

# V&V Reference Report

## L2 ASCDS Version : 10.2.4

Observation 16632 - L2 Version 1  
Chandra X-Ray Center

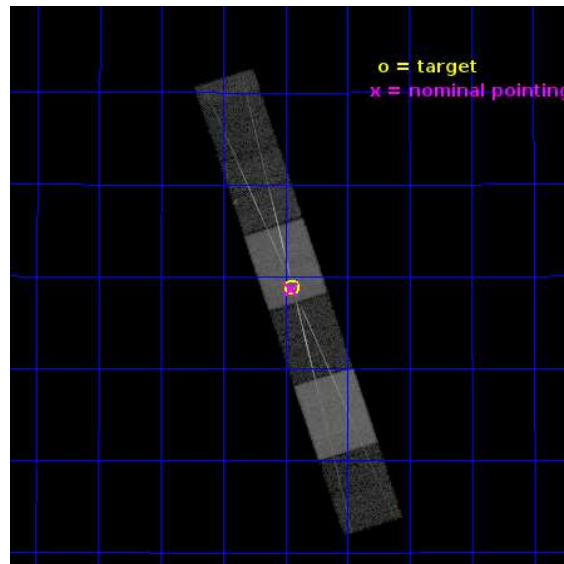
L2 Processing Date : Jul 15 2014

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# 1 Front

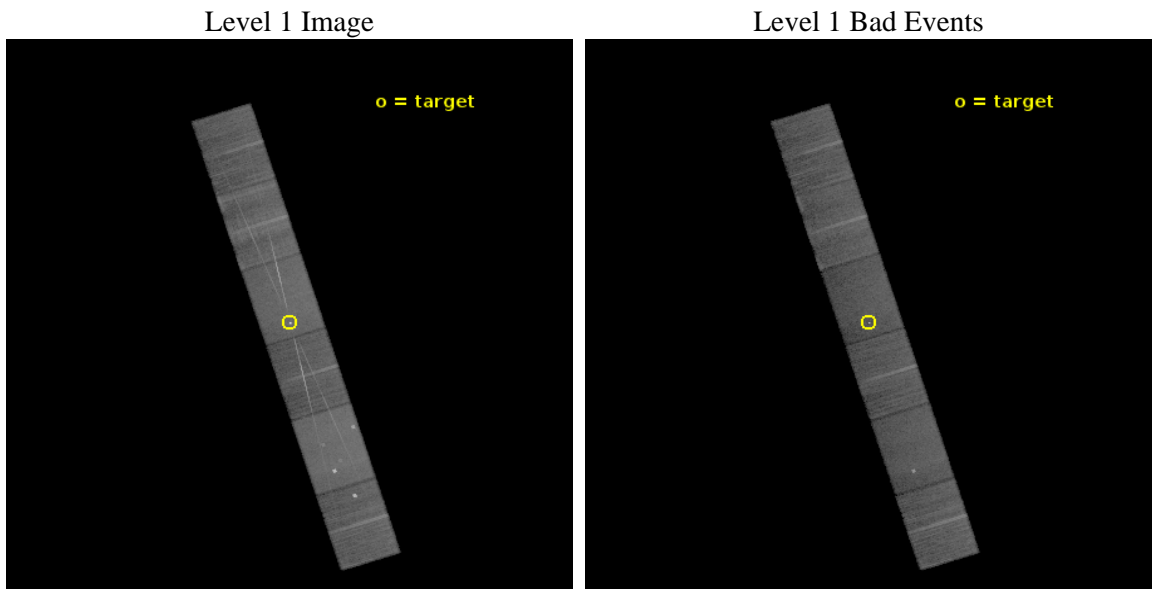
seq_num	703022	Sequence number
obs_id	16632	Observation id
title	A Warm Absorber Study of Mk 766	Proposal title
observer	Prof. Claude Canizares	Principal investigator
object	Mkn 766	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	184.610417	Observer's specified target RA [deg]
dec_targ	29.812778	Observer's specified target Dec [deg]
ra_nom	184.61265471965	Nominal RA [deg]
dec_nom	29.81034487057	Nominal Dec [deg]
roll_nom	252.15551649383	Nominal Roll [deg]
revision	1	Processing version of data
ontime	35750.0	Sum of GTIs [s]
livetime	35172.60649183	Livetime [s]
ontime4	35750.0	Sum of GTIs [s]
ontime5	35750.0	Sum of GTIs [s]
ontime6	35750.0	Sum of GTIs [s]
ontime7	35750.0	Sum of GTIs [s]
ontime8	35750.0	Sum of GTIs [s]
ontime9	35750.0	Sum of GTIs [s]
l2events	277511	Number of level 2 events



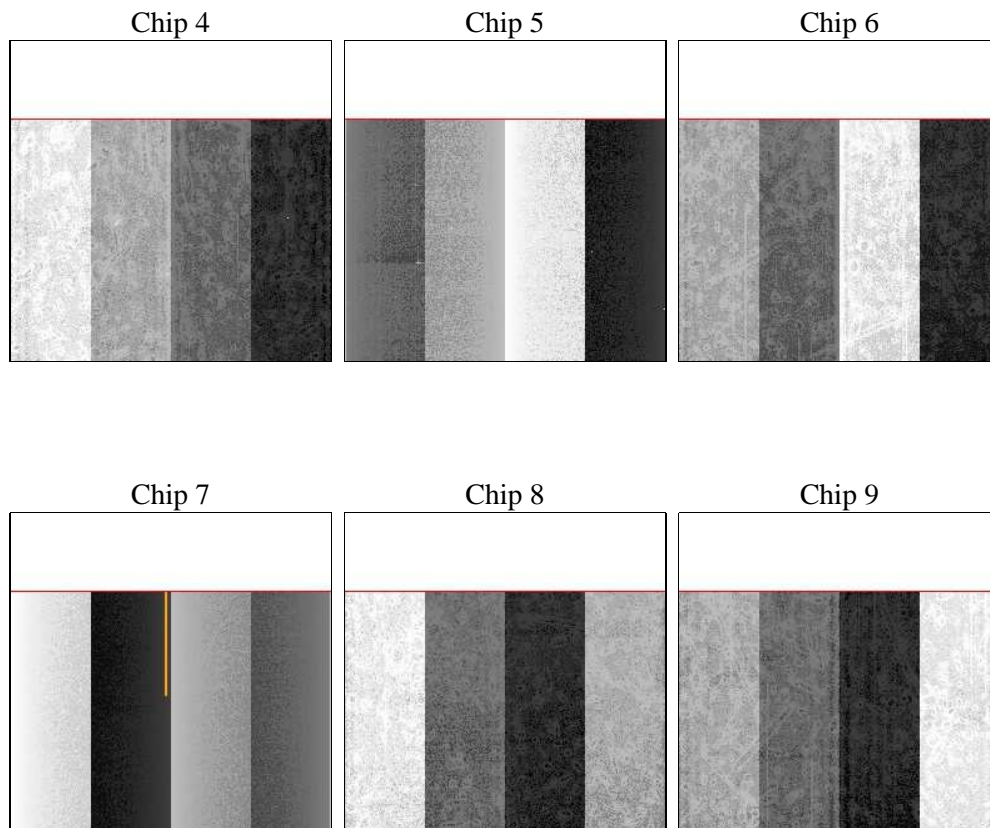
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	35717.000000	[s] Scheduled observation exposure time
ascdsver	10.2.4	Processing system revision	ontime	35750.0	Sum of GTIs [s]
caldbver	4.6.2	&#160	ontime4	35750.0	Sum of GTIs [s]
date	2014-07-15T11:27:33	Date and time of file creation	ontime5	35750.0	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	35750.0	Sum of GTIs [s]
			ontime7	35750.0	Sum of GTIs [s]
			ontime8	35750.0	Sum of GTIs [s]
			ontime9	35750.0	Sum of GTIs [s]
			l1events	1019693	Number of level 1 events
			tgmetho	FINDZO	Method used to create src1a file
				4110.01	

