

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 11987 - L2 Version 3
Chandra X-Ray Center

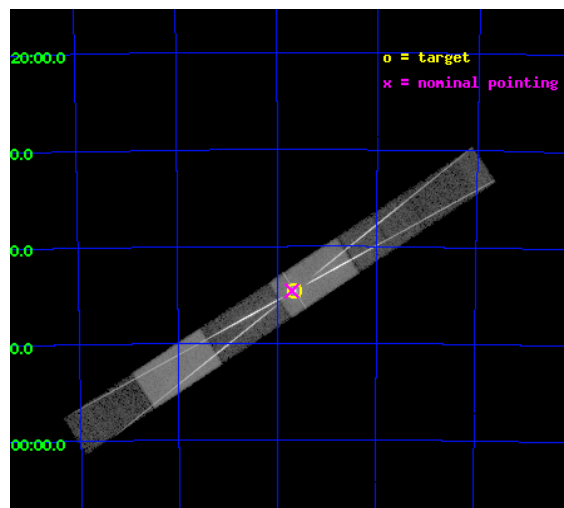
L2 Processing Date : Jun 21 2012

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1 Front

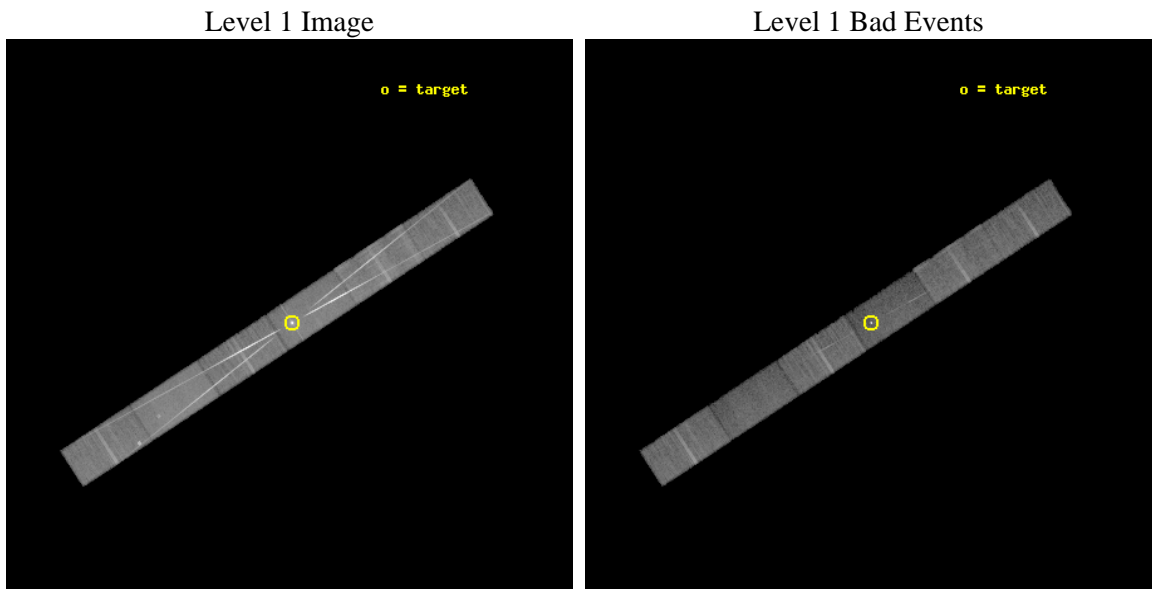
seq_num	401109	Sequence number
obs_id	11987	Observation id
title	Deep Chandra Observations of the Black Hole LMC X-1	Proposal title
observer	Dr. Michael Nowak	Principal investigator
object	LMC X-1	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	84.911667	Observer's specified target RA [deg]
dec_targ	-69.74325	Observer's specified target Dec [deg]
ra_nom	84.925676683221	Nominal RA [deg]
dec_nom	-69.743386020012	Nominal Dec [deg]
roll_nom	326.66975798741	Nominal Roll [deg]
revision	3	Processing version of data
ontime	19070.063917518	Sum of GTIs [s]
livetime	18620.542124121	Livetime [s]
ontime4	19070.104957521	Sum of GTIs [s]
ontime5	19070.022877514	Sum of GTIs [s]
ontime6	19069.981837511	Sum of GTIs [s]
ontime7	19070.063917518	Sum of GTIs [s]
ontime8	19069.940797508	Sum of GTIs [s]
ontime9	19069.899757504	Sum of GTIs [s]
l2events	414645	Number of level 2 events



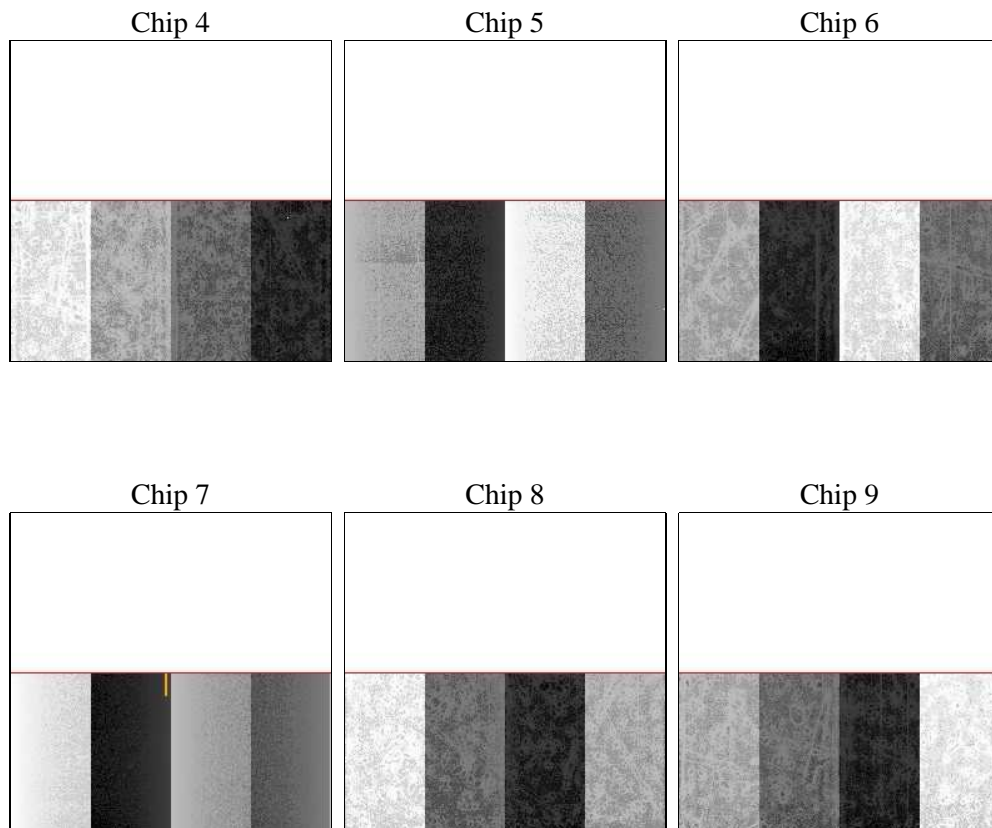
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	19000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	19070.063917518	Sum of GTIs [s]
caldsver	4.4.10	 	ontime4	19070.104957521	Sum of GTIs [s]
date	2012-06-19T22:38:22	Date and time of file creation	ontime5	19070.022877514	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	19069.981837511	Sum of GTIs [s]
			ontime7	19070.063917518	Sum of GTIs [s]
			ontime8	19069.940797508	Sum of GTIs [s]
			ontime9	19069.899757504	Sum of GTIs [s]
			l1events	913751	Number of level 1 events

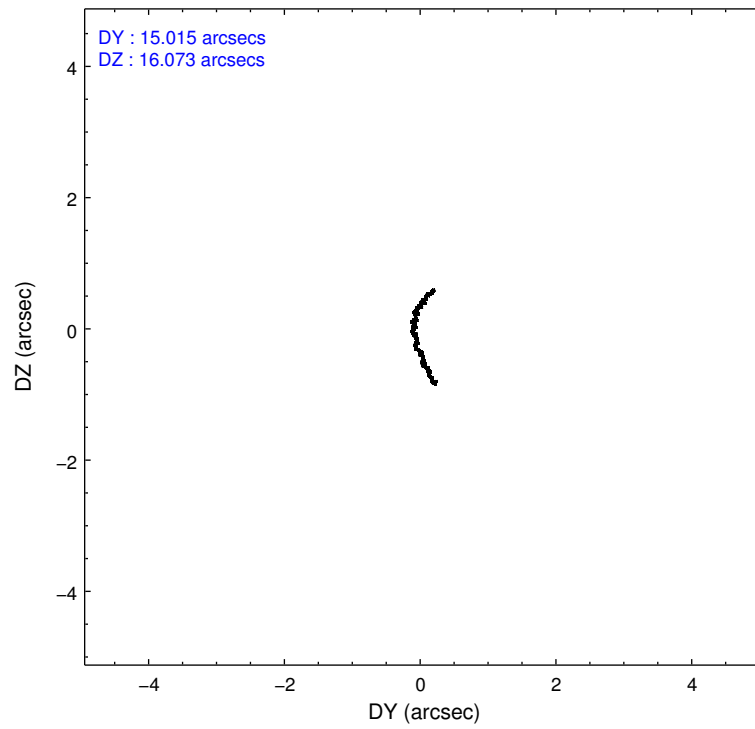
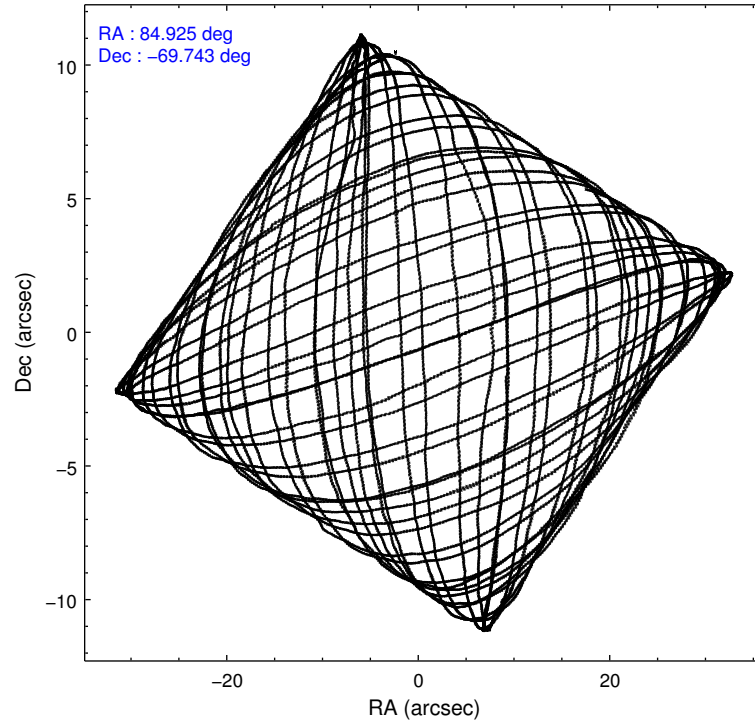
2.1.4 Events

