

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 1701 - L2 Version 7  
Chandra X-Ray Center

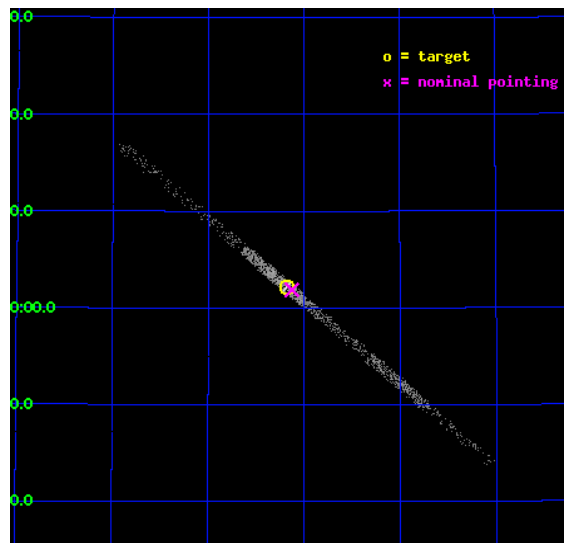
L2 Processing Date : Nov 9 2012

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# 1 Front

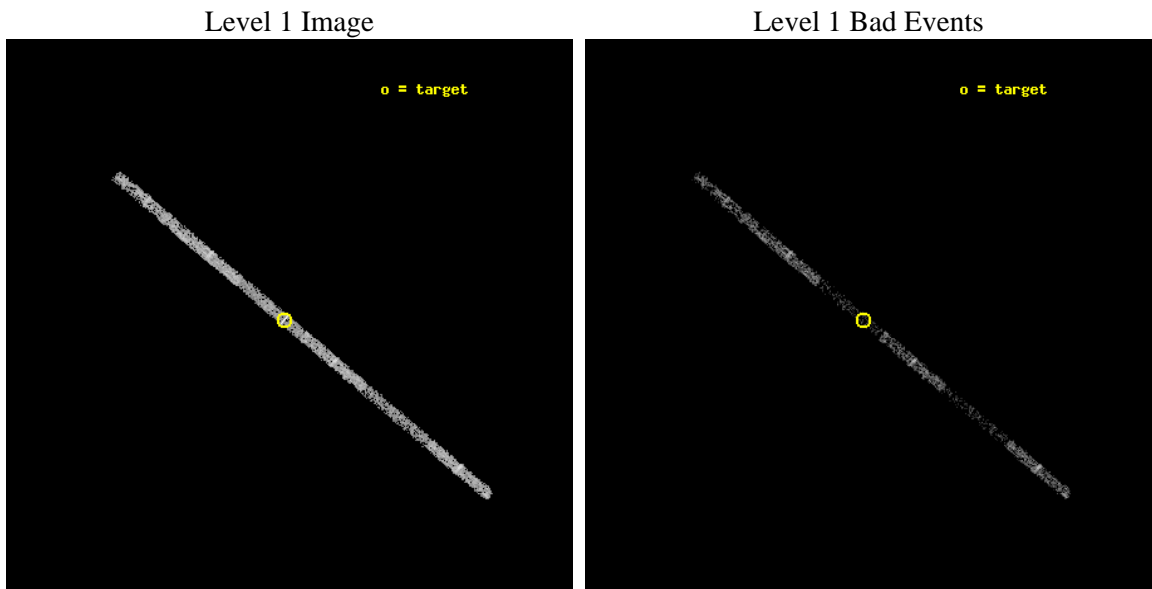
seq_num	400110	Sequence number
obs_id	1701	Observation id
title	CHANDRA ACIS/LETG OBSERVATIONS OF THE LEAST ABSORBED X-RAY NOVA: XTE J1118+48	Proposal title
observer	Dr. Jeffrey McClintock	Principal investigator
object	XTE J1118+48	Source name
dtcycle	0	&#160
cycle	P	events are from which exps? P[primary] S[econdar
ra_targ	169.545	Observer's specified target RA [deg]
dec_targ	48.036389	Observer's specified target Dec [deg]
ra_nom	169.53195789997	Nominal RA [deg]
dec_nom	48.031442711828	Nominal Dec [deg]
roll_nom	220.26444274594	Nominal Roll [deg]
revision	7	Processing version of data
ontime	2929.9092755169	Sum of GTIs [s]
livetime	373.17980379011	Livetime [s]
ontime4	2929.9503155202	Sum of GTIs [s]
ontime5	2929.8682355136	Sum of GTIs [s]
ontime6	2929.8271955252	Sum of GTIs [s]
ontime7	2929.9092755169	Sum of GTIs [s]
ontime8	2929.7861555219	Sum of GTIs [s]
ontime9	2929.7451155186	Sum of GTIs [s]
l2events	2458	Number of level 2 events



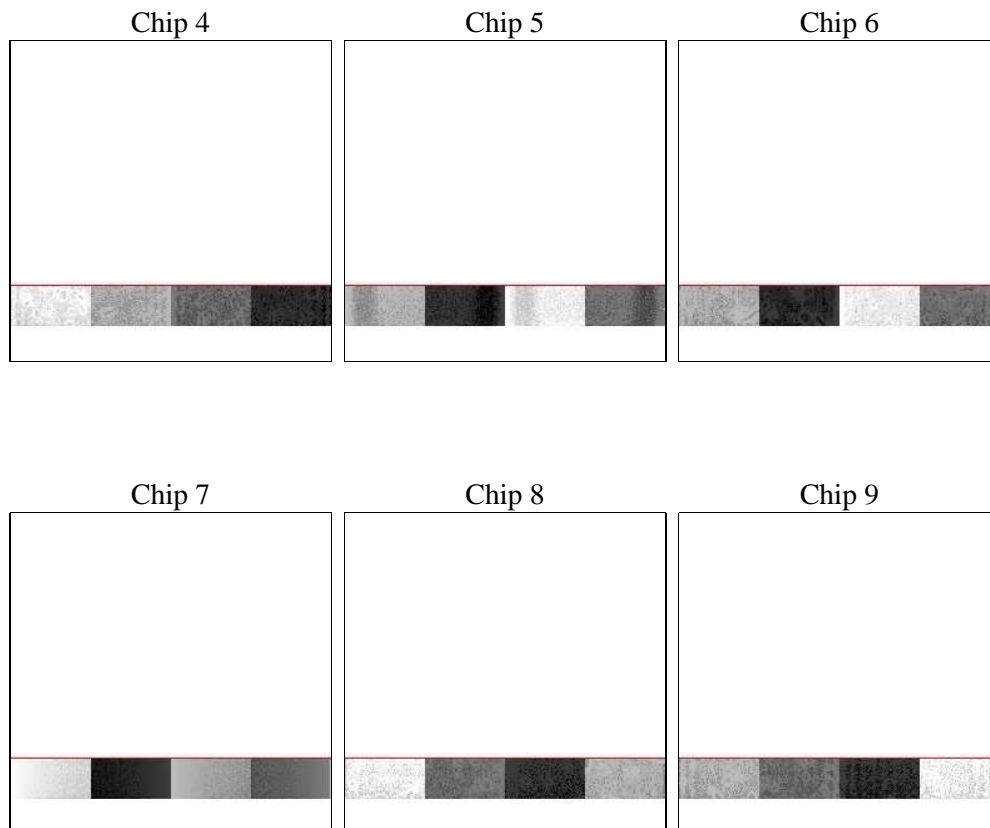
## 2 OBI Primary

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	27000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	2929.9092755169	Sum of GTIs [s]
caldsver	4.5.1.1	&#160	ontime4	2929.9503155202	Sum of GTIs [s]
date	2012-08-25T20:57:36	Date and time of file creation	ontime5	2929.8682355136	Sum of GTIs [s]
revision	5	Processing version of data	ontime6	2929.8271955252	Sum of GTIs [s]
			ontime7	2929.9092755169	Sum of GTIs [s]
			ontime8	2929.7861555219	Sum of GTIs [s]
			ontime9	2929.7451155186	Sum of GTIs [s]
			l1events	15963	Number of level 1 events

### 2.1.4 Events

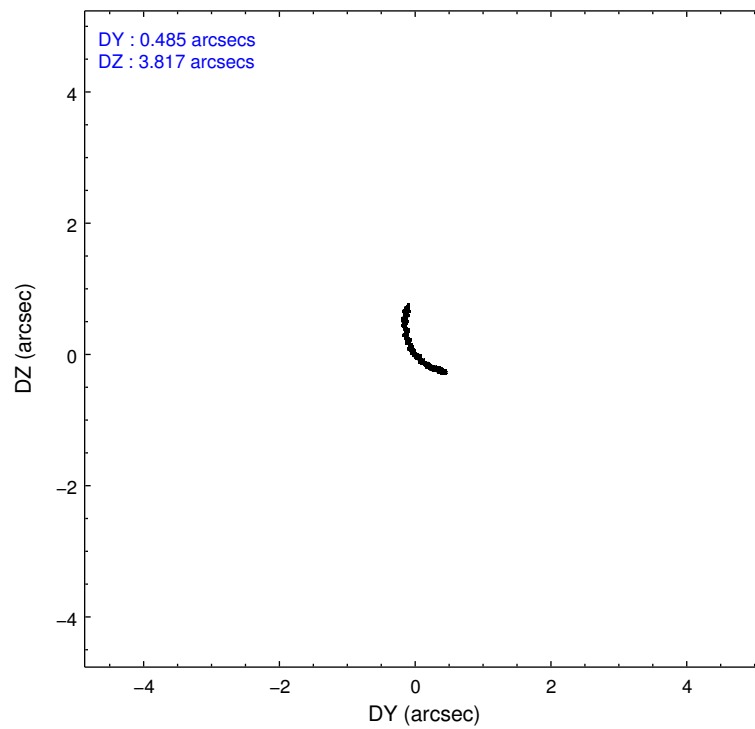
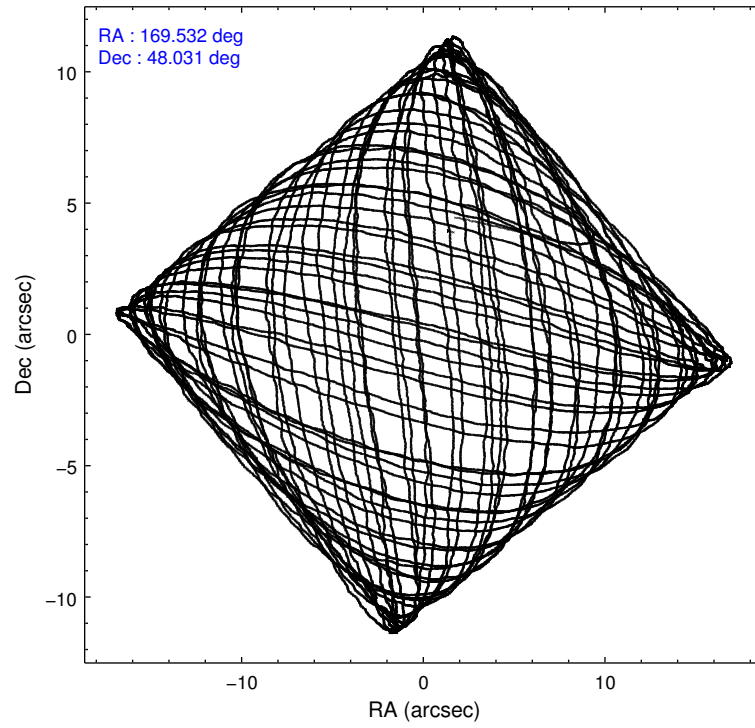
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	3095	1153	3112	2432	3632	2539
rejected events	2932	743	2778	834	3299	2401
rejected %	94%	64%	89%	34%	90%	94%