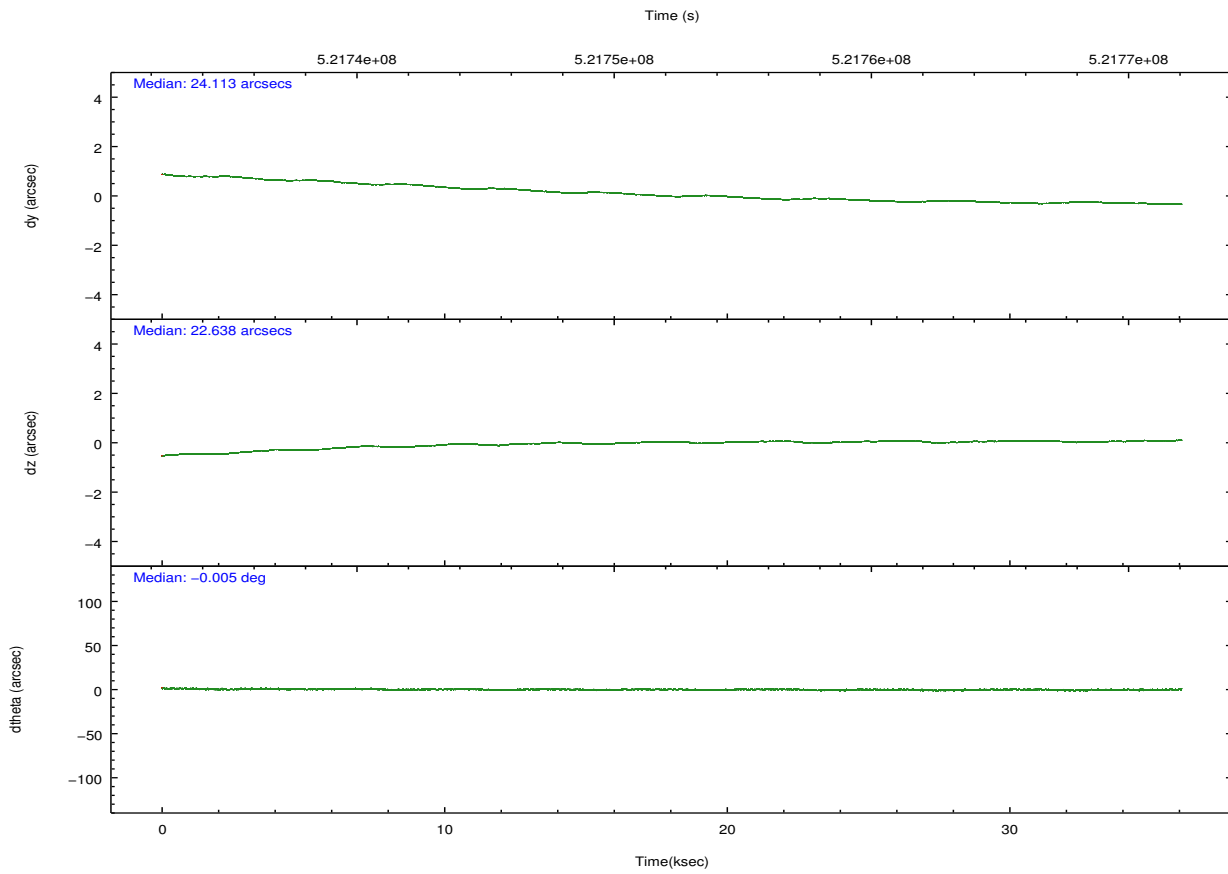
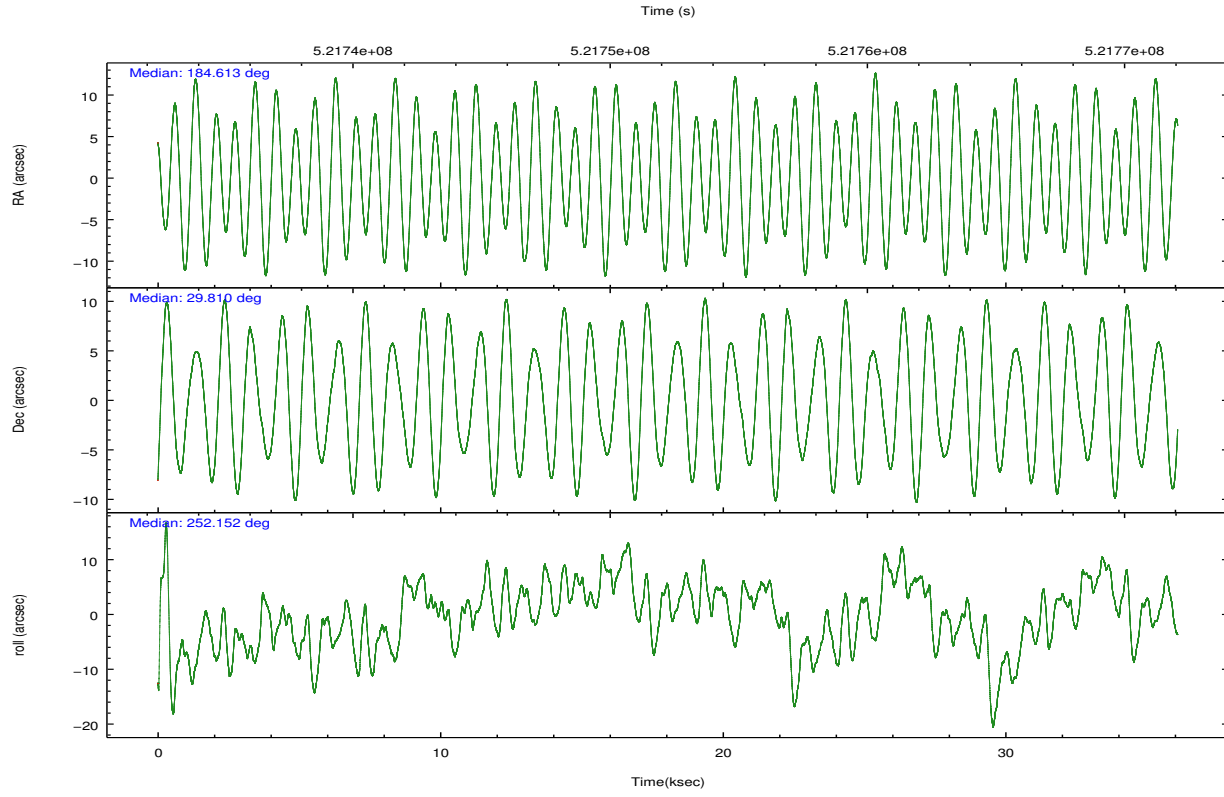
### 2.1.4 Events

	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	150014	221548	140675	200833	179373	127250	grade 0 events	13551	13079	16291	11757	19330	6677
rejected events	125650	109253	110785	100802	125486	109511		9%	5%	11%	5%	10%	5%
rejected %	83%	49%	78%	50%	69%	86%	grade 1 events	96	351	92	403	132	57
								0%	0%	0%	0%	0%	0%
							grade 2 events	4224	35637	5276	21420	11418	3799
								2%	16%	3%	10%	6%	2%
							grade 3 events	1863	4540	2152	9344	5182	1896
								1%	2%	1%	4%	2%	1%
							grade 4 events	1697	4411	2228	9280	5041	1725
								1%	1%	1%	4%	2%	1%
							grade 5 events	6570	16450	6592	19330	9464	7182
								4%	7%	4%	9%	5%	5%
							grade 6 events	3033	54640	3948	48247	12920	3645
								2%	24%	2%	24%	7%	2%
							grade 7 events	118980	92440	104096	81052	115886	102269
								79%	41%	73%	40%	64%	80%

## 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	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	184.605585	184.6126547196506	CCD I2 on	N	N
[deg] Pointing Dec	29.837094	29.81034487057035	CCD I3 on	N	N
[deg] Pointing Roll	252.002408	252.1555164938312	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	-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)	521734571.184000	521733437.60871	CCD S5 on	Y	Y
Observation start date	2014-07-14T14:15:04	2014-07-14T13:57:17	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	521770288.184000	521771293.93581	On-chip summing requested	N	N
Observation end date	2014-07-15T00:10:21	2014-07-15T00:28:13	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	2.5

## 2.3 Aspect



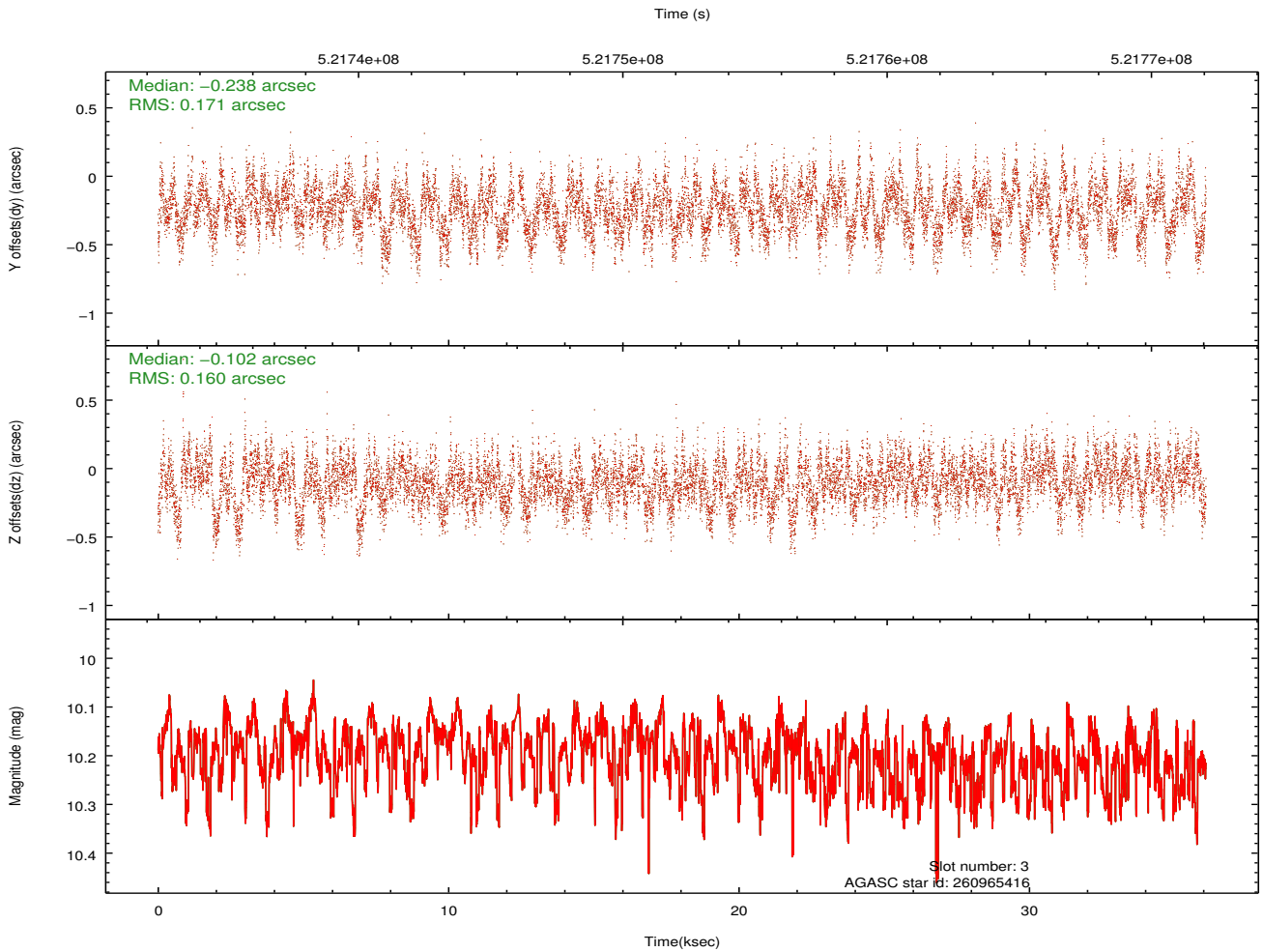
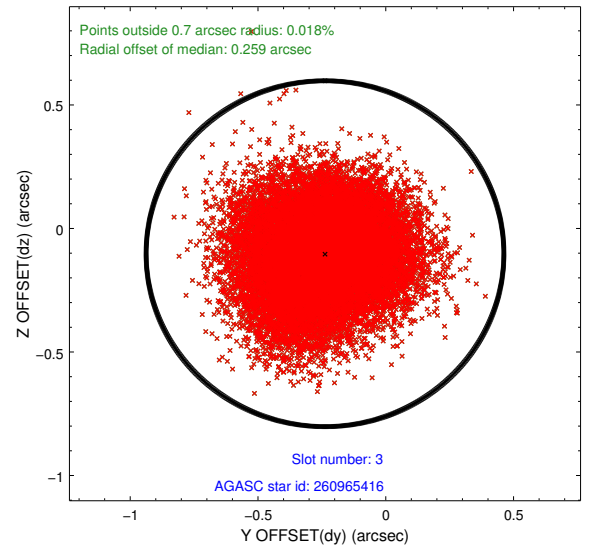
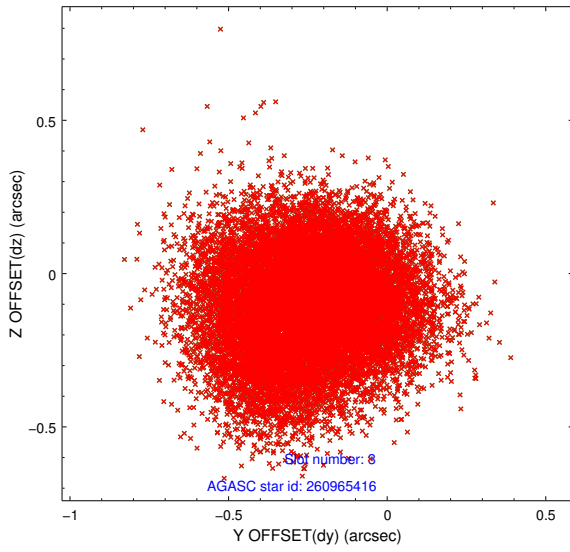
### Slot Statistics

slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.94	8802	-0.206	-0.004	0.012	0.018	0.000000	0.000000	-777.41	-1806.26
1	FID	ACIS-S-4	7.02	8802	0.355	0.100	0.010	0.016	0.000000	0.000000	2136.37	102.33
2	FID	ACIS-S-5	7.06	8801	-0.181	-0.088	0.008	0.014	0.000000	0.000000	-1830.22	95.78
3	BAD	260965416	10.20	16806	-0.238	-0.102	0.254	0.395	184.798422	29.200373	1992.68	1283.75
4	GUIDE	260966048	10.23	17351	-0.464	-0.230	0.397	0.636	185.169624	29.533581	488.67	2016.13
5	GUIDE	331352880	9.64	17574	0.298	0.370	0.202	0.328	184.726920	30.468207	-2276.32	-344.02
6	GUIDE	331368240	6.54	17603	-0.024	0.158	0.141	0.221	184.631757	30.249046	-1434.36	-378.89
7	GUIDE	260968144	10.21	17358	0.423	-0.214	0.236	0.423	184.193166	29.586641	1254.70	-949.95

