

V&V Reference Report

L2 ASCDS Version : 10.7

Observation 21965 - L2 Version 1
Chandra X-Ray Center

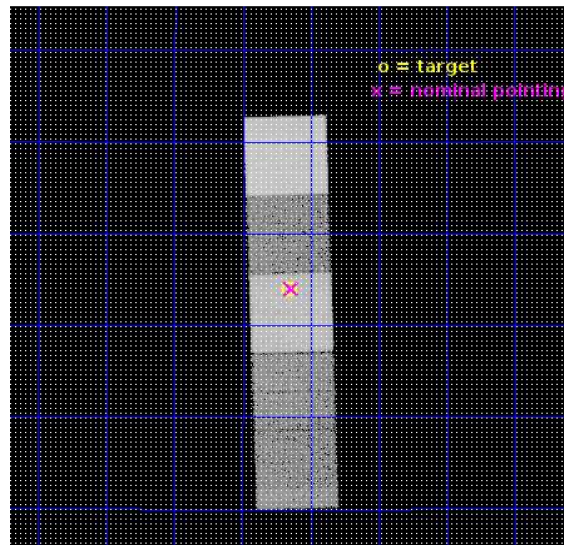
L2 Processing Date : Nov 13 2018

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1 Front

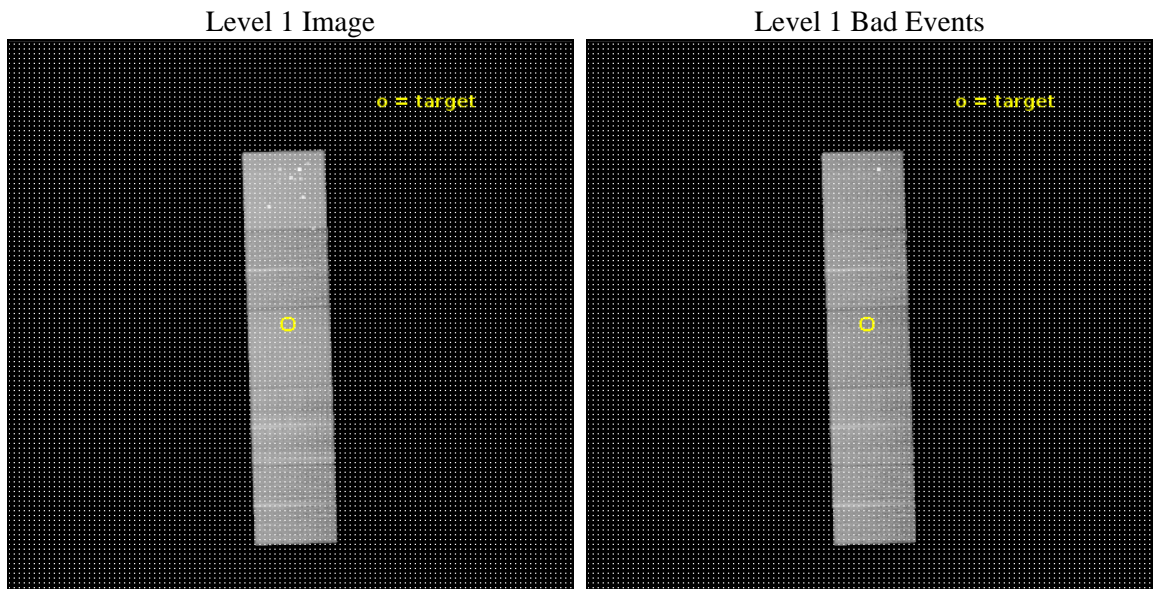
seq_num	201178	Sequence number
obs_id	21965	Observation id
title	An (X-ray Gratings) Tale of Two Young Stellar Objects	Proposal tit
observer	David Principe	Principal investigator
object	XZ Tau and HL Tau	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	67.91375	Observer's specified target RA [deg]
dec_targ	18.232028	Observer's specified target Dec [deg]
ra_nom	67.910332754651	Nominal RA [deg]
dec_nom	18.233647347066	Nominal Dec [deg]
roll_nom	88.157692397662	Nominal Roll [deg]
revision	1	Processing version of data
ontime	23178.700178385	Sum of GTIs [s]
livetime	22875.853396643	Livetime [s]
ontime5	23178.700178385	Sum of GTIs [s]
ontime6	23178.700178385	Sum of GTIs [s]
ontime7	23178.700178385	Sum of GTIs [s]
ontime8	23175.55916822	Sum of GTIs [s]
ontime9	23175.559098244	Sum of GTIs [s]
l2events	272821	Number of level 2 events



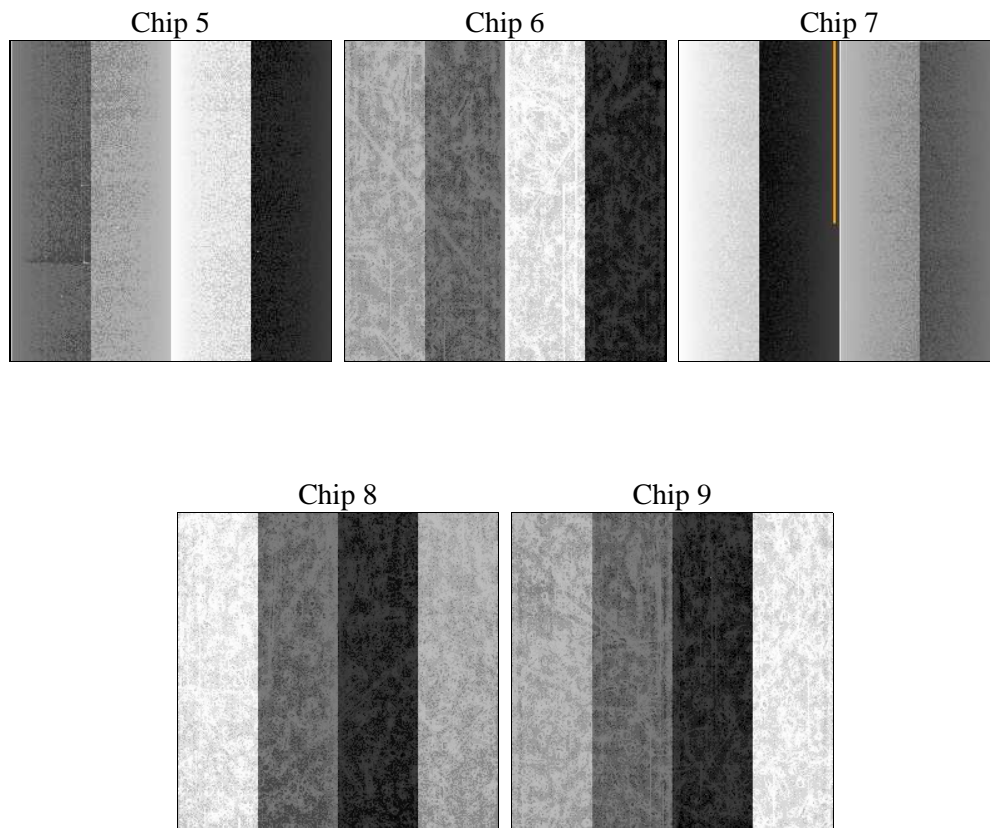
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	23157.000000	[s] Scheduled observation exposure time
ascdsver	10.7	Processing system revision	ontime	23178.700178385	Sum of GTIs [s]
caldbver	4.8.0.1	 	ontime5	23178.700178385	Sum of GTIs [s]
date	2018-11-13T02:41:57	Date and time of file creation	ontime6	23178.700178385	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	23178.700178385	Sum of GTIs [s]
			ontime8	23175.55916822	Sum of GTIs [s]
			ontime9	23175.559098244	Sum of GTIs [s]
			l1events	1096991	Number of level 1 events
			tgmethod	DEADRECKONING	Method used to create src1a file

2.1.4 Events

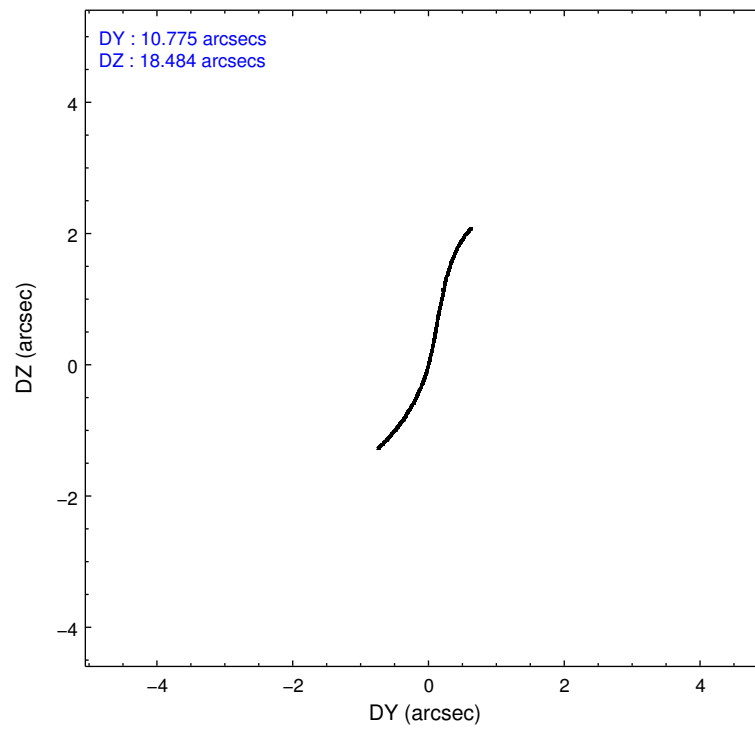
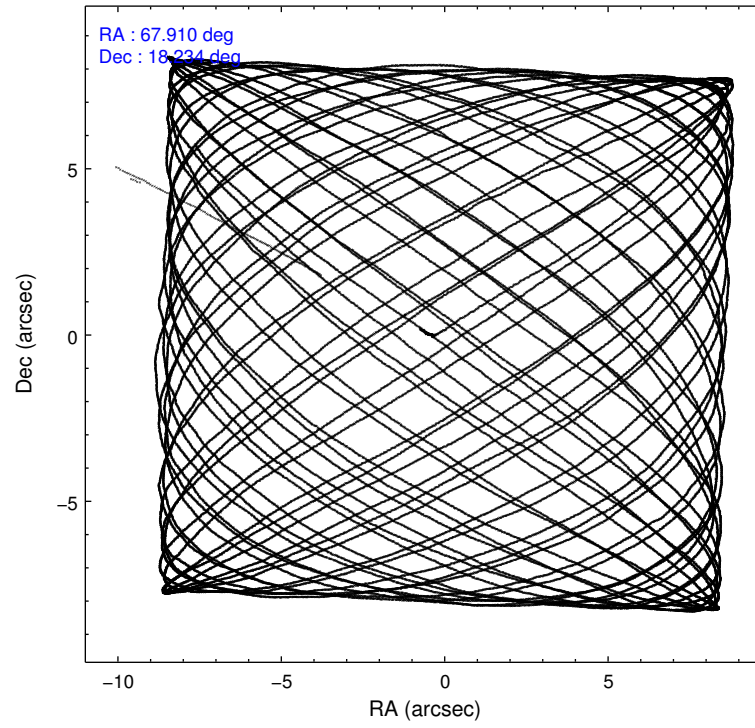
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	296294	176062	223237	228863	172535
rejected events	148393	156533	127620	168140	152044
rejected %	50%	88%	57%	73%	88%

