

# V&V Reference Report

## L2 ASCDS Version : 10.3

Observation 17324 - L2 Version 1  
Chandra X-Ray Center

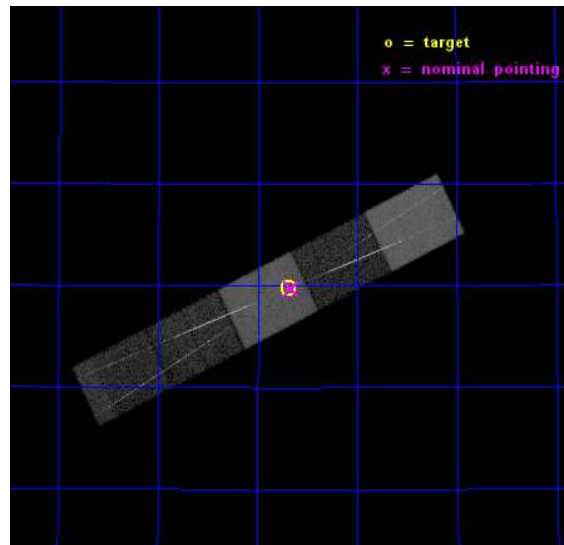
L2 Processing Date : Dec 1 2014

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# 1 Front

seq_num	291197	Sequence number
obs_id	17324	Observation id
title	AO-16 HETG/ACIS-S Calibration Observations of Capella	Proposal tit
observer	Dr. CXC Calibration	Principal investigator
object	Capella	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	79.172917	Observer's specified target RA [deg]
dec_targ	45.996389	Observer's specified target Dec [deg]
ra_nom	79.165271480137	Nominal RA [deg]
dec_nom	45.995205067029	Nominal Dec [deg]
roll_nom	153.54300184652	Nominal Roll [deg]
revision	1	Processing version of data
ontime	29135.99971056	Sum of GTIs [s]
livetime	28646.150536388	Livetime [s]
ontime5	29135.99971056	Sum of GTIs [s]
ontime6	29135.99971056	Sum of GTIs [s]
ontime7	29135.99971056	Sum of GTIs [s]
ontime8	29135.99971056	Sum of GTIs [s]
ontime9	29135.99971056	Sum of GTIs [s]
l2events	233375	Number of level 2 events

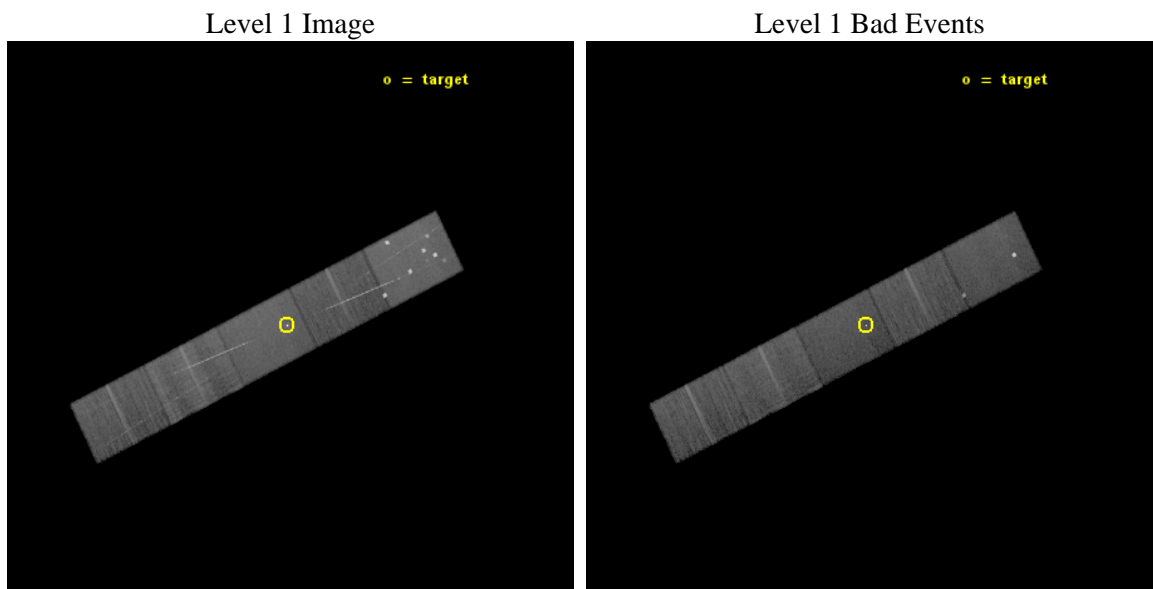




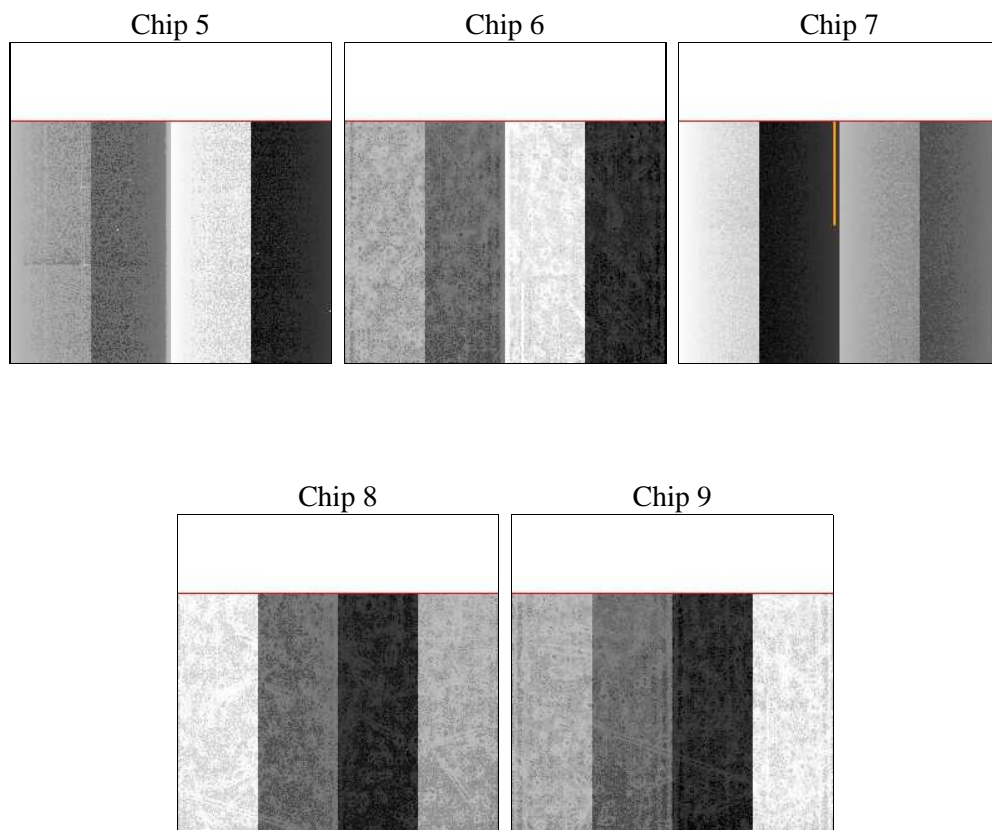
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	29090.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	29135.99971056	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime5	29135.99971056	Sum of GTIs [s]
date	2014-12-02T02:20:12	Date and time of file creation	ontime6	29135.99971056	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	29135.99971056	Sum of GTIs [s]
			ontime8	29135.99971056	Sum of GTIs [s]
			ontime9	29135.99971056	Sum of GTIs [s]
			l1events	839838	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4058.35, 4103.85)	src1a sky pixel position

### 2.1.4 Events

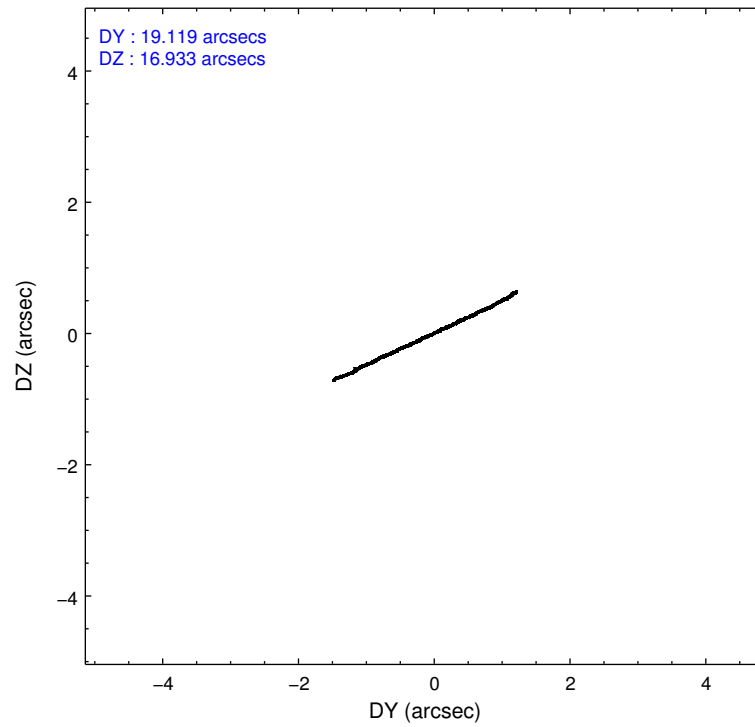
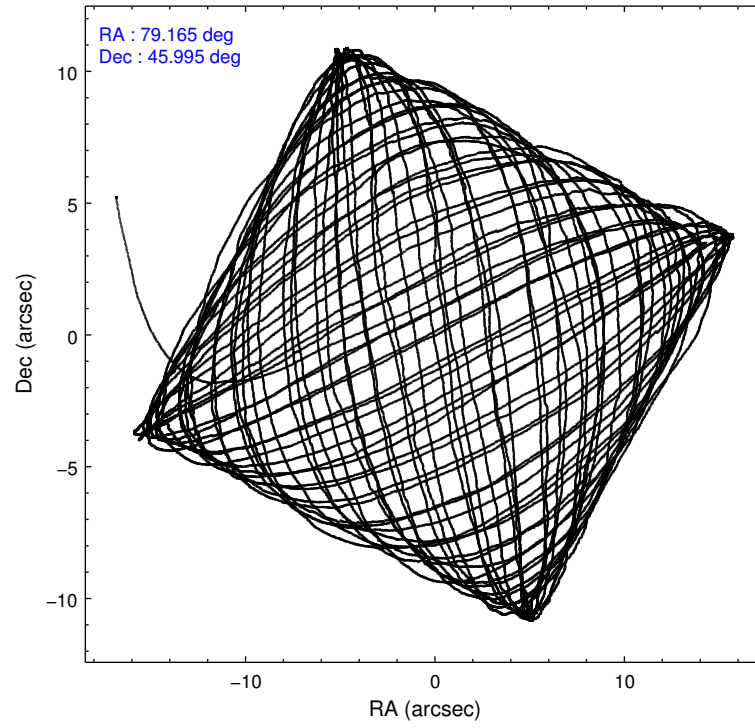
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	249883	127274	175667	167878	119136
rejected events	111103	103054	93091	116368	102115
rejected %	44%	80%	52%	69%	85%