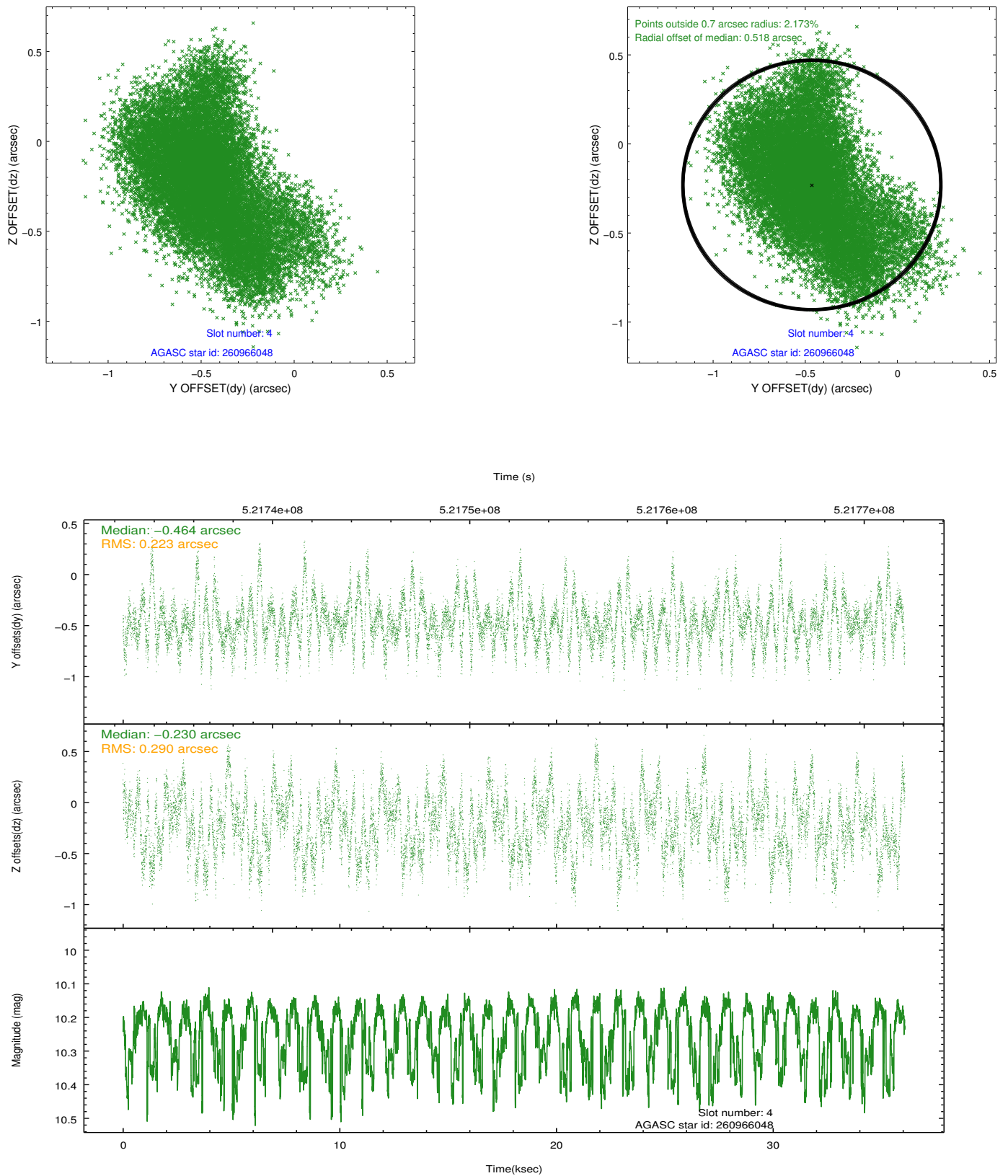
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## 2.4 Star Slots

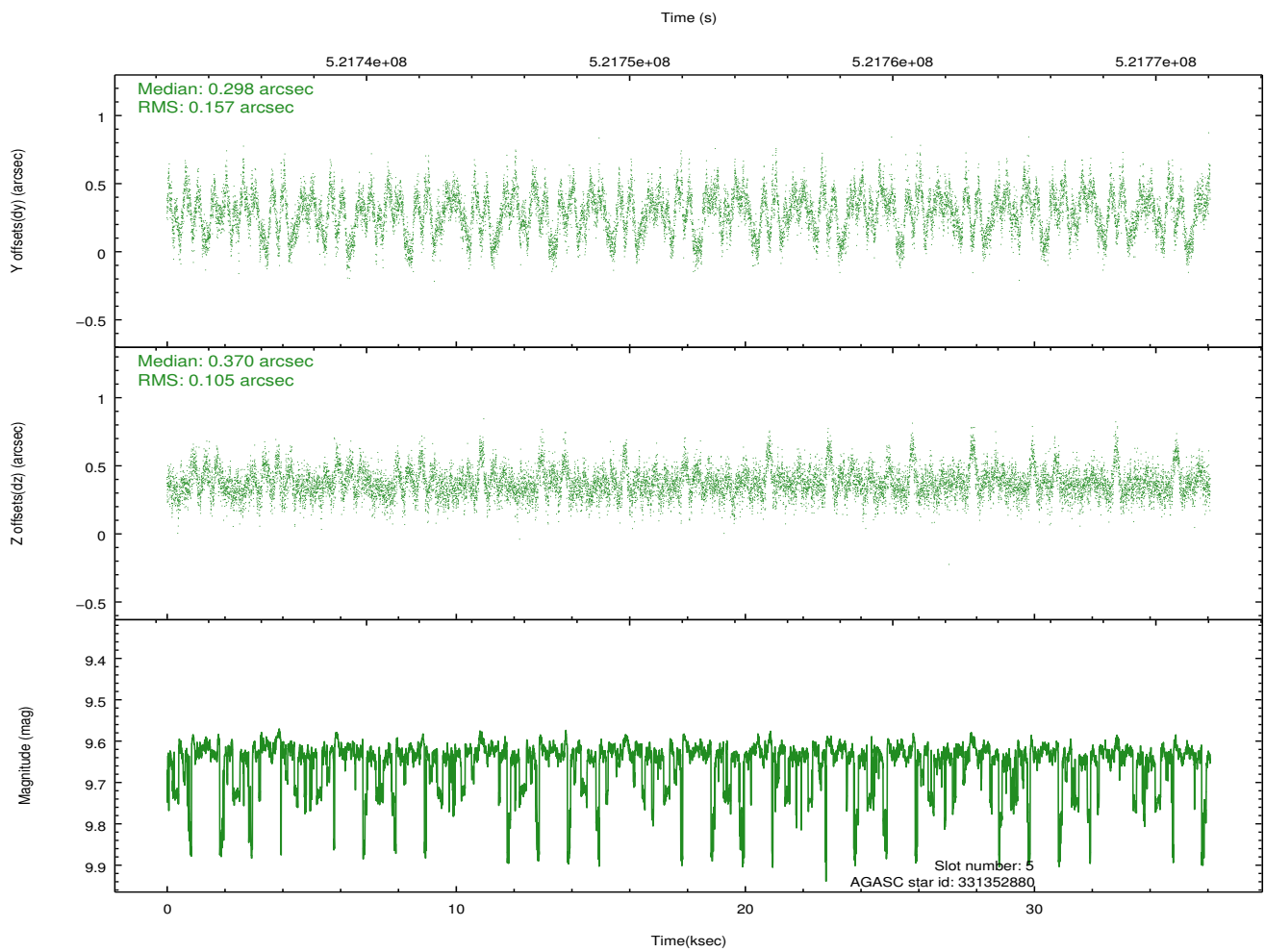
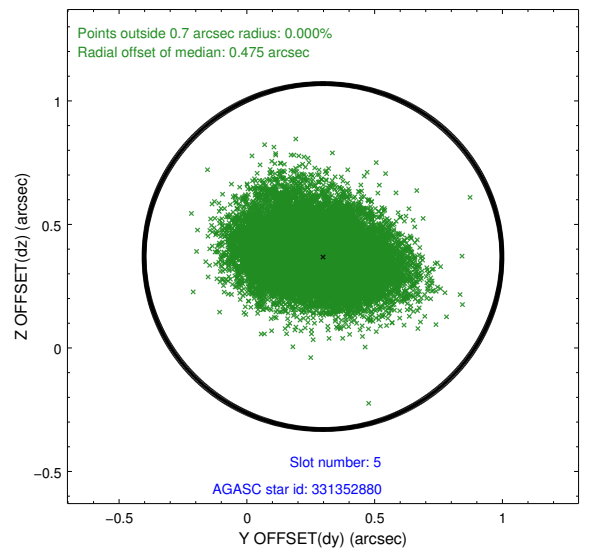
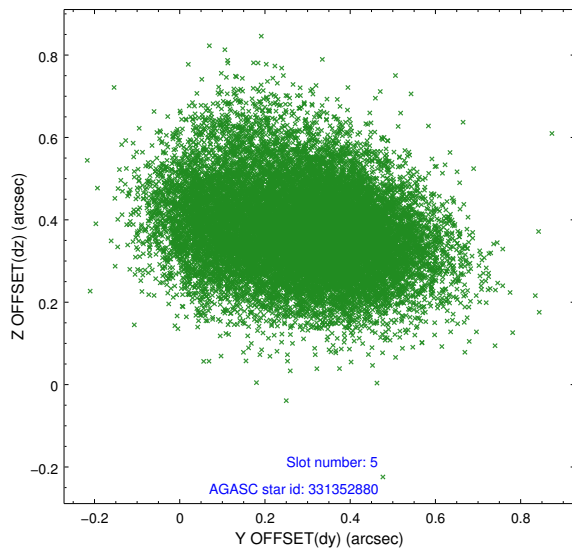
### 2.4.1 Slot 3



