

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 12068 - L2 Version 3
Chandra X-Ray Center

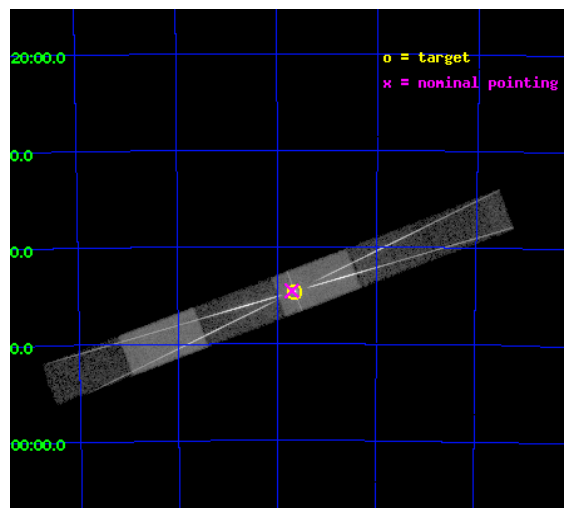
L2 Processing Date : Jun 19 2012

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1 Front

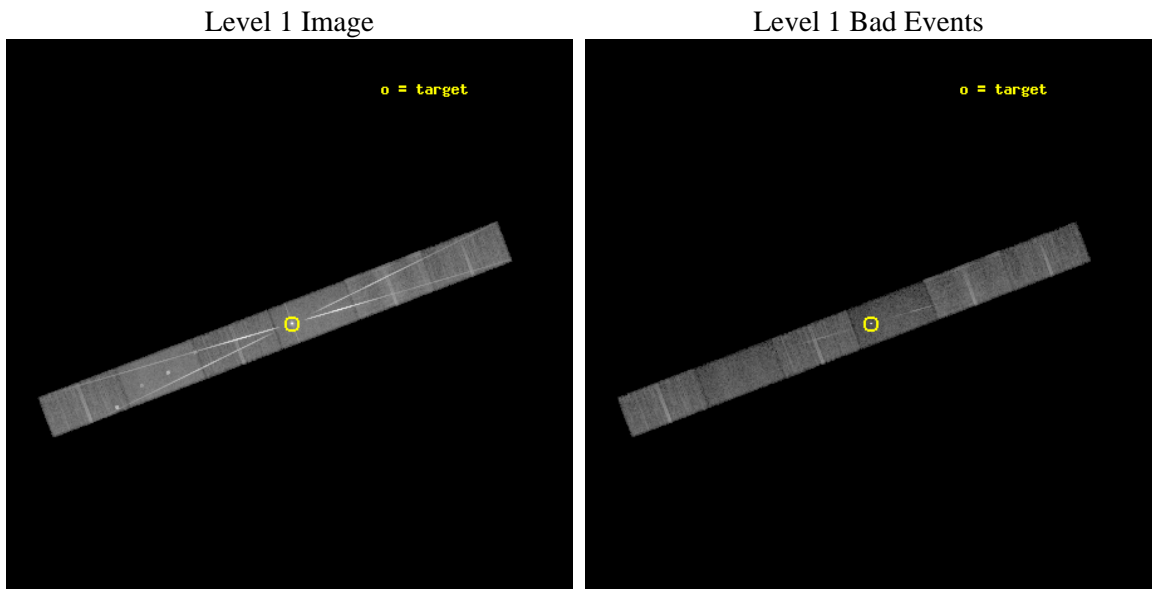
seq_num	401109	Sequence number
obs_id	12068	Observation id
title	Deep Chandra Observations of the Black Hole LMC X-1	Proposal title
observer	Dr. Michael Nowak	Principal investigator
object	LMC X-1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	84.911667	Observer's specified target RA [deg]
dec_targ	-69.74325	Observer's specified target Dec [deg]
ra_nom	84.925357365158	Nominal RA [deg]
dec_nom	-69.742327066945	Nominal Dec [deg]
roll_nom	339.1694474291	Nominal Roll [deg]
revision	3	Processing version of data
ontime	13185.199907601	Sum of GTIs [s]
livetime	12874.396821969	Livetime [s]
ontime4	13185.199907601	Sum of GTIs [s]
ontime5	13185.199907601	Sum of GTIs [s]
ontime6	13183.458877385	Sum of GTIs [s]
ontime7	13185.199907601	Sum of GTIs [s]
ontime8	13185.199907601	Sum of GTIs [s]
ontime9	13185.199907601	Sum of GTIs [s]
l2events	302028	Number of level 2 events



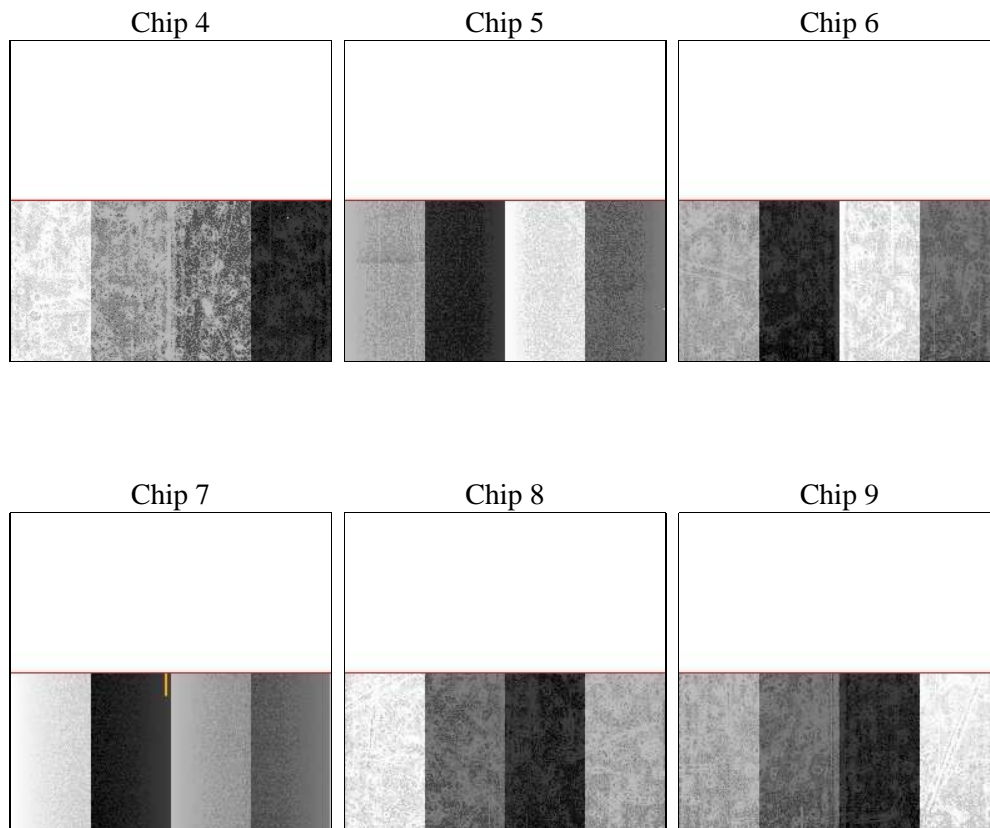
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	13000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	13185.199907601	Sum of GTIs [s]
caldsver	4.4.10	 	ontime4	13185.199907601	Sum of GTIs [s]
date	2012-06-19T07:30:44	Date and time of file creation	ontime5	13185.199907601	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	13183.458877385	Sum of GTIs [s]
			ontime7	13185.199907601	Sum of GTIs [s]
			ontime8	13185.199907601	Sum of GTIs [s]
			ontime9	13185.199907601	Sum of GTIs [s]
			l1events	660333	Number of level 1 events

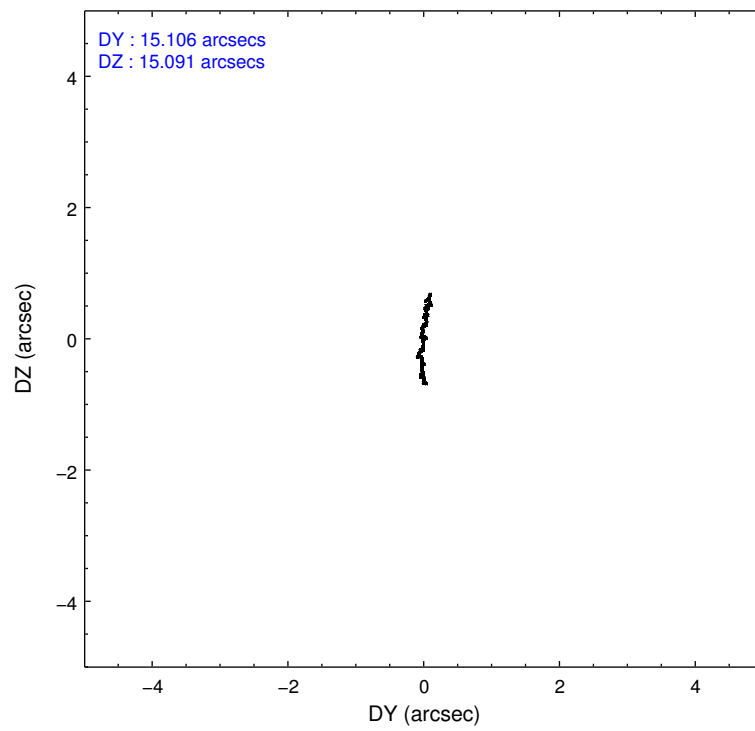
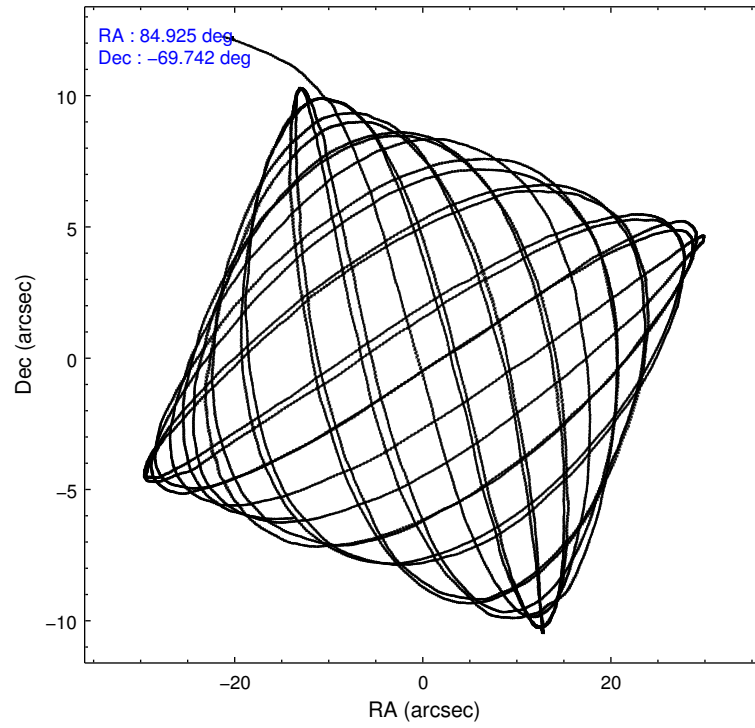
2.1.4 Events

