

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 10668 - L2 Version 3  
Chandra X-Ray Center

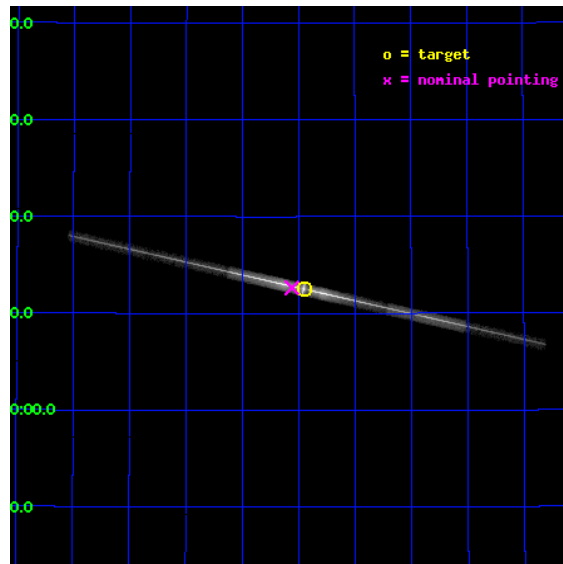
L2 Processing Date : Jun 25 2012

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# 1 Front

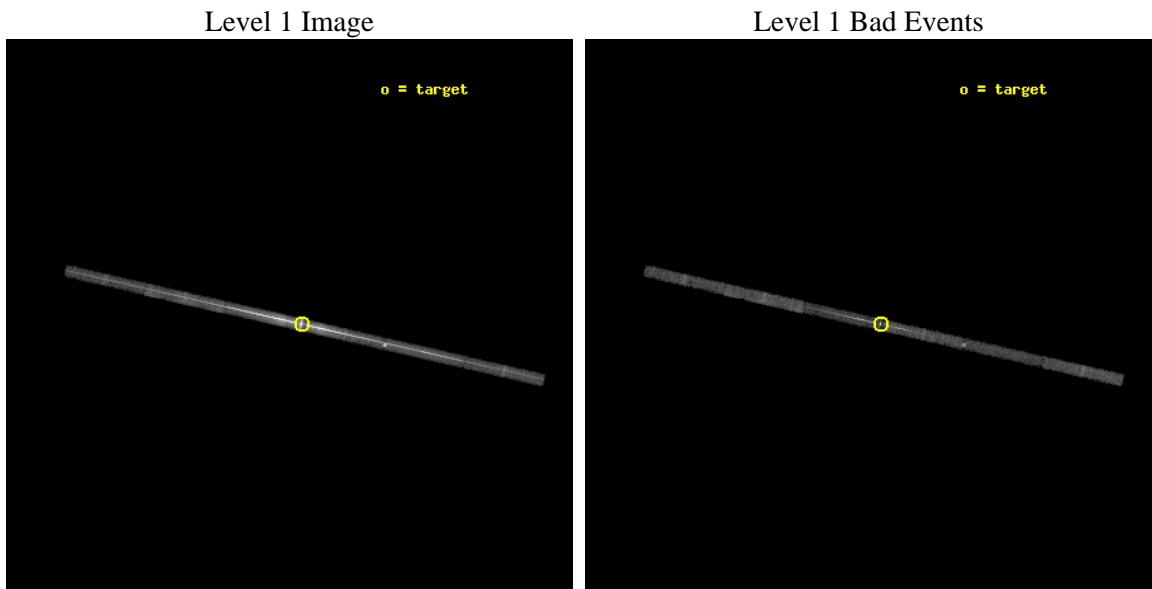
seq_num	790205	Sequence number
obs_id	10668	Observation id
title	AO-10 Calibration Observations of PKS2155-304	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	Mkn421	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.1399100076	Nominal RA [deg]
dec_nom	38.210834466791	Nominal Dec [deg]
roll_nom	192.74926787396	Nominal Roll [deg]
revision	3	Processing version of data
ontime	10064.599828541	Sum of GTIs [s]
liveltime	9507.2059267771	Livetime [s]
ontime4	10064.599828541	Sum of GTIs [s]
ontime5	10064.599828541	Sum of GTIs [s]
ontime6	10064.599828541	Sum of GTIs [s]
ontime7	10064.599828541	Sum of GTIs [s]
ontime8	10064.56399858	Sum of GTIs [s]
ontime9	10064.522958577	Sum of GTIs [s]
l2events	565254	Number of level 2 events



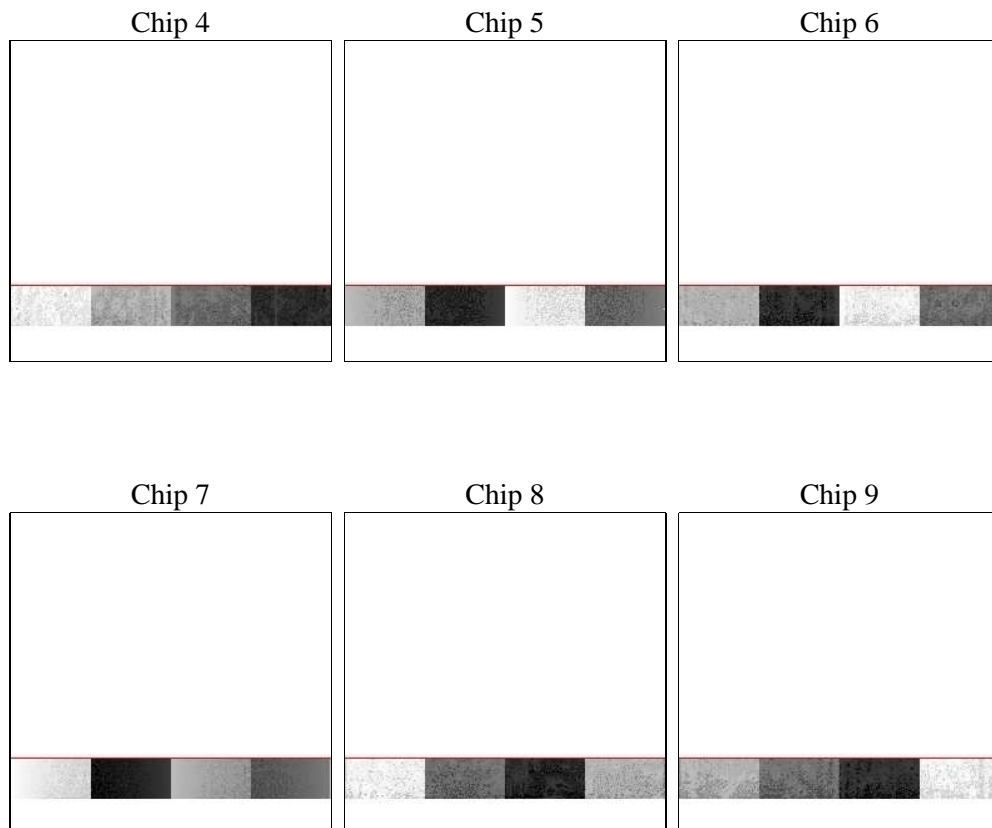
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	10064.599828541	Sum of GTIs [s]
caldsver	4.4.10	&#160	ontime4	10064.599828541	Sum of GTIs [s]
date	2012-06-22T16:33:09	Date and time of file creation	ontime5	10064.599828541	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	10064.599828541	Sum of GTIs [s]
			ontime7	10064.599828541	Sum of GTIs [s]
			ontime8	10064.56399858	Sum of GTIs [s]
			ontime9	10064.522958577	Sum of GTIs [s]
			l1events	670631	Number of level 1 events

