

# V&V Reference Report

## L2 ASCDS Version : 8.5

Observation 4640 - L2 Version 3  
Chandra X-Ray Center

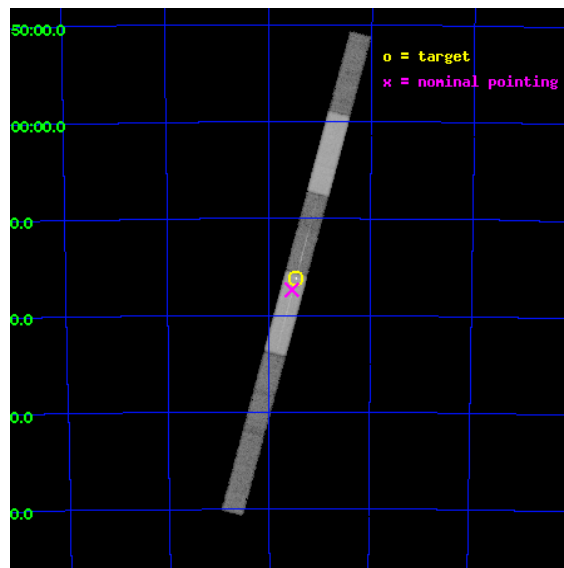
L2 Processing Date : Dec 8 2012

## 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	500460	Sequence number
obs_id	4640	Observation id
title	Spatially resolved grating spectrometry of the newborn supernova remnant SNR1987A	Proposal title
observer	Dr. Richard McCray	Principal investigator
object	SNR1987A	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.866667	Observer's specified target RA [deg]
dec_targ	-69.26975	Observer's specified target Dec [deg]
ra_nom	83.886539555763	Nominal RA [deg]
dec_nom	-69.289565467595	Nominal Dec [deg]
roll_nom	105.17521002881	Nominal Roll [deg]
revision	3	Processing version of data
ontime	59167.0	Sum of GTIs [s]
livetime	56834.511642204	Livetime [s]
ontime4	59167.0	Sum of GTIs [s]
ontime5	59167.0	Sum of GTIs [s]
ontime6	59167.0	Sum of GTIs [s]
ontime7	59167.0	Sum of GTIs [s]
ontime8	59167.0	Sum of GTIs [s]
ontime9	59167.0	Sum of GTIs [s]
l2events	202132	Number of level 2 events

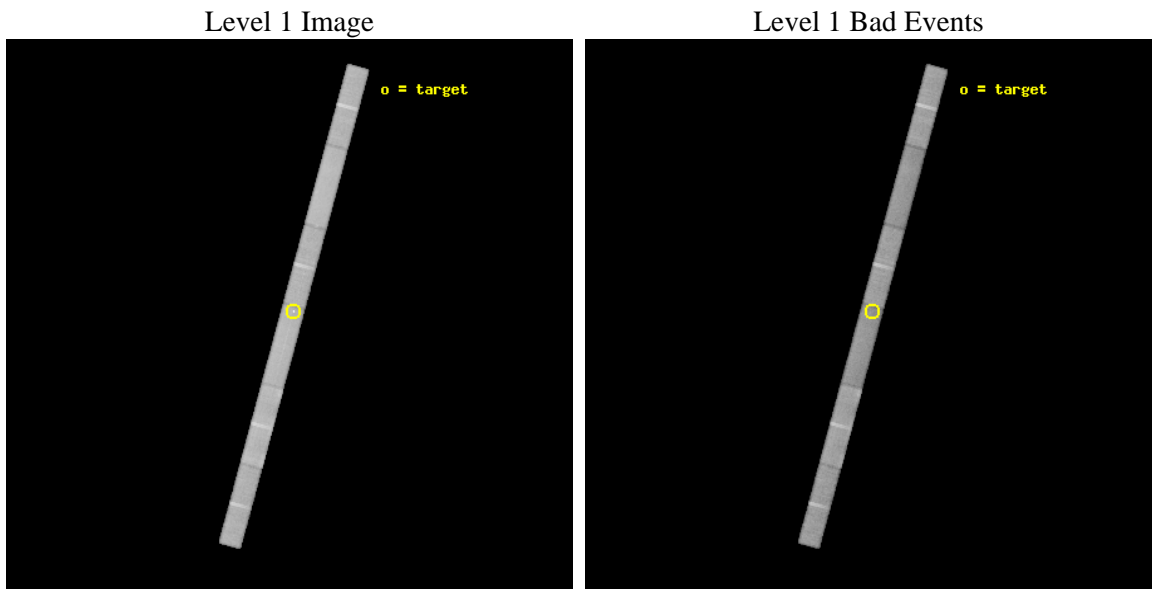




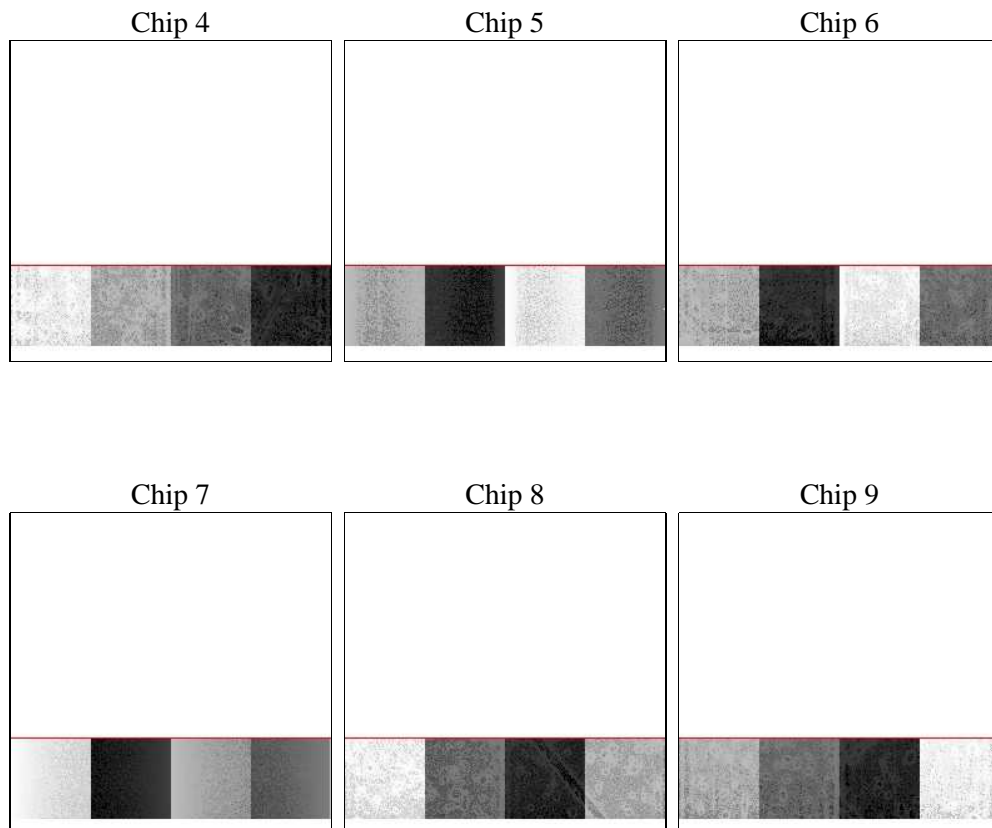
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	59021.803000	[s] Scheduled observation exposure time
ascdsver	8.5	Processing system revision	ontime	59167.0	Sum of GTIs [s]
caldsver	4.5.4	&#160	ontime4	59167.0	Sum of GTIs [s]
date	2012-12-08T10:04:58	Date and time of file creation	ontime5	59167.0	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	59167.0	Sum of GTIs [s]
			ontime7	59167.0	Sum of GTIs [s]
			ontime8	59167.0	Sum of GTIs [s]
			ontime9	59167.0	Sum of GTIs [s]
			l1events	933607	Number of level 1 events

