

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 3176 - L2 Version 5  
Chandra X-Ray Center

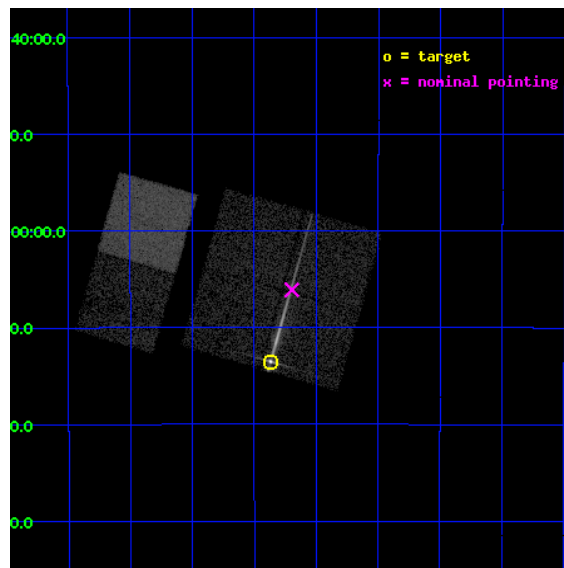
L2 Processing Date : Nov 9 2012

## 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	Bias . . . . .	3
2.1.3	Parameters . . . . .	4
2.1.4	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	LETG Arm . . . . .	17
<b>A</b>	<b>Summary</b>	<b>19</b>
A.1	Status . . . . .	19
A.2	Comments . . . . .	19

# 1 Front

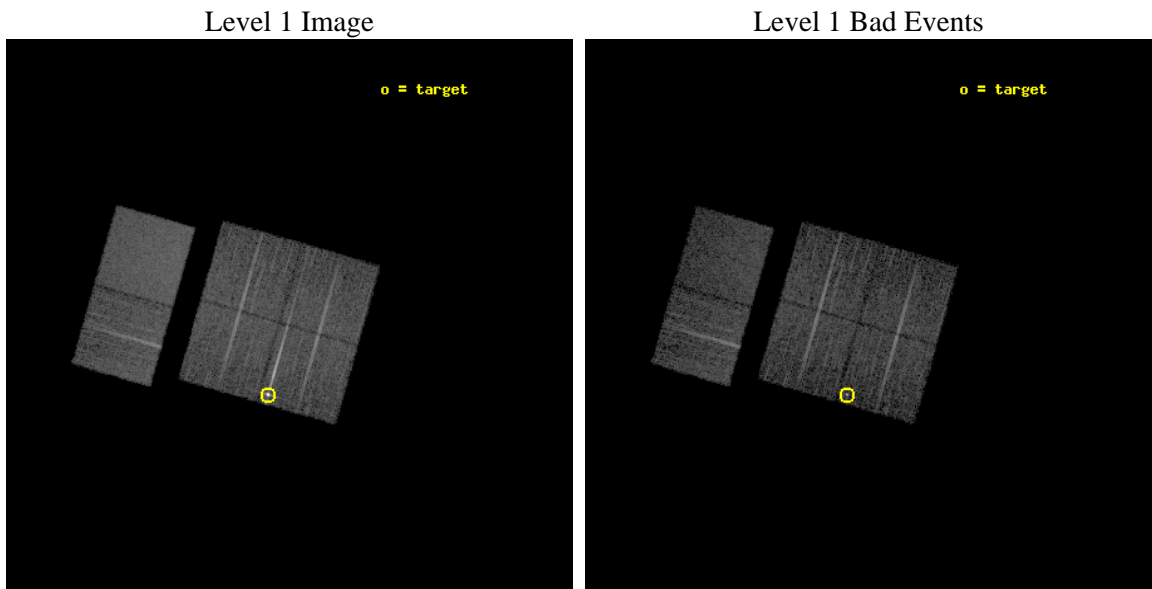
seq_num	790070	Sequence number
obs_id	3176	Observation id
title	AO3 LETG/ACIS-I CALIBRATION OBSERVATIONS OF PKS2155-304	Proposal t
observer	Dr. CXC Calibration	Principal investigator
object	PKS2155-304	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	329.716667	Observer's specified target RA [deg]
dec_targ	-30.225556	Observer's specified target Dec [deg]
ra_nom	329.67401693879	Nominal RA [deg]
dec_nom	-30.101863042204	Nominal Dec [deg]
roll_nom	285.98550822395	Nominal Roll [deg]
revision	5	Processing version of data
ontime	7932.3427335471	Sum of GTIs [s]
livetime	7831.8986335716	Livetime [s]
ontime0	7932.3427335471	Sum of GTIs [s]
ontime1	7932.3837735504	Sum of GTIs [s]
ontime2	7932.4248135537	Sum of GTIs [s]
ontime3	7932.4658535421	Sum of GTIs [s]
ontime6	7932.5479335487	Sum of GTIs [s]
ontime7	7932.5068935454	Sum of GTIs [s]
l2events	77687	Number of level 2 events



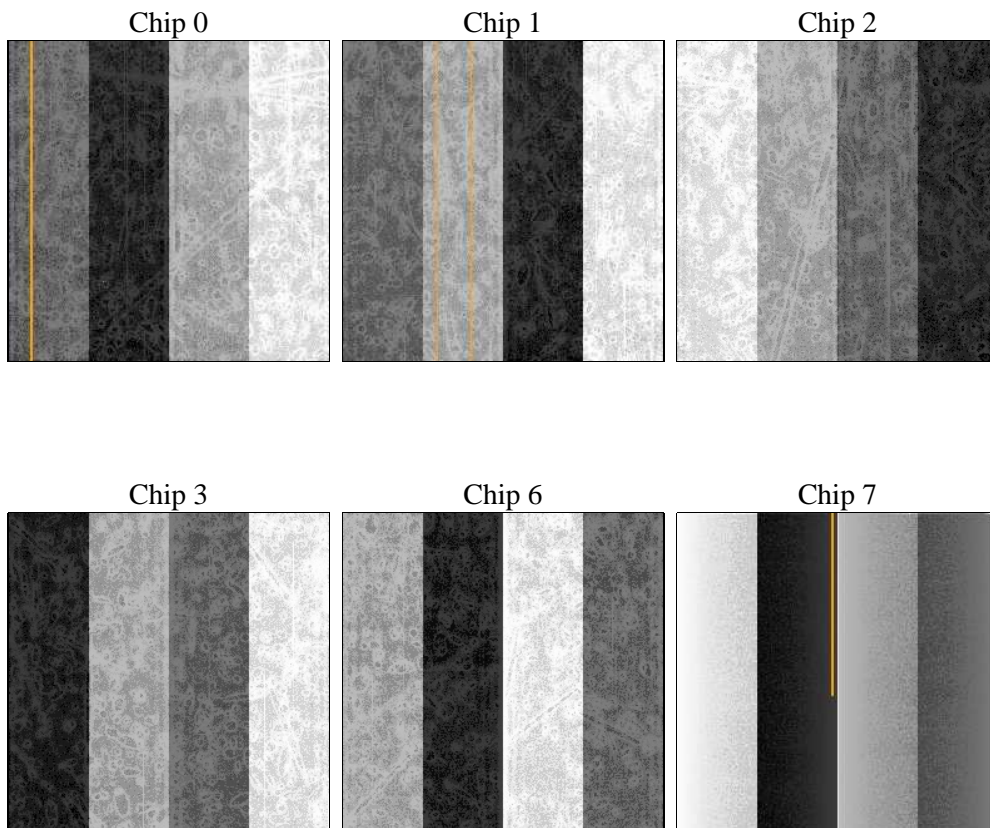
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	8000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	7932.3427335471	Sum of GTIs [s]
caldsver	4.5.2	&#160	ontime0	7932.3427335471	Sum of GTIs [s]
date	2012-09-28T06:21:55	Date and time of file creation	ontime1	7932.3837735504	Sum of GTIs [s]
revision	3	Processing version of data	ontime2	7932.4248135537	Sum of GTIs [s]
			ontime3	7932.4658535421	Sum of GTIs [s]
			ontime6	7932.5479335487	Sum of GTIs [s]
			ontime7	7932.5068935454	Sum of GTIs [s]
			l1events	349386	Number of level 1 events

### 2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7		ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	76346	49530	50978	51258	54565	66709	grade 0 events	25482	3861	2617	2431	2165	2441
rejected events	42434	41814	44827	45475	48704	39360		33%	7%	5%	4%	3%	3%
rejected %	55%	84%	87%	88%	89%	59%	grade 1 events	606	31	24	25	28	69
								0%	0%	0%	0%	0%	0%
							grade 2 events	4020	1411	1393	1223	1258	5363
								5%	2%	2%	2%	2%	8%
							grade 3 events	1418	619	564	498	616	2438
								1%	1%	1%	0%	1%	3%
							grade 4 events	1389	649	556	571	578	2522
								1%	1%	1%	1%	1%	3%
							grade 5 events	2050	1989	1803	2018	2314	6438
								2%	4%	3%	3%	4%	9%
							grade 6 events	1633	1178	1024	1063	1246	14596
								2%	2%	2%	2%	2%	21%
							grade 7 events	39748	39792	42997	43429	46360	32842
								52%	80%	84%	84%	84%	49%