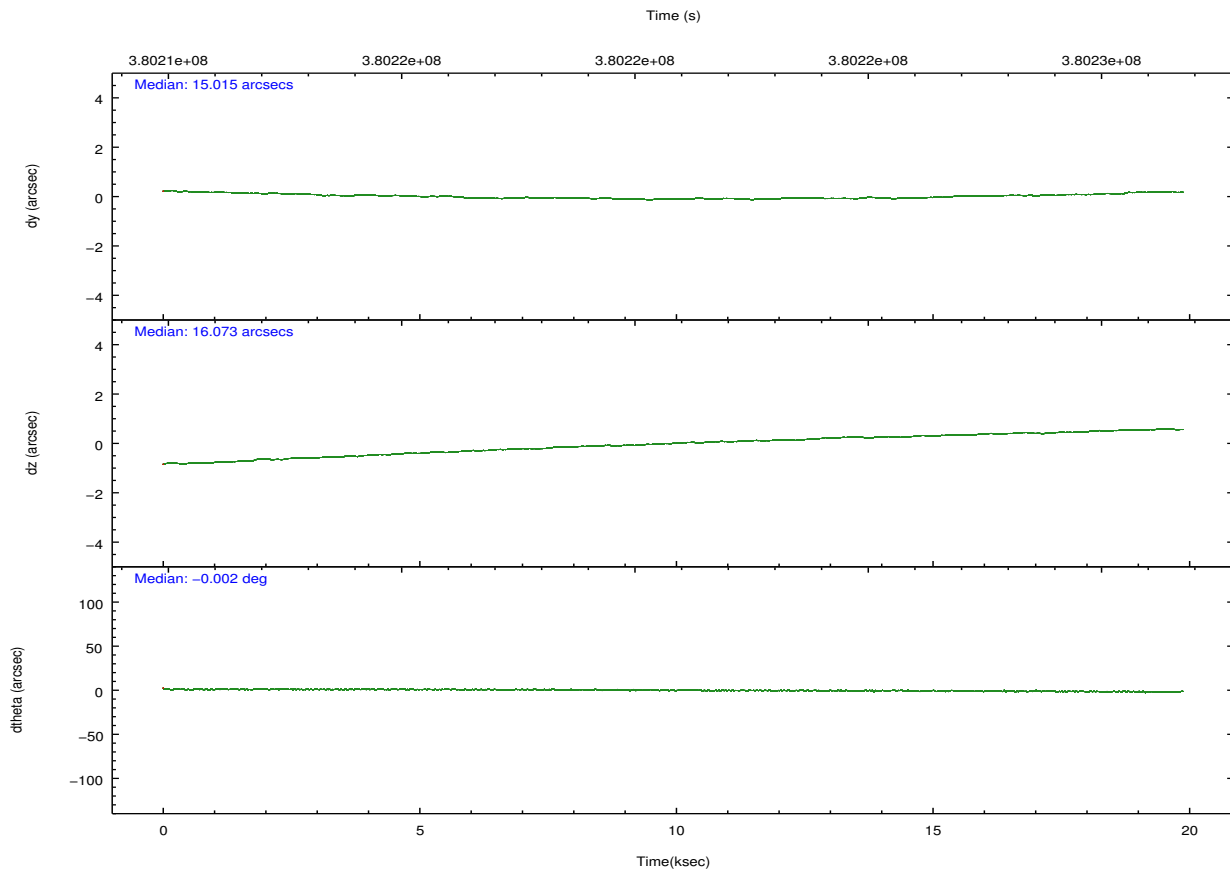
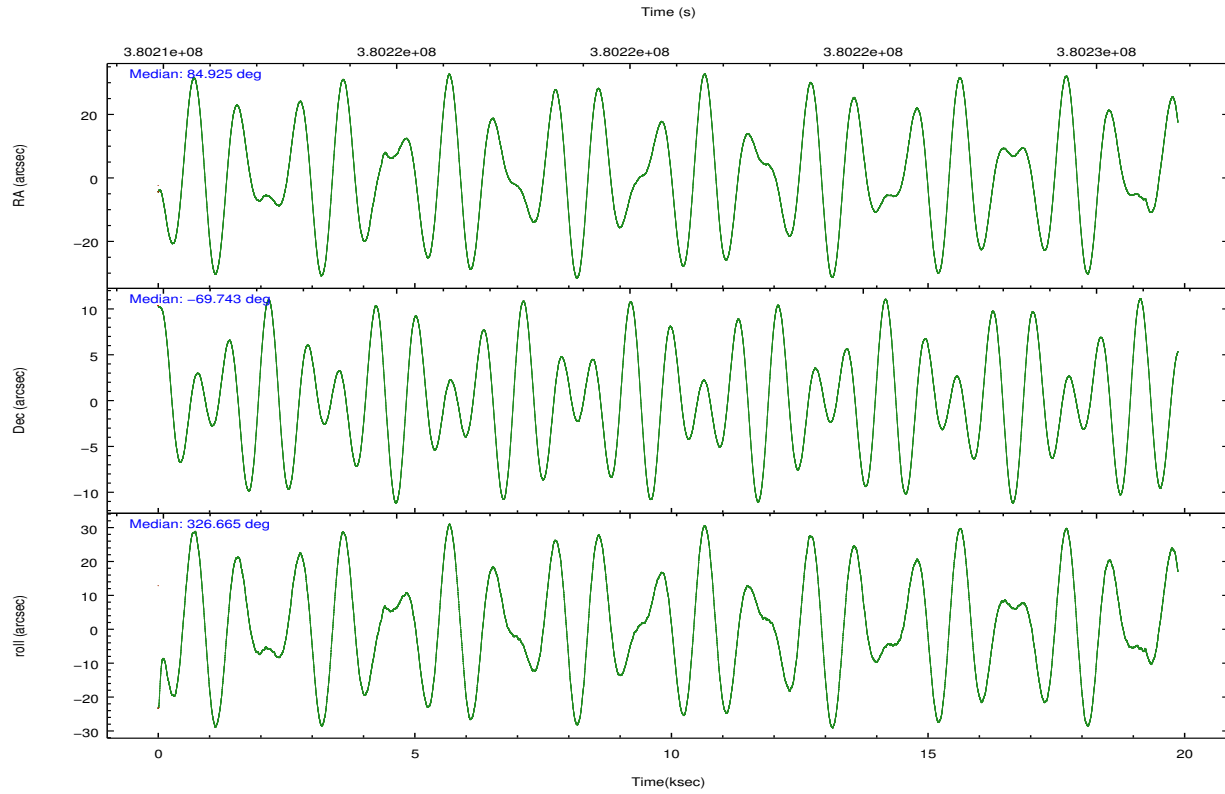
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	108717	146817	196128	206330	163203	92556	grade 0 events	10330	14763	83325	27285	45692	10351
rejected events	90832	60965	84311	56532	87488	73980		9%	10%	42%	13%	27%	11%
rejected %	83%	41%	42%	27%	53%	79%	grade 1 events	93	334	613	469	243	52
								0%	0%	0%	0%	0%	0%
							grade 2 events	2985	24443	13773	35982	11360	2979
								2%	16%	7%	17%	6%	3%
							grade 3 events	1363	5992	4939	16131	4829	1592
								1%	4%	2%	7%	2%	1%
							grade 4 events	1341	5978	5062	16259	4559	1551
								1%	4%	2%	7%	2%	1%
							grade 5 events	3295	10754	3859	11765	5086	3675
								3%	7%	1%	5%	3%	3%
							grade 6 events	1867	34698	4734	54176	9285	2109
								1%	23%	2%	26%	5%	2%
							grade 7 events	87443	49855	79823	44263	82149	70247
								80%	33%	40%	21%	50%	75%

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	84.846764	84.92567668322091	CCD I2 on	N	N
[deg] Pointing Dec	-69.742148	-69.74338602001187	CCD I3 on	N	N
[deg] Pointing Roll	326.439115	326.6697579874133	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	-183.985022191653	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-6.14	-6.147500391354811	CCD S4 on	Y	Y
[s] Observation start time (MET)	380211749.184000	380209914.10101	CCD S5 on	Y	Y
Observation start date	2010-01-18T14:21:23	2010-01-18T13:51:54	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	380230749.184000	380231861.91462	On-chip summing requested	N	N
Observation end date	2010-01-18T19:38:03	2010-01-18T19:57:41	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



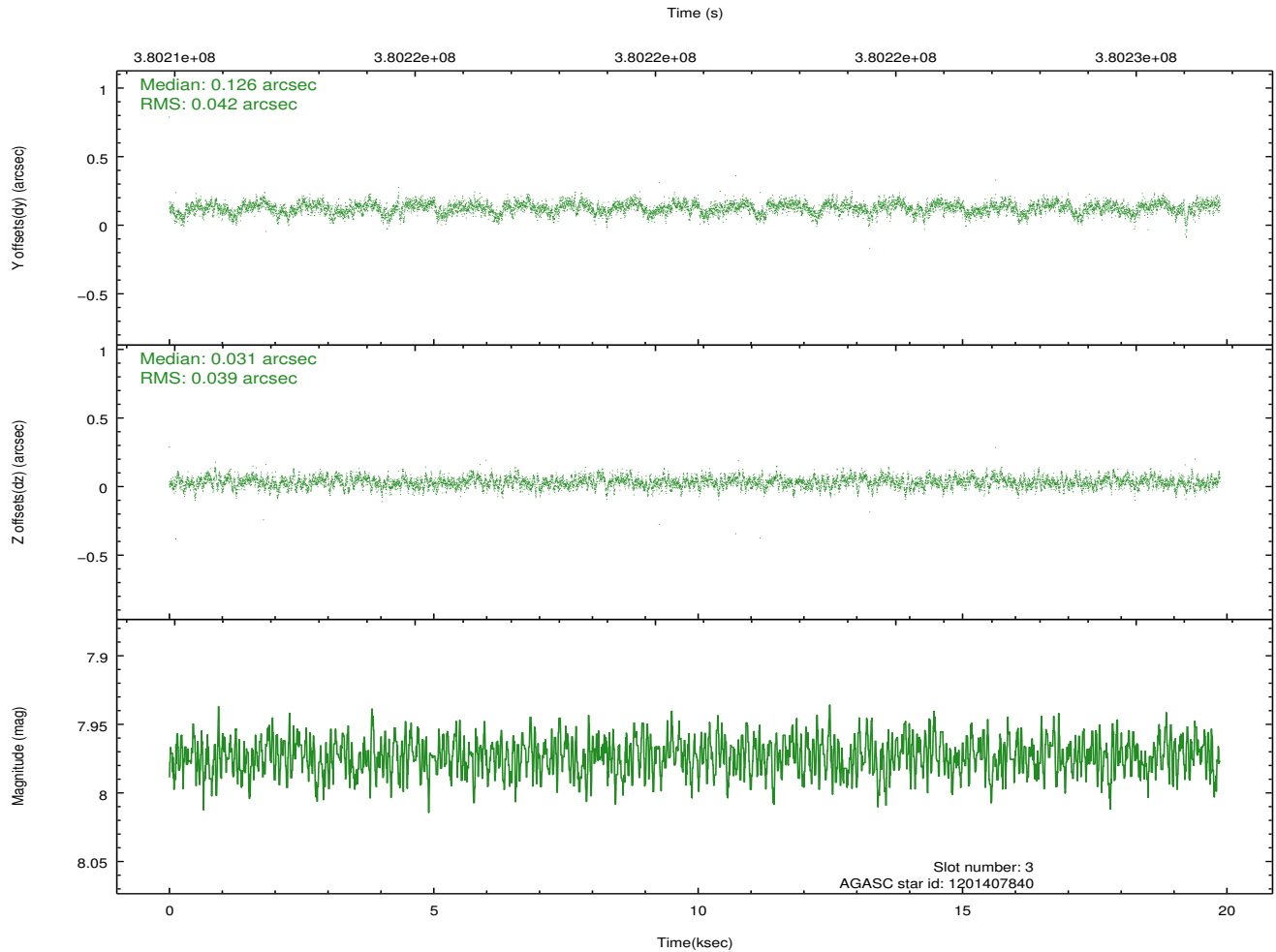
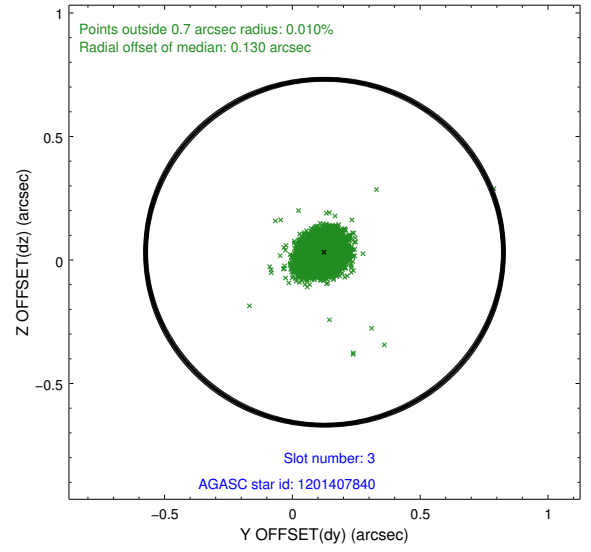
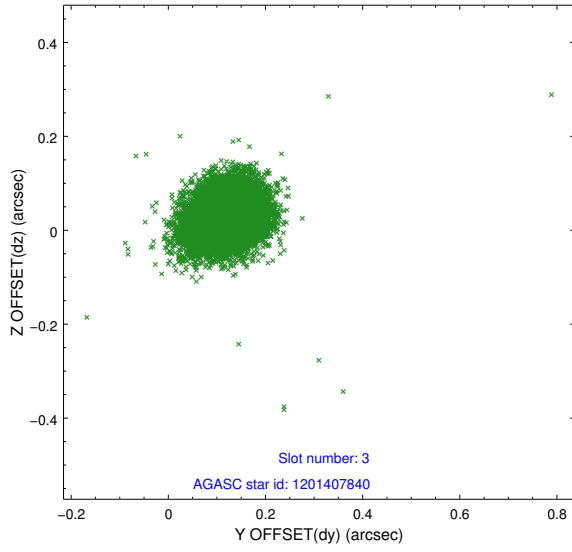