### 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	152842	171572	140736	162722	177738	127997	grade 0 events	6519	7274	6951	7912	10065	5874
rejected events	135771	92283	123391	90011	142691	112353		4%	4%	4%	4%	5%	4%
rejected %	88%	53%	87%	55%	80%	87%	grade 1 events	47	196	38	140	62	43
								0%	0%	0%	0%	0%	0%
							grade 2 events	3516	21695	3052	15107	7150	2792
								2%	12%	2%	9%	4%	2%
							grade 3 events	2332	5613	2345	7759	4248	2254
								1%	3%	1%	4%	2%	1%
							grade 4 events	2170	5533	2247	7642	4016	2047
								1%	3%	1%	4%	2%	1%
							grade 5 events	4584	14446	4962	14611	6608	5051
								2%	8%	3%	8%	3%	3%
							grade 6 events	2674	39838	2877	34773	9854	2780
								1%	23%	2%	21%	5%	2%
							grade 7 events	131000	76977	118264	74778	135735	107156
								85%	44%	84%	45%	76%	83%

## 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	83.941966	83.88653955576311	Subarray requested	CUSTOM	1/4
[deg] Pointing Dec	-69.308481	-69.28956546759532	Subarray start row	49	49
[deg] Pointing Roll	105.070441	105.1752100288102	Subarray row count	256	256
[deg] Roll angle	100.000000	100.000000	Alternating exposures requested	N	N
[deg] Roll tolerance	10.000000	10.000000	[s] Primary exposure time	0.000000	1
Roll constraint allows 180D rotation	N	N			
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-182.132523	-182.1370004450064			
[mm] SIM translation stage offset	-8	-7.995522138001405			
[s] Observation start time (MET)	209886752.184000	209885653.12985			
Observation start date	2004-08-26T05:51:28	2004-08-26T05:34:13			
[s] Observation end time (MET)	209945774.184000	209945989.24504			
Observation end date	2004-08-26T22:15:10	2004-08-26T22:19:49			
Read mode	TIMED	TIMED			