### 2.1.4 Events

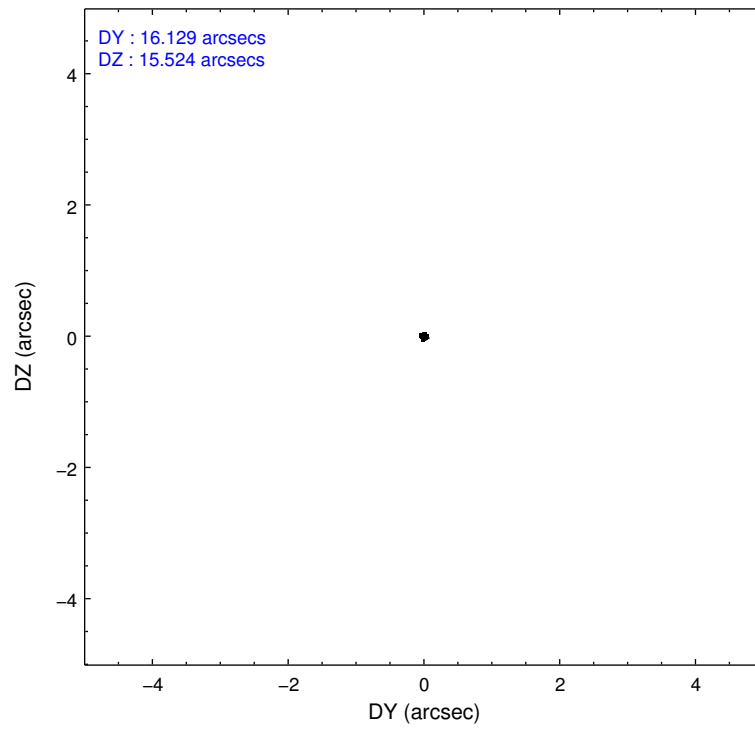
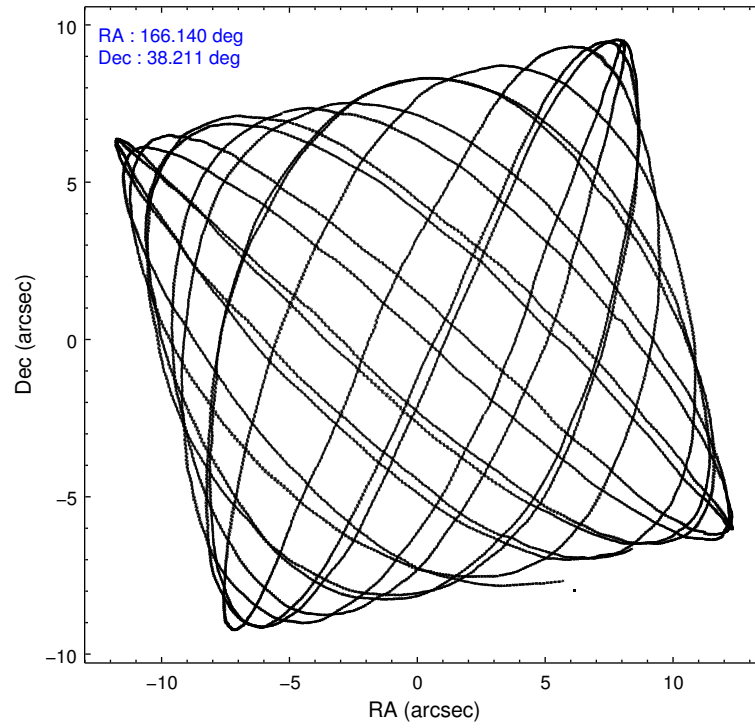
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	19691	55219	216247	328070	34612	16792	grade 0 events	5026	22317	158673	81354	14391	5488
rejected events	12800	8678	15706	20470	14620	9434		25%	40%	73%	24%	41%	32%
rejected %	65%	15%	7%	6%	42%	56%	grade 1 events	11	700	2015	1647	29	10
								0%	1%	0%	0%	0%	0%
							grade 2 events	835	8714	21455	79122	2222	783
								4%	15%	9%	24%	6%	4%
							grade 3 events	390	4577	7345	35941	900	359
								1%	8%	3%	10%	2%	2%
							grade 4 events	339	4350	7217	35304	956	401
								1%	7%	3%	10%	2%	2%
							grade 5 events	382	2292	1650	7267	561	401
								1%	4%	0%	2%	1%	2%
							grade 6 events	302	6590	5865	75917	1526	327
								1%	11%	2%	23%	4%	1%
							grade 7 events	12406	5679	12027	11518	14027	9023
								63%	10%	5%	3%	40%	53%

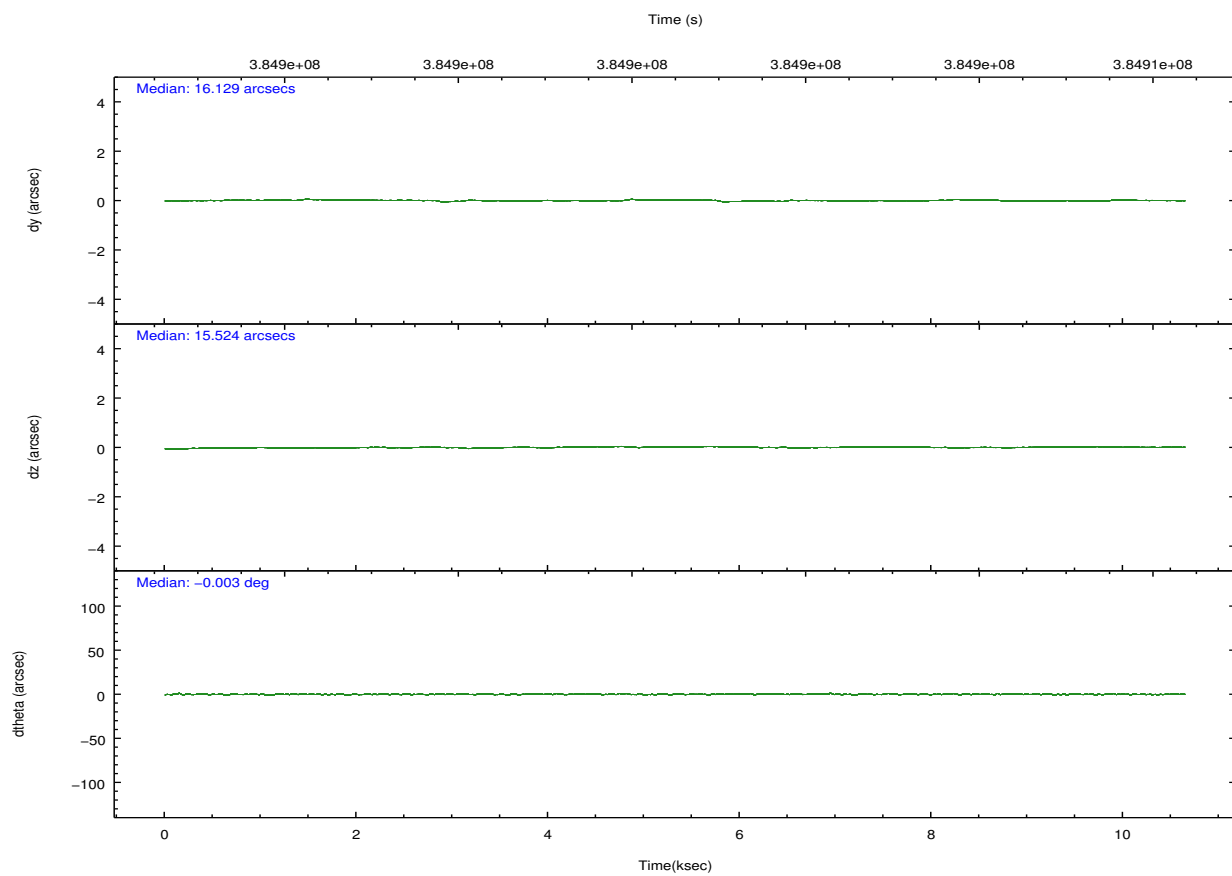
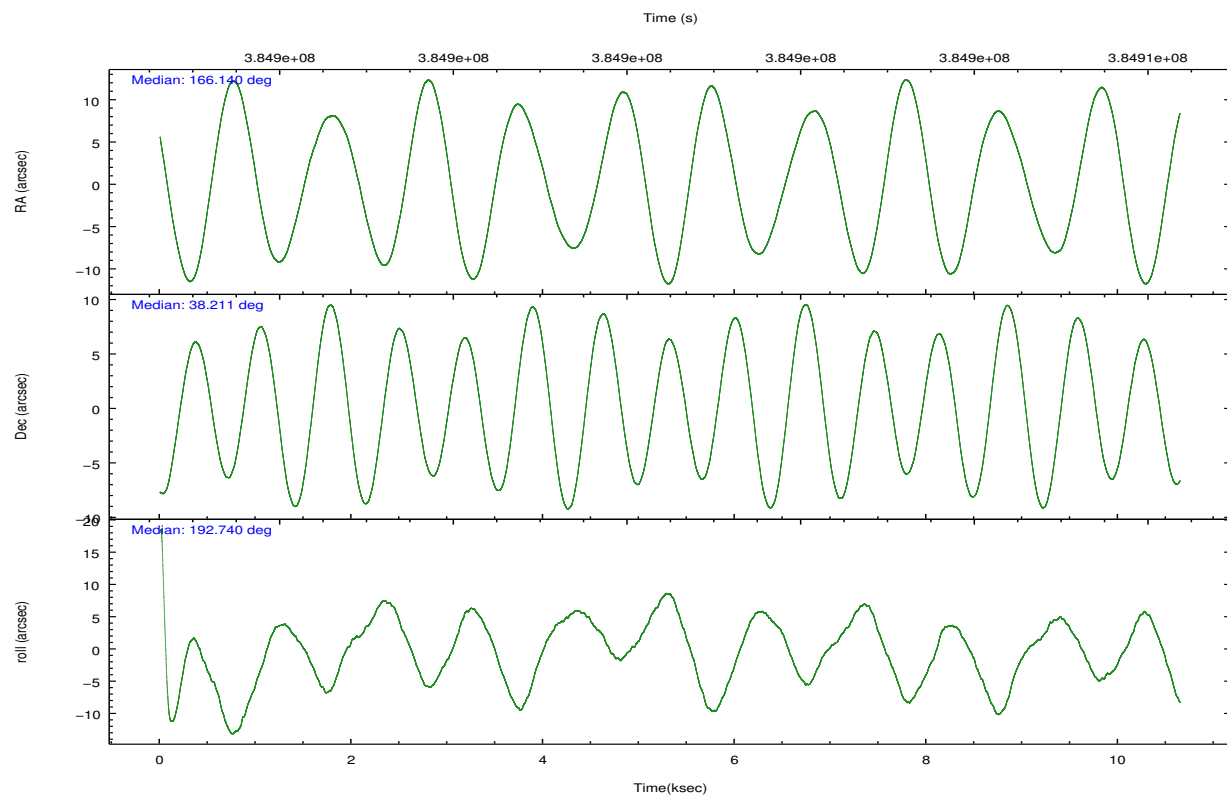