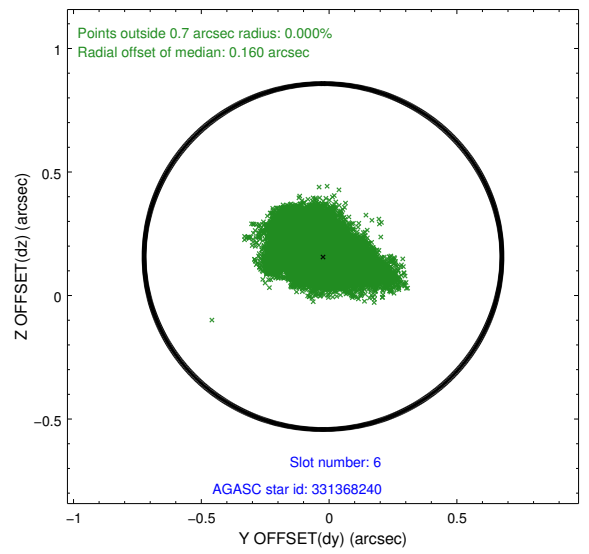
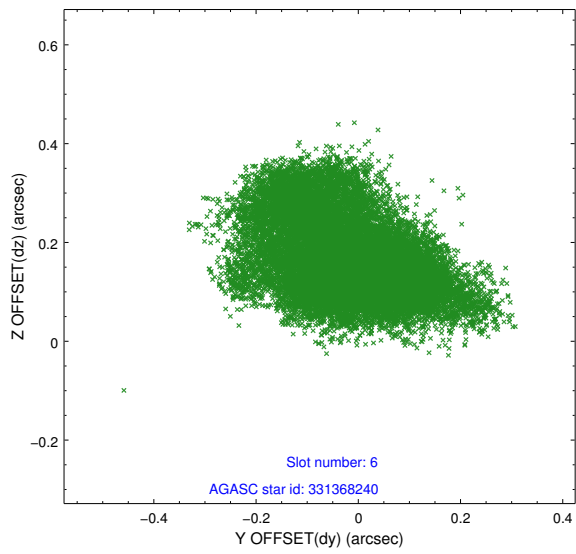
## 2.4.2 Slot 4



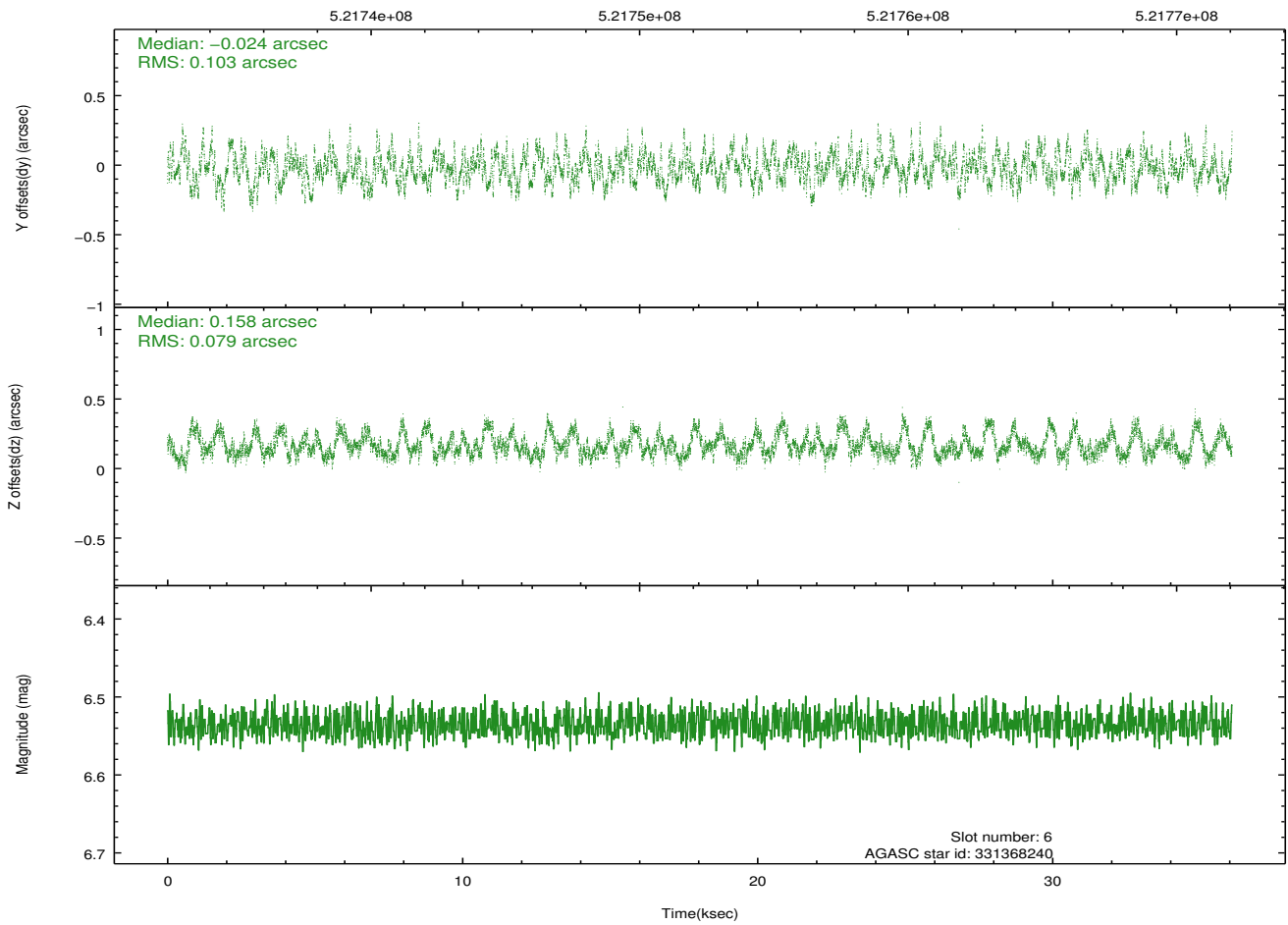
### 2.4.3 Slot 5



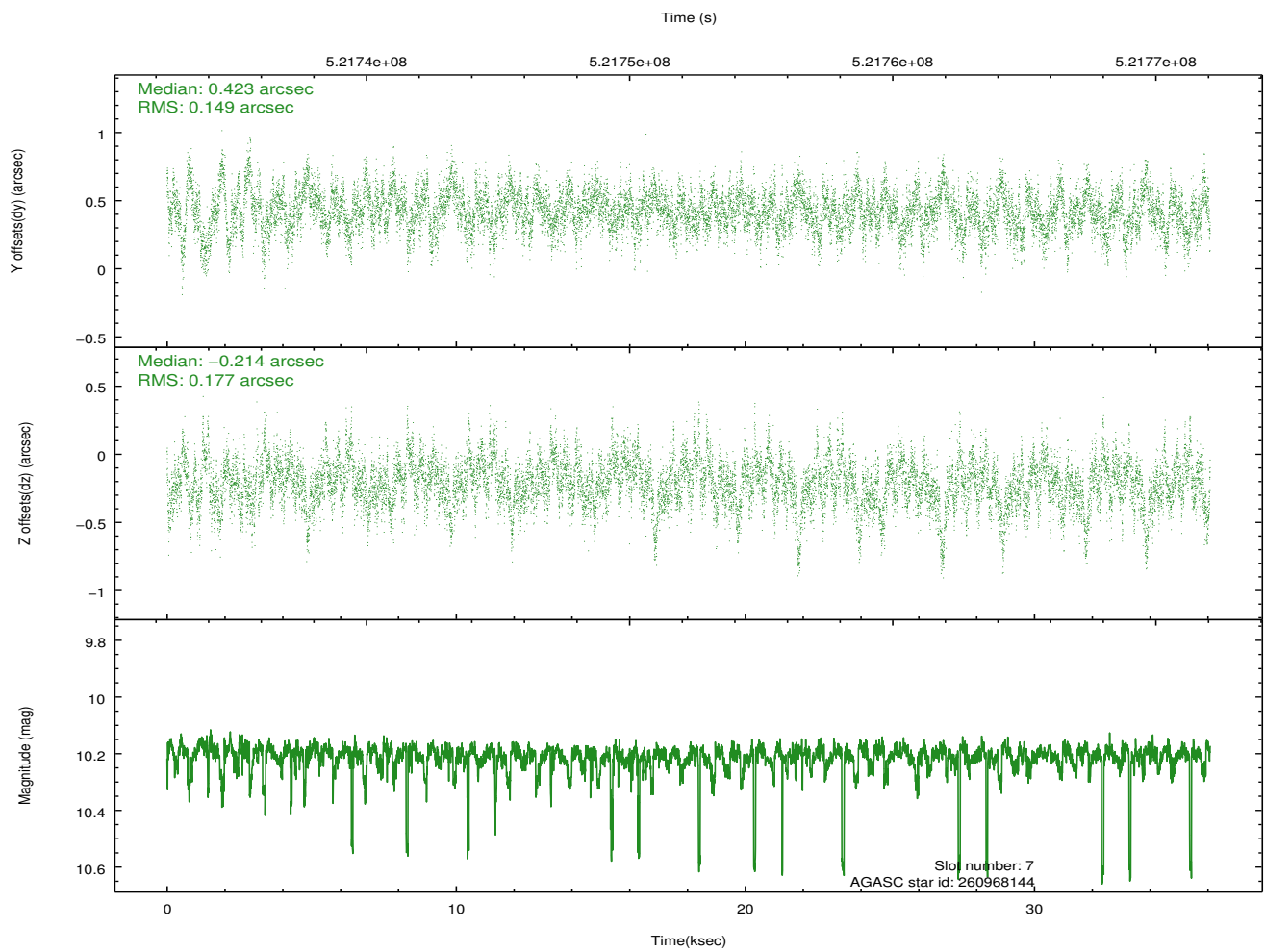
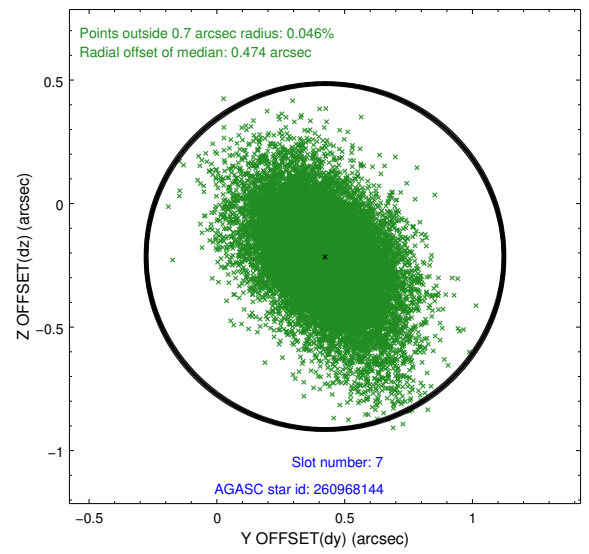
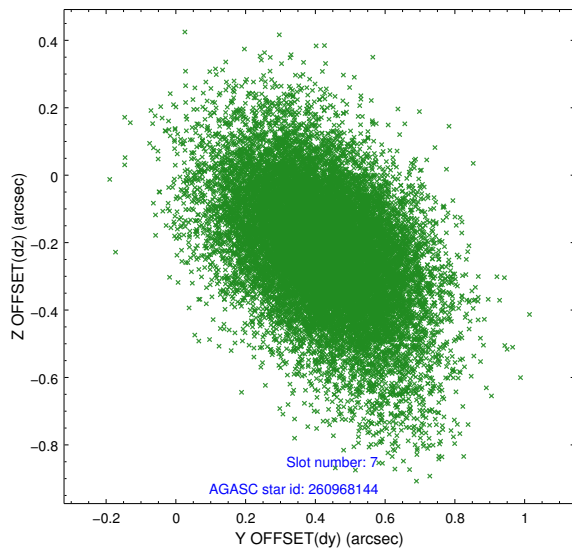
## 2.4.4 Slot 6