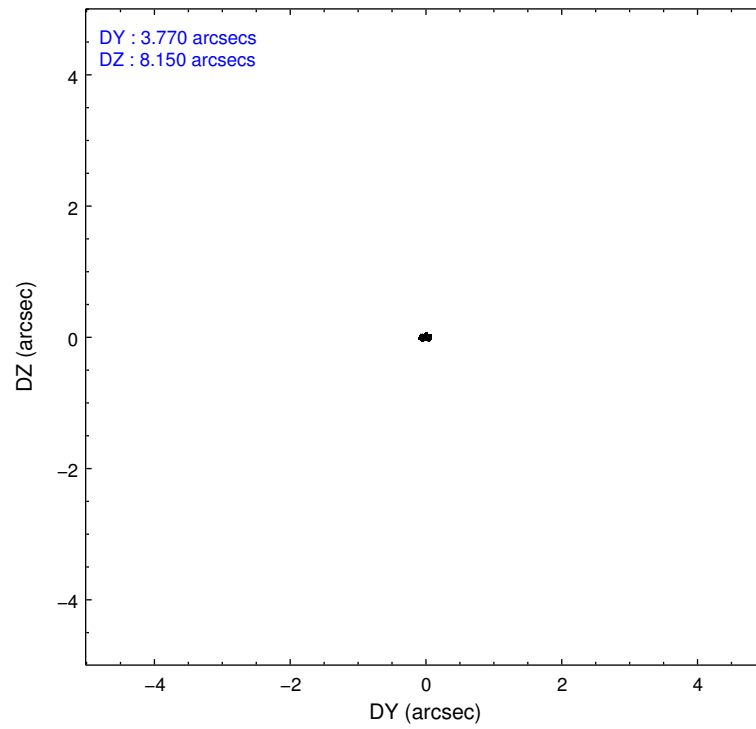
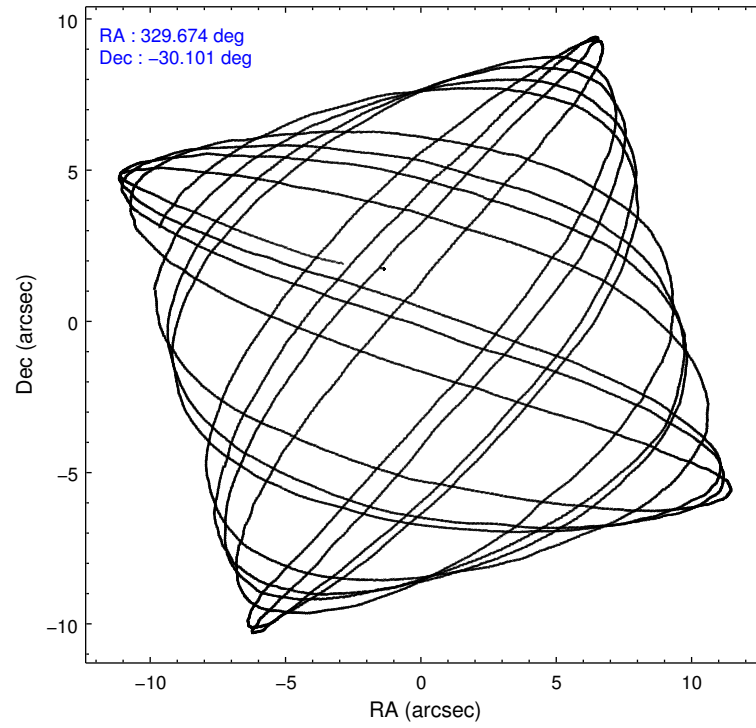


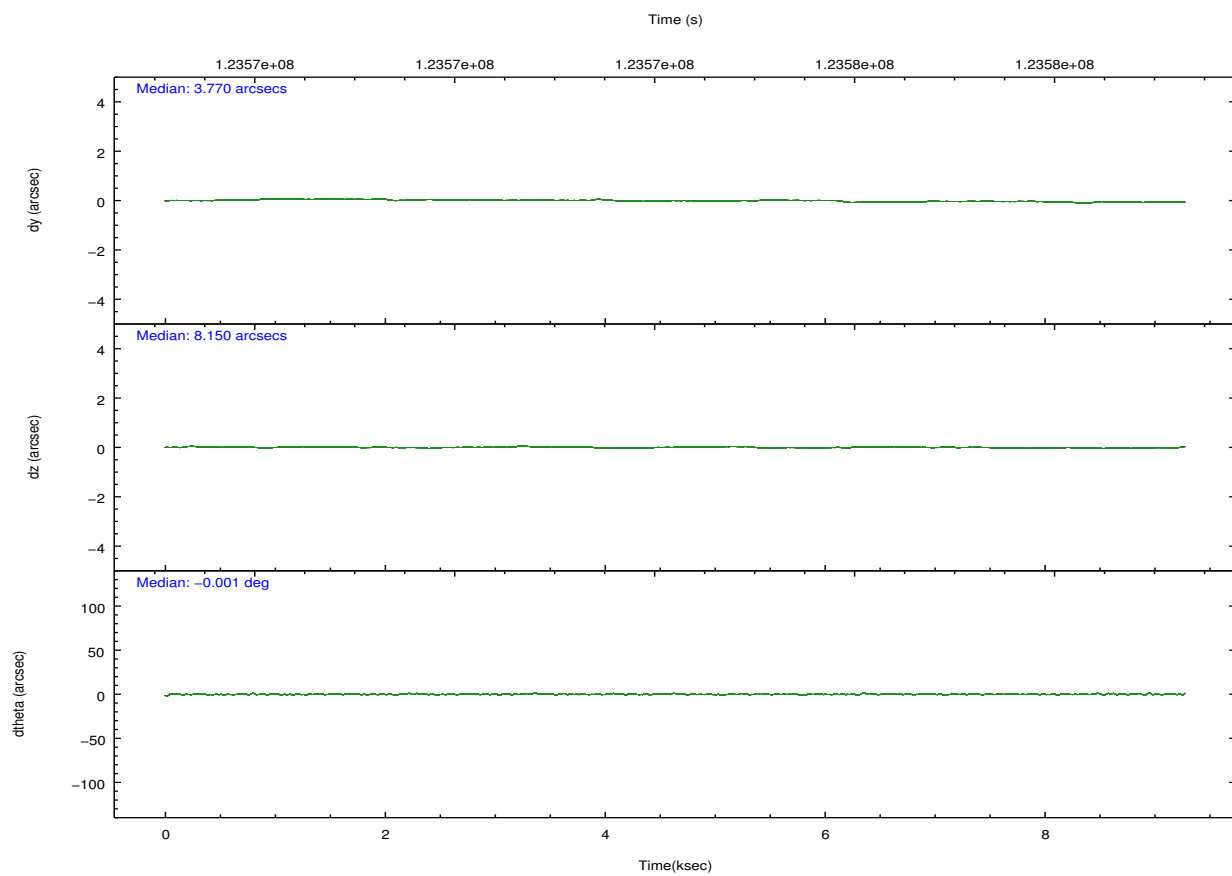
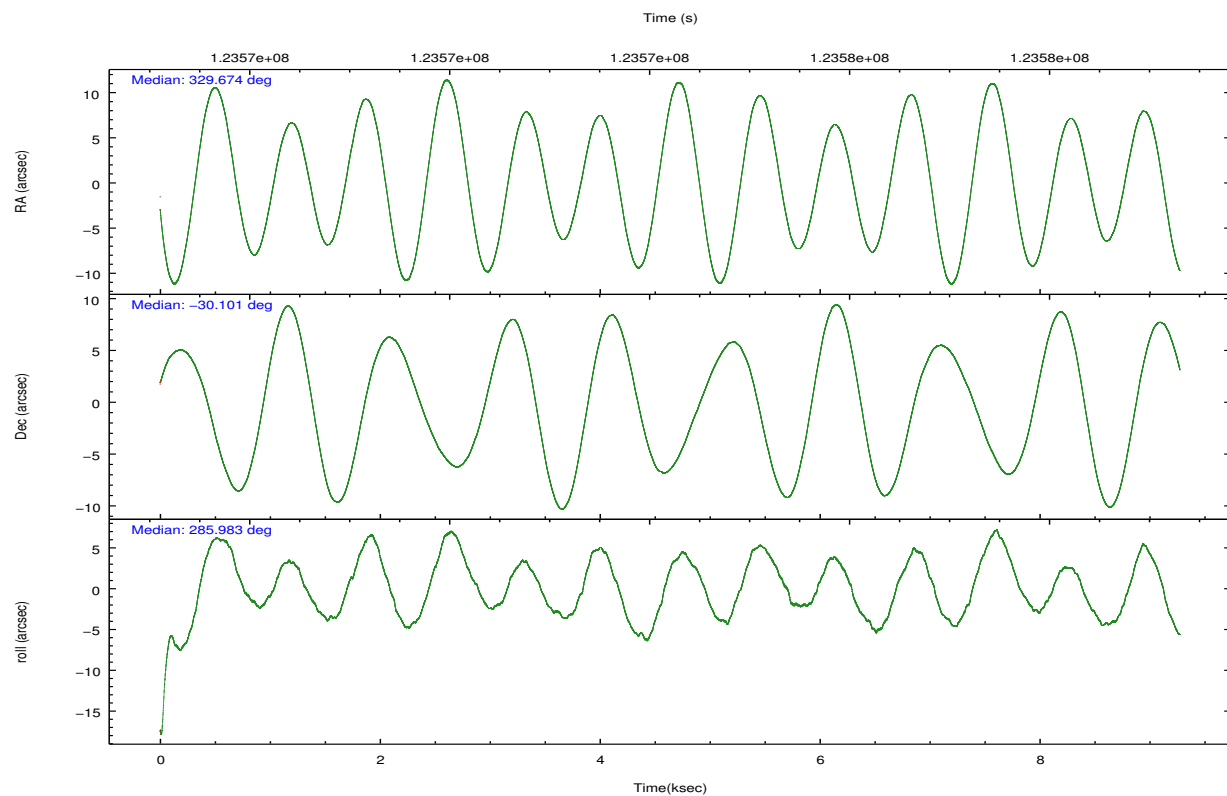
## 2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-012367	ACIS-012367
Grating	LETG	LETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	329.651210	329.6740169387891
[deg] Pointing Dec	-30.082907	-30.10186304220373
[deg] Pointing Roll	285.765407	285.9855082239465
[s] Window start time (MET)	120960064.184000	120960064.184000
[s] Window stop time (MET)	126144064.184000	126144064.184000
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-238.277263	-238.2741181829365
[mm] SIM translation stage offset	4.6848	4.681665180006831
[s] Observation start time (MET)	123570840.184000	123569062.3677
Observation start date	2001-12-01T05:12:56	2001-12-01T04:44:22
[s] Observation end time (MET)	123578840.184000	123578973.6056
Observation end date	2001-12-01T07:26:16	2001-12-01T07:29:33
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.2