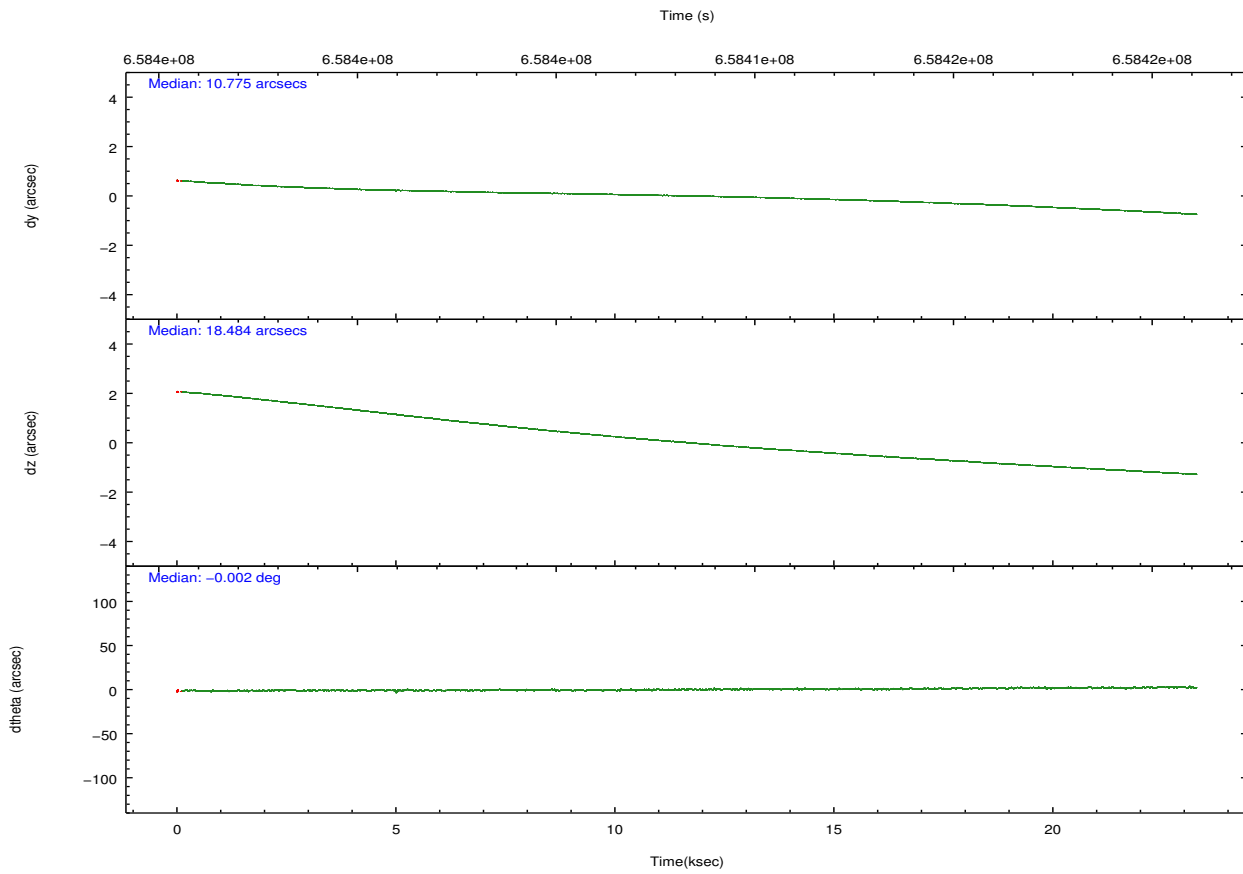
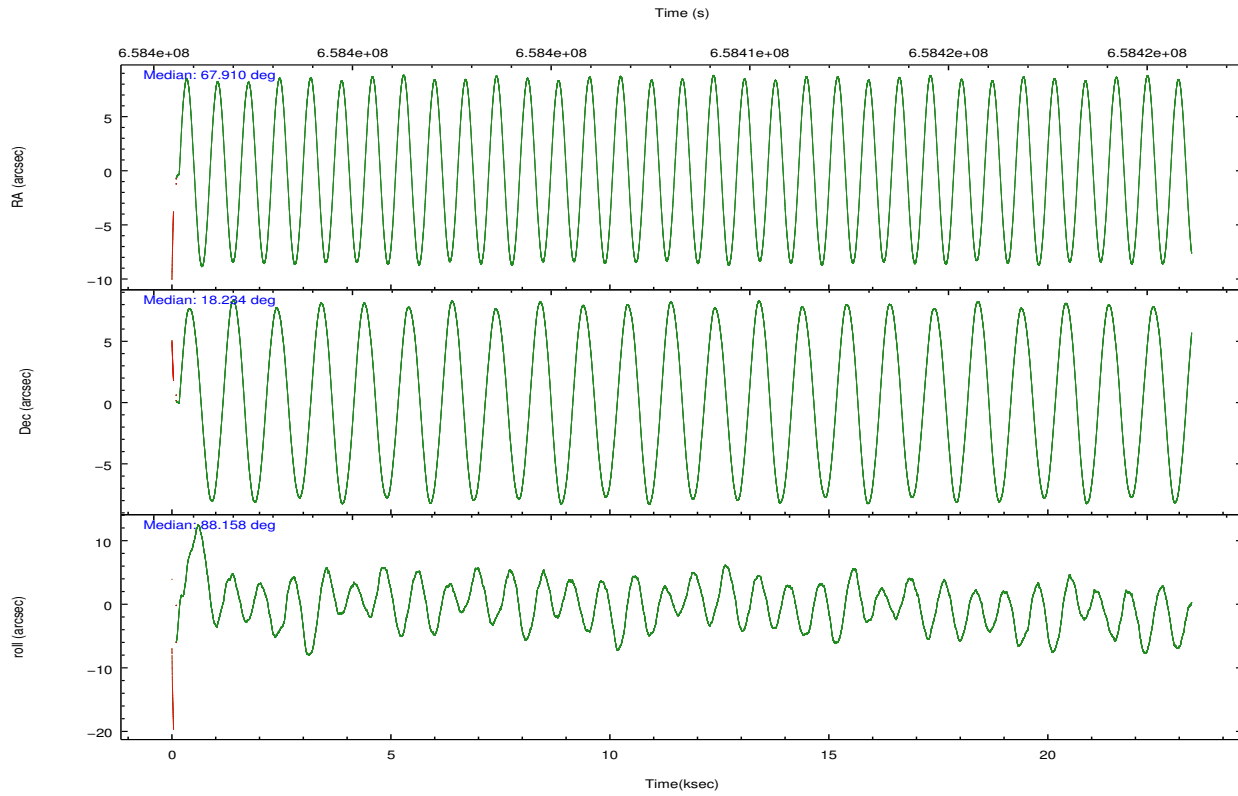
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	22441	6341	7704	16593	7173
	7%	3%	3%	7%	4%
grade 1 events	709	94	346	157	130
	0%	0%	0%	0%	0%
grade 2 events	44586	4663	20571	14903	4640
	15%	2%	9%	6%	2%
grade 3 events	4735	1937	7480	6331	2087
	1%	1%	3%	2%	1%
grade 4 events	4371	1873	7335	5897	2024
	1%	1%	3%	2%	1%
grade 5 events	19420	8025	21931	12384	9180
	6%	4%	9%	5%	5%
grade 6 events	71961	4745	52666	17127	4598
	24%	2%	23%	7%	2%
grade 7 events	128071	148384	105204	155471	142703
	43%	84%	47%	67%	82%

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	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	67.924293	67.91033275465051	CCD I2 on	N	N
[deg] Pointing Dec	18.209622	18.23364734706593	CCD I3 on	N	N
[deg] Pointing Roll	87.996703	88.15769239766216	CCD S0 on	O1	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	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	658396774.184000	658395449.35629	CCD S5 on	O2	Y
Observation start date	2018-11-12T07:58:25	2018-11-12T07:37:29	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	658419931.184000	658420540.33279	On-chip summing requested	N	N
Observation end date	2018-11-12T14:24:22	2018-11-12T14:35:40	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect





