

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 12313 - L2 Version 3
Chandra X-Ray Center

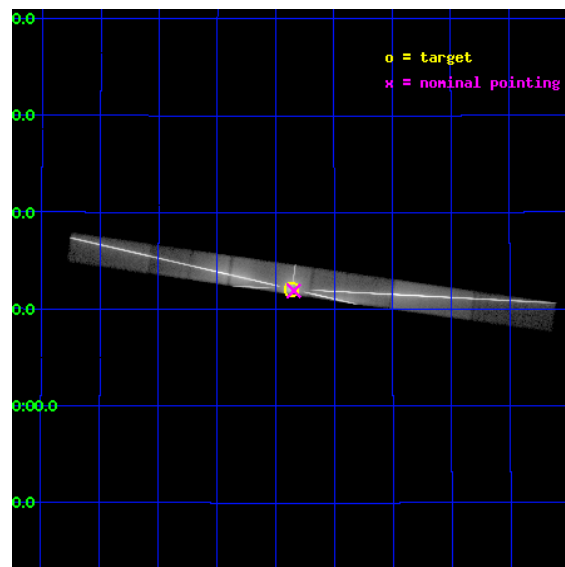
L2 Processing Date : Jul 11 2012

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1 Front

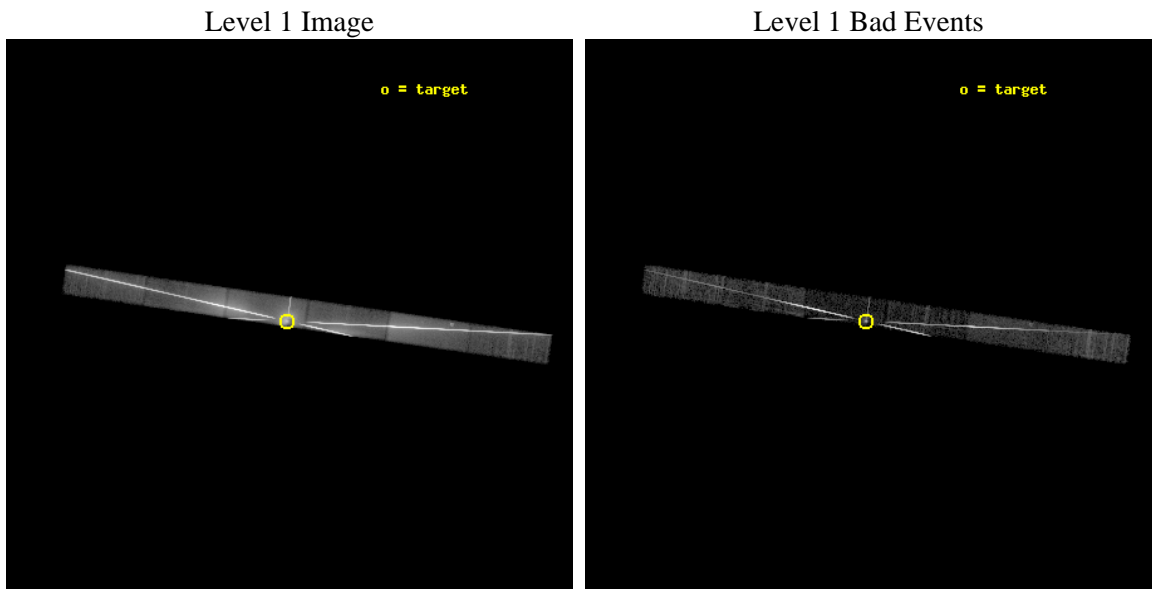
seq_num	401144	Sequence number
obs_id	12313	Observation id
title	Measuring the spin of the black hole Cygnus X-1	Proposal title
observer	Dr. Jeffrey McClintock	Principal investigator
object	Cyg X-1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	299.590417	Observer's specified target RA [deg]
dec_targ	35.201667	Observer's specified target Dec [deg]
ra_nom	299.58593127457	Nominal RA [deg]
dec_nom	35.198584281311	Nominal Dec [deg]
roll_nom	188.15925733381	Nominal Roll [deg]
revision	3	Processing version of data
ontime	2212.5083827972	Sum of GTIs [s]
livetime	2144.7987365302	Livetime [s]
ontime4	6072.3000556231	Sum of GTIs [s]
ontime5	5586.8473603725	Sum of GTIs [s]
ontime6	2533.0980363488	Sum of GTIs [s]
ontime7	2212.5083827972	Sum of GTIs [s]
ontime8	3826.0748031735	Sum of GTIs [s]
ontime9	6072.3000556231	Sum of GTIs [s]
l2events	1780690	Number of level 2 events



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	0	Obi number	sched_exp_time	6000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	2212.5083827972	Sum of GTIs [s]
caldsver	4.5.0	 	ontime4	6072.3000556231	Sum of GTIs [s]
date	2012-06-30T14:36:35	Date and time of file creation	ontime5	5586.8473603725	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	2533.0980363488	Sum of GTIs [s]
			ontime7	2212.5083827972	Sum of GTIs [s]
			ontime8	3826.0748031735	Sum of GTIs [s]
			ontime9	6072.3000556231	Sum of GTIs [s]
			l1events	2298989	Number of level 1 events

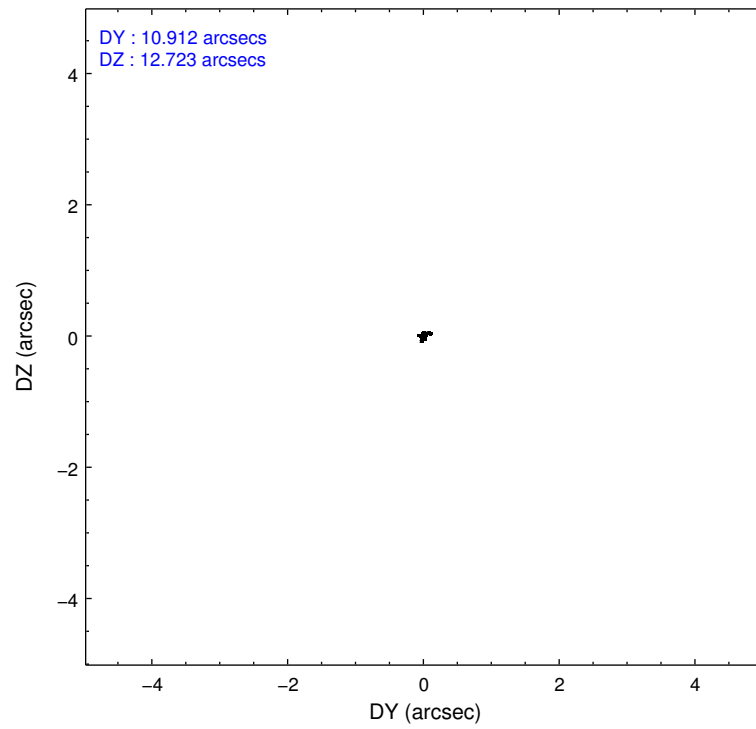
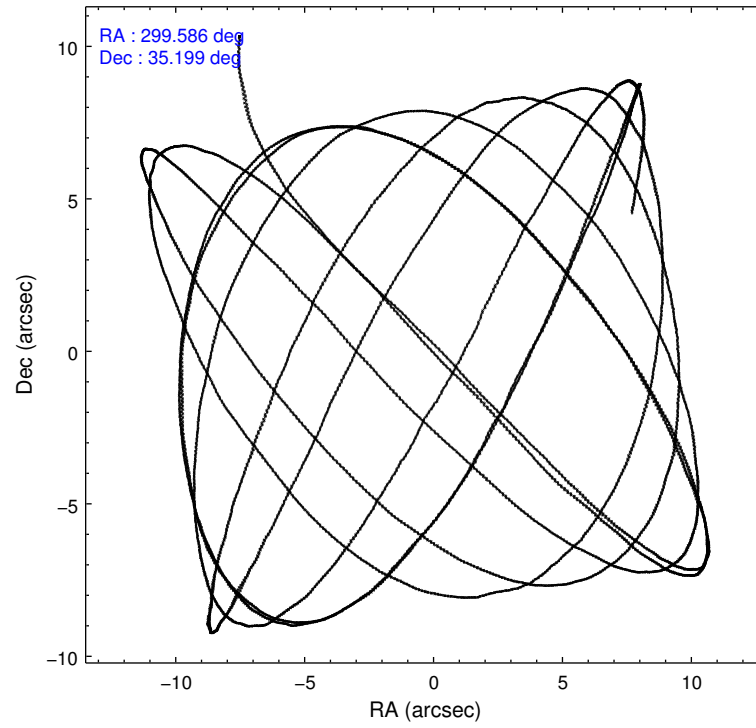
2.1.3 Events

