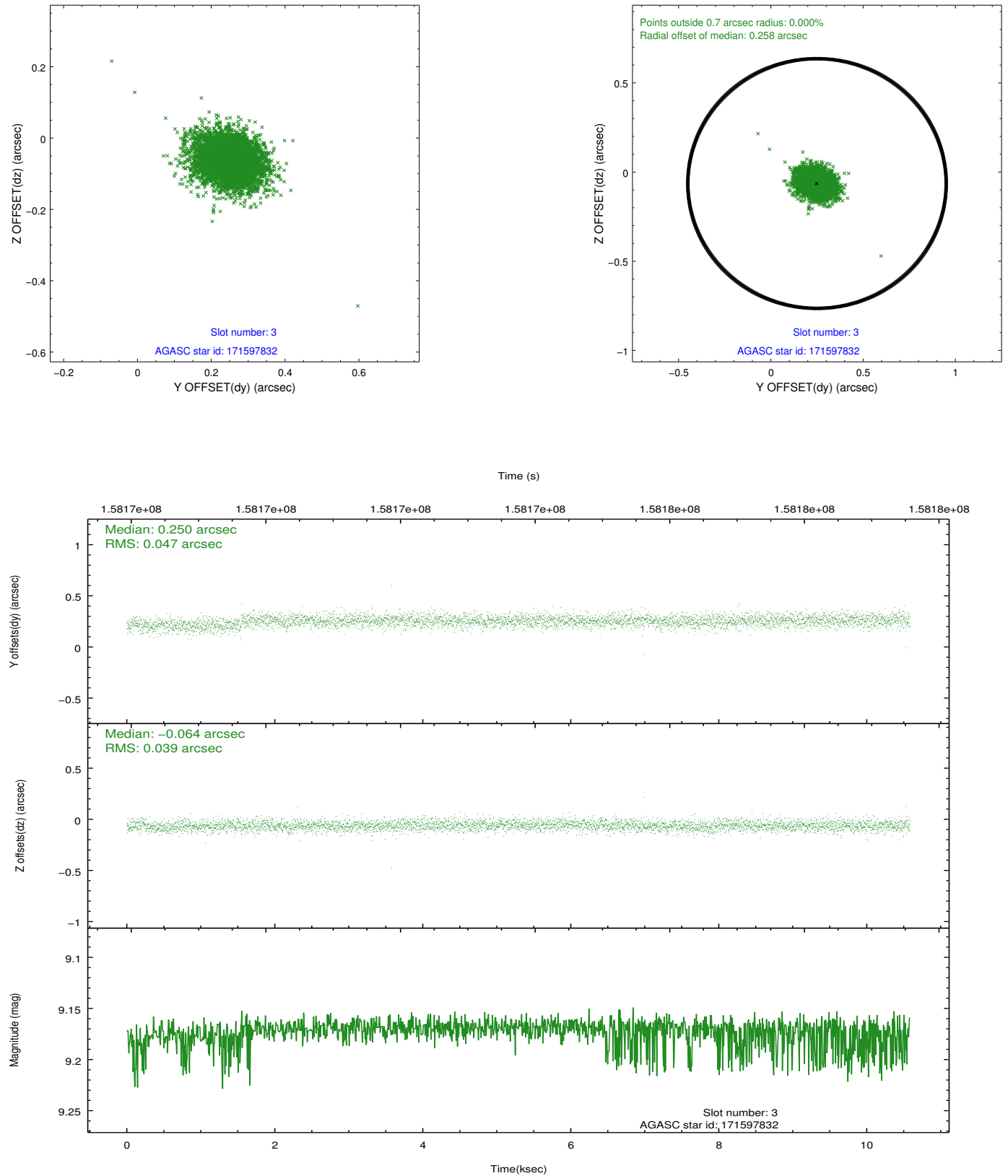


### Slot Statistics

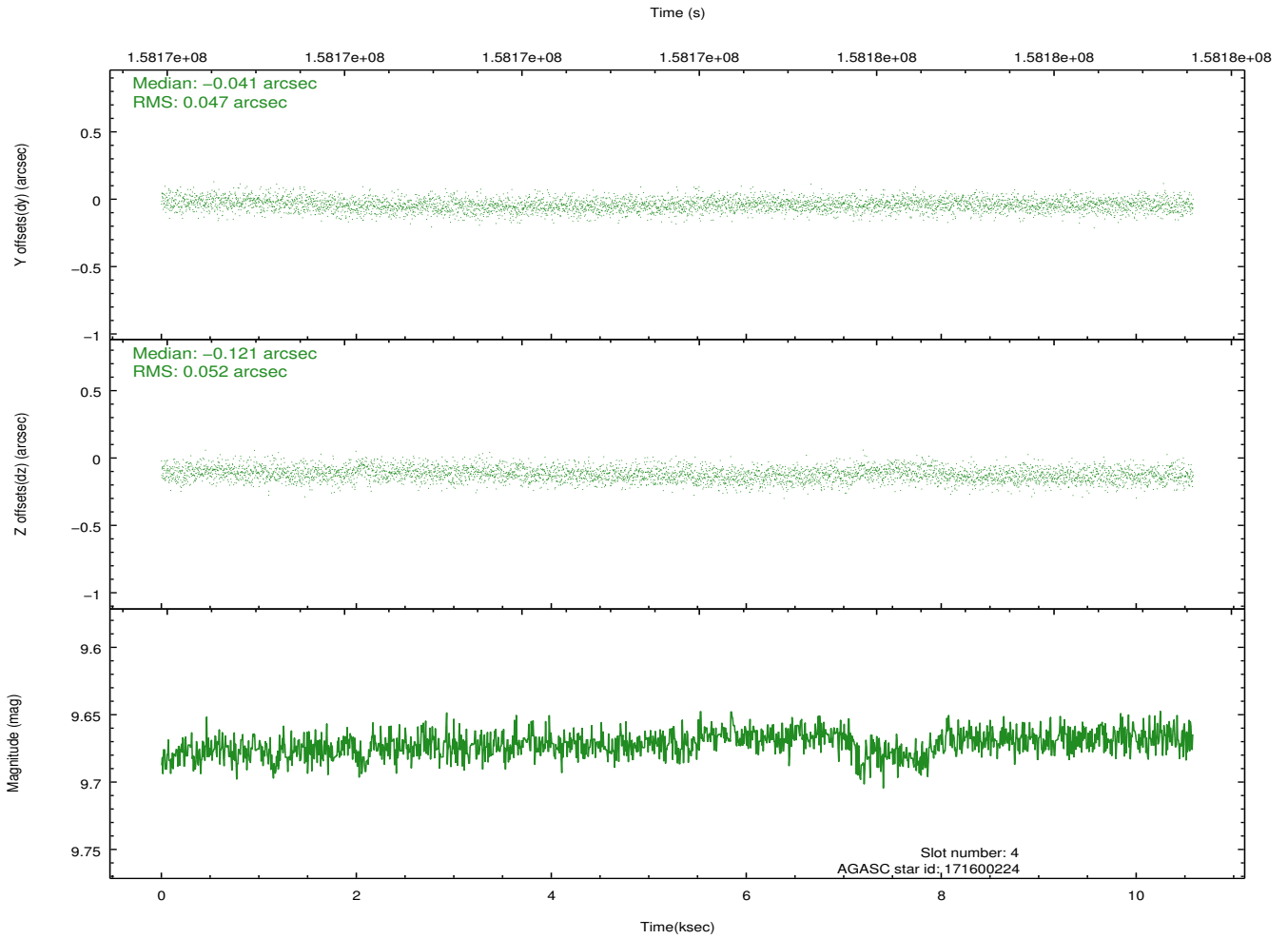
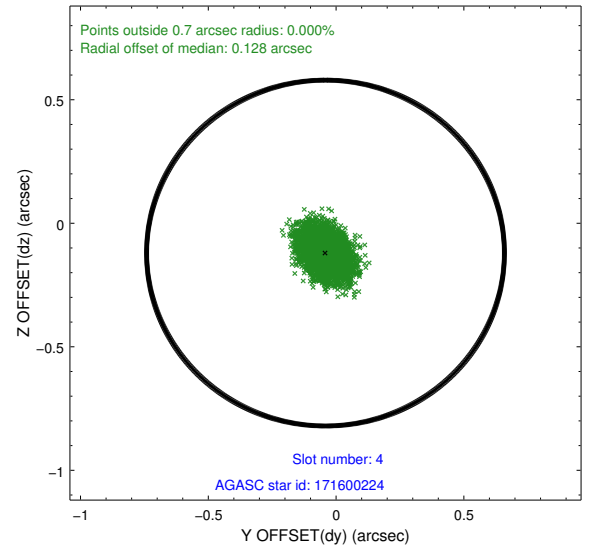
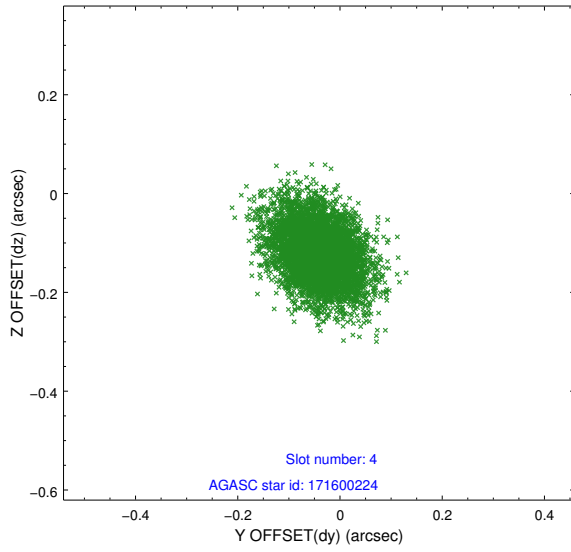
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	2581	-0.066	-0.108	0.006	0.011	0.000000	0.000000	-753.80	-1892.15
1	FID	ACIS-S-4	7.18	2581	0.098	0.061	0.005	0.010	0.000000	0.000000	2159.44	15.88
2	FID	ACIS-S-5	7.23	2581	-0.063	0.055	0.006	0.011	0.000000	0.000000	-1805.98	10.15
3	GUIDE	171597832	9.17	5162	0.250	-0.064	0.063	0.107	83.183230	21.366702	2211.84	-1655.57
4	GUIDE	171600224	9.67	5161	-0.041	-0.121	0.073	0.124	82.941815	21.636094	1160.55	-2355.17
5	GUIDE	171721904	9.22	5159	0.080	0.080	0.055	0.092	84.272676	22.116922	-96.92	2247.41
6	GUIDE	243941560	8.28	5160	-0.189	0.039	0.036	0.058	83.733264	22.568598	-1897.86	627.01
7	GUIDE	171586032	8.99	5162	-0.098	0.064	0.049	0.080	83.950197	22.083225	-85.77	1165.59