Slot Statistics

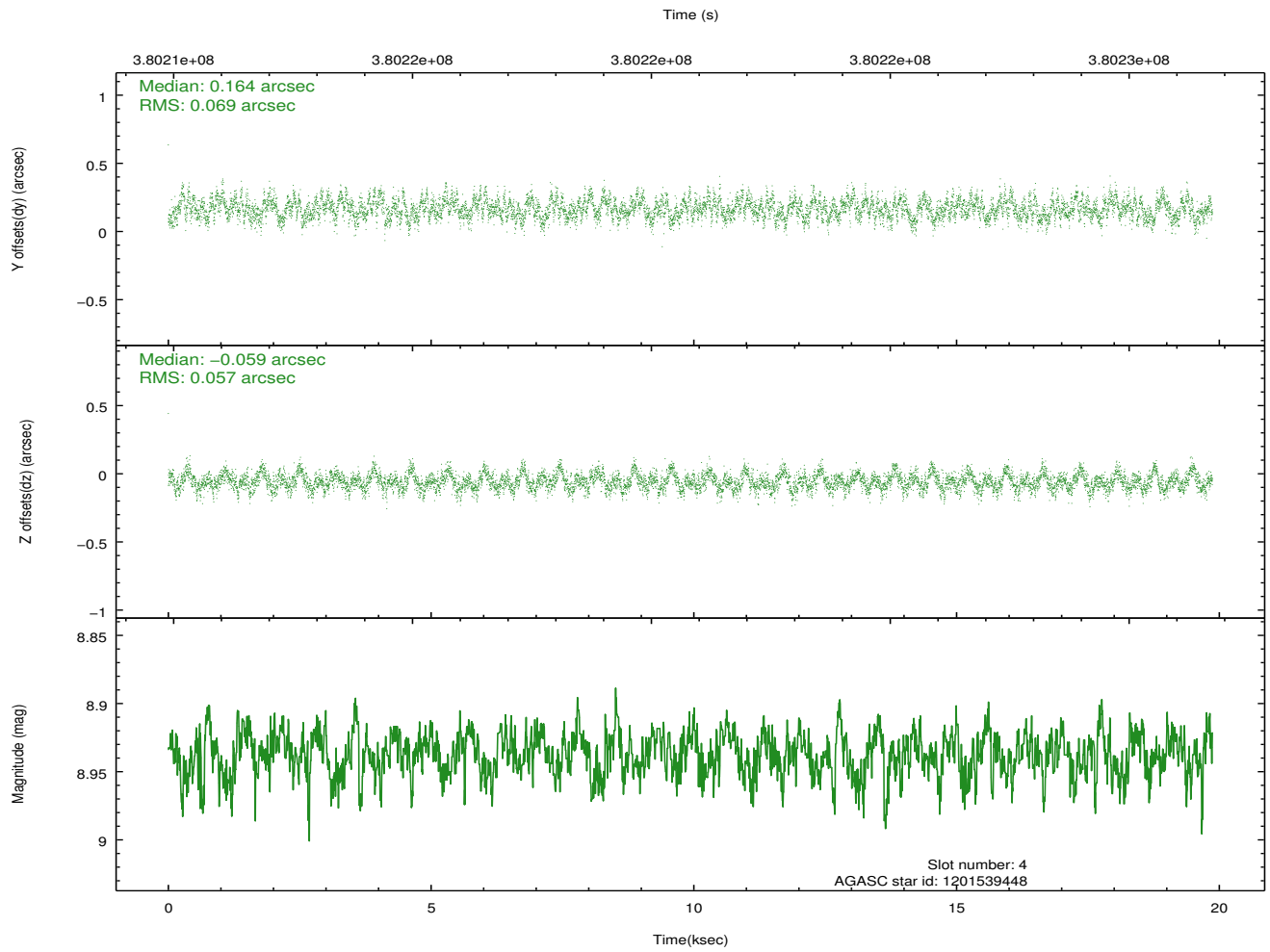
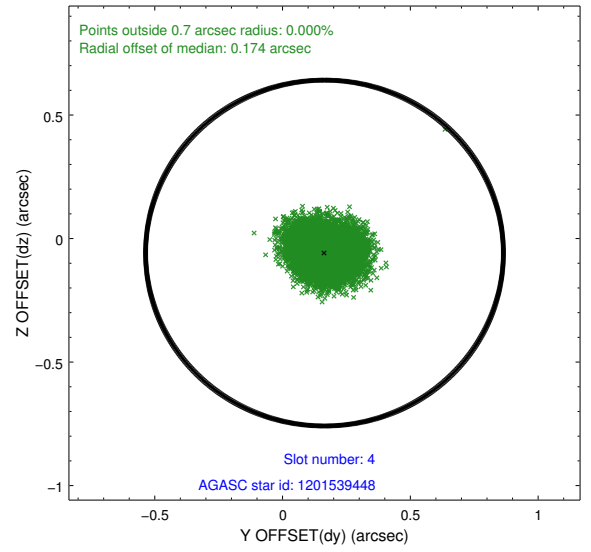
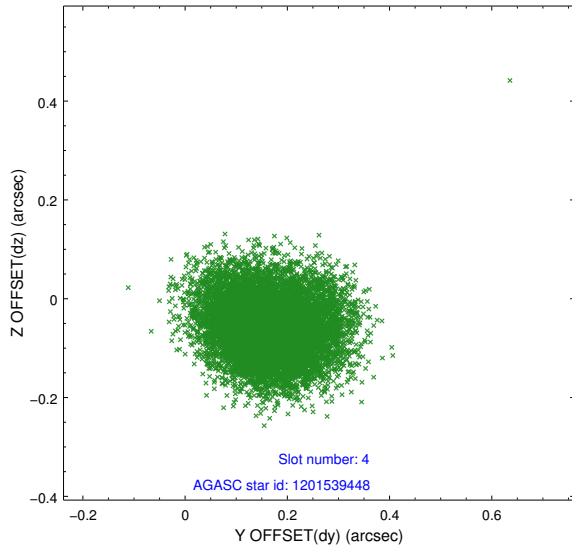
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.91	4847	-0.082	-0.125	0.016	0.025	0.000000	0.000000	-767.70	-1864.24
1	FID	ACIS-S-4	6.98	4847	0.212	0.073	0.009	0.017	0.000000	0.000000	2145.84	44.12
2	FID	ACIS-S-5	7.04	4847	-0.160	0.061	0.015	0.023	0.000000	0.000000	-1820.32	38.11
3	GUIDE	1201407840	7.97	9690	0.126	0.031	0.059	0.099	83.696303	-70.172201	-306.66	-2077.74
4	GUIDE	1201539448	8.94	9686	0.164	-0.059	0.096	0.153	85.635707	-70.382152	2072.40	-1397.65
5	GUIDE	1201540816	7.96	9690	-0.140	-0.088	0.061	0.099	86.998494	-69.749817	2275.50	1419.71
6	GUIDE	1201541752	7.40	9694	-0.053	0.036	0.053	0.086	85.373891	-70.033762	1122.49	-518.46
7	GUIDE	1201406184	7.91	9692	-0.095	0.076	0.069	0.109	82.503234	-69.975517	-1911.14	-2342.76