Time (s)

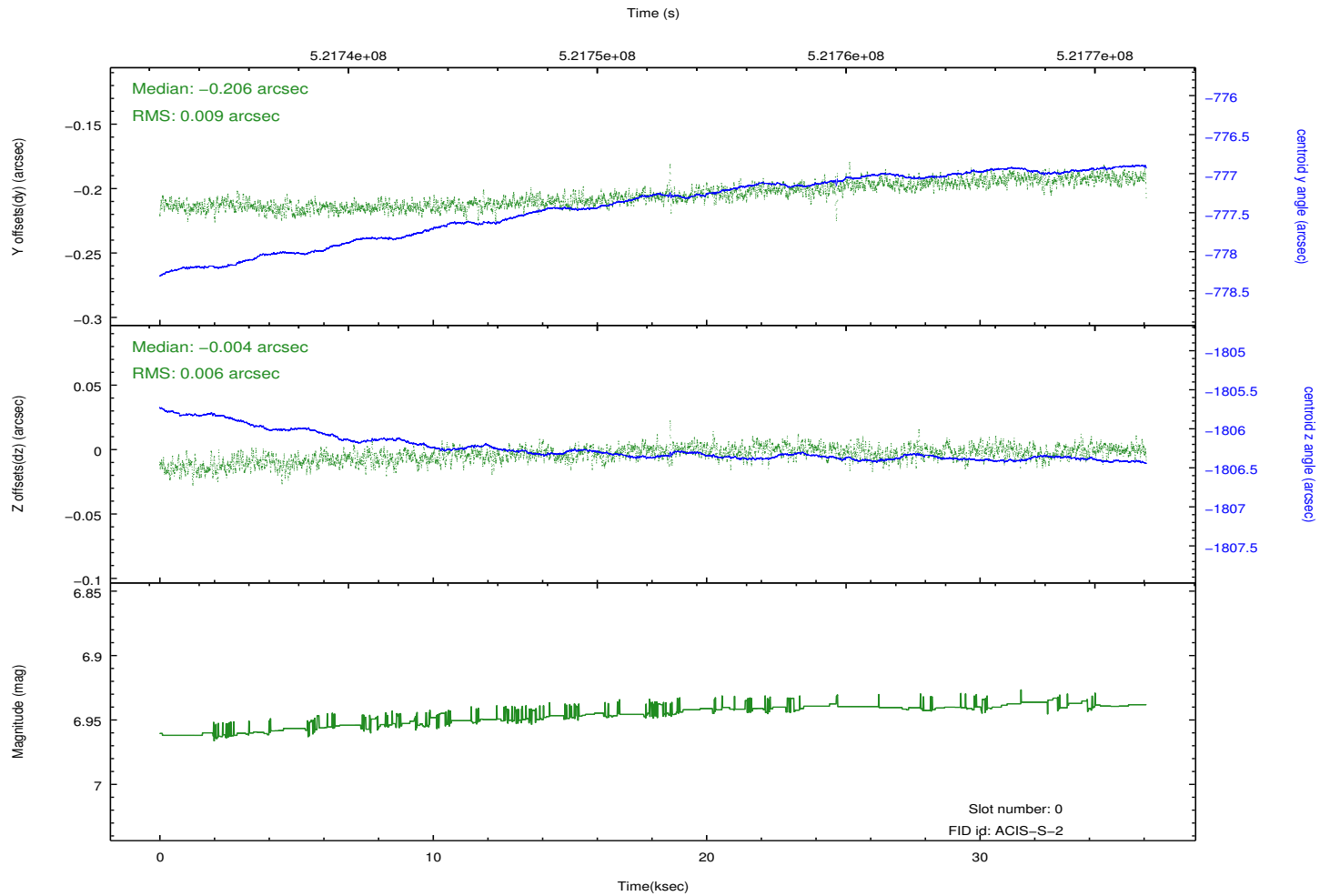
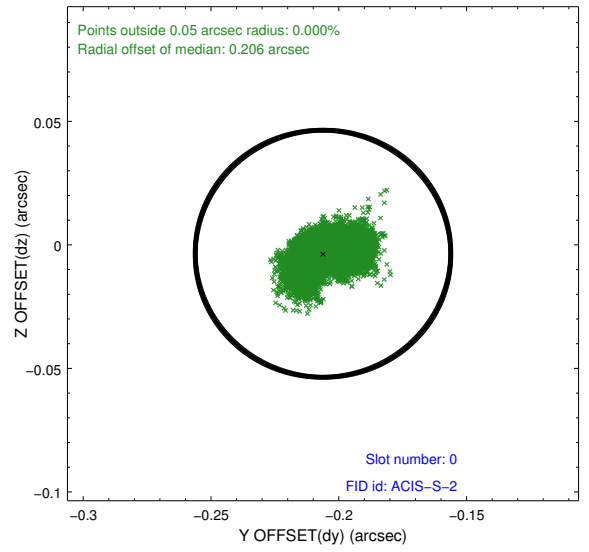
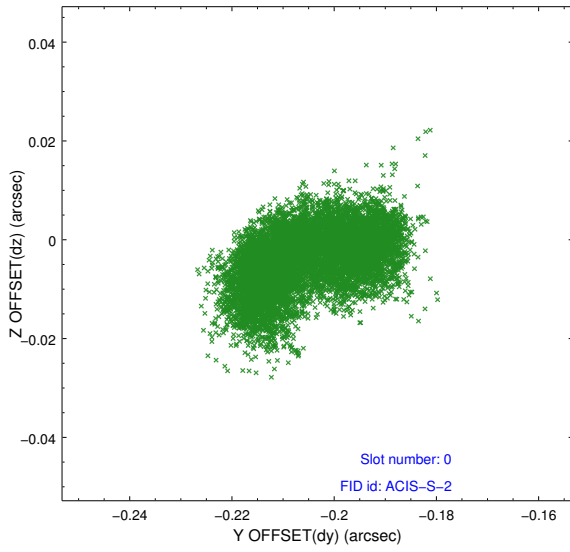


## 2.4.5 Slot 7

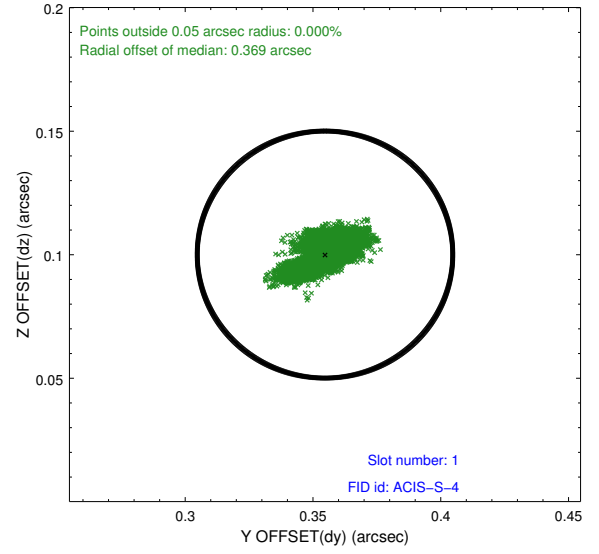
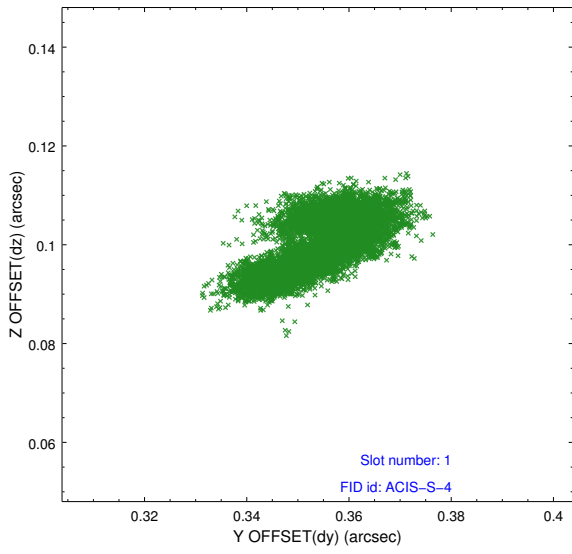