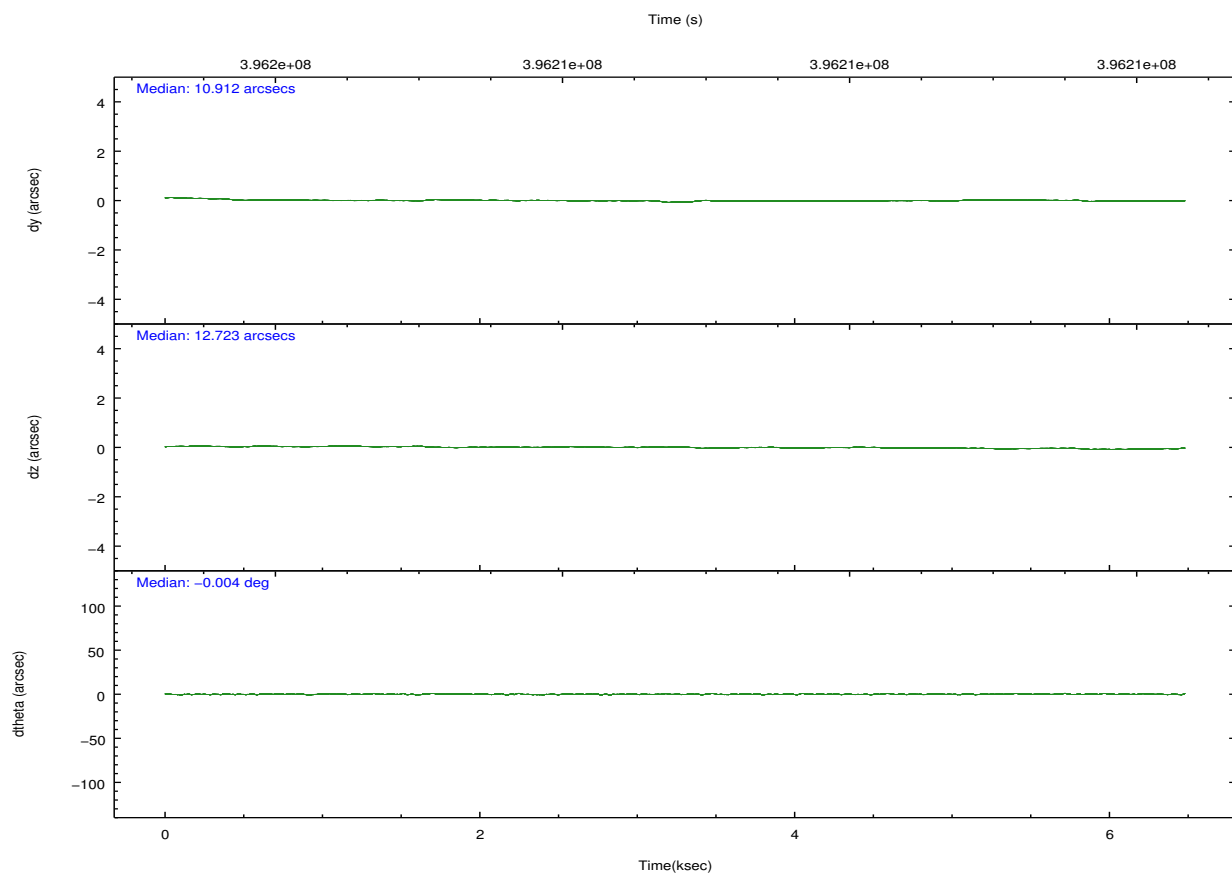
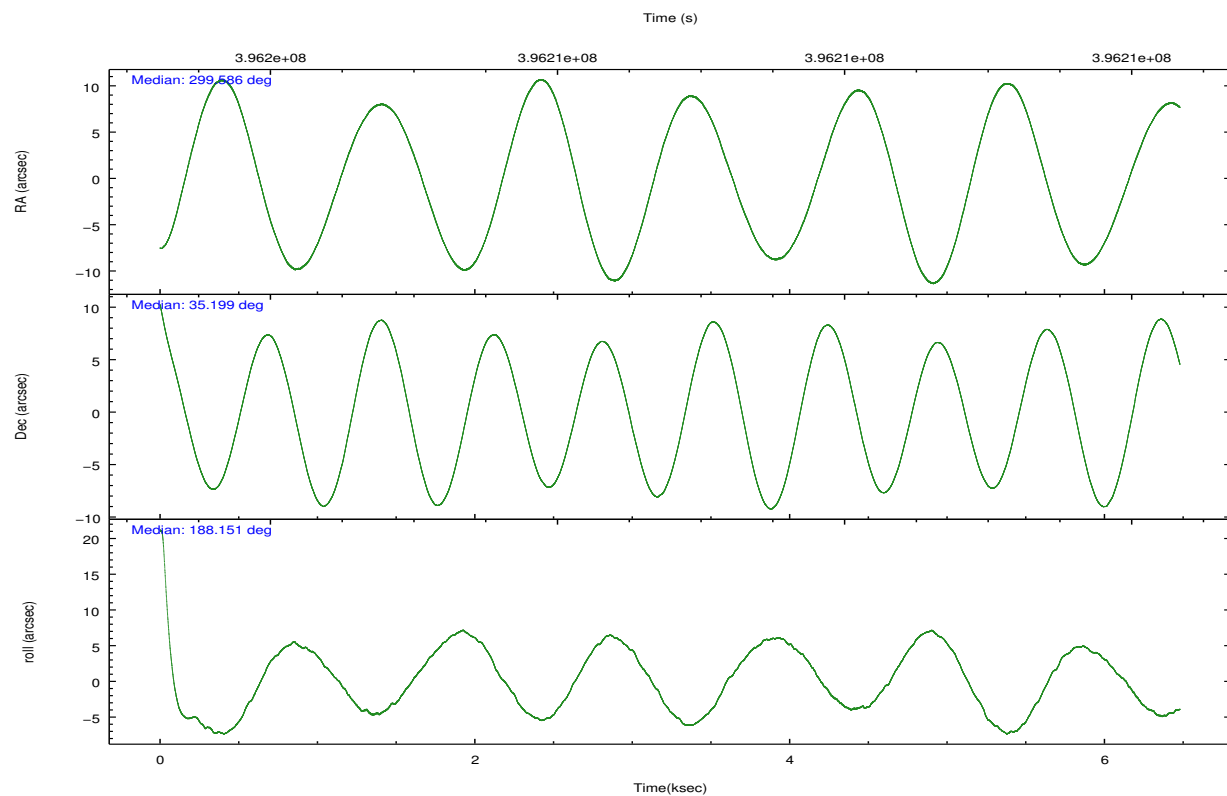
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	116666	564524	479100	532220	396304	210175	grade 0 events	74246	135308	273604	59302	252581	148896
rejected events	20546	83787	75306	169768	59229	20337		63%	23%	57%	11%	63%	70%
rejected %	17%	14%	15%	31%	14%	9%	grade 1 events	587	8359	28241	5254	24625	2123
								0%	1%	5%	0%	6%	1%
							grade 2 events	13131	164824	58764	88458	40876	22856
								11%	29%	12%	16%	10%	10%
							grade 3 events	3273	39875	24581	36179	16780	6840
								2%	7%	5%	6%	4%	3%
							grade 4 events	3163	39874	23339	36131	16281	6783
								2%	7%	4%	6%	4%	3%
							grade 5 events	901	28659	22674	26774	14628	1788
								0%	5%	4%	5%	3%	0%
							grade 6 events	2361	101101	23685	142594	10886	4623
								2%	17%	4%	26%	2%	2%
							grade 7 events	19004	46524	24212	137528	19647	16266
								16%	8%	5%	25%	4%	7%

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	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	299.611890	299.5859312745713	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	35.215737	35.19858428131052	Subarray start row	1	1
[deg] Pointing Roll	187.987620	188.1592573338127	Subarray row count	350	350
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	1.3
[mm] SIM translation stage pos	-178.932523	-178.9362770661205			
[mm] SIM translation stage offset	-11.2	-11.19624551688727			
Phase constraints	Y	Y			
[d] Phase period	5.599829	5.599829			
[d] Phase epoch (MJD)	51729.949000	51729.949000			
Phase start	0.300000	0.300000			
Phase end	0.700000	0.700000			
Phase start error	0.100000	0.100000			
Phase end error	0.100000	0.100000			
[s] Observation start time (MET)	396204031.184000	396202947.88929			
Observation start date	2010-07-22T16:39:25	2010-07-22T16:22:27			
[s] Observation end time (MET)	396210031.184000	396211189.91471			
Observation end date	2010-07-22T18:19:25	2010-07-22T18:39:49			
Read mode	TIMED	TIMED			