## 2.2 Compared Parameters

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	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	166.165210	166.139910007604	CCD I2 on	N	N
[deg] Pointing Dec	38.229696	38.21083446679067	CCD I3 on	N	N
[deg] Pointing Roll	192.576986	192.7492678739627	CCD S0 on	O1	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-182.132523	-182.1344861297048	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-8	-7.998036453302973	CCD S4 on	Y	Y
[s] Observation start time (MET)	384895822.184000	384894851.60097	CCD S5 on	Y	Y
Observation start date	2010-03-13T19:29:16	2010-03-13T19:14:11	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	384905822.184000	384906045.11404	On-chip summing requested	N	N
Observation end date	2010-03-13T22:15:56	2010-03-13T22:20:45	Subarray requested	CUSTOM	1/8
Read mode	TIMED	TIMED	Subarray start row	113	113
			Subarray row count	128	128
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.7

## 2.3 Aspect



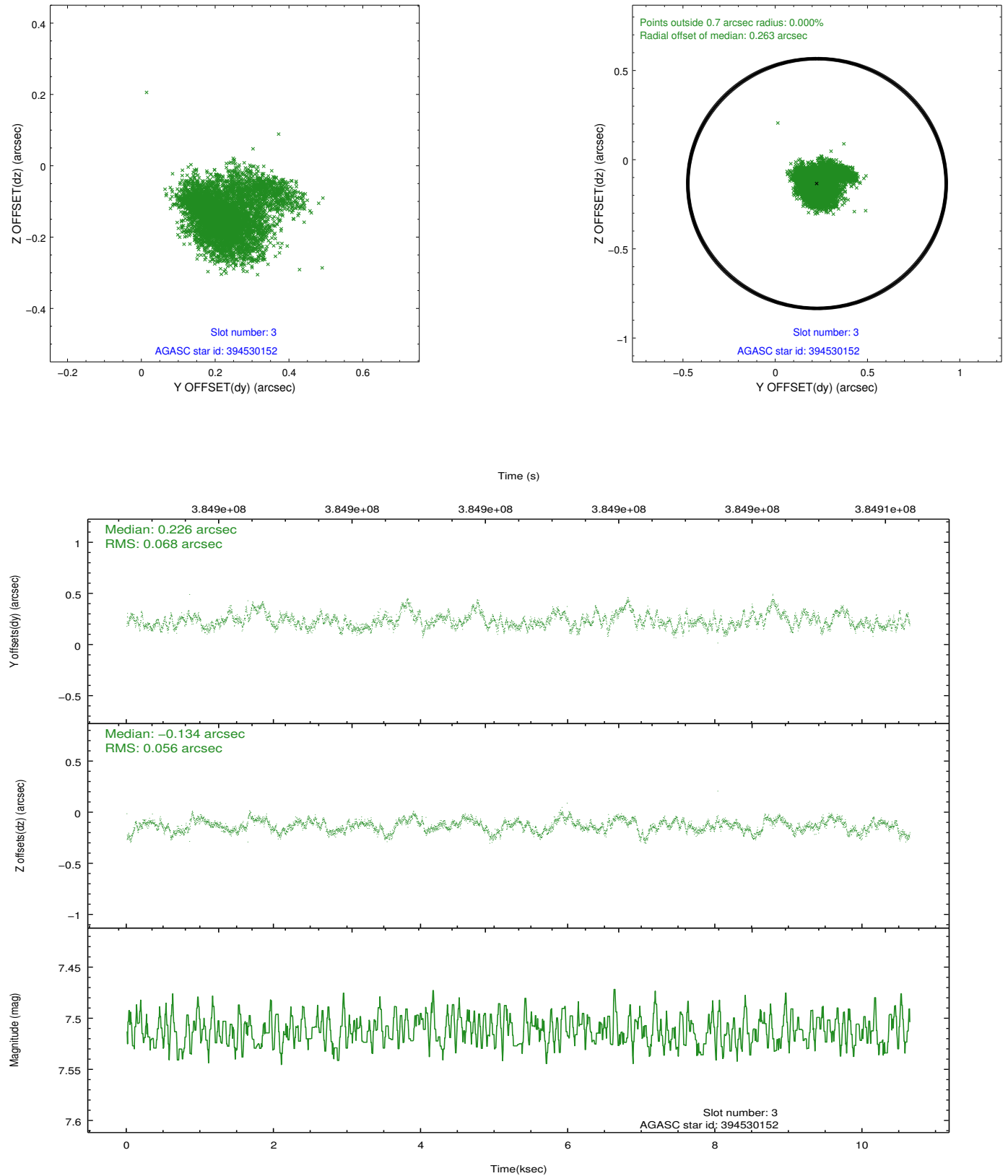


### Slot Statistics

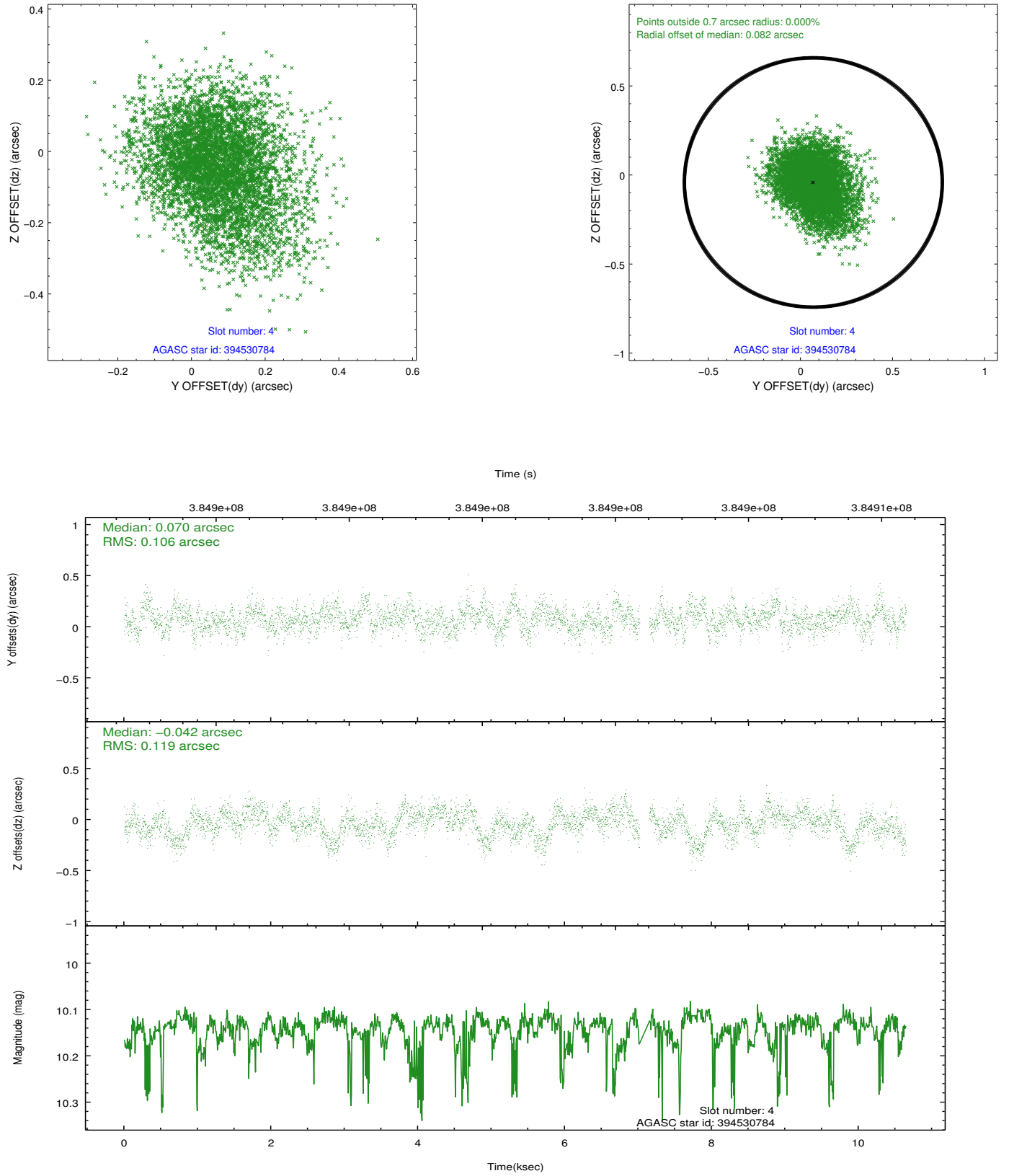
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.93	2596	-0.173	-0.122	0.005	0.009	0.000000	0.000000	-768.77	-1901.79
1	FID	ACIS-S-4	7.01	2596	0.142	0.109	0.006	0.010	0.000000	0.000000	2144.64	6.28
2	FID	ACIS-S-6	7.23	2595	0.003	0.020	0.006	0.011	0.000000	0.000000	394.07	644.18
3	GUIDE	394530152	7.51	5192	0.226	-0.134	0.094	0.154	166.075805	38.868252	-255.30	-2298.42
4	GUIDE	394530784	10.14	5108	0.070	-0.042	0.169	0.279	165.569172	38.418674	1491.82	-1035.43
5	GUIDE	394531368	9.96	5187	-0.139	0.110	0.231	0.395	165.794613	38.837127	538.33	-2362.54
6	GUIDE	394543960	9.77	5179	0.072	-0.017	0.142	0.240	165.802757	37.787371	1352.81	1327.51
7	GUIDE	394546712	6.61	5192	-0.233	0.097	0.087	0.139	166.451462	38.394357	-916.66	-403.61