## 2.3 Aspect

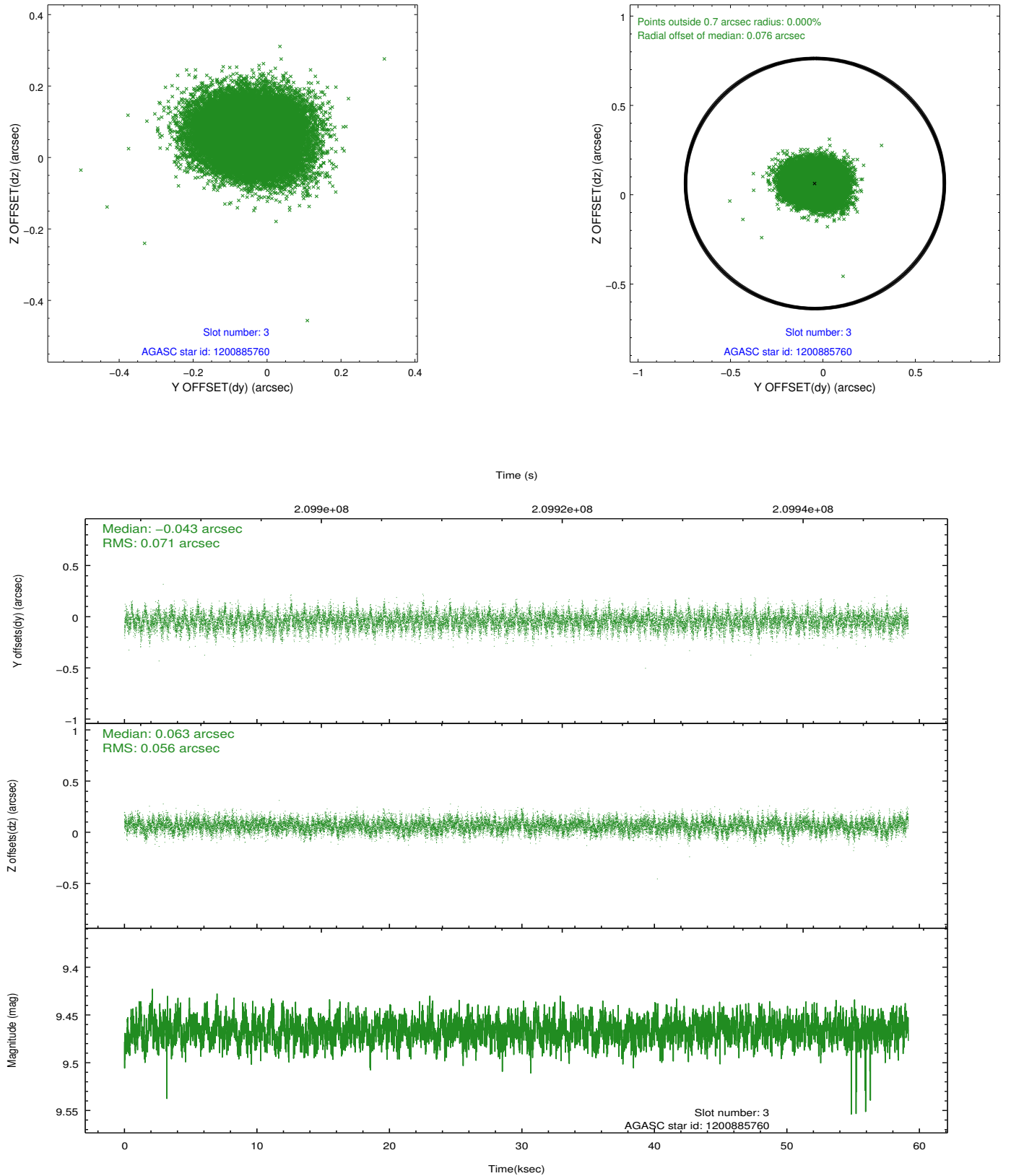


### Slot Statistics

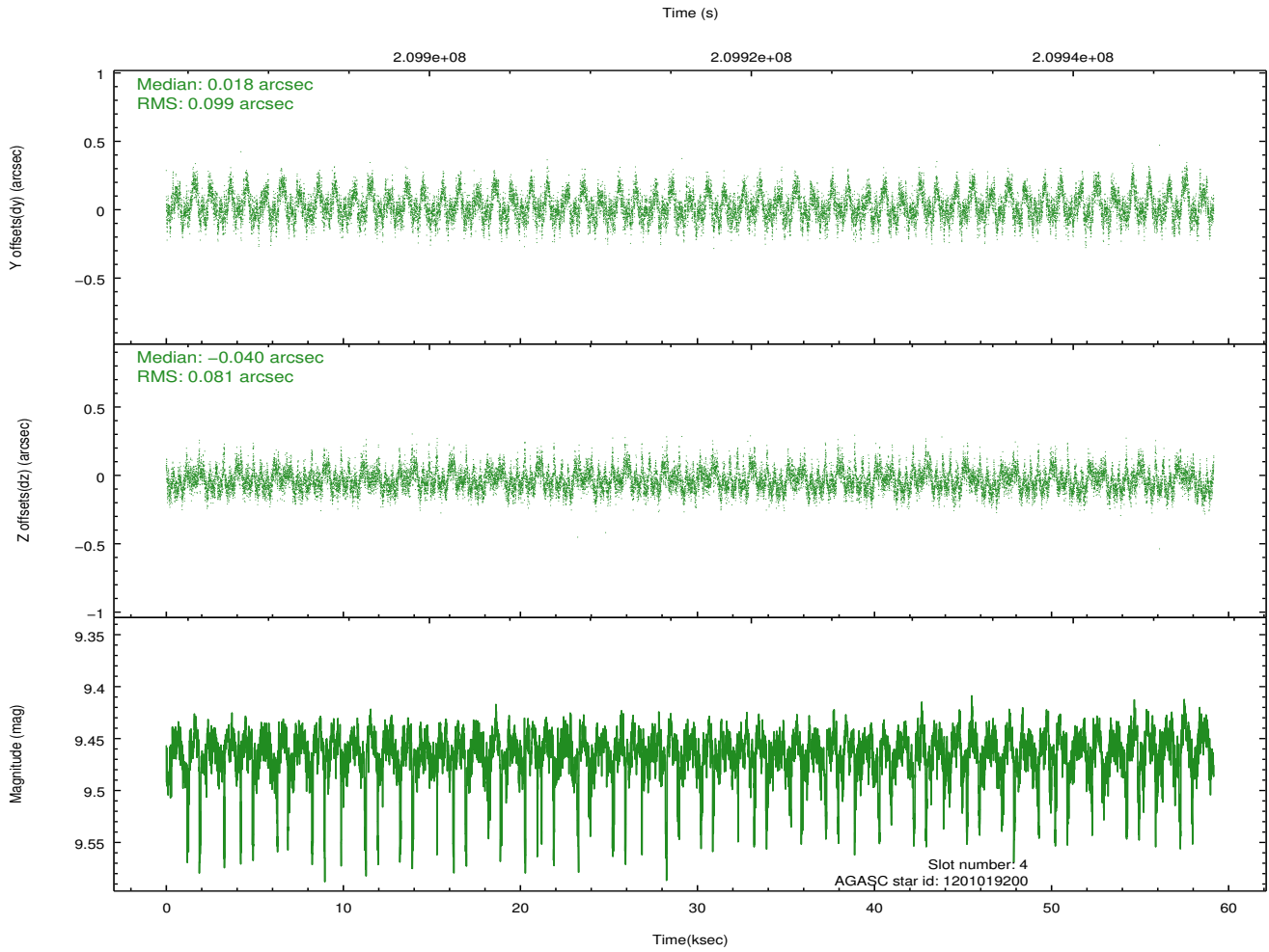
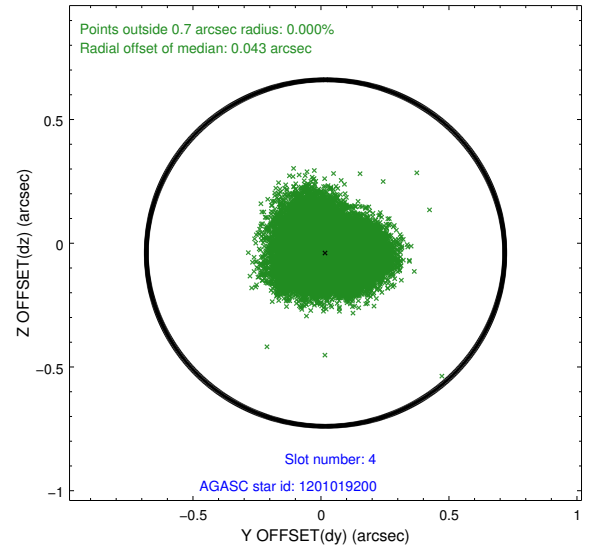
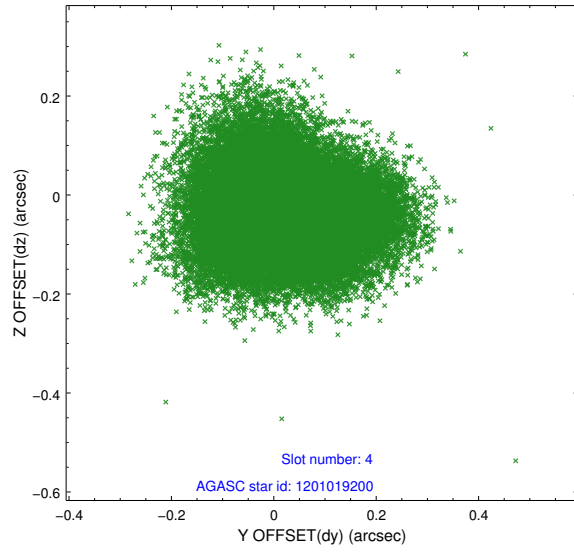
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.18	14431	0.060	0.065	0.009	0.023	0.000000	0.000000	936.93	-1891.12
1	FID	ACIS-S-2	7.09	14431	-0.099	-0.123	0.012	0.043	0.000000	0.000000	-759.15	-1895.89
2	FID	ACIS-S-5	7.22	14432	0.014	0.063	0.008	0.022	0.000000	0.000000	-1812.30	6.37
3	GUIDE	1200885760	9.47	28829	-0.043	0.063	0.096	0.157	83.723637	-68.777667	1918.89	-221.56