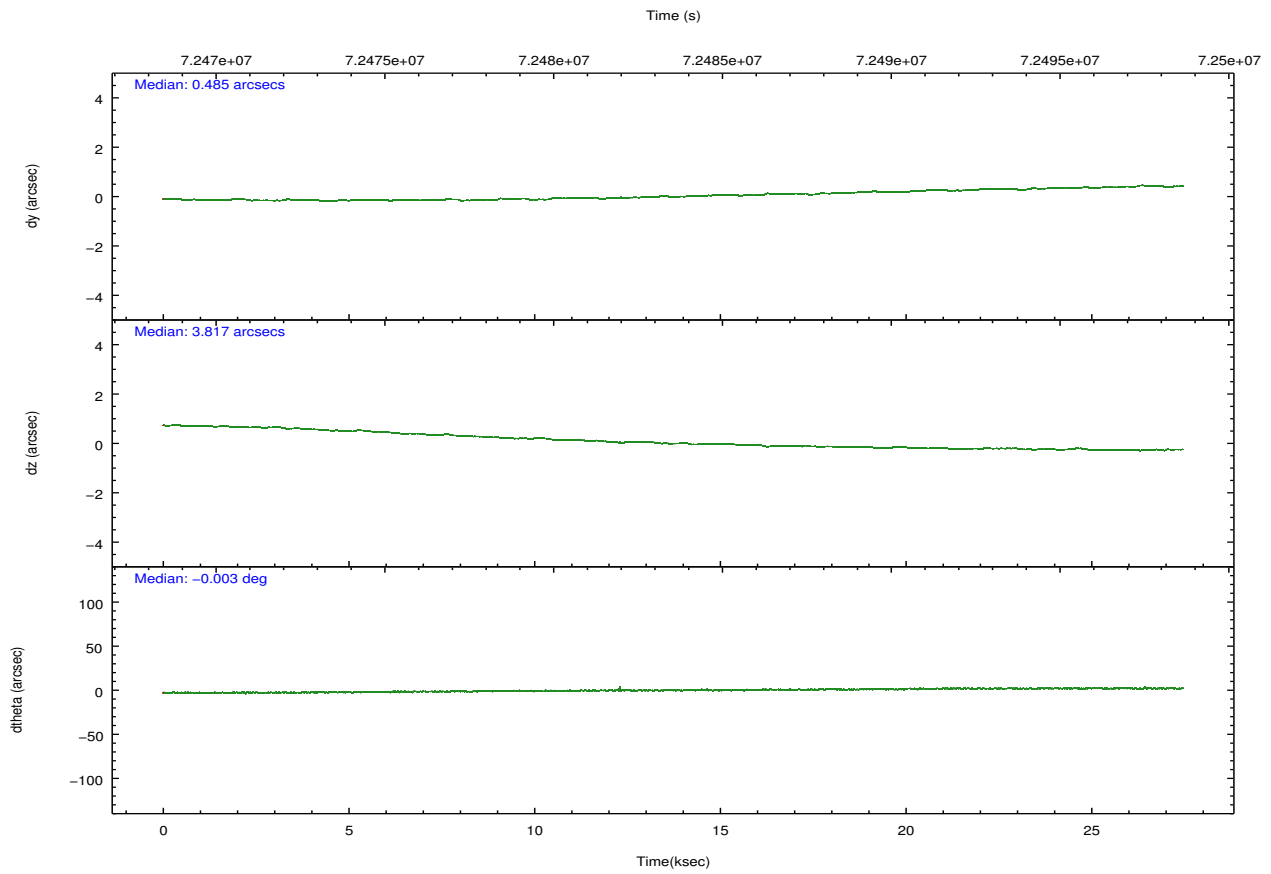
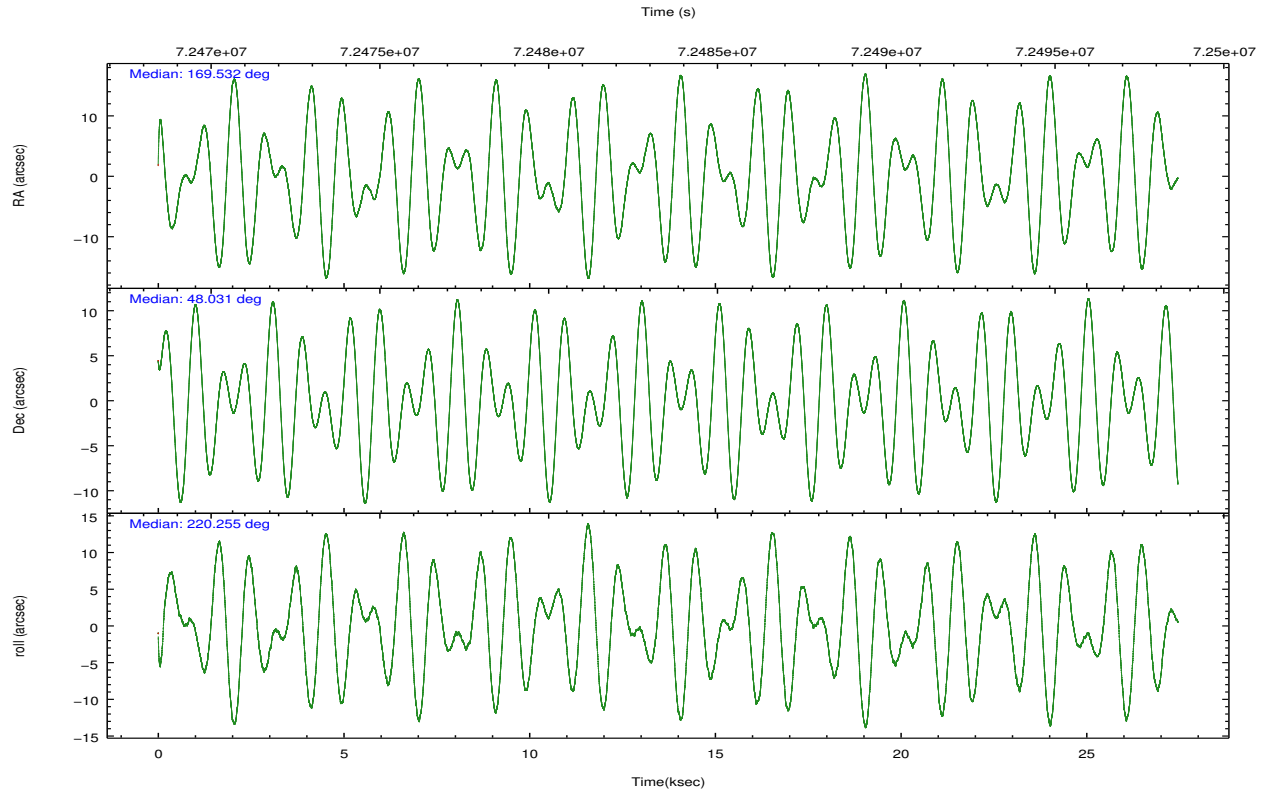
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	23	70	152	389	57	25
	0%	6%	4%	15%	1%	0%
grade 1 events	0	1	0	5	0	0
	0%	0%	0%	0%	0%	0%
grade 2 events	16	75	45	341	38	11
	0%	6%	1%	14%	1%	0%
grade 3 events	55	47	70	218	62	51
	1%	4%	2%	8%	1%	2%
grade 4 events	44	48	55	208	56	37
	1%	4%	1%	8%	1%	1%
grade 5 events	31	69	32	89	30	29
	1%	5%	1%	3%	0%	1%
grade 6 events	26	175	17	460	125	17
	0%	15%	0%	18%	3%	0%
grade 7 events	2900	668	2741	722	3264	2369
	93%	57%	88%	29%	89%	93%

## 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	LETG	LETG	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	169.545734	169.5319578999705	Subarray requested	CUSTOM	1/8
[deg] Pointing Dec	48.057274	48.03144271182809	Subarray start row	115	115
[deg] Pointing Roll	220.097564	220.2644427459421	Subarray row count	128	128
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	Y	Y
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.100000	0.1
[mm] SIM translation stage pos	-182.132523	-182.1344861297048	[s] Secondary exposure time	0.700000	0.7
[mm] SIM translation stage offset	-8	-7.998036453302973	Duty cycle	9	9
[s] Observation start time (MET)	72470261.184000	72468962.55704799			
Observation start date	2000-04-18T18:36:37	2000-04-18T18:16:02			
[s] Observation end time (MET)	72497261.184000	72497757.883104			
Observation end date	2000-04-19T02:06:37	2000-04-19T02:15:57			
Read mode	TIMED	TIMED			