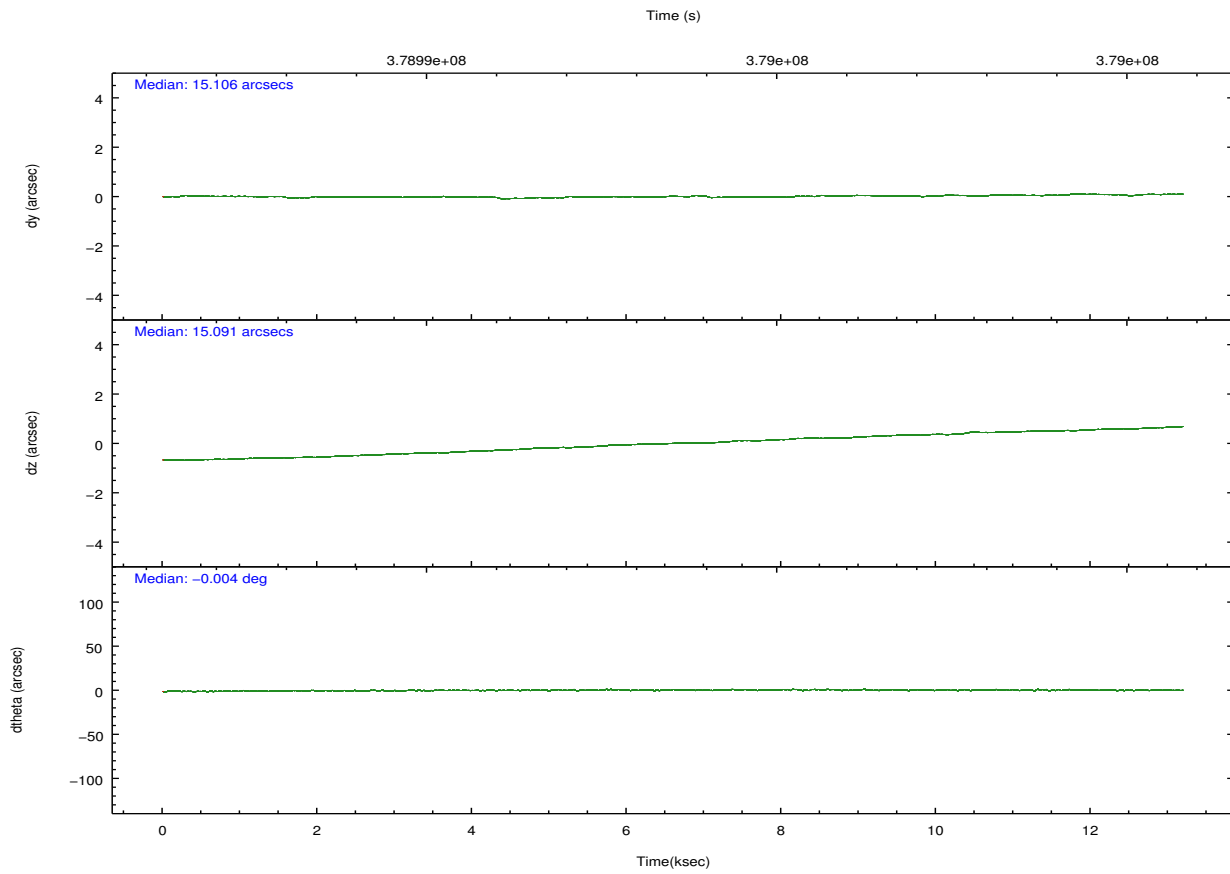
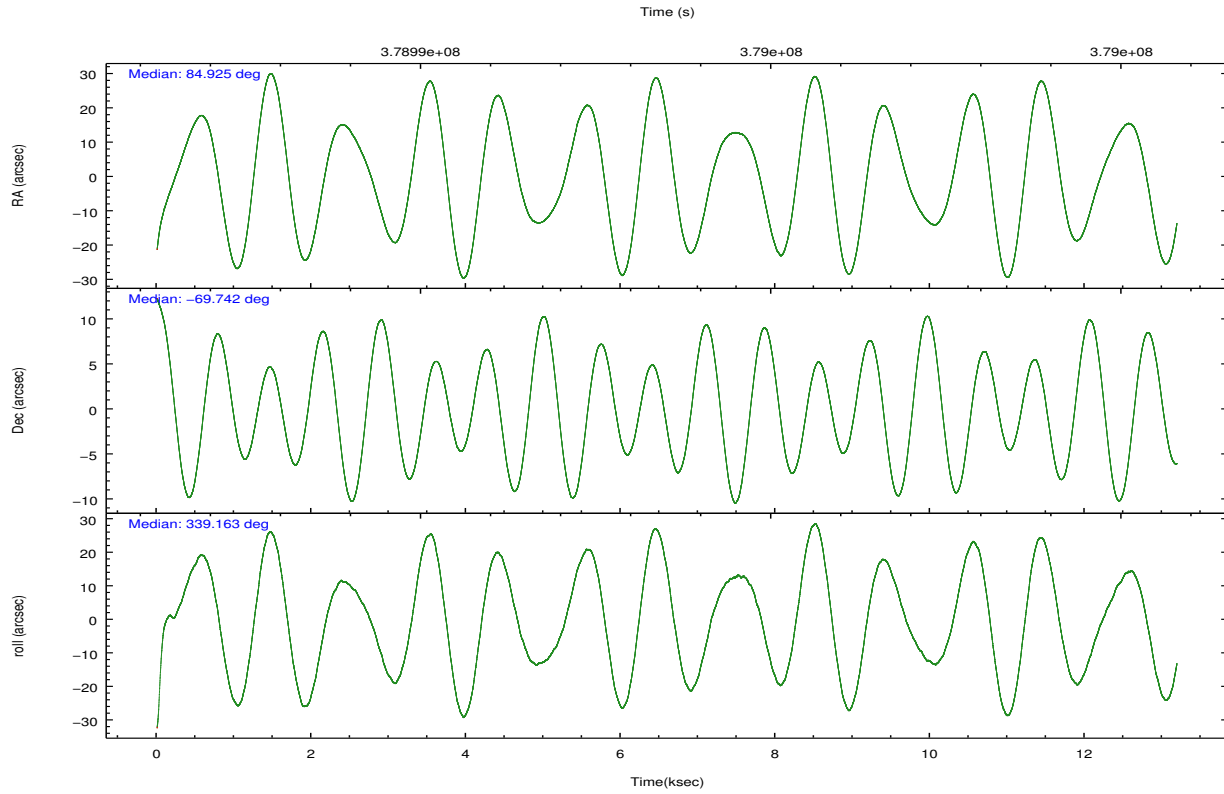
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	77185	107486	141551	151673	115849	66589	grade 0 events	8192	14229	63727	20866	33626	7540
rejected events	63906	44000	57700	41294	62520	53400		10%	13%	45%	13%	29%	11%
rejected %	82%	40%	40%	27%	53%	80%	grade 1 events	88	303	486	411	200	43
								0%	0%	0%	0%	0%	0%
							grade 2 events	2097	17439	10320	26977	7818	2050
								2%	16%	7%	17%	6%	3%
							grade 3 events	991	4054	3694	12241	3277	1160
								1%	3%	2%	8%	2%	1%
							grade 4 events	930	4015	3539	12115	3125	1085
								1%	3%	2%	7%	2%	1%
							grade 5 events	2265	7239	2762	8395	3630	2546
								2%	6%	1%	5%	3%	3%
							grade 6 events	1279	24788	3459	39441	6098	1512
								1%	23%	2%	26%	5%	2%
							grade 7 events	61343	35419	53564	31227	58075	50653
								79%	32%	37%	20%	50%	76%

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	84.847622	84.92535736515843	CCD I2 on	N	N
[deg] Pointing Dec	-69.747052	-69.74232706694464	CCD I3 on	N	N
[deg] Pointing Roll	338.939907	339.1694474291004	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	-183.992523	-183.9875365069546	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-6.14	-6.144986076053243	CCD S4 on	Y	Y
[s] Observation start time (MET)	378987114.184000	378986095.81411	CCD S5 on	Y	Y
Observation start date	2010-01-04T10:10:48	2010-01-04T09:54:55	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	379000114.184000	379001058.76487	On-chip summing requested	N	N
Observation end date	2010-01-04T13:47:28	2010-01-04T14:04:18	Subarray requested	CUSTOM	1/2
Read mode	TIMED	TIMED	Subarray start row	1	1
			Subarray row count	512	512
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	1.7

2.3 Aspect



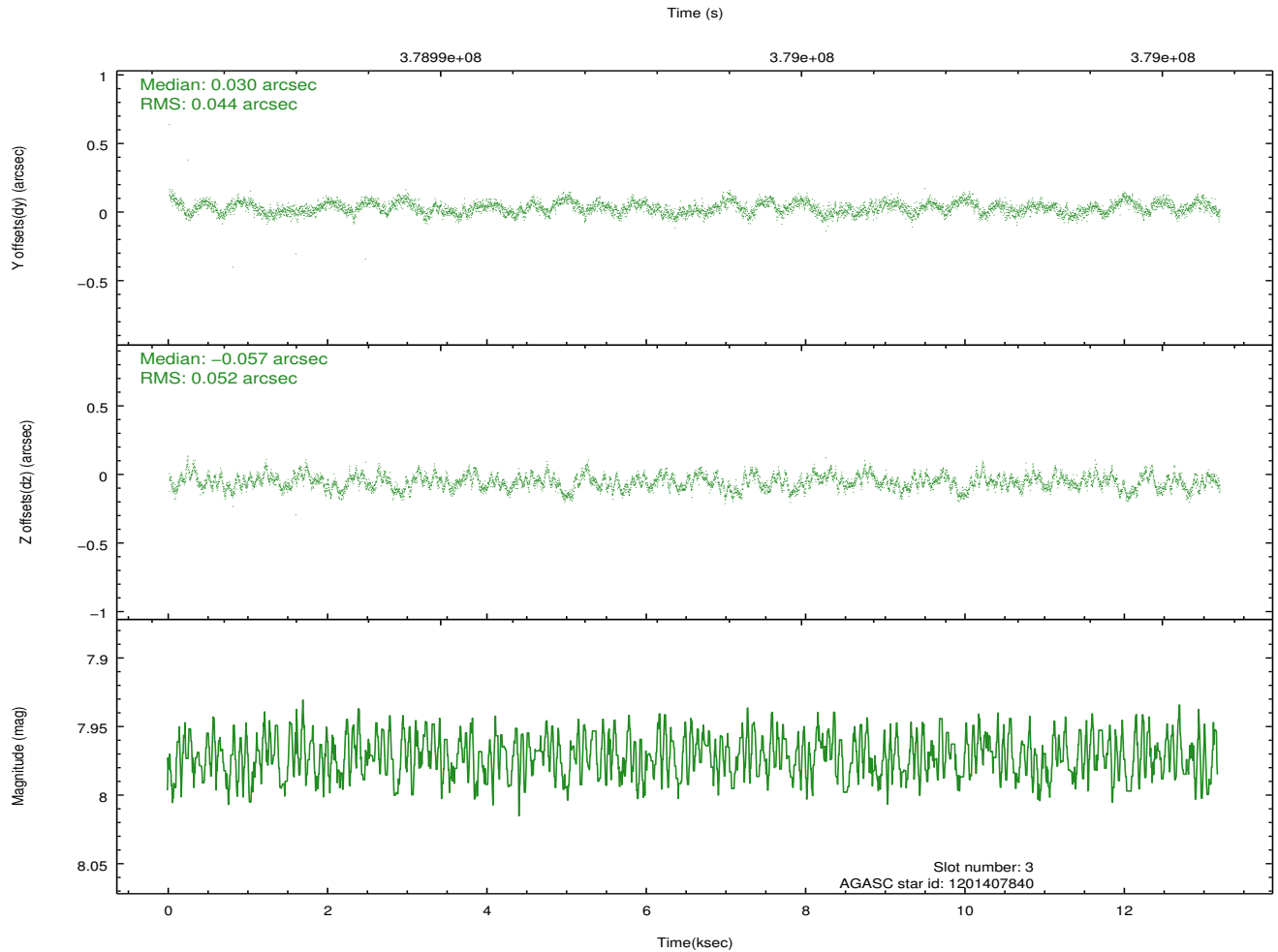
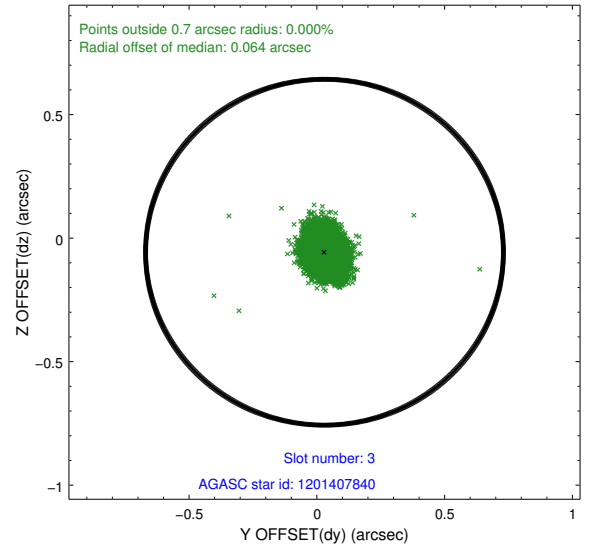
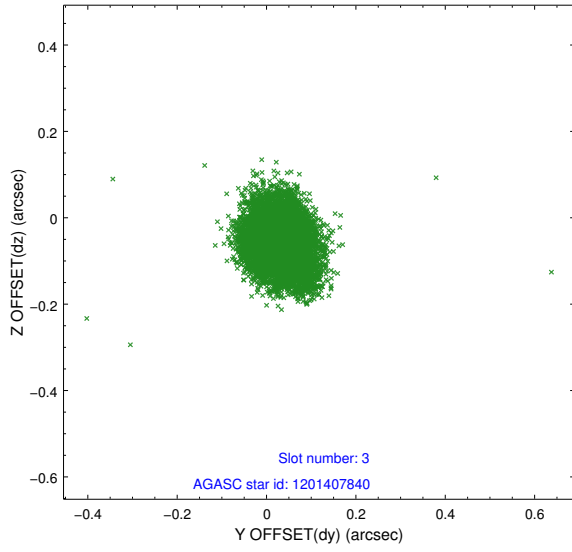


