

V&V Reference Report

L2 ASCDS Version : 7.6.8.1

Observation 2743 - L2 Version 001
Chandra X-Ray Center

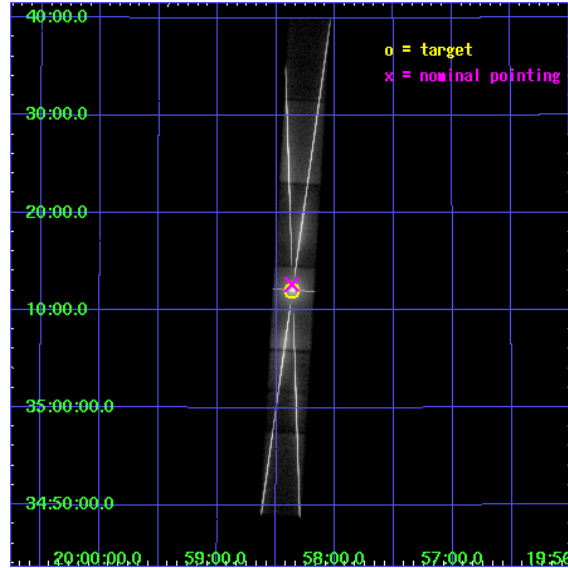
L2 Processing Date : Sep 26 2006

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1 Front

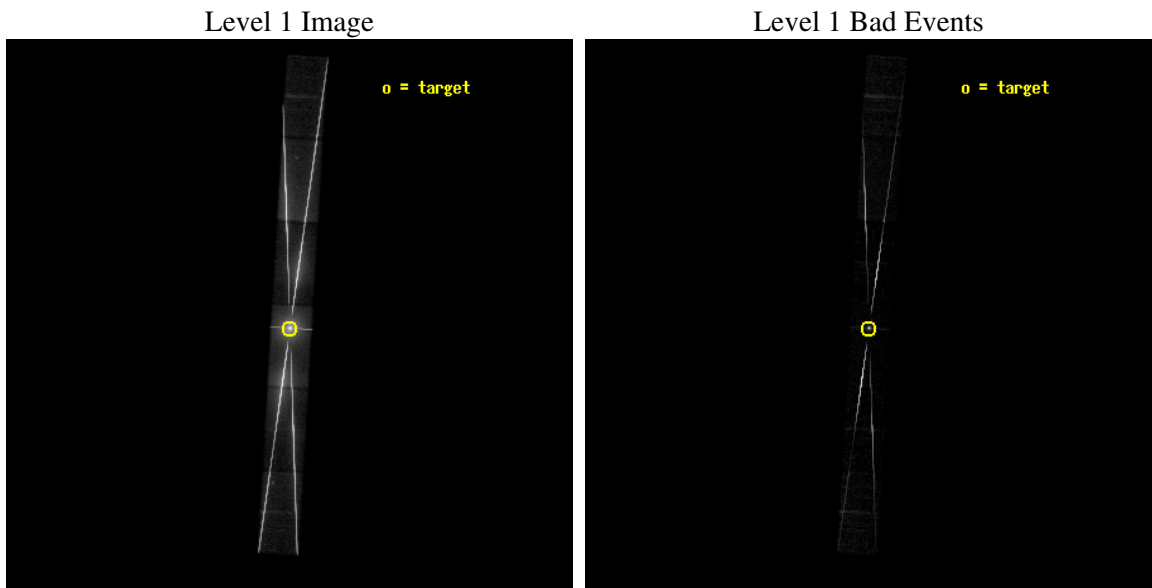
seq_num	400223
obs_id	2743
title	PHASE RESOLVED HIGH ENERGY RESOLUTION SPECTROSCOPY OF THE BLACK HOLE X-RAY BAINARY CYGNUS X-1
observer	Prof. Shuang Nan Zhang
object	CYG X-1
dtcycle	0
cycle	P
ra_targ	299.590417
dec_targ	35.201611
ra_nom	299.59176268742
dec_nom	35.211250366095
roll_nom	93.367001896581
revision	3
ontime	2480.3109337986
livetime	2421.8447522501
ontime4	4643.6722413301
ontime5	4490.4653247297
ontime6	1602.7124467194
ontime7	2480.3109337986
ontime8	1949.9638735652
ontime9	4236.2780794799
l2events	1589199