## 2.3 Aspect



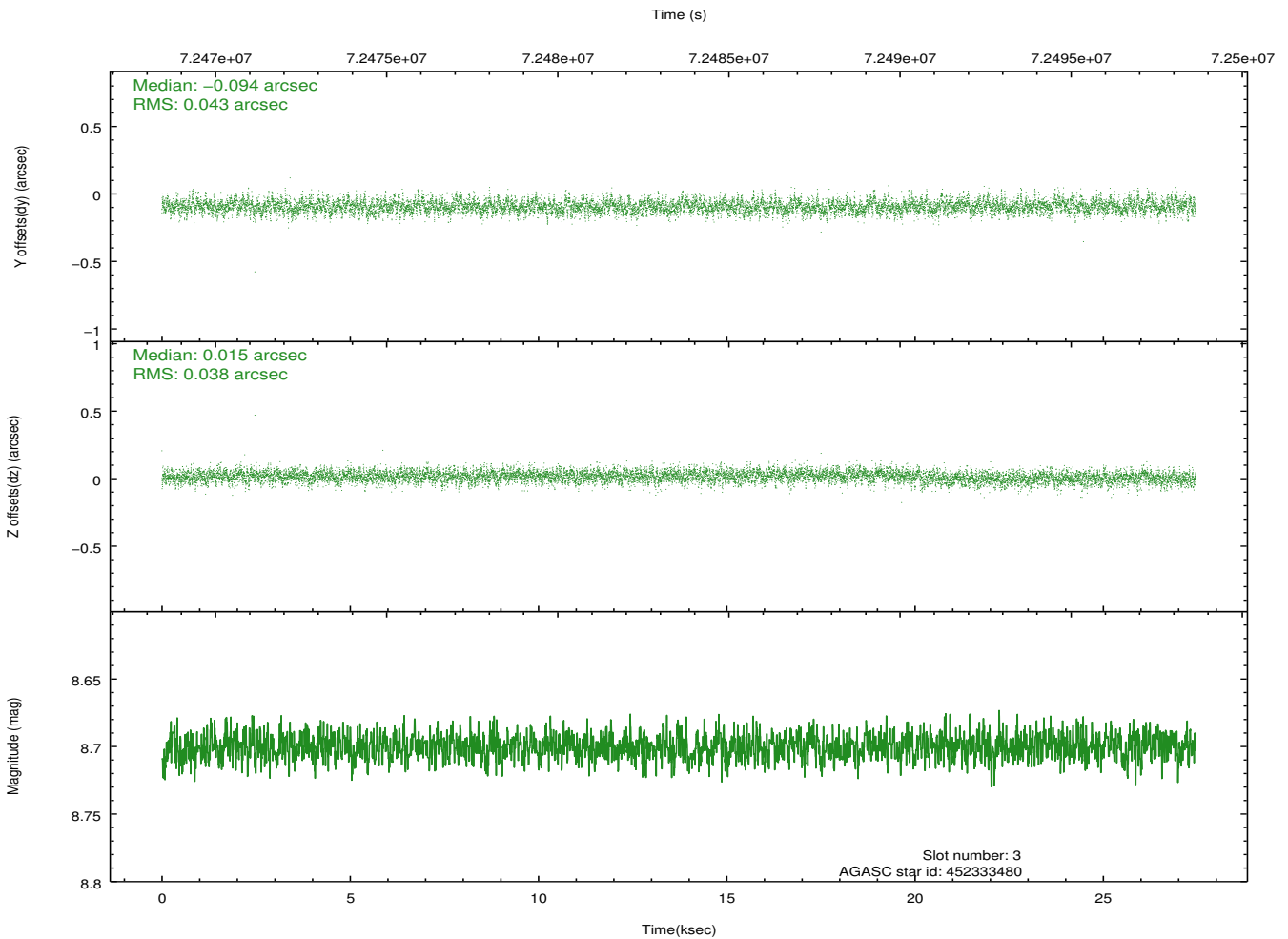
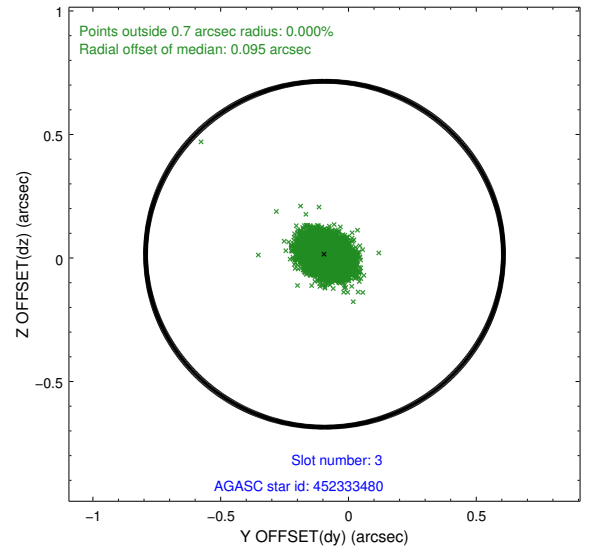
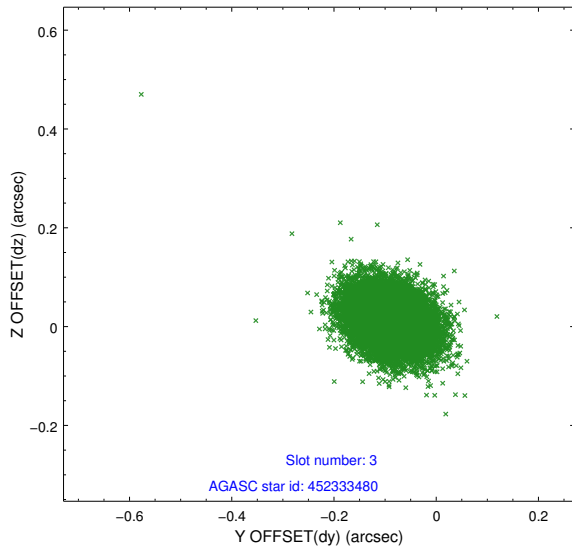


### Slot Statistics

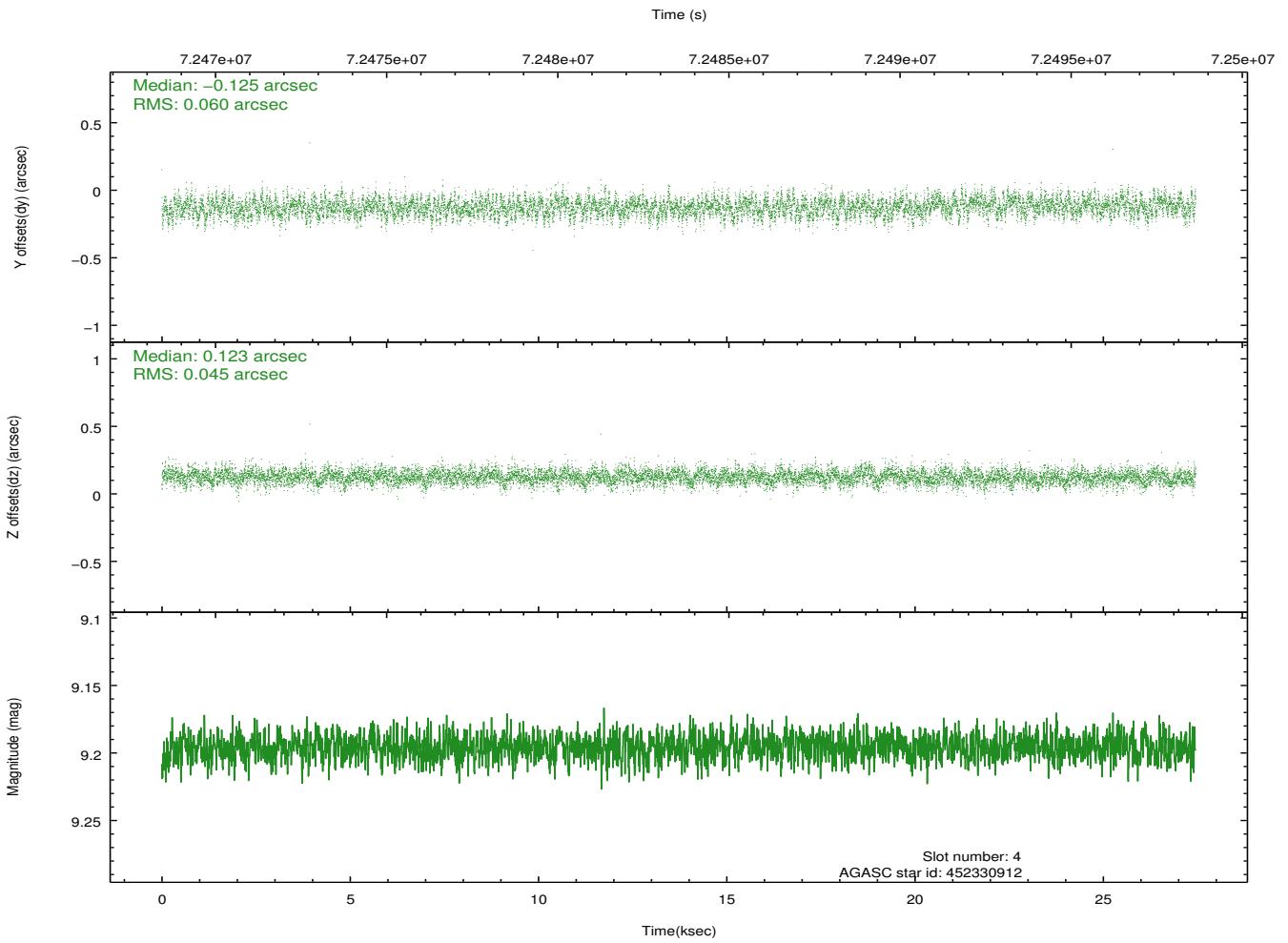
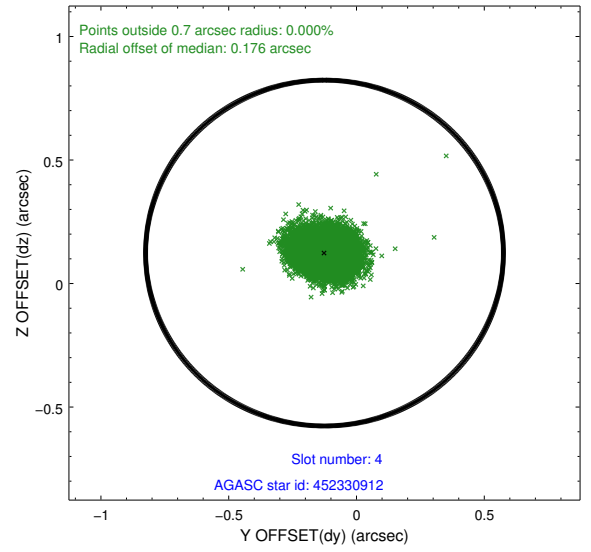
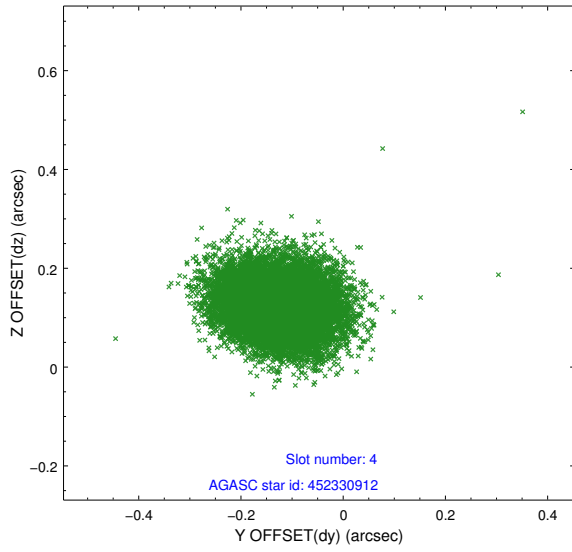
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	6698	-0.063	-0.111	0.019	0.032	0.000000	0.000000	-752.64	-1889.86
1	FID	ACIS-S-4	7.18	6698	0.093	0.059	0.012	0.030	0.000000	0.000000	2160.78	18.60
2	FID	ACIS-S-5	7.22	6698	-0.057	0.062	0.017	0.031	0.000000	0.000000	-1805.32	12.45
3	GUIDE	452333480	8.70	13394	-0.094	0.015	0.060	0.100	170.336265	47.786774	-843.03	1969.17
4	GUIDE	452330912	9.20	13392	-0.125	0.123	0.079	0.130	170.294974	48.205150	-1724.72	744.20
5	GUIDE	451813352	9.22	13391	0.063	-0.112	0.085	0.137	168.440366	48.076848	1975.51	-1780.38
6	GUIDE	452332560	9.11	13392	0.103	-0.061	0.065	0.109	168.907013	48.101061	1068.63	-1114.22
7	GUIDE	452335688	9.62	13369	0.051	0.035	0.086	0.142	169.560165	48.223525	-412.59	-435.33