## 2.3 Aspect



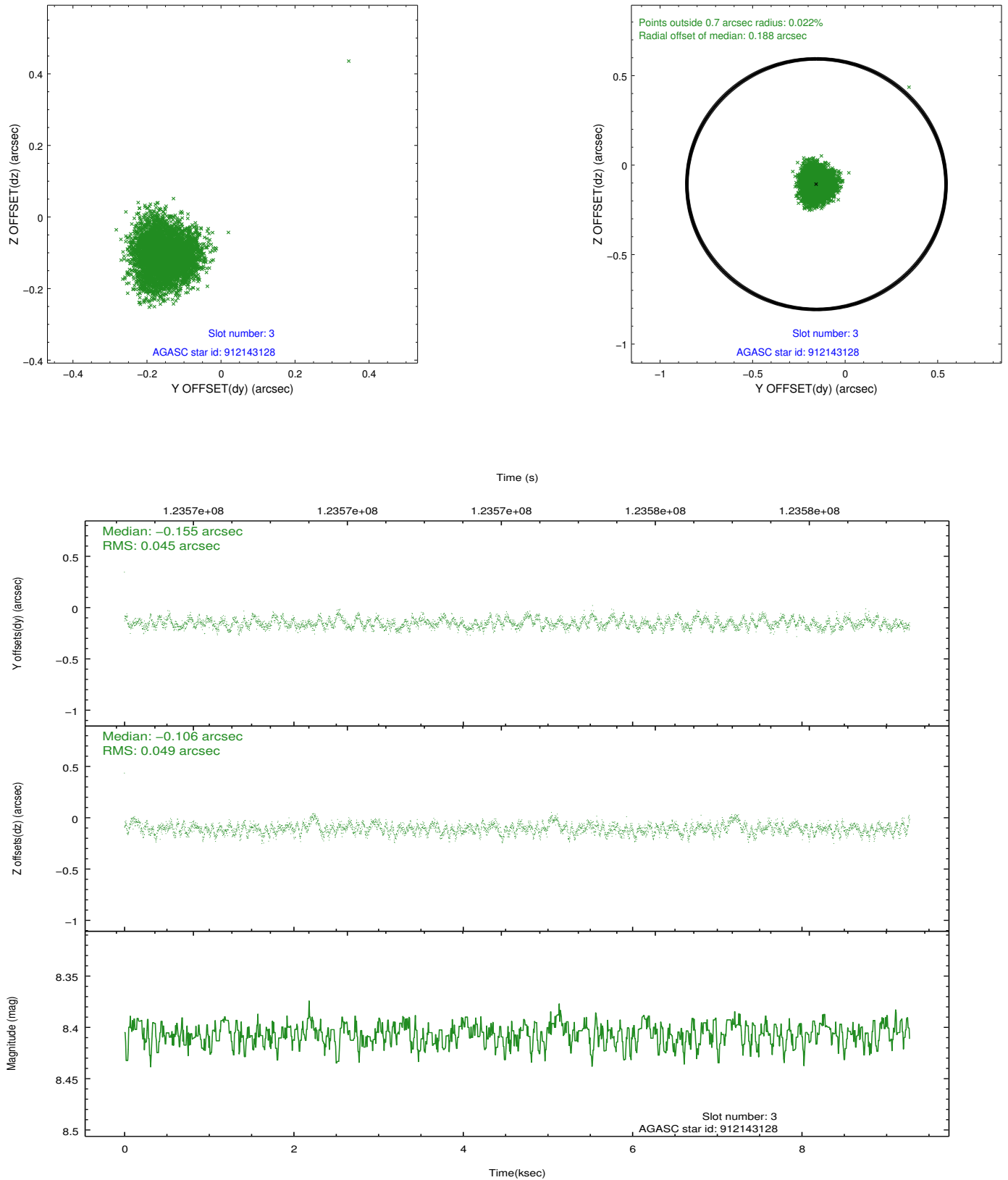


### Slot Statistics

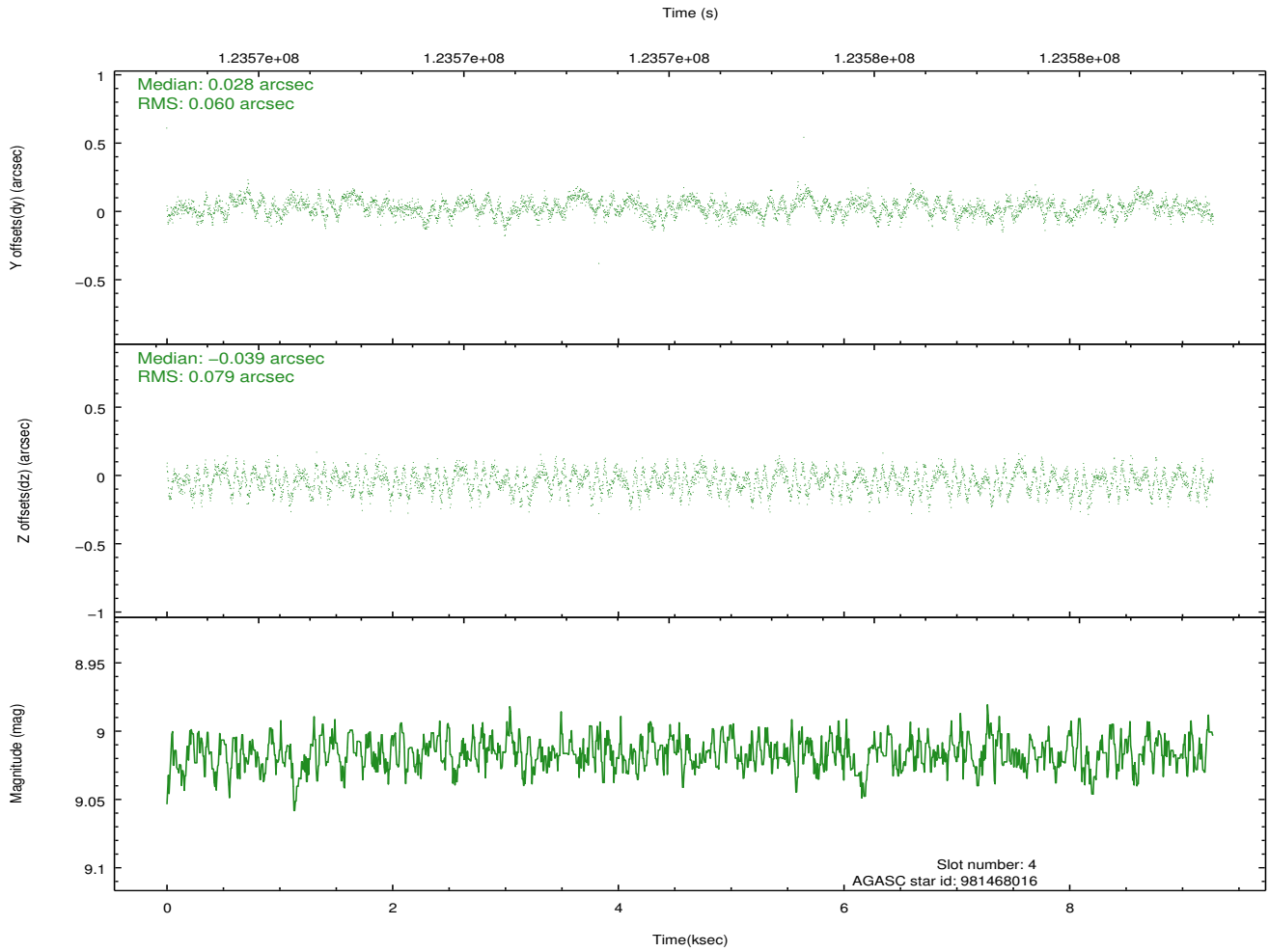
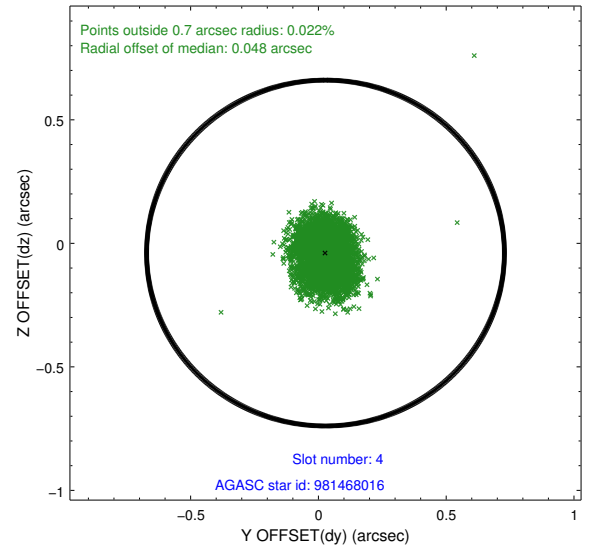
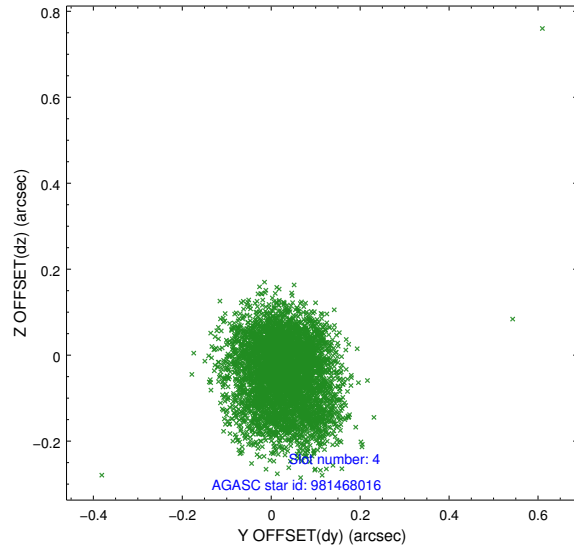
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-I-1	7.25	2262	-0.054	0.076	0.006	0.010	0.000000	0.000000	936.03	-735.23
1	FID	ACIS-I-5	7.24	2261	-0.039	0.008	0.006	0.010	0.000000	0.000000	-1811.71	1161.98
2	FID	ACIS-I-6	7.25	2262	0.002	-0.014	0.007	0.011	0.000000	0.000000	401.03	1807.09
3	GUIDE	912143128	8.41	4523	-0.155	-0.106	0.072	0.110	328.924992	-29.706140	-1913.55	-1818.21