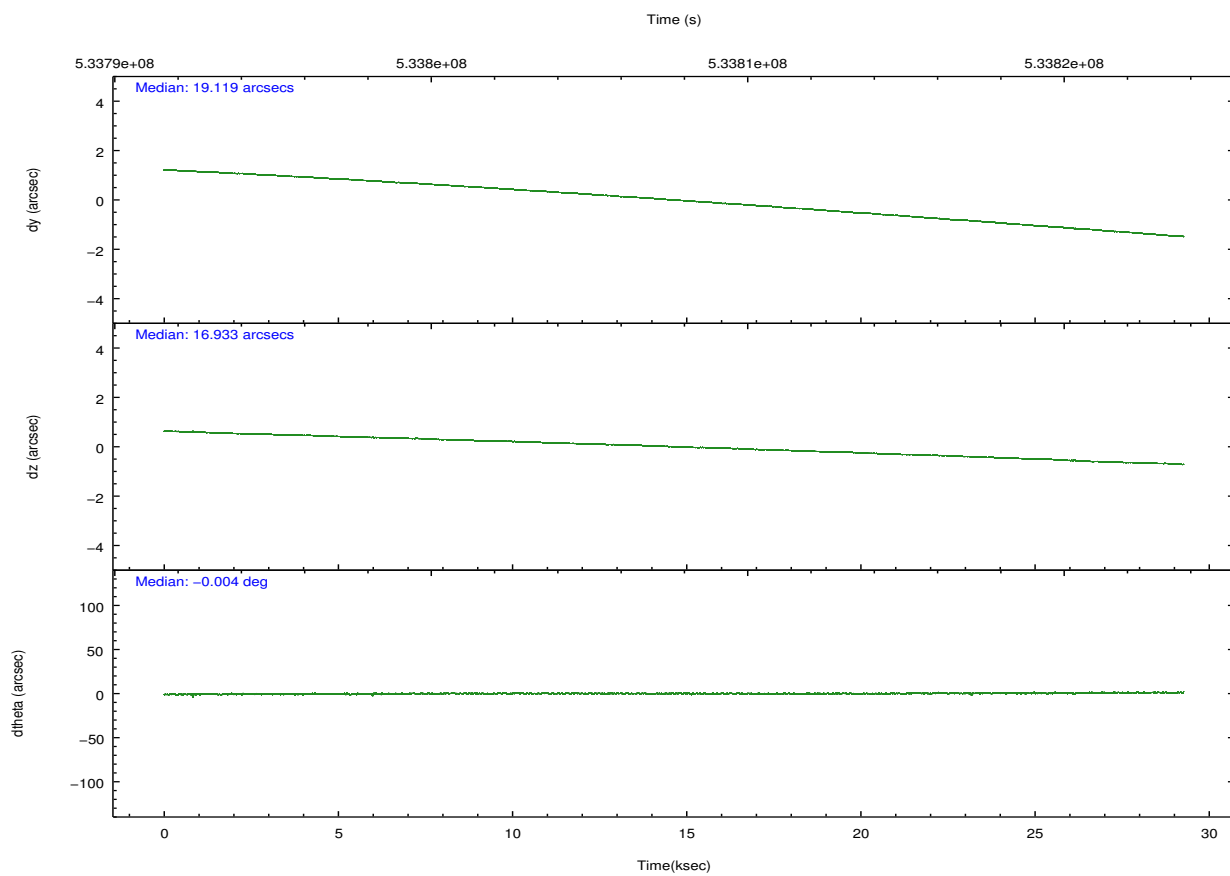
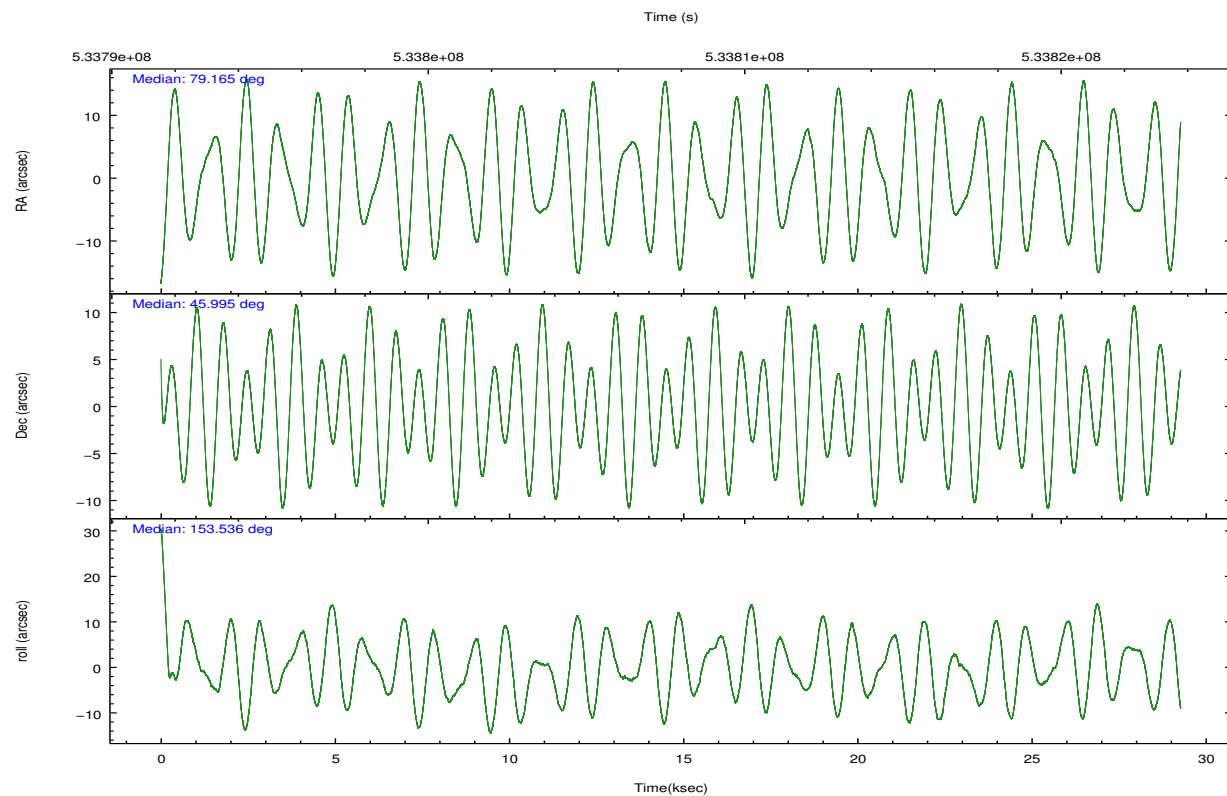
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	41782	13212	9026	20066	6917
	16%	10%	5%	11%	5%
grade 1 events	426	90	529	151	62
	0%	0%	0%	0%	0%
grade 2 events	32346	4085	17610	10902	3479
	12%	3%	10%	6%	2%
grade 3 events	7425	1814	7405	4587	1629
	2%	1%	4%	2%	1%
grade 4 events	5528	1779	7364	4339	1614
	2%	1%	4%	2%	1%
grade 5 events	15859	5797	17268	8386	6295
	6%	4%	9%	4%	5%
grade 6 events	51723	3338	41188	11620	3384
	20%	2%	23%	6%	2%
grade 7 events	94794	97159	75277	107827	95756
	37%	76%	42%	64%	80%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-56789	ACIS-56789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	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	79.204679	79.16527148013724	CCD I2 on	N	N
[deg] Pointing Dec	45.997268	45.99520506702917	CCD I3 on	N	N
[deg] Pointing Roll	153.358026	153.5430018465185	CCD S0 on	N	N
[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	-187.132523	-187.1254020033014	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-3	-3.007120579706367	CCD S4 on	Y	Y
[s] Observation start time (MET)	533793199.184000	533791896.51591	CCD S5 on	O1	Y
Observation start date	2014-12-01T03:52:12	2014-12-01T03:31:36	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	533822289.184000	533823330.70517	On-chip summing requested	N	N
Observation end date	2014-12-01T11:57:02	2014-12-01T12:15:30	Subarray requested	CUSTOM	CUSTOM
Read mode	TIMED	TIMED	Subarray start row	1	1
			Subarray row count	774	774
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	2.4

## 2.3 Aspect



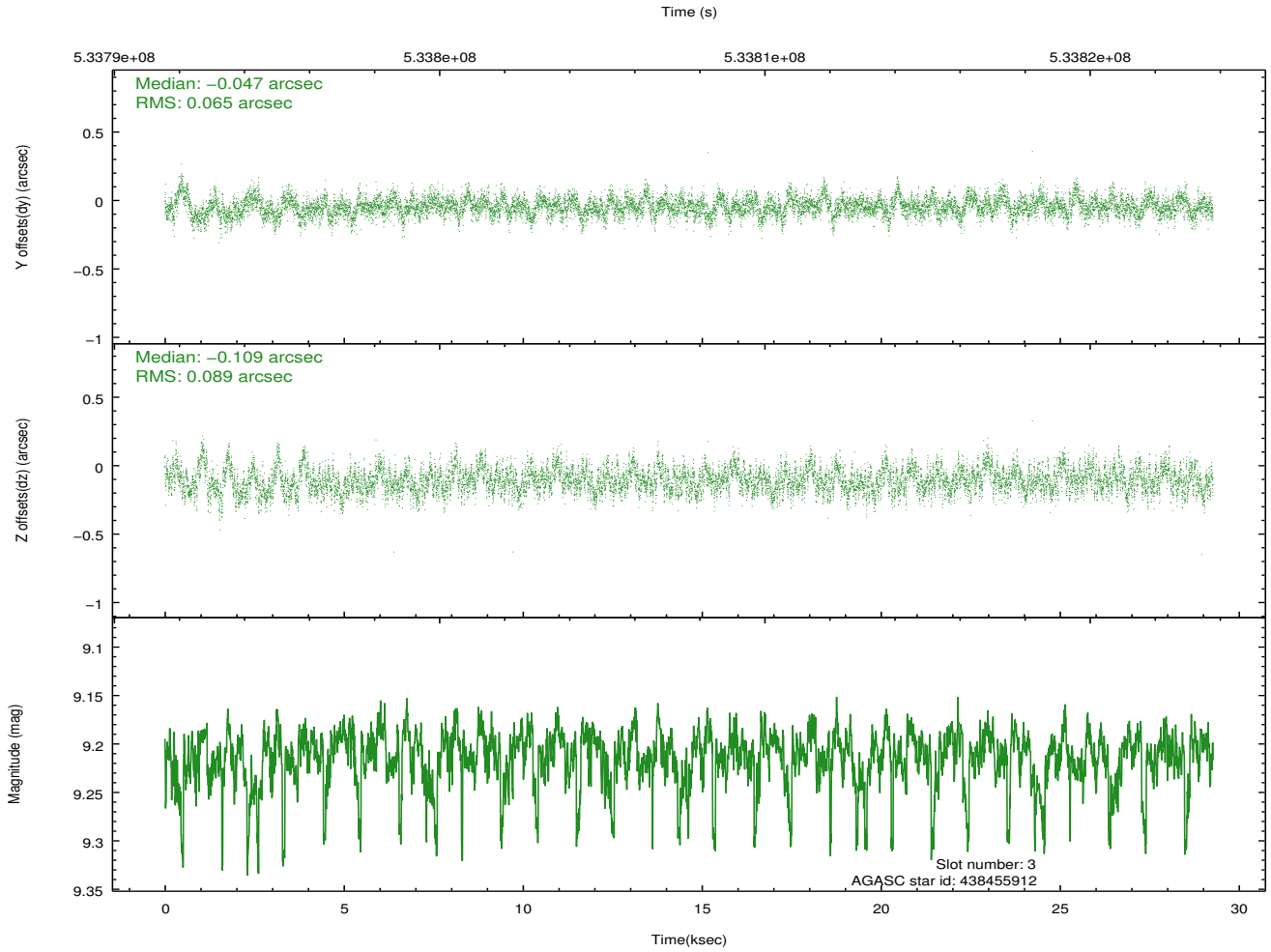
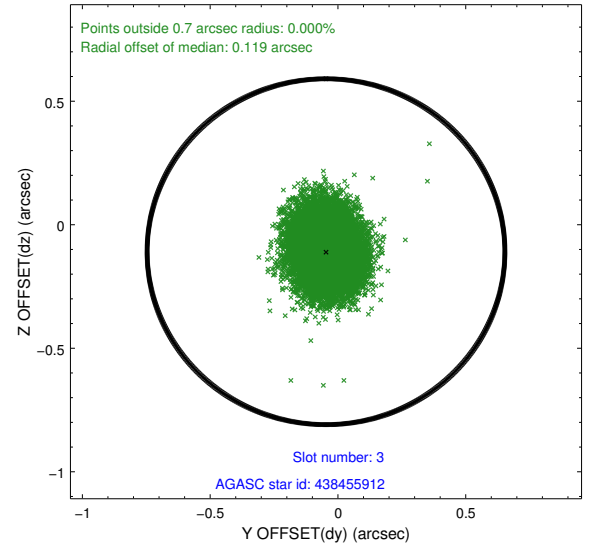
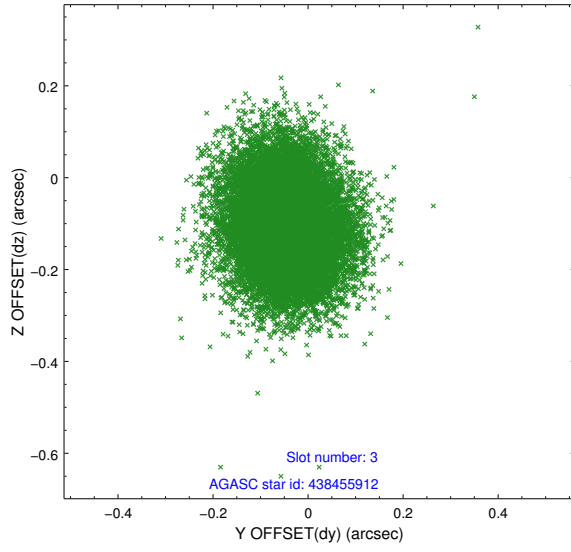