2.4 Star Slots

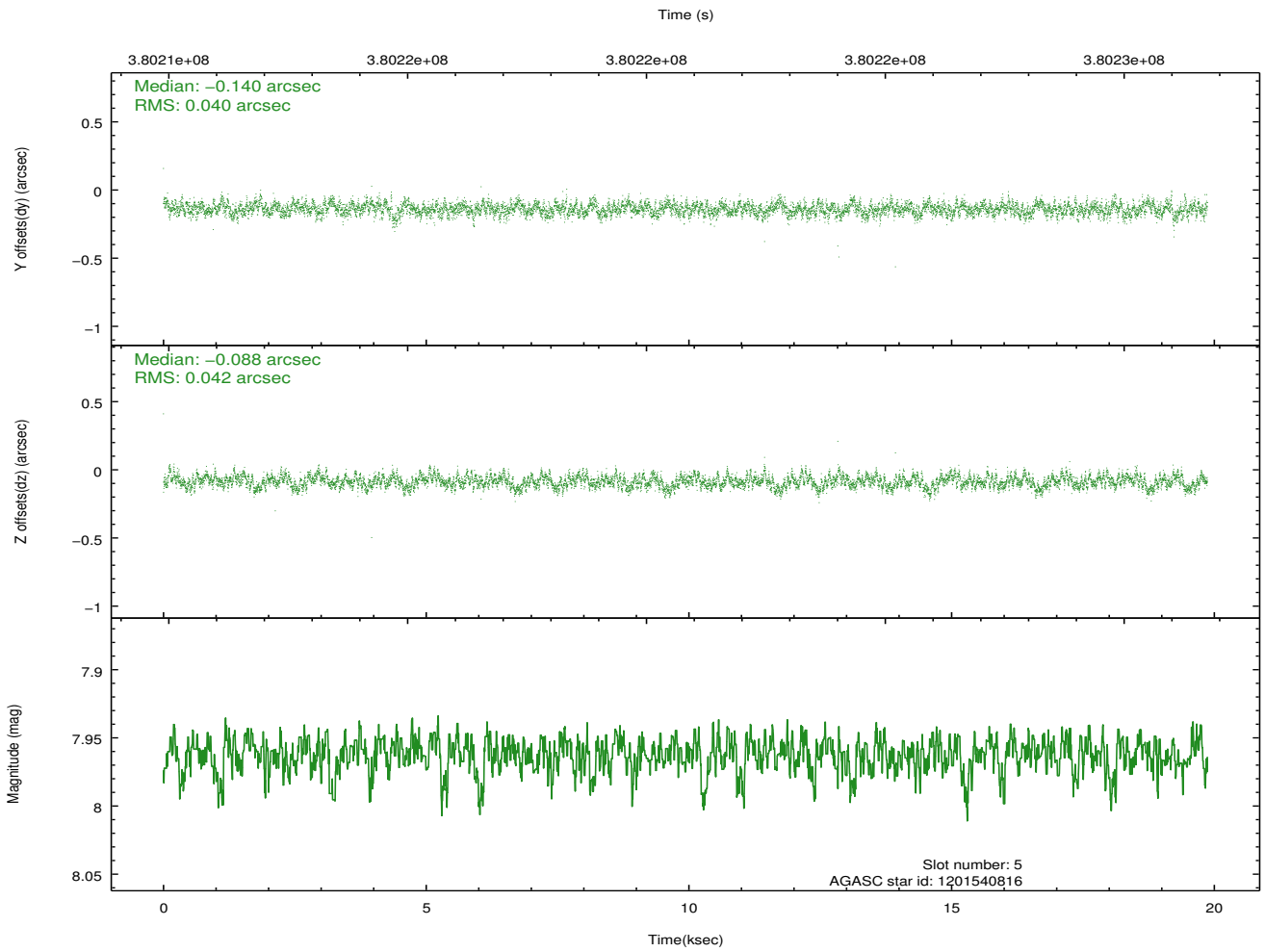
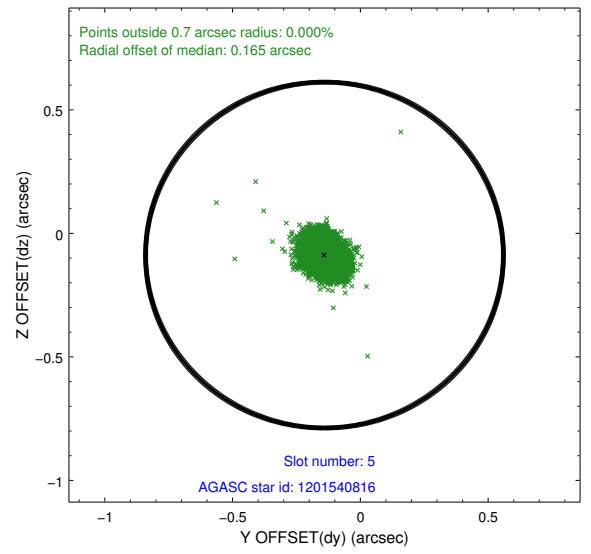
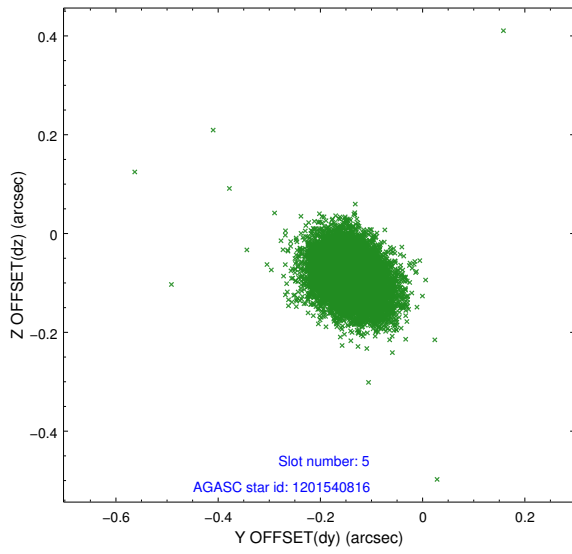
2.4.1 Slot 3



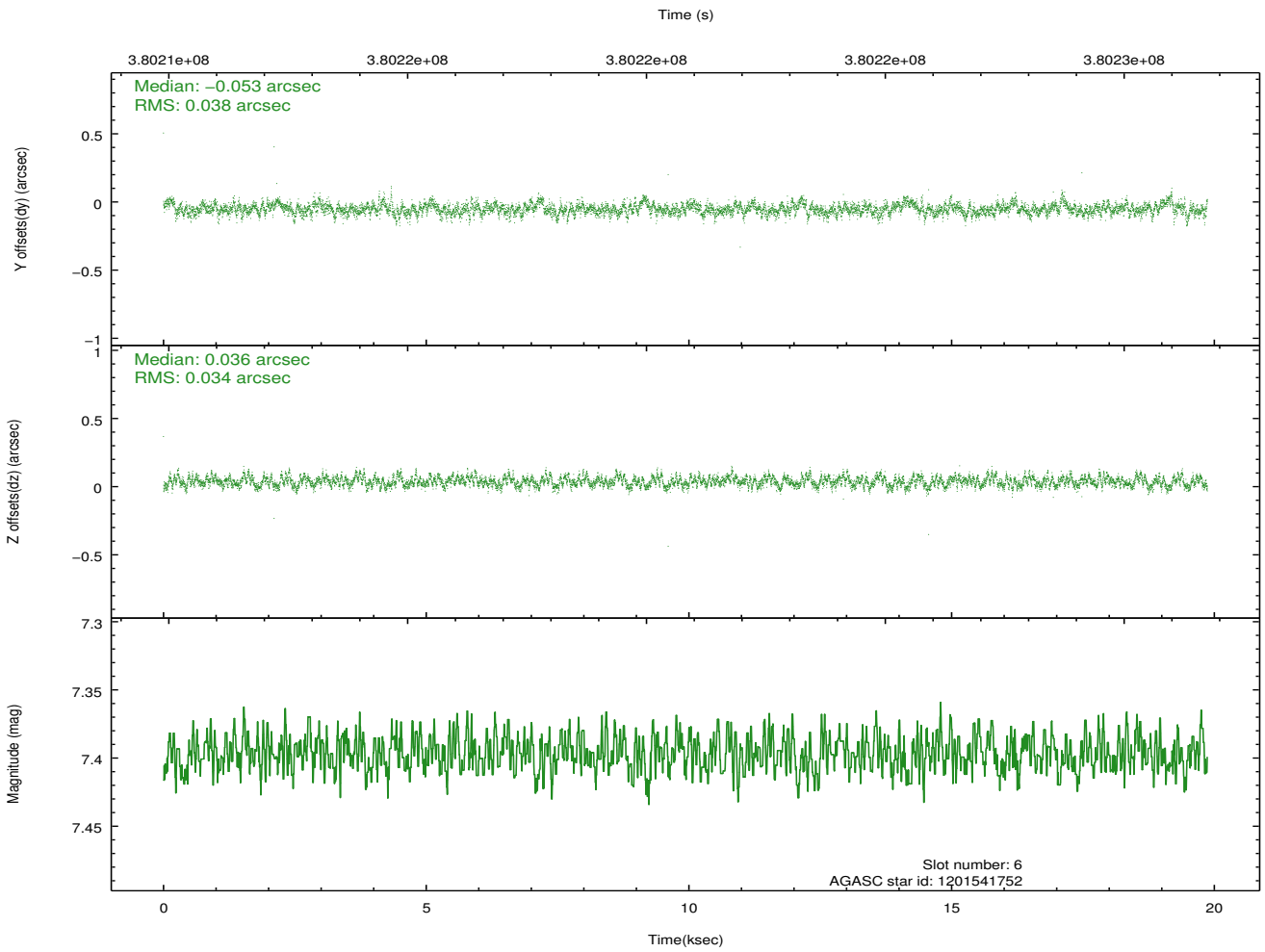
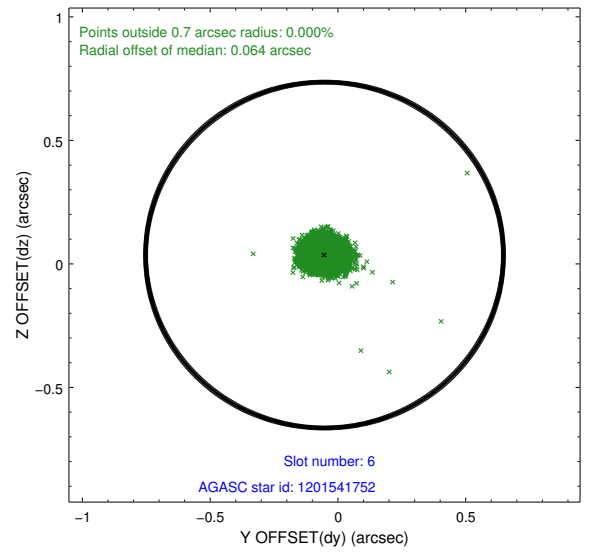
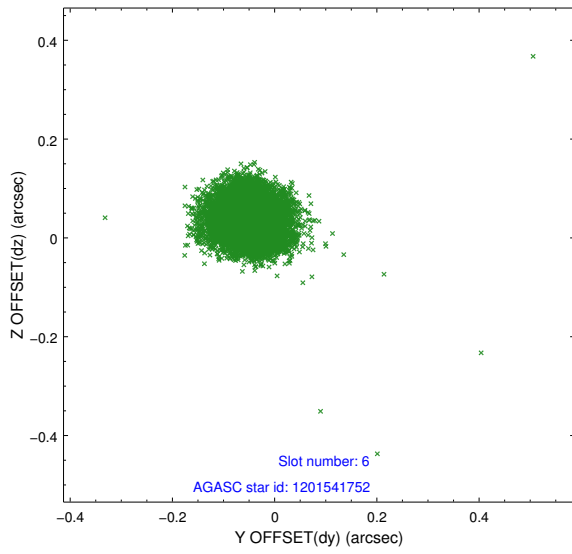
2.4.2 Slot 4