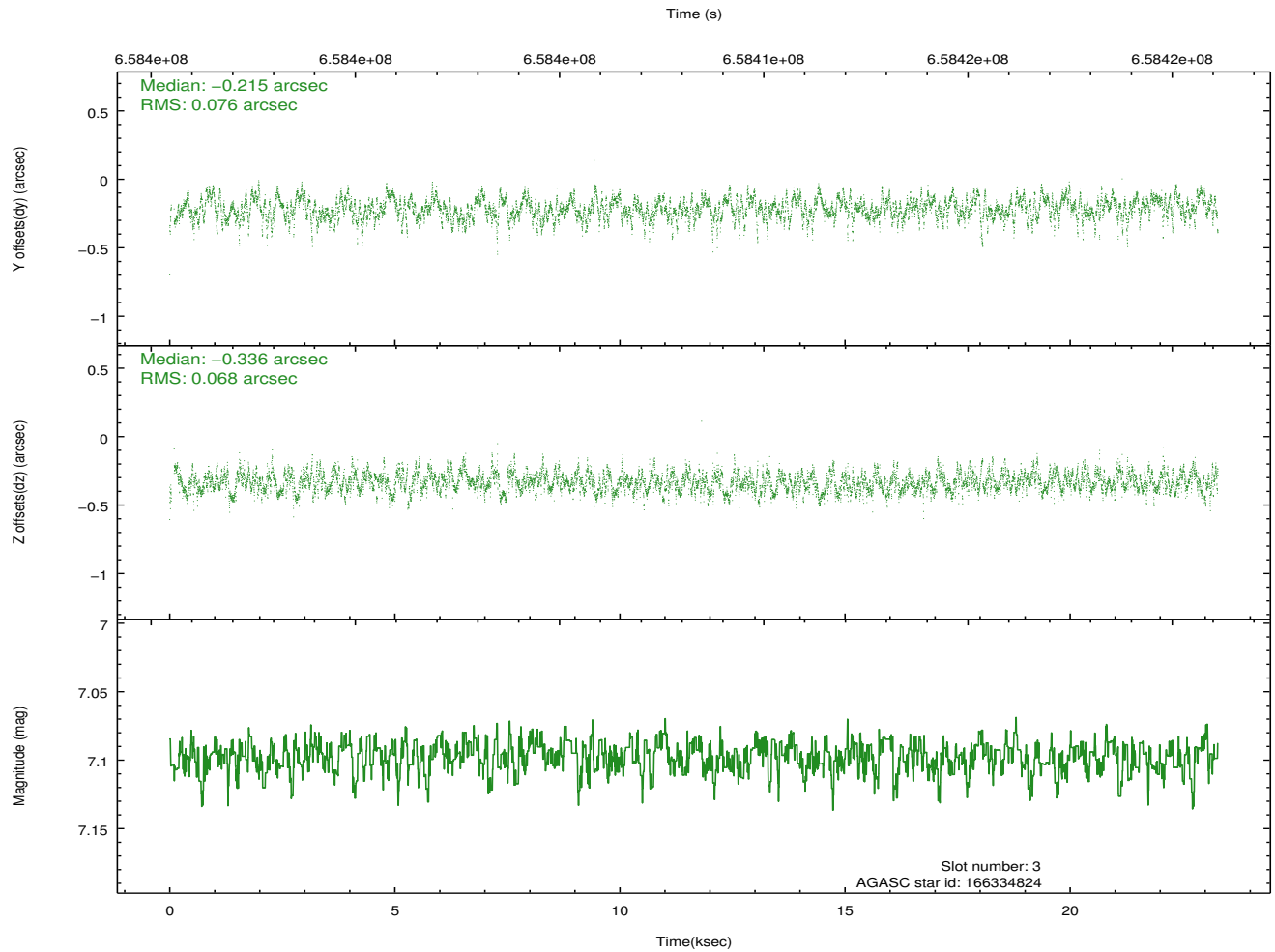
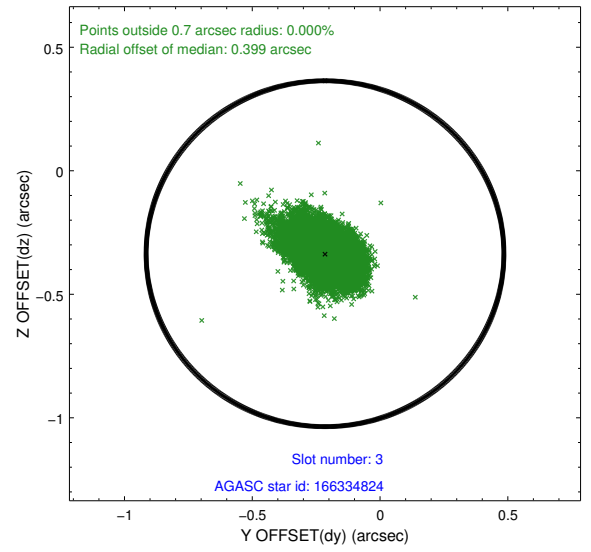
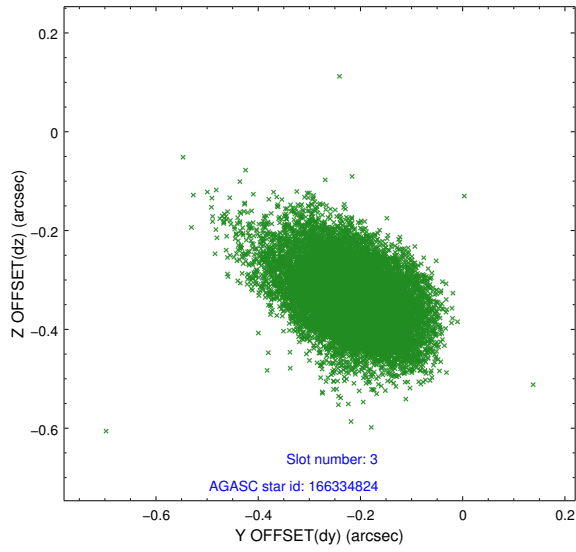
Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.04	5666	1.000	-0.418	-0.273	0.009	0.014	0.000000	0.000000	-764.06	-1740
1	FID		ACIS-S-4	7.17	5665	1.000	0.448	0.252	0.010	0.017	0.000000	0.000000	2150.08	168
2	FID		ACIS-S-6	7.30	5666	1.000	-0.057	0.028	0.014	0.023	0.000000	0.000000	398.54	805
3	GUIDE	used	166334824	7.10	11329	1.000	-0.215	-0.336	0.107	0.176	67.376458	17.863163	-1309.82	1830
4	GUIDE	used	166338584	9.33	11313	1.000	0.120	0.101	0.134	0.215	67.904616	17.709782	-1800.90	2
5	GUIDE	used	166468240	9.02	11318	1.000	0.428	0.423	0.147	0.237	68.167699	17.861525	-1222.44	-876
6	GUIDE	used	166996584	9.11	11318	1.000	-0.324	-0.196	0.150	0.233	68.020035	18.861675	2357.31	-243
7	MONITOR	unused		0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

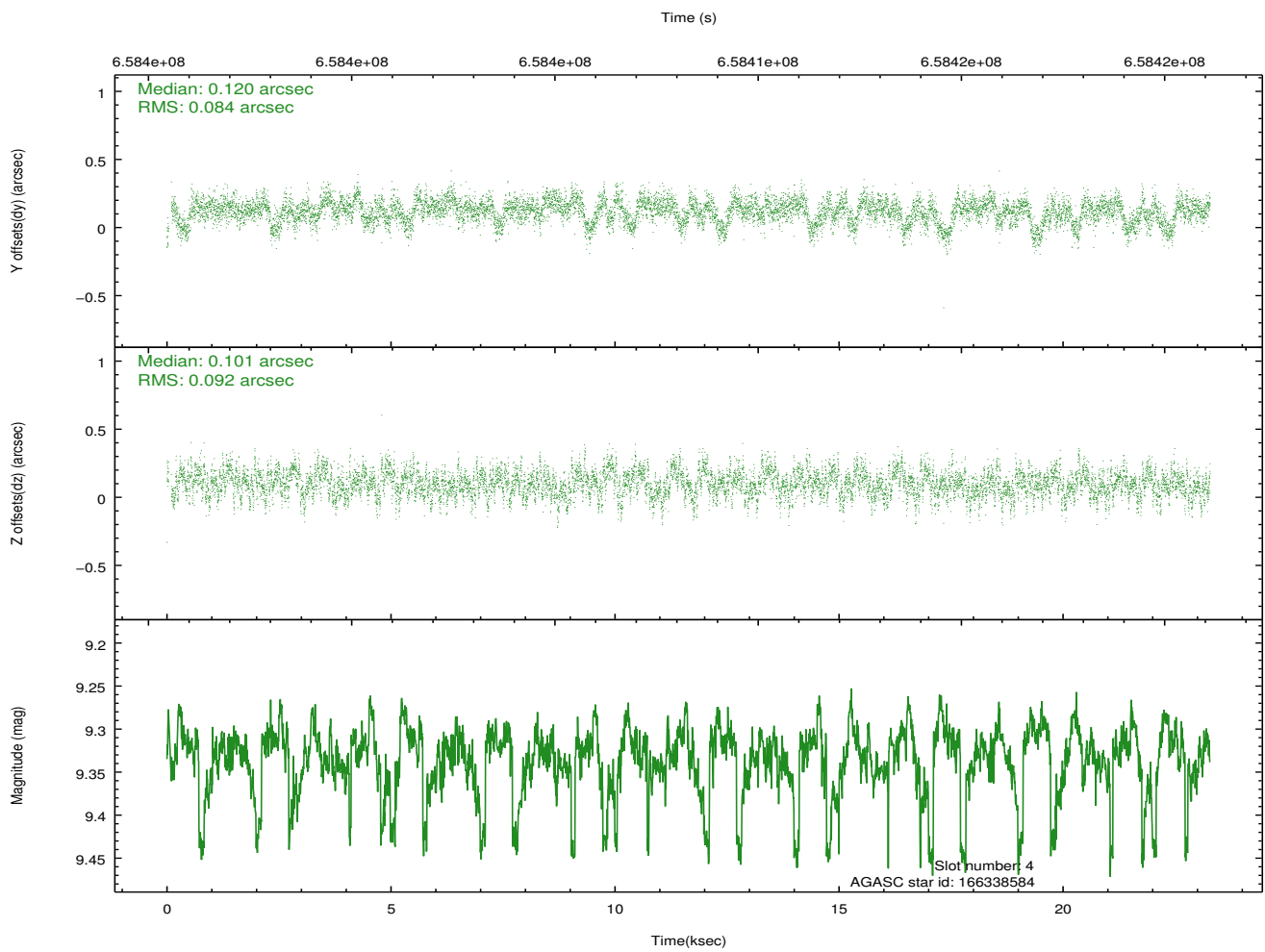
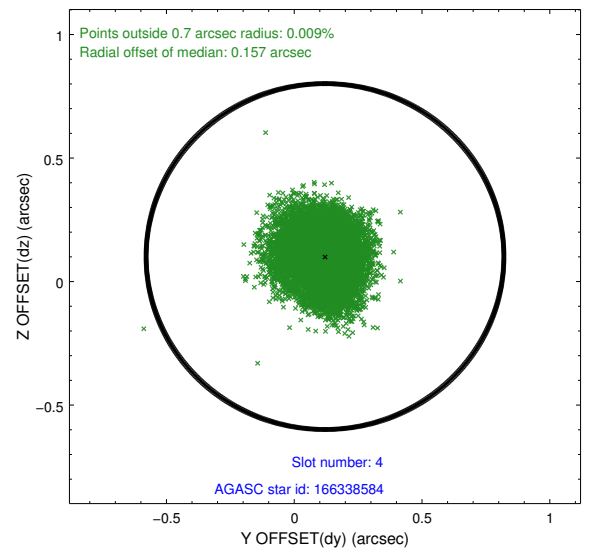
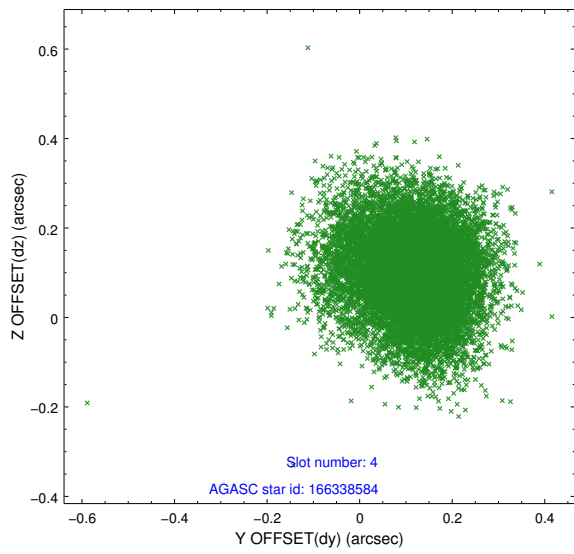
∞