### Slot Statistics

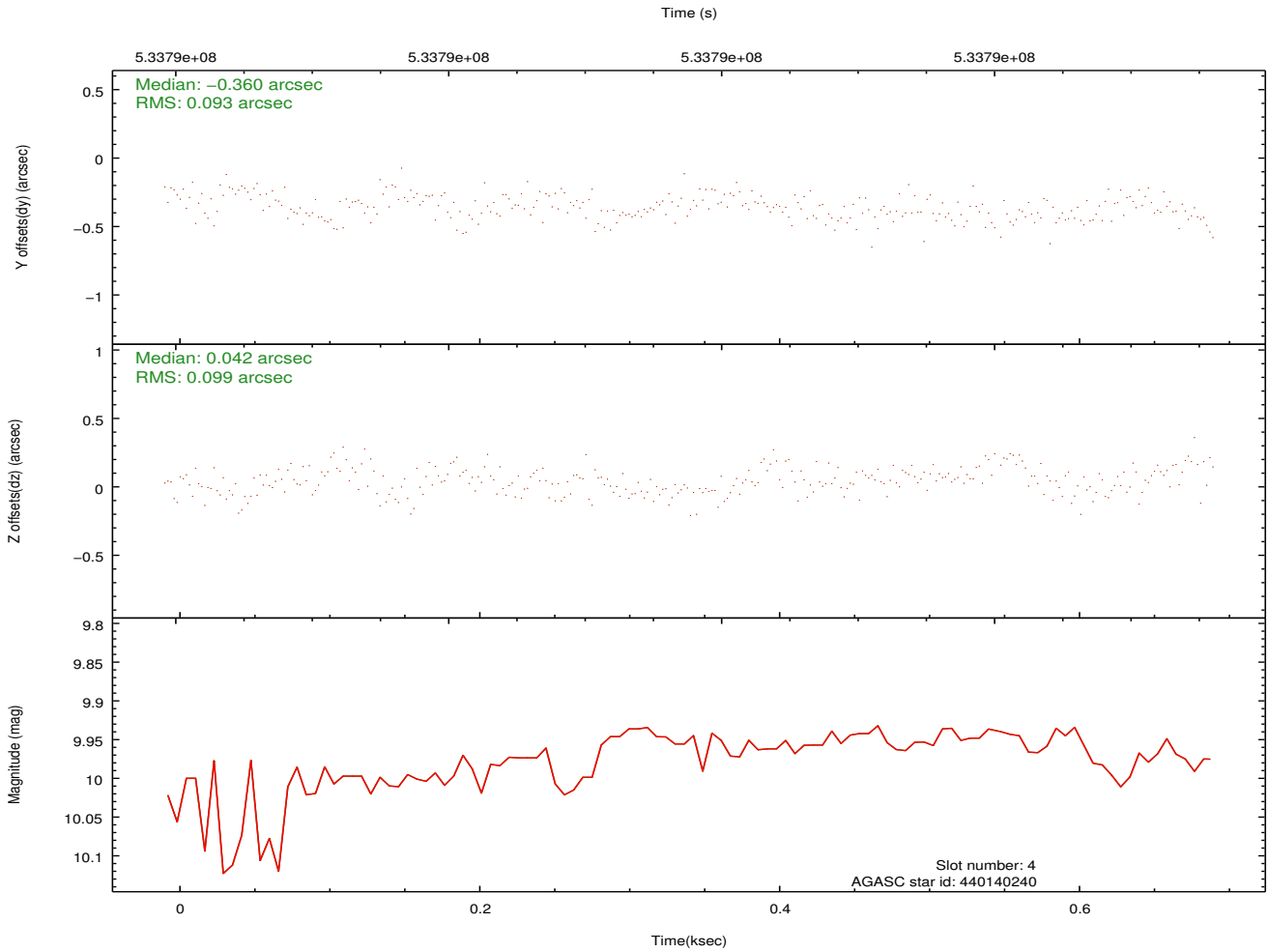
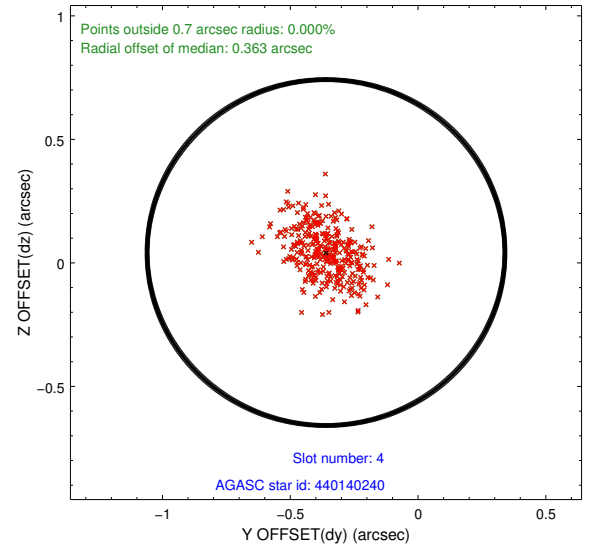
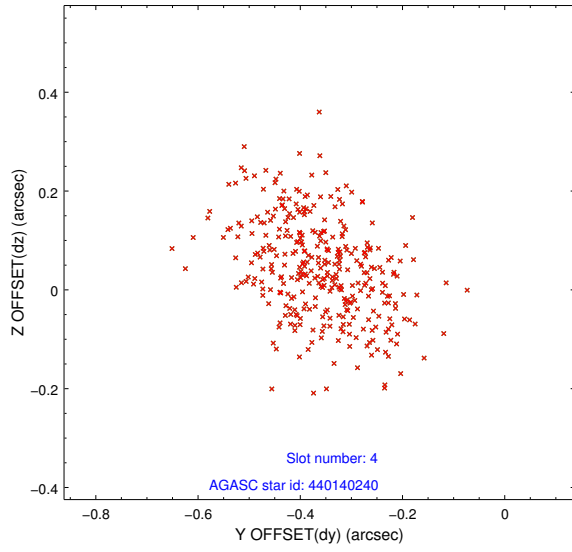
lot	status	used	id	mag	n_pts	med_dy	med_dz	drl	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-S-2	7.00	7141	-0.143	-0.056	0.042	0.053	0.000000	0.000000	-772.09	-1800.45
1	FID		ACIS-S-4	7.09	7141	0.354	0.084	0.032	0.082	0.000000	0.000000	2141.63	108.03
2	FID		ACIS-S-5	7.11	7141	-0.233	-0.019	0.035	0.047	0.000000	0.000000	-1824.92	101.70
3	GUIDE	used	438455912	9.21	14278	-0.047	-0.109	0.117	0.190	78.251946	45.690923	1653.41	2047.44
4	BAD	used	440140240	9.97	341	-0.360	0.042	0.144	0.247	78.889349	46.726437	1880.90	-1992.20
5	GUIDE	used	440150048	7.22	14208	-0.011	0.253	0.082	0.146	79.112838	46.416060	880.46	-1245.24
6	GUIDE	used	440163960	8.87	14276	0.171	0.096	0.102	0.166	79.298370	45.827072	-484.37	441.85
7	GUIDE	used	438460832	8.94	14203	-0.114	-0.238	0.106	0.175	78.414614	45.554782	1069.88	2308.35