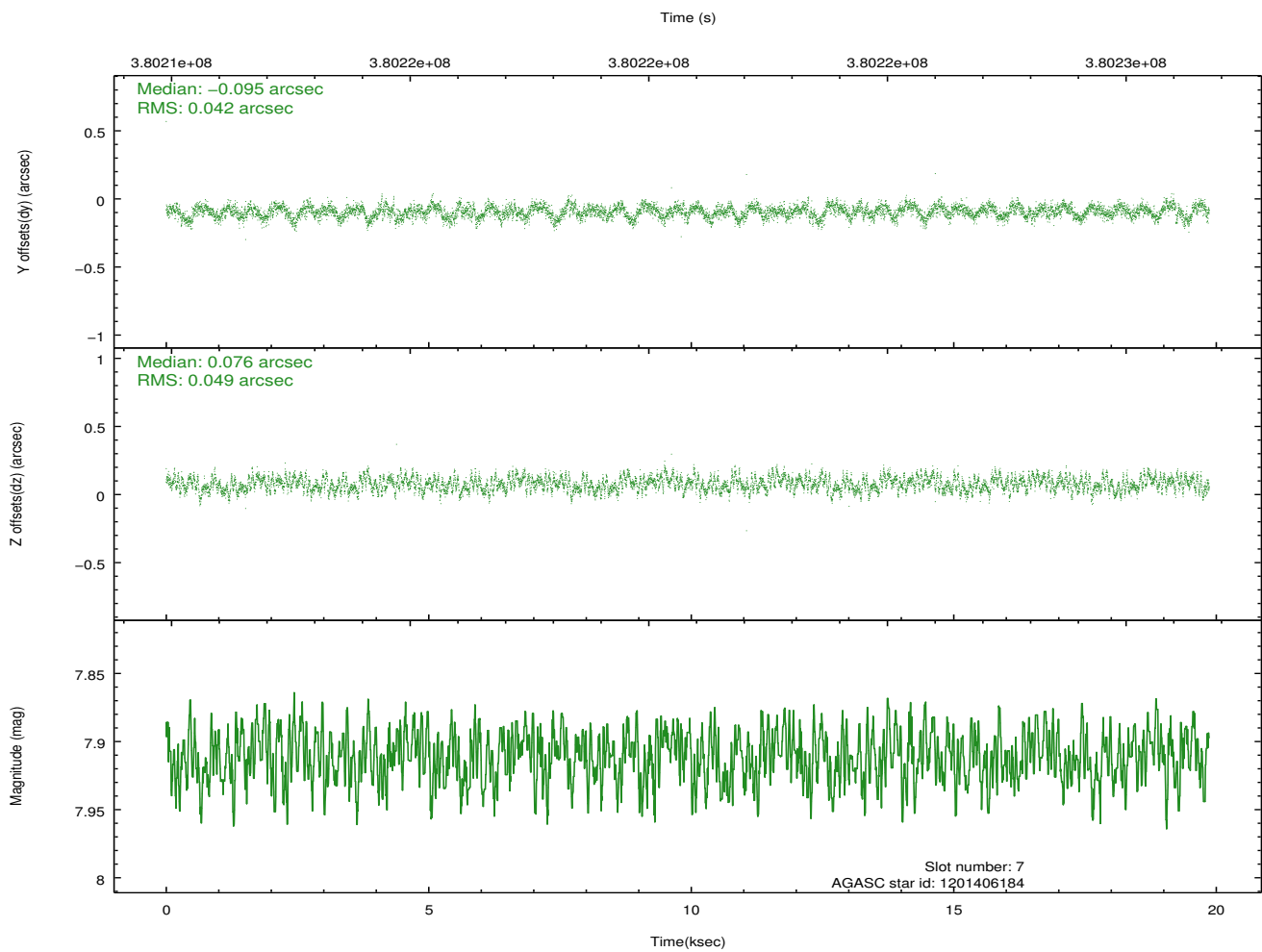
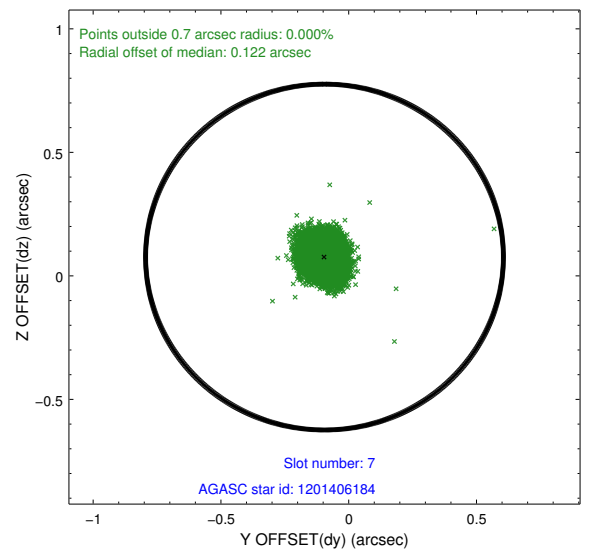
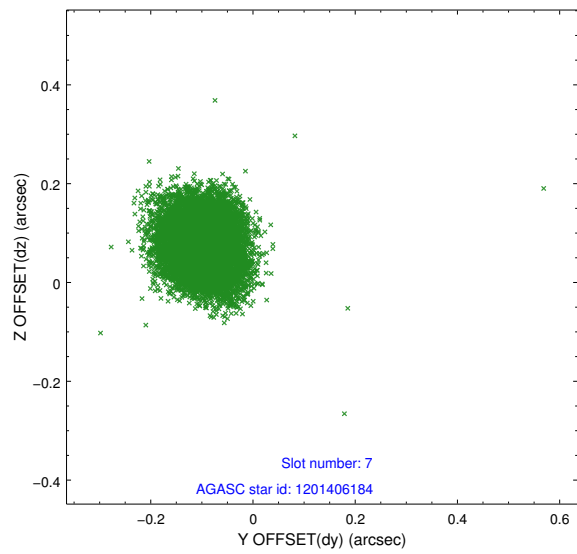
2.4.3 Slot 5