Slot Statistics

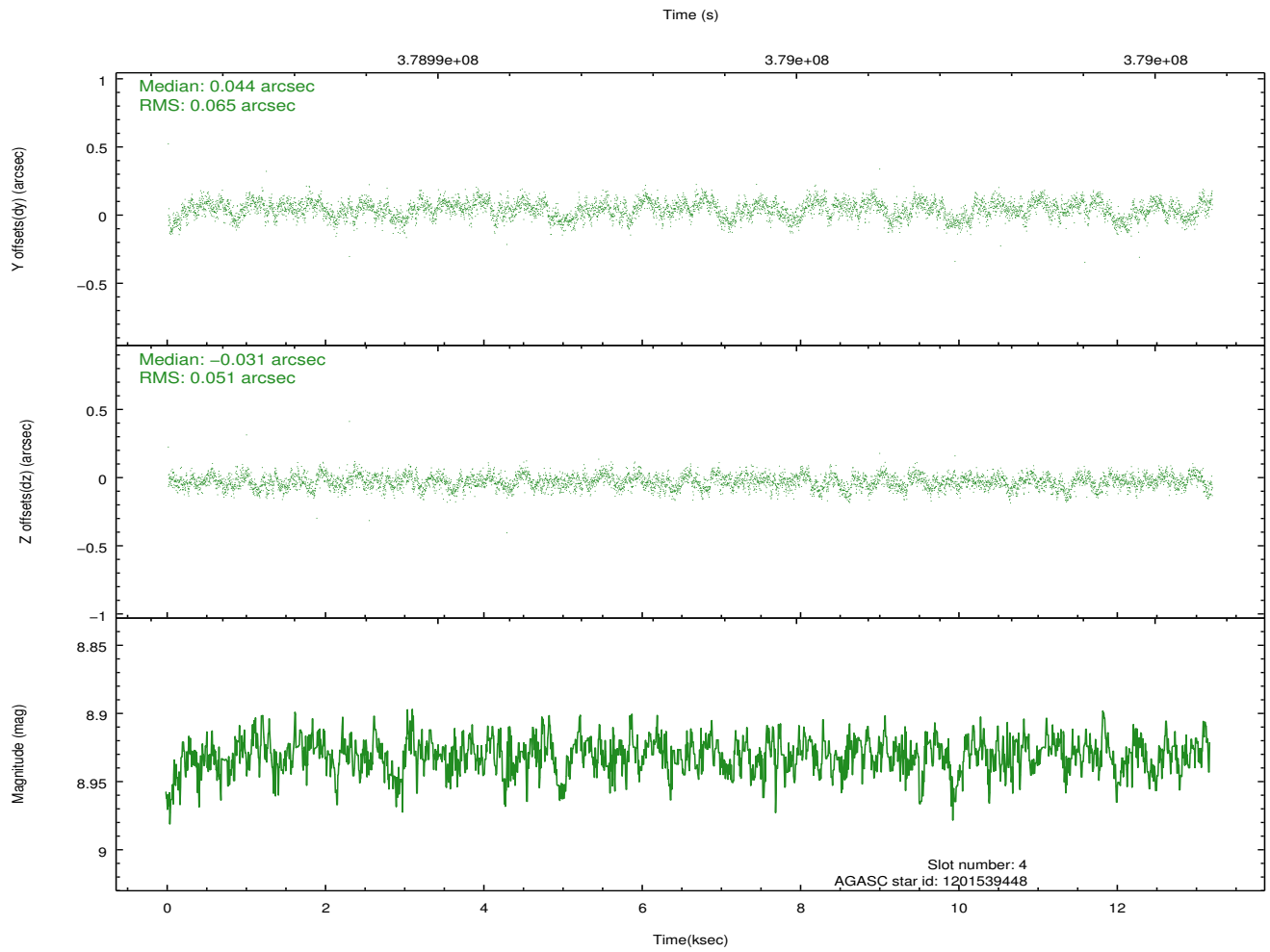
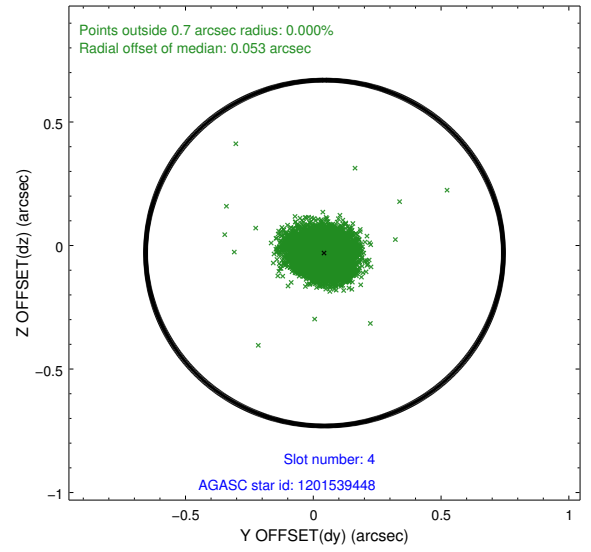
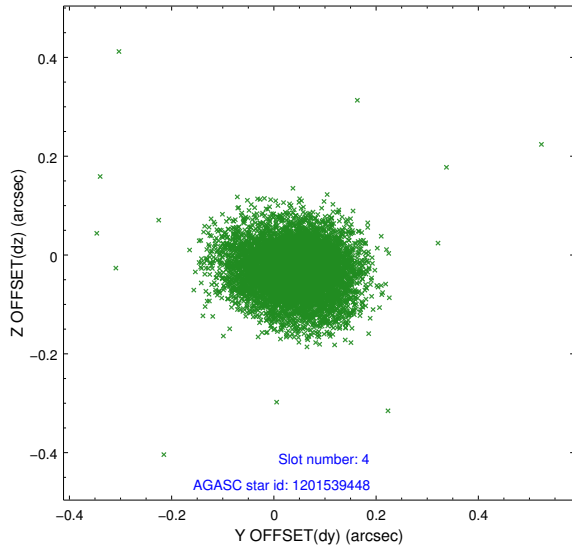
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.07	3217	0.079	0.088	0.017	0.028	0.000000	0.000000	928.42	-1858.68
1	FID	ACIS-S-4	7.06	3217	0.137	-0.096	0.013	0.024	0.000000	0.000000	2146.12	44.85
2	FID	ACIS-S-5	7.11	3217	-0.244	0.020	0.009	0.014	0.000000	0.000000	-1820.27	39.05
3	GUIDE	1201407840	7.97	6432	0.030	-0.057	0.072	0.115	83.696303	-70.172201	-756.35	-1946.01
4	GUIDE	1201539448	8.93	6424	0.044	-0.031	0.087	0.138	85.635707	-70.382152	1713.49	-1796.84
5	GUIDE	1201541752	7.39	6433	-0.114	-0.000	0.062	0.096	85.373891	-70.033762	976.42	-733.31
6	GUIDE	1201542672	8.20	6432	0.121	-0.024	0.075	0.120	84.492488	-69.957531	-135.33	-863.92
7	GUIDE	1201540760	8.55	6430	-0.076	0.120	0.074	0.123	84.403691	-70.419249	371.29	-2452.18

2.4 Star Slots

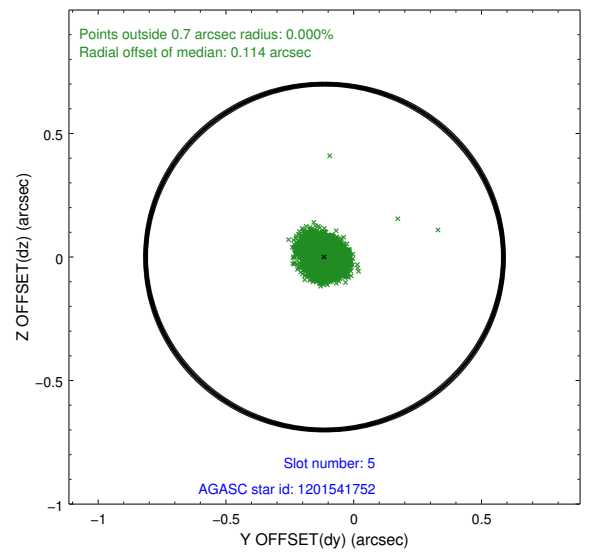
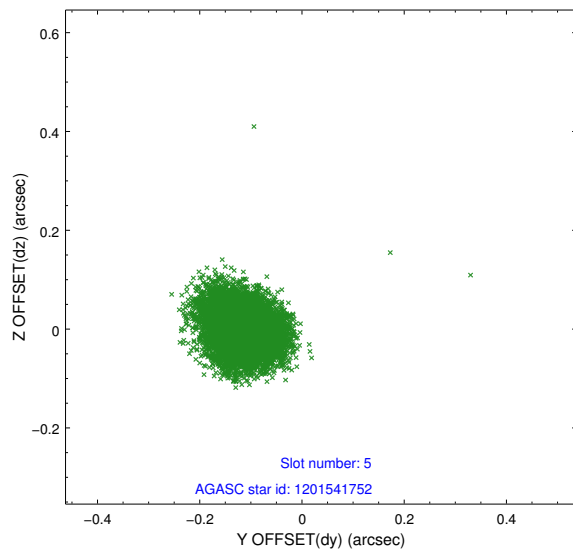
2.4.1 Slot 3