## 2.4 Star Slots

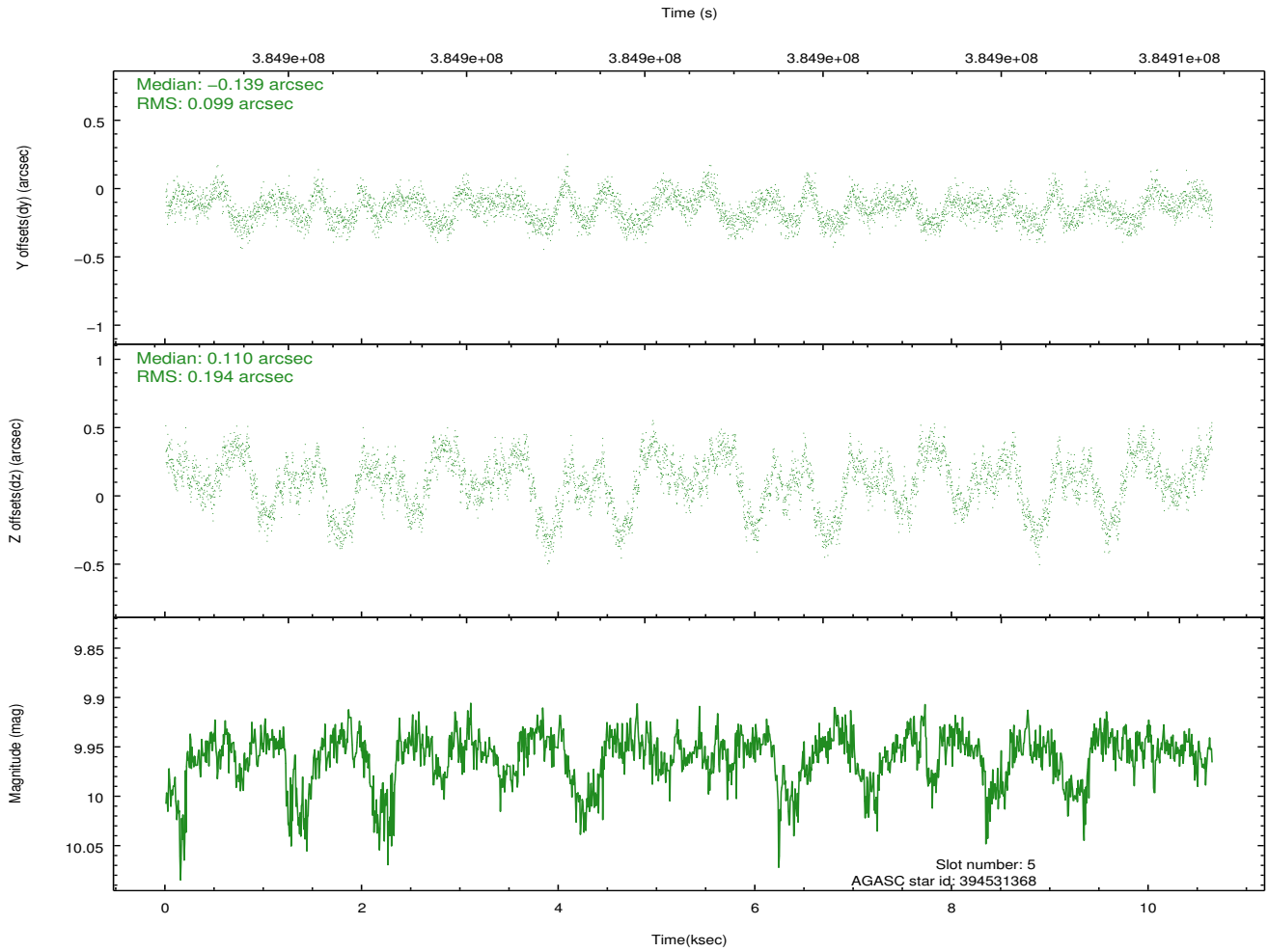
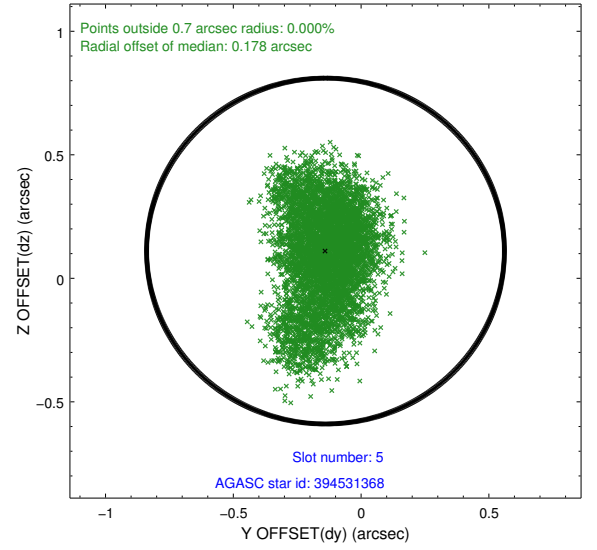
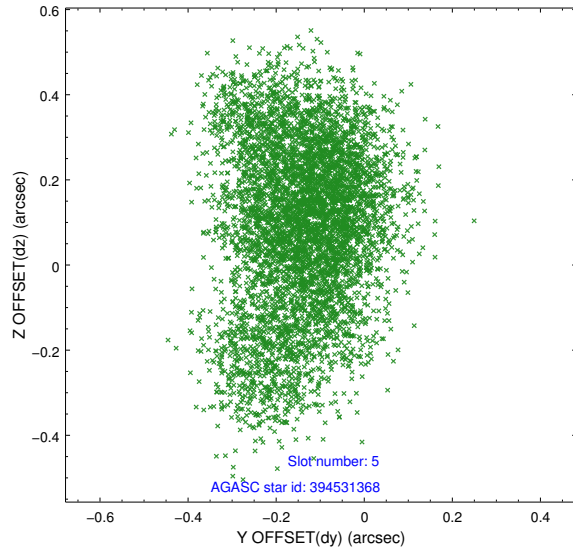
### 2.4.1 Slot 3