2.4.4 Slot 6

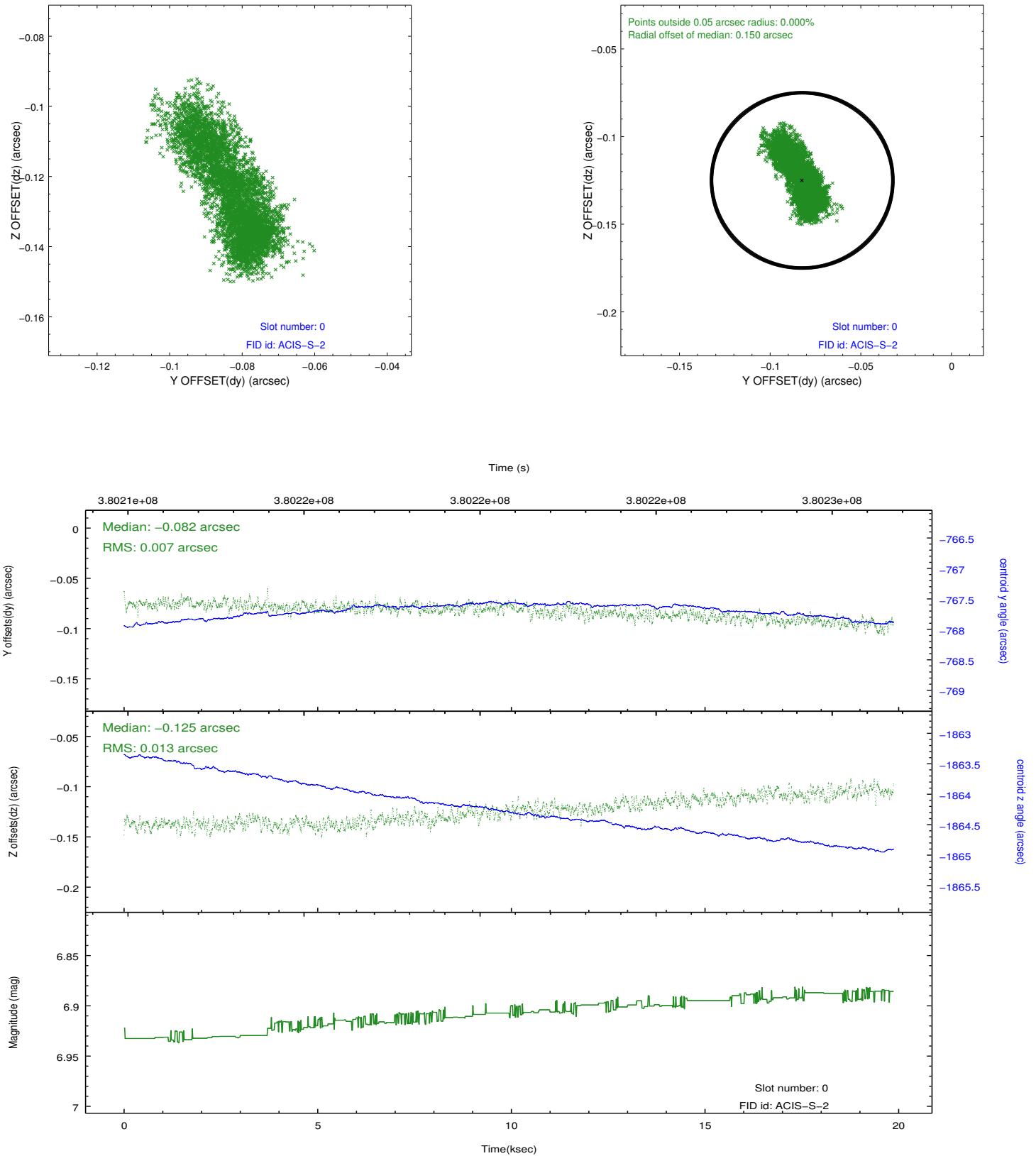


2.4.5 Slot 7

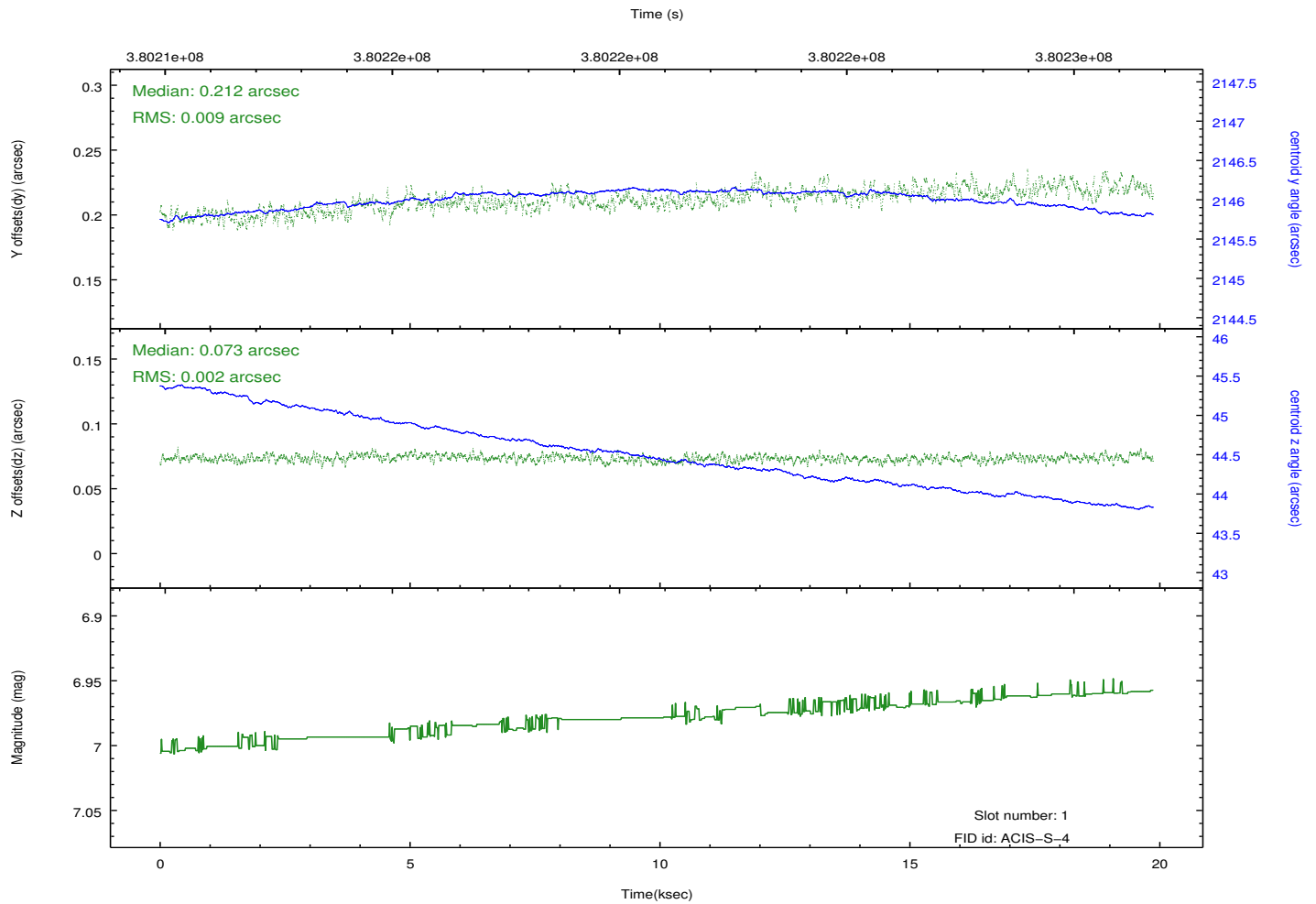
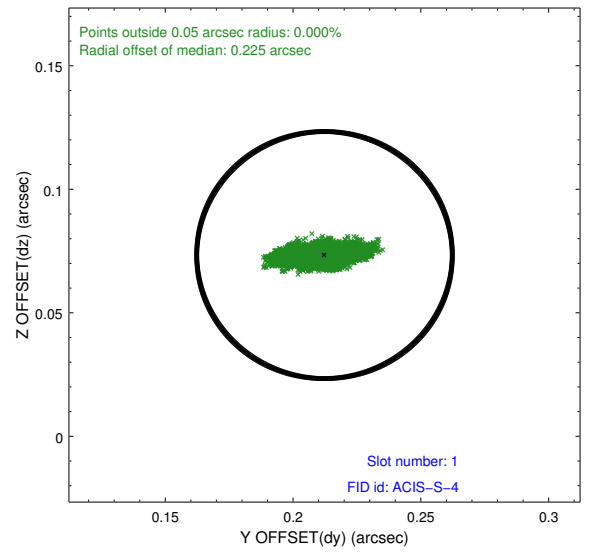
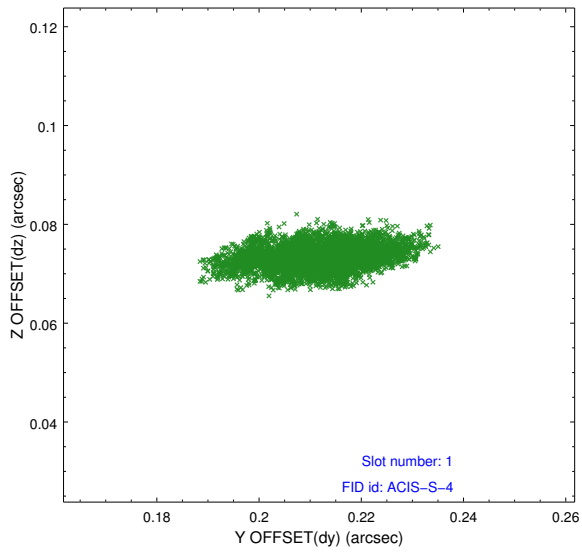


2.5 FID Slots

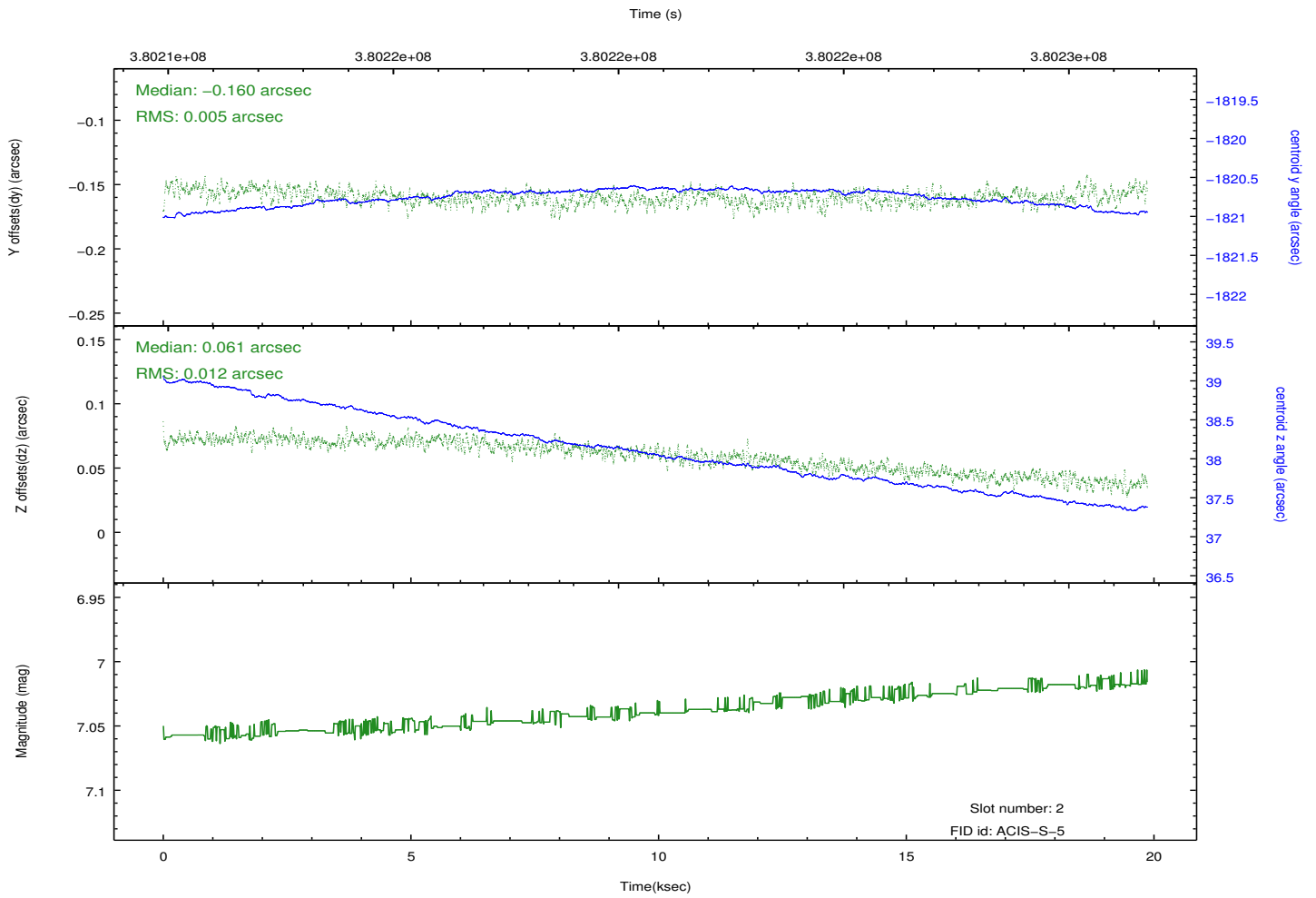
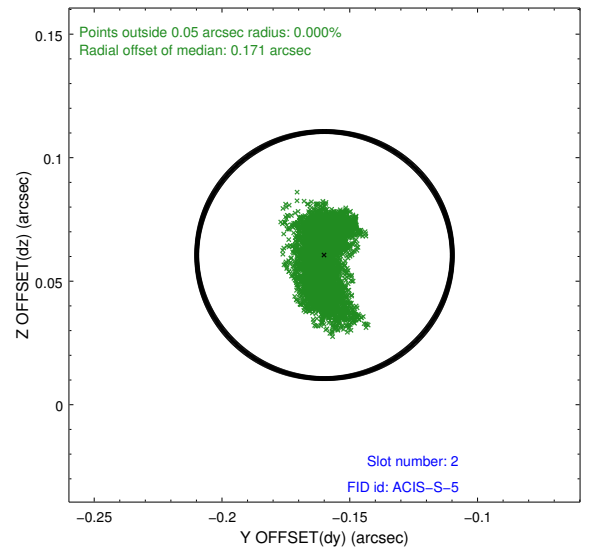
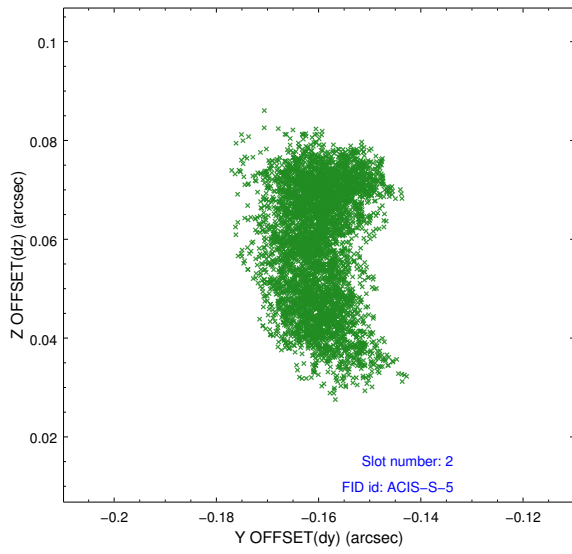
2.5.1 Slot 0