4	GUIDE	981468016	9.02	4523	0.028	-0.039	0.106	0.165	328.842457	-30.034984	-840.98	-2380.93
5	GUIDE	912275088	9.05	4522	-0.003	0.012	0.078	0.127	329.619228	-29.738698	-1218.28	240.71
6	GUIDE	981478152	9.41	4518	0.057	0.142	0.091	0.148	329.415589	-30.057192	-286.40	-680.59
7	GUIDE	981468128	9.35	4520	0.070	-0.004	0.083	0.133	329.756350	-30.158334	352.03	241.85

## 2.4 Star Slots

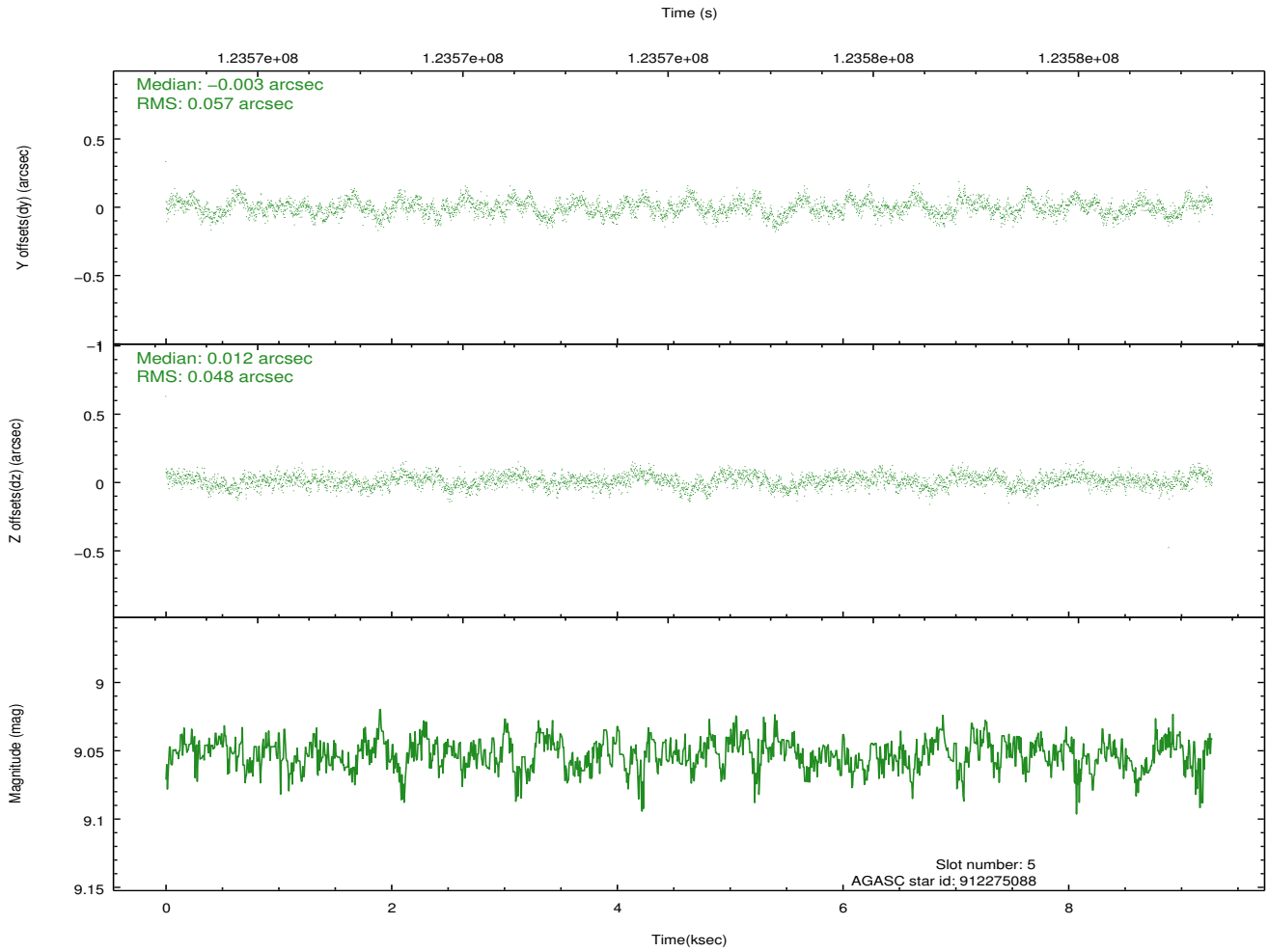
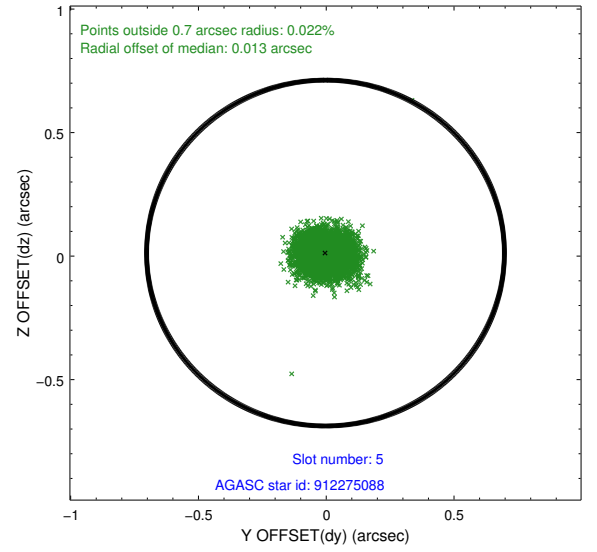
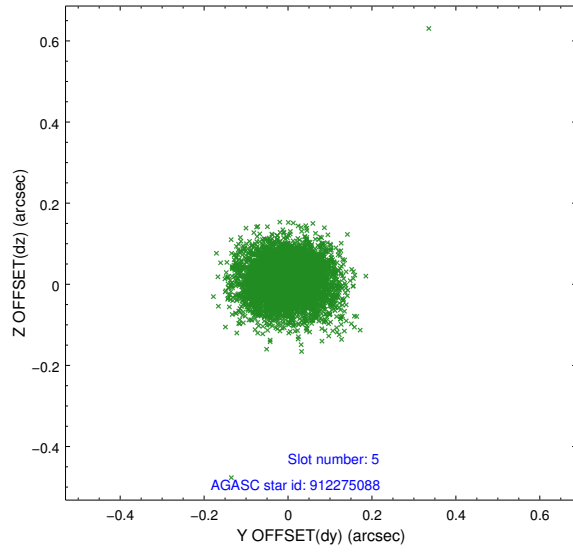
### 2.4.1 Slot 3