4	GUIDE	1201019200	9.46	28734	0.018	-0.040	0.138	0.215	84.213591	-68.777384	1753.89	-838.41
5	GUIDE	1201406184	7.93	28861	-0.047	-0.075	0.063	0.104	82.503234	-69.975517	-1877.84	2341.99
6	GUIDE	1201410616	9.34	28848	0.122	-0.190	0.123	0.195	82.516808	-69.784406	-1213.42	2162.50
7	GUIDE	1201017424	10.20	28762	-0.066	0.245	0.172	0.290	85.854985	-69.248506	-462.16	-2401.65

## 2.4 Star Slots

### 2.4.1 Slot 3

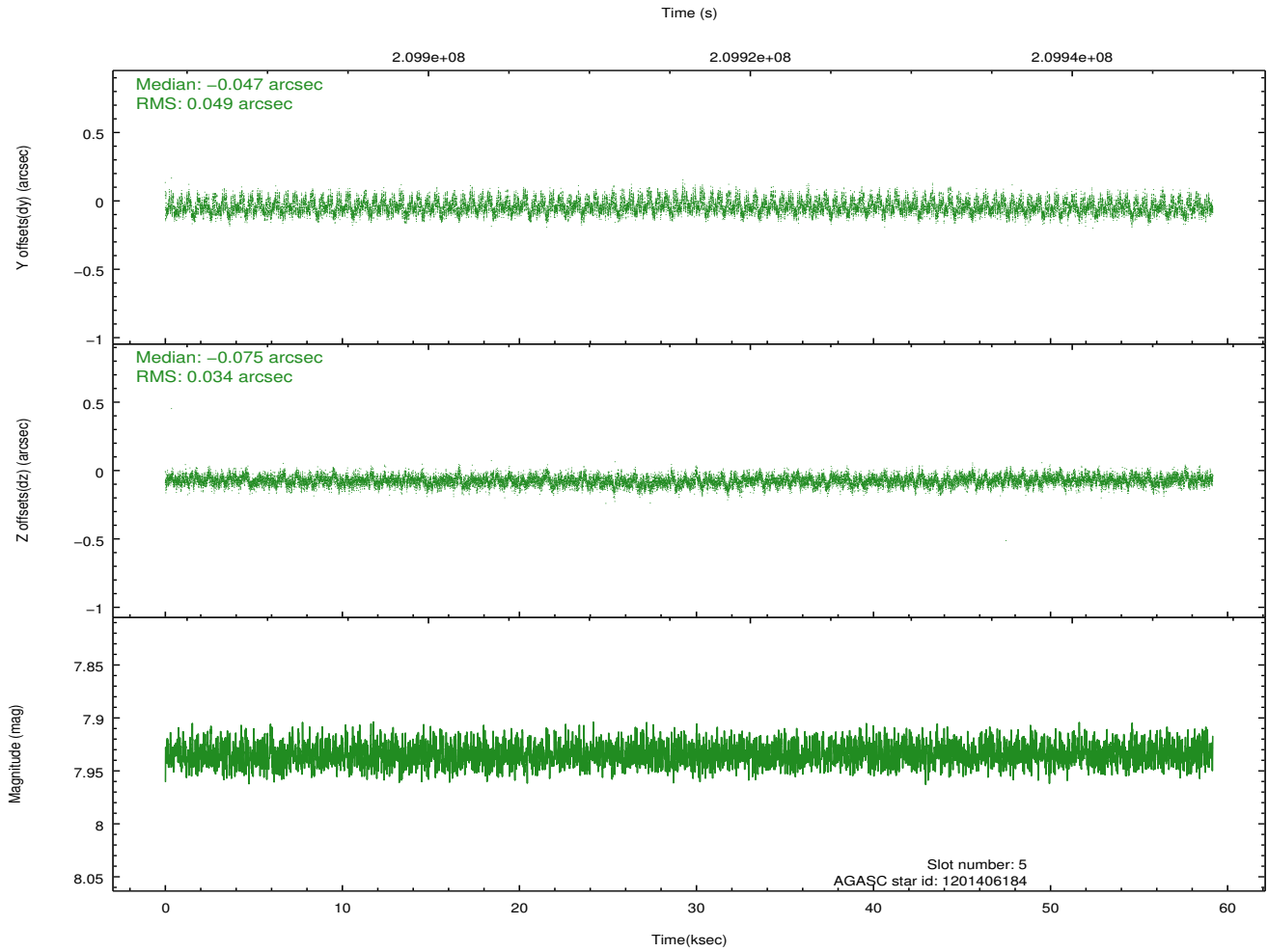
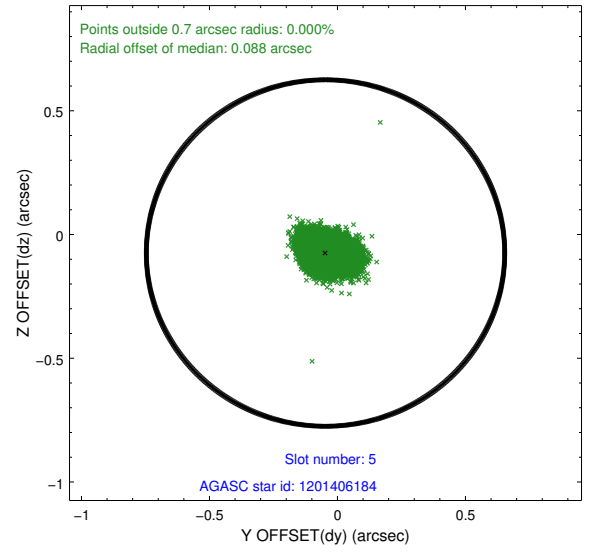
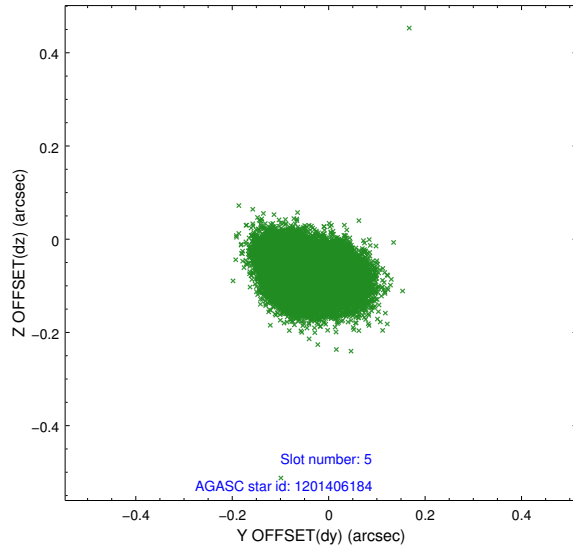