2.5.2 Slot 1

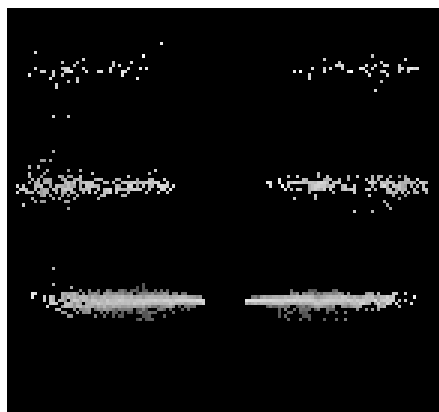


2.5.3 Slot 2

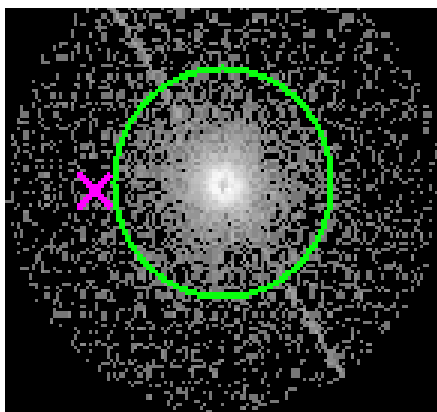


3 Gratings

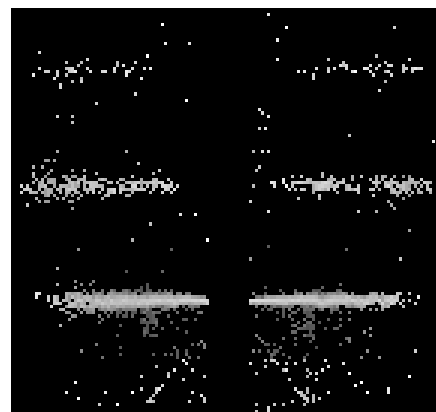
3.1 HEG Arm



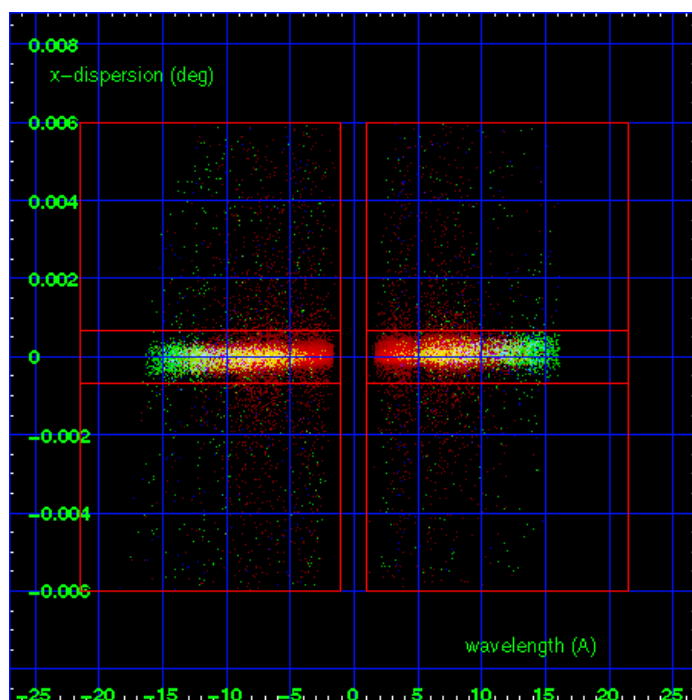
HEG Order Sort 123



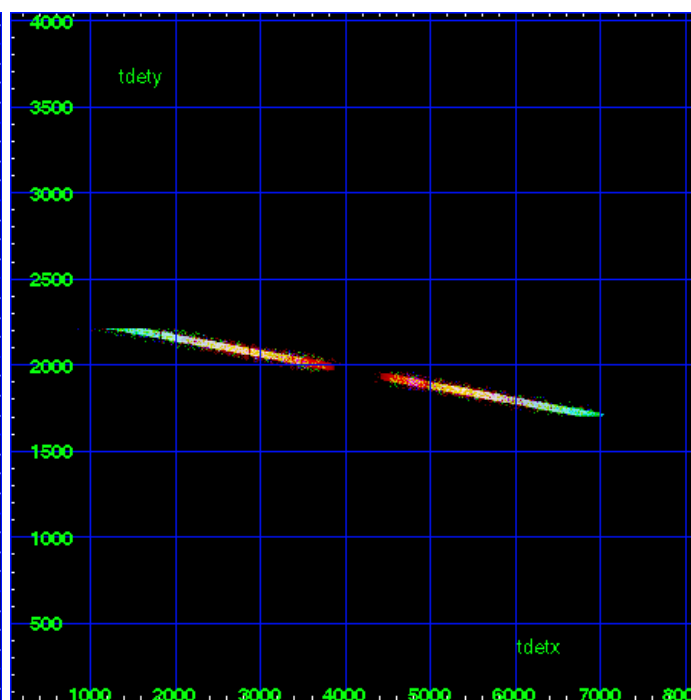
HEG Zero Order



HEG Order Sort ALL

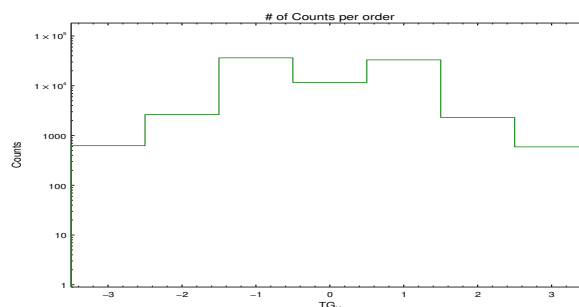


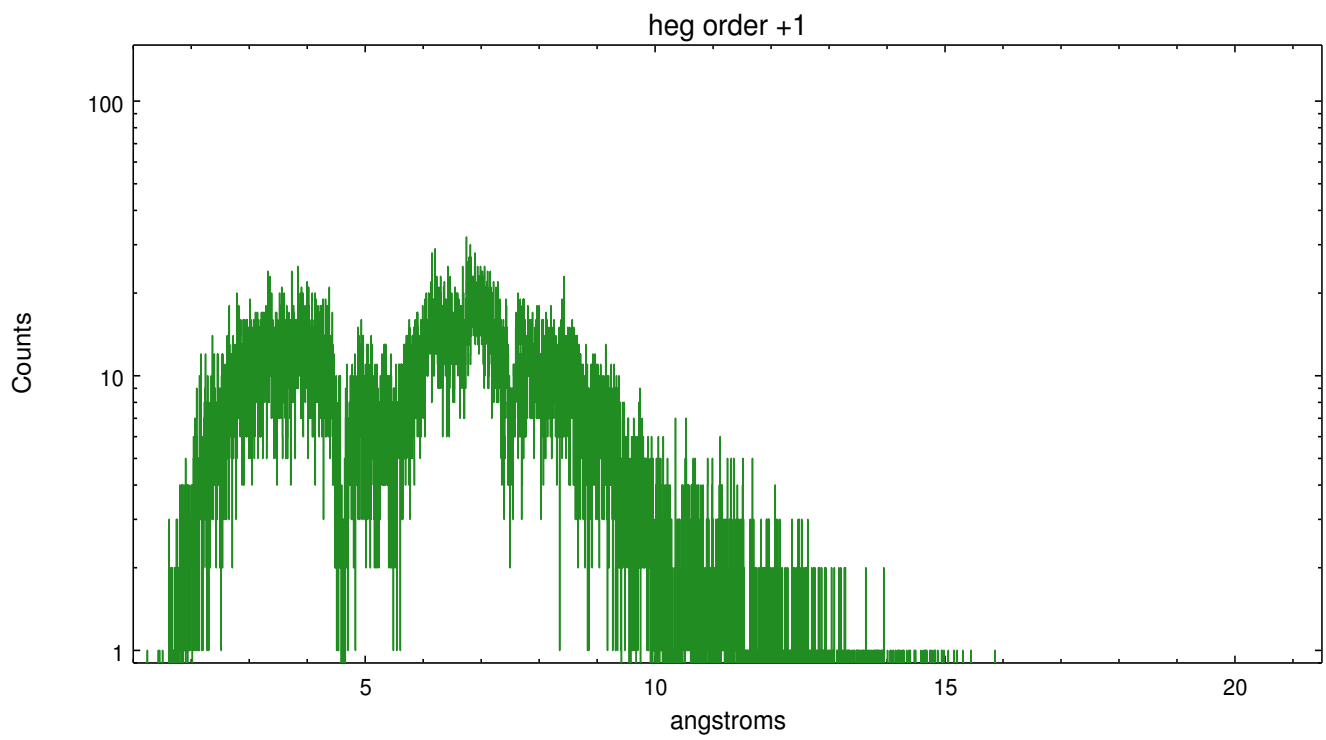
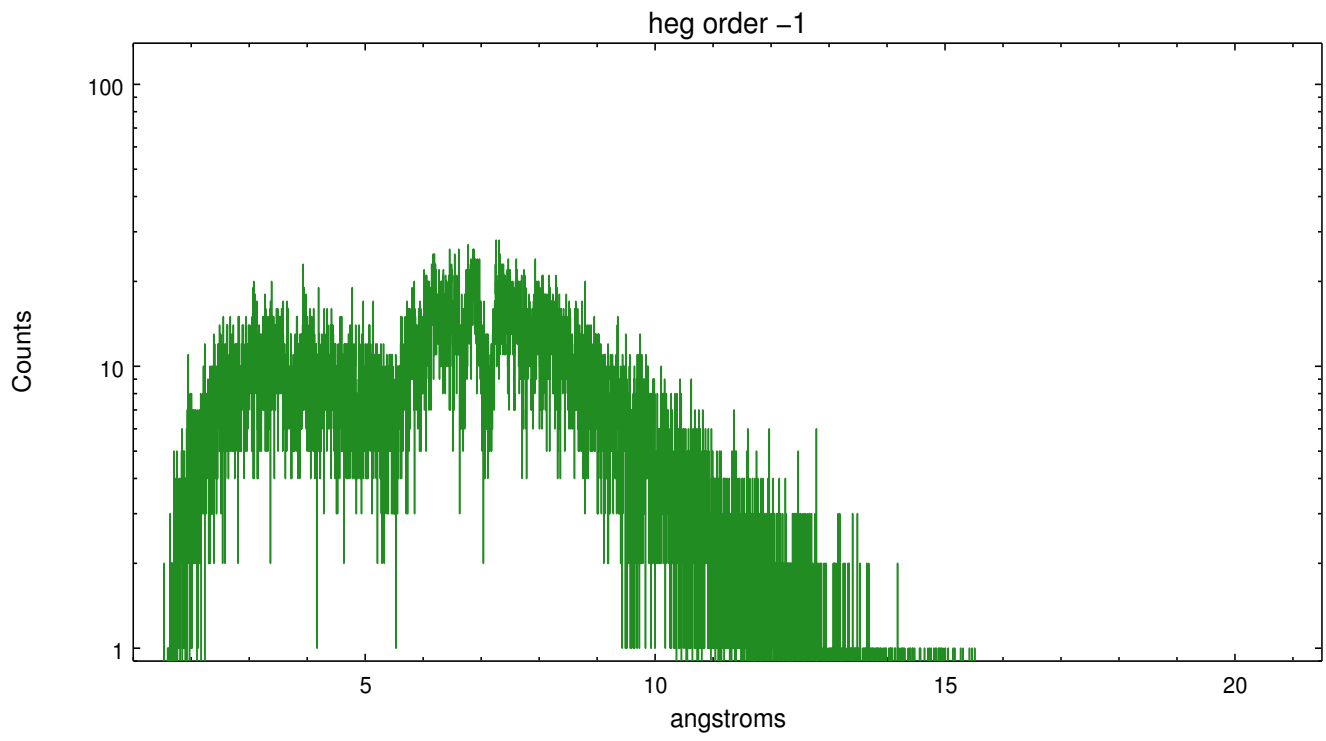
Spot Image HEG



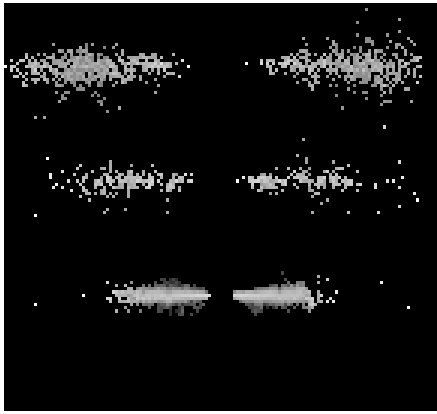
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	625	2639	36437	11640	33161	2312	591