## 2.4 Star Slots

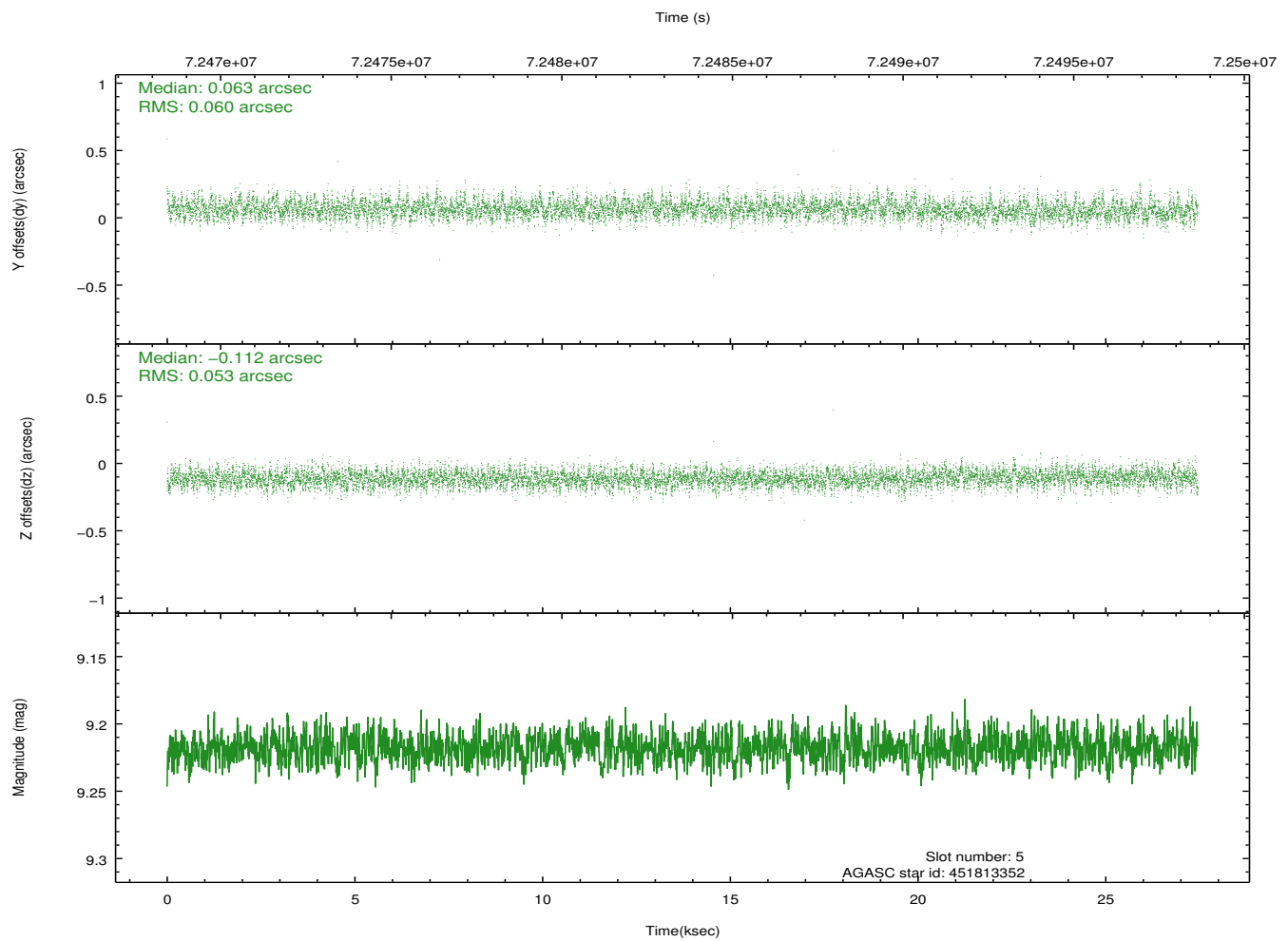
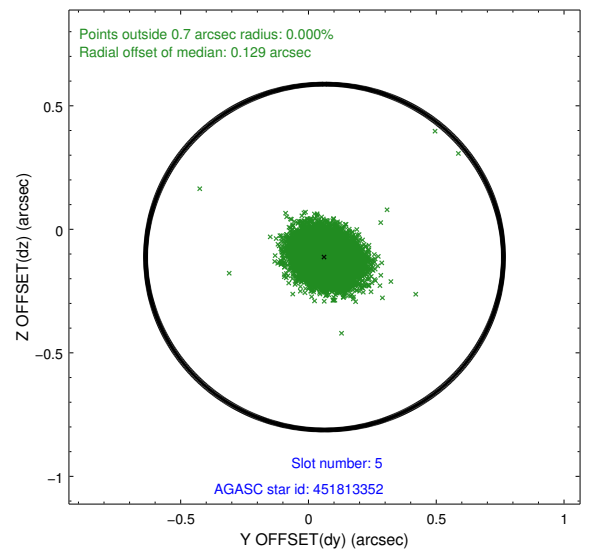
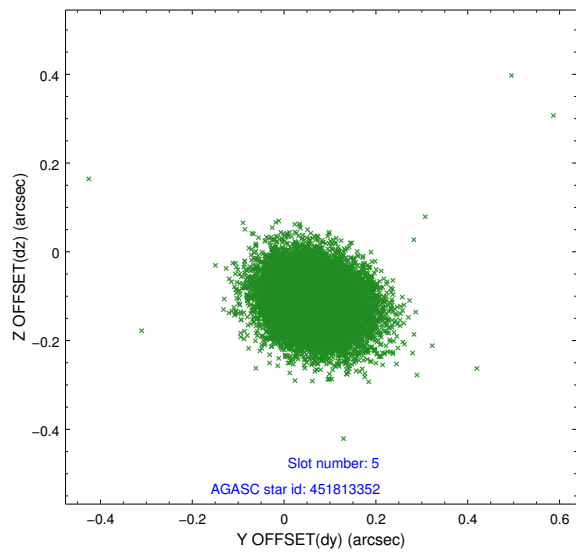
### 2.4.1 Slot 3



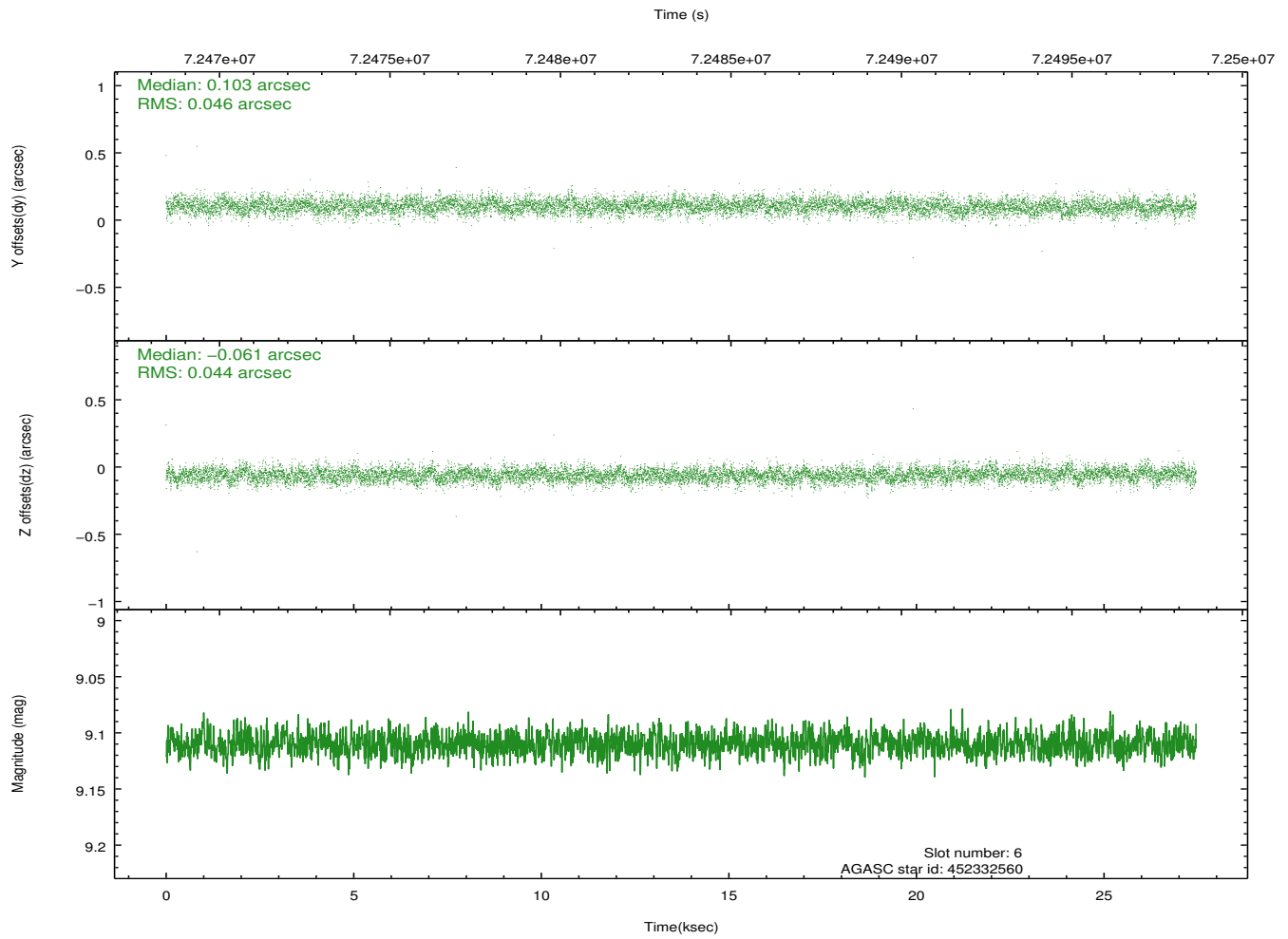
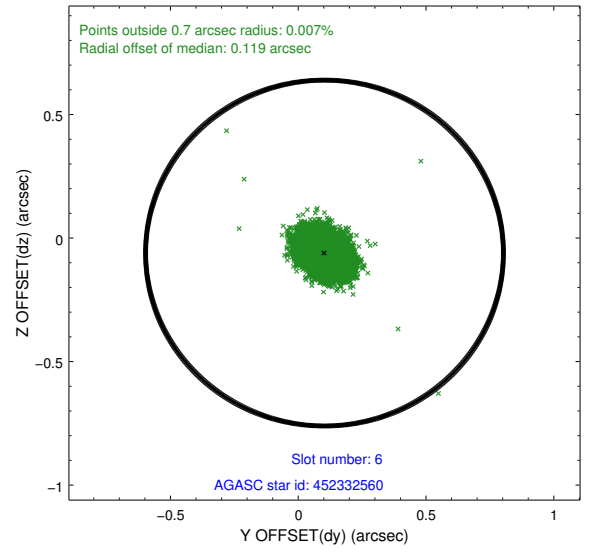
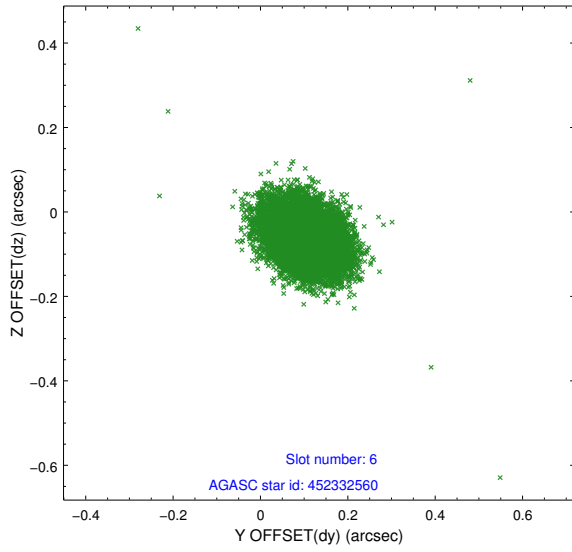
### 2.4.2 Slot 4