## 2.4.2 Slot 4

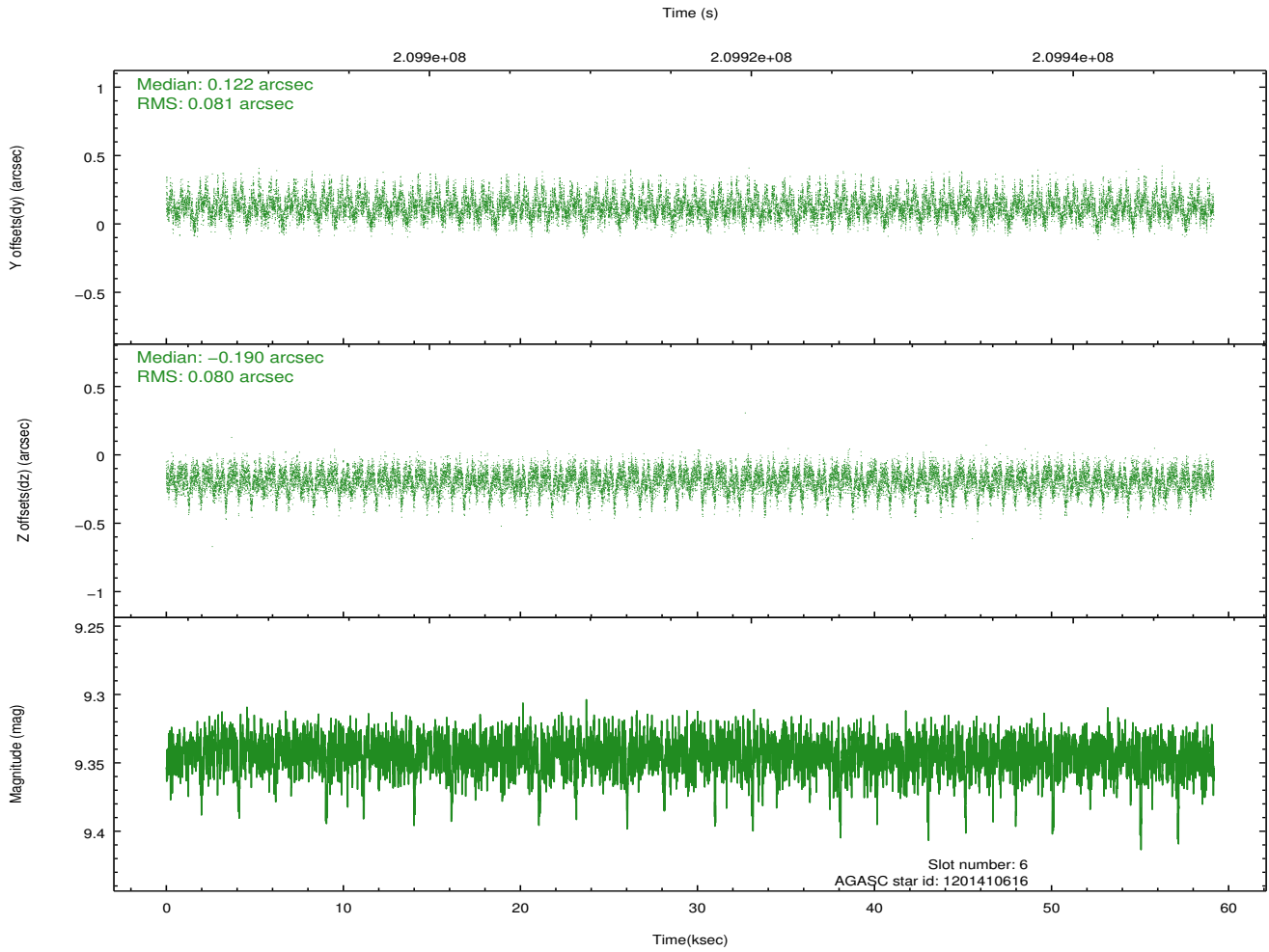
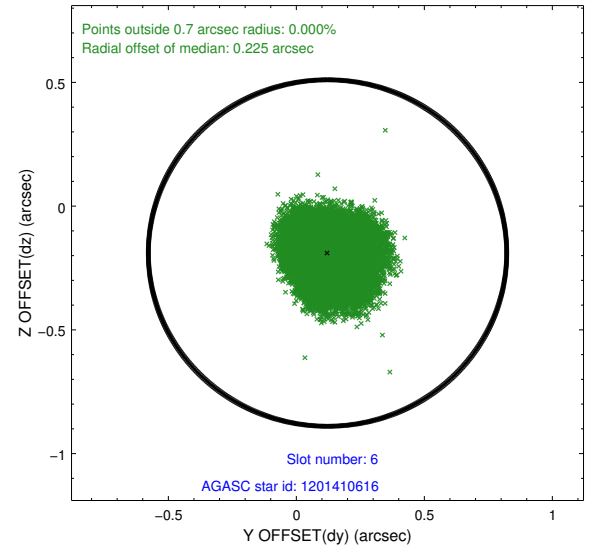
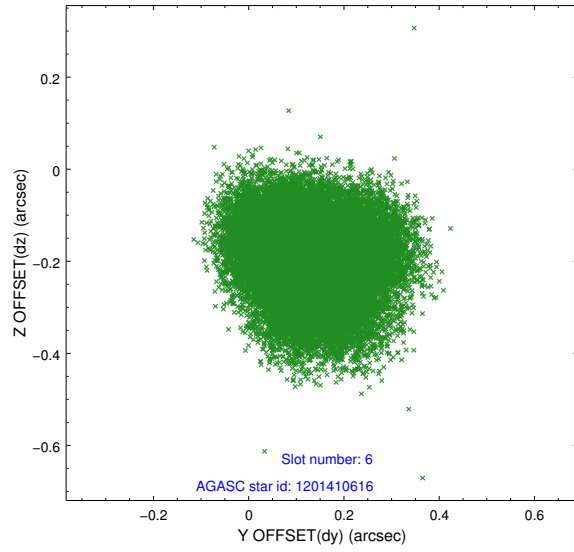