## 2.4 Star Slots

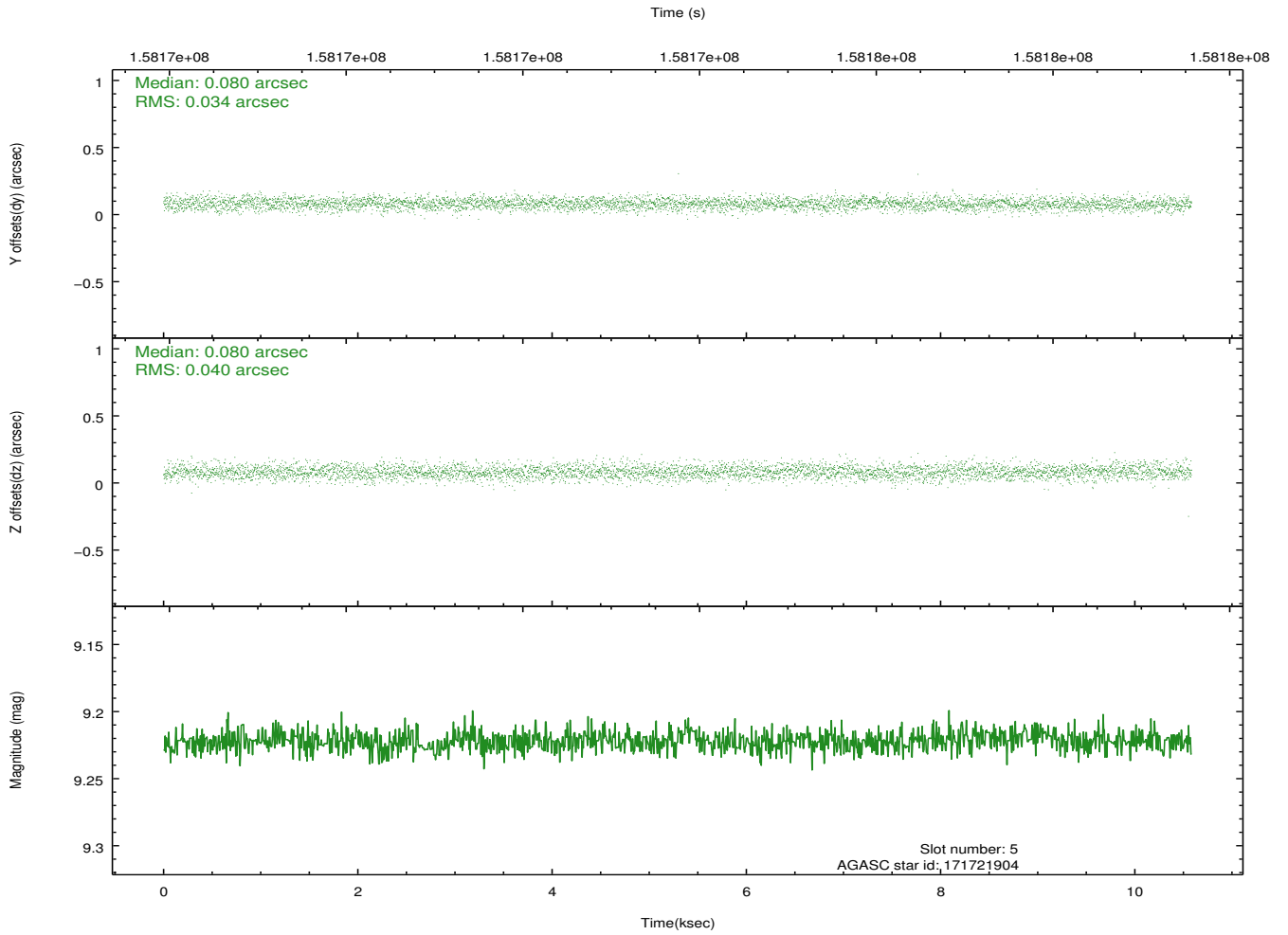
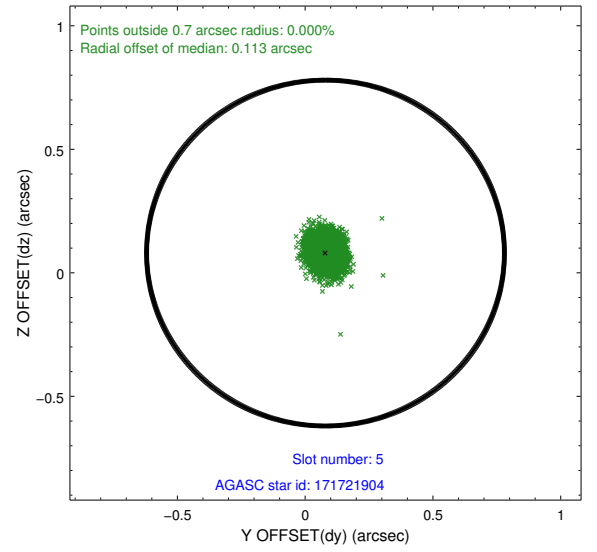
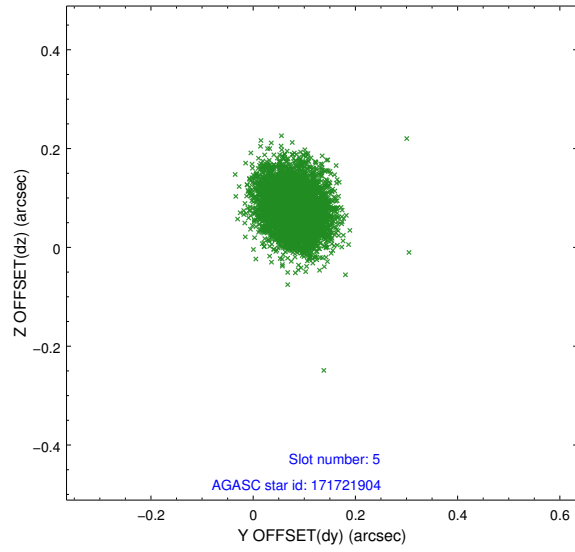
### 2.4.1 Slot 3