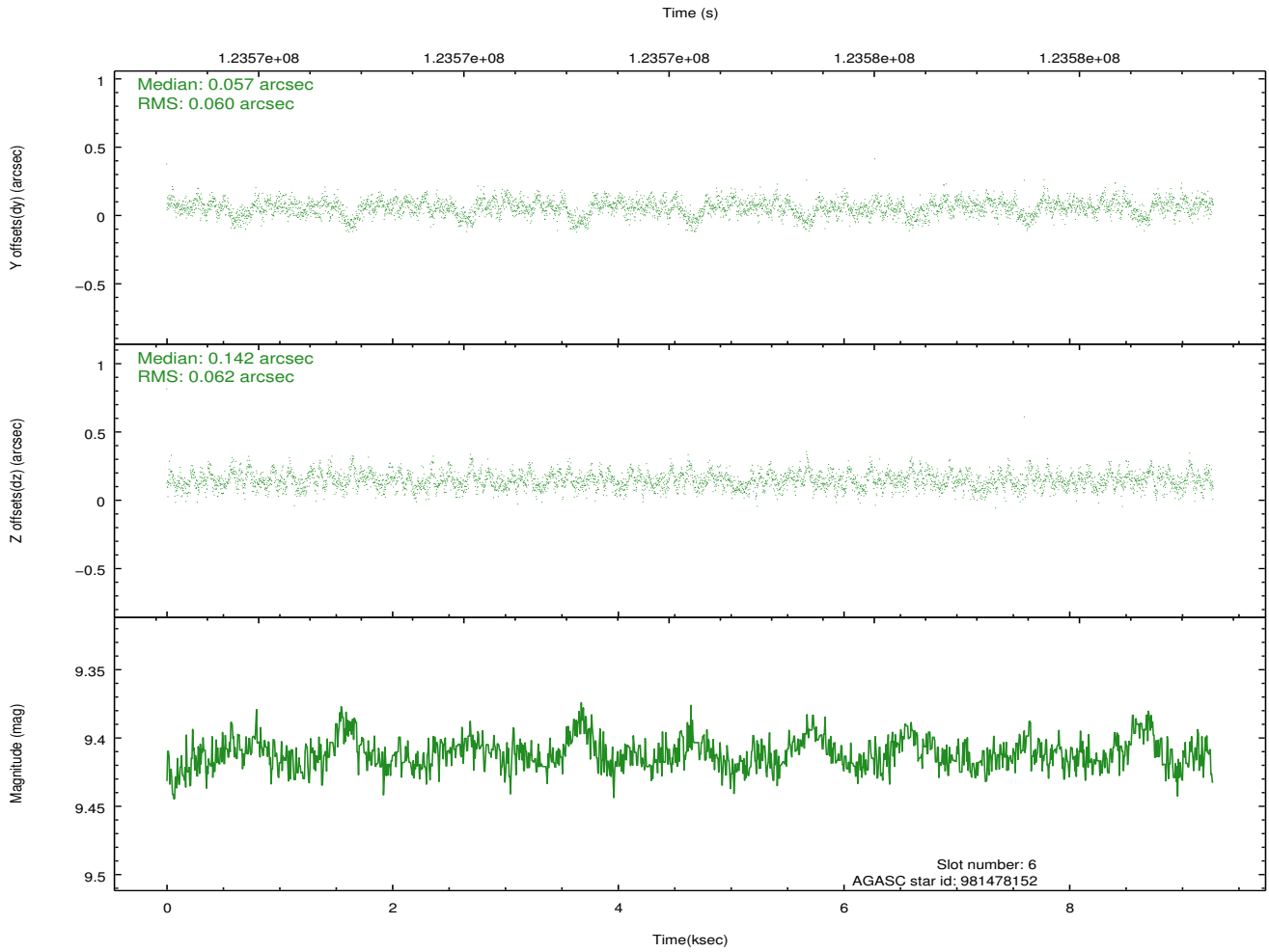
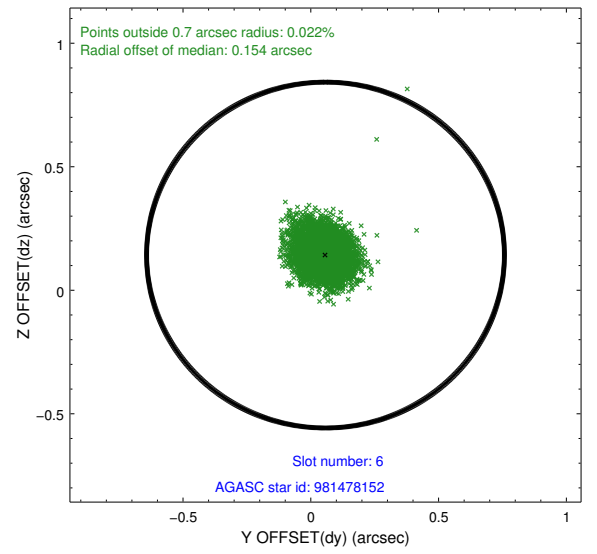
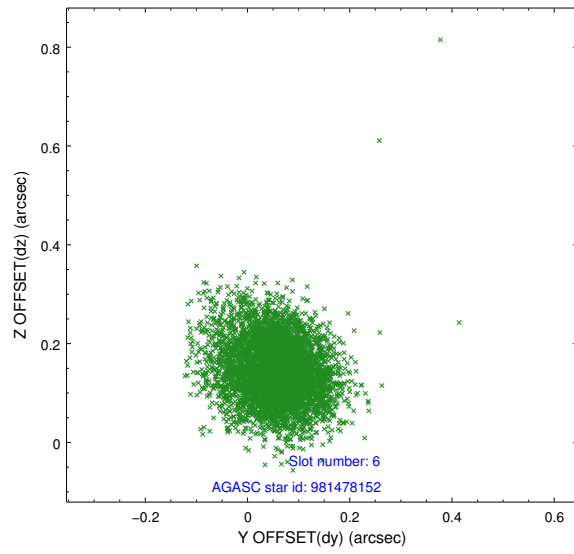
## 2.4.2 Slot 4