2.4 Star Slots

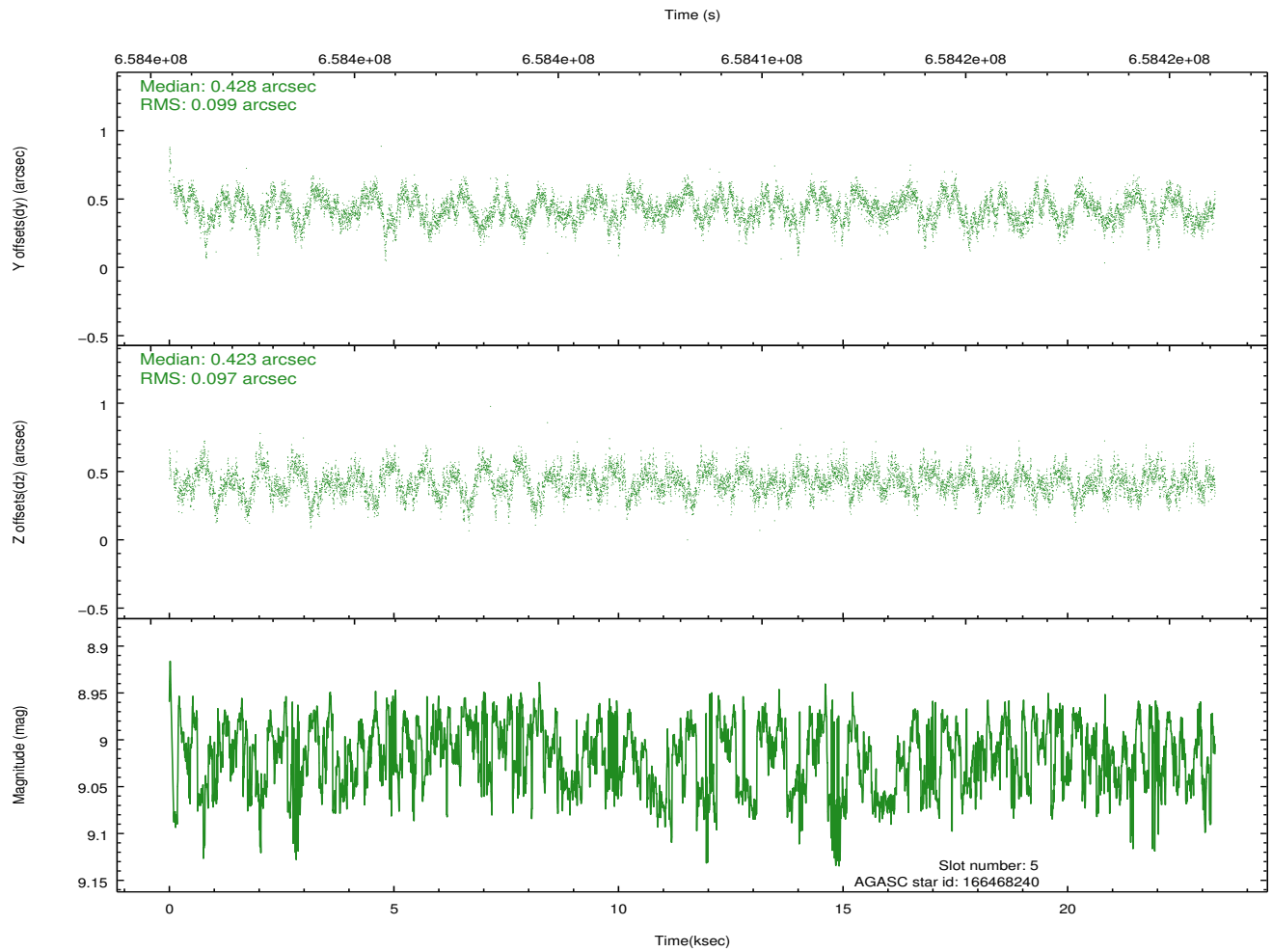
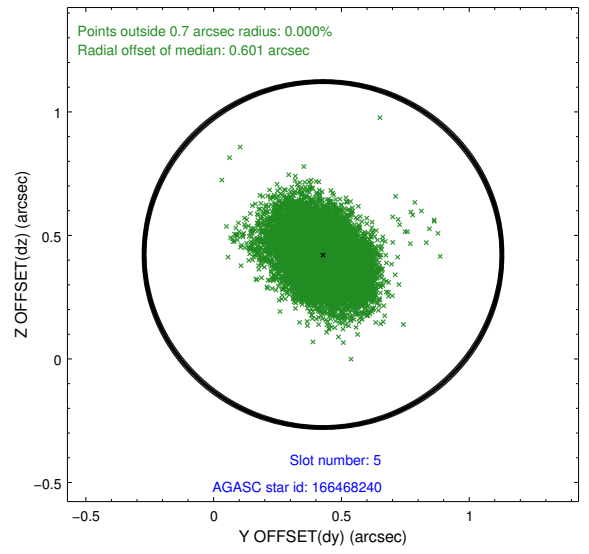
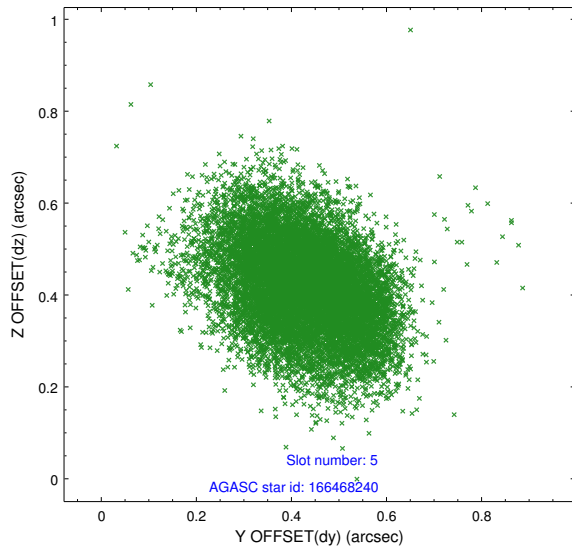
2.4.1 Slot 3



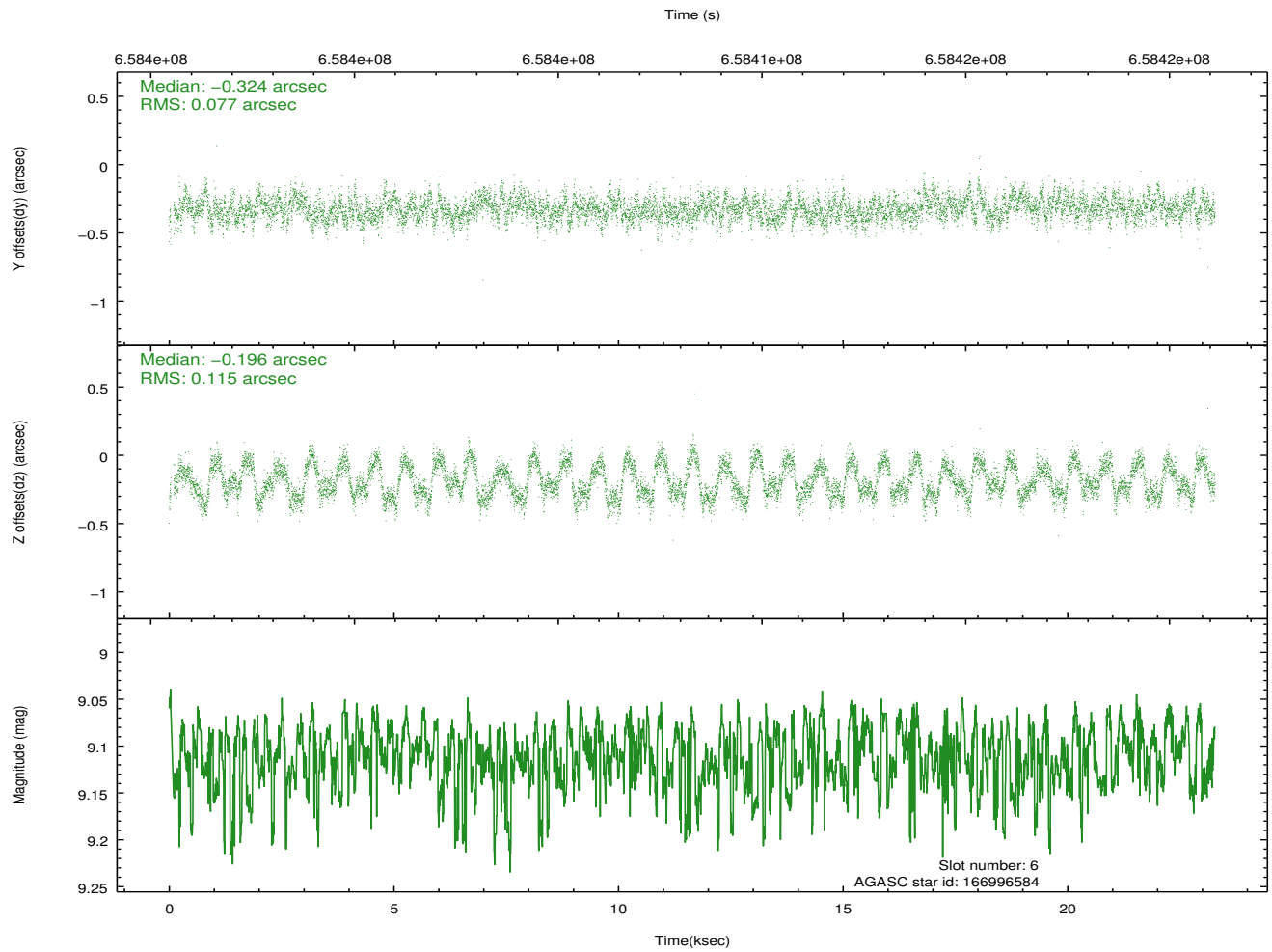
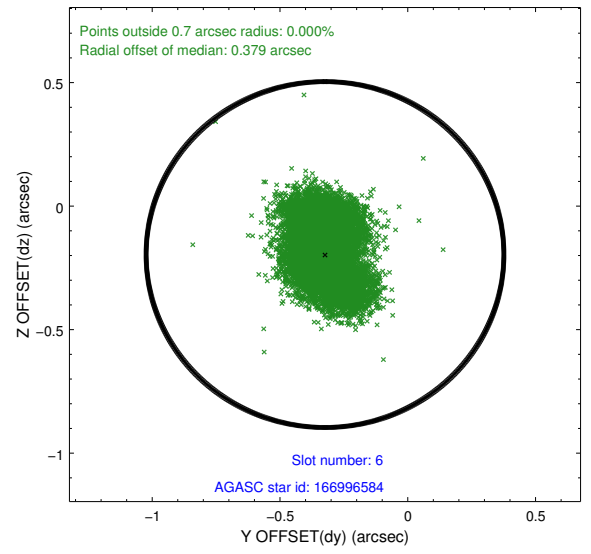
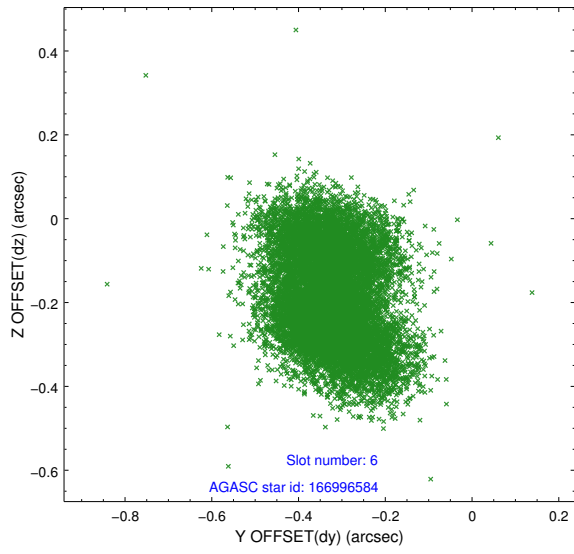
2.4.2 Slot 4