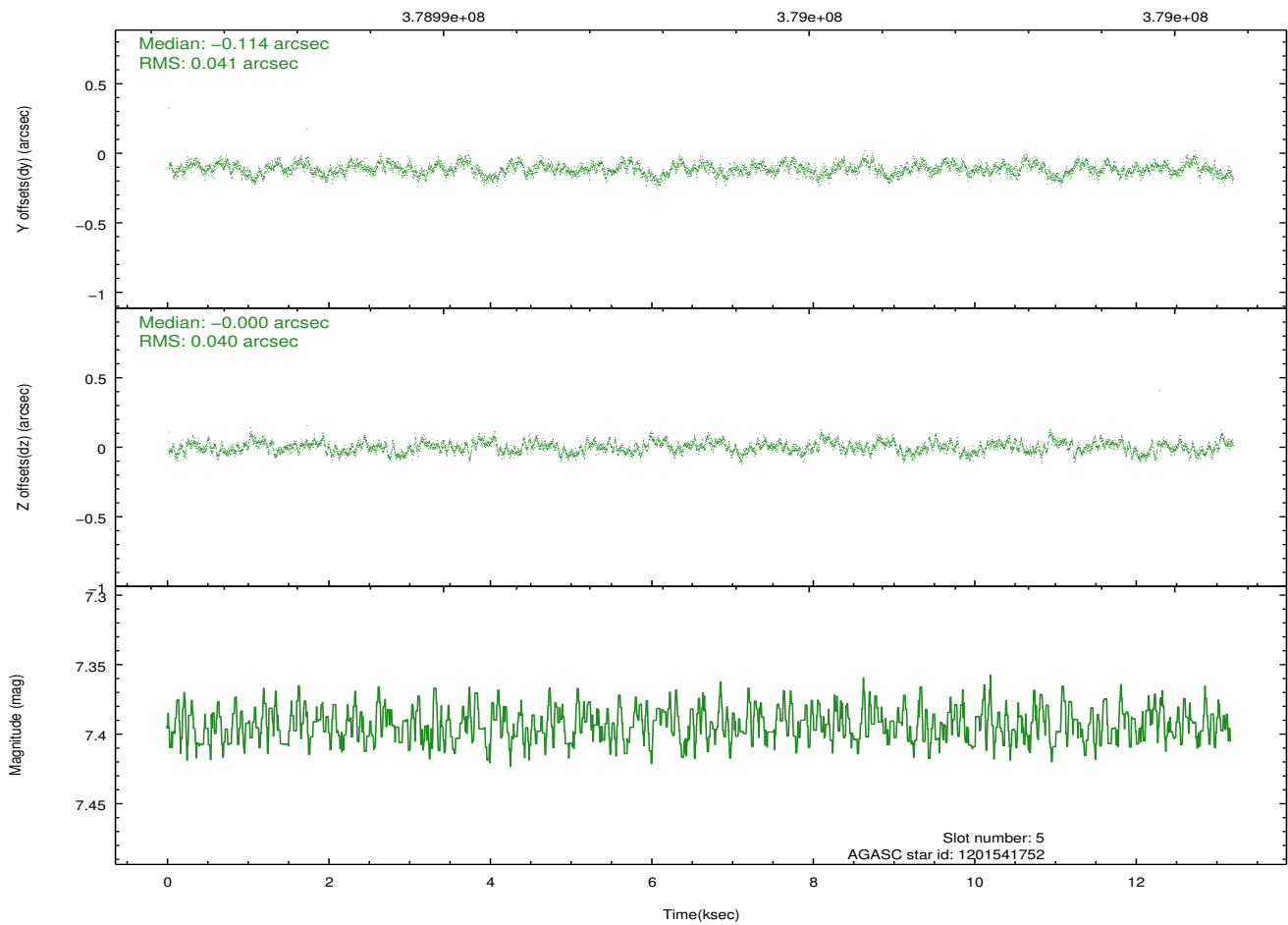
2.4.2 Slot 4



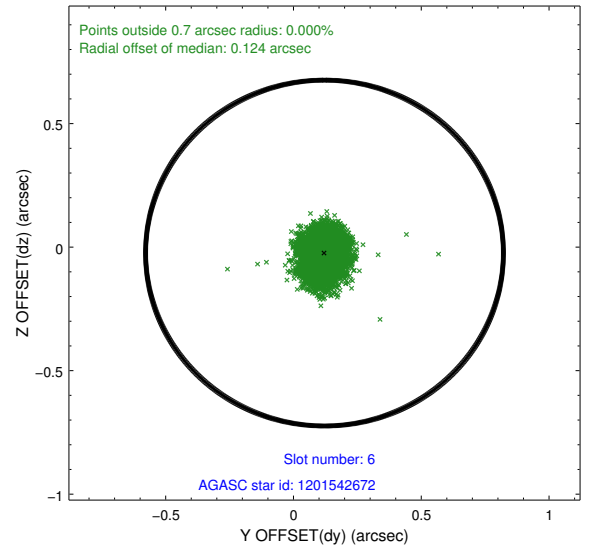
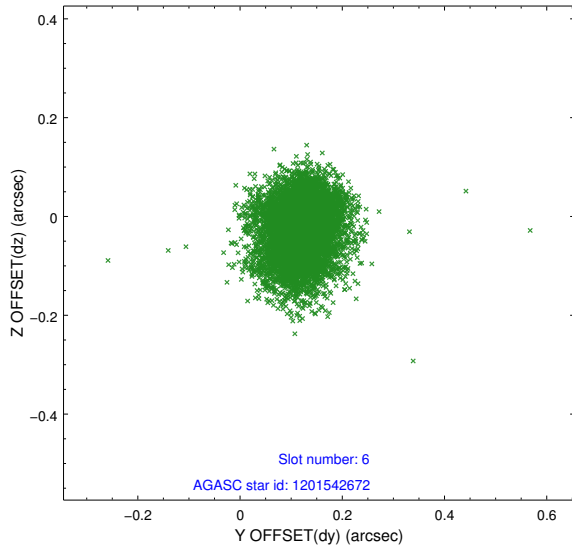
2.4.3 Slot 5



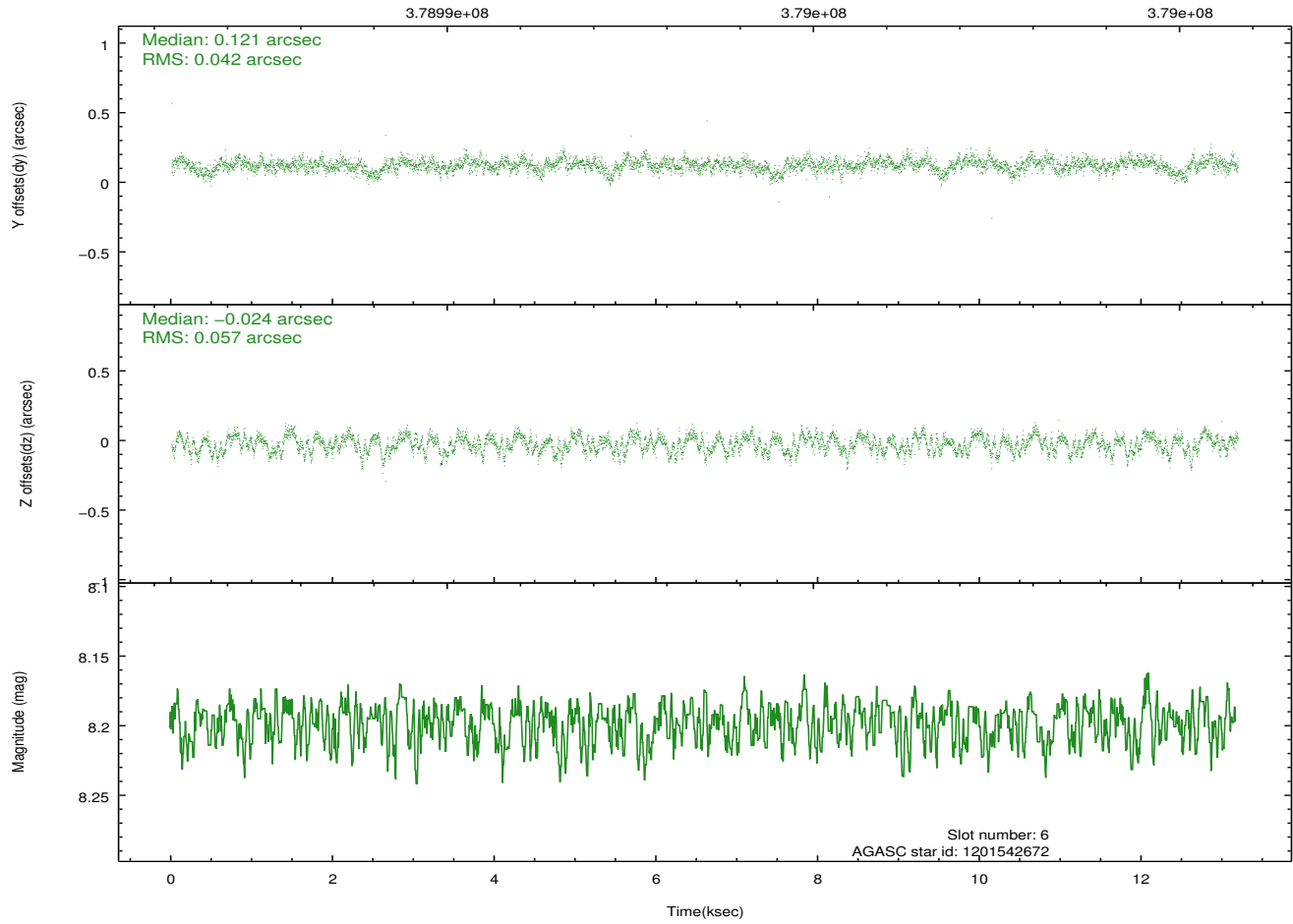
Time (s)