2.3 Aspect



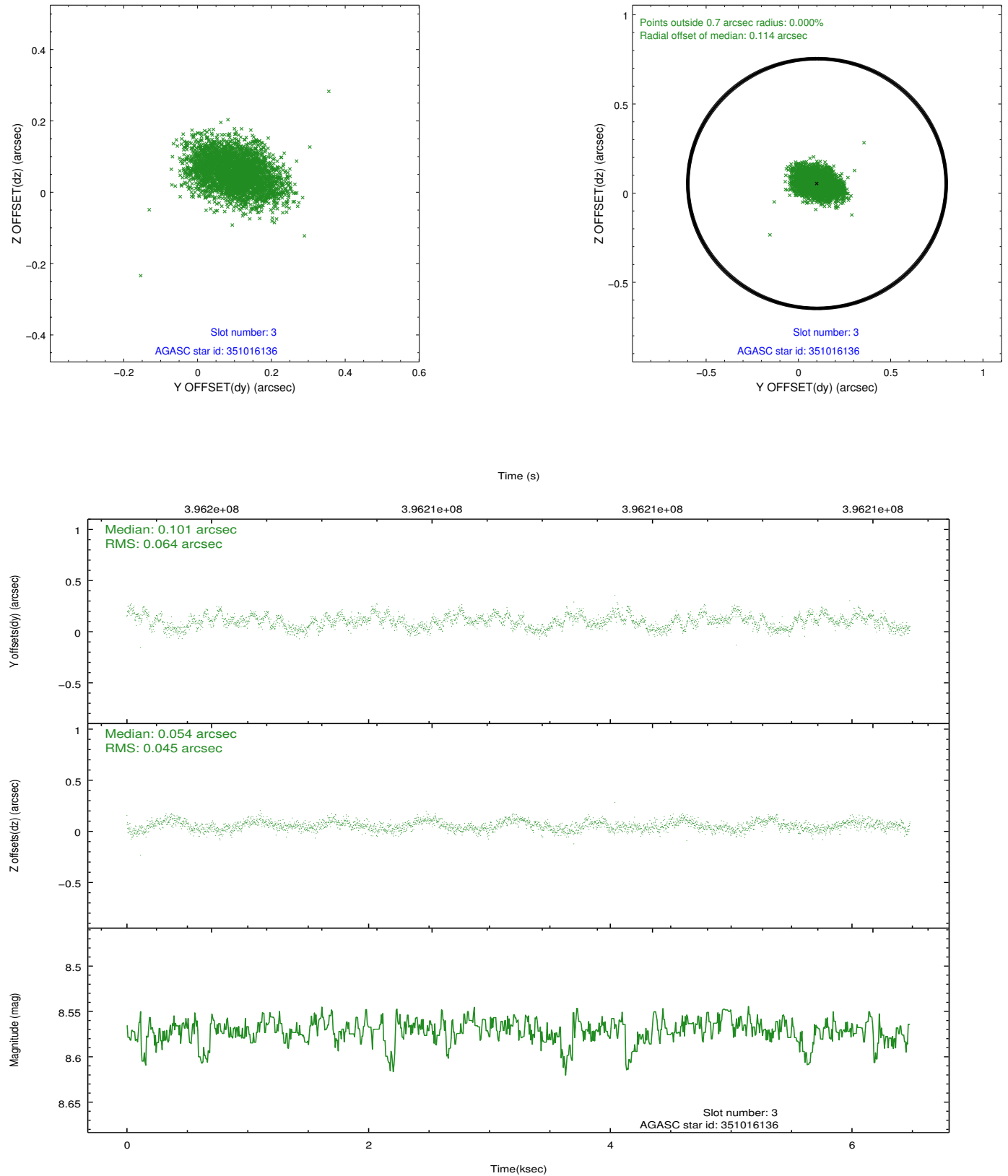


Slot Statistics

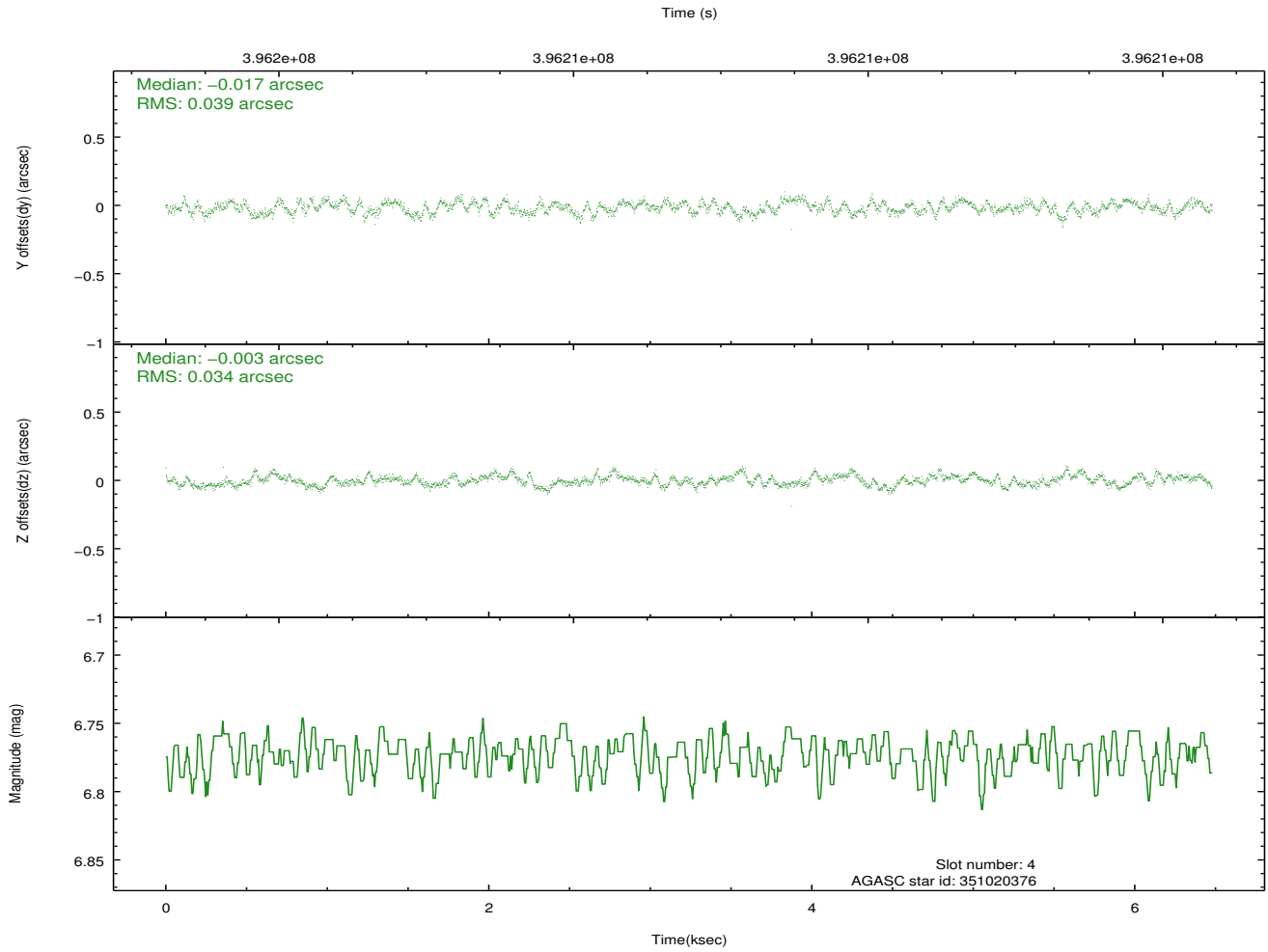
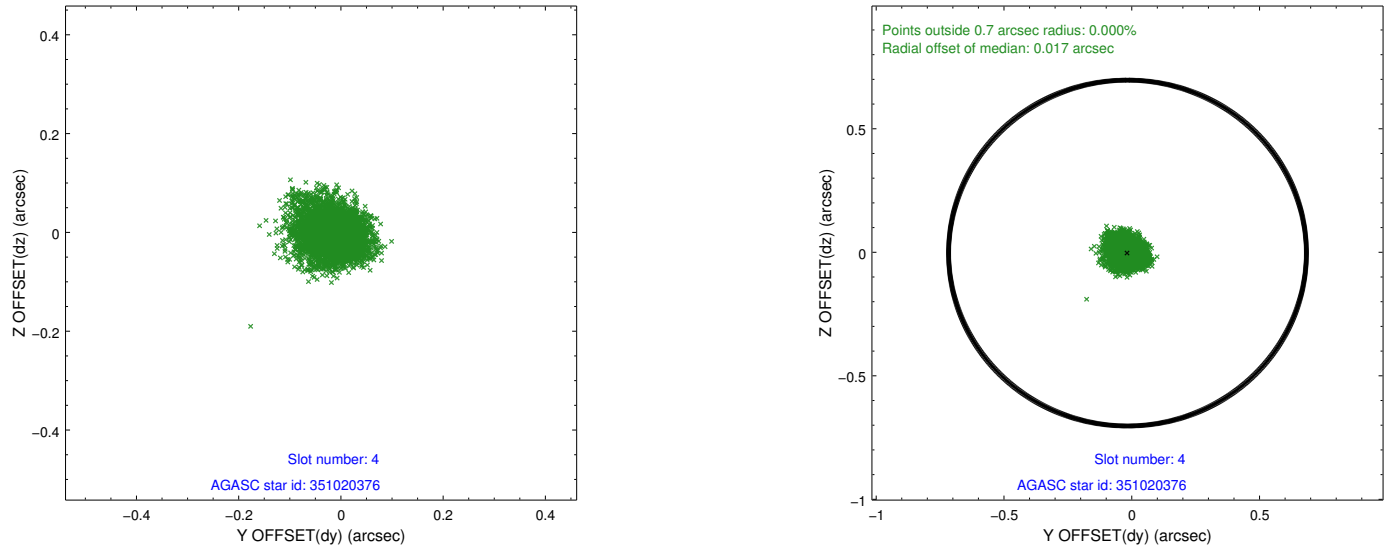
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.92	1581	-0.107	-0.362	0.007	0.011	0.000000	0.000000	-763.06	-1964.89
1	FID	ACIS-S-4	6.99	1581	0.218	0.148	0.006	0.011	0.000000	0.000000	2150.14	-57.01
2	FID	ACIS-S-5	7.06	1581	-0.142	0.221	0.007	0.011	0.000000	0.000000	-1814.77	-62.22
3	GUIDE	351016136	8.57	3162	0.101	0.054	0.084	0.135	300.302636	34.786391	-1808.38	1807.75
4	GUIDE	351020376	6.77	3162	-0.017	-0.003	0.056	0.088	299.982490	35.296494	-1119.10	-137.72
5	GUIDE	351406096	8.90	3158	0.019	0.139	0.078	0.133	299.076637	35.711249	1301.43	-1987.43
6	GUIDE	350889584	8.49	3159	0.012	-0.092	0.067	0.111	299.222293	35.536921	970.17	-1306.32
7	GUIDE	351018080	8.33	3160	-0.115	-0.103	0.071	0.113	299.327312	34.581247	1152.97	2143.74