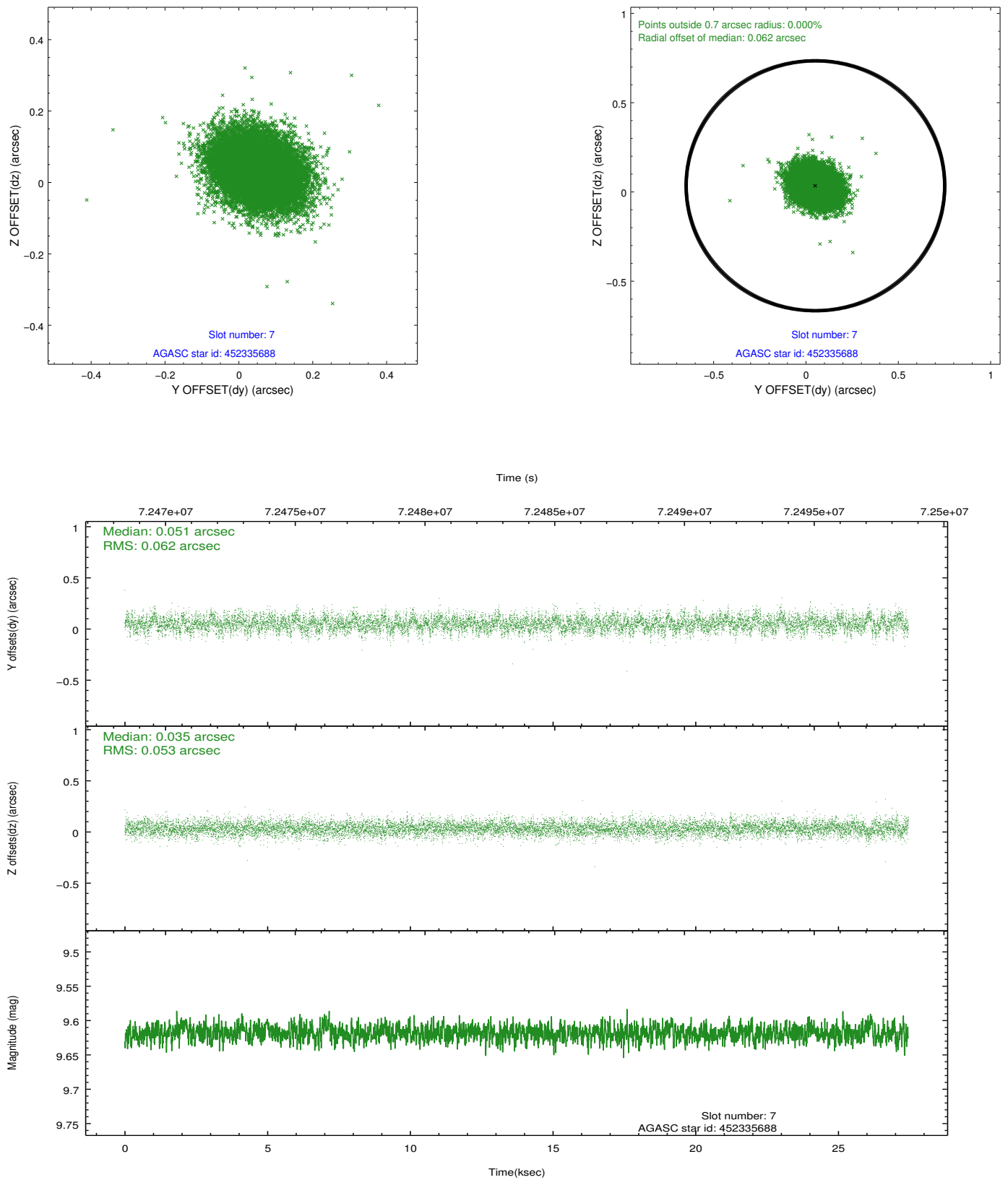
### 2.4.3 Slot 5



## 2.4.4 Slot 6

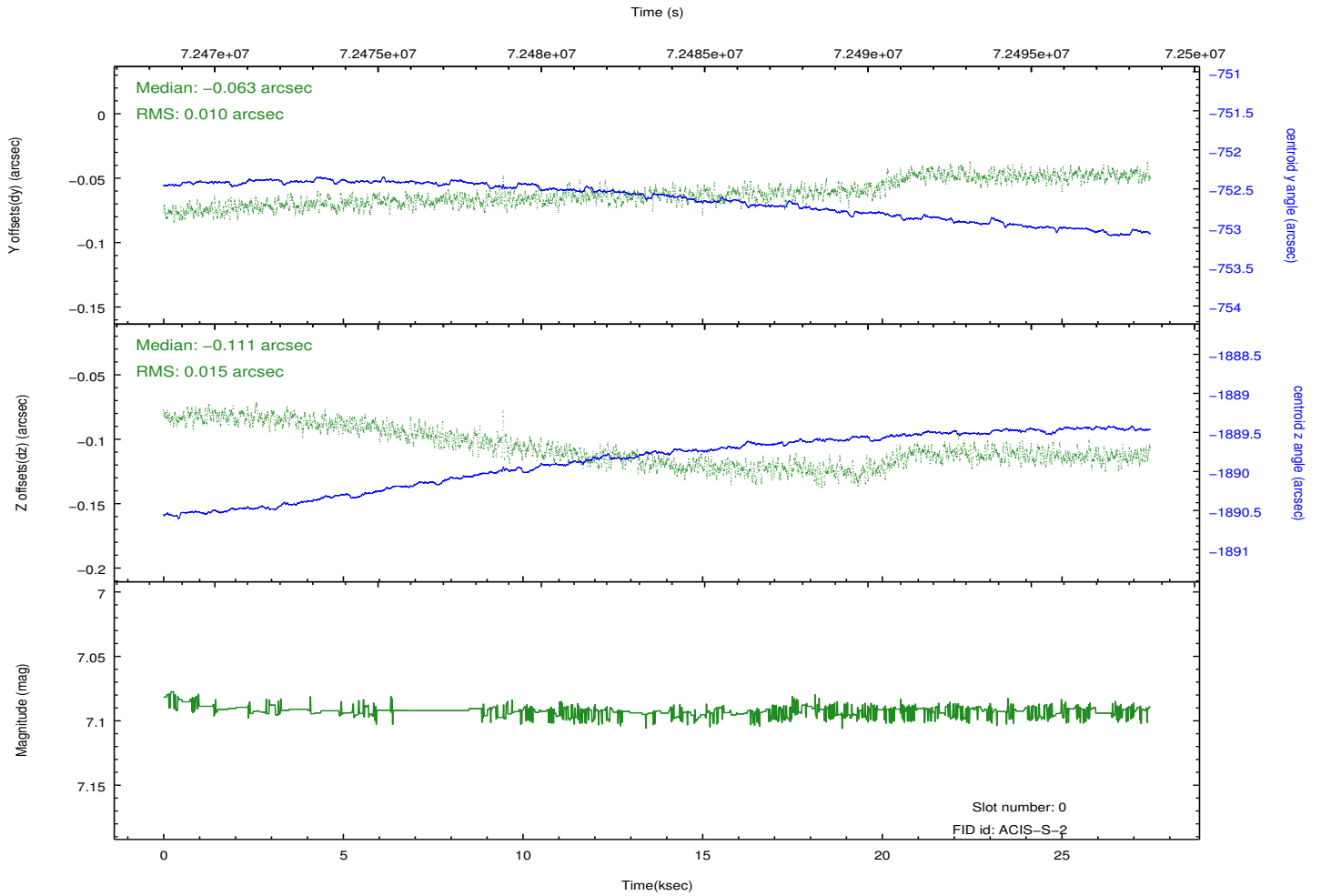
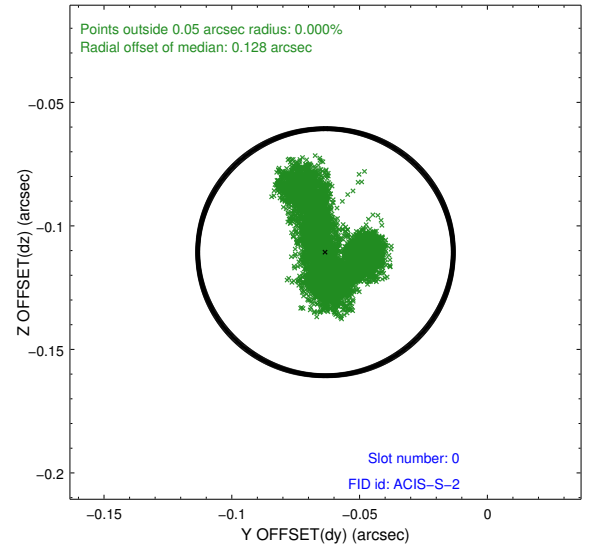
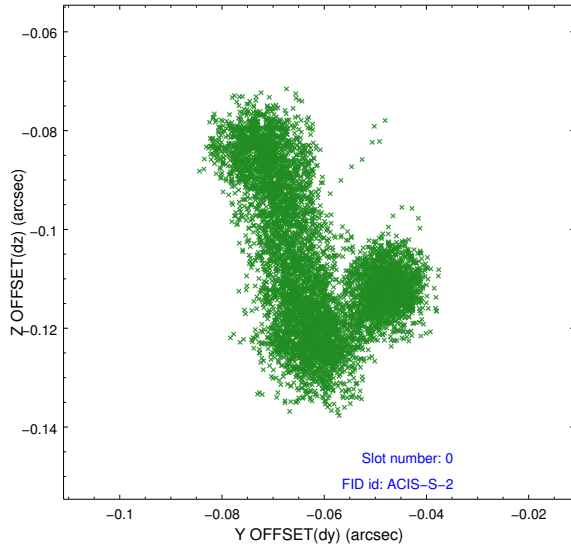