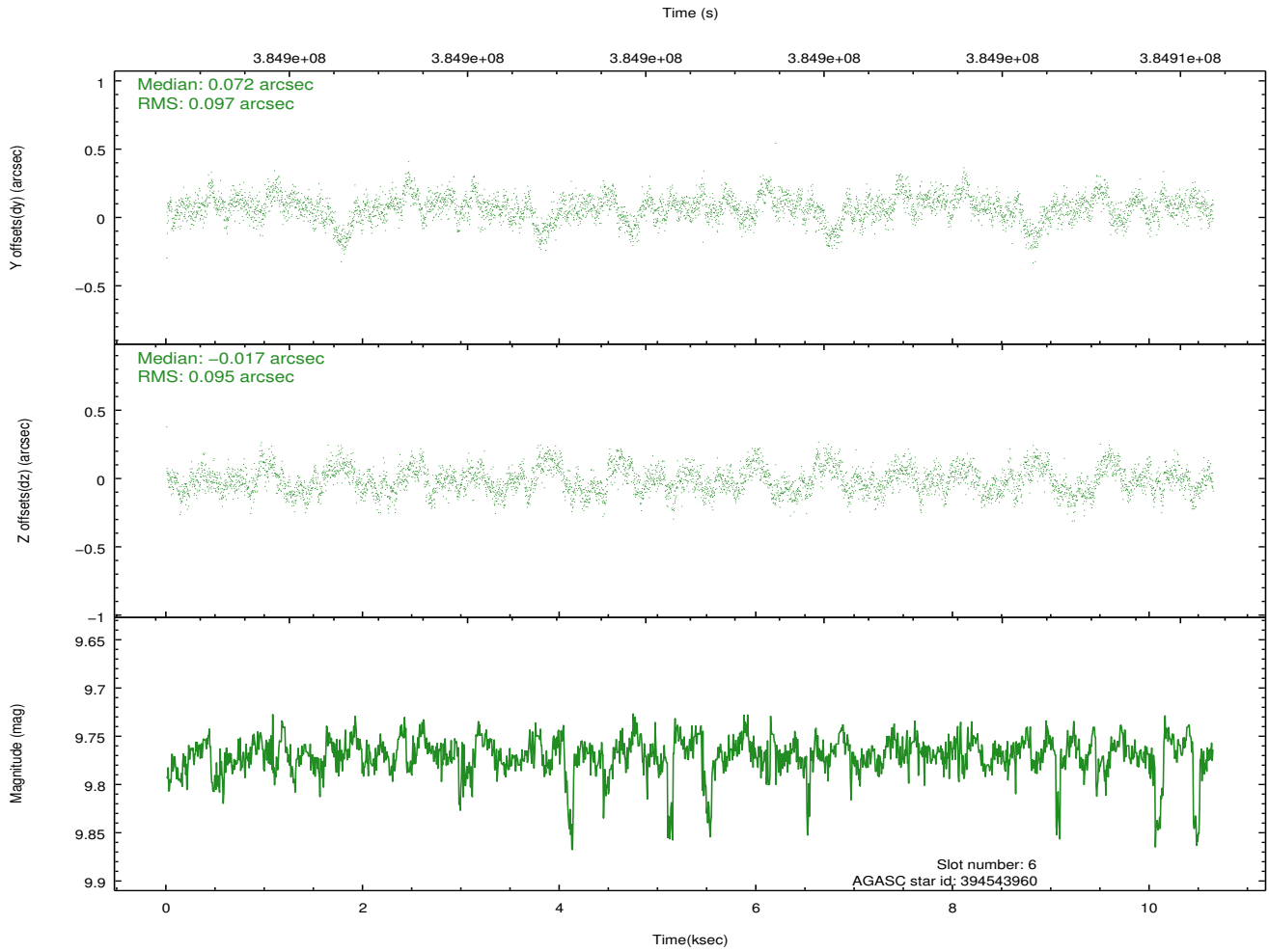
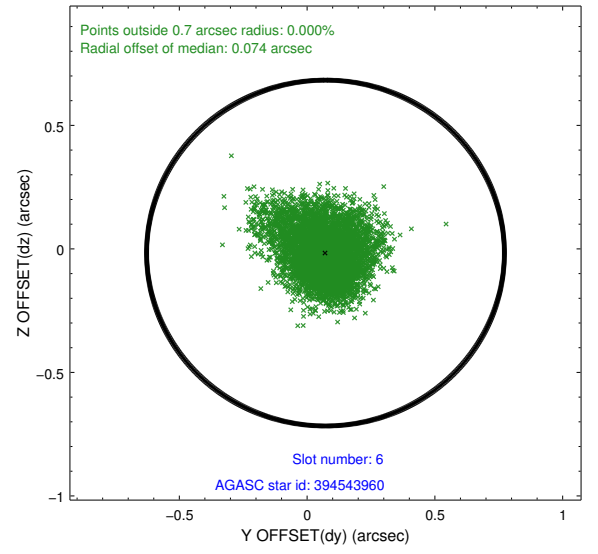
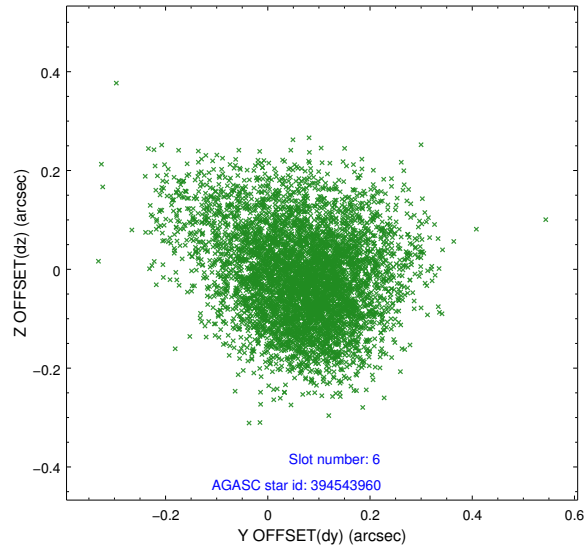
## 2.4.2 Slot 4



### 2.4.3 Slot 5

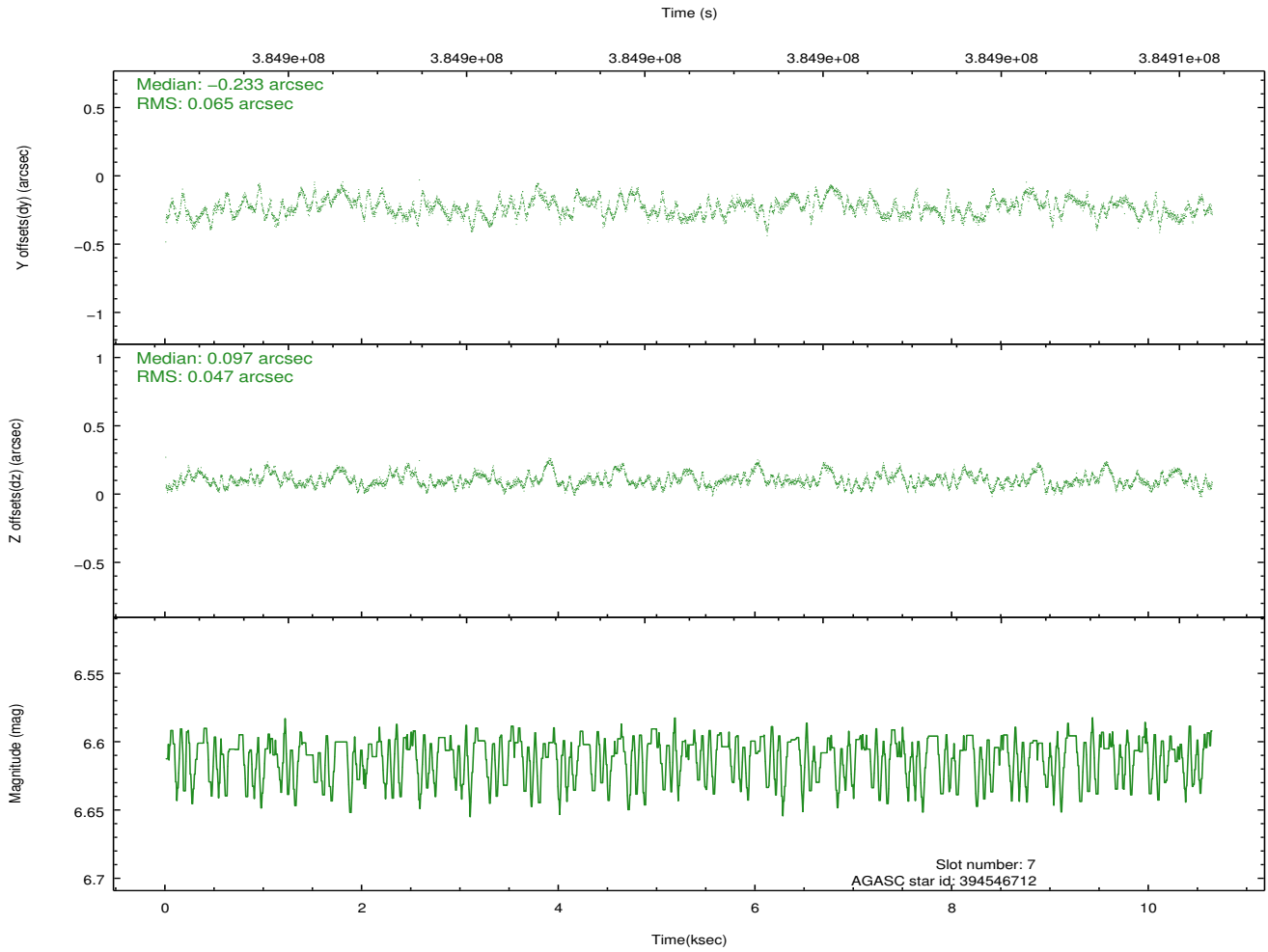
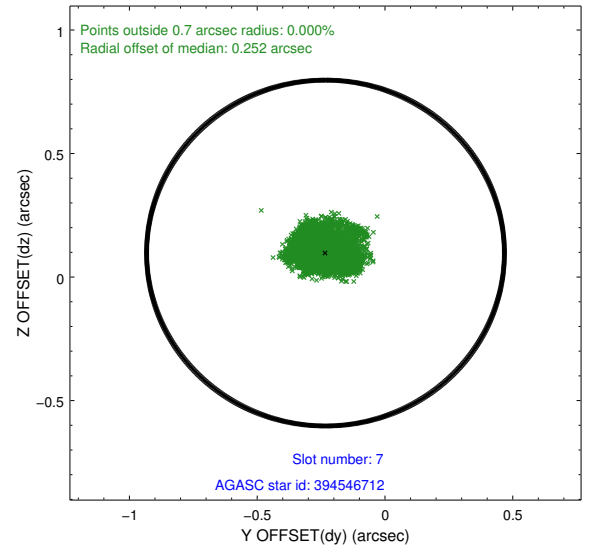
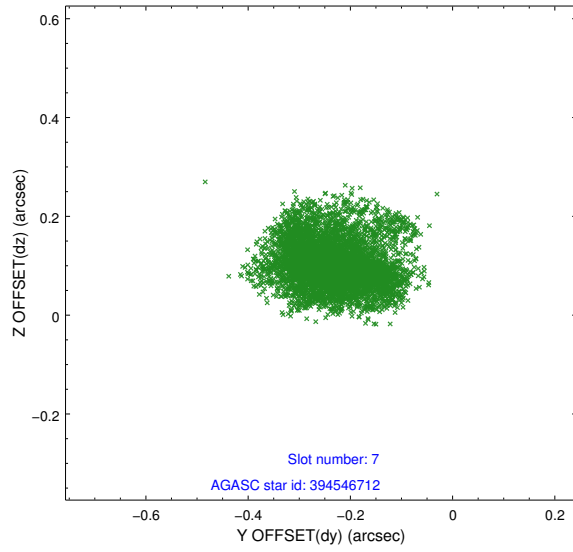