### 2.4.3 Slot 5

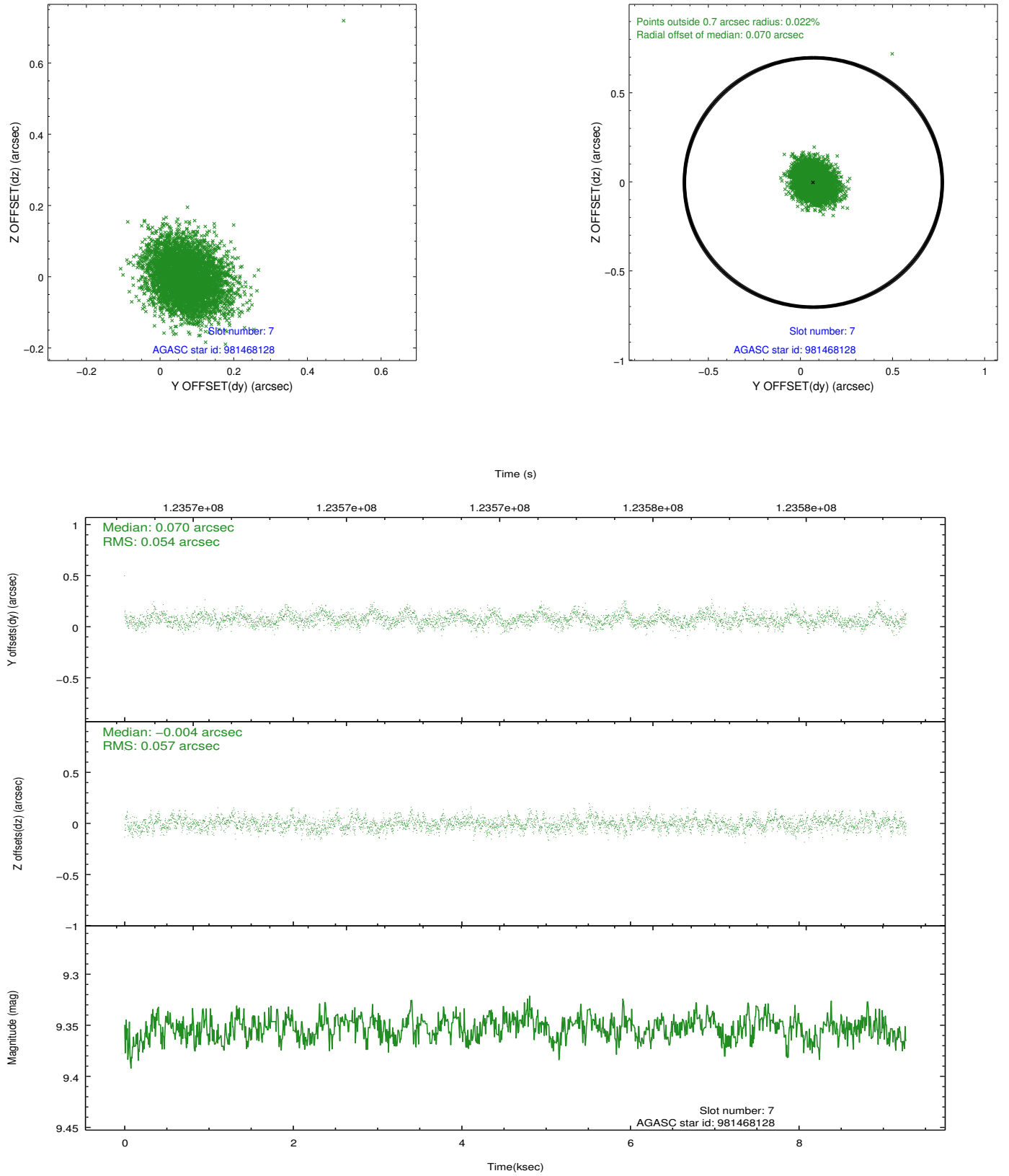


## 2.4.4 Slot 6



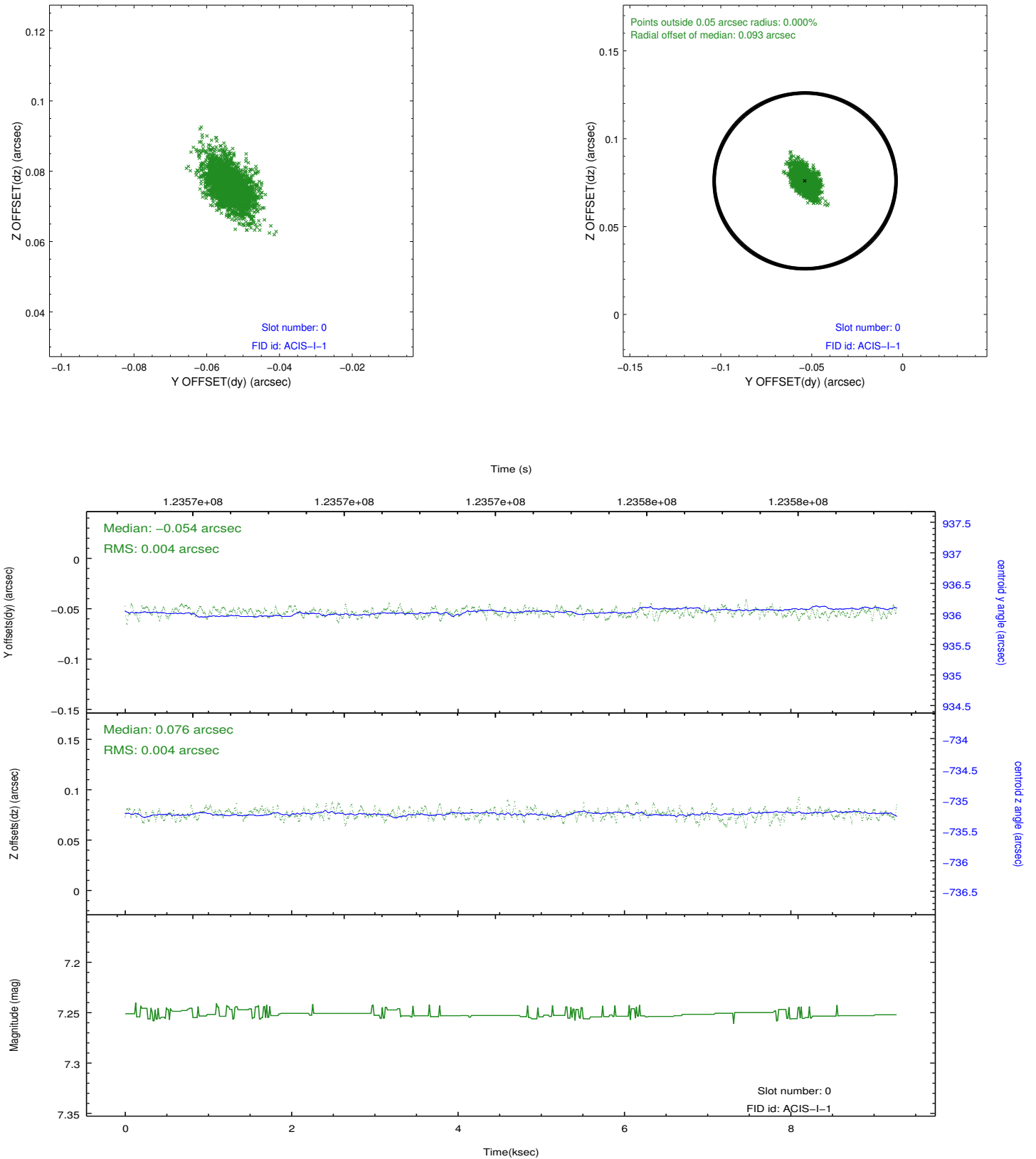


## 2.4.5 Slot 7

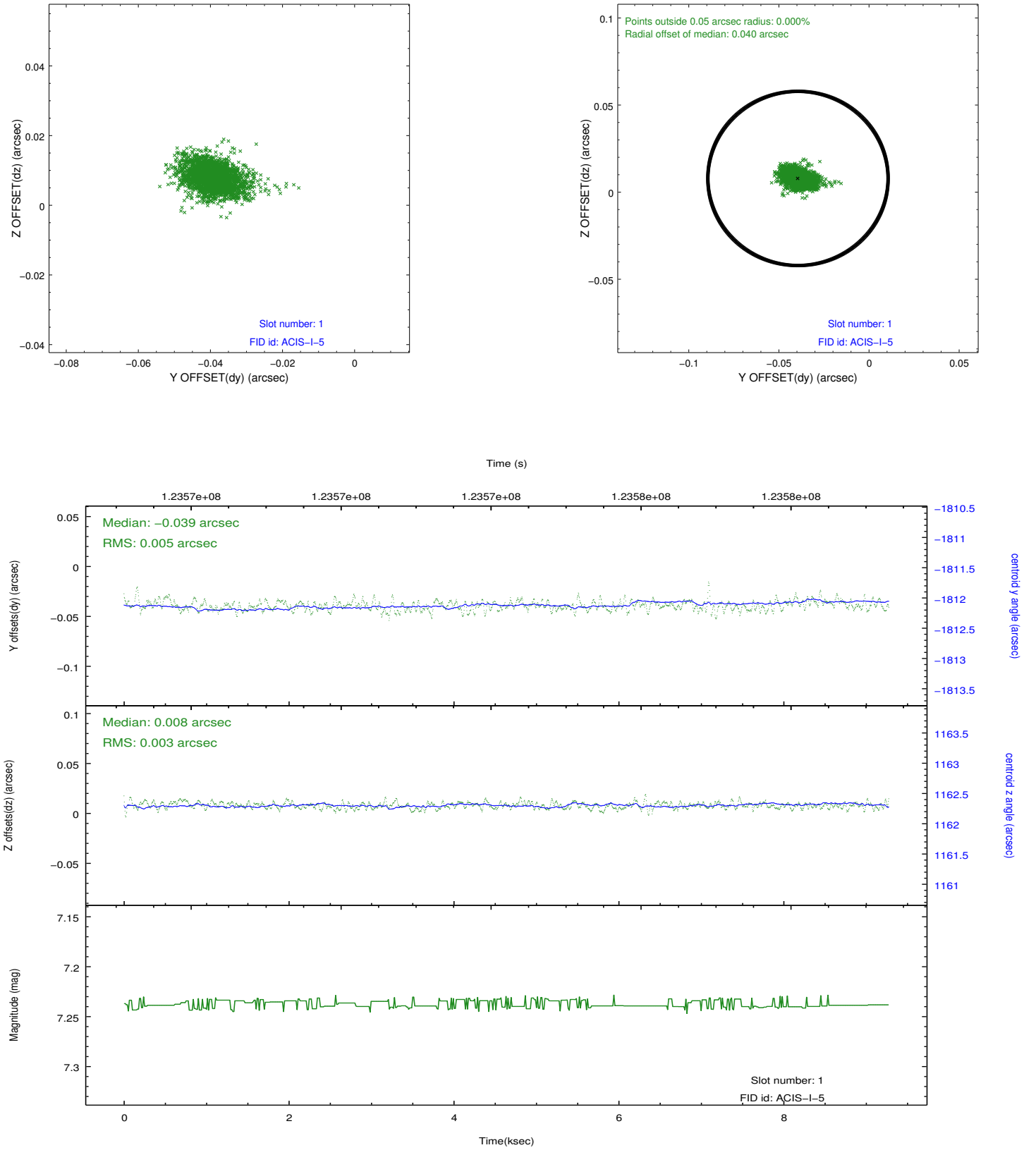


## 2.5 FID Slots

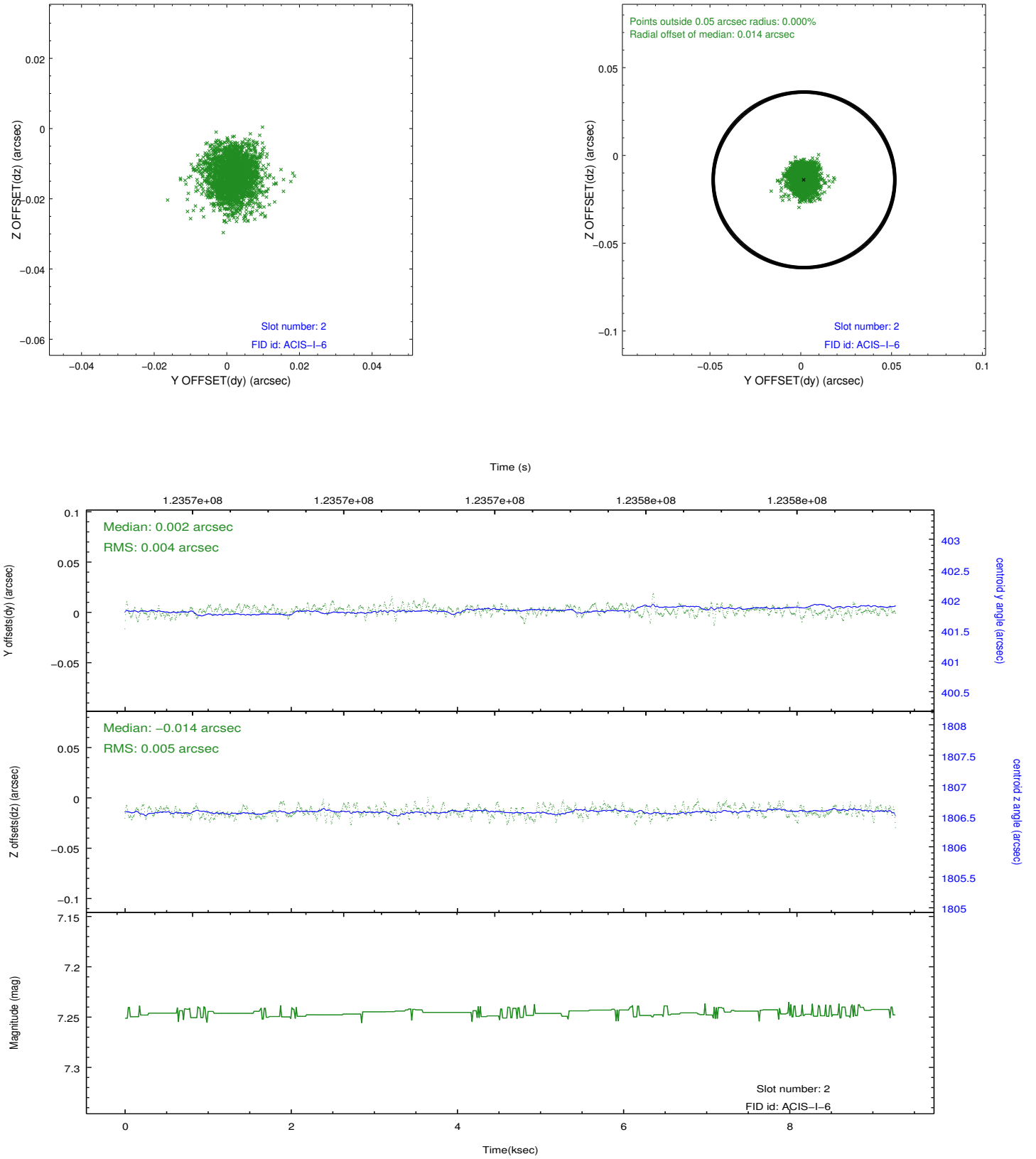
### 2.5.1 Slot 0



## 2.5.2 Slot 1

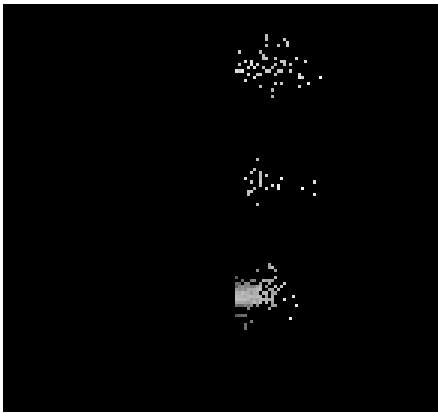


### 2.5.3 Slot 2

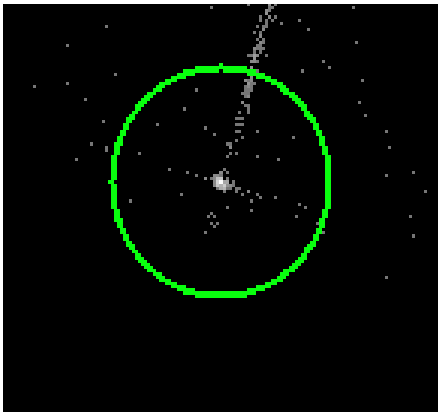


# 3 Gratings

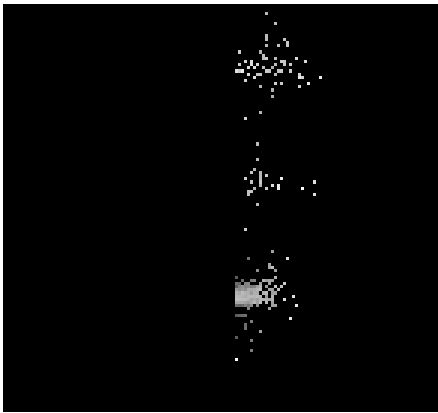
## 3.1 LETG Arm



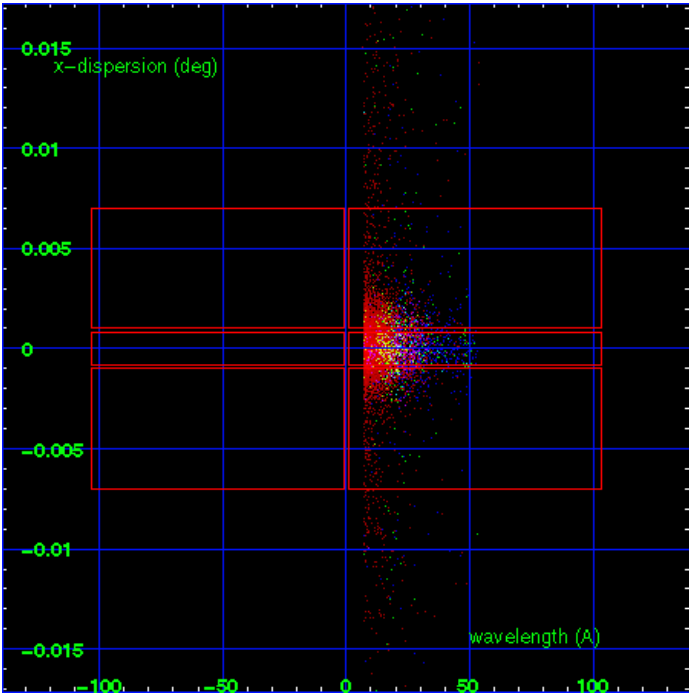
LETG Order Sort 123



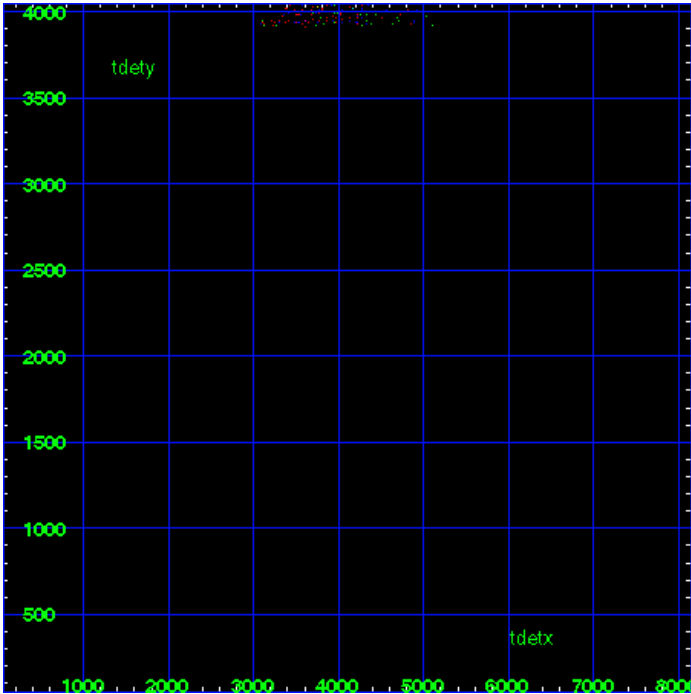
LETG Zero Order