## 2.4.5 Slot 7

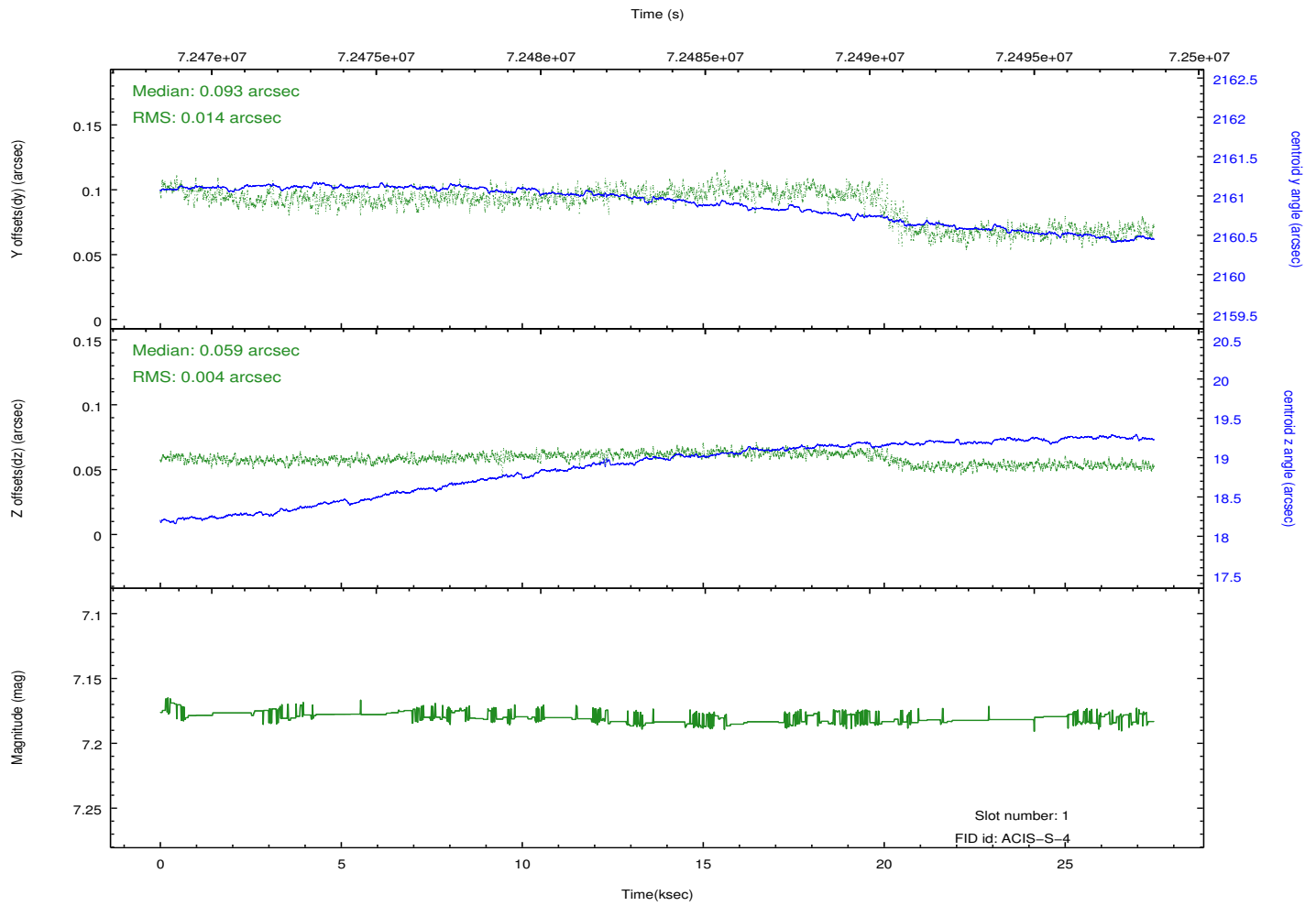
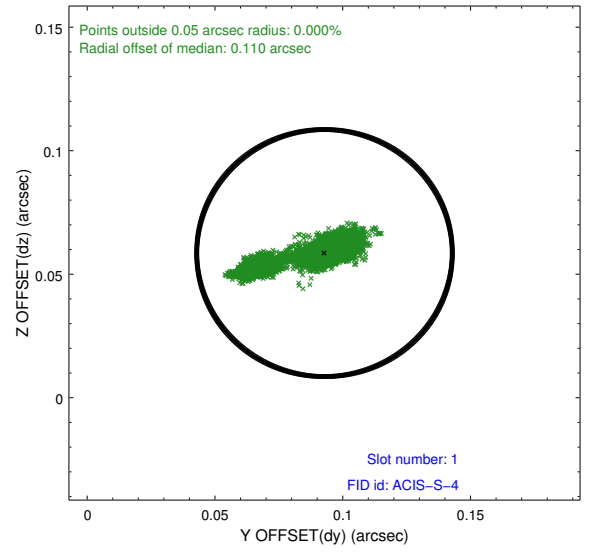
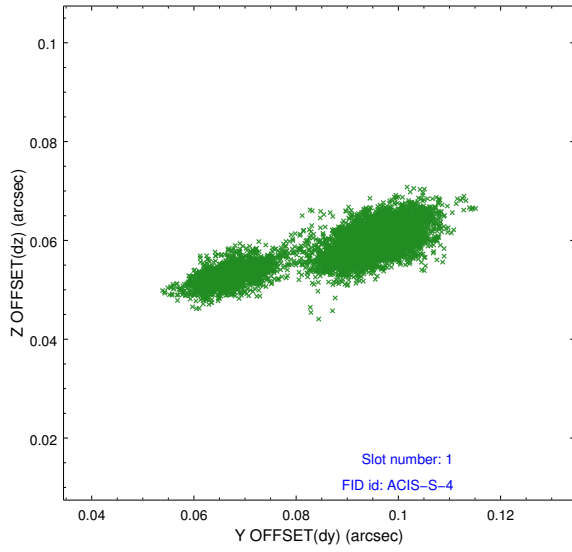


## 2.5 FID Slots

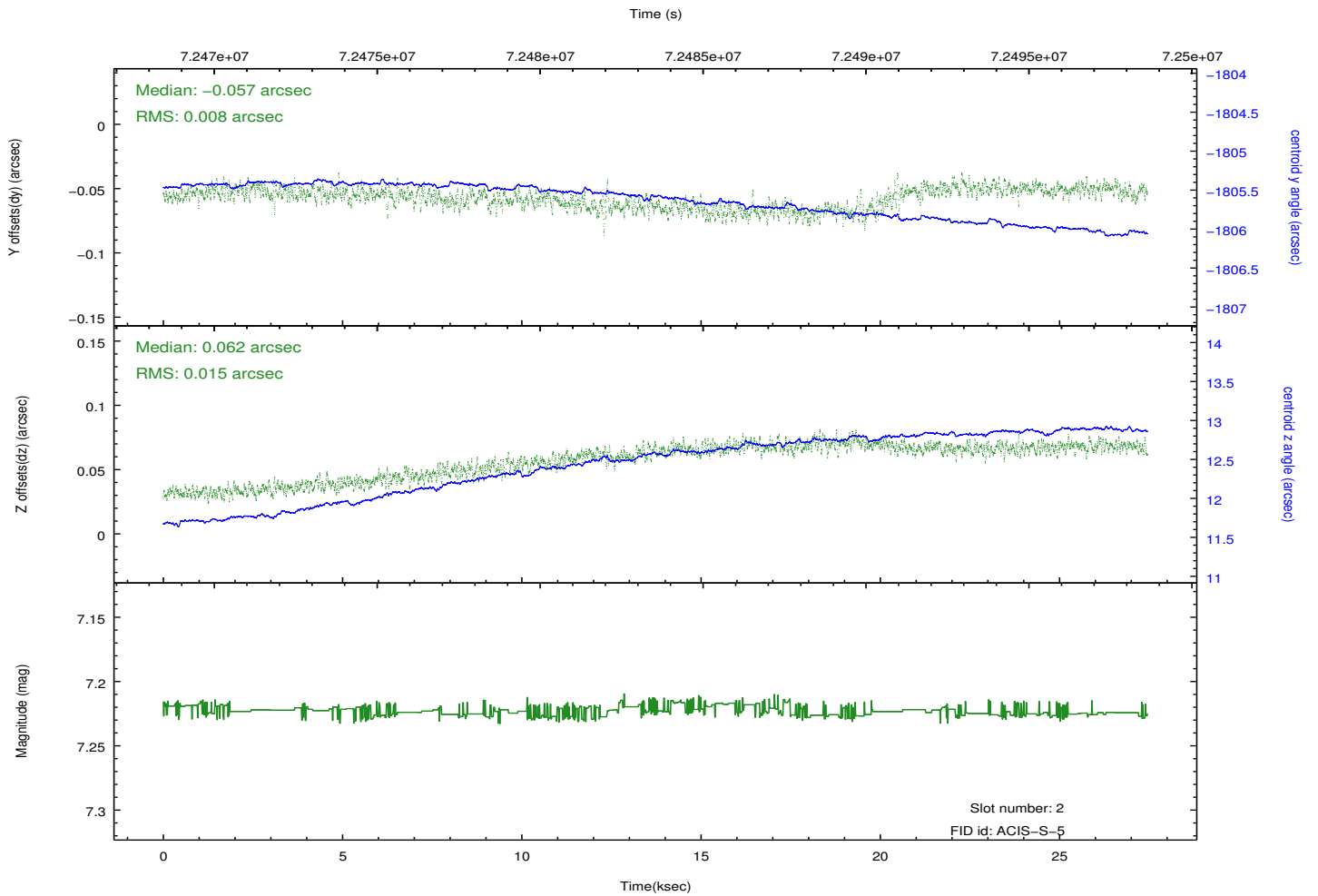
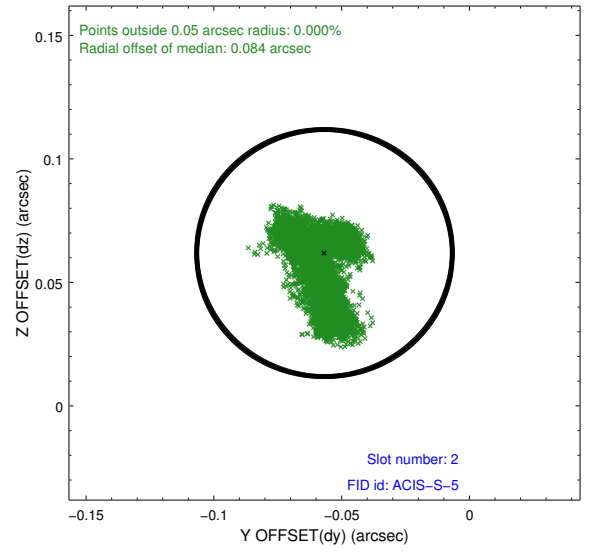
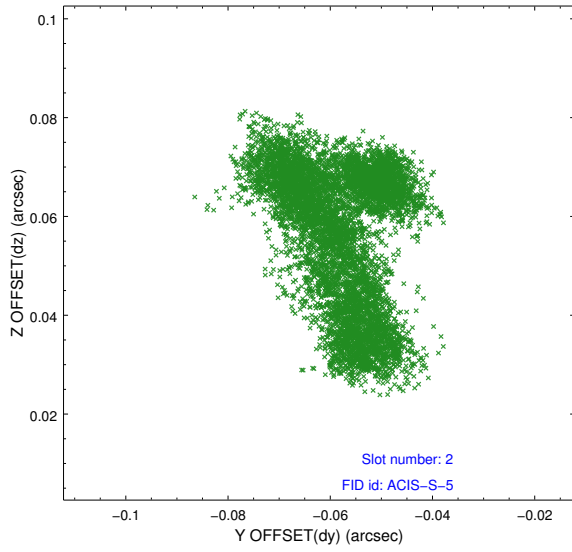
### 2.5.1 Slot 0