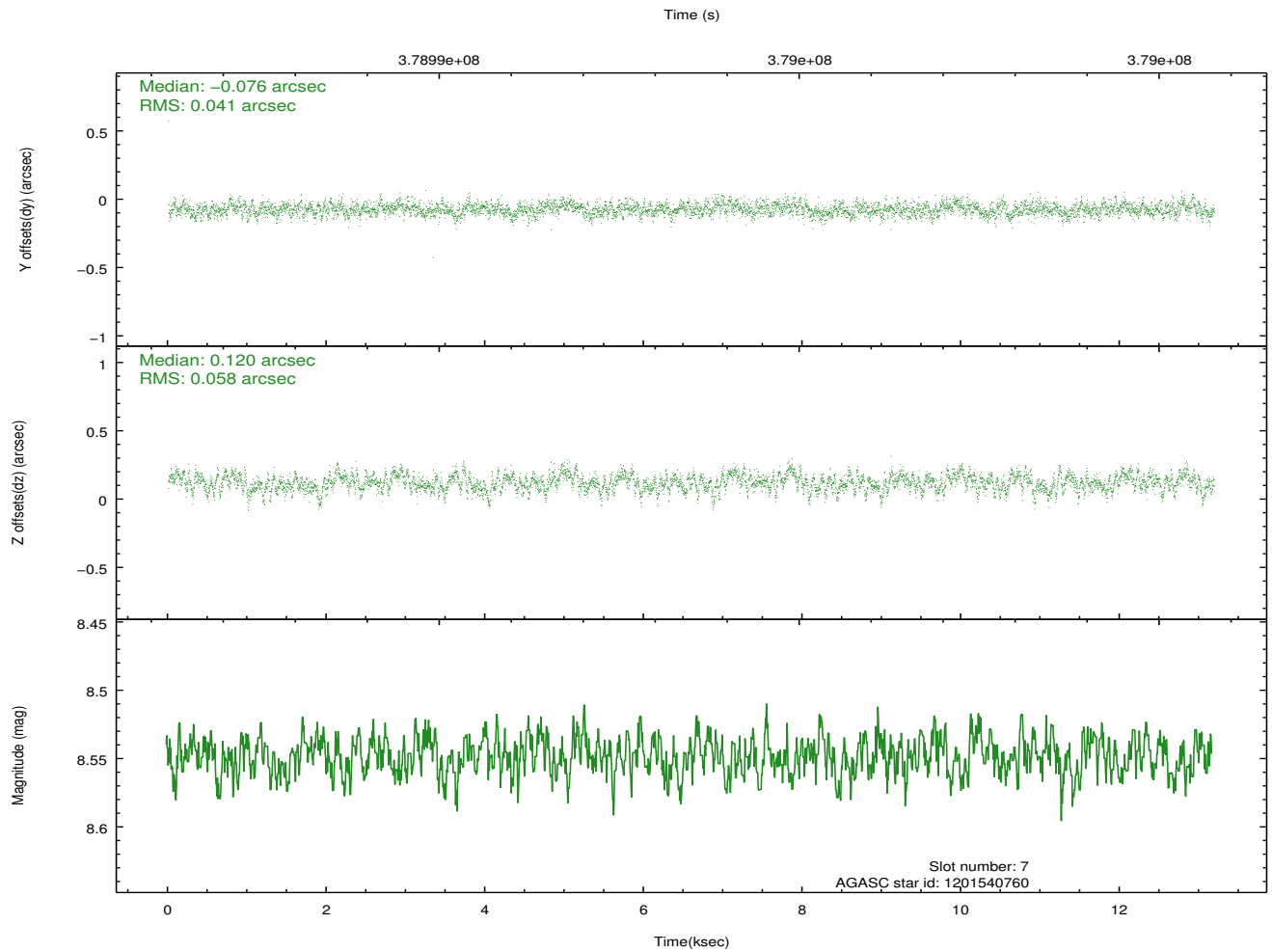
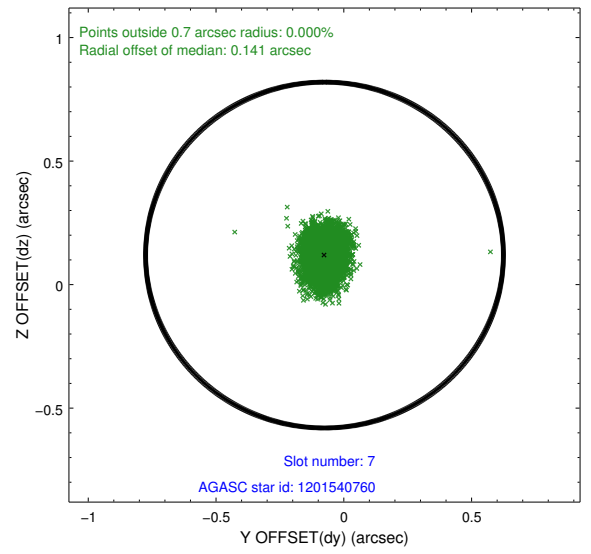
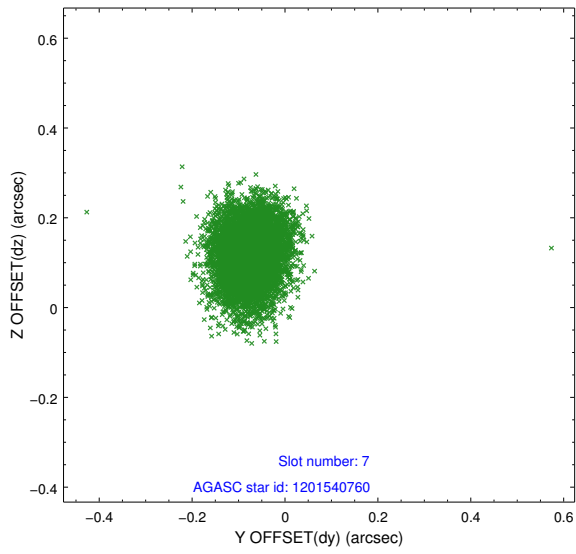
2.4.4 Slot 6



Time (s)

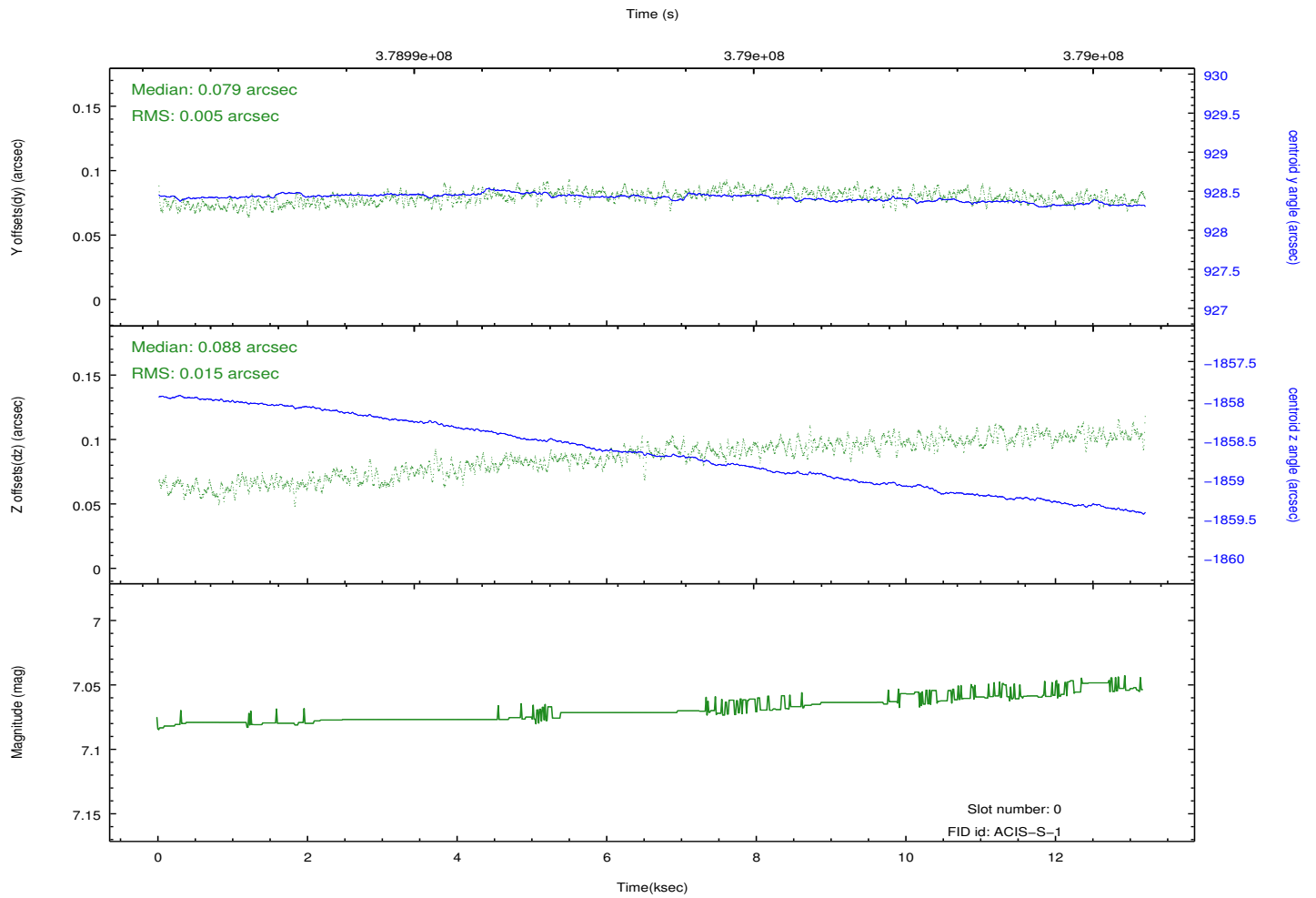
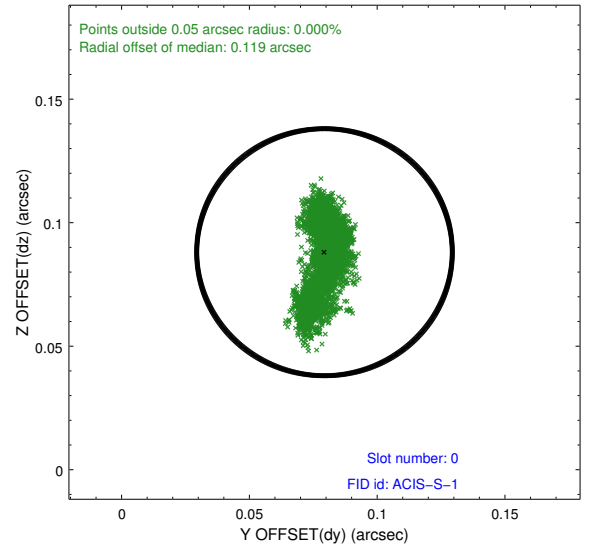
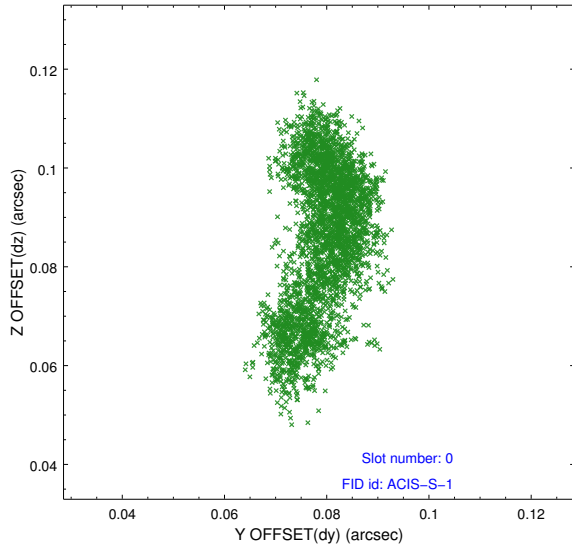


2.4.5 Slot 7

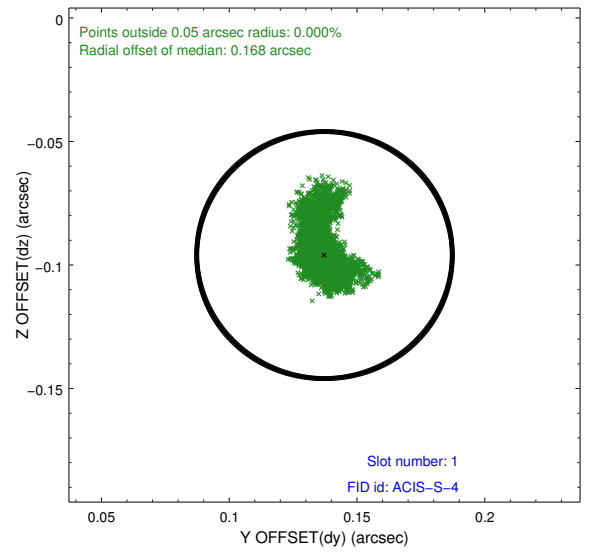
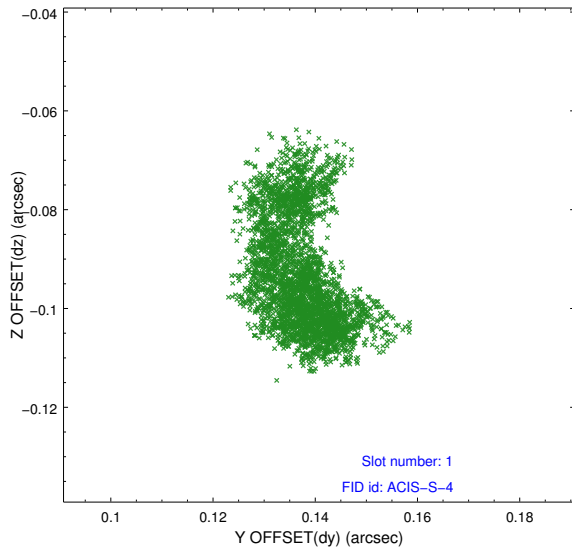