## 2.4 Star Slots

### 2.4.1 Slot 3

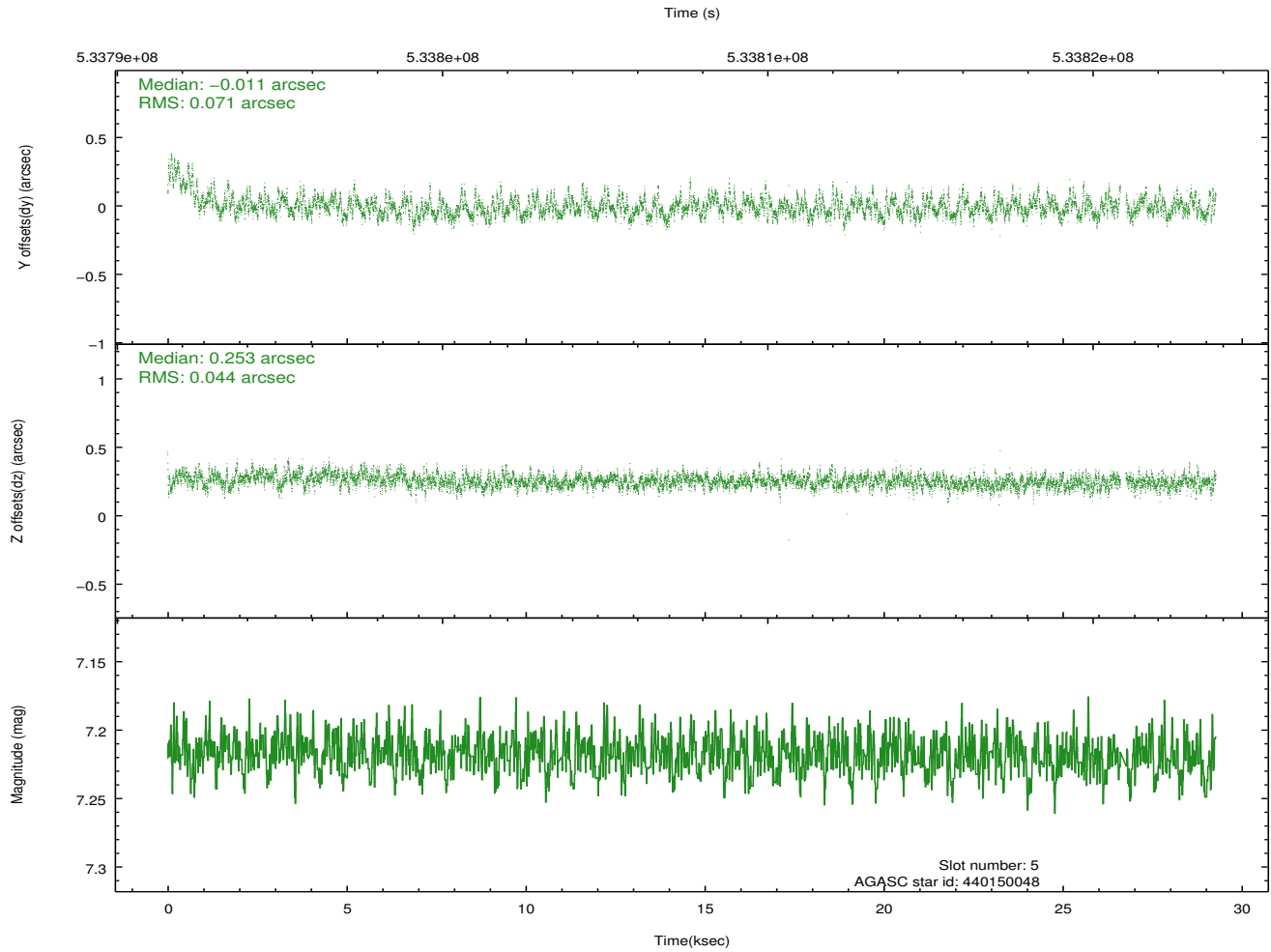
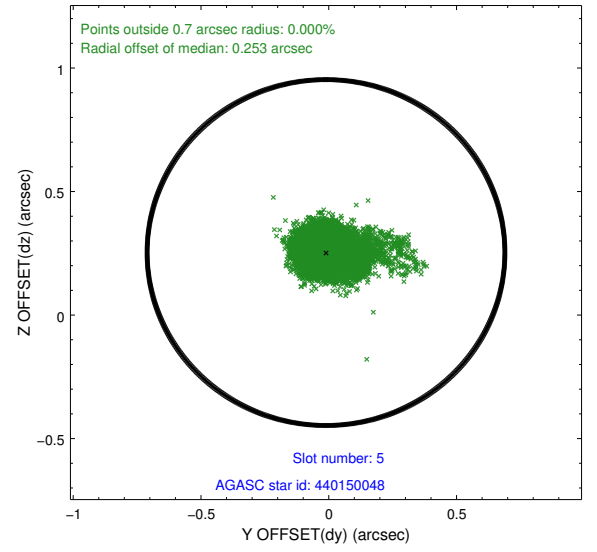
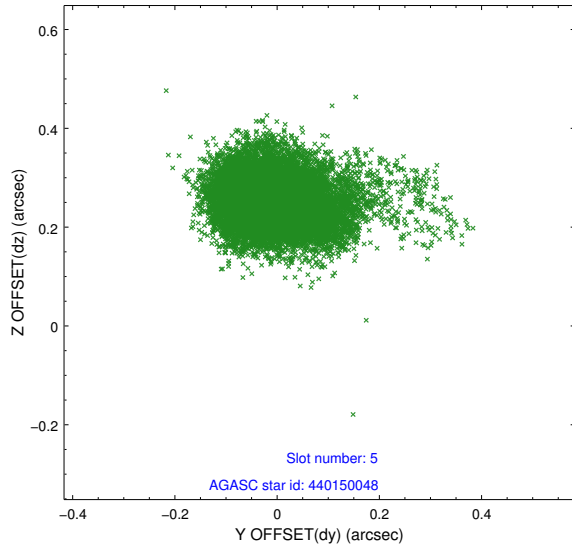


## 2.4.2 Slot 4

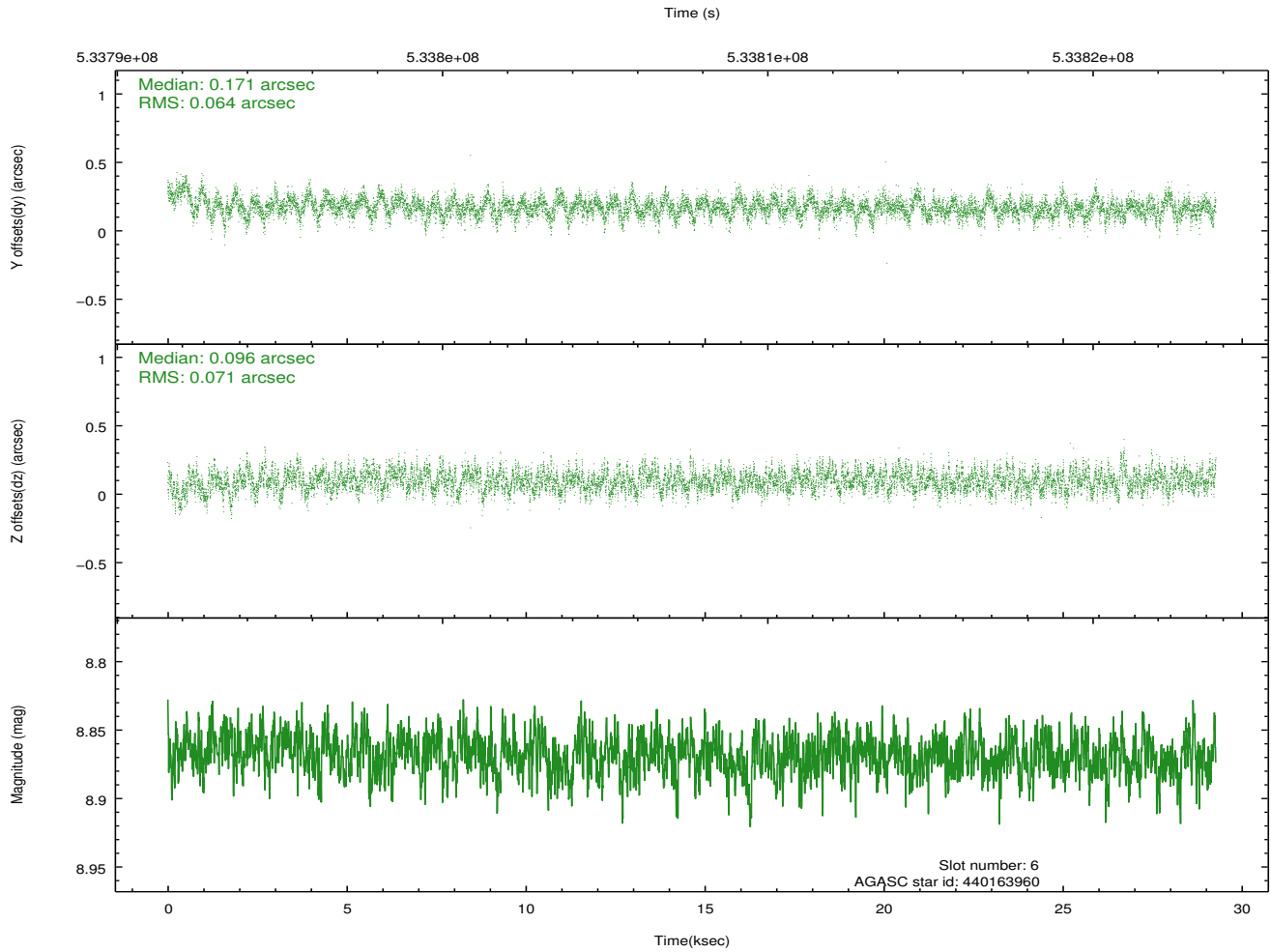
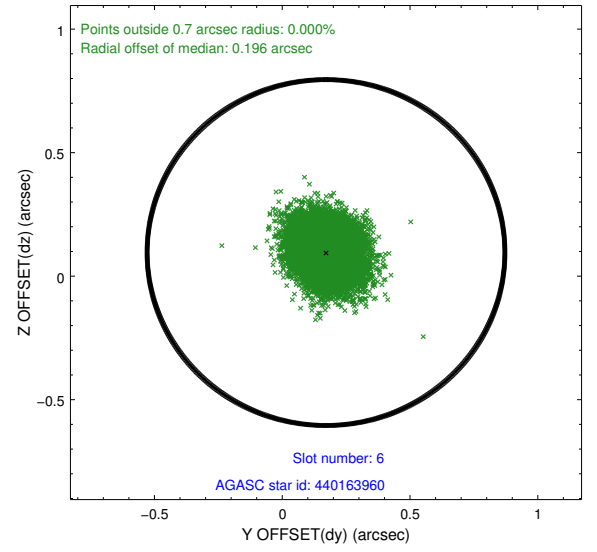
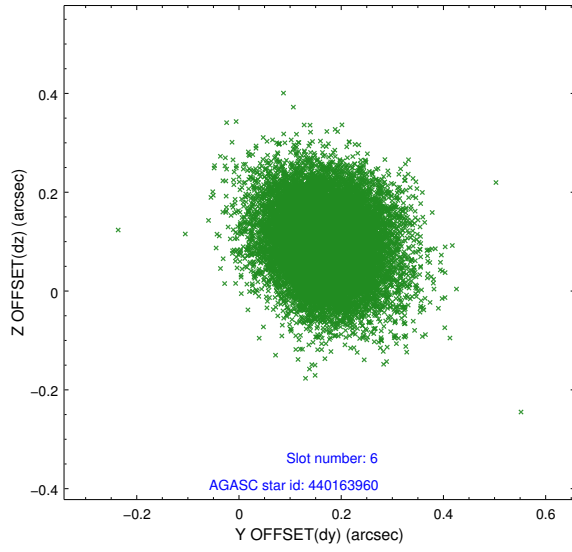