2.4 Star Slots

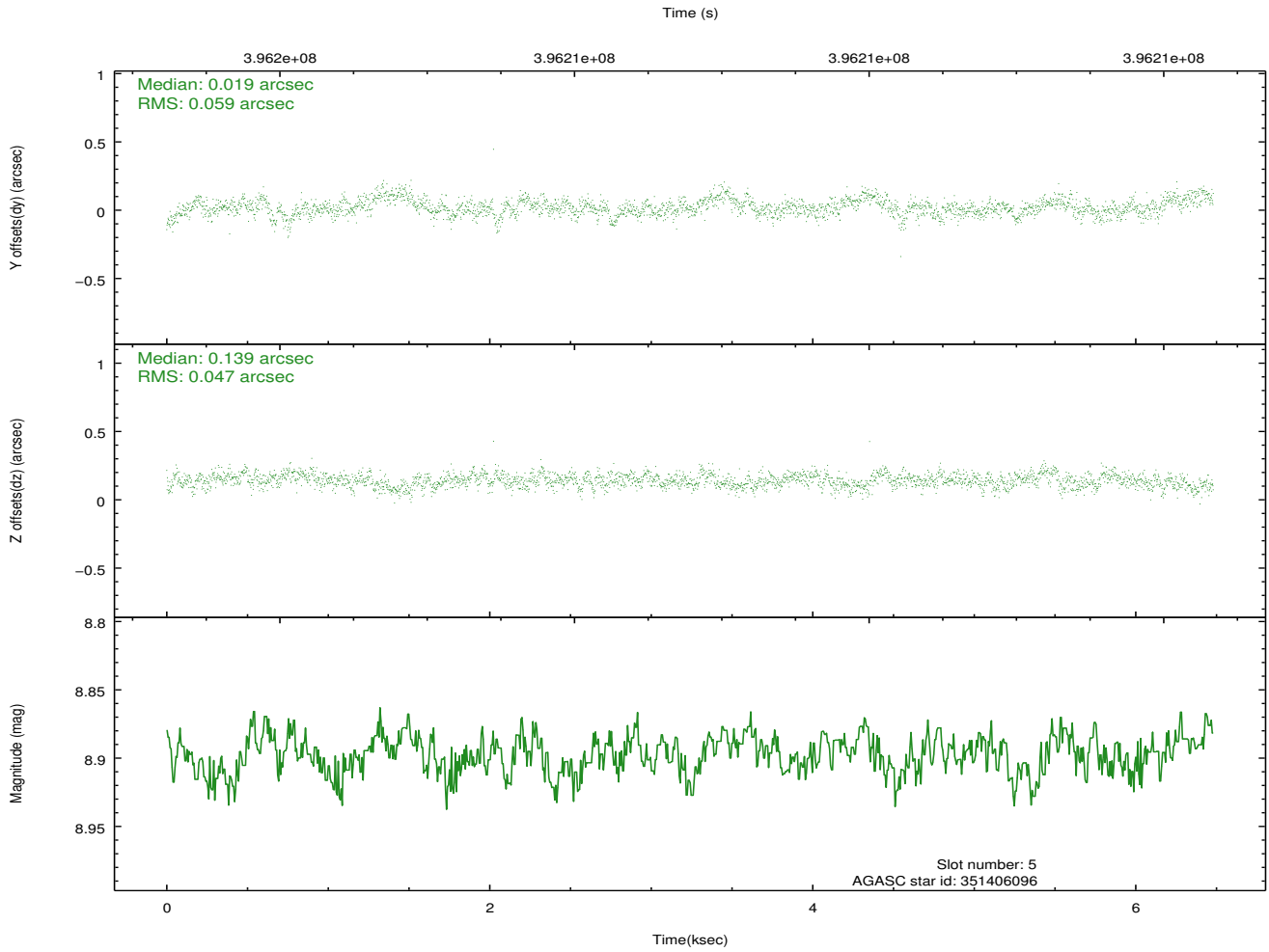
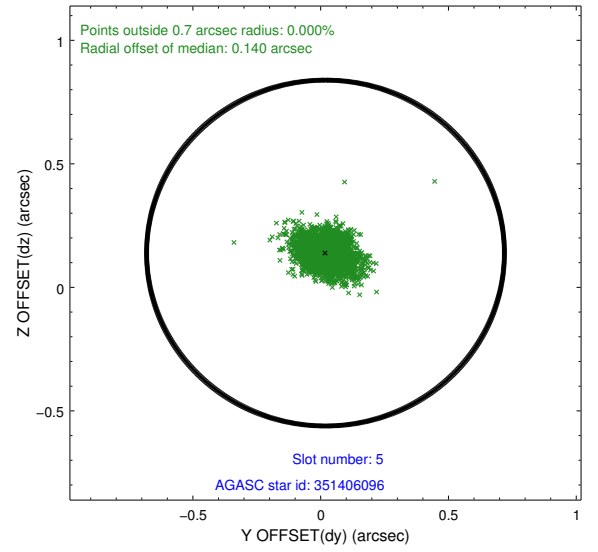
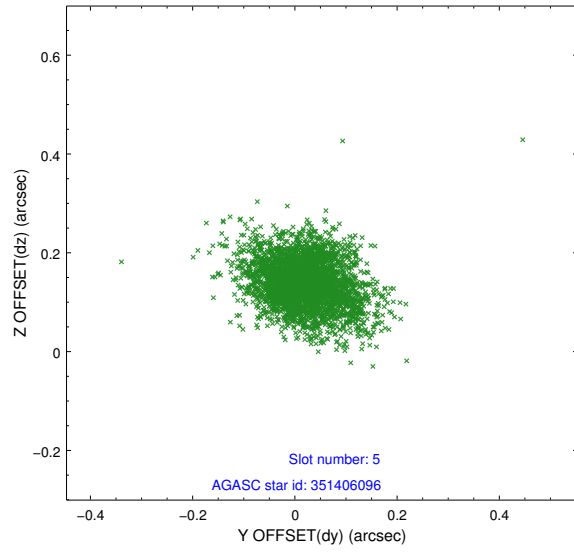
2.4.1 Slot 3



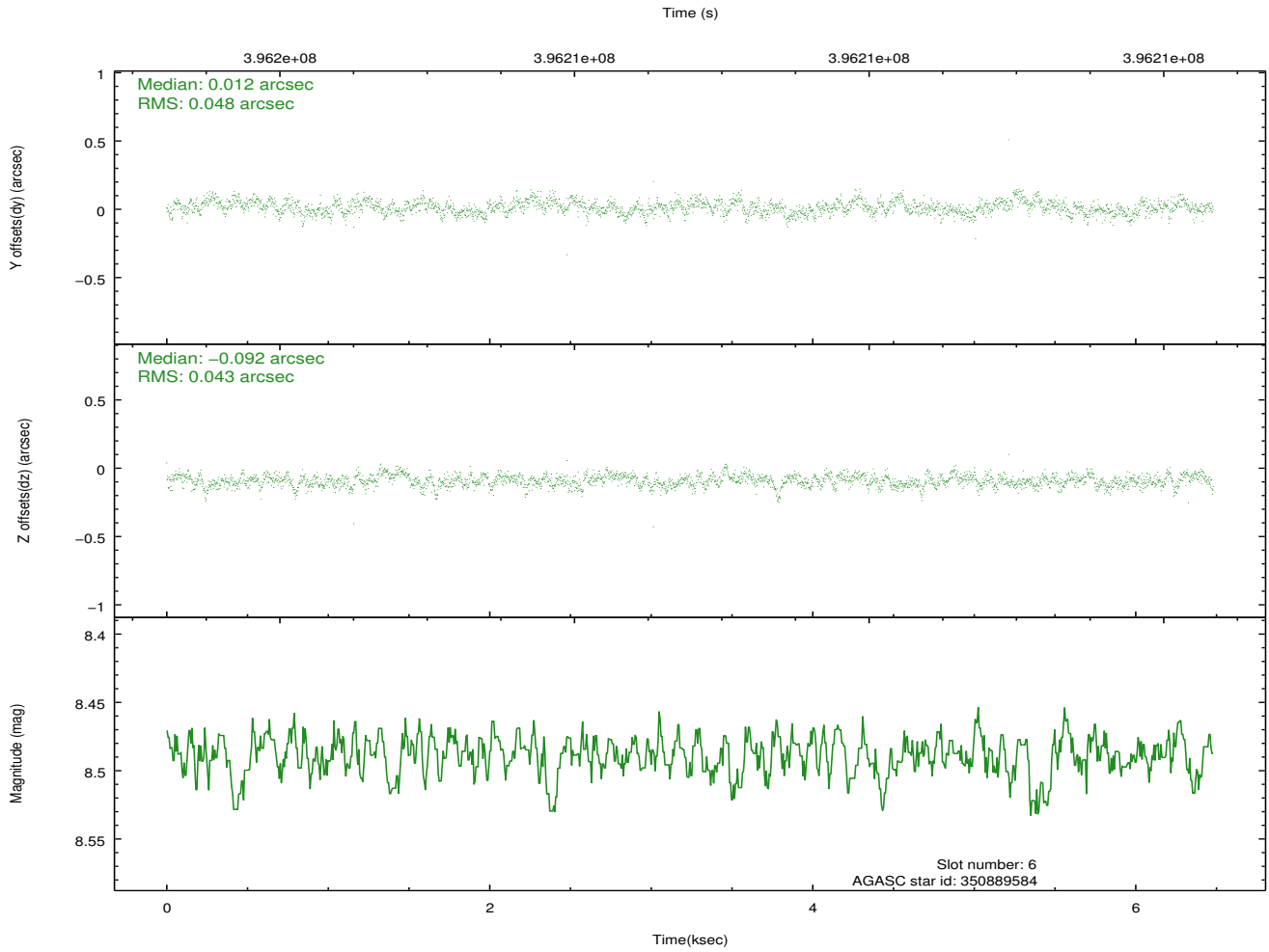
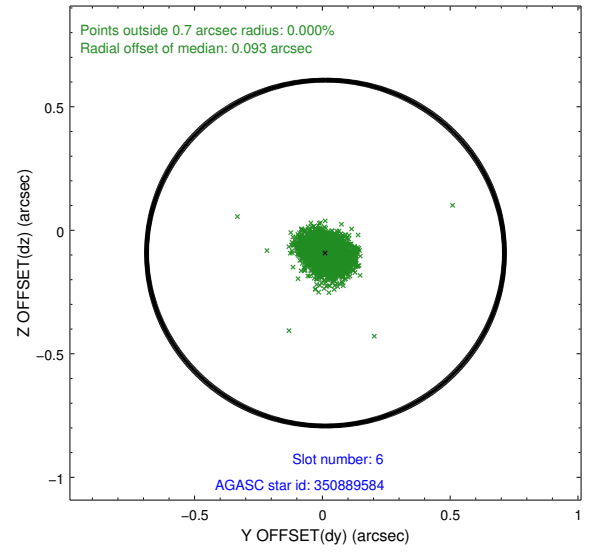
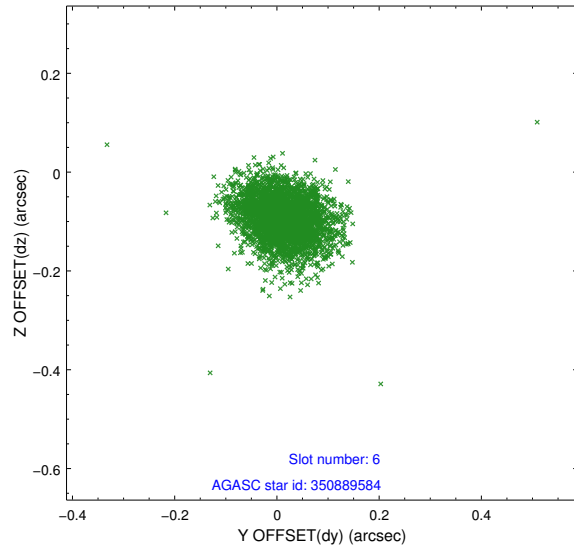
2.4.2 Slot 4