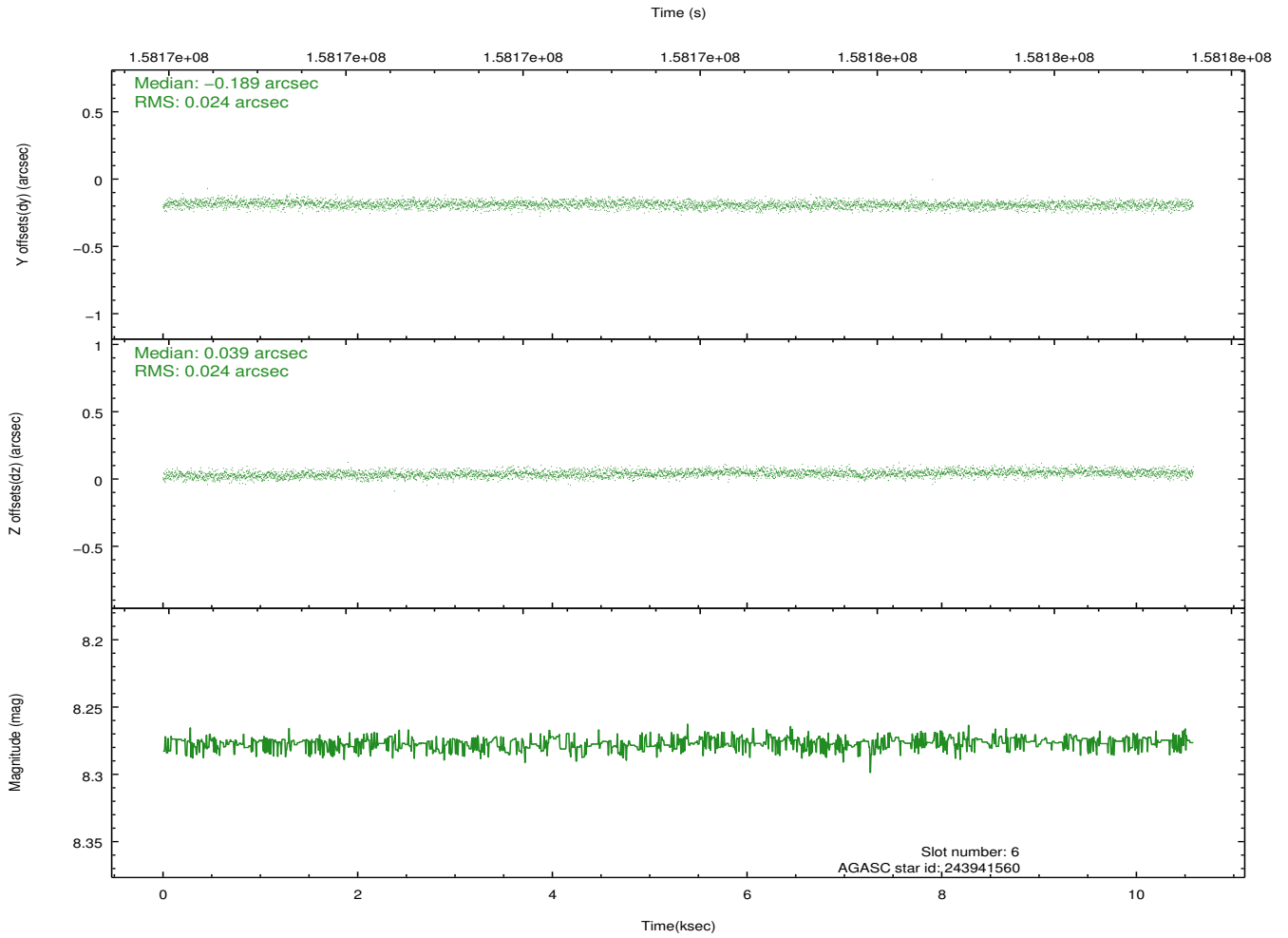
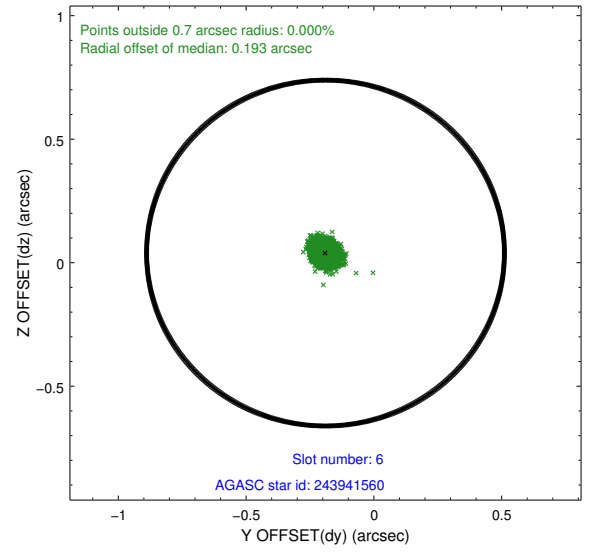
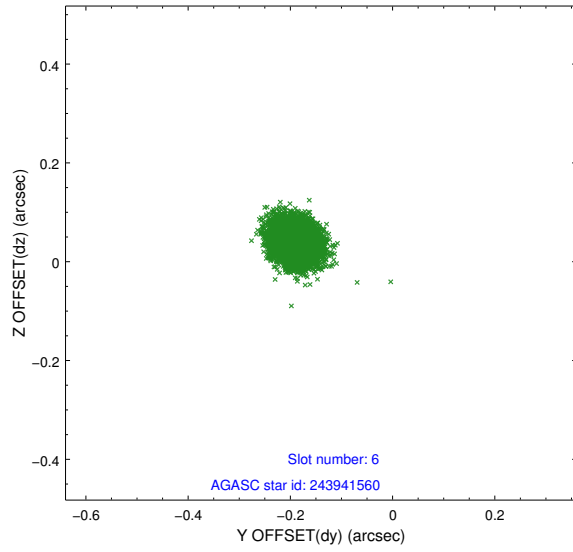
## 2.4.2 Slot 4