## 2.5 FID Slots

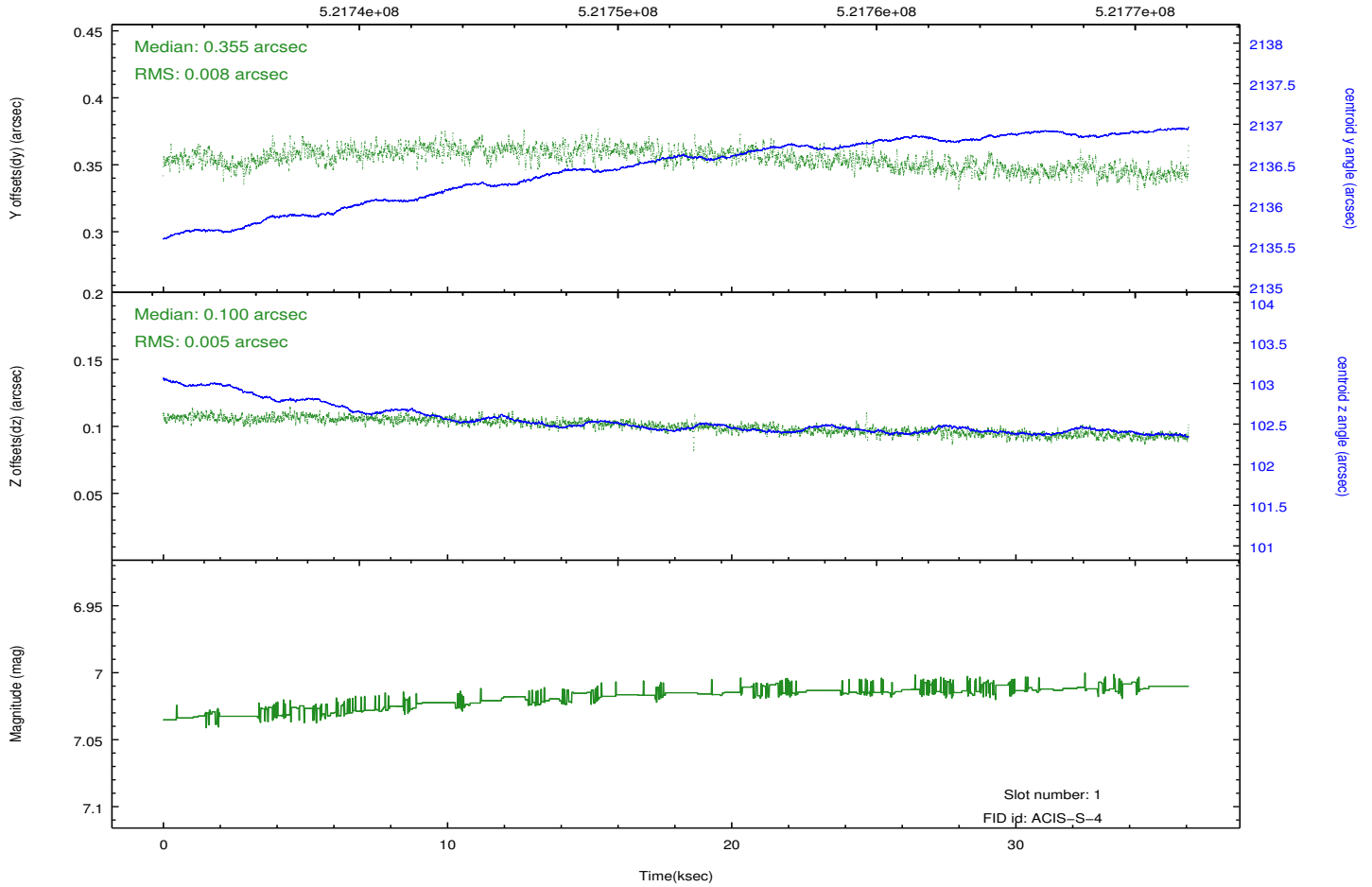
### 2.5.1 Slot 0



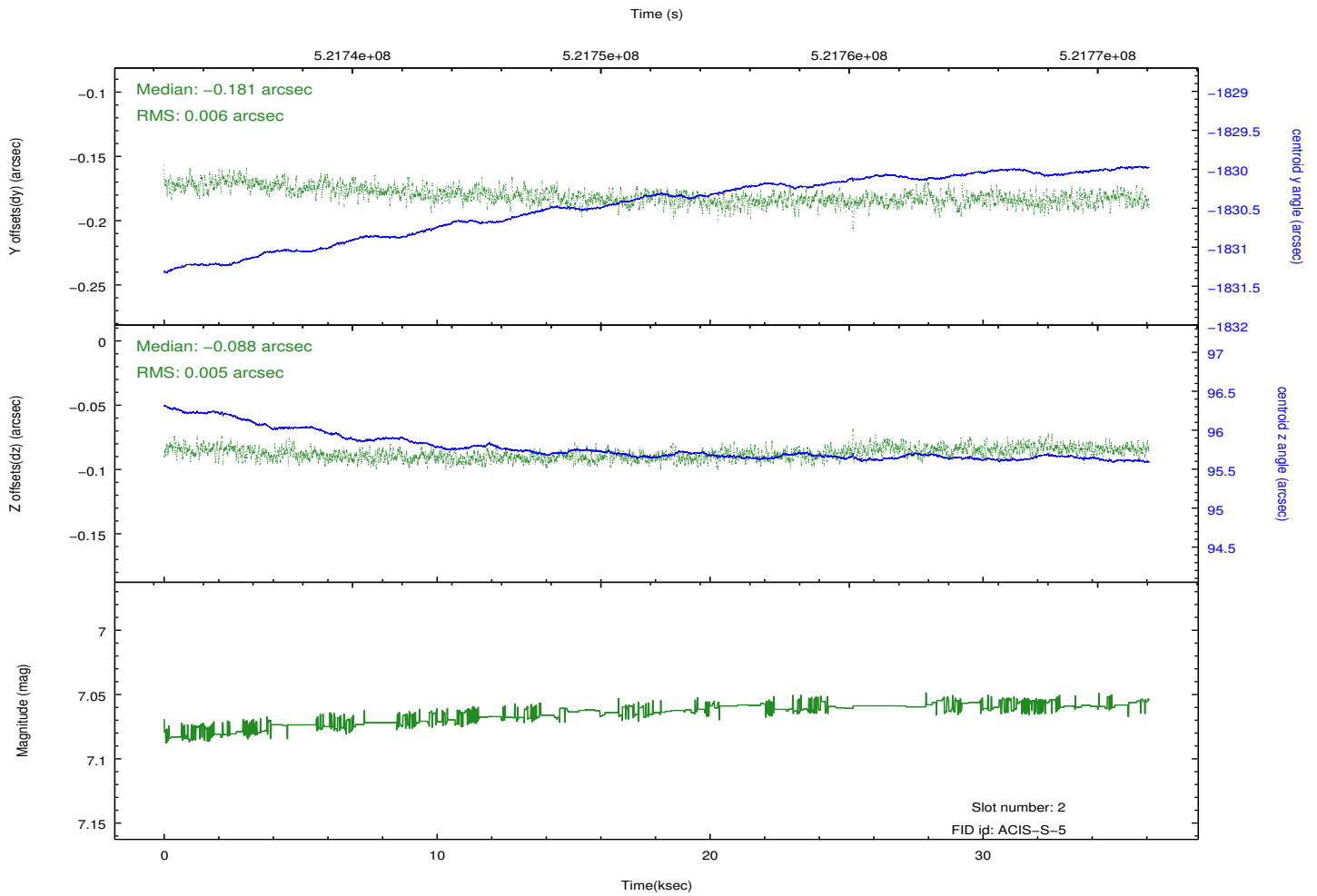
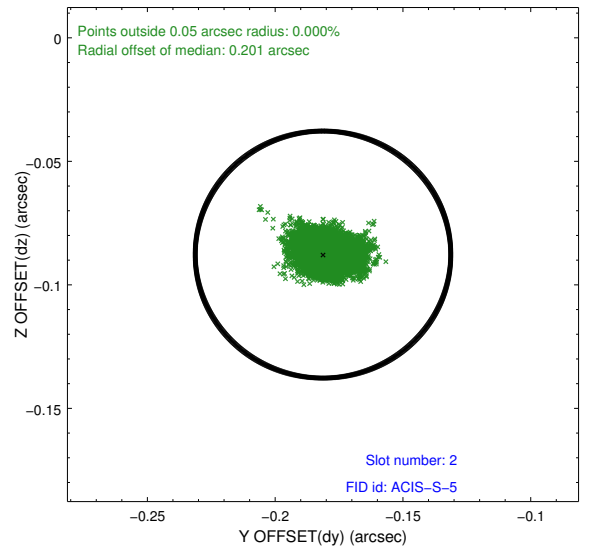
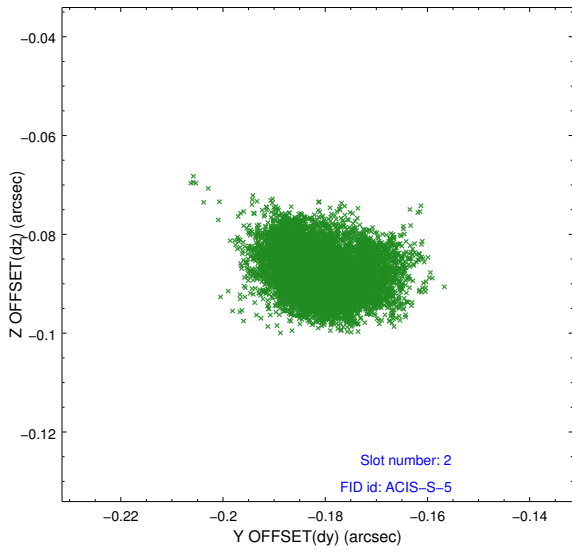
## 2.5.2 Slot 1



Time (s)