2.5 FID Slots

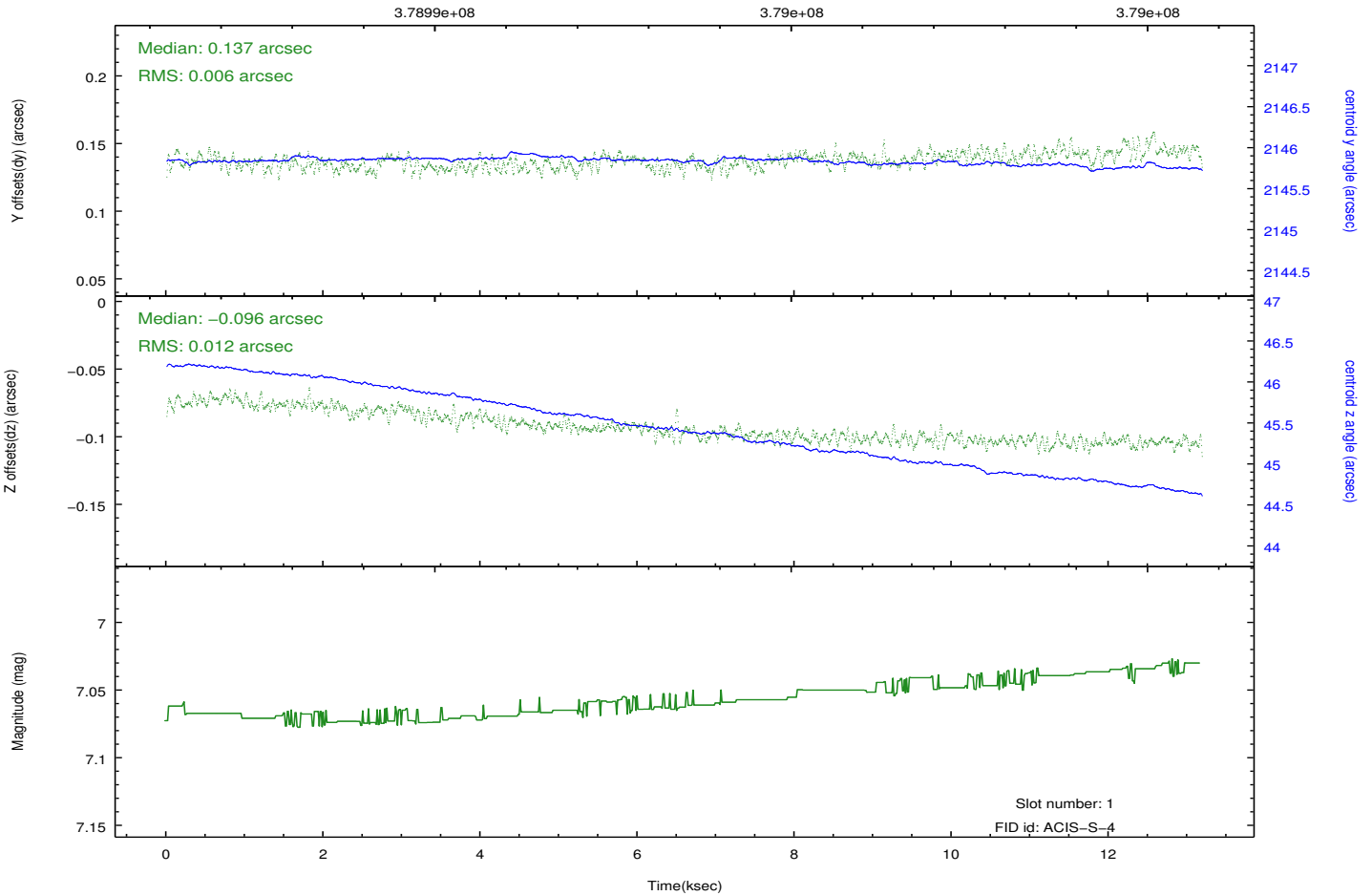
2.5.1 Slot 0



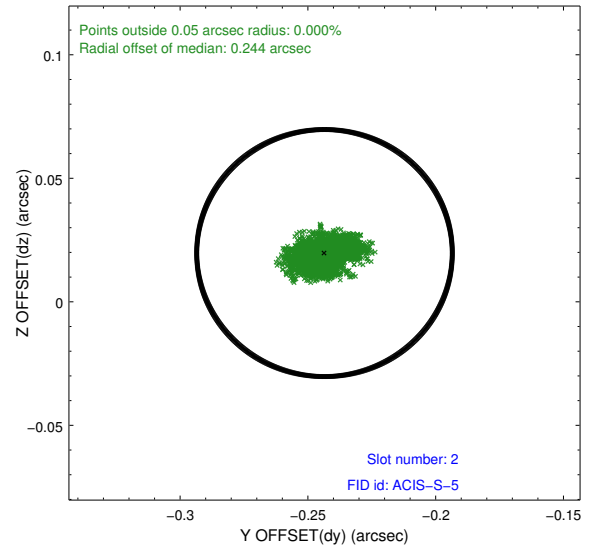
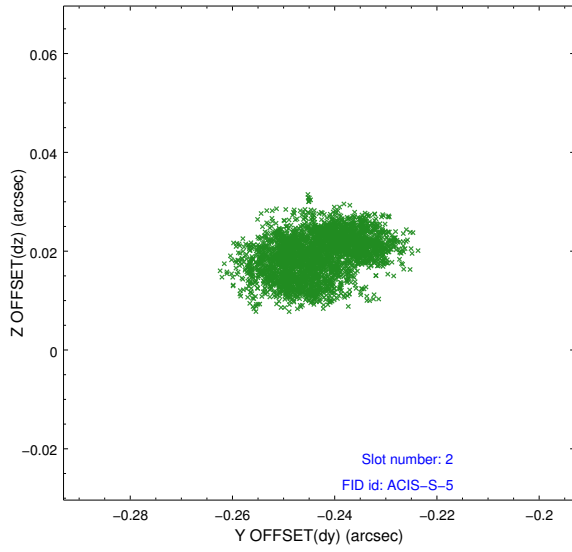
2.5.2 Slot 1



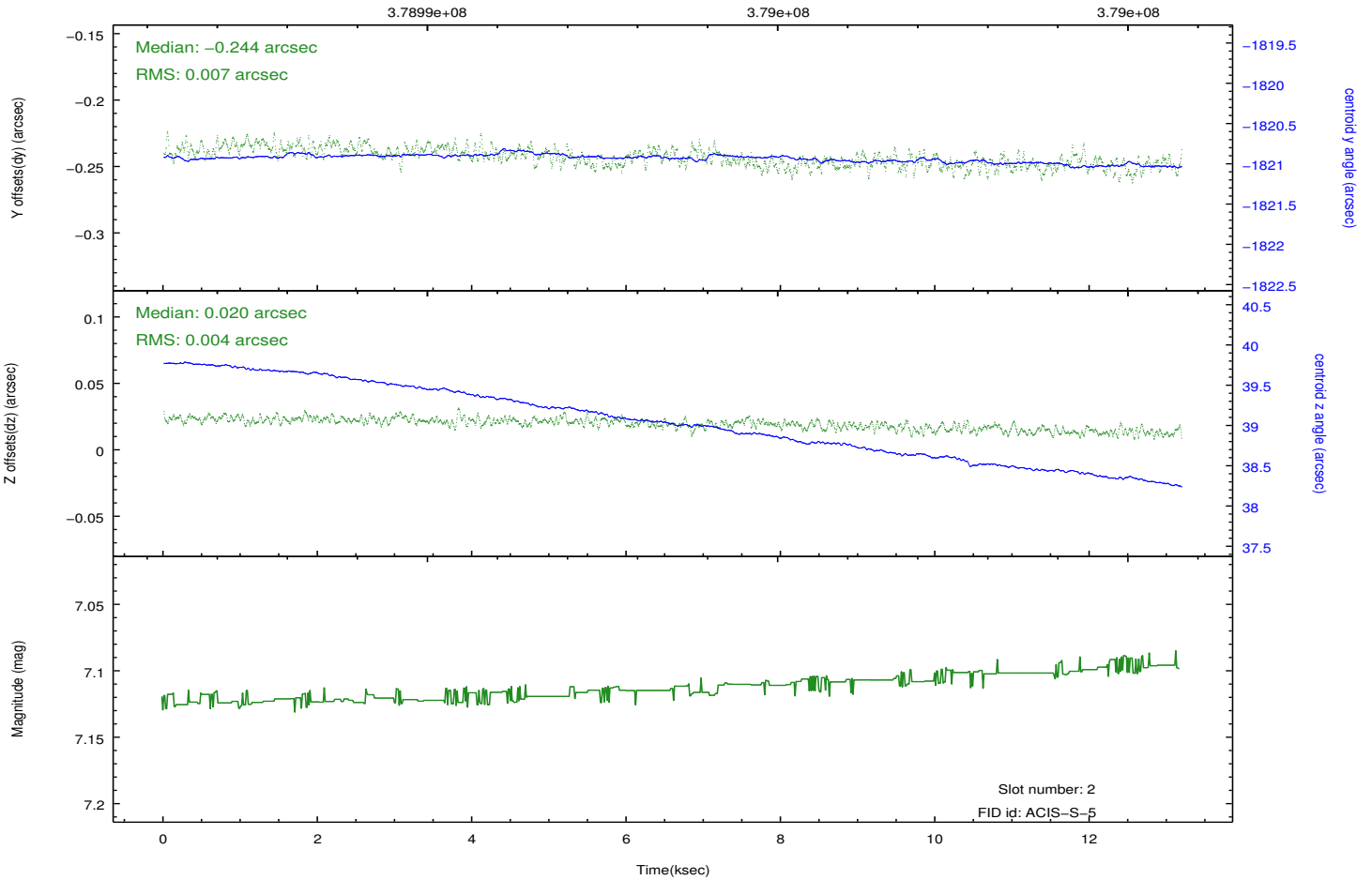
Time (s)



2.5.3 Slot 2

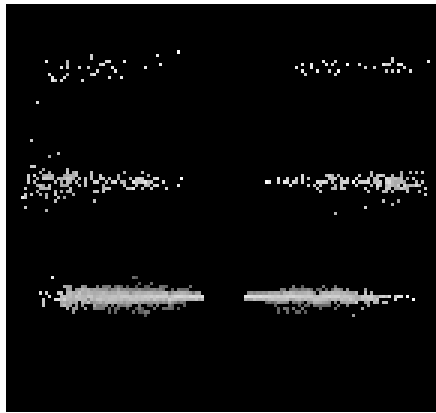


Time (s)