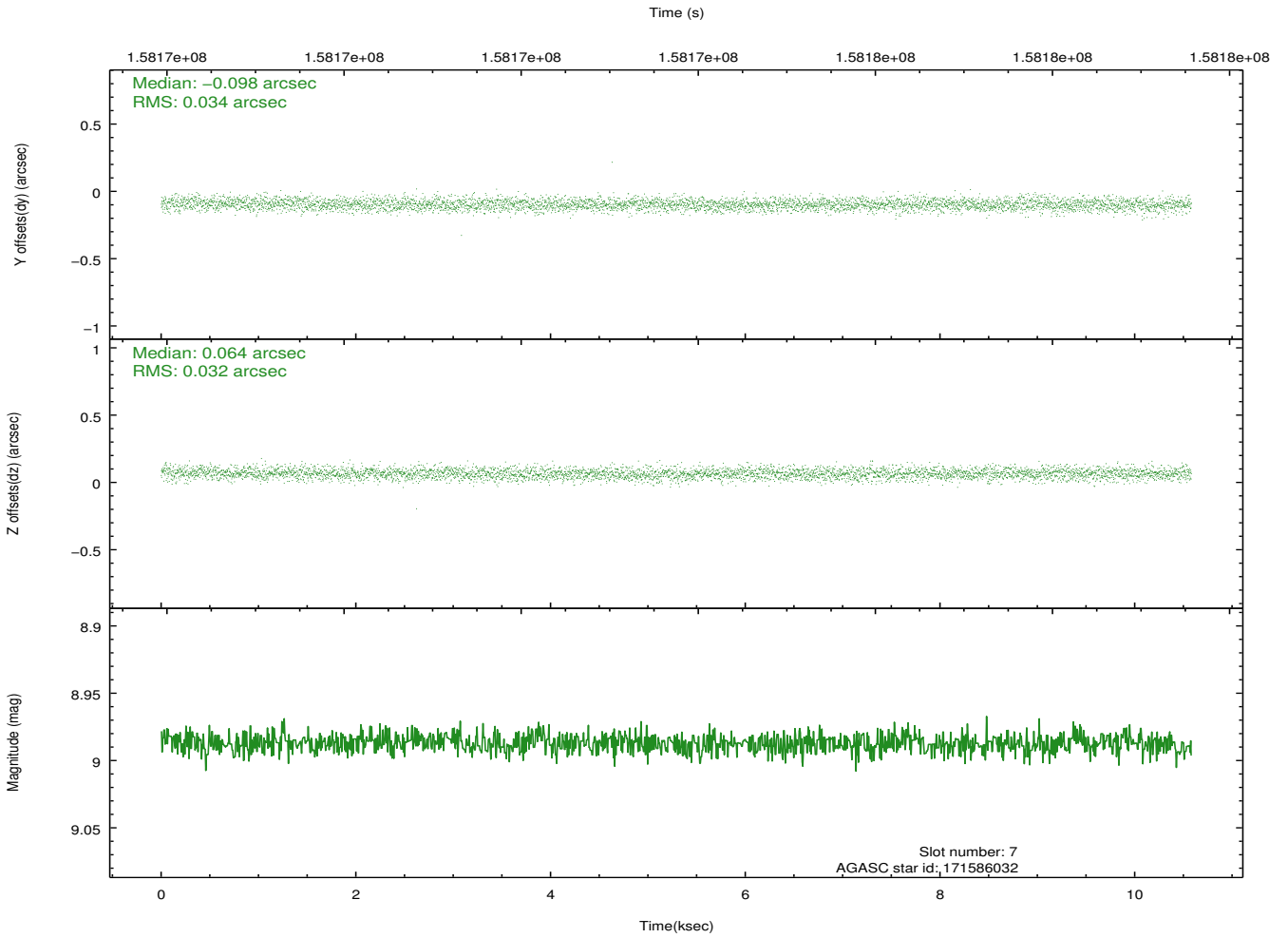
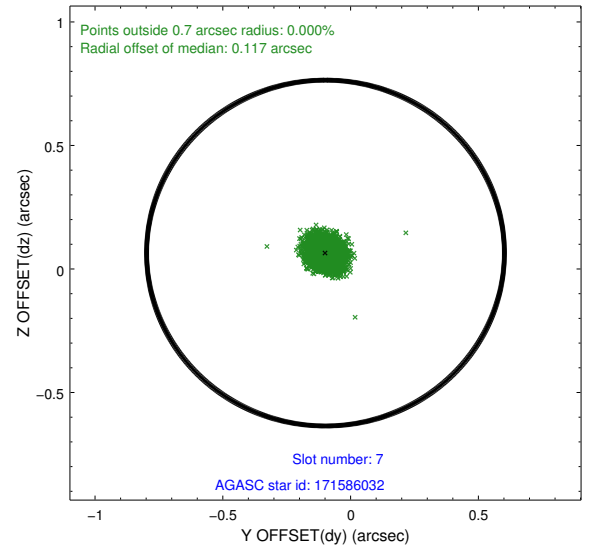
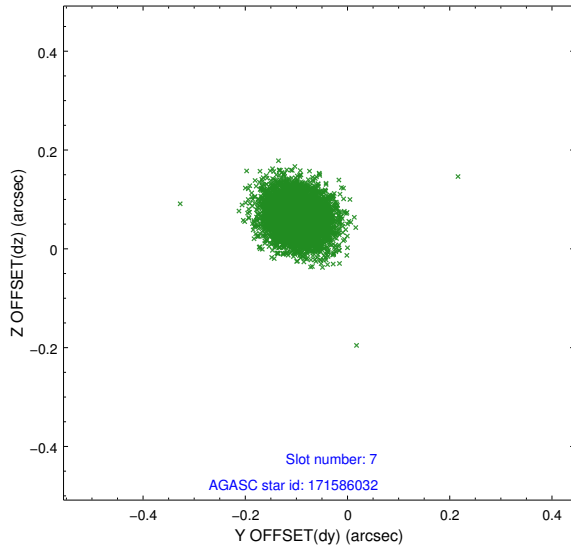
### 2.4.3 Slot 5