2.4.3 Slot 5

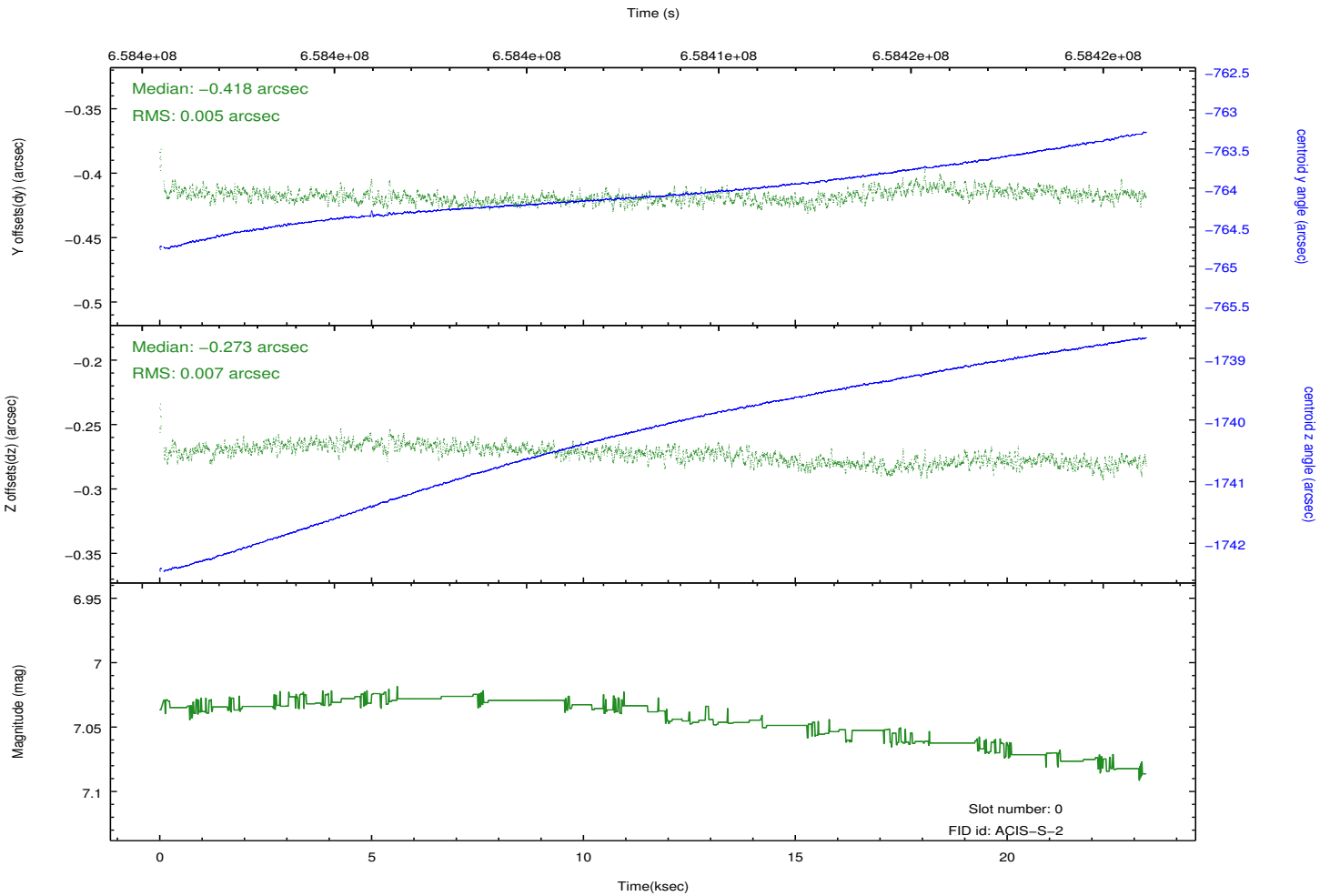
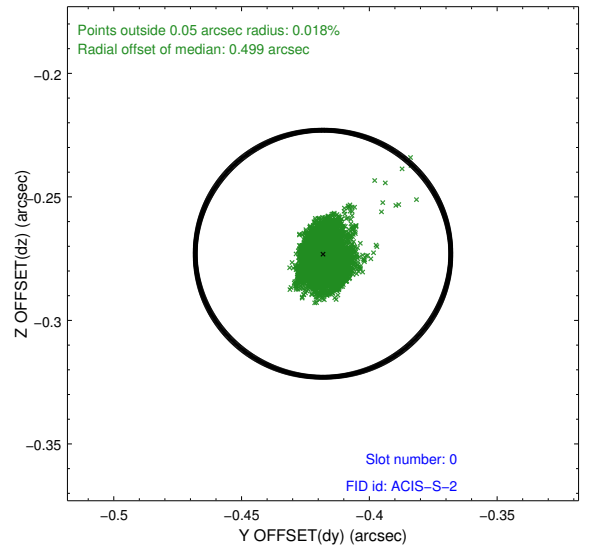
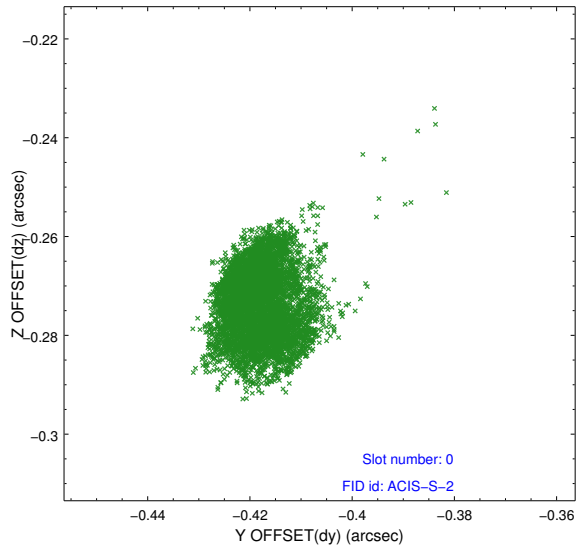


2.4.4 Slot 6

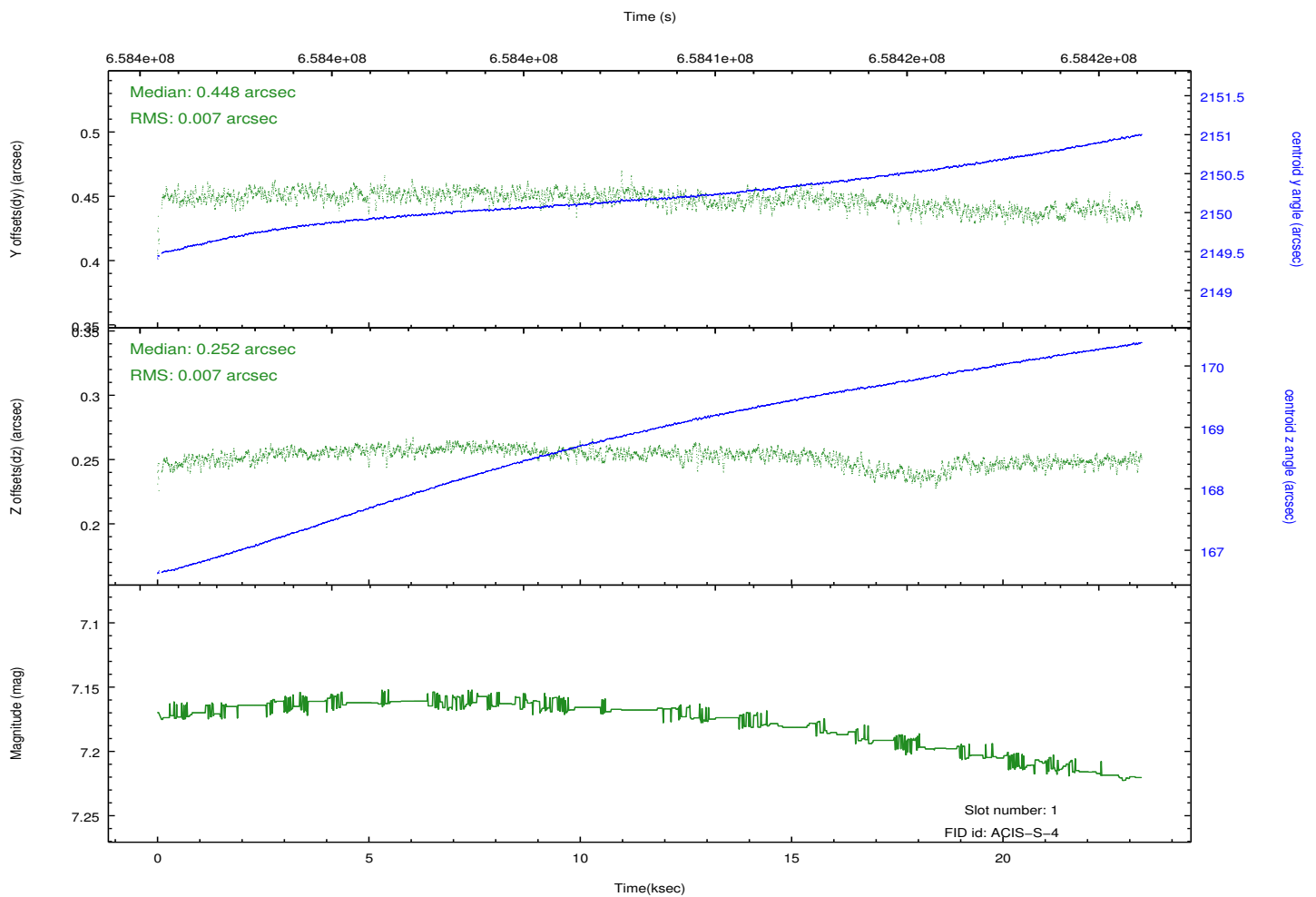
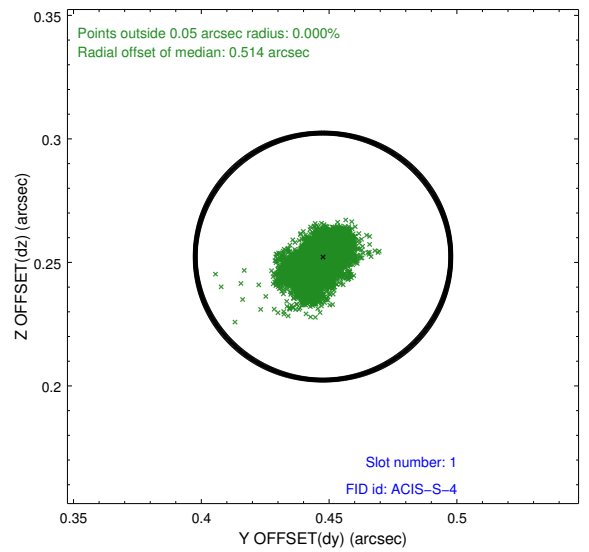
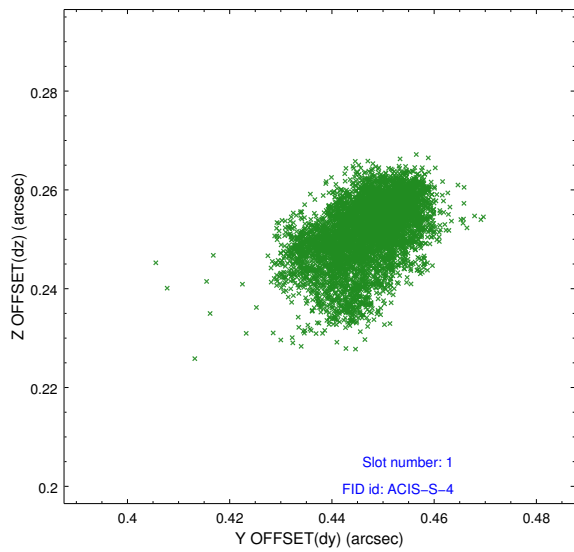