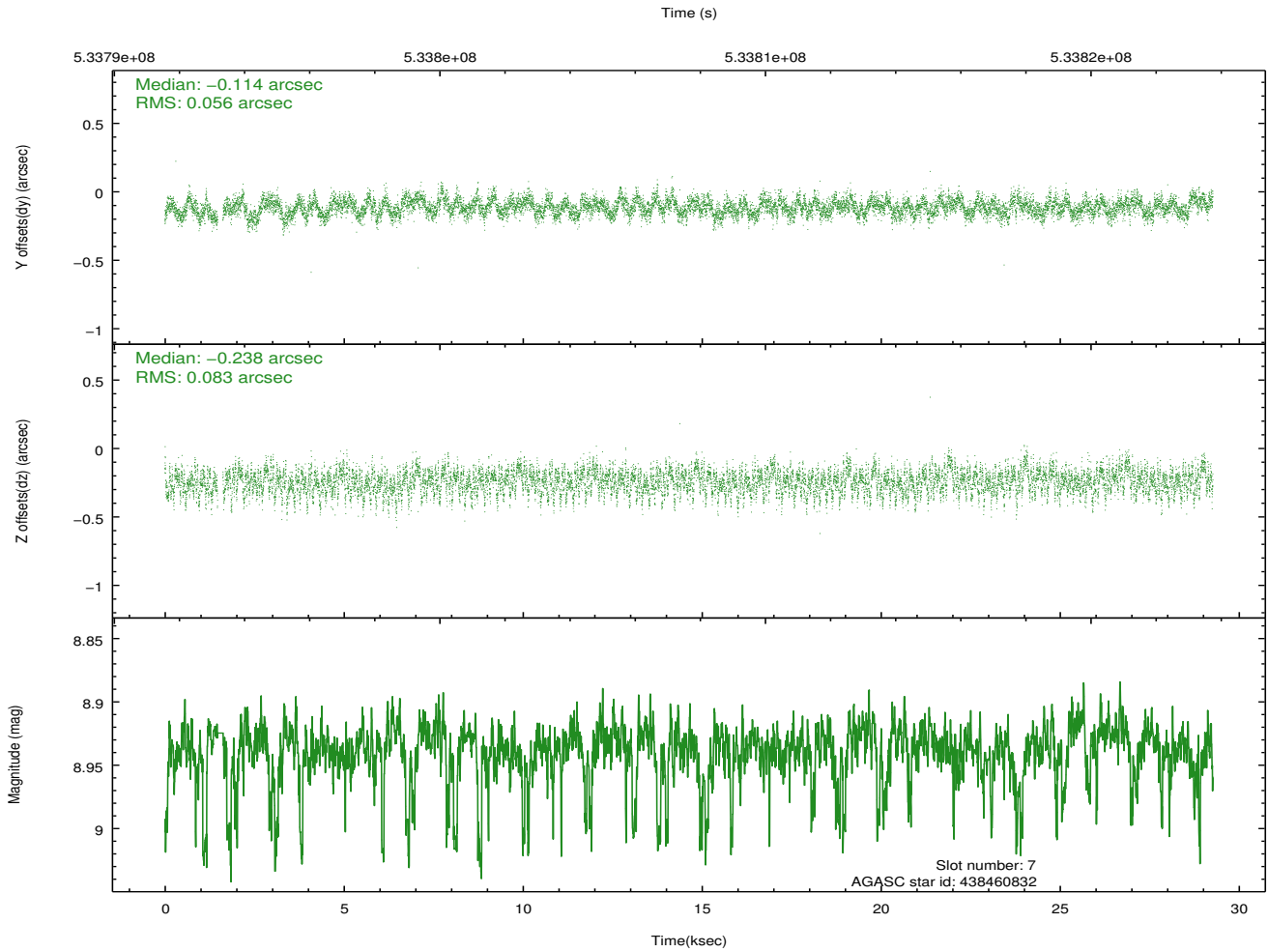
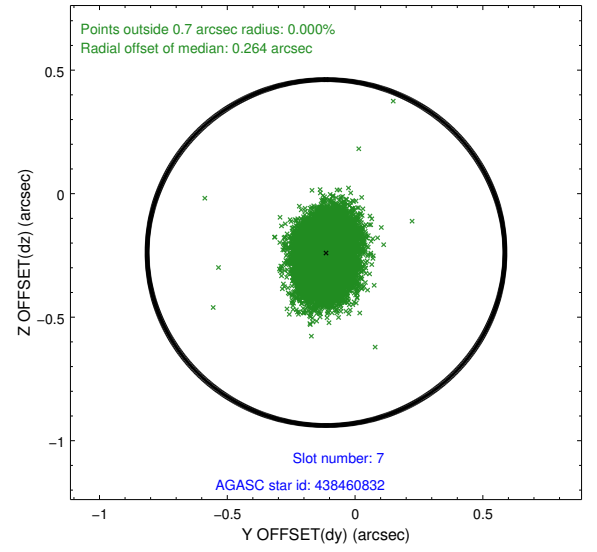
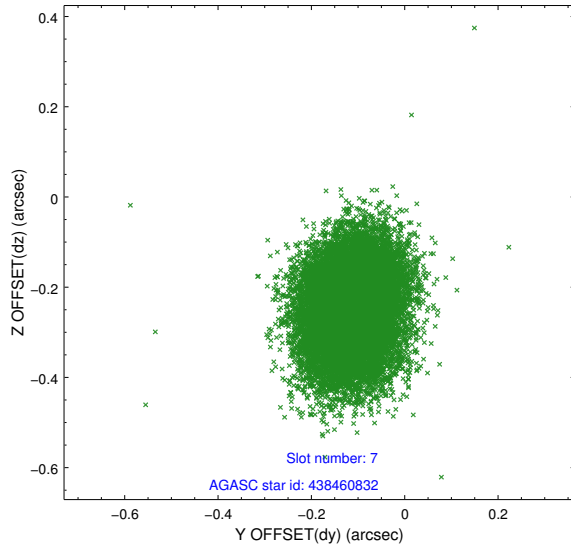
### 2.4.3 Slot 5