## 2.4.4 Slot 6

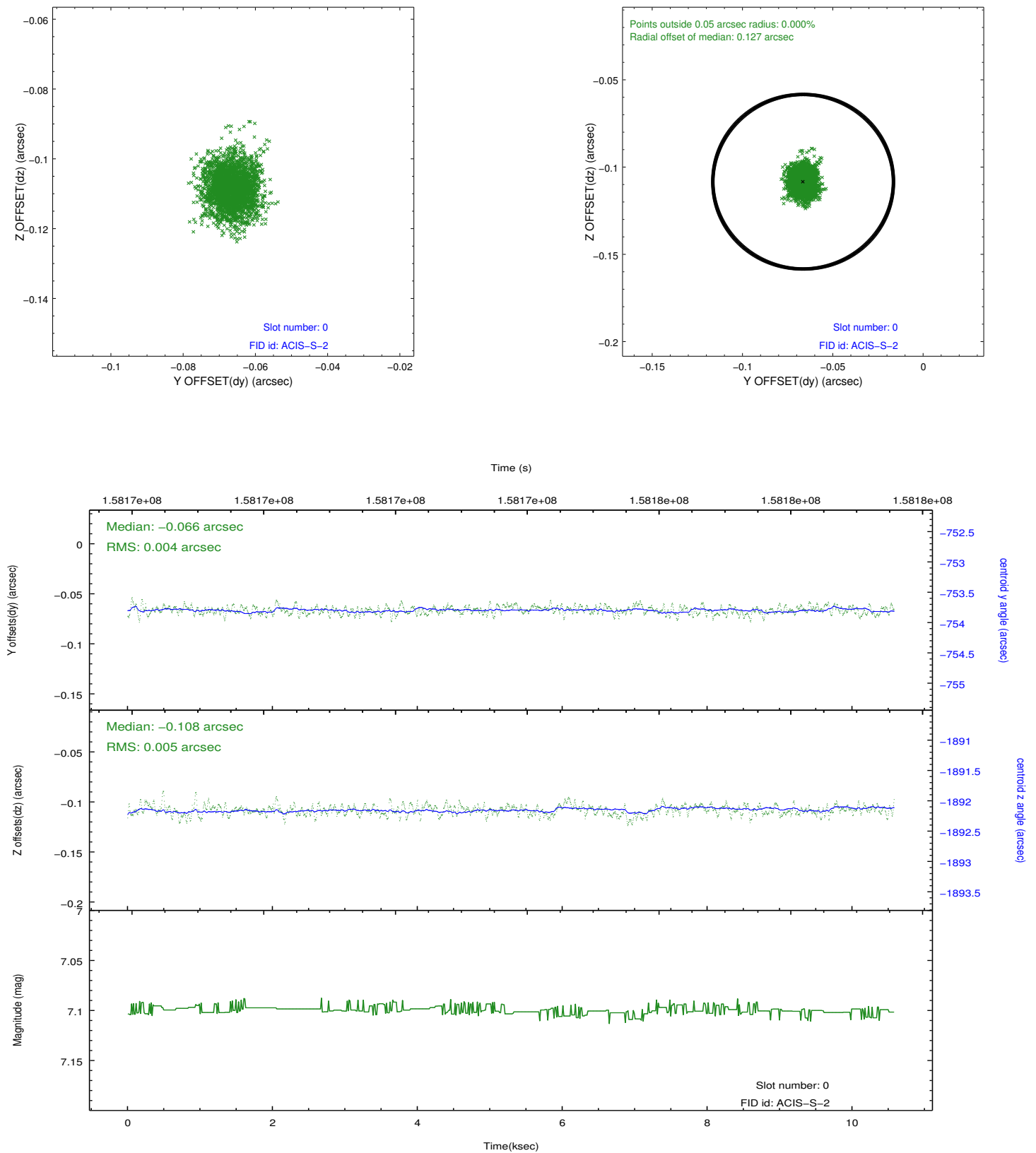


## 2.4.5 Slot 7

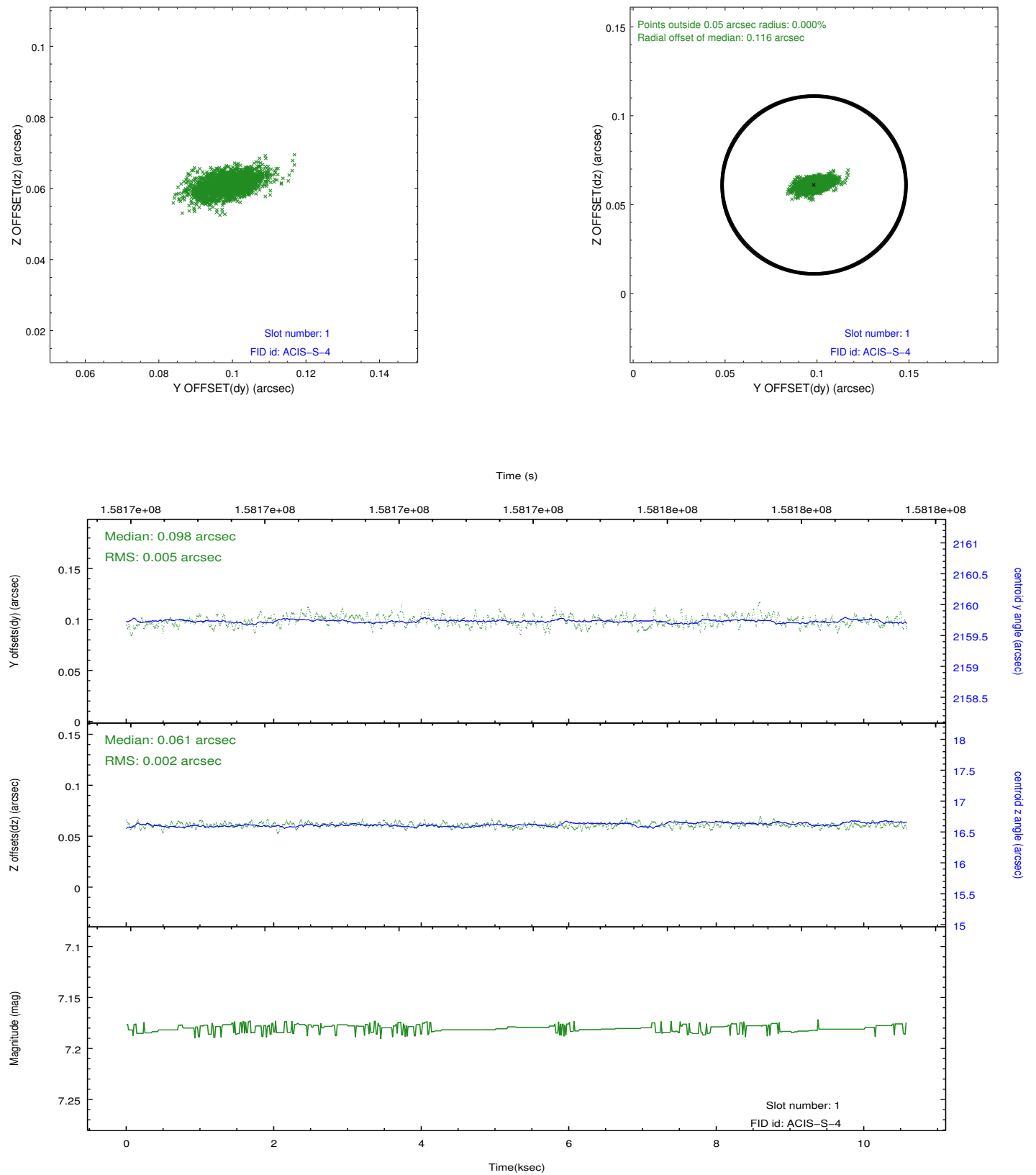