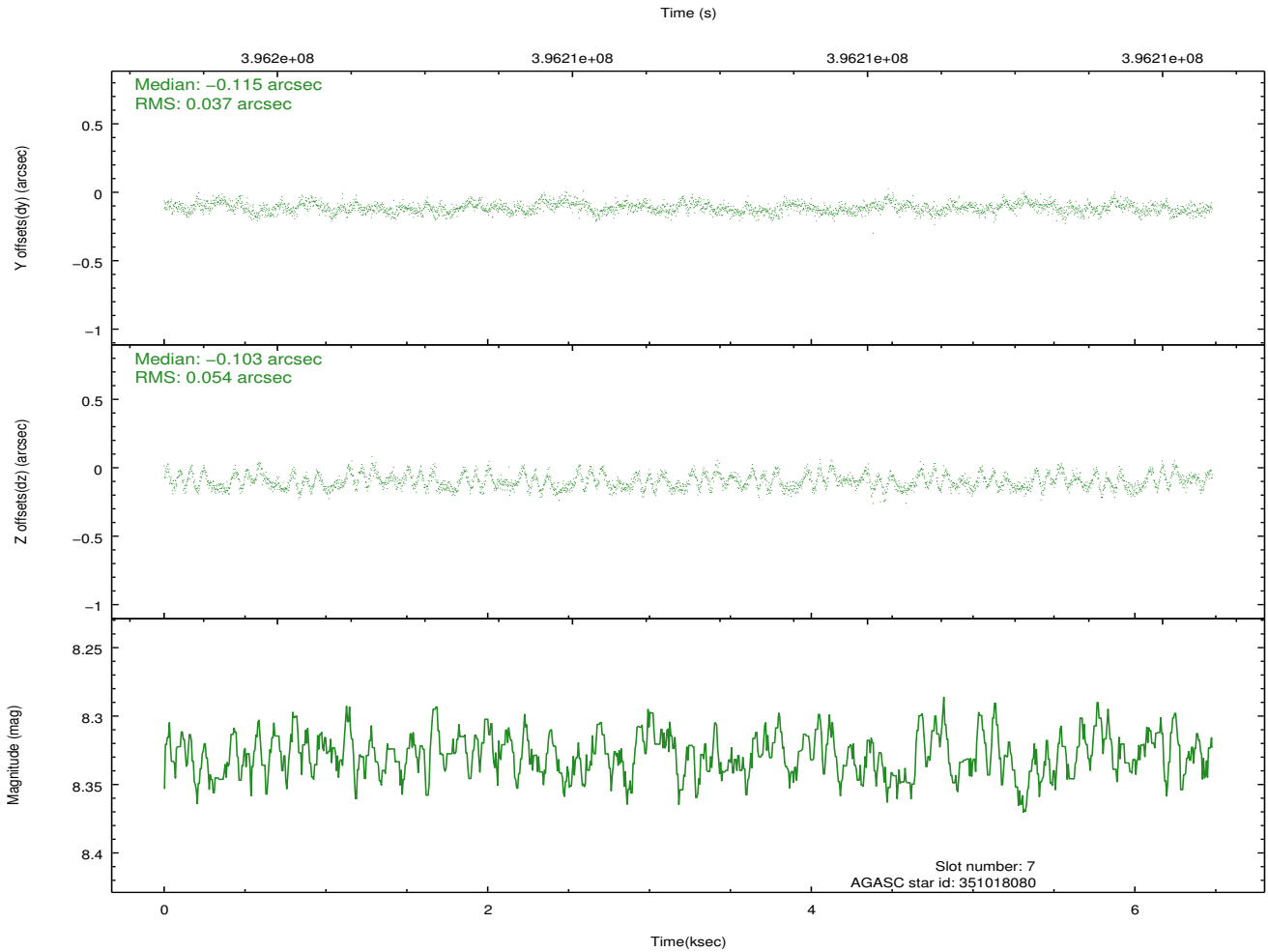
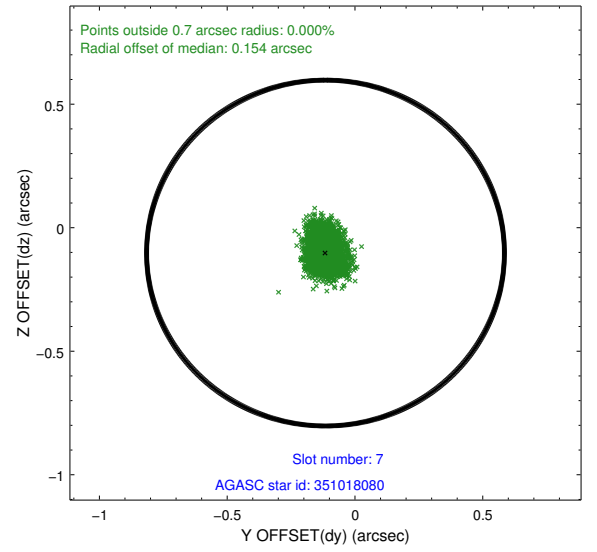
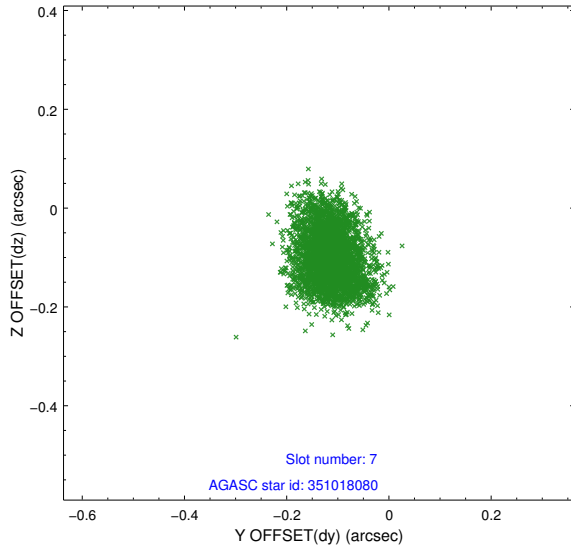
2.4.3 Slot 5