## 2.4.4 Slot 6



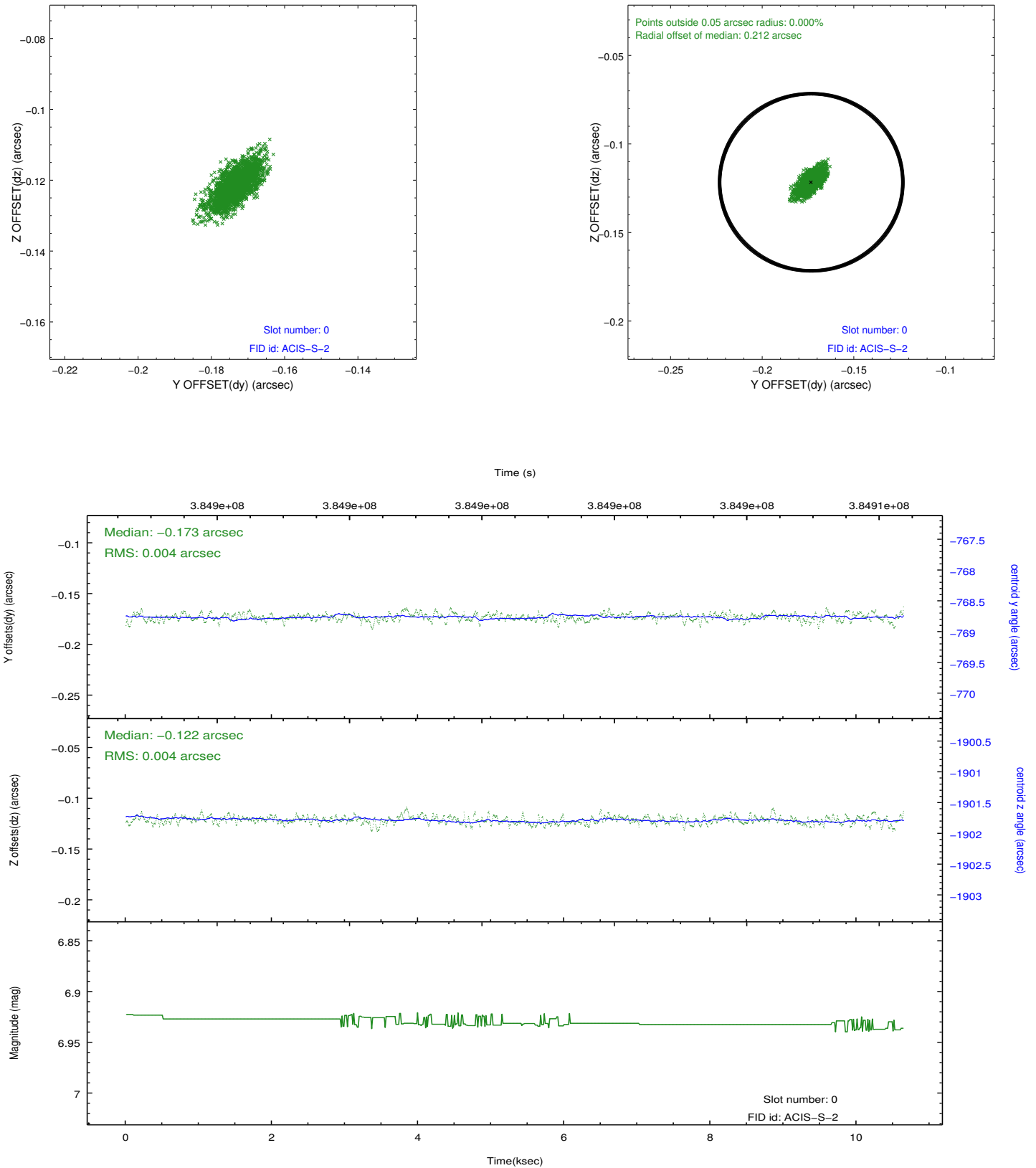


## 2.4.5 Slot 7

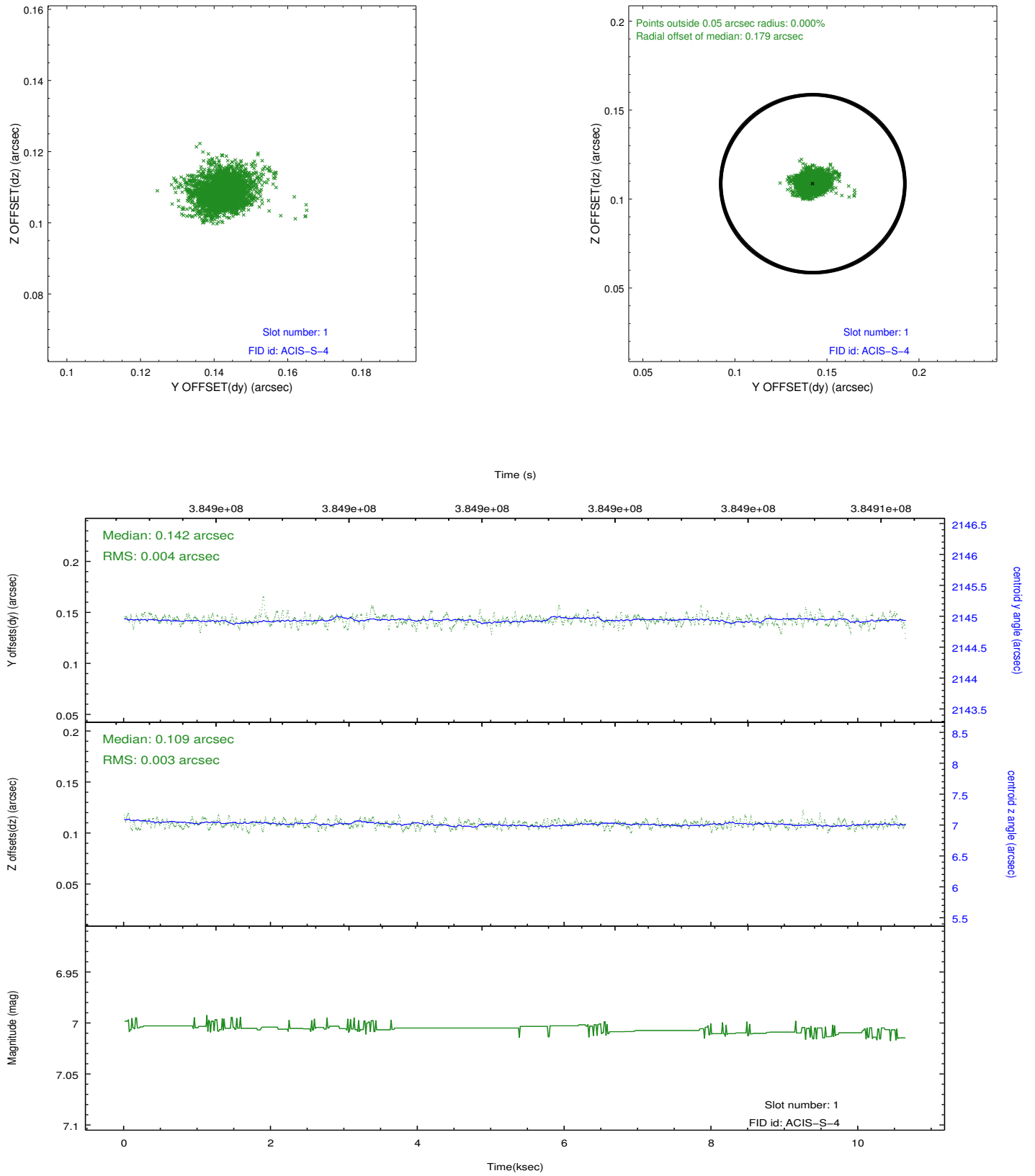


## 2.5 FID Slots

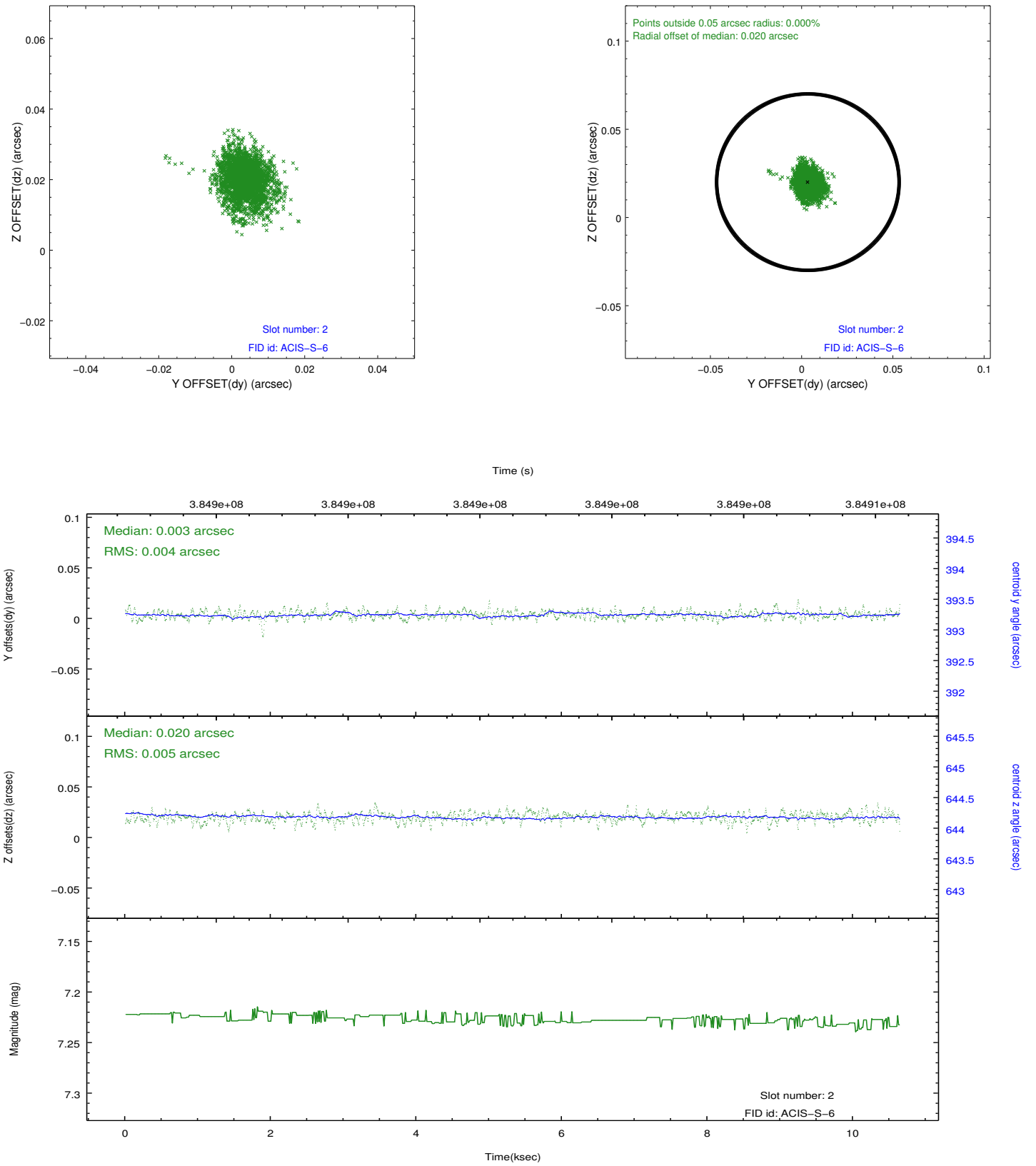
### 2.5.1 Slot 0



## 2.5.2 Slot 1

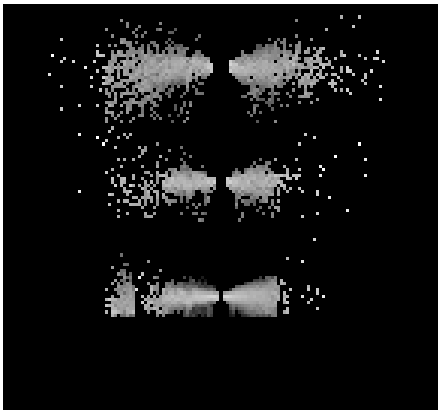


### 2.5.3 Slot 2

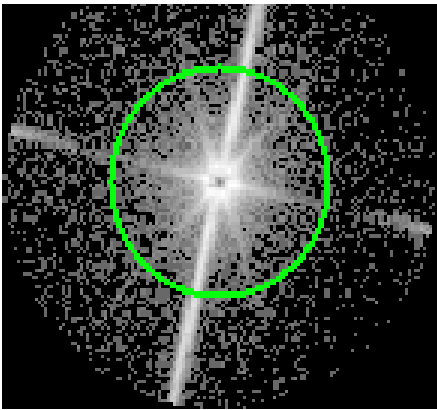


# 3 Gratings

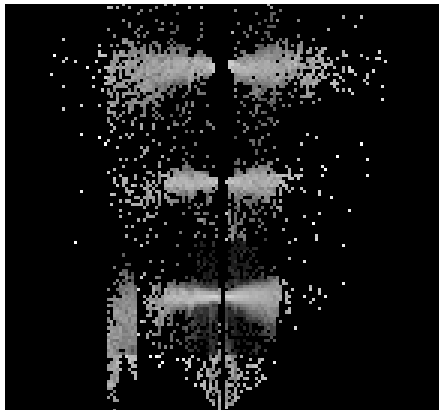
## 3.1 LETG Arm



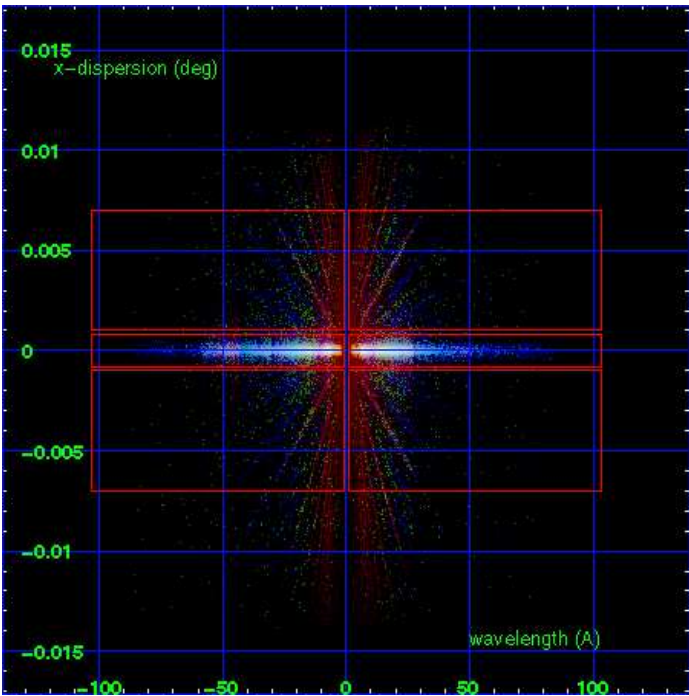
LETG Order Sort 123



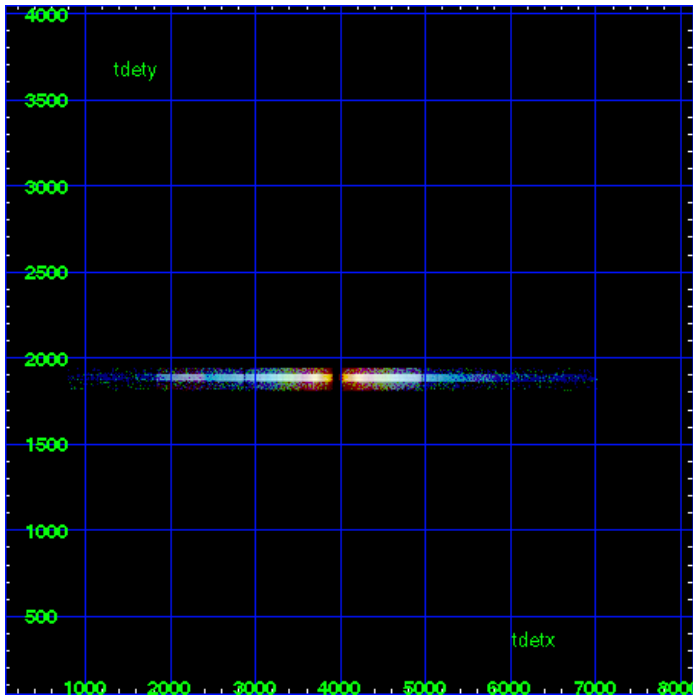