2.5 FID Slots

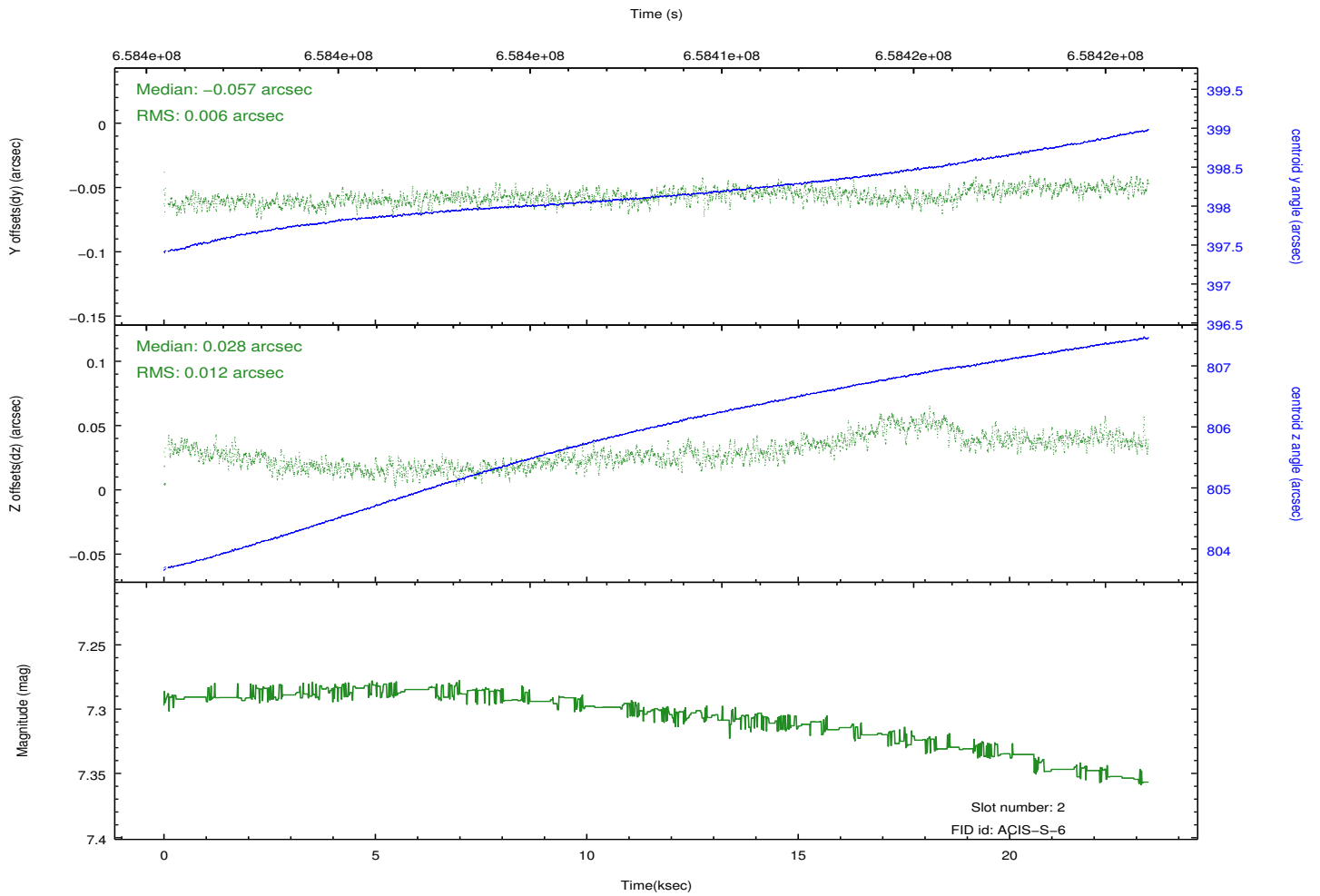
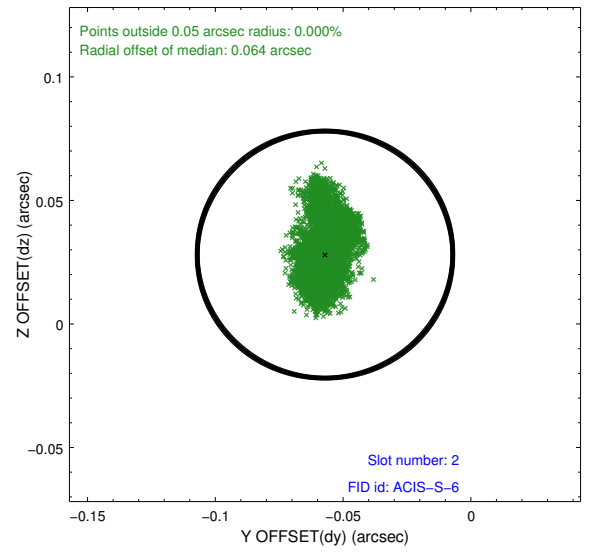
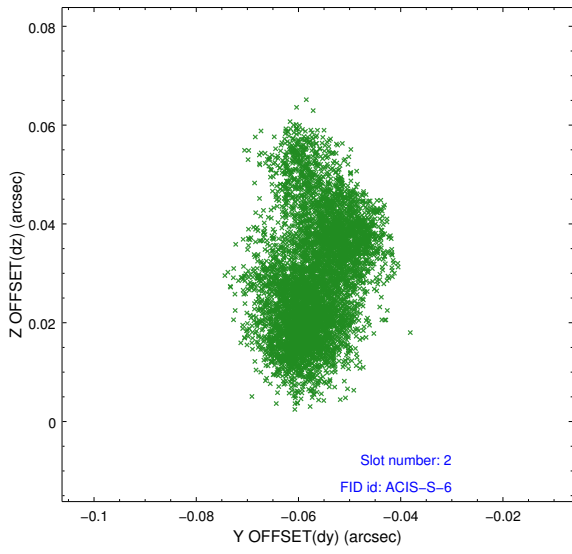
2.5.1 Slot 0



2.5.2 Slot 1

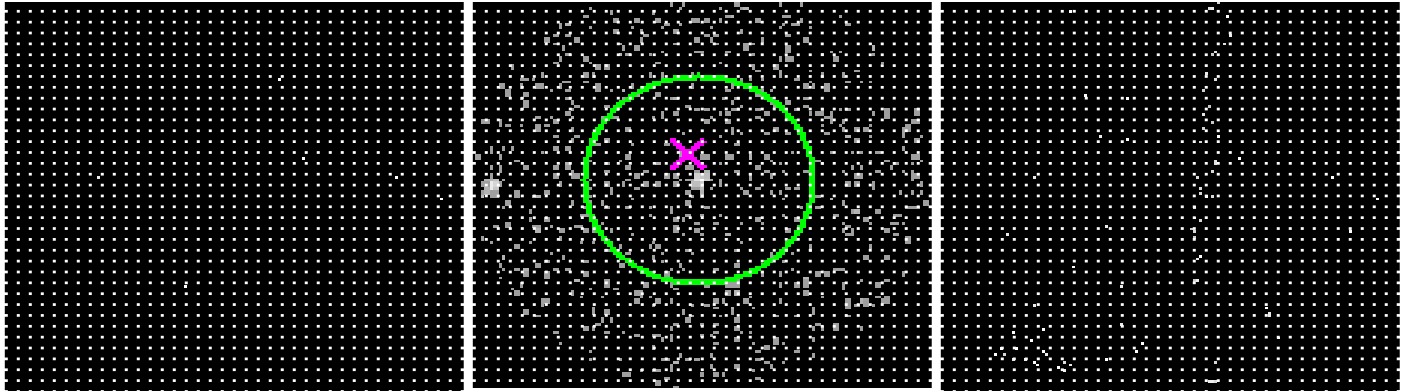


2.5.3 Slot 2



3 Gratings

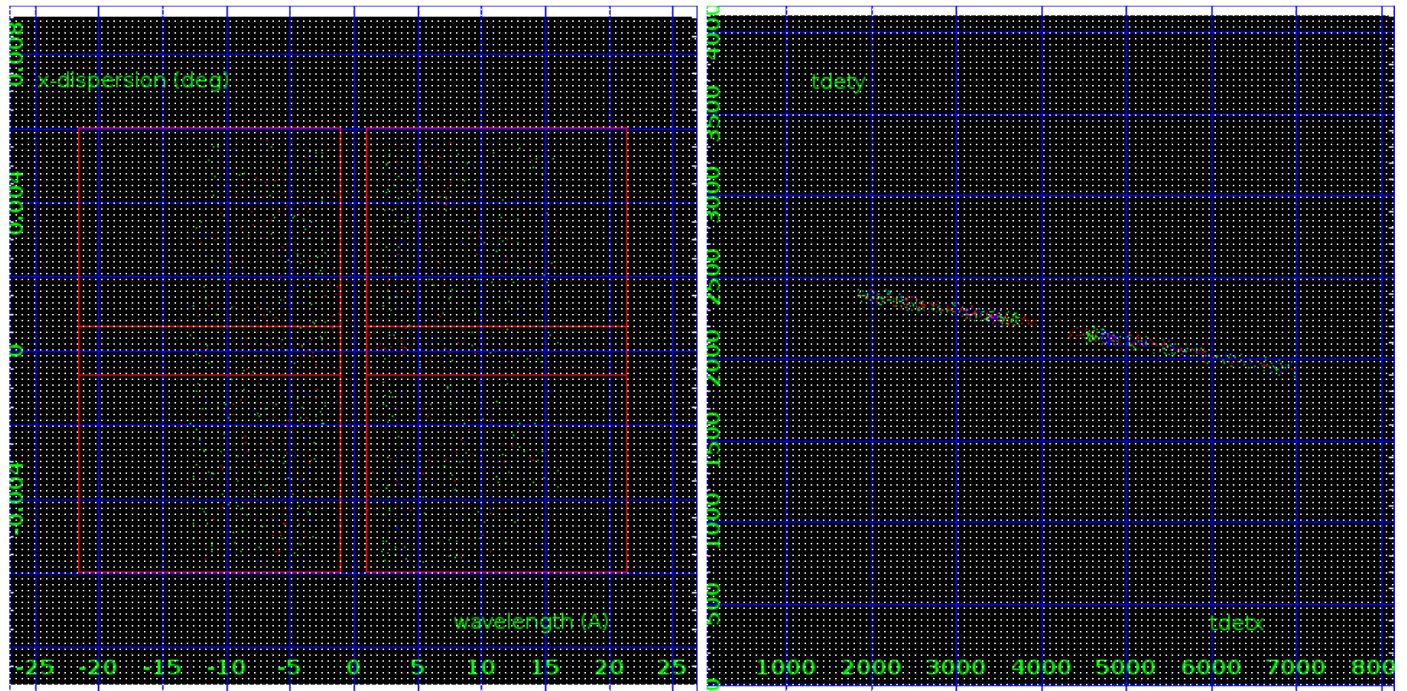
3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