2.4.4 Slot 6

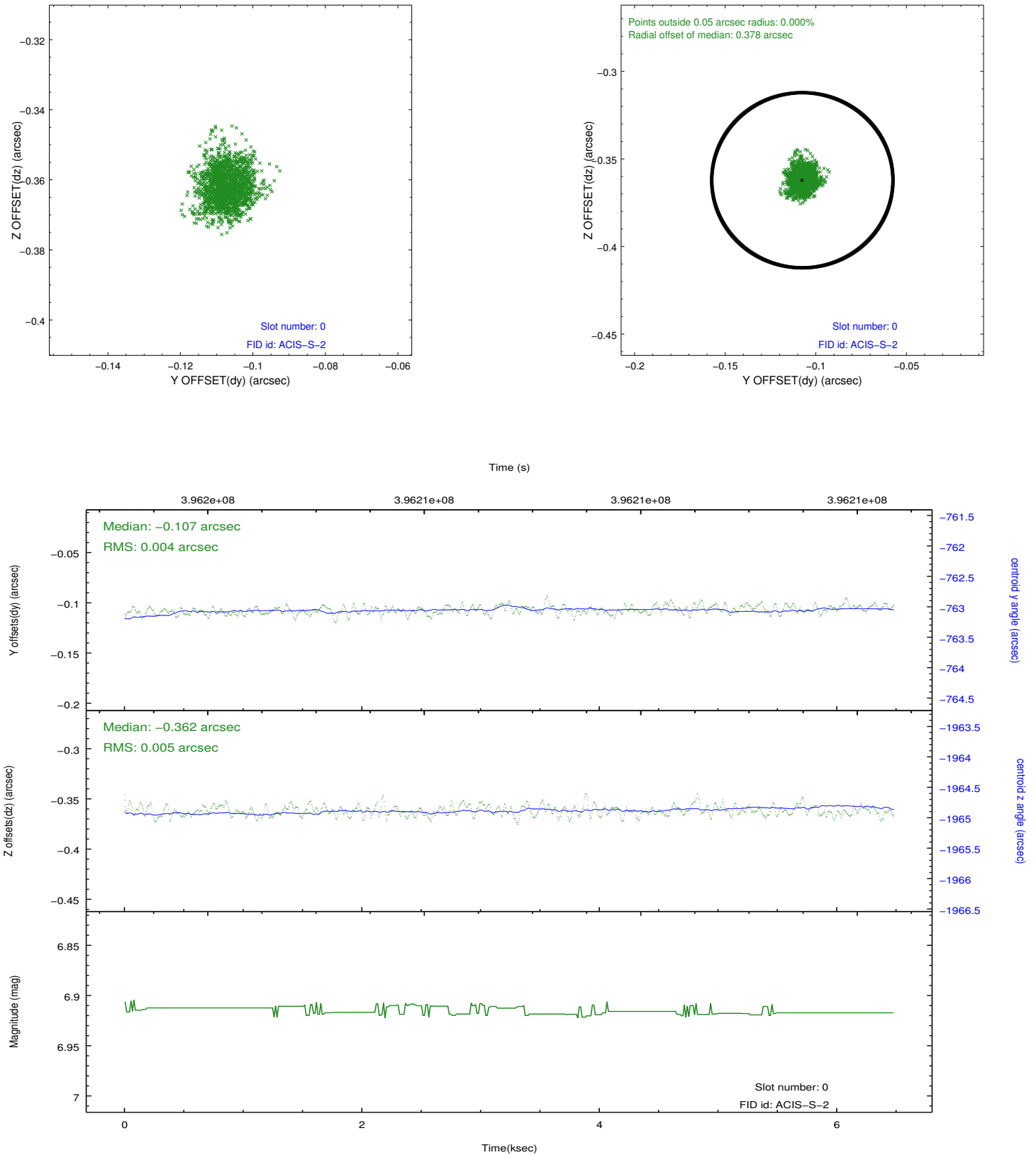


2.4.5 Slot 7

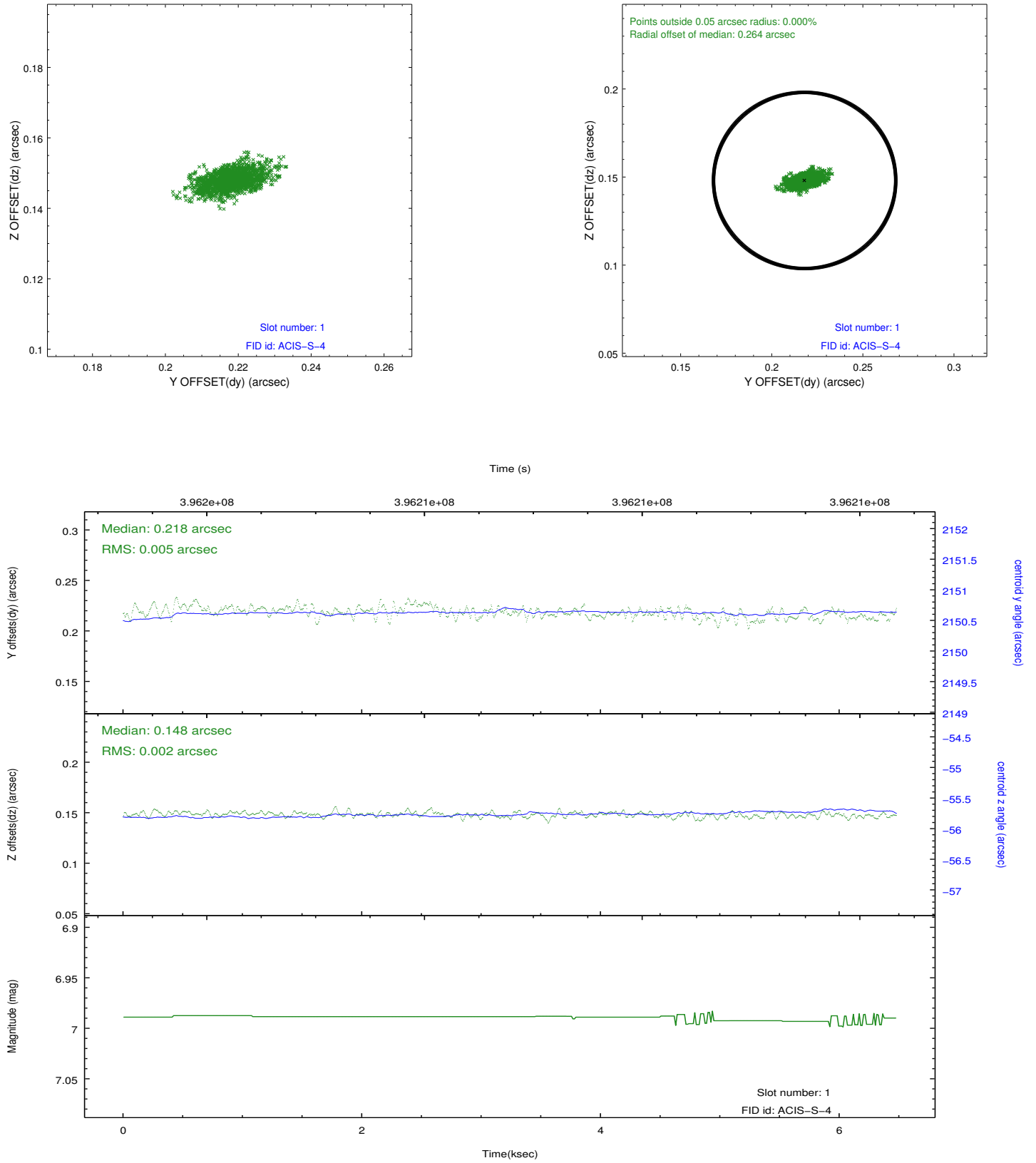


2.5 FID Slots

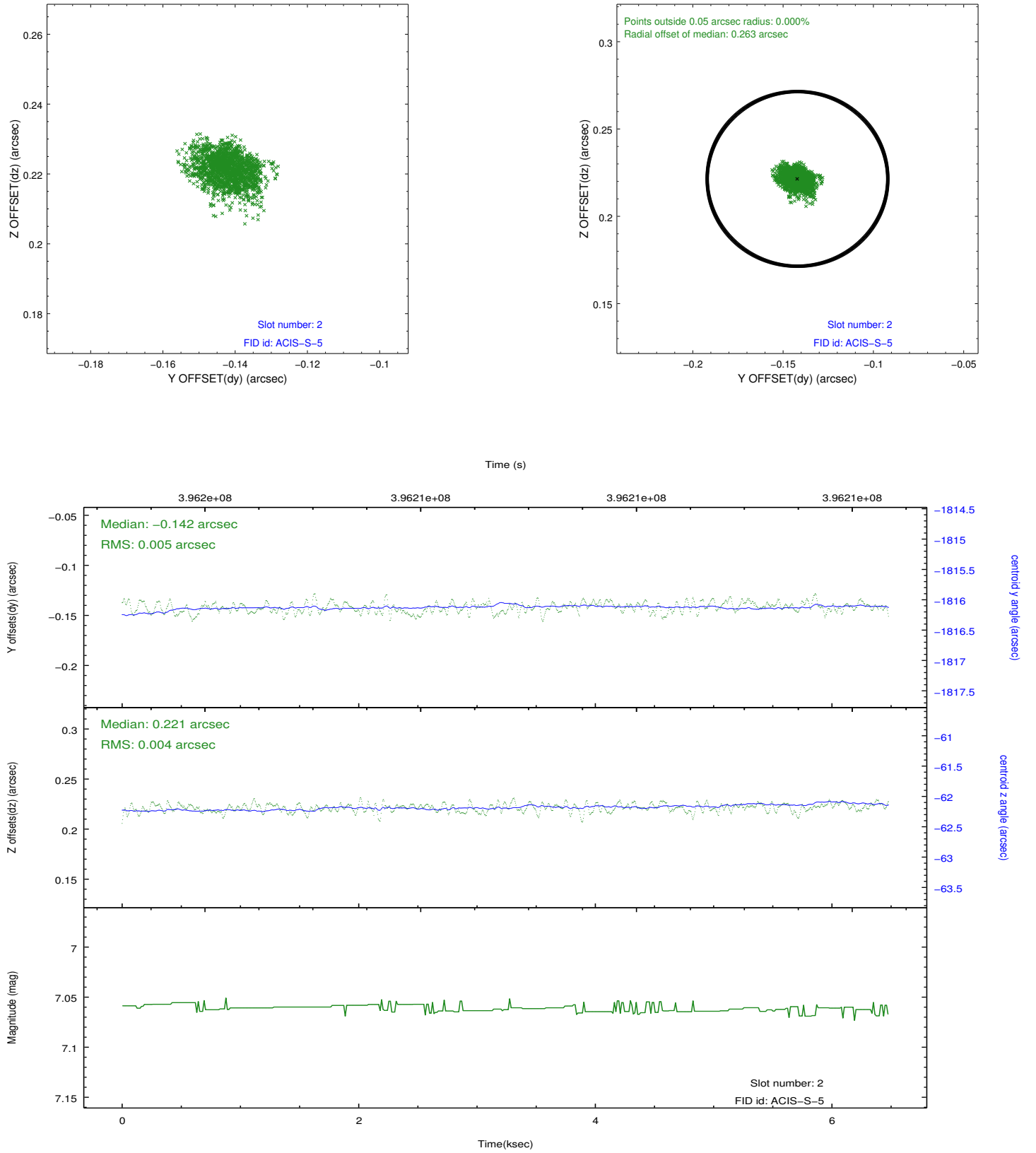
2.5.1 Slot 0



2.5.2 Slot 1

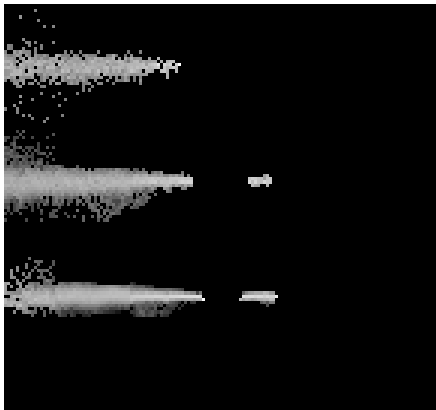


2.5.3 Slot 2

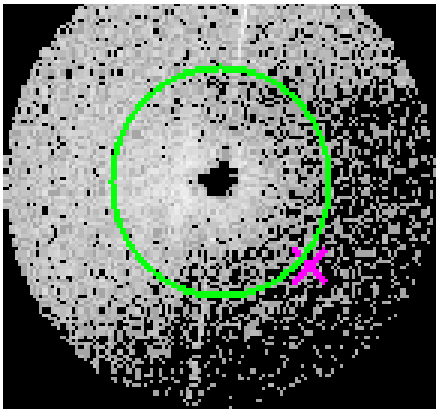


3 Gratings

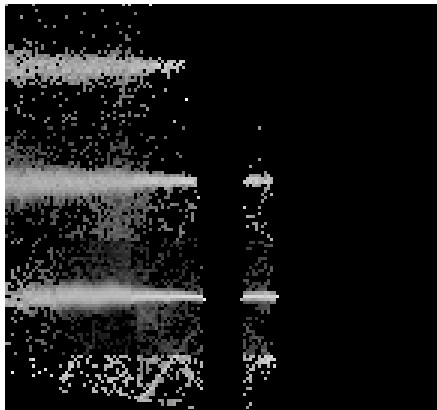
3.1 HEG Arm



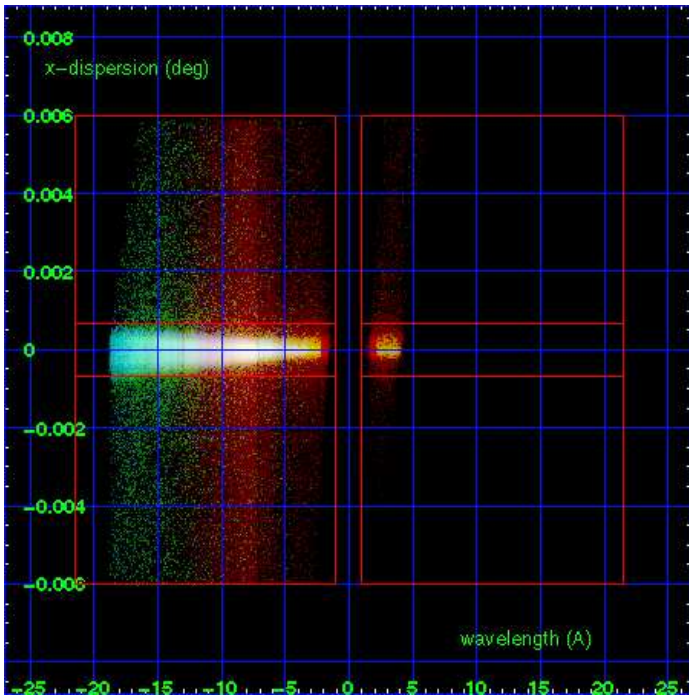