## 2.5 FID Slots

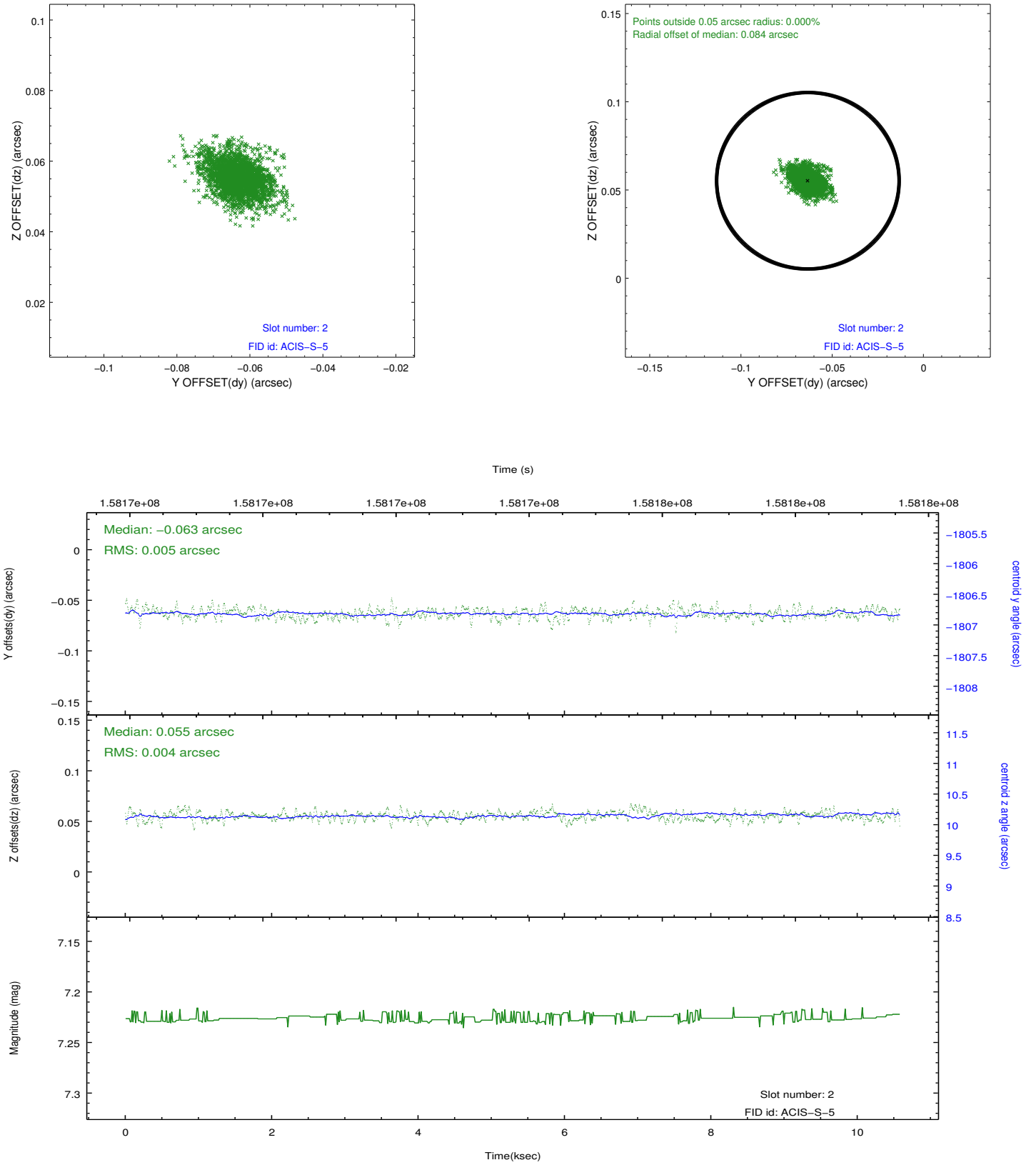
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