## 2.4.4 Slot 6

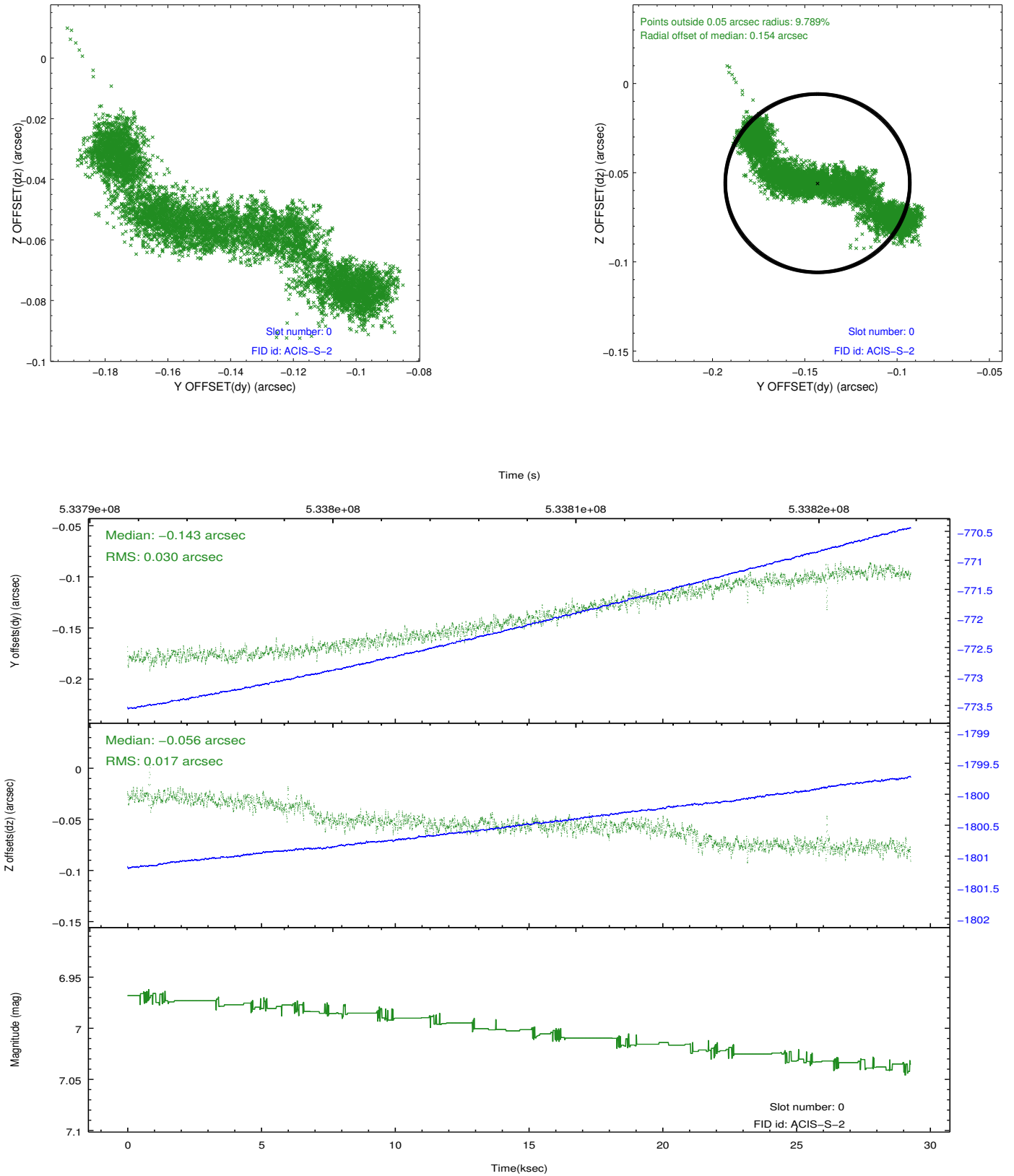


## 2.4.5 Slot 7

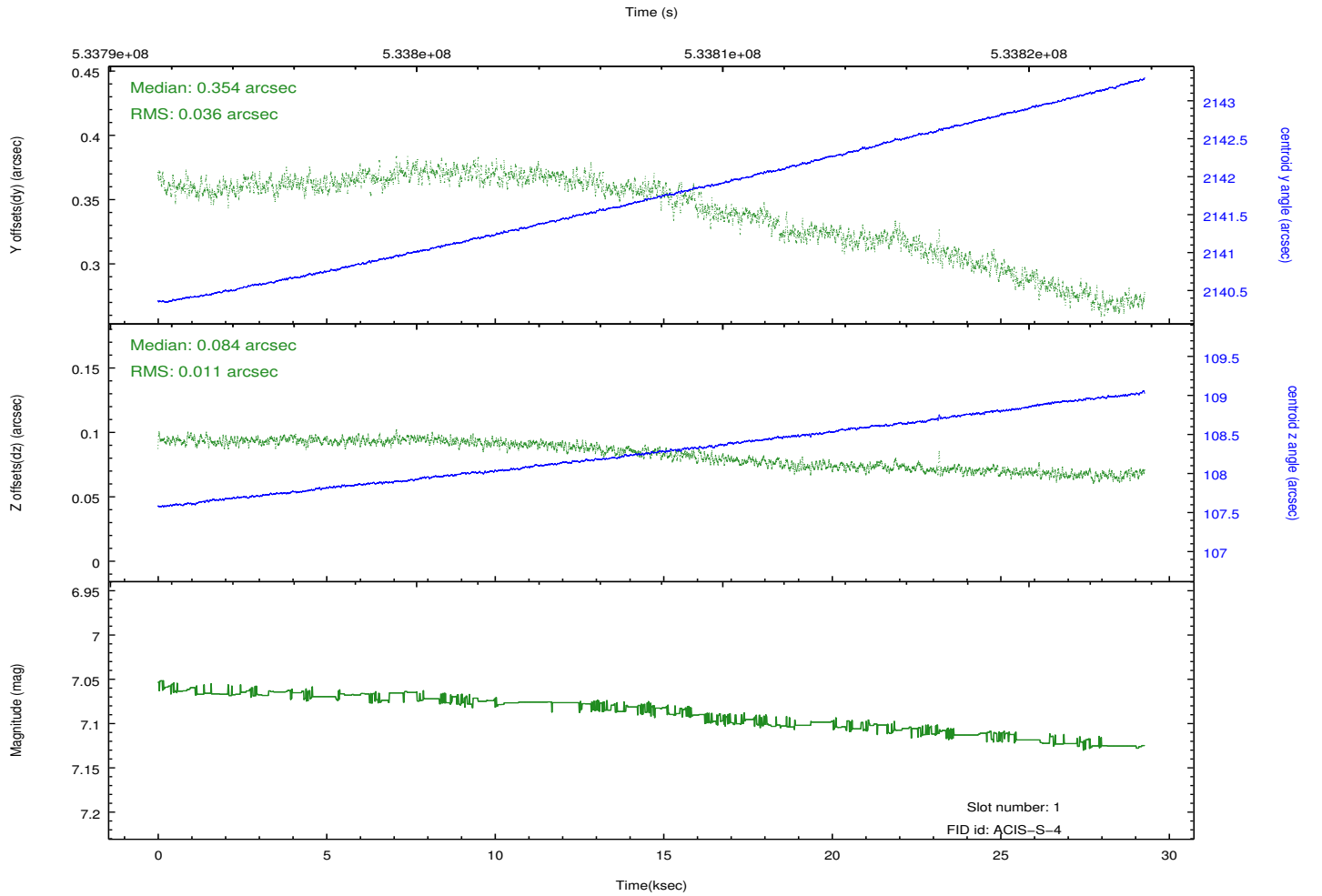
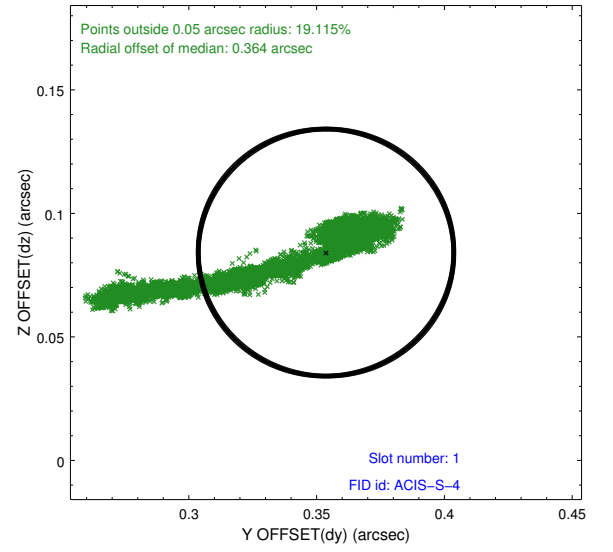
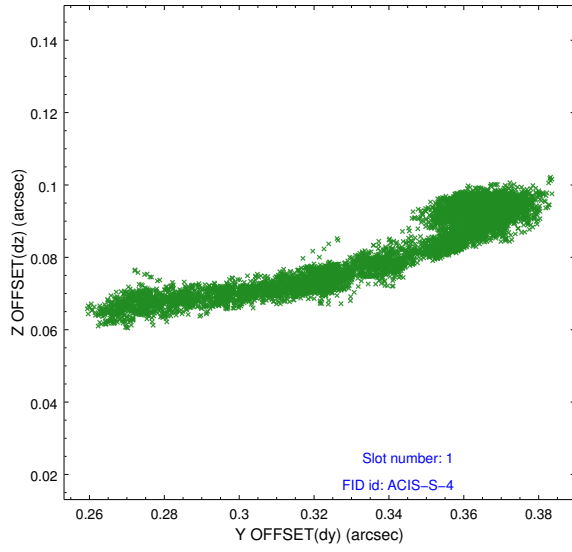


## 2.5 FID Slots

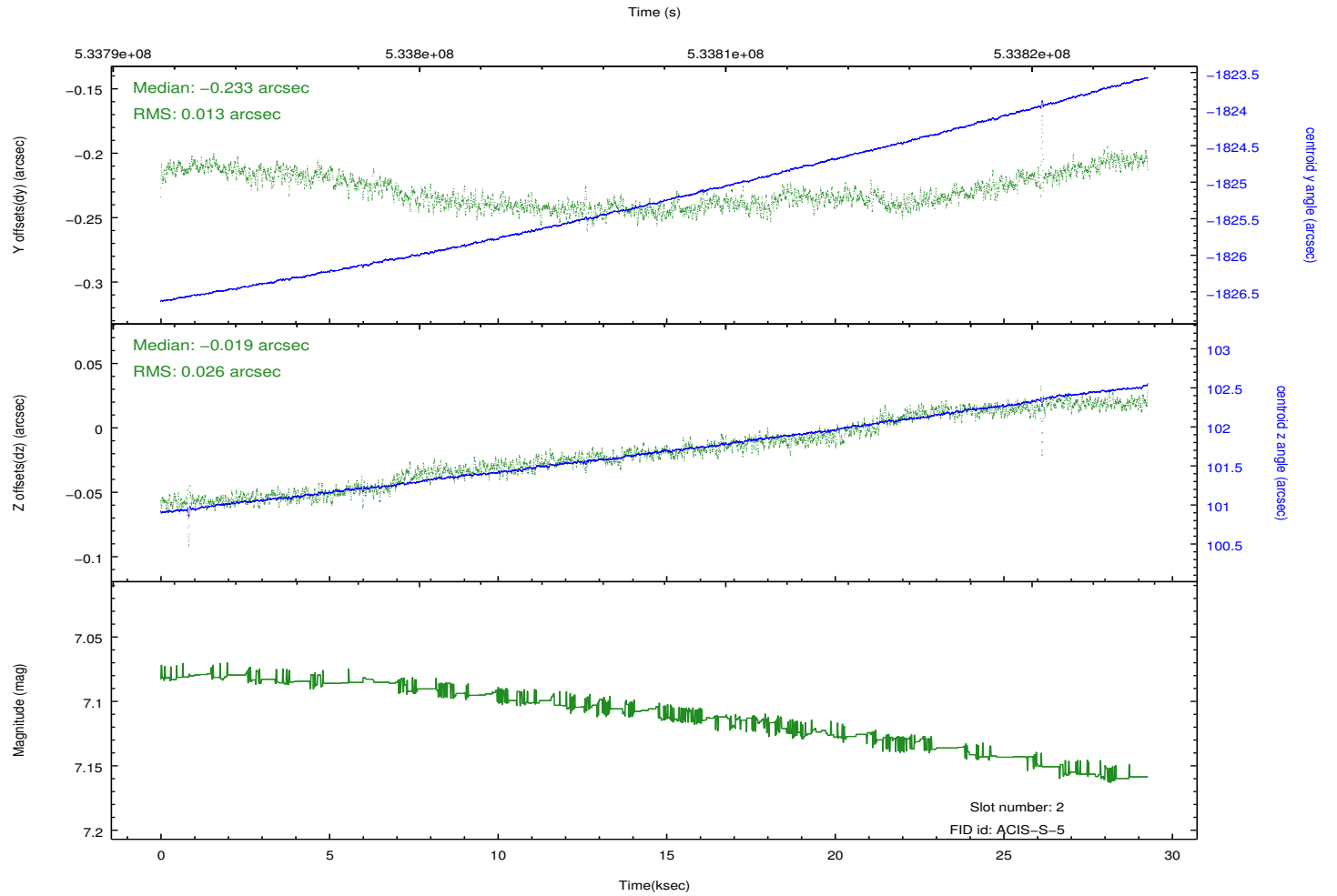
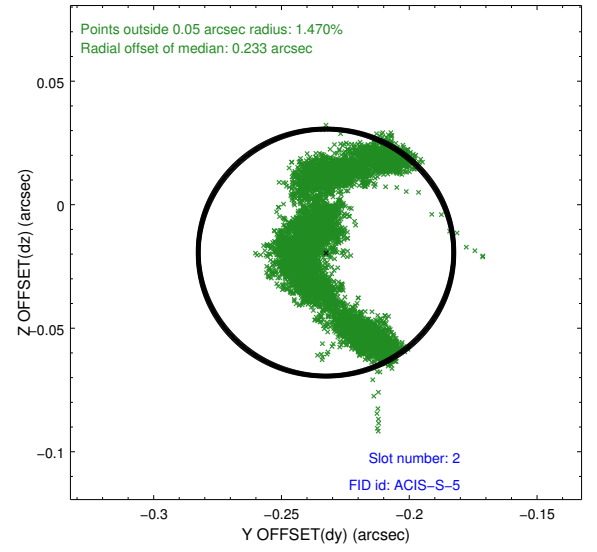
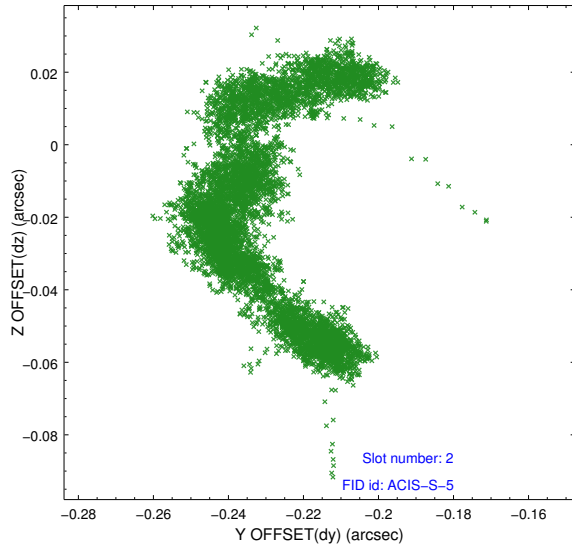
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