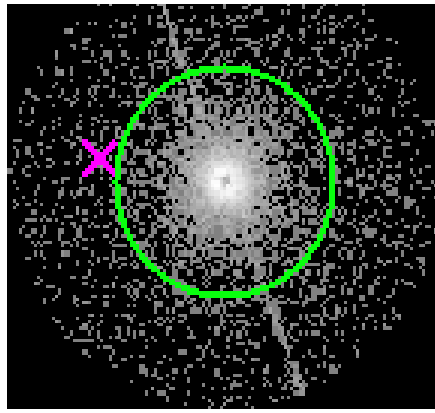


3 Gratings

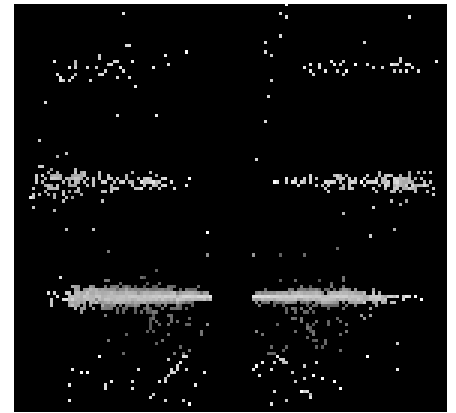
3.1 HEG Arm



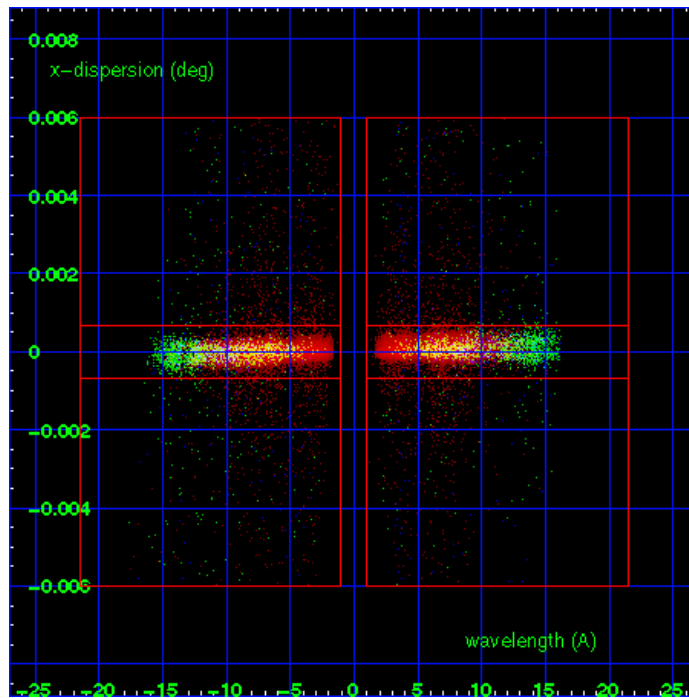
HEG Order Sort 123



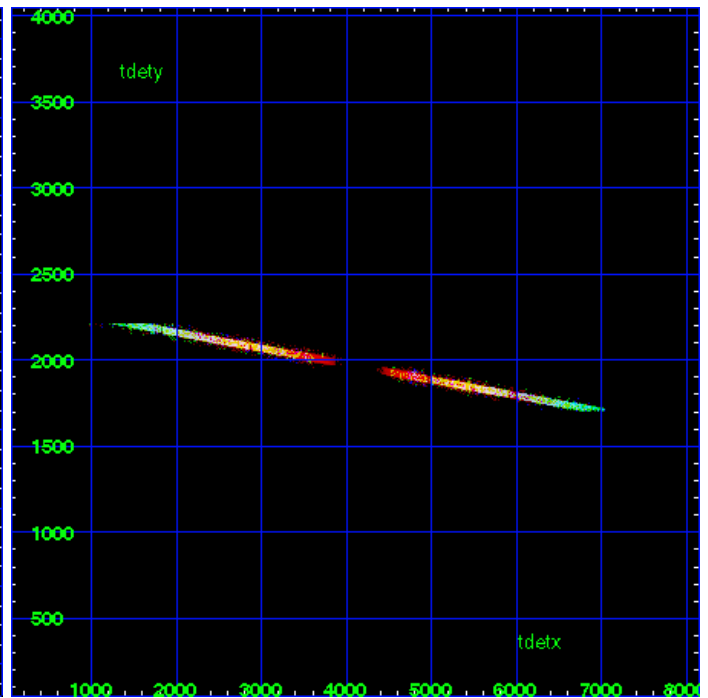
HEG Zero Order



HEG Order Sort ALL

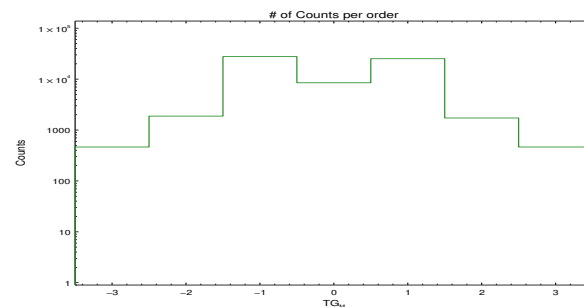


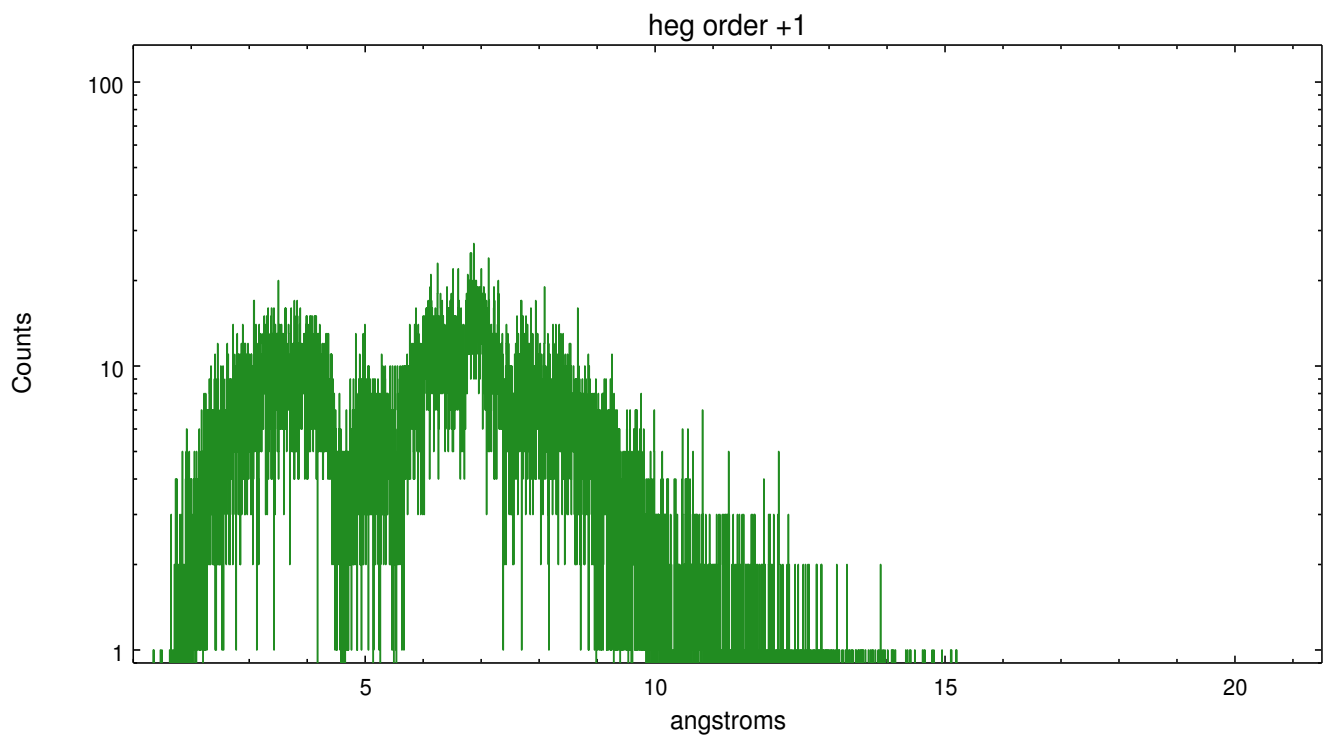
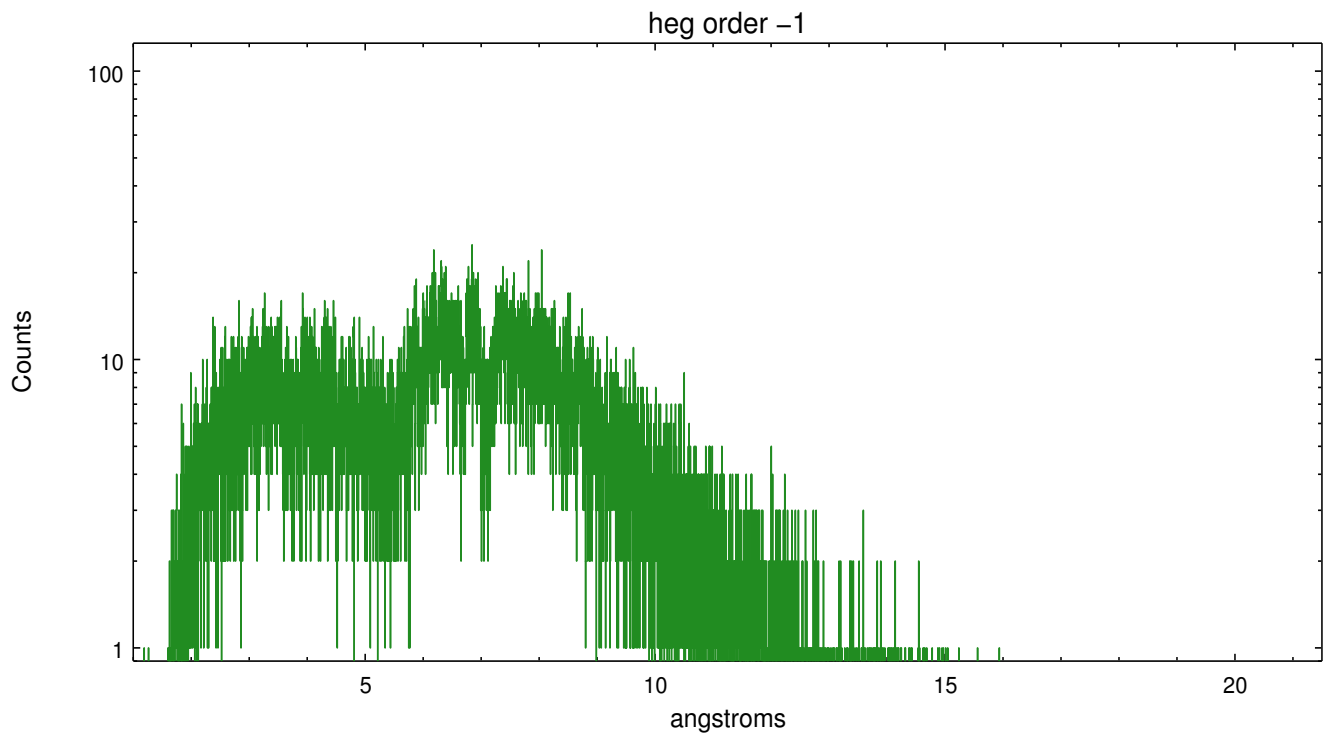
Spot Image HEG



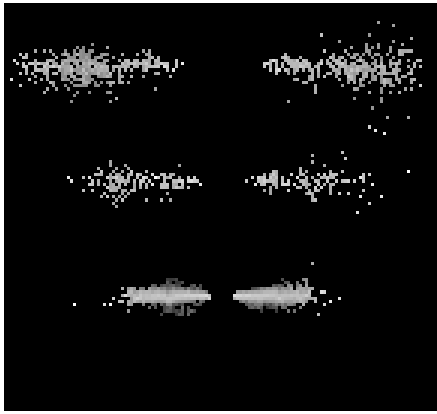
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	464	1877	27707	8483	25205	1724	464