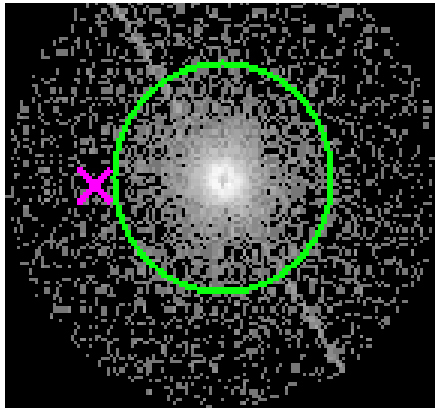




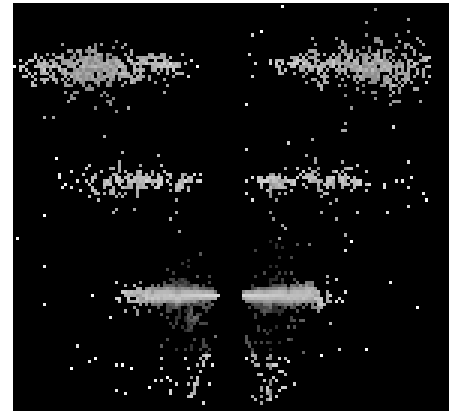
3.2 MEG Arm



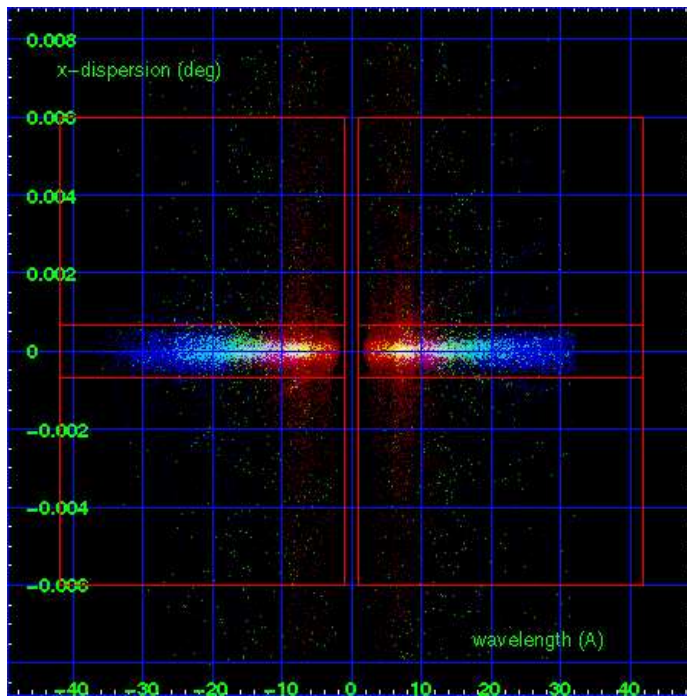
MEG Order Sort 123



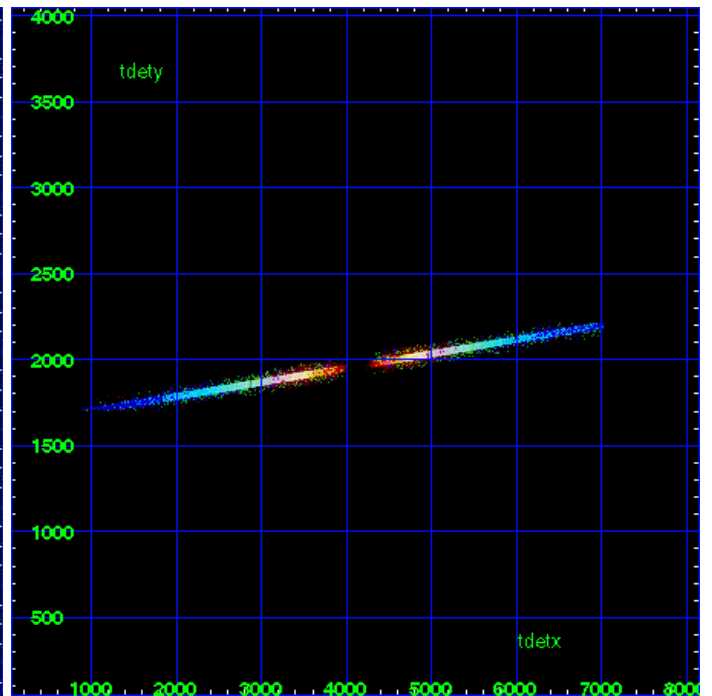
MEG Zero Order



MEG Order Sort ALL

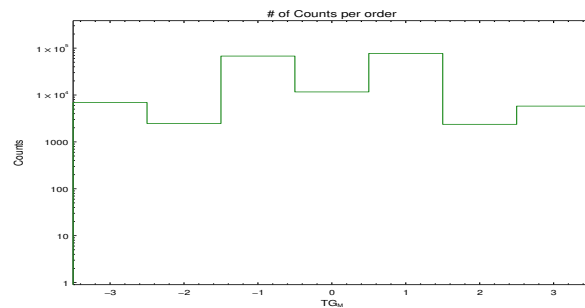


Spot Image MEG

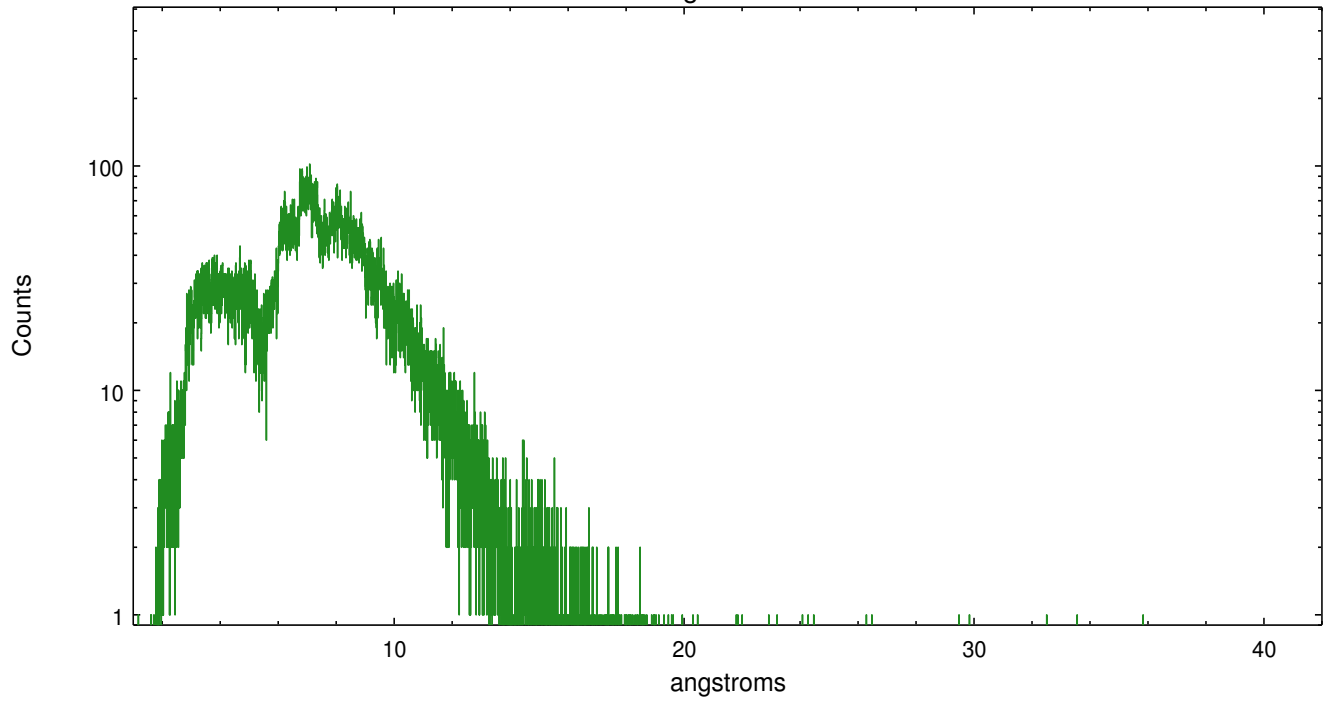


Full Detector MEG

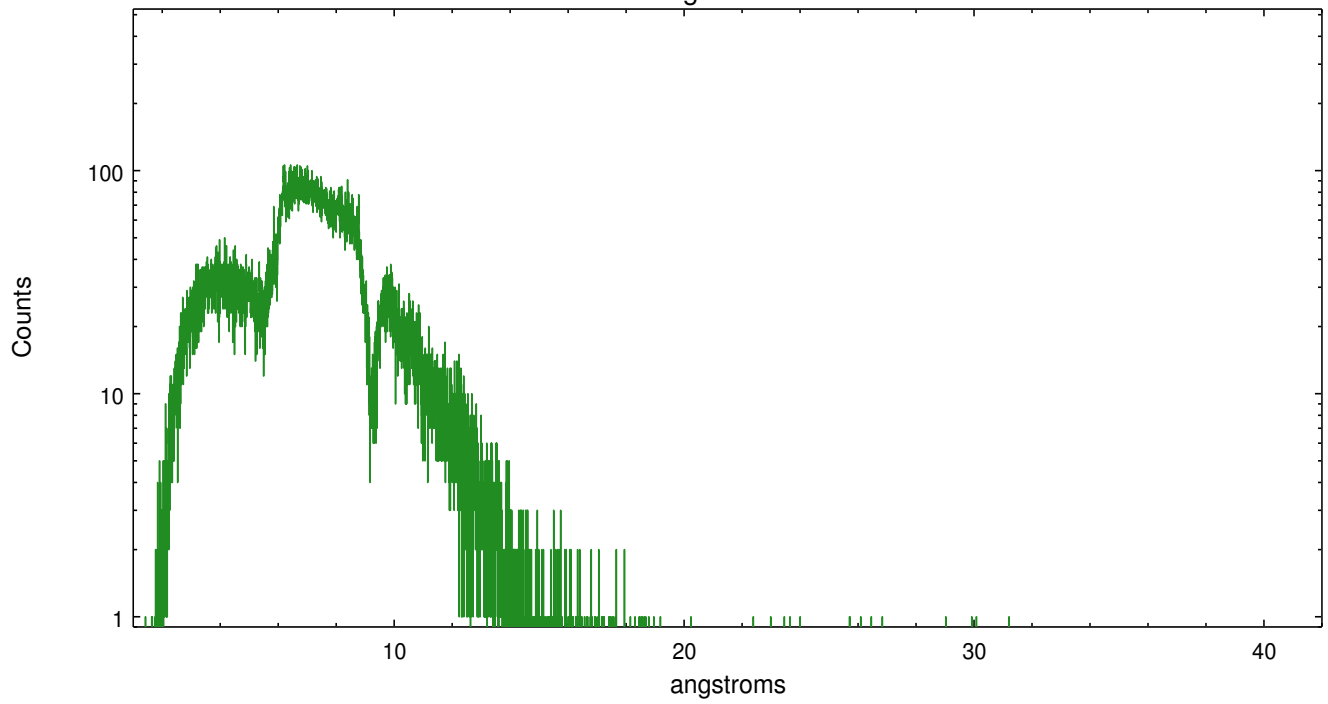
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	6919	2471	67667	11640	76978	2366	5795



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.06.25
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	19.070063919604

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 ($x=4131.57$, $y=4097.64$) 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.