## 2.5.2 Slot 1



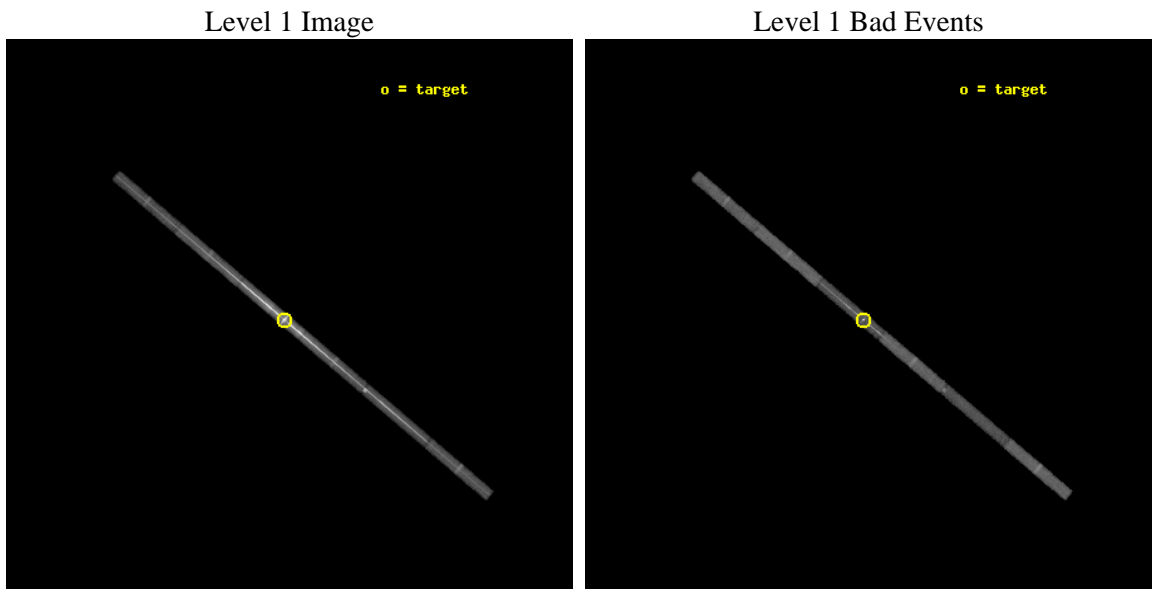
### 2.5.3 Slot 2



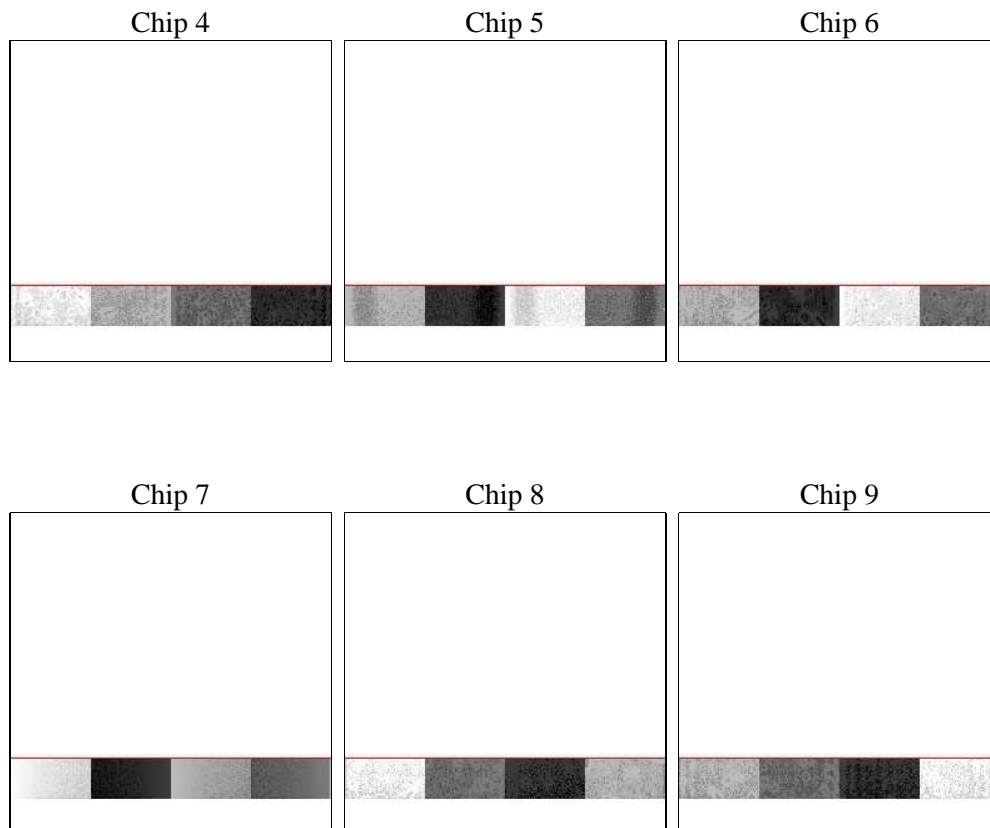
### 3 OBI Secondary

#### 3.1 OBI

##### 3.1.1 Images



##### 3.1.2 Bias



### 3.1.3 Parameters

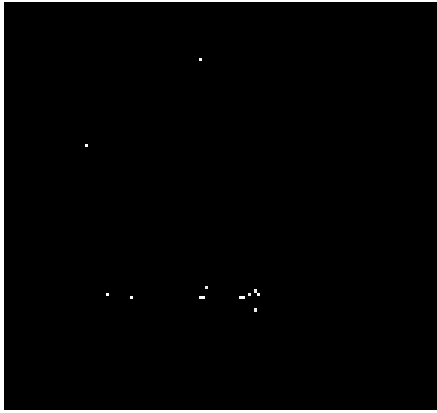
obi_num	0	Obi number	sched_exp_time	27000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	24897.76552403	Sum of GTIs [s]
caldbver	4.5.1.1	&#160	ontime4	24897.765794128	Sum of GTIs [s]
date	2012-08-25T21:27:00	Date and time of file creation	ontime5	24897.766153499	Sum of GTIs [s]
revision	5	Processing version of data	ontime6	24897.766003653	Sum of GTIs [s]
			ontime7	24897.76552403	Sum of GTIs [s]
			ontime8	24897.766682044	Sum of GTIs [s]
			ontime9	24897.766472682	Sum of GTIs [s]
			l1events	1266060	Number of level 1 events

### 3.1.4 Events

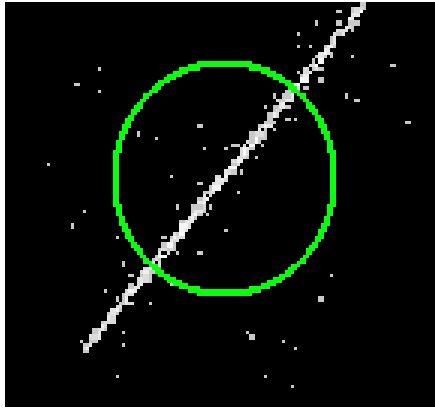
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	46984	117962	212427	747424	97172	44091	grade 0 events	8422	63338	153018	179438	46593	11936
rejected events	35277	17855	34330	51393	39268	28378		17%	53%	72%	24%	47%	27%
rejected %	75%	15%	16%	6%	40%	64%	grade 1 events	14	910	742	3354	77	16
								0%	0%	0%	0%	0%	0%
							grade 2 events	1338	15188	14514	176497	5343	1619
								2%	12%	6%	23%	5%	3%
							grade 3 events	704	6523	4590	81171	2004	829
								1%	5%	2%	10%	2%	1%
							grade 4 events	734	5993	4375	80018	1893	831
								1%	5%	2%	10%	1%	1%
							grade 5 events	729	3085	1197	14860	1062	745
								1%	2%	0%	1%	1%	1%
							grade 6 events	606	9977	2388	182273	2475	611
								1%	8%	1%	24%	2%	1%
							grade 7 events	34437	12948	31603	29813	37725	27504
								73%	10%	14%	3%	38%	62%