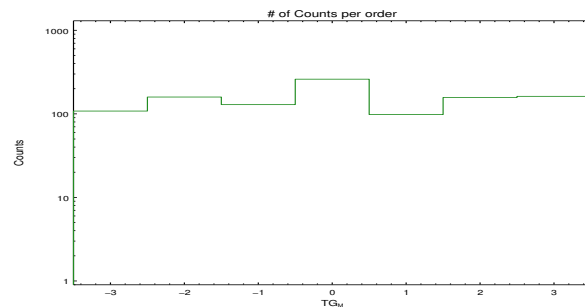
HEG Order Sort ALL

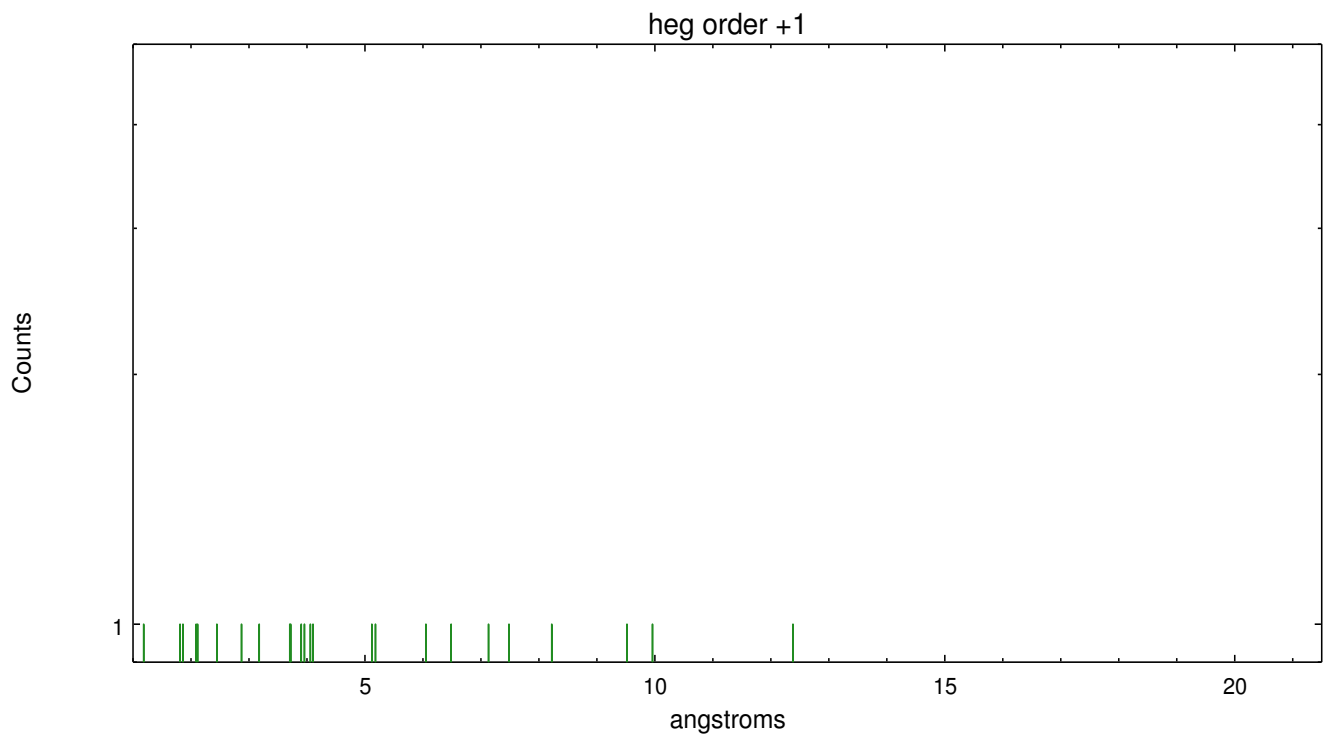
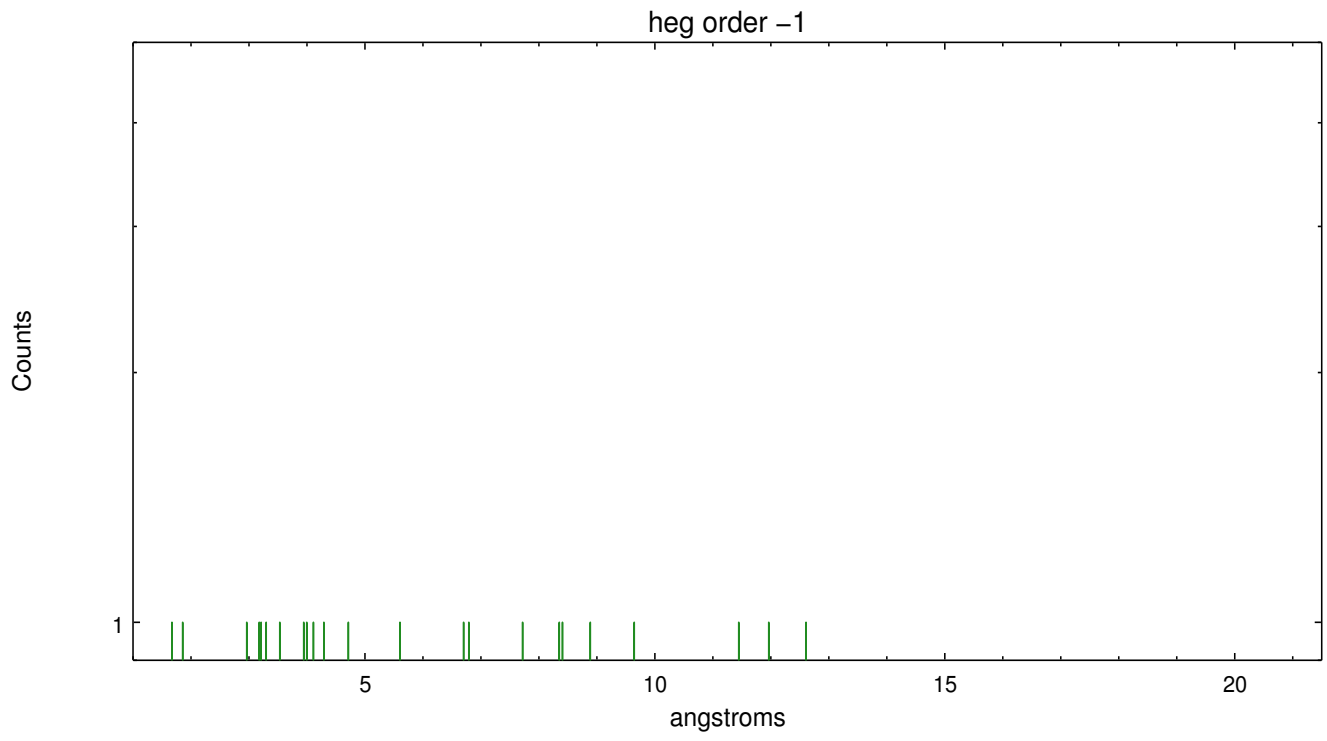


Spot Image HEG

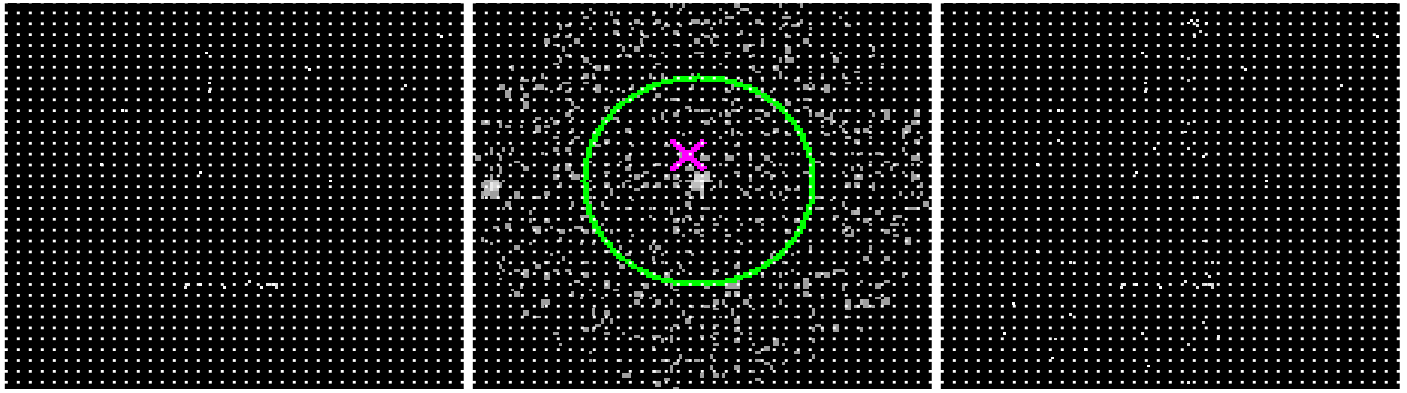
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	108	159	129	260	98	157	162