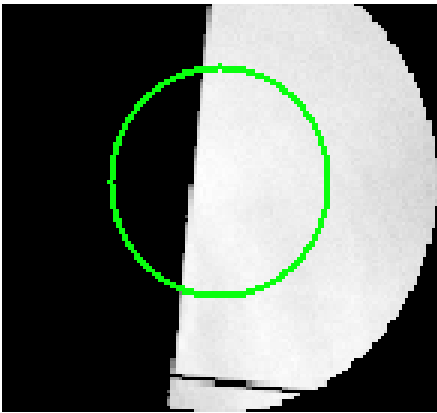


# 3 Gratings

## 3.1 HEG Arm



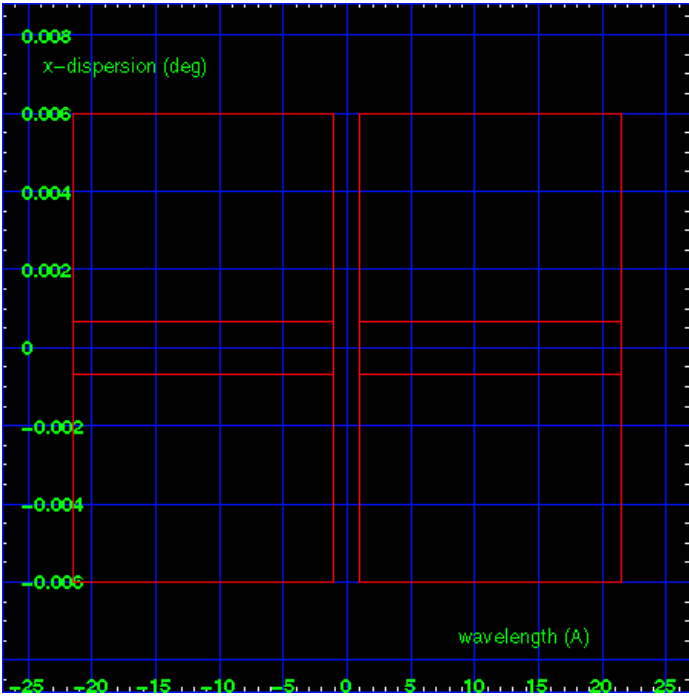
HEG Order Sort 123



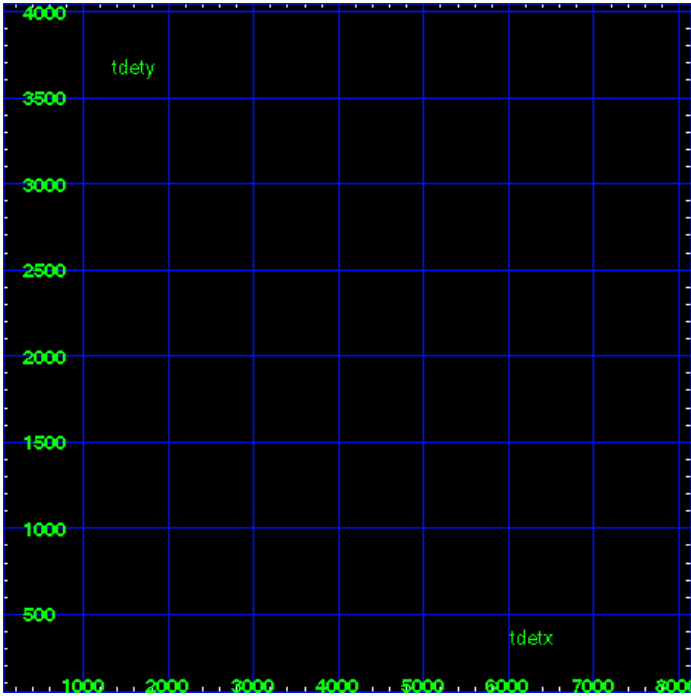
HEG Zero Order



HEG Order Sort ALL

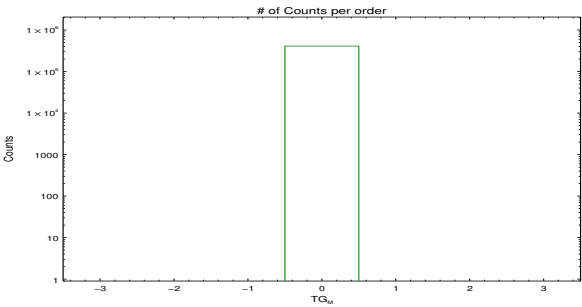


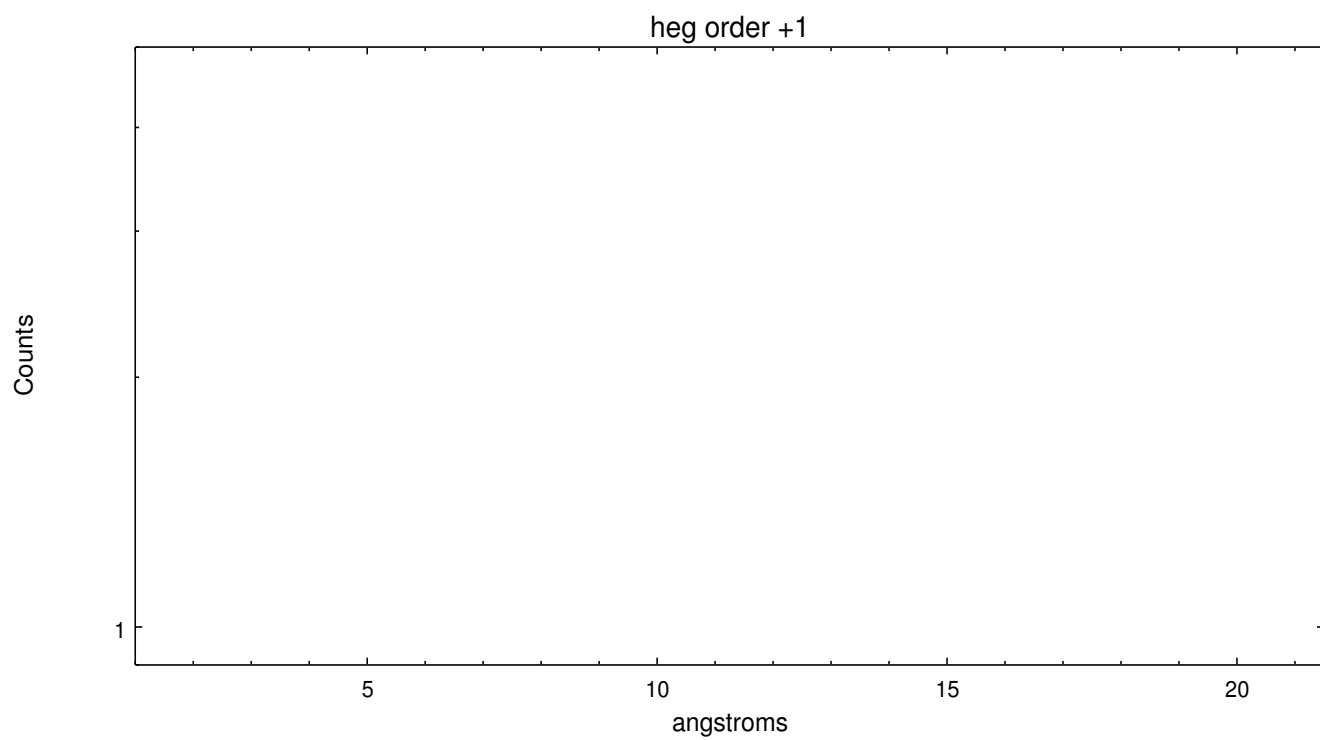
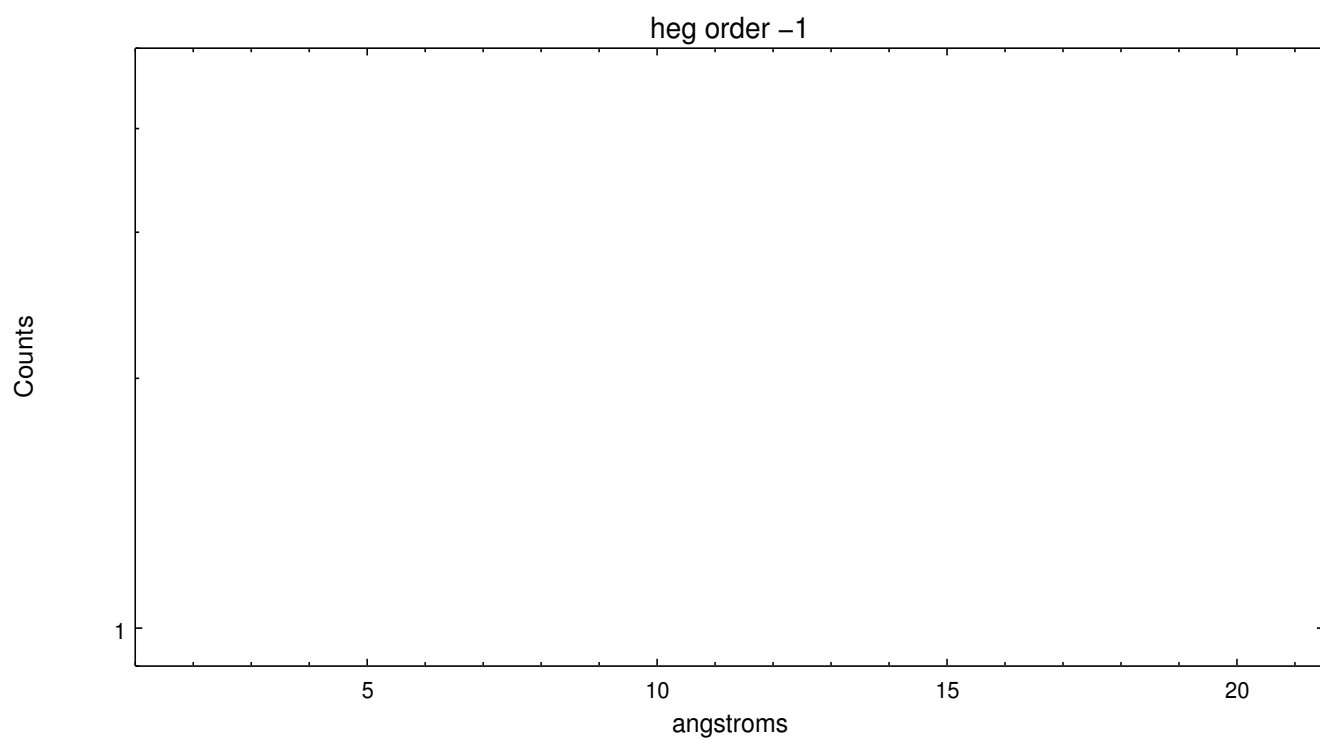
Spot Image HEG



Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	0	410233	0	0	0

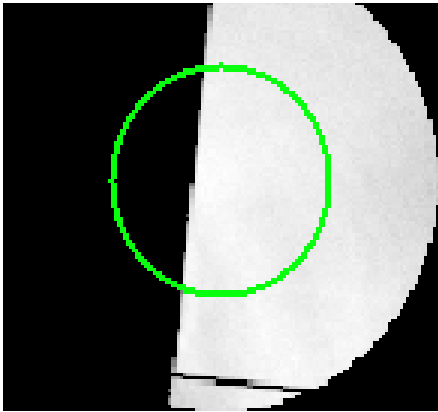




3.2 MEG Arm



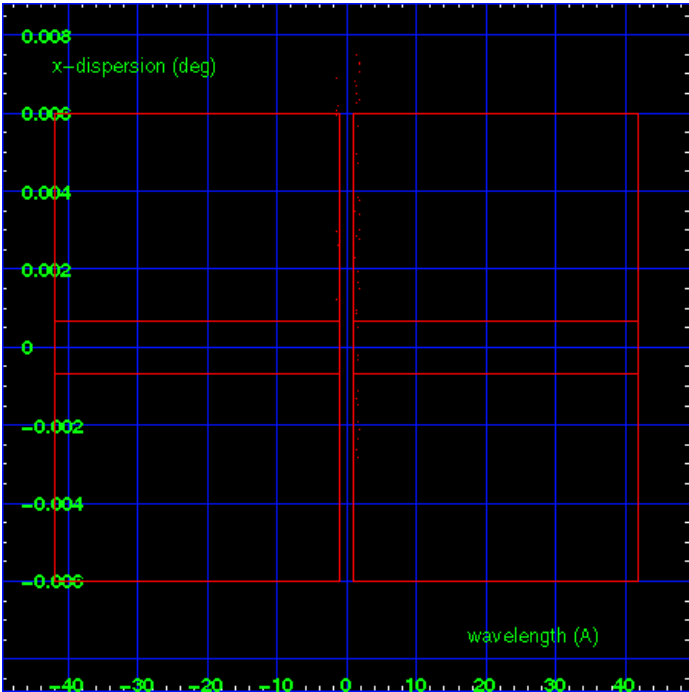
MEG Order Sort 123



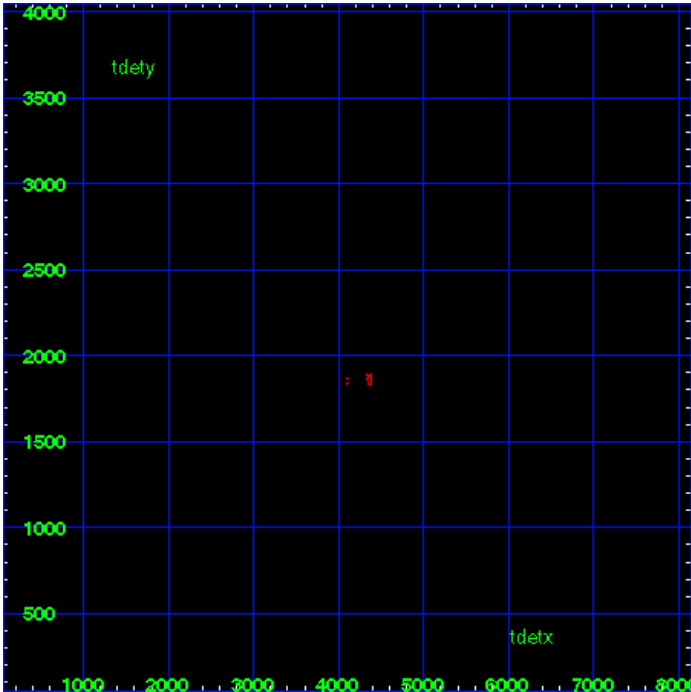
MEG Zero Order



MEG Order Sort ALL

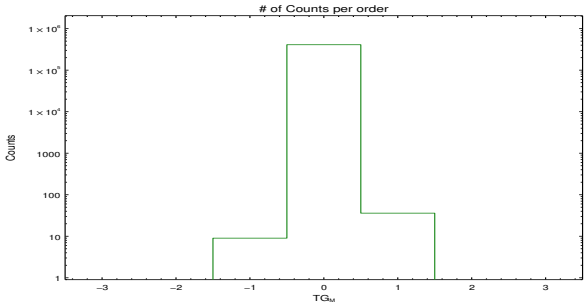


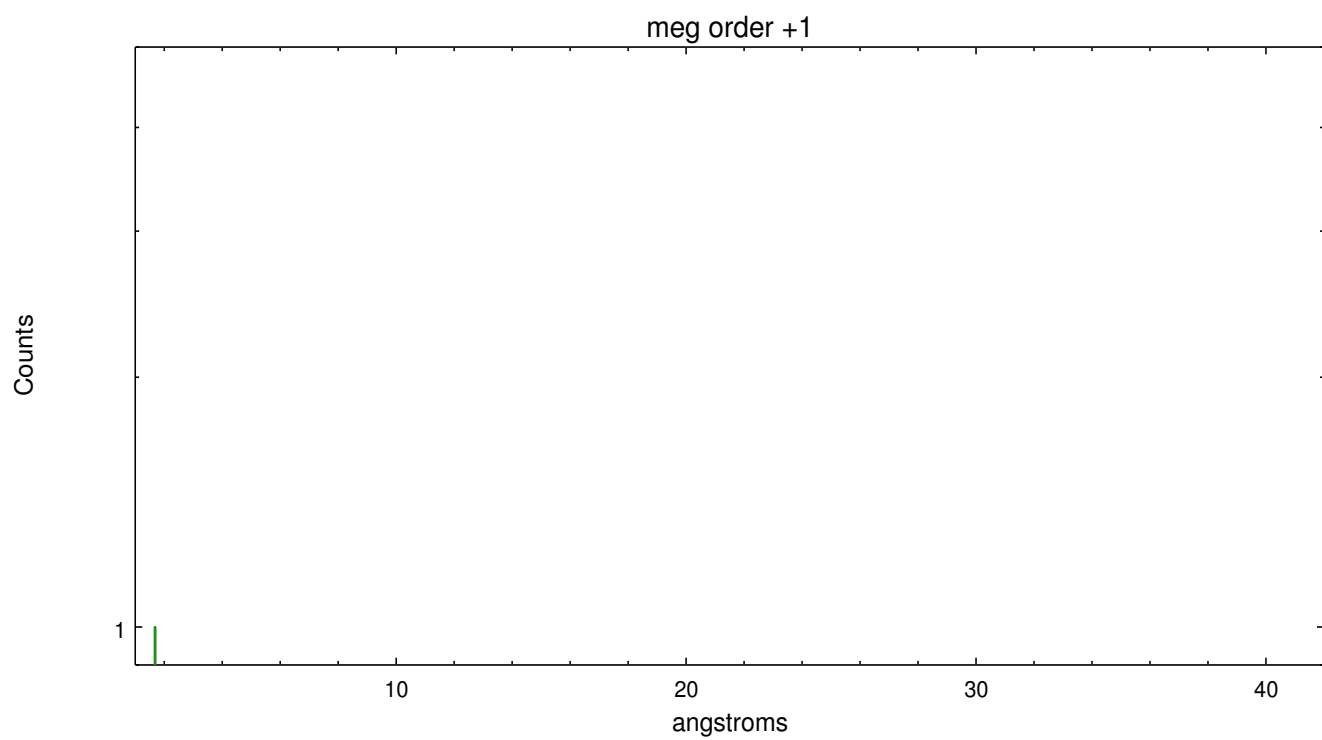
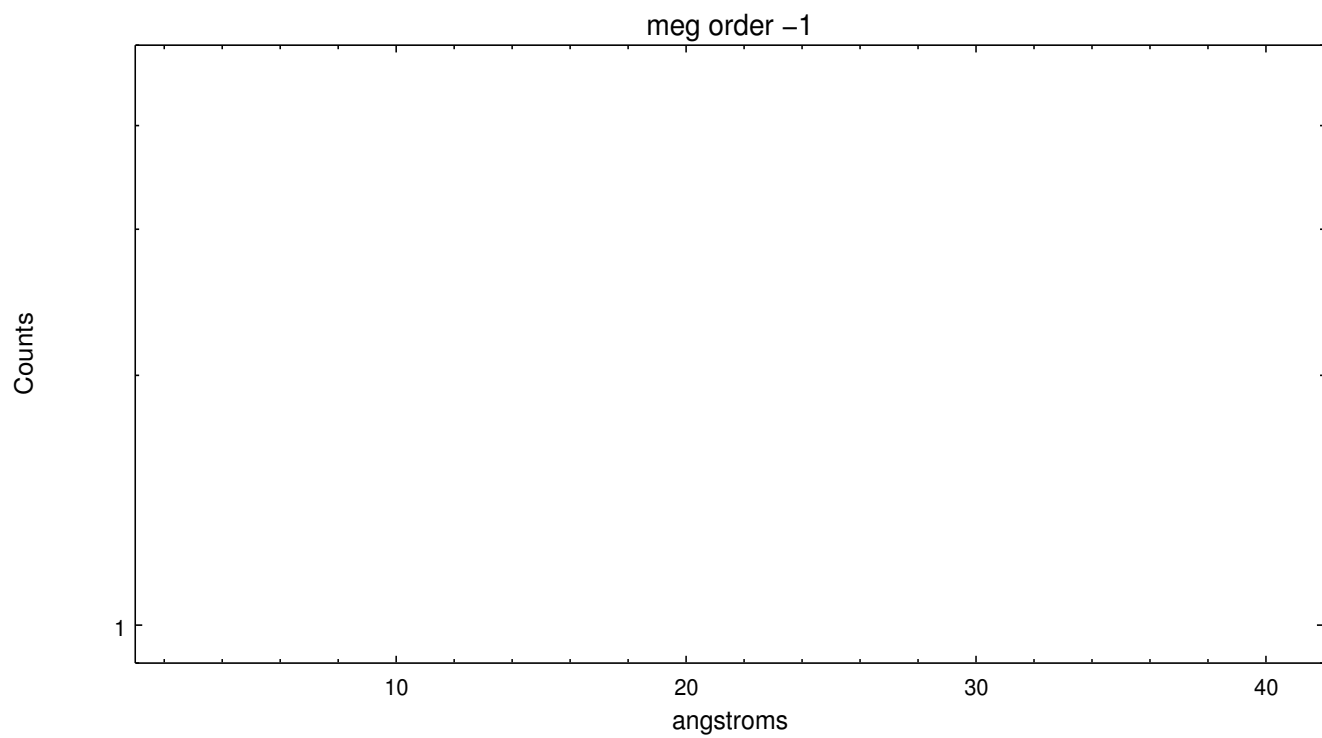
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	9	410233	36	0	0





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.11.14
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.256

## A.2 Comments

The target moves at a rate of about 8.9 arcsec/hr. The subarray chosen for the observation is large enough to keep the target within the active region for 3 hr. As with all observations of moving targets, event positions are in the reference frame of Chandra, not of Titan. Users should run a software tool such as `sso_freeze` to reposition the events in the reference frame of Titan, then run normal data analysis tools.

===

HETG used as count-rate suppression filter. No useful HETG spectral products. Only zero-order imaging or ccd-spectral data are of interest.

===

Observation was intended to record the passage of Titan in front of the Crab Nebula. Dither was turned off for this observation. The CCD node boundary at column 256 contains 2 columns of bad data due to disabling the dither.