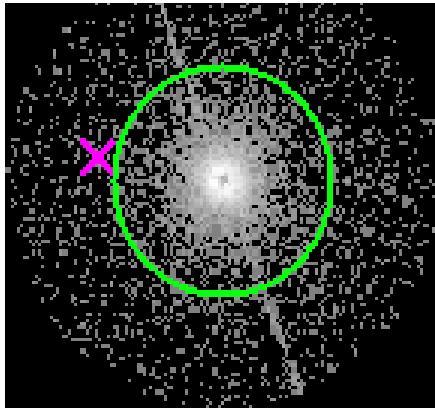




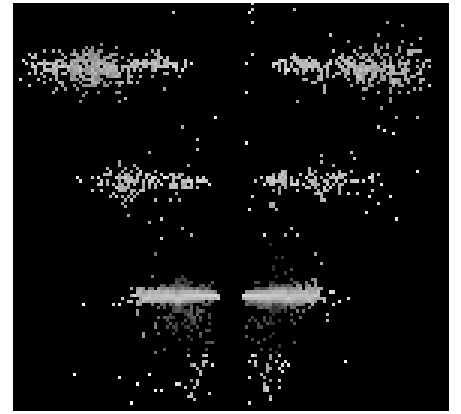
3.2 MEG Arm



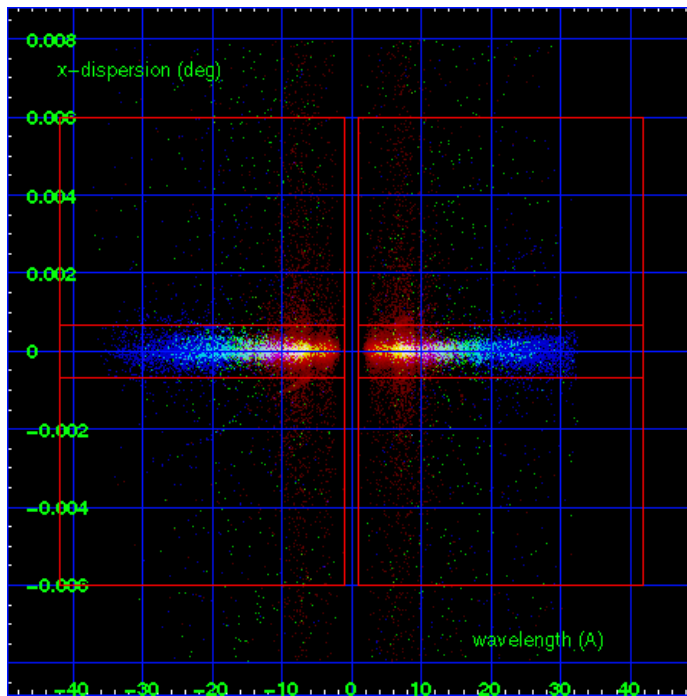
MEG Order Sort 123



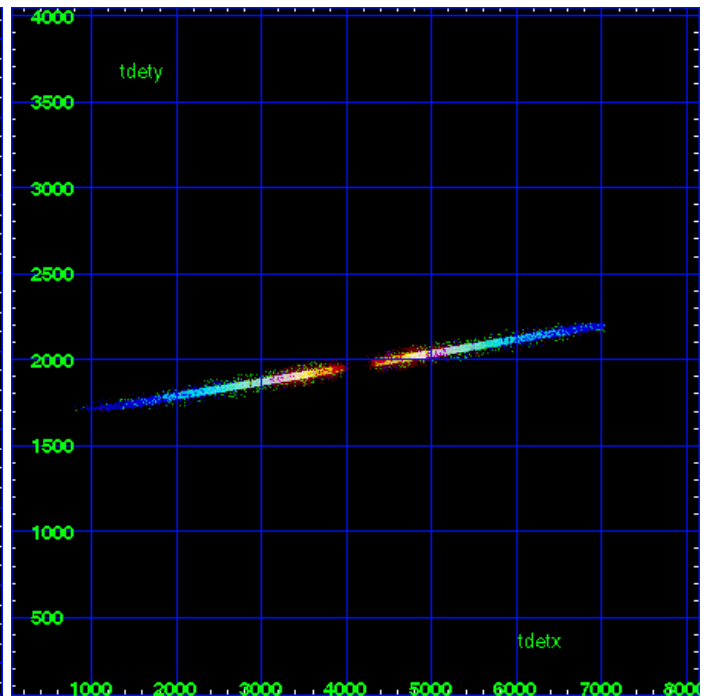
MEG Zero Order



MEG Order Sort ALL

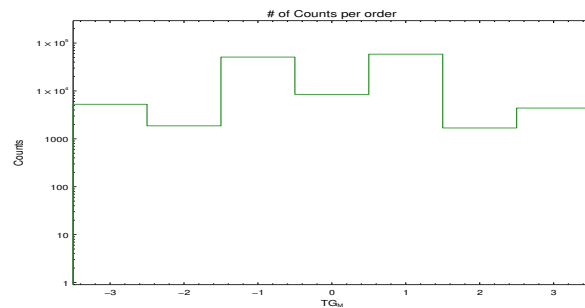


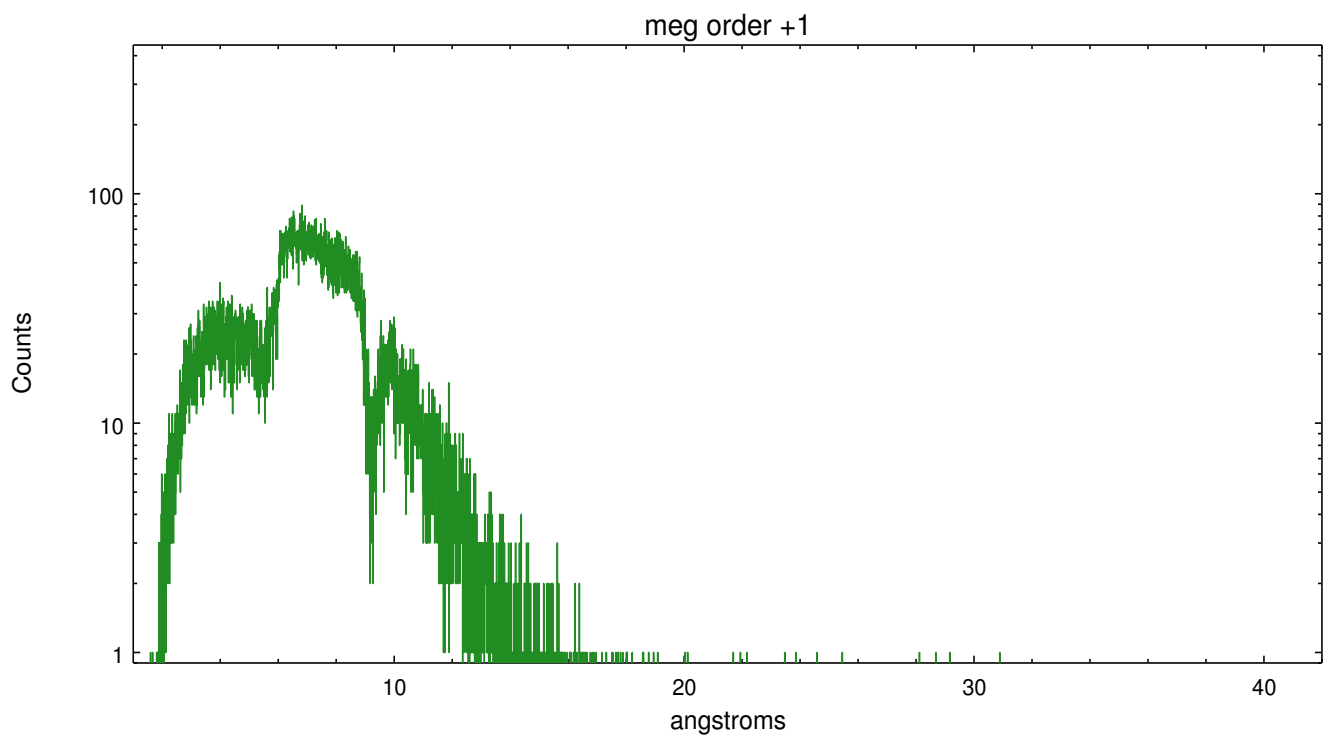
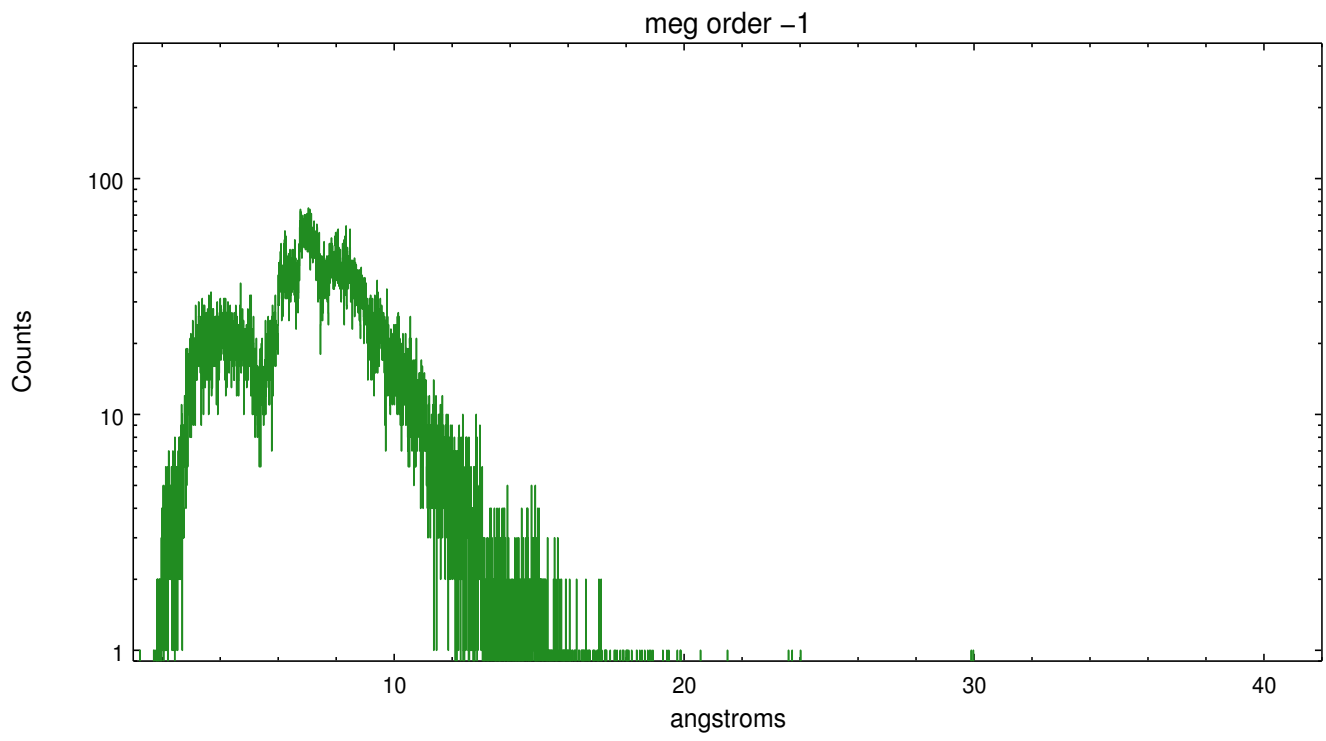
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	5268	1866	50979	8483	58615	1685	4394





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.06.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	13.185199907601

A.2 Comments

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 ($x=4130.71$, $y=4090.23$) 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.