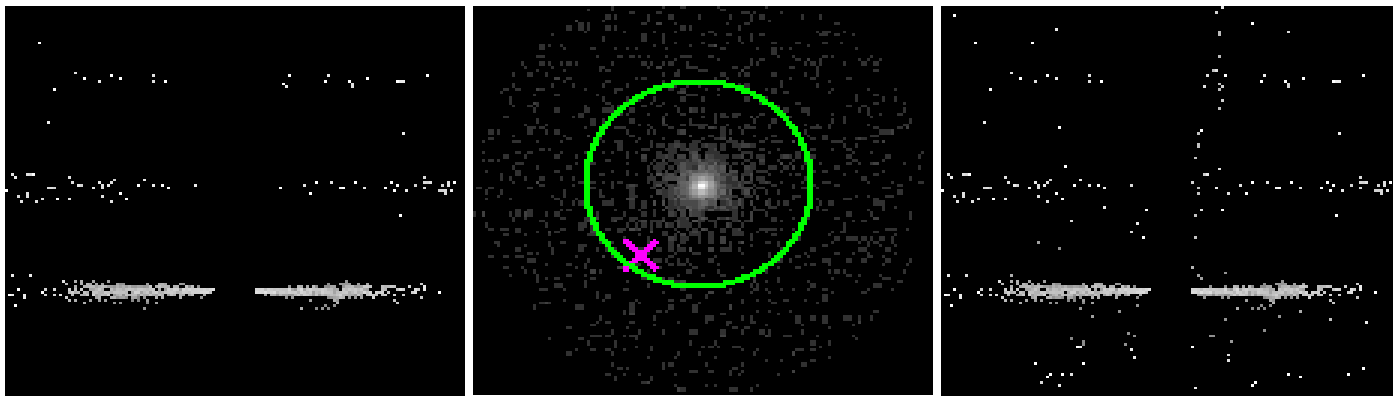


### 2.5.3 Slot 2



### 3 Gratings

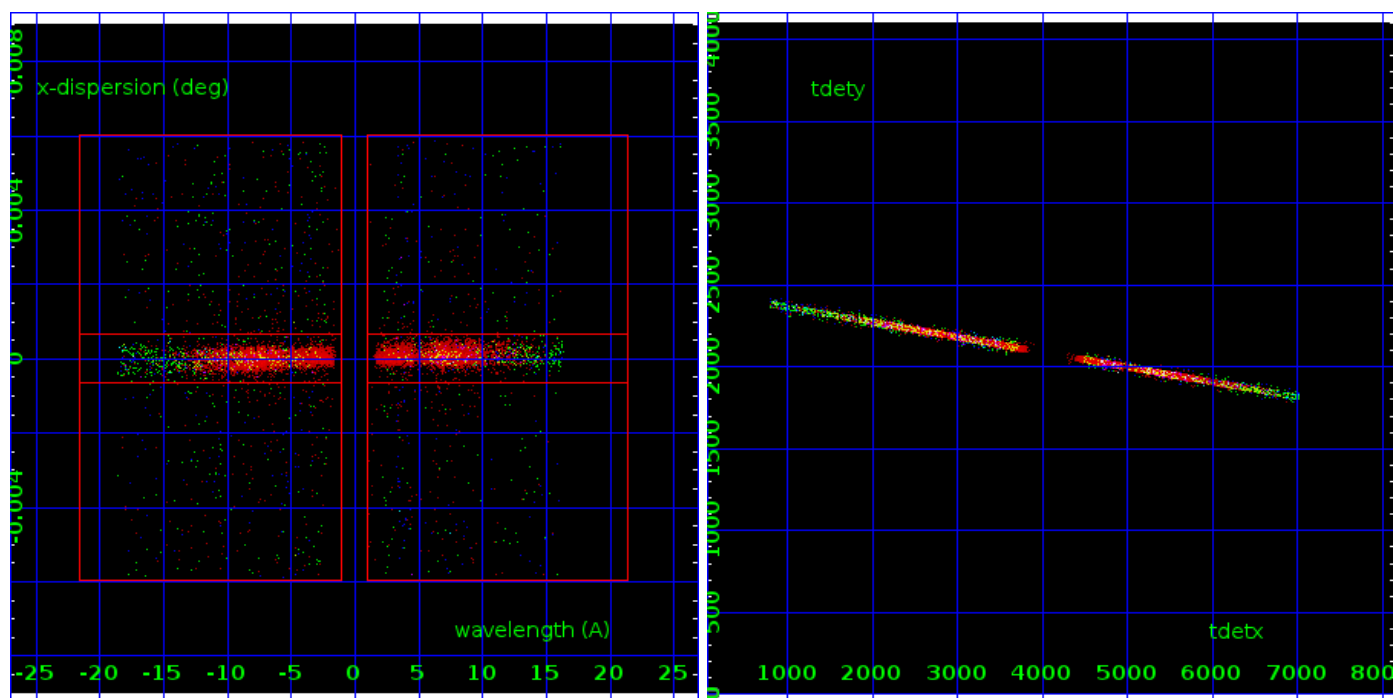
#### 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

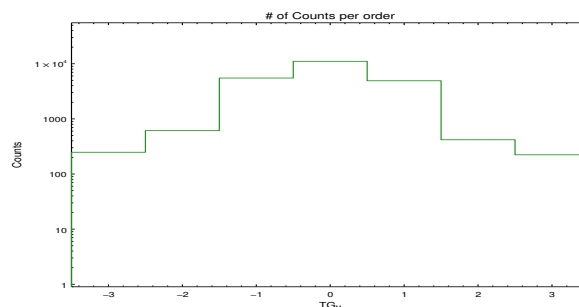
HEG Order Sort ALL

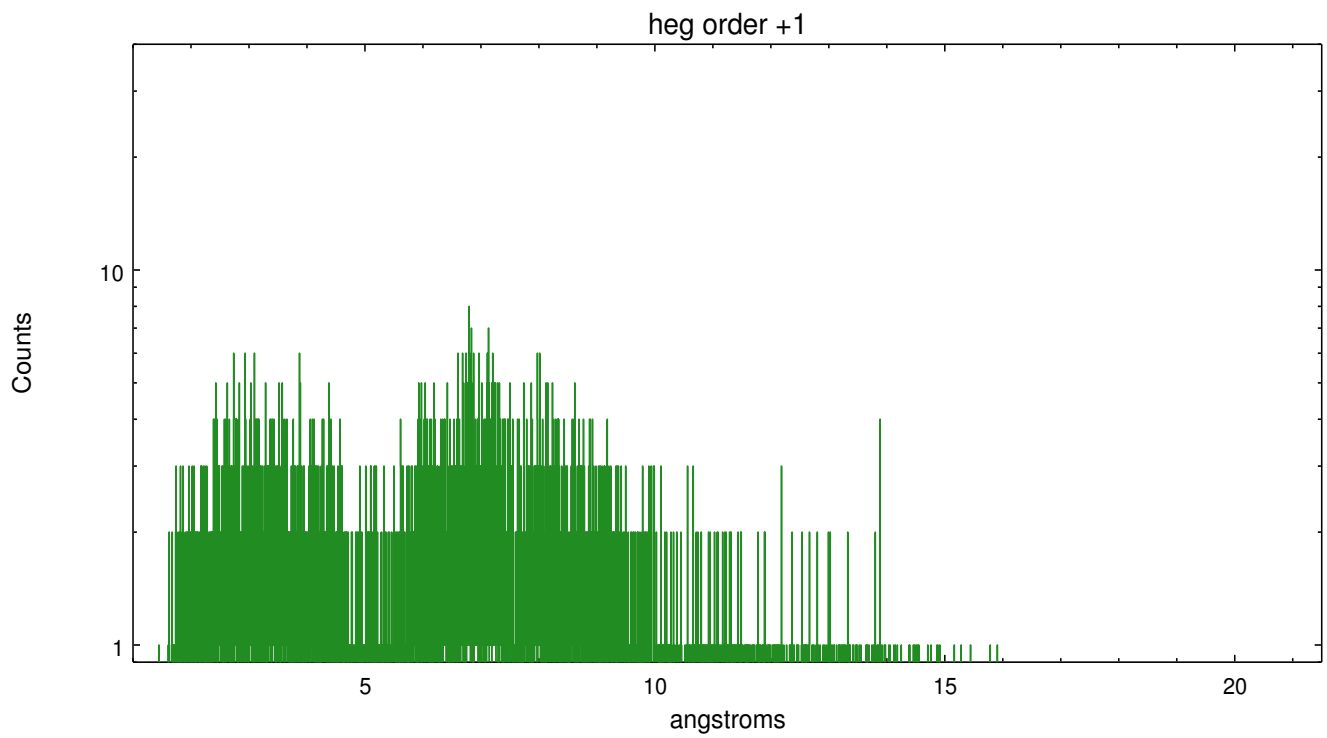
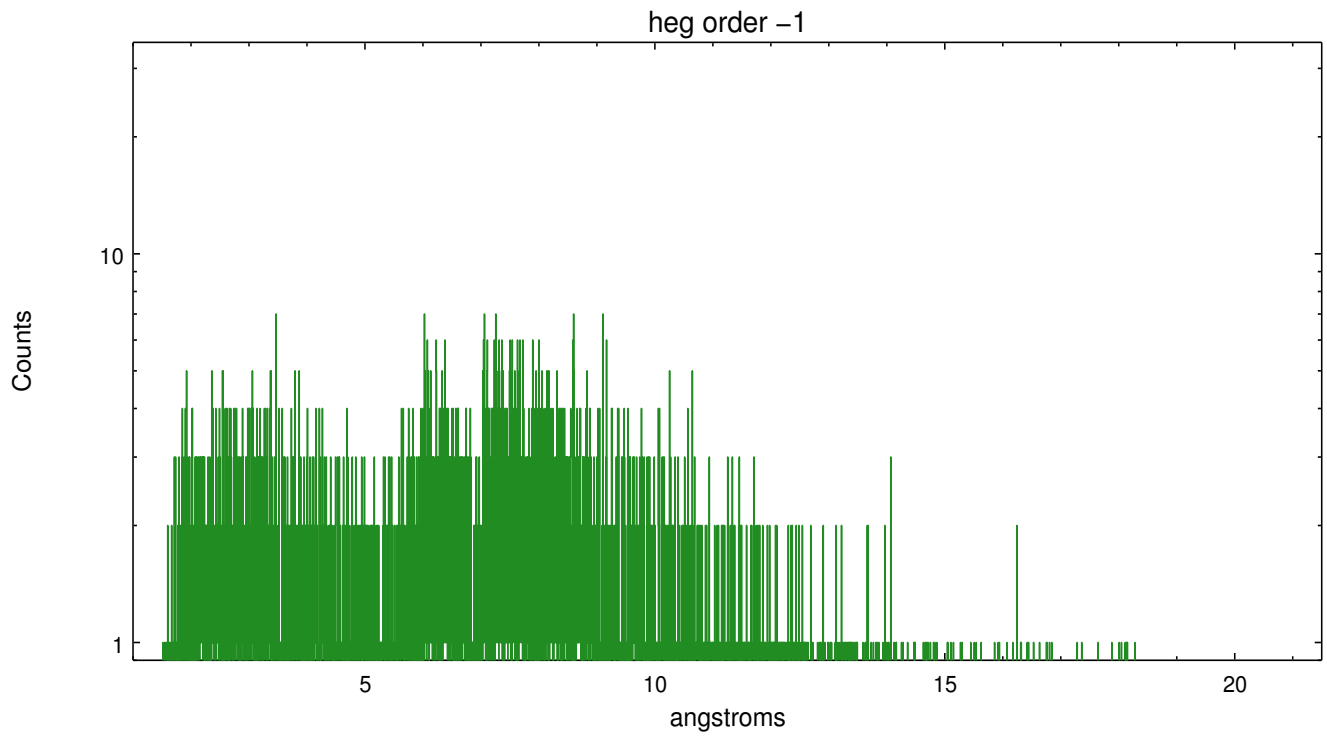


Spot Image HEG

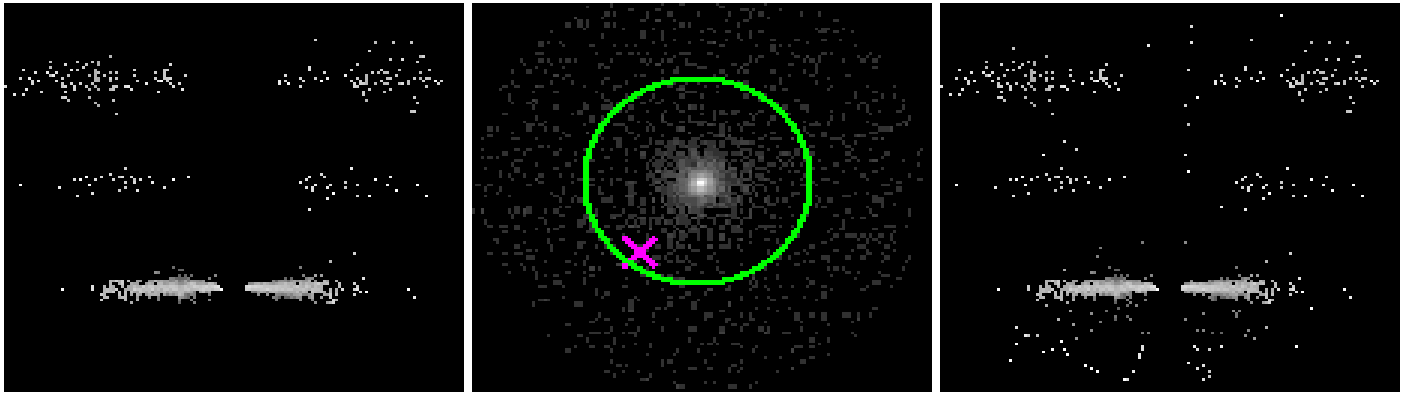
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	248	612	5508	11073	4916	418	223