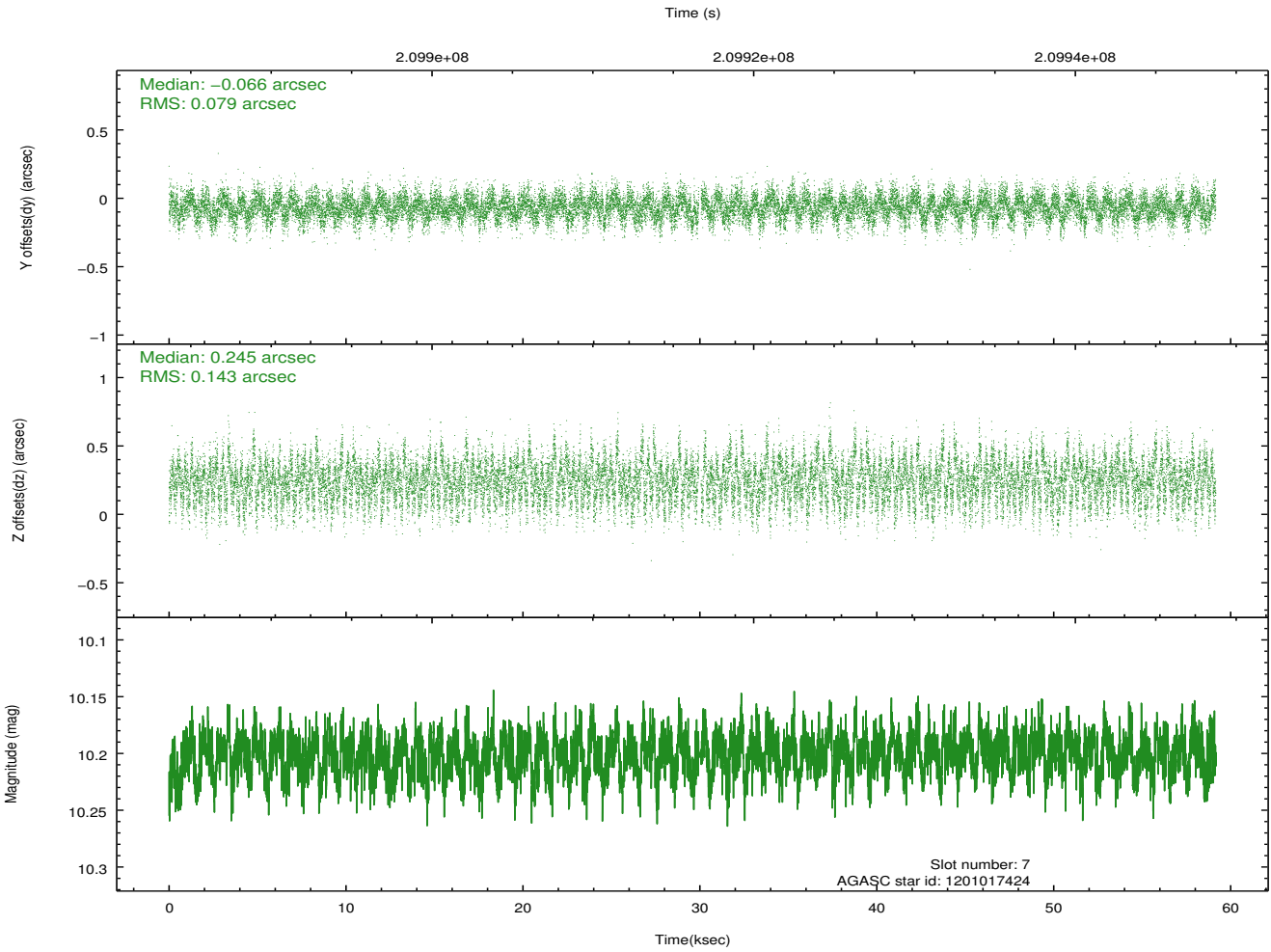
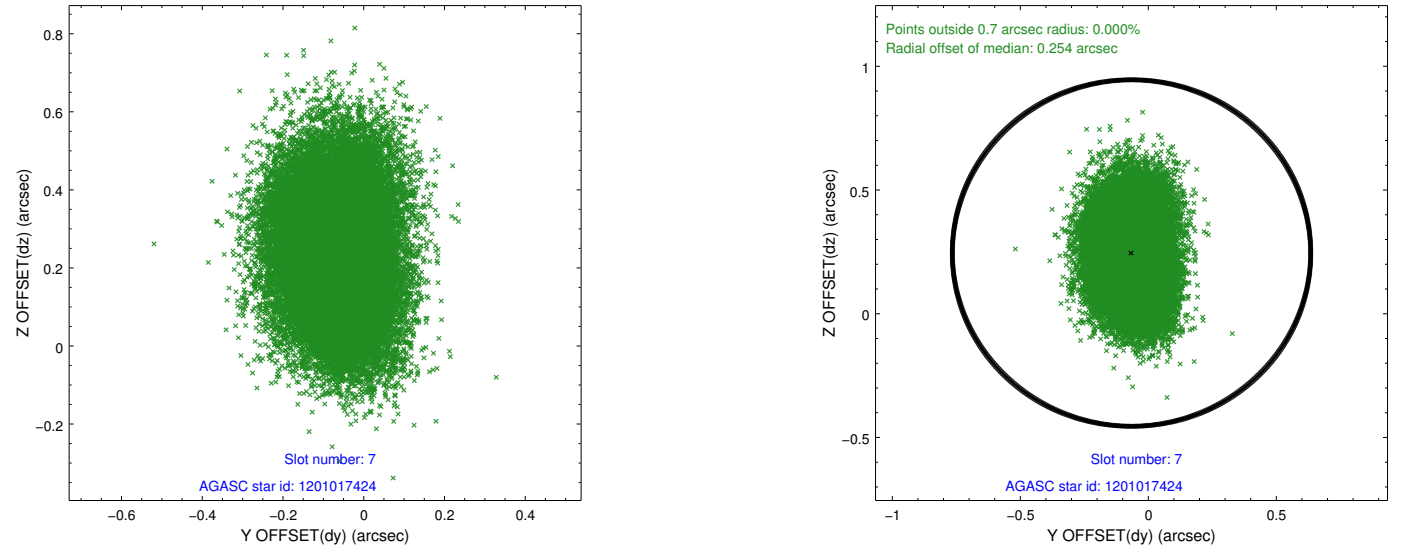
### 2.4.3 Slot 5