LETG Order Sort ALL

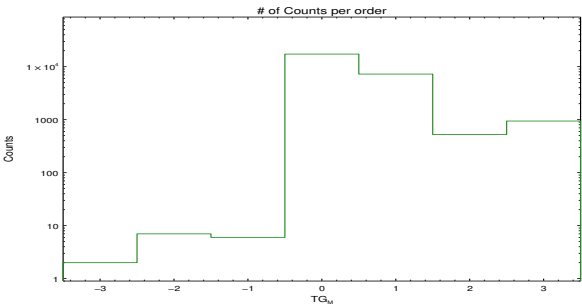


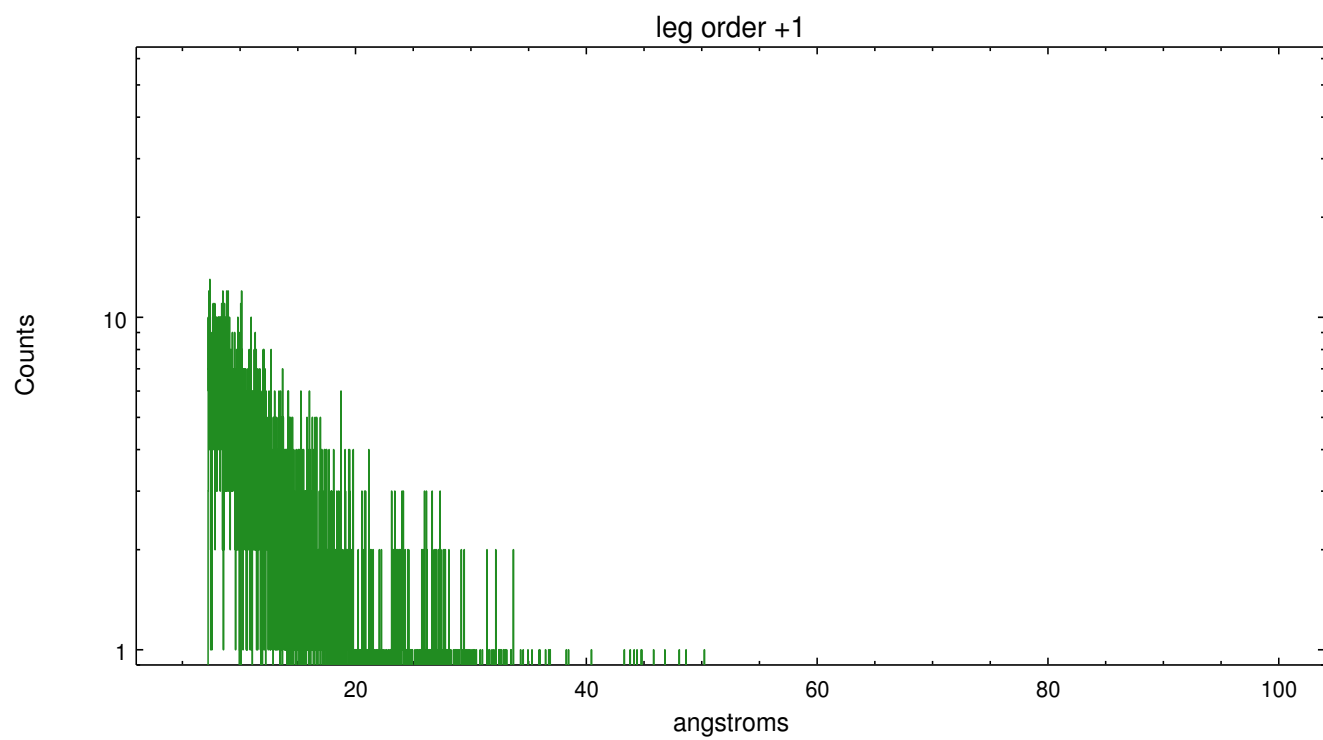
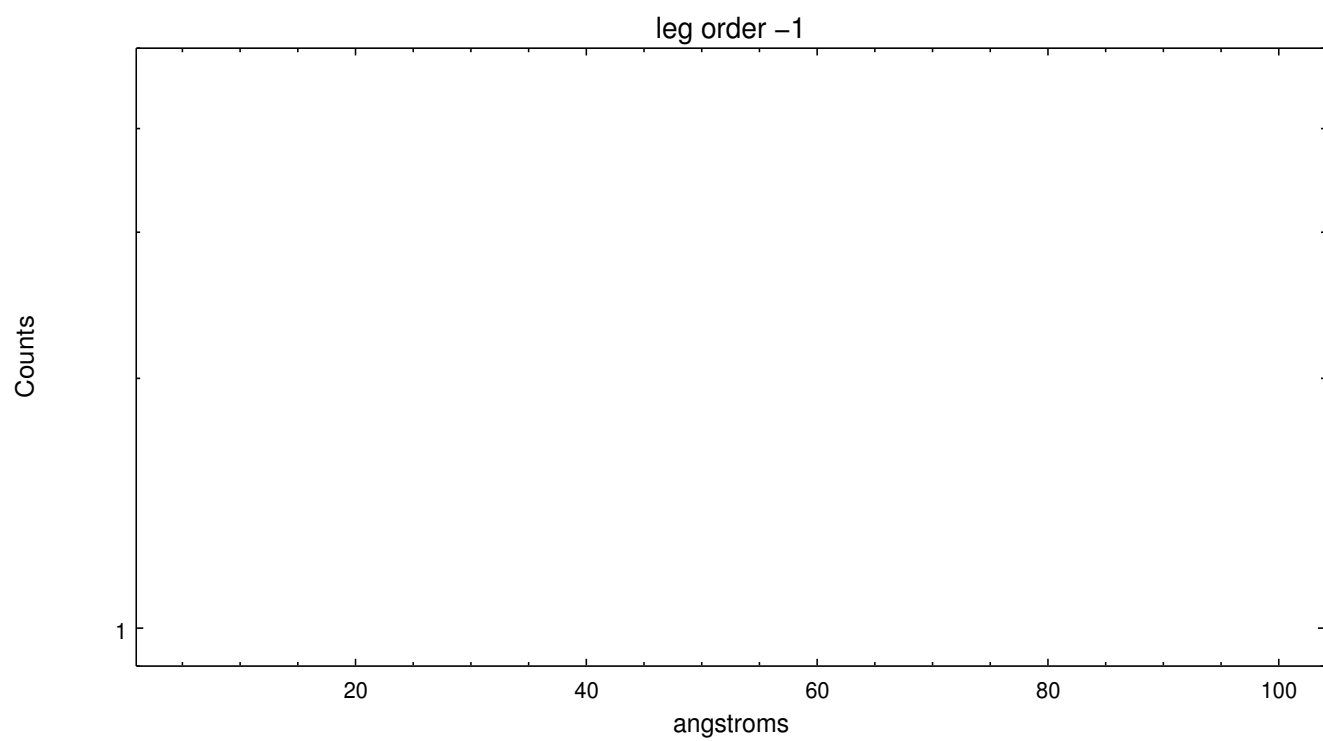
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2	7	6	17283	7246	524	942





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.12.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	7.932

## A.2 Comments

Non-standard grating/detector combination required custom parameters. Used flat order-sorting in `tg_resolve_events`, since there is no 'osip' table for ACIS-I. `=== pset grt_lev15 osipfile=None === pset grt_lev15 osort_lo=0.3 === pset grt_lev15 osort_hi=0.3 ===` 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 ( $x=3824.125$ ,  $y=3195.125$ ) into the `*src1a.fits` file table. These corrected coordinates were determined by eye because neither the pipeline tool `tgdetect` nor the `findzero` tool was successful in identifying the piled up zeroth order so close to a chip boundary. Source is very off-axis. Zeroth order was placed at brightest part of source. The determination of the position by eye is expected to be in error by up to 1-2 pixels. 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.