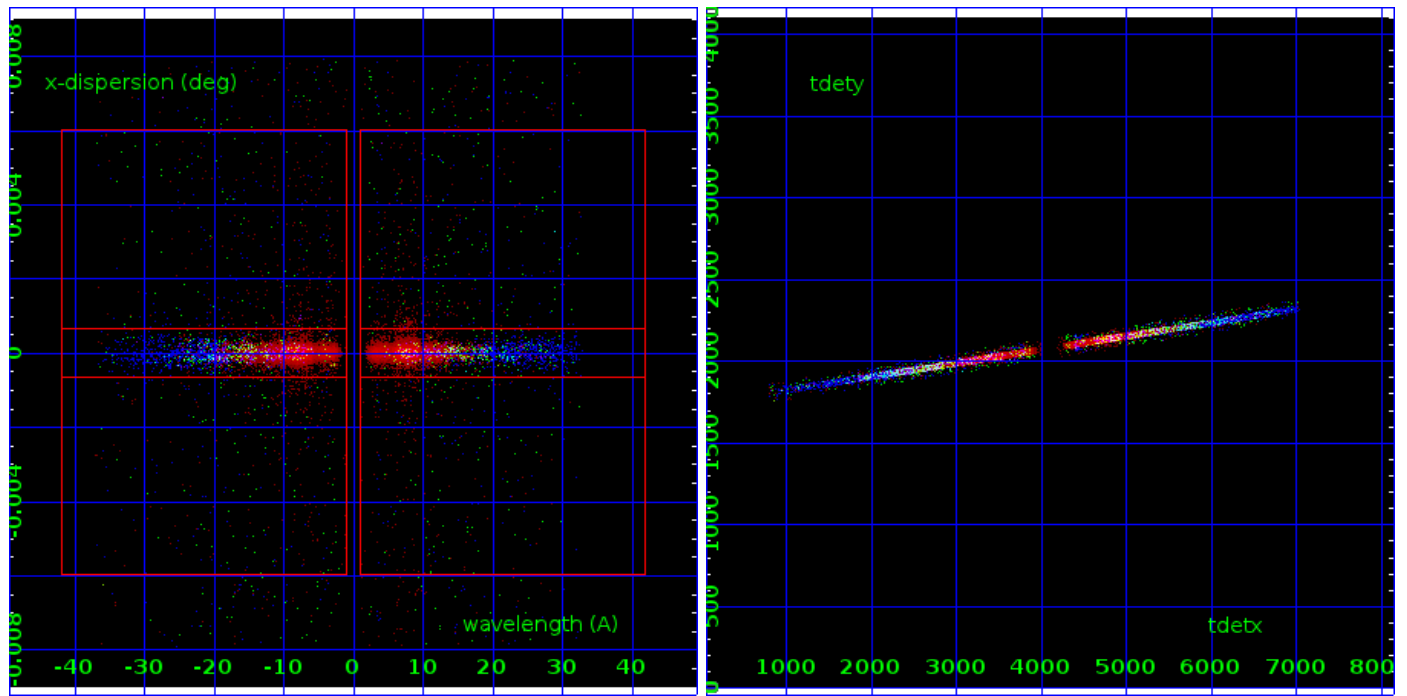
### 3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

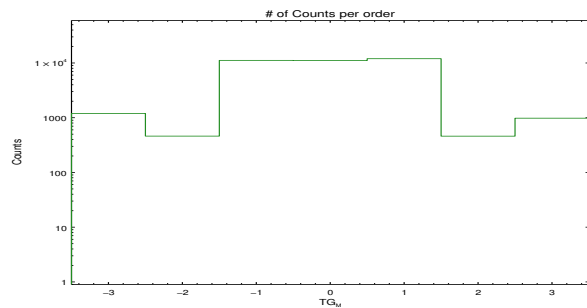
MEG Order Sort ALL

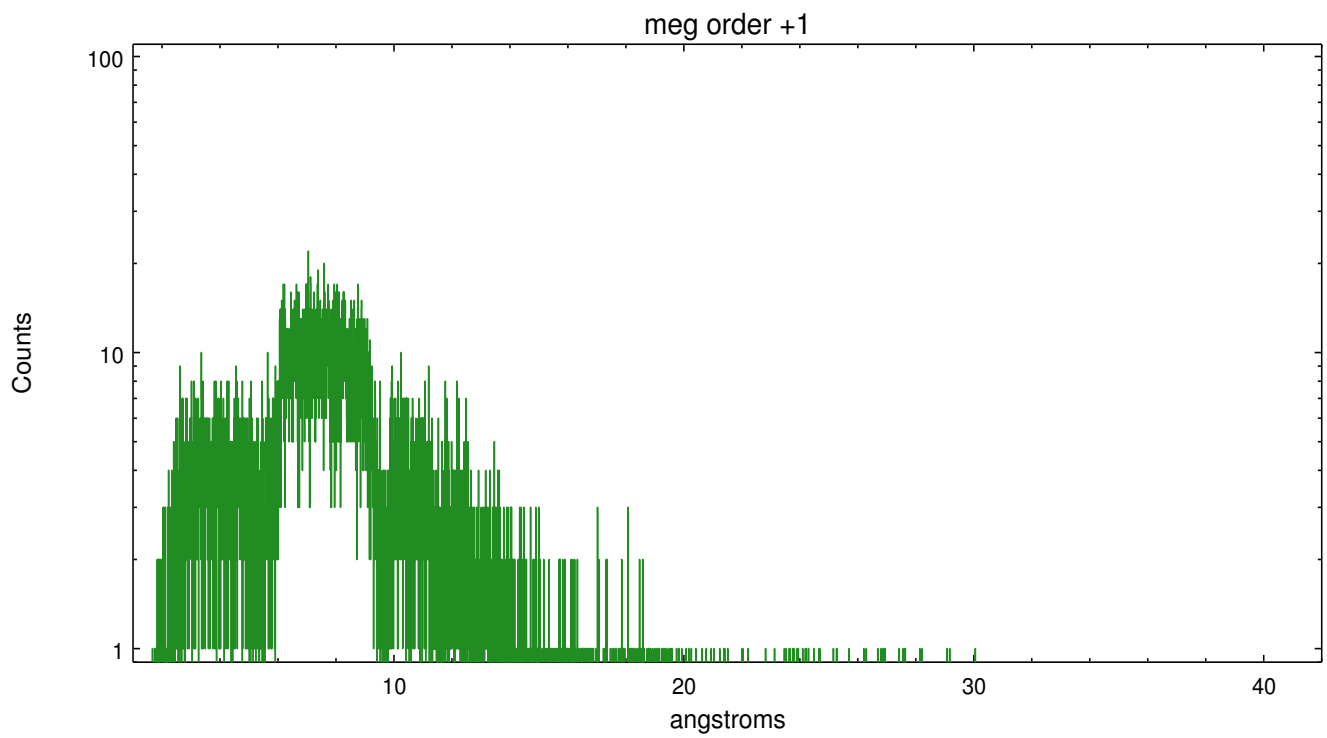
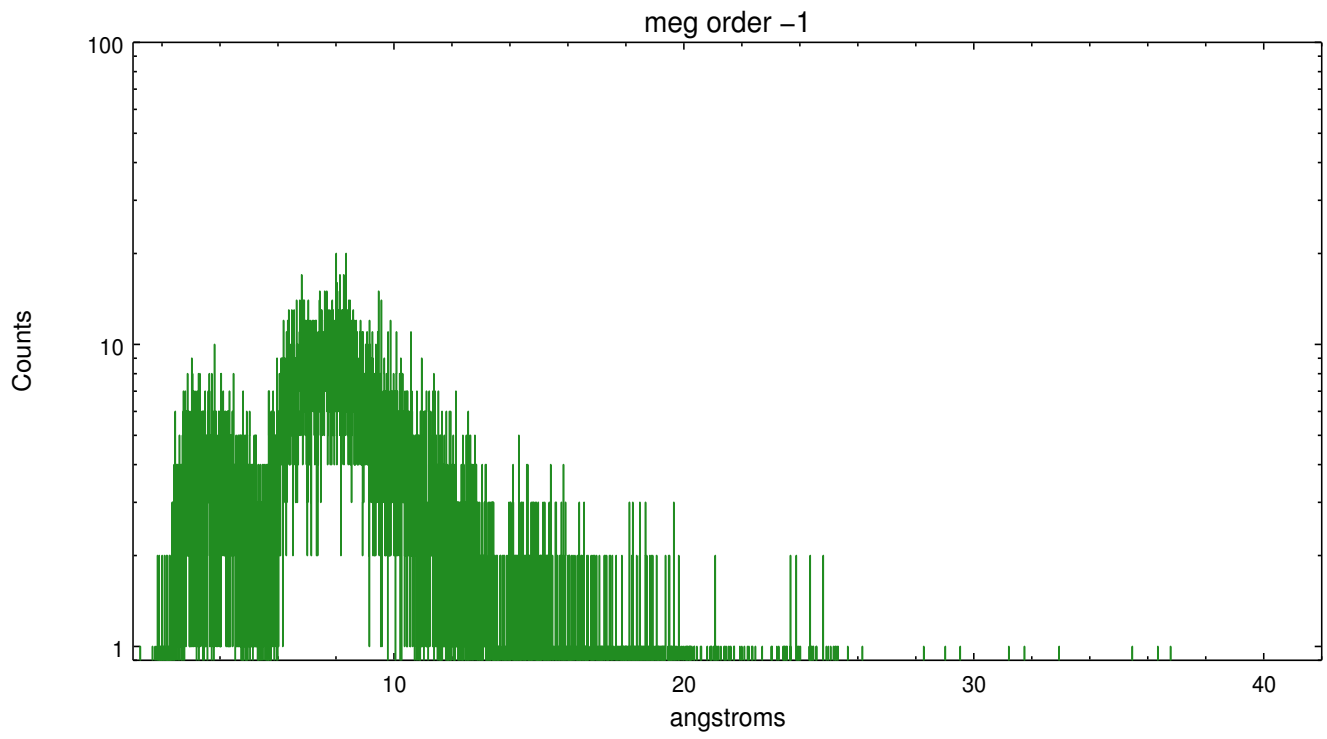


Spot Image MEG

Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1198	461	11153	11073	11980	460	980





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2014.07.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	35.75

## A.2 Comments

Zeroth order 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.