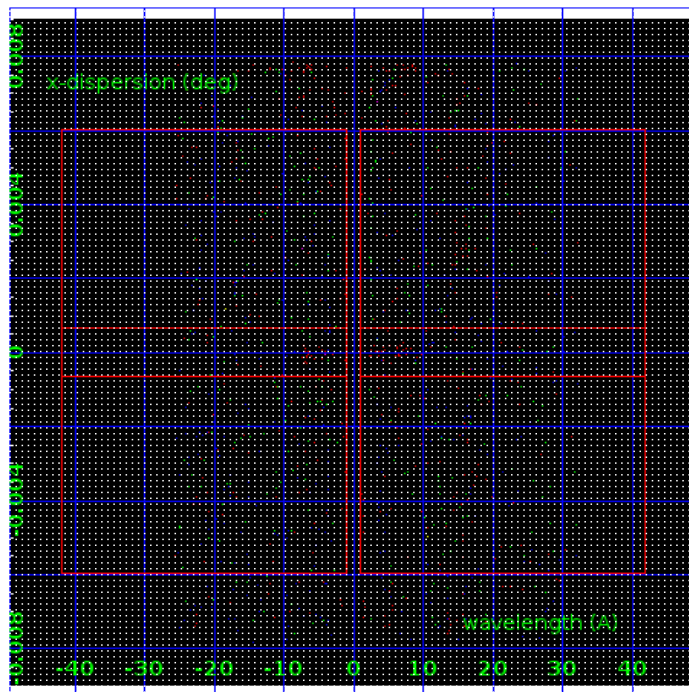
3.2 MEG Arm



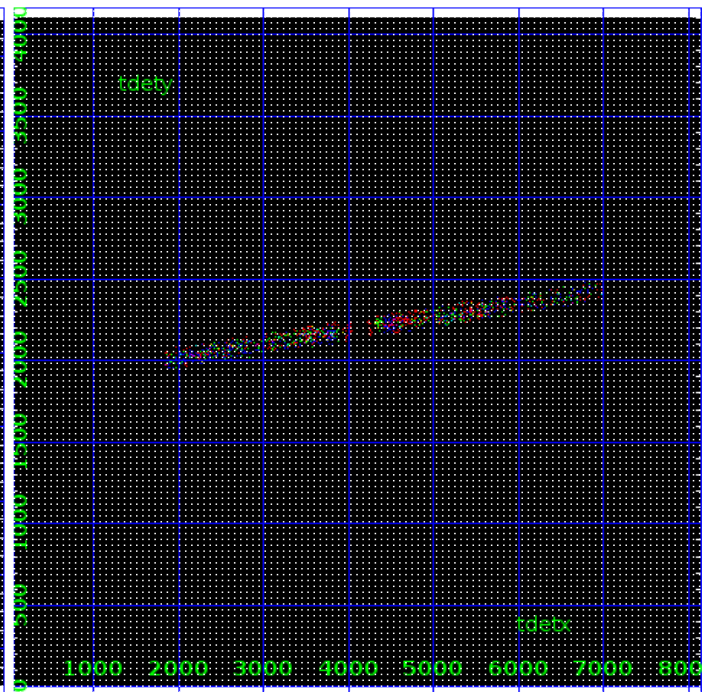
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

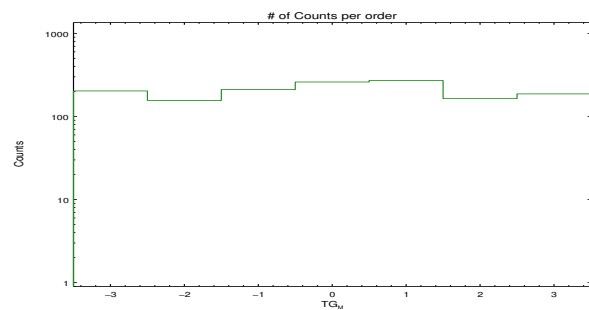


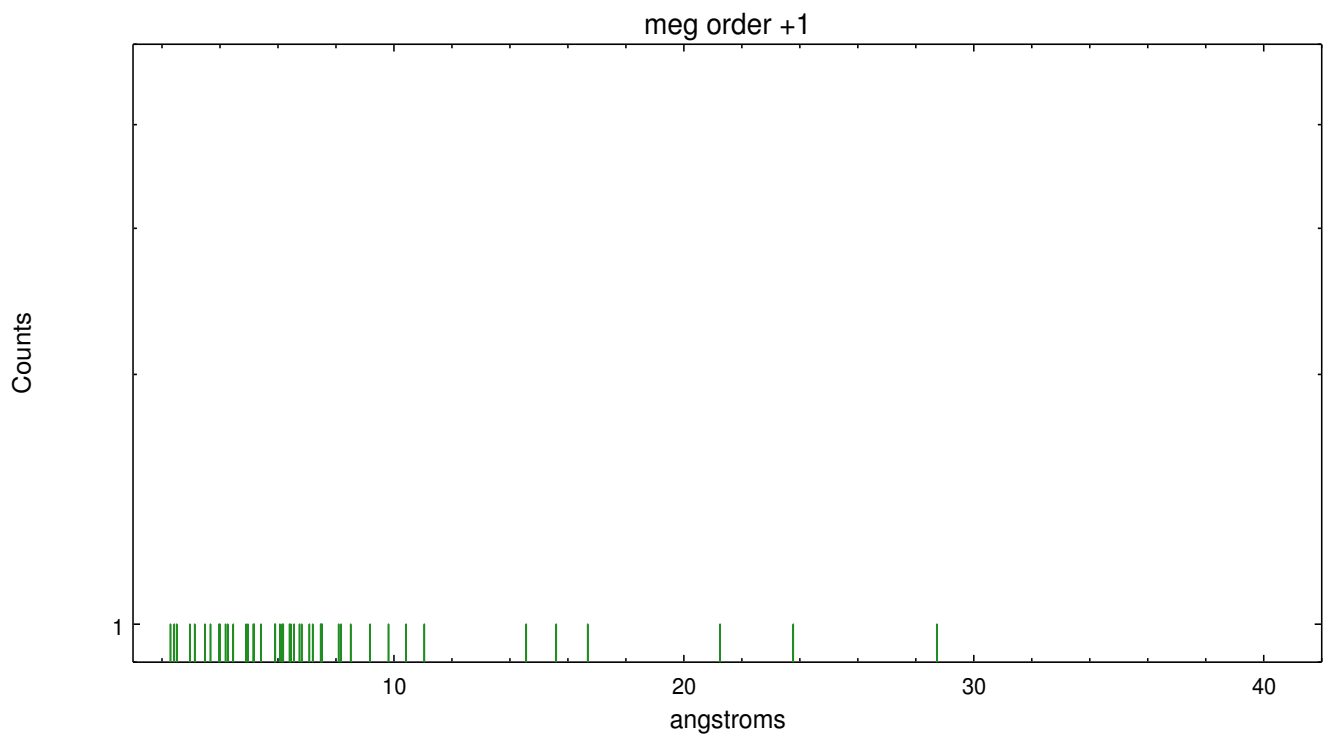
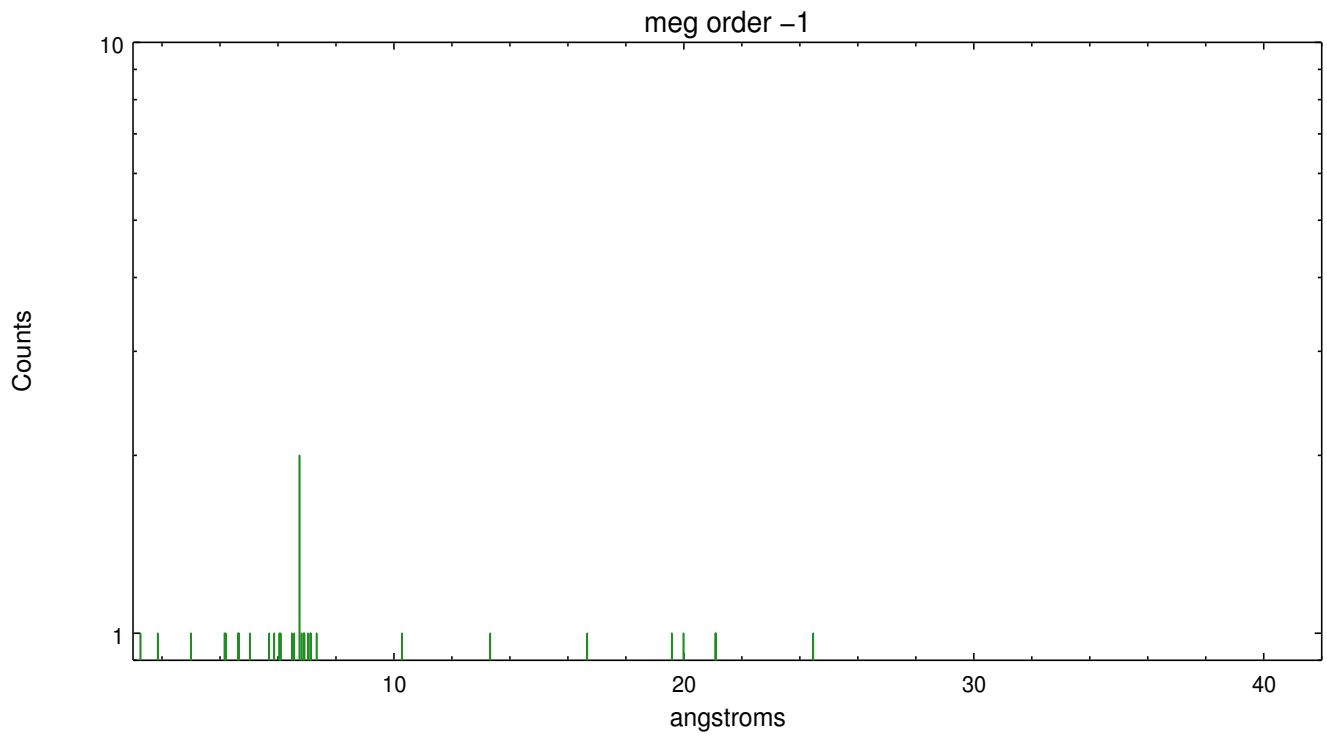
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	203	156	211	260	271	164	187





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2018.11.14
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	23.178700178385

A.2 Comments

Standard software processing technique using the tools `tgdetect` and `findzo` could not locate a target near the aim point, because the aimpoint was placed between 2 stars of interest. The star HL Tau was chosen as the source for the spectral extraction in this processing of the data. The zeroth order position was specified manually as the brightest X-ray emission in the source. The investigator will want to verify that the zeroth order position is at the desired position for extraction of the spectrum. The nearby star XZ Tau can also be the source for a spectral extraction using `TGCat` or `CIAO` tools.

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The ACA has the capability to devote one or more of the eight image slots to "monitor" particular sky locations. This allows simultaneous optical photometry of one or more targets in the ACA field of view. These optical sources can be slightly fainter than the ACA guide star limit of $m_{ACA} = 10.2$ mag. The bright-end limit for monitor star photometry is $m_{ACA} = 6.2$ mag. However, since there are a fixed number of image slots, devoting a slot to photometry instead of tracking a guide star results in a degradation of the image reconstruction and celestial location accuracy (Section 5.4). Using one monitor slot represents a 15 - 25% increase in the aspect image reconstruction RMS diameter, depending on the particular guide star configuration. Two monitor slots would increase the diameter by about 50 - 60%, but this configuration is not operationally allowed under normal circumstances. The photometric accuracy which can be achieved depends primarily on the star magnitude, integration time, CCD dark current, CCD read noise, sky background, and the CCD dark current uncertainty.