LETG Zero Order



LETG Order Sort ALL

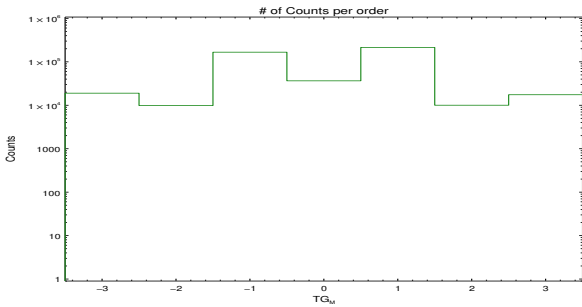


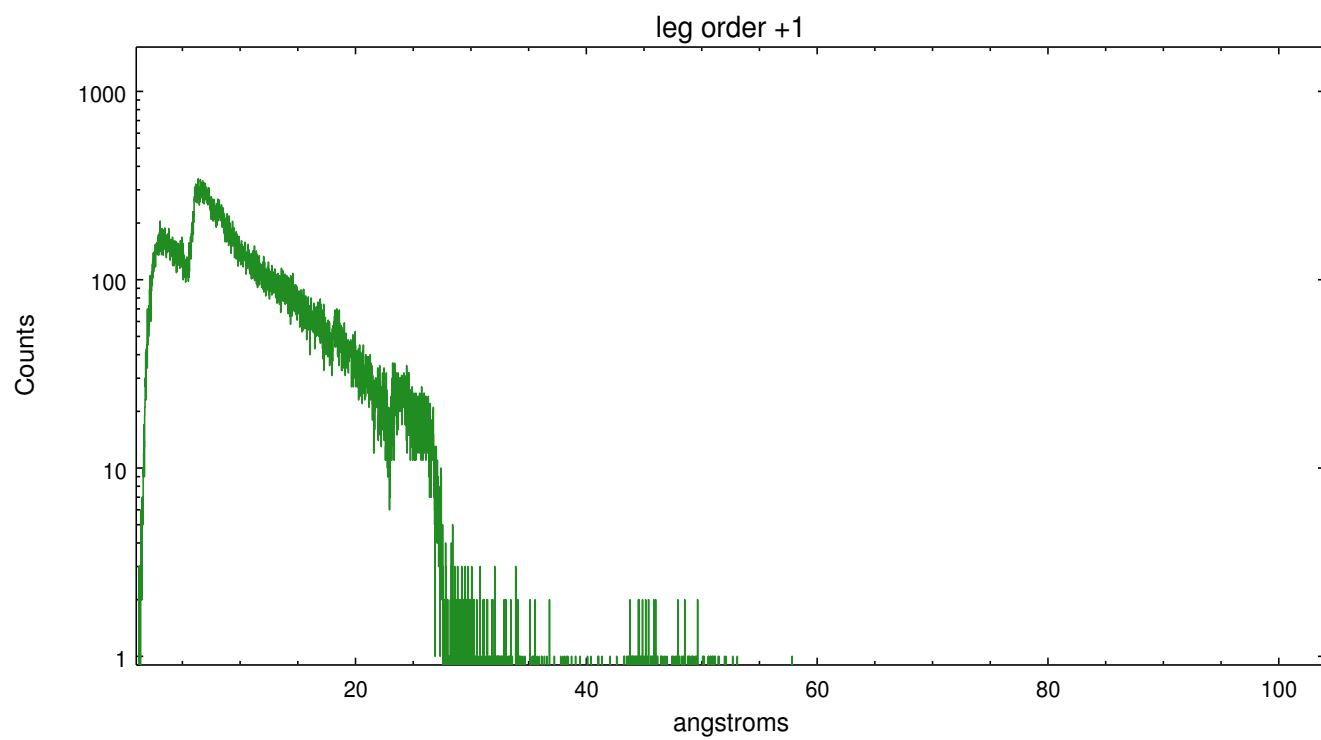
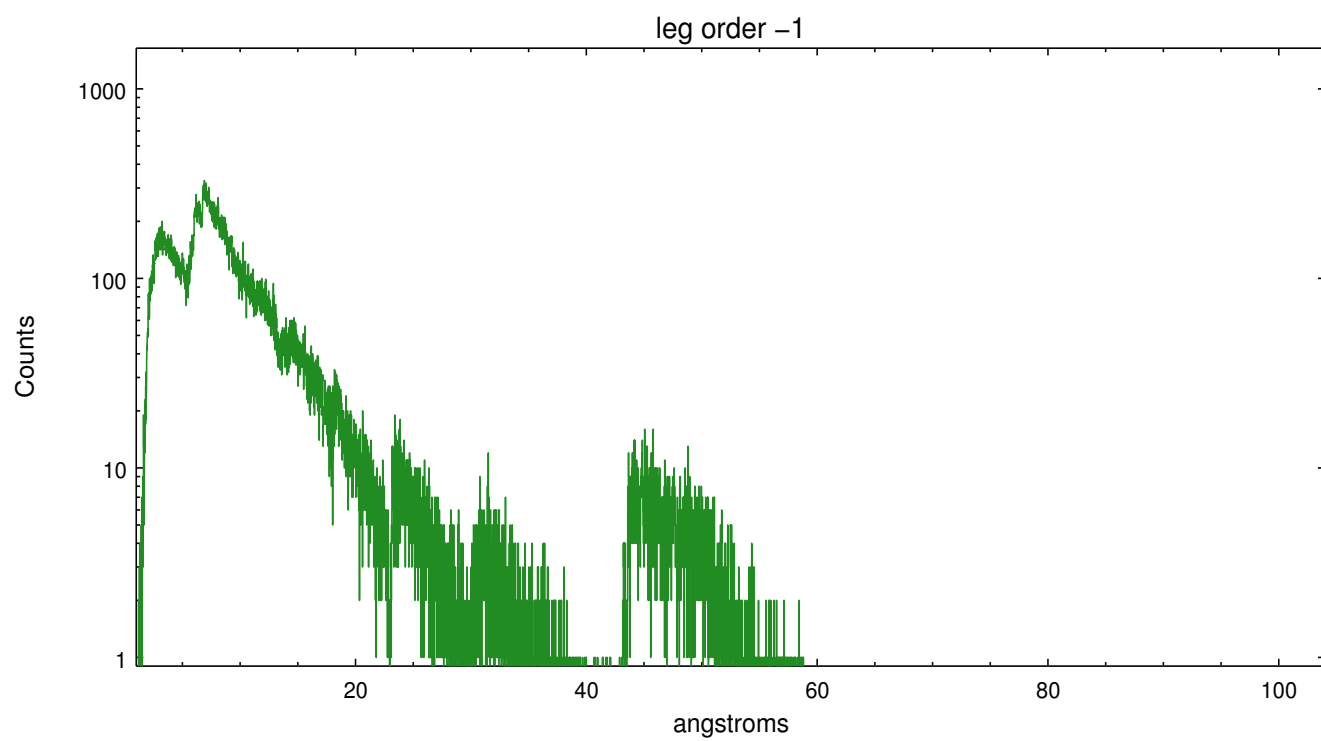
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	18970	9849	166578	36547	214661	10021	17498





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.06.26
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.064599828541

## A.2 Comments

Note: spectrum shows faintly in bad-events image, meaning pileup may be an issue. 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=4246.22, y=4082.27) into the \*src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called findzero, which is expected to be released in CIAO (currently in ISIS). The tool calculates the point of intersection of the readout streak and the meg arm (preferred position), or the readout streak and the heg 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.

===

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.