HEG Order Sort 123



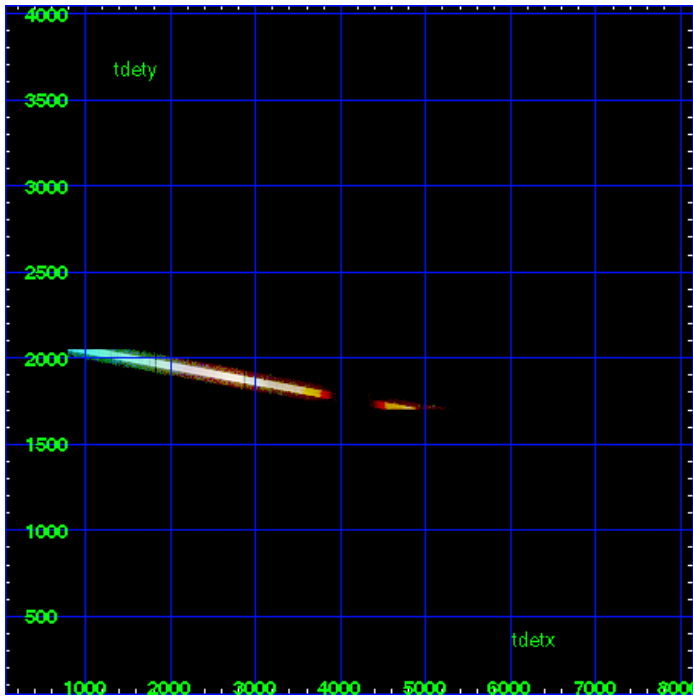
HEG Zero Order



HEG Order Sort ALL

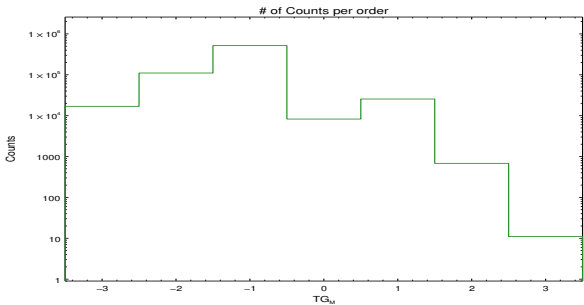


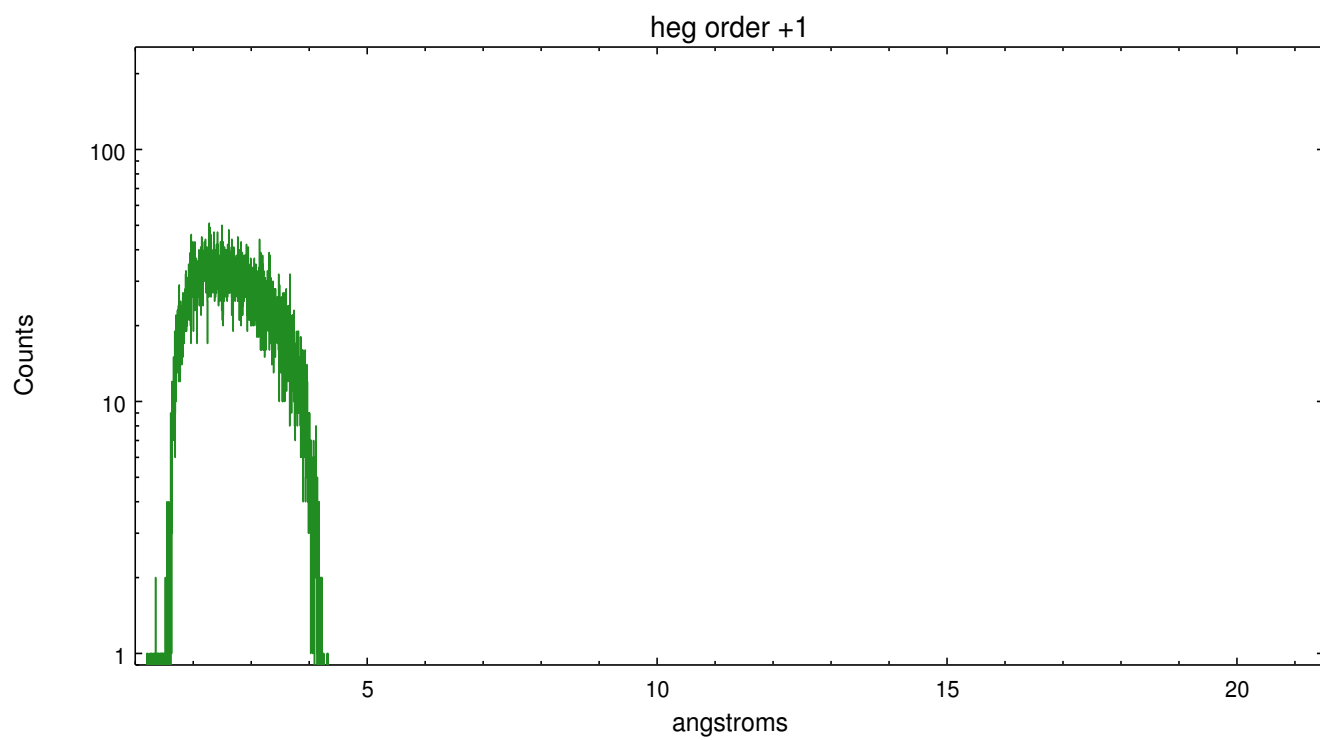
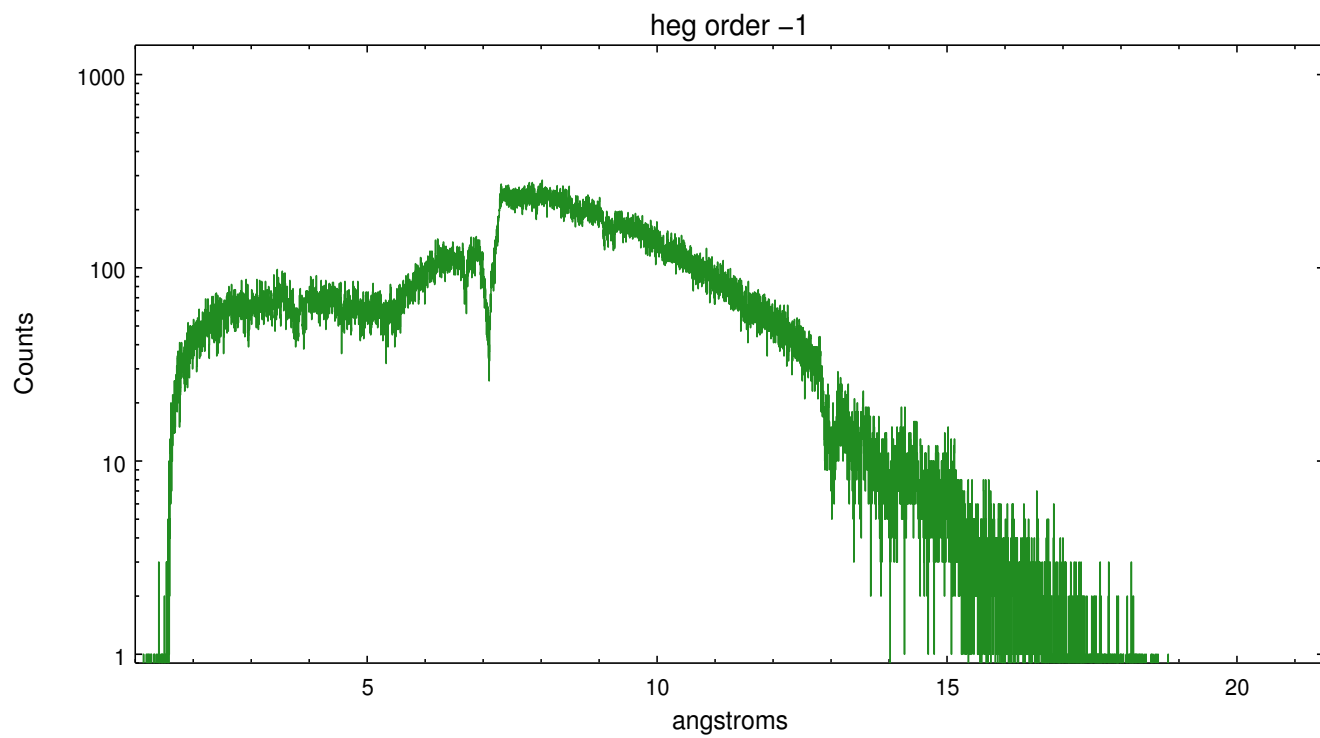
Spot Image HEG



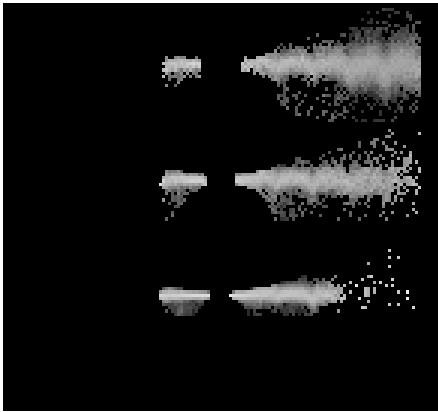
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	16902	110456	516627	8257	25539	681	11