## 2.4.4 Slot 6

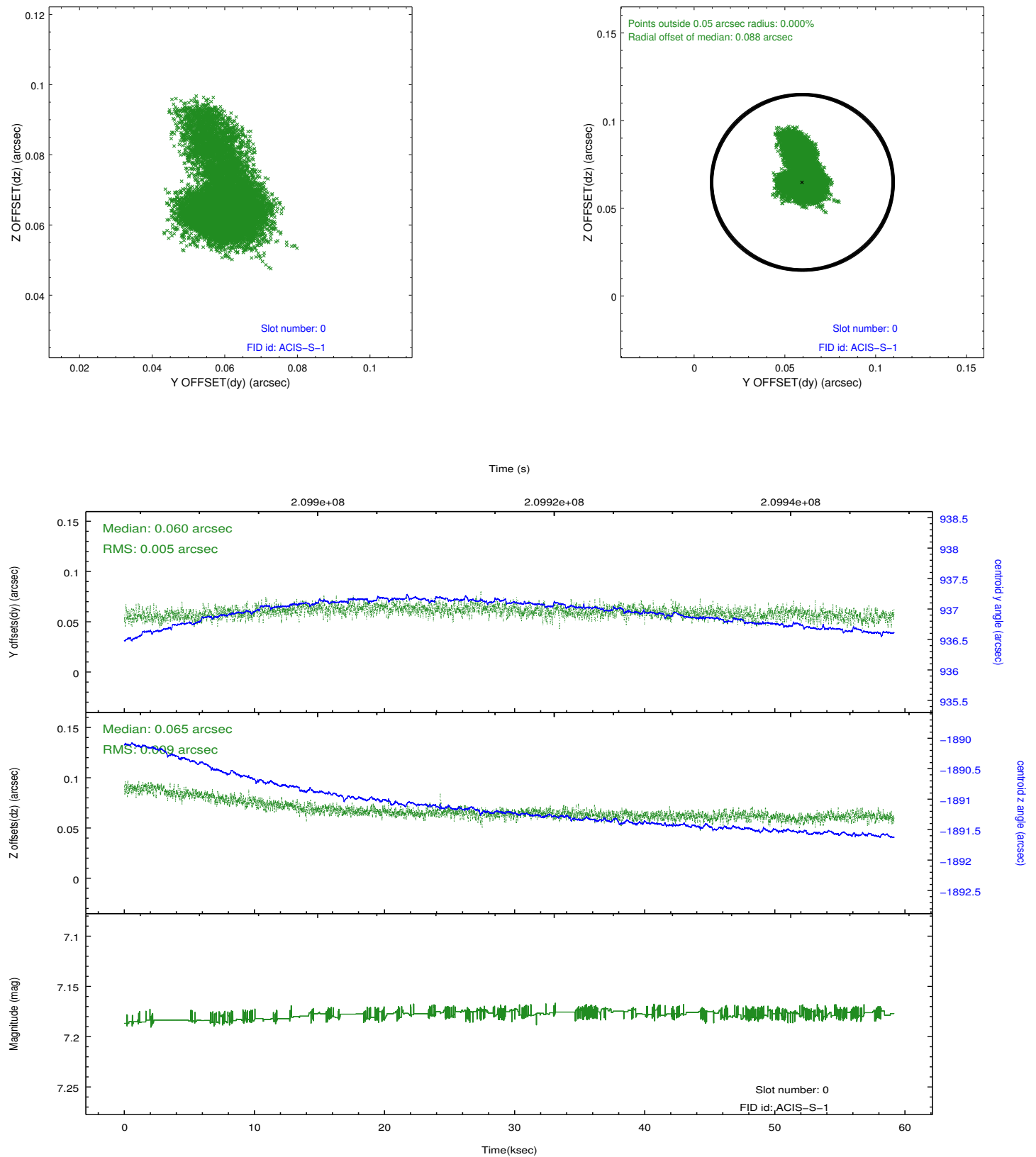


## 2.4.5 Slot 7

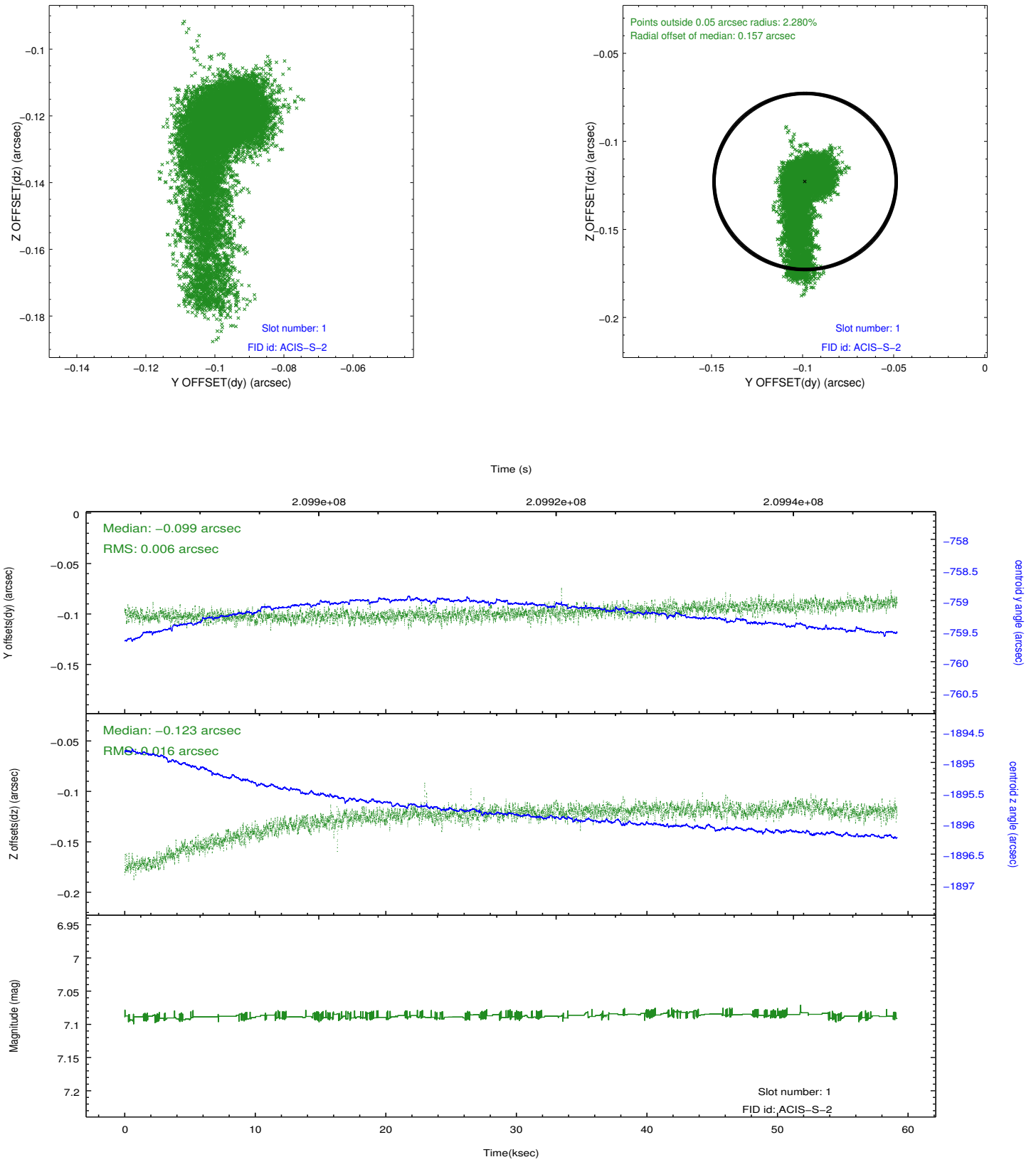


## 2.5 FID Slots

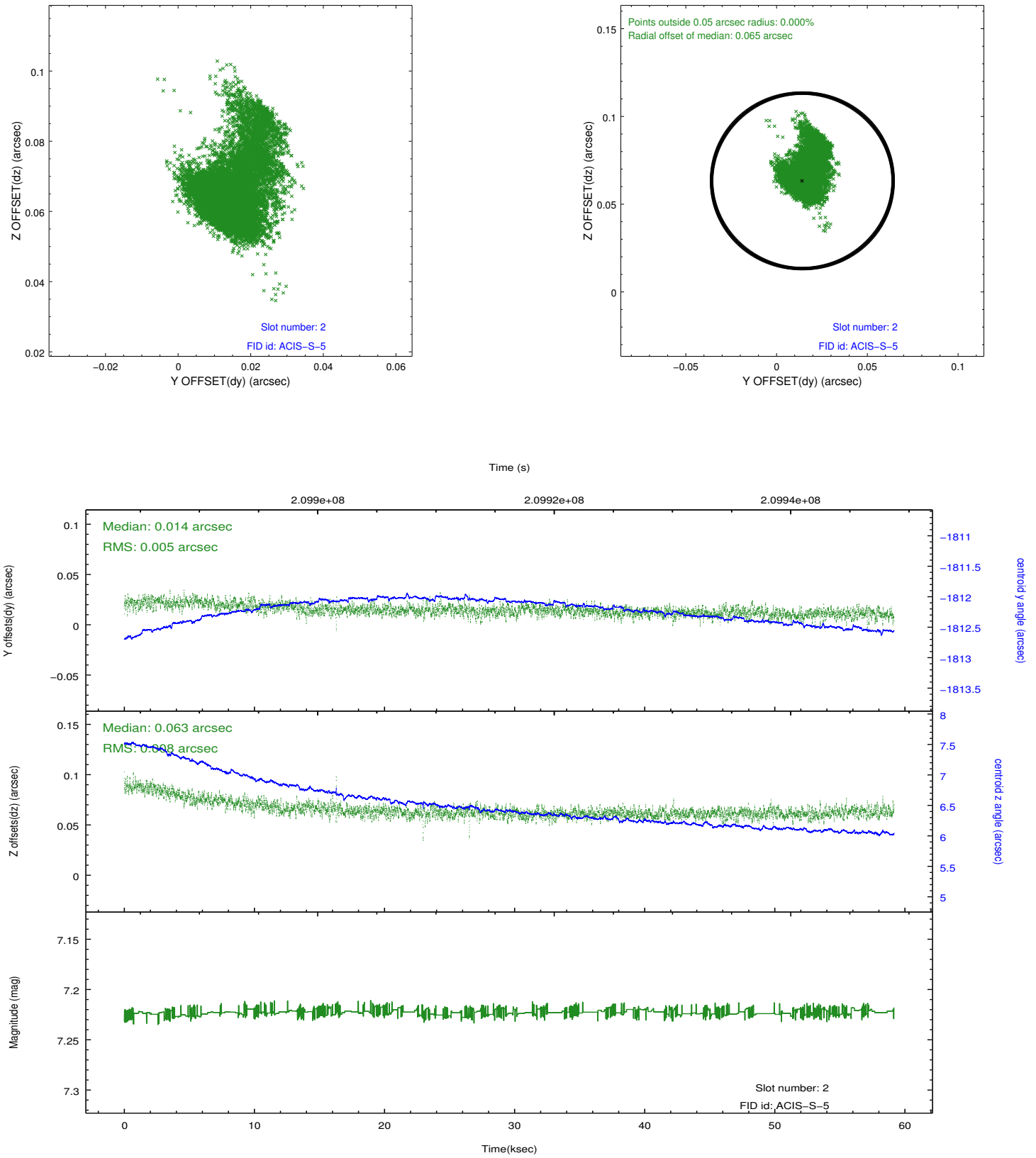
### 2.5.1 Slot 0



## 2.5.2 Slot 1

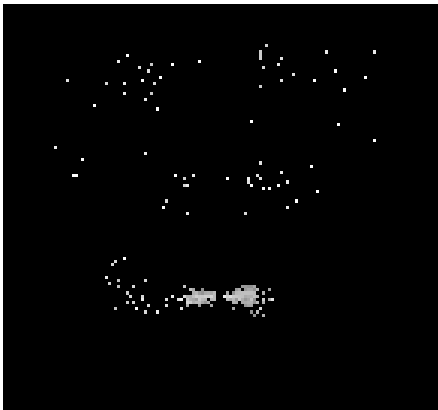


### 2.5.3 Slot 2

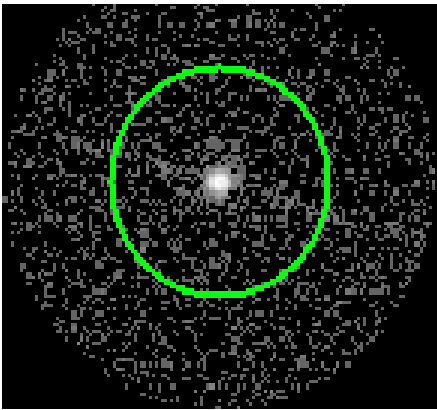


# 3 Gratings

## 3.1 LETG Arm



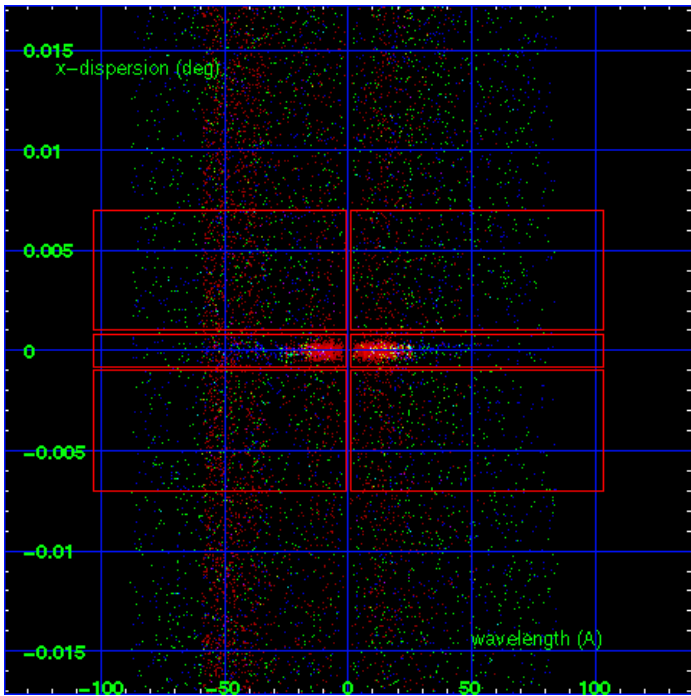
LETG Order Sort 123



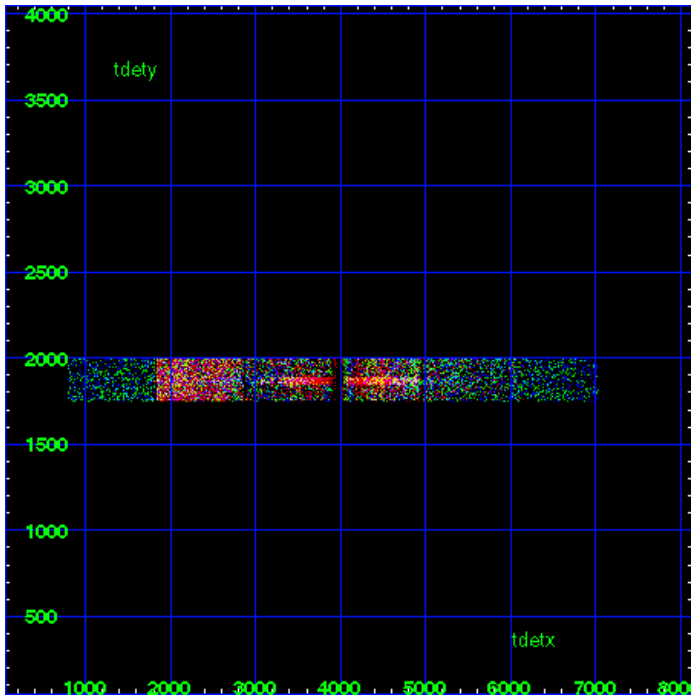
LETG Zero Order



LETG Order Sort ALL

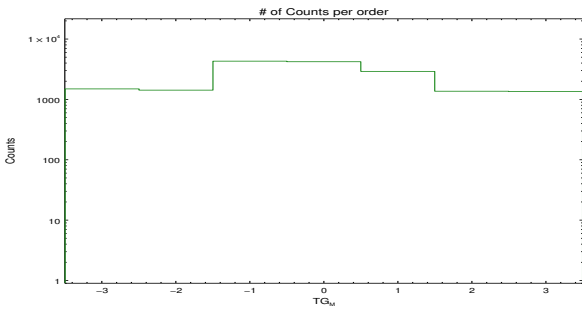


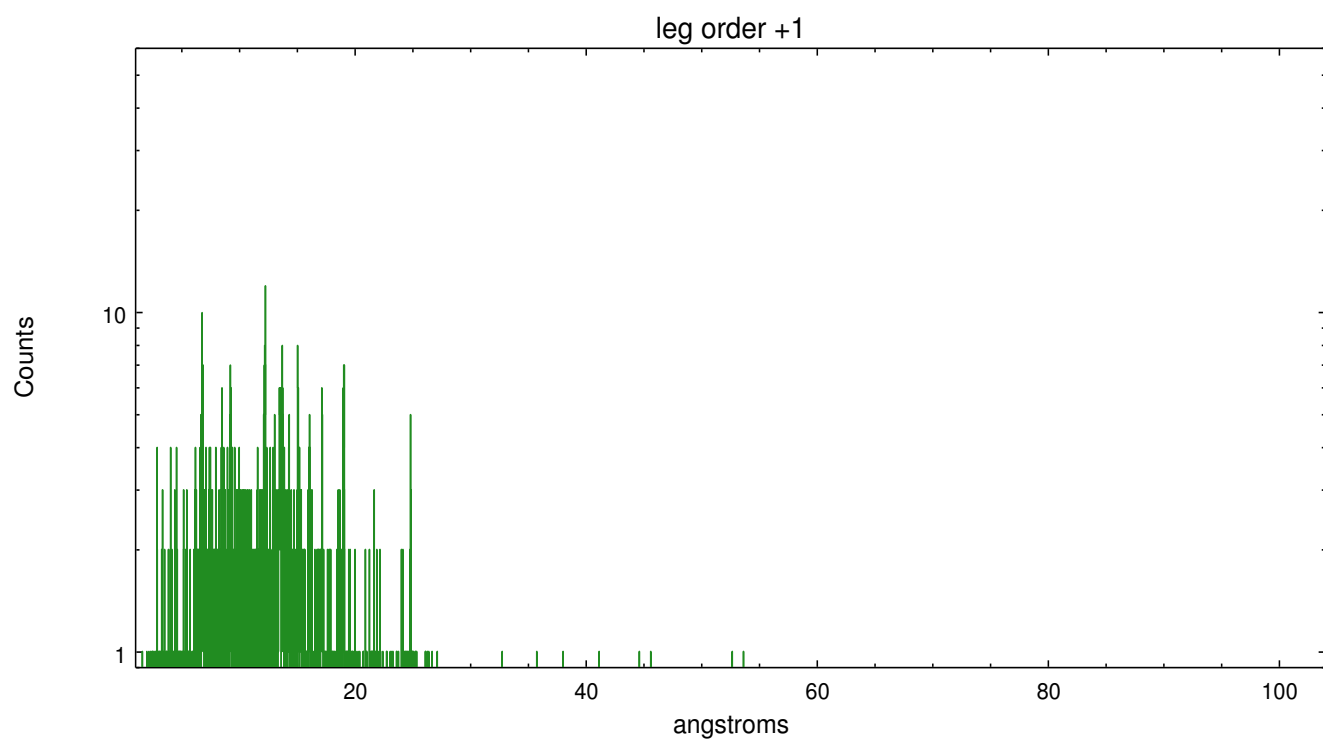
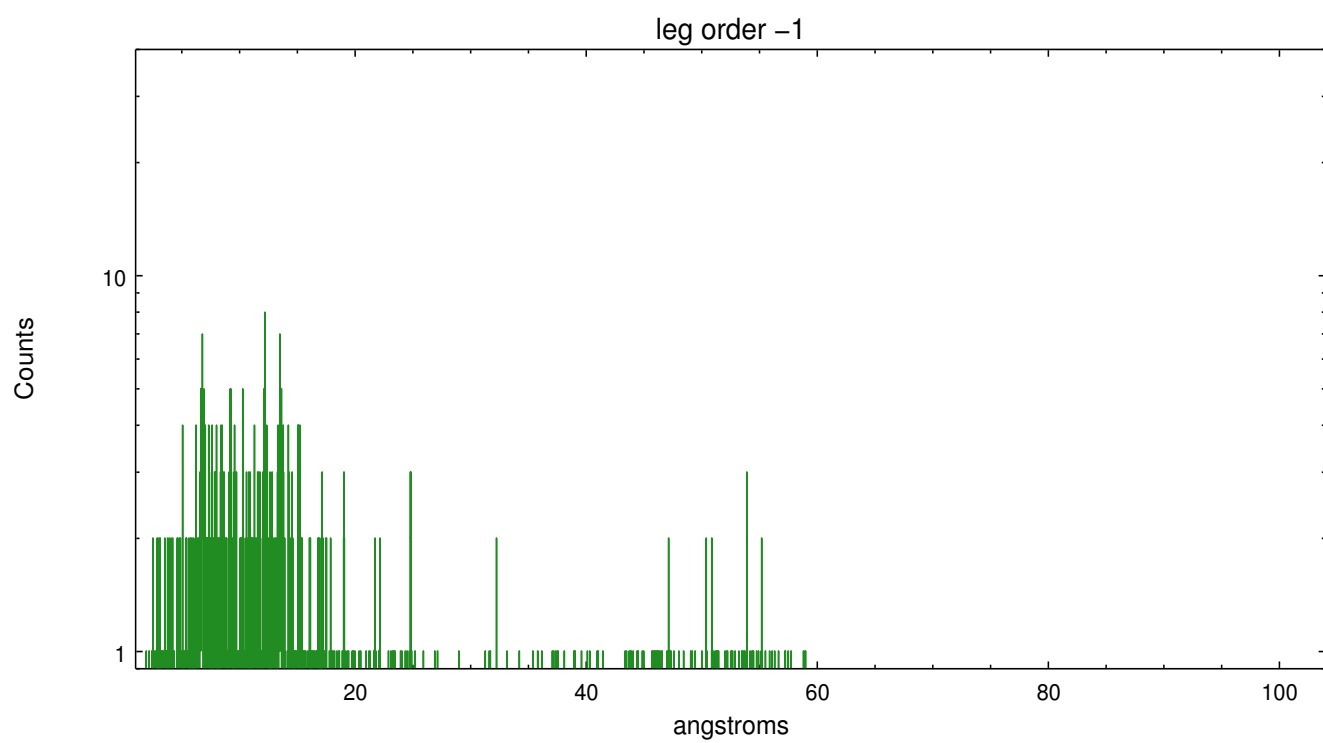
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1500	1430	4328	4239	2928	1372	1359







# 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	59.167

## A.2 Comments

Gain and CTI correction are not well calibrated on CCD\_ID 5 (ACIS-S1). Default order sorting can clip some regions, particularly longward of 30A (first order). User-specified custom processing parameters may be required in `tg_resolve_events` (`osipfile=None`, `osort_lo`, `osort_hi ~0.5`) though this can allow more zeroth order background at short wavelengths.

===

The spatial flux distribution of the source is asymmetric and extended. The wavelength solution is pertinent only to the zeroth order position determined by the tool `tgdetect`. For extended sources, there is no unique mapping from position to wavelength.

===WARNING: there are no standard ciao tools for analysis of grating spectra from extended sources. The shape of an emission 'line' will be the shape of the zero order spatial structure convolved with the instrumental LSF. Grating extractions can be used, but need to be combined with custom spatial-spectral analysis, since wavelength is multi-valued at any particular diffraction angle. ===== WARNING::Zeroth order selected by pipeline tools is well-centered in the SNR but is not necessarily at the position of brightest emission. The user may want to select a region or source of interest, then use software tools such as CIAO to specify the coordinates of the zeroth order source of interest before running the tools to resolve the dispersed events.