# 4 Gratings

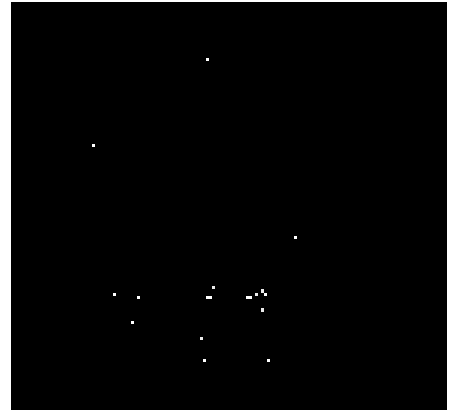
## 4.1 LETG Arm



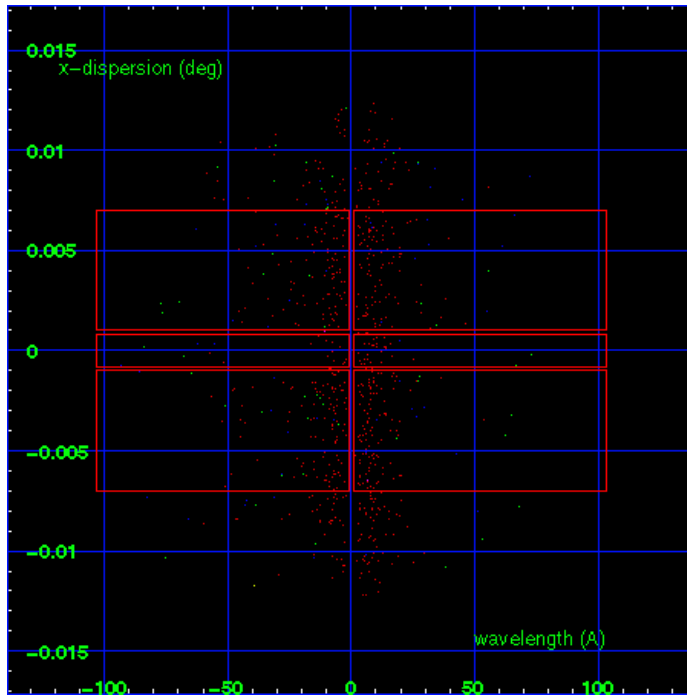
LETG Order Sort 123



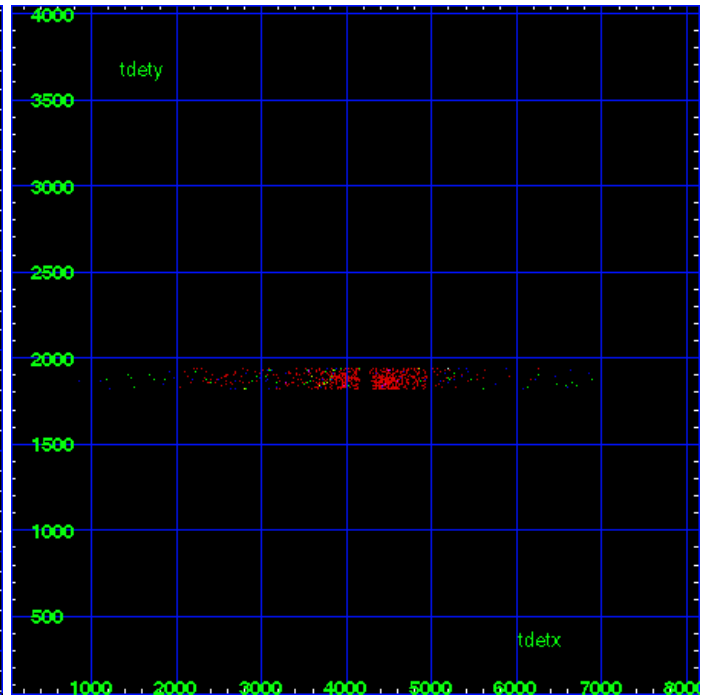
LETG Zero Order



LETG Order Sort ALL

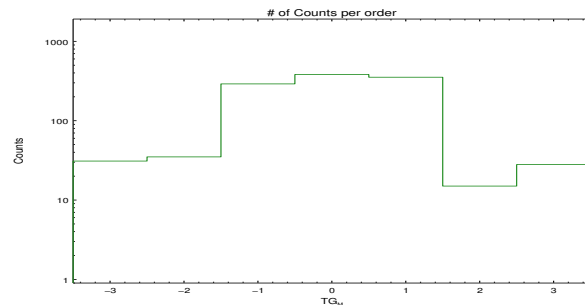


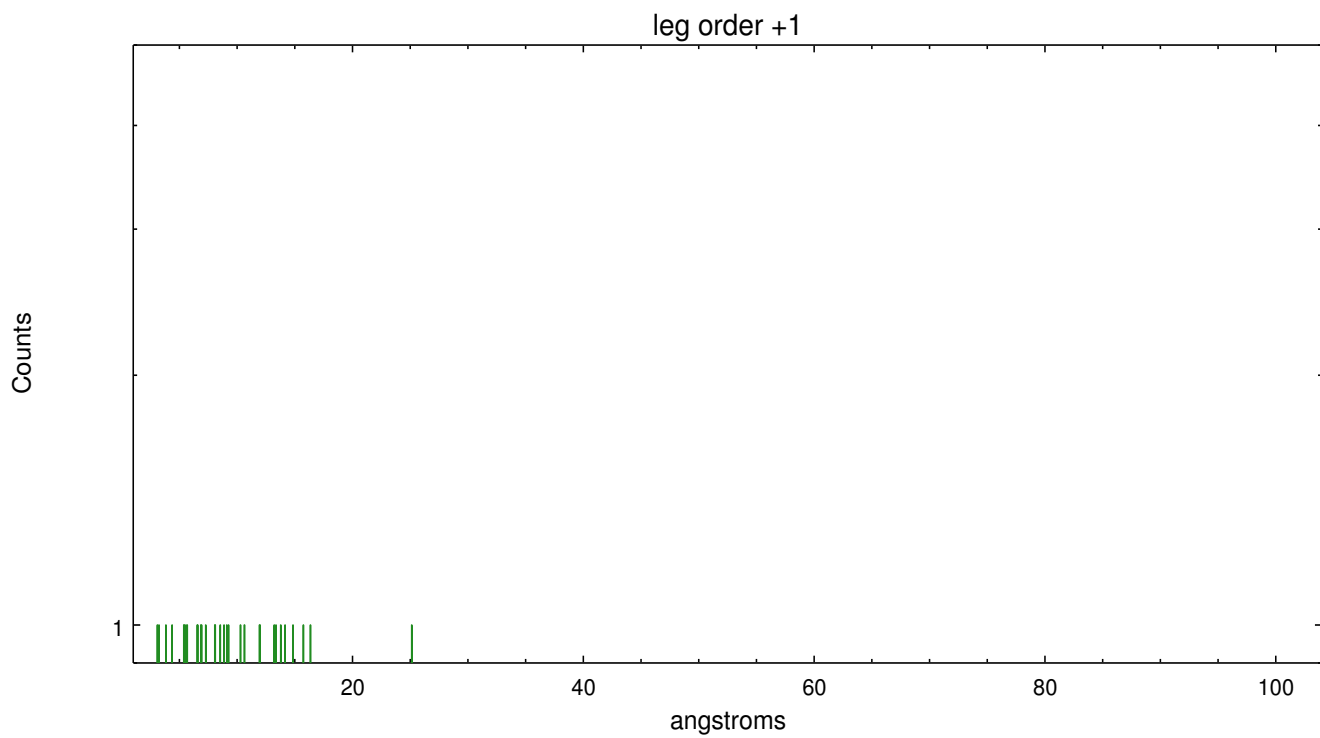
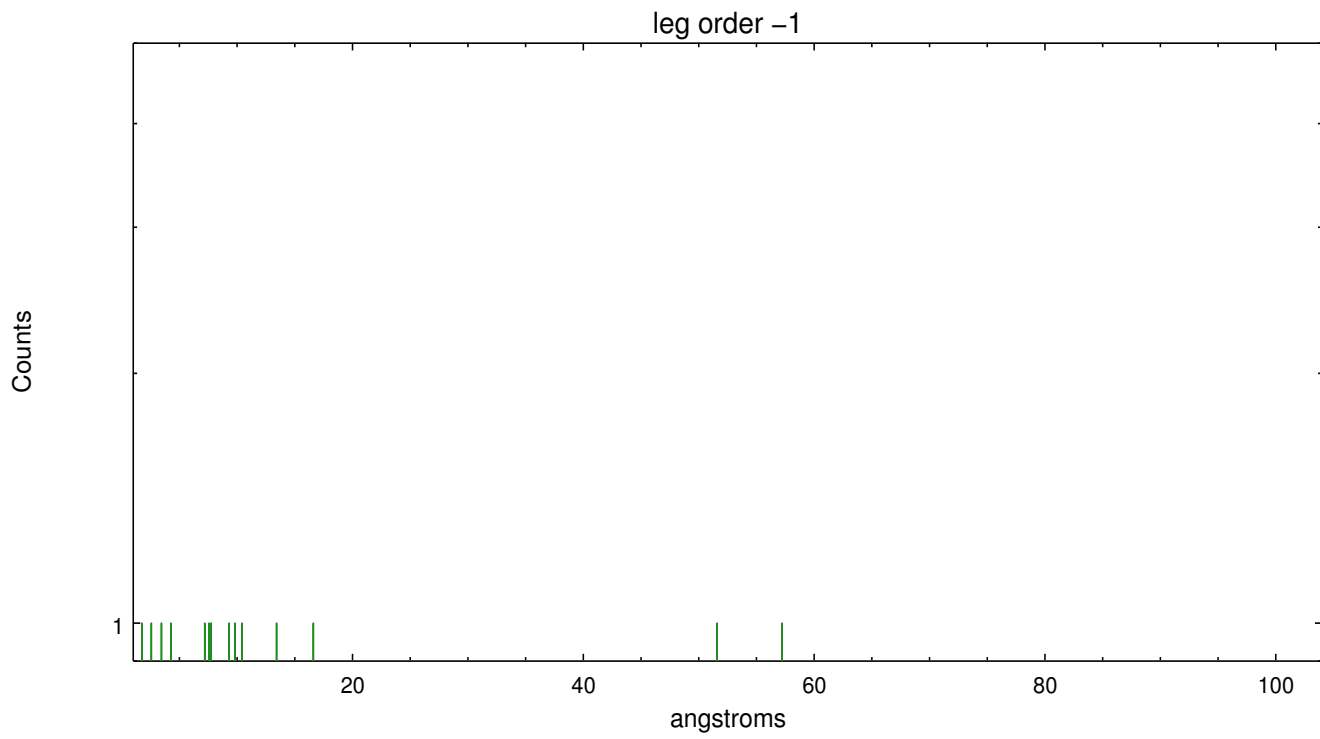
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	31	35	291	382	353	15	28





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.01.11
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	27.83

## A.2 Comments

ACIS was commanded to make timed exposures of 0.1 and 0.7 seconds with a 1:9 duty cycle. Since 6 CCDs were used, the 0.1 second exposures violated a minimum exposure time constraint -- 'e >= 0.04104\*(n-1)' -- where 'e' is the primary or secondary exposure time and 'n' the number of CCDs. The flight s/w reacts to a violation of the rule by setting the appropriate exposure time to zero. The effect, in the case of OBSID 1701, was to reduce the events in the 0.1 second exposure frames to those few that were collected during the 0.04104-sec-per-frame smear interval. There is no usable dispersed spectral data in the primary exposure (e1).

====

This is an interleaved-mode observation. The primary exposure (e1) is shorter than the secondary exposure (e2). Therefore the longer exposure was used to determine the zeroth order position, then that position was applied to both exposures.

===

e2 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=4032.96, y=4135.51) into the \*src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called tg\_findzo, available in CIAO. The tool calculates the point of intersection of the readout streak and the leg 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.