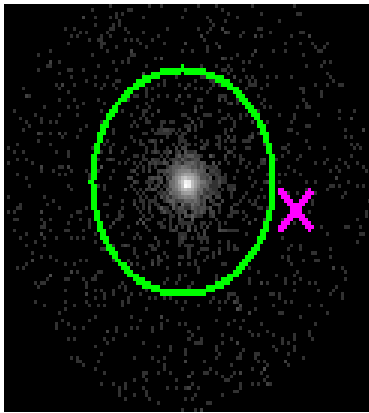


# 3 Gratings

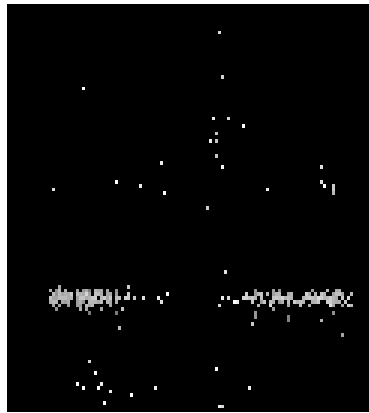
## 3.1 HEG Arm



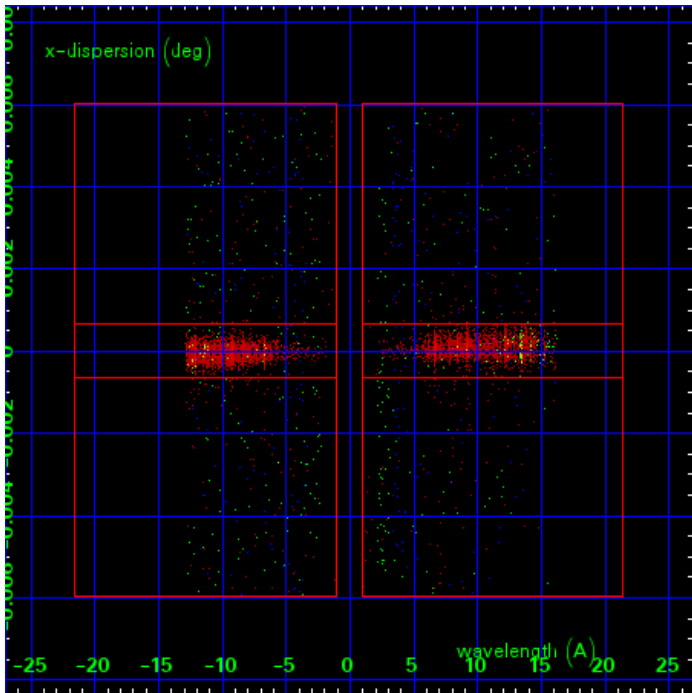
HEG Order Sort 123



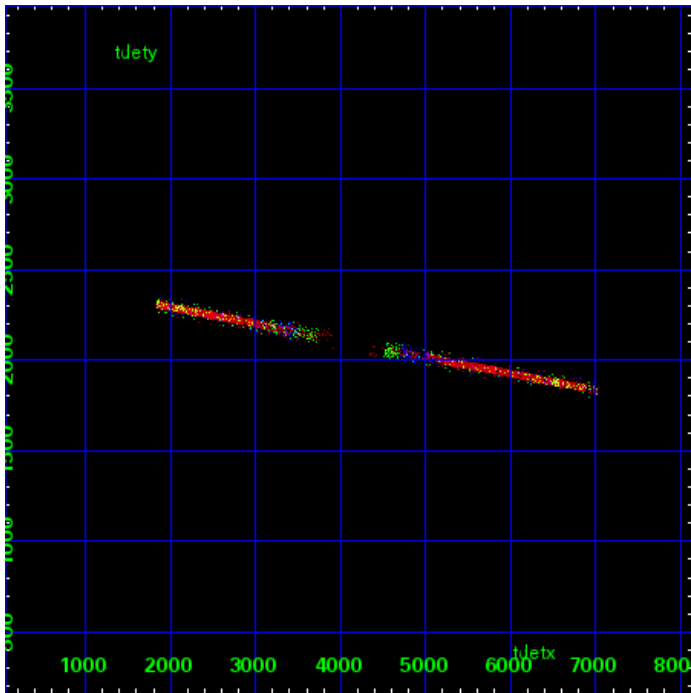
HEG Zero Order



HEG Order Sort ALL

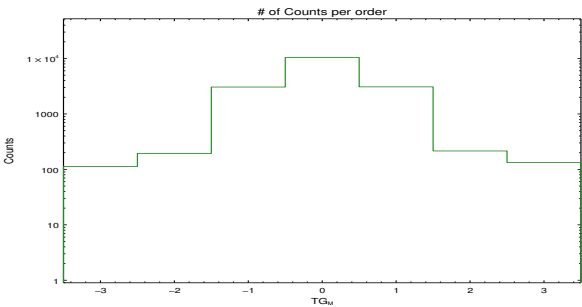


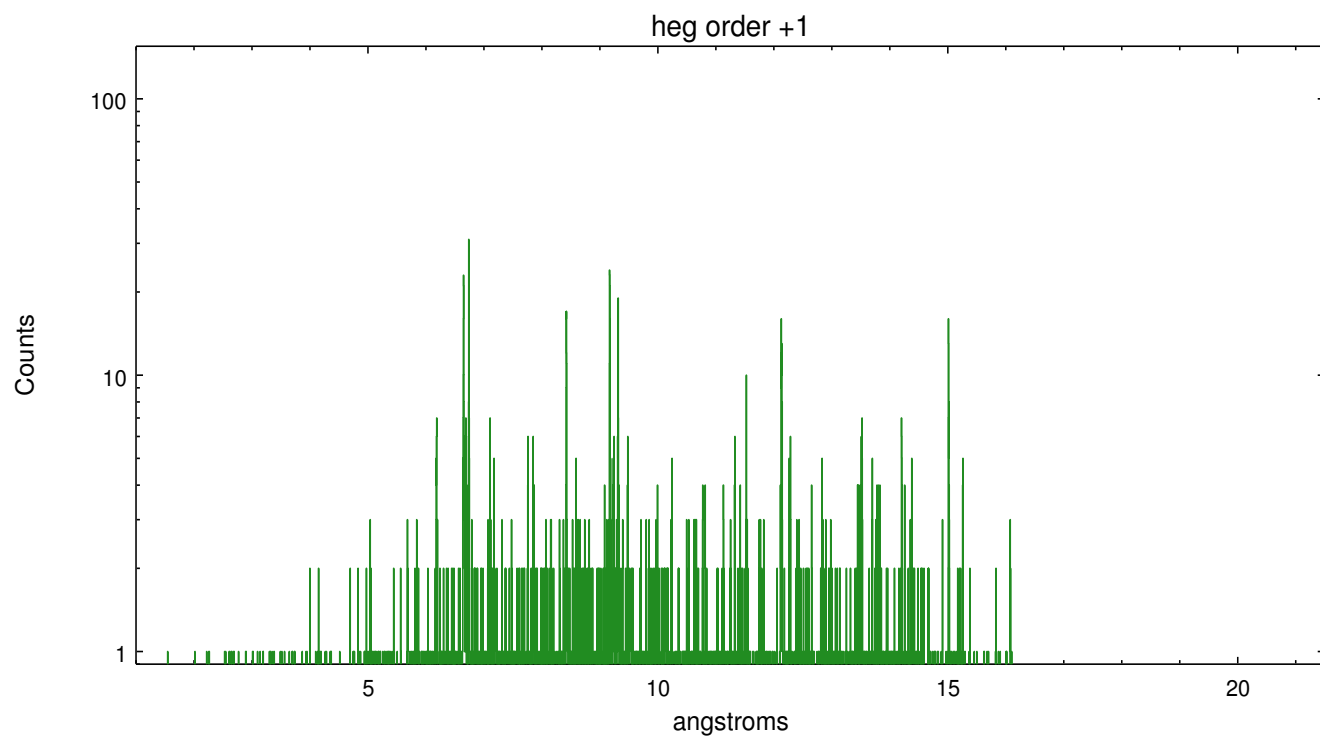
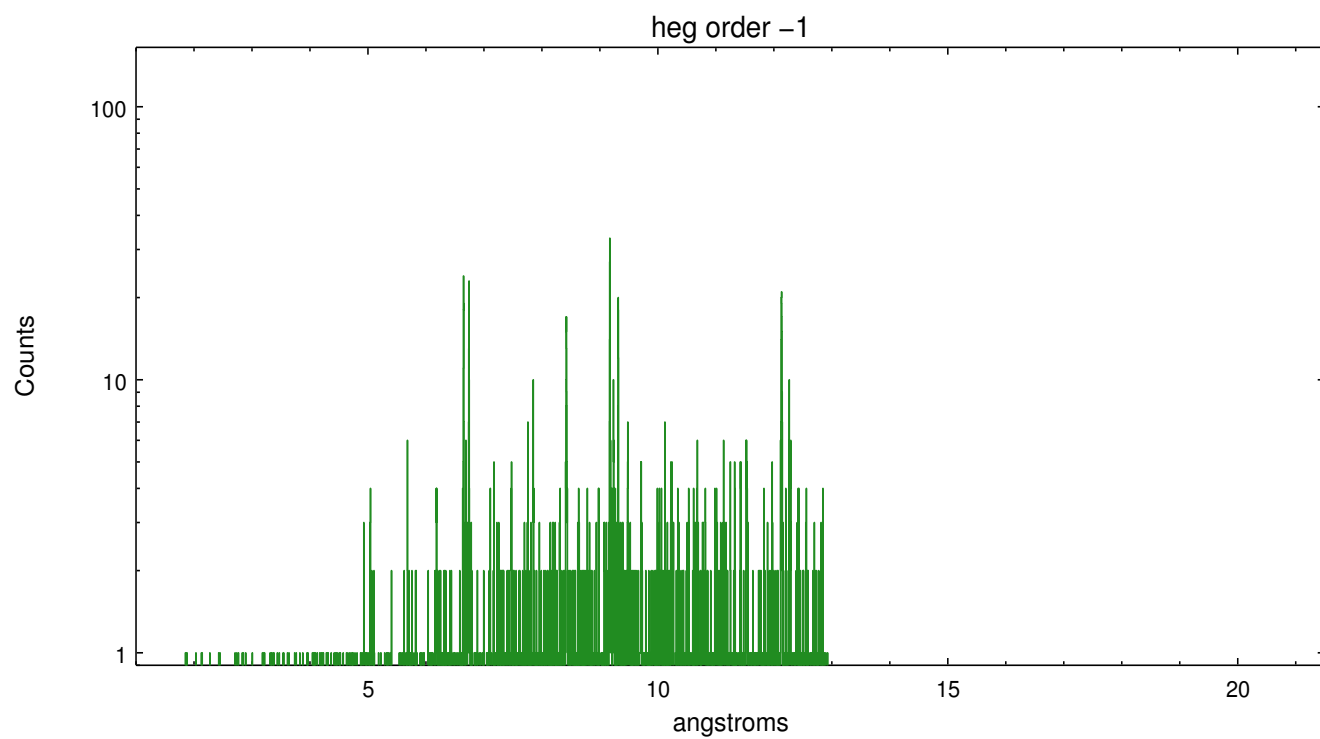
Spot Image HEG



Full Detector HEG

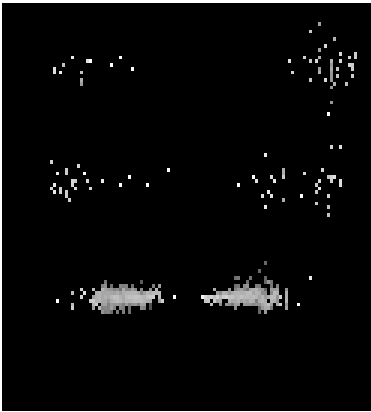
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	113	194	3059	10421	3085	215	133