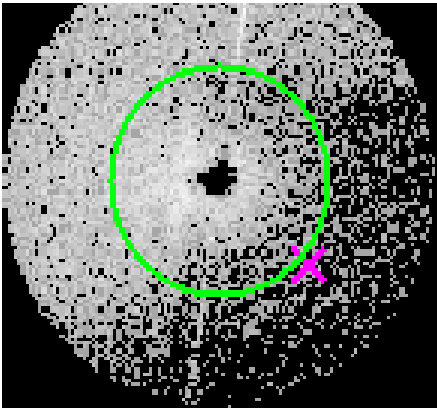




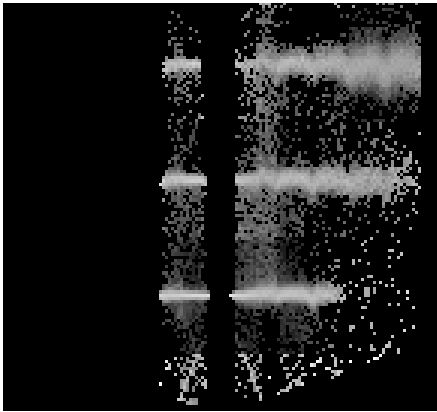
3.2 MEG Arm



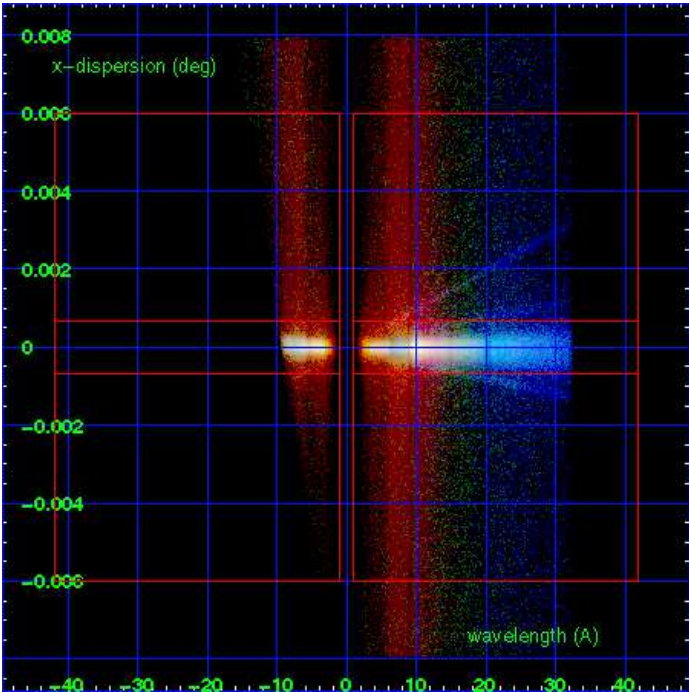
MEG Order Sort 123



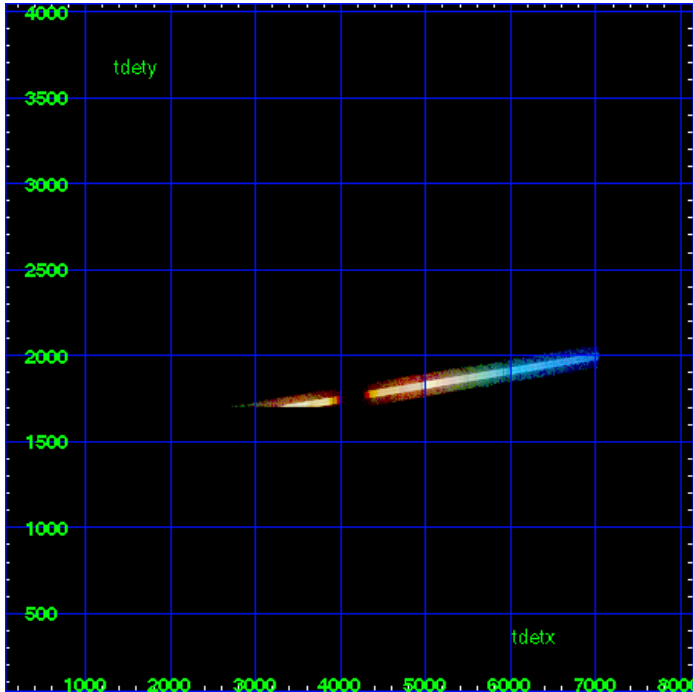
MEG Zero Order



MEG Order Sort ALL

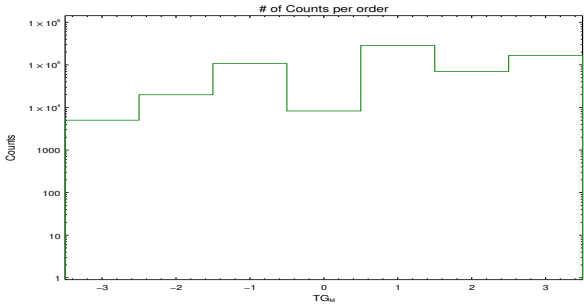


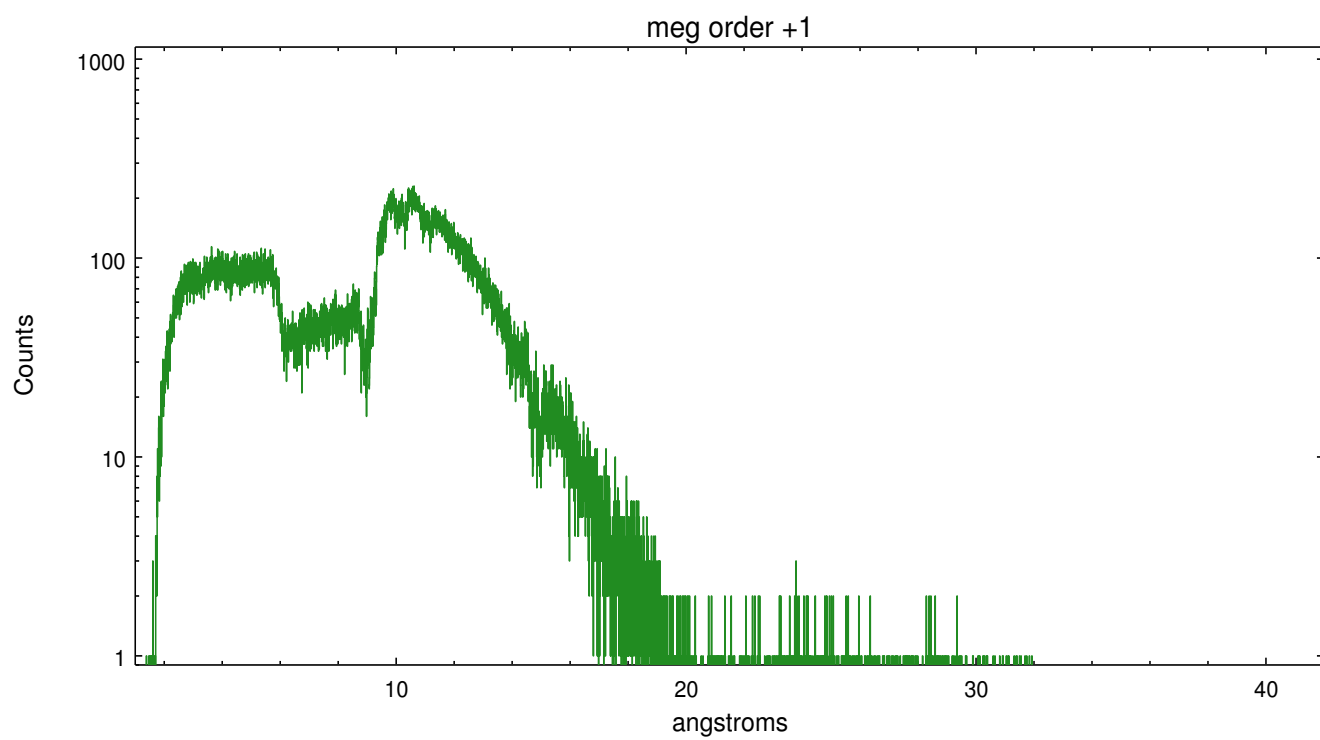
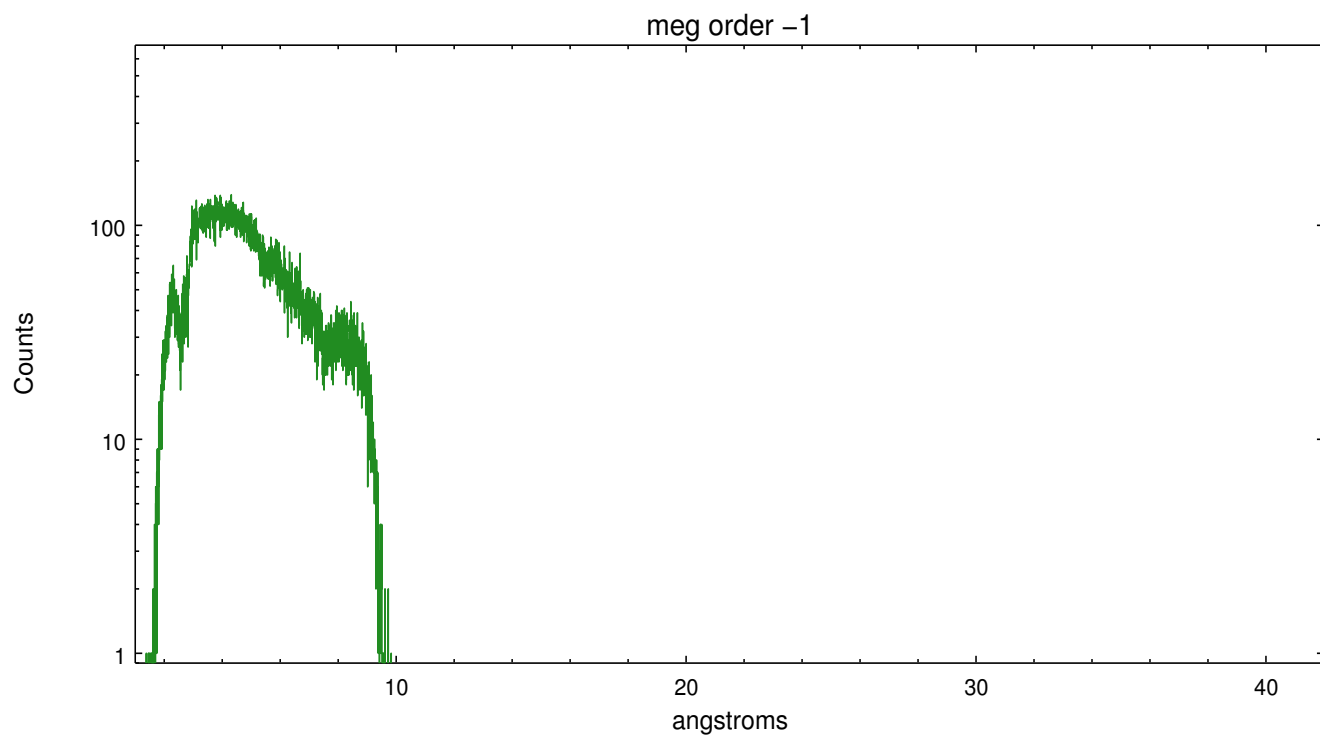
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	5012	19858	107204	8257	285741	70078	166535





A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2012.07.12
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	6.07

A.2 Comments

WARNING: grating spectra are visible in the 'level 1 bad-events' image, meaning that the grating spectra may have CCD pileup (and unreliable fluxes).

Note: detector intentionally offset so that 2 grating arms are off the array. Spectra are primarily of HEG negative and MEG positive orders.

Note: phase constraints met.