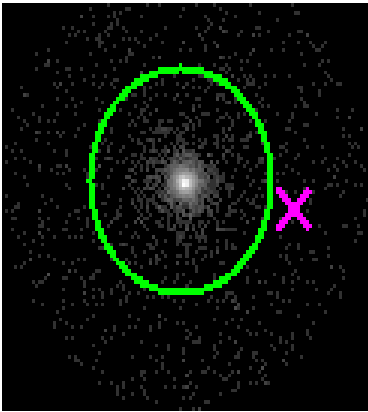




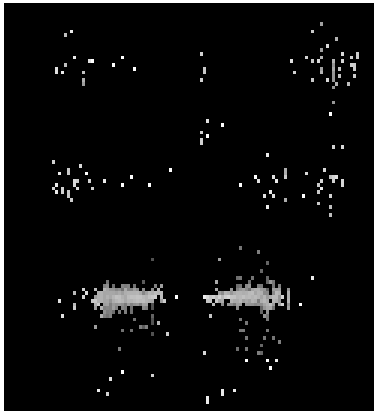
3.2 MEG Arm



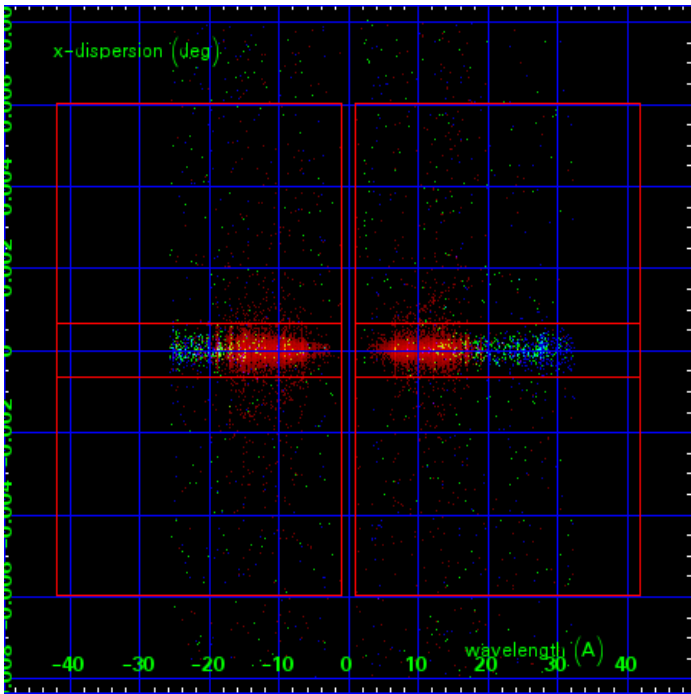
MEG Order Sort 123



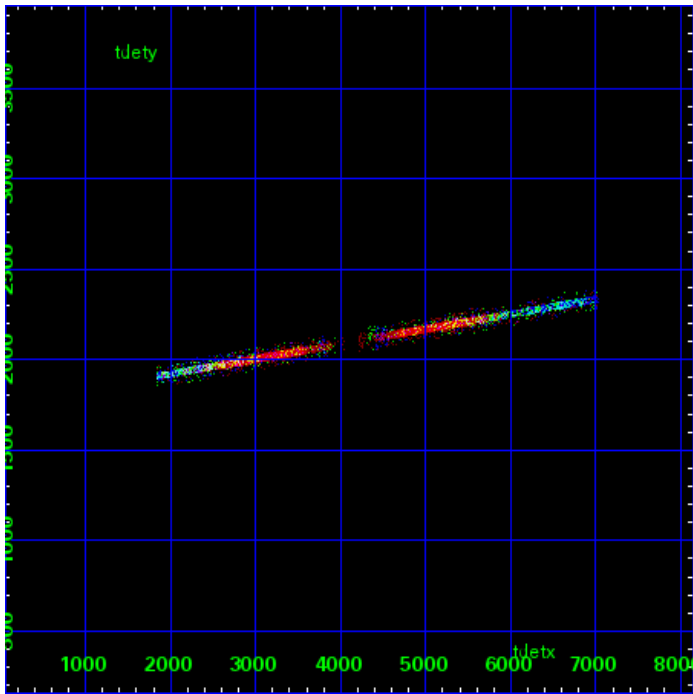
MEG Zero Order



MEG Order Sort ALL

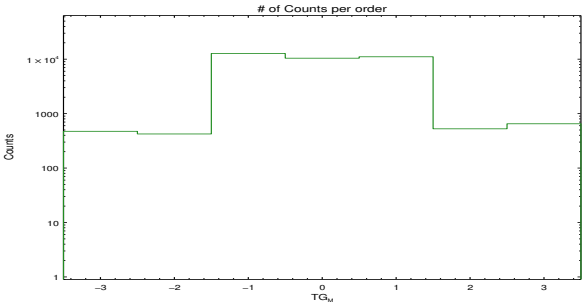


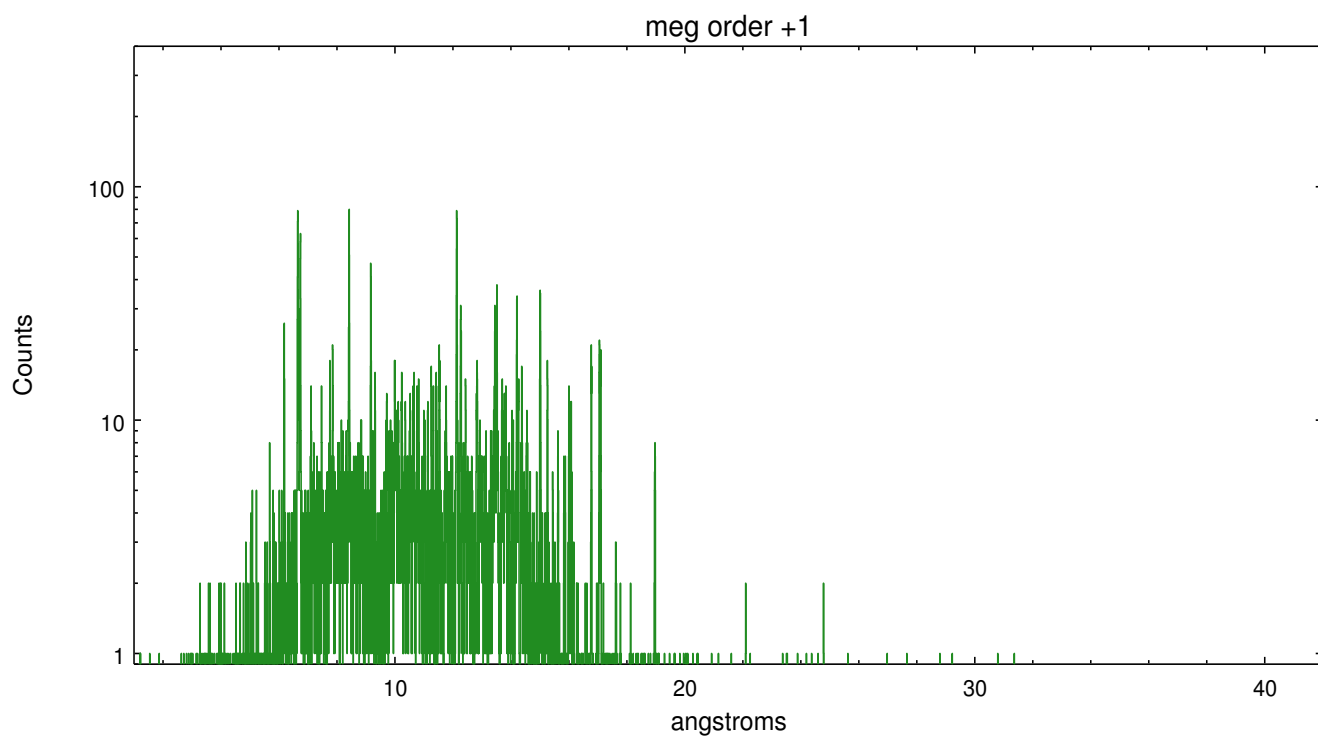
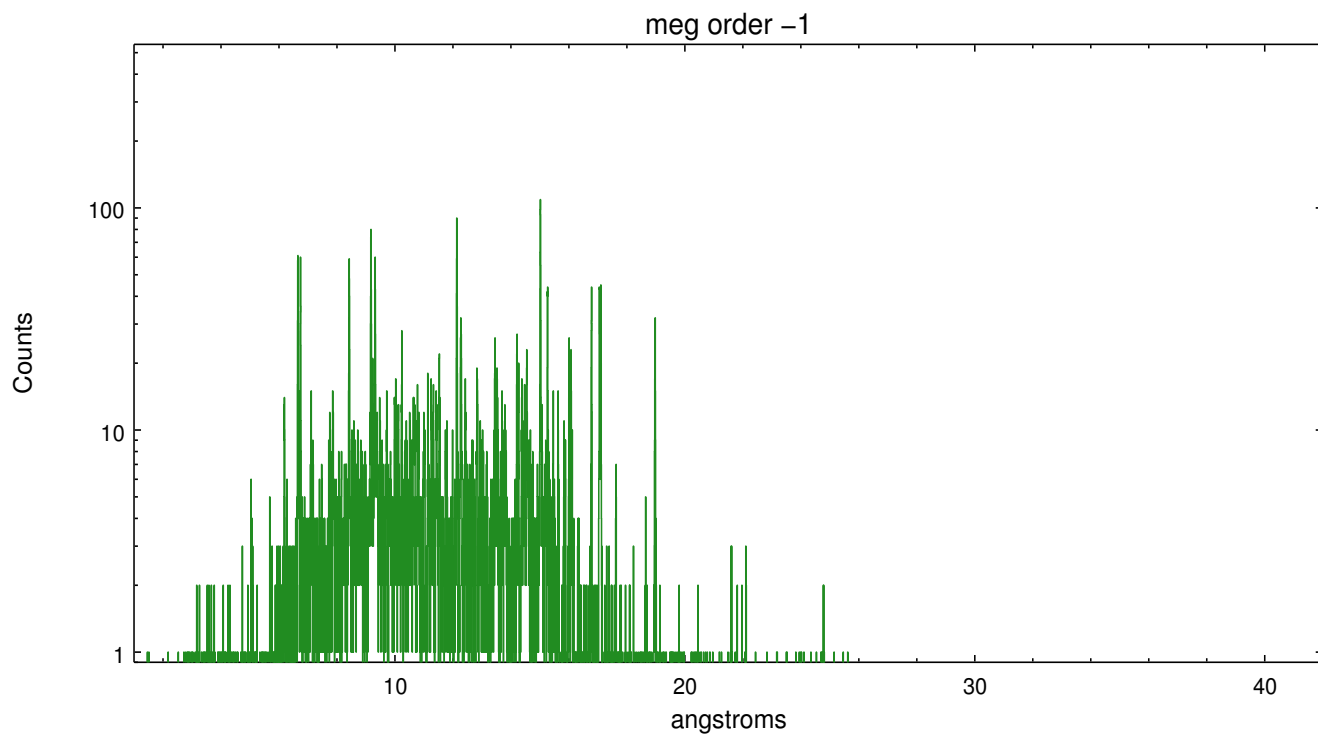
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	473	423	12728	10421	11074	526	651





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2014.12.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	29.13599971056

## A.2 Comments

Zeroth order moderately piled up. The zeroth order sky position was determined using a software tool developed by CXC called findzero, which is available in CIAO as part of the tgdetect2 tool. The tool calculates the point of intersection of the readout streak on the ACIS CCD and the meg dispersed spectral arm, rather than using a centroid position of the source. The findzero results are more accurate than source centroid in this case.