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	2
ascdsver	7.6.8.1
caldsver	3.2.3
date	2006-09-11T05:57:39
revision	2

sched_exp_time	5000.000000
ontime	3064.2182486653
ontime4	5230.0237320364
ontime5	5076.8168154359
ontime6	2176.2926454544
ontime7	3064.2182486653
ontime8	2531.4638670683
ontime9	4822.6296100914
l1events	2128821

2.1.3 Events

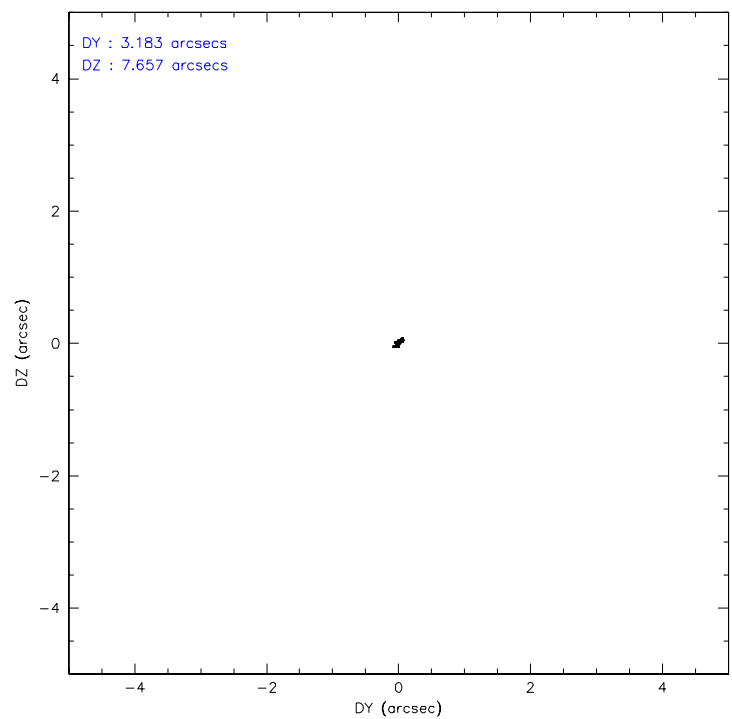
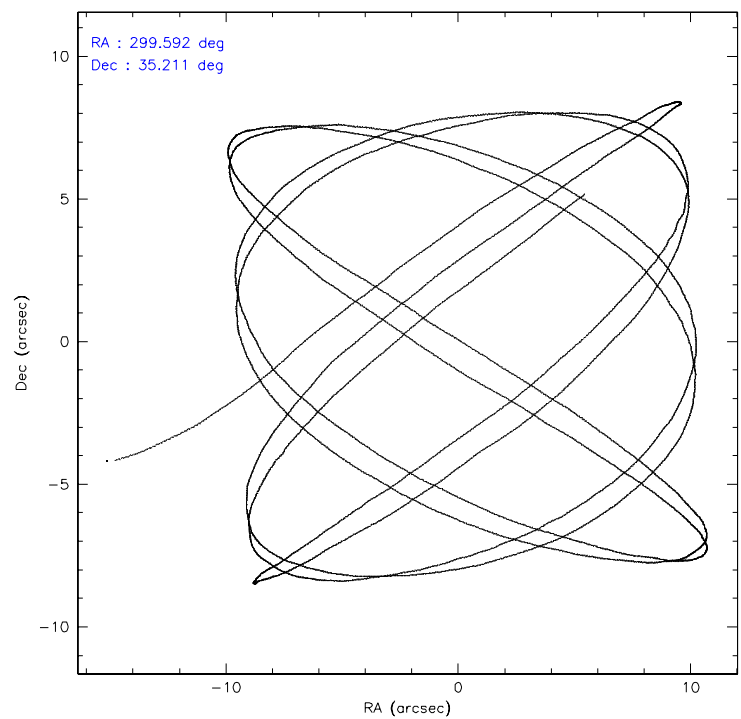
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	100596	481920	419132	510212	403535	213426
rejected events	21919	68828	111318	149314	87087	27381
rejected %	21%	14%	26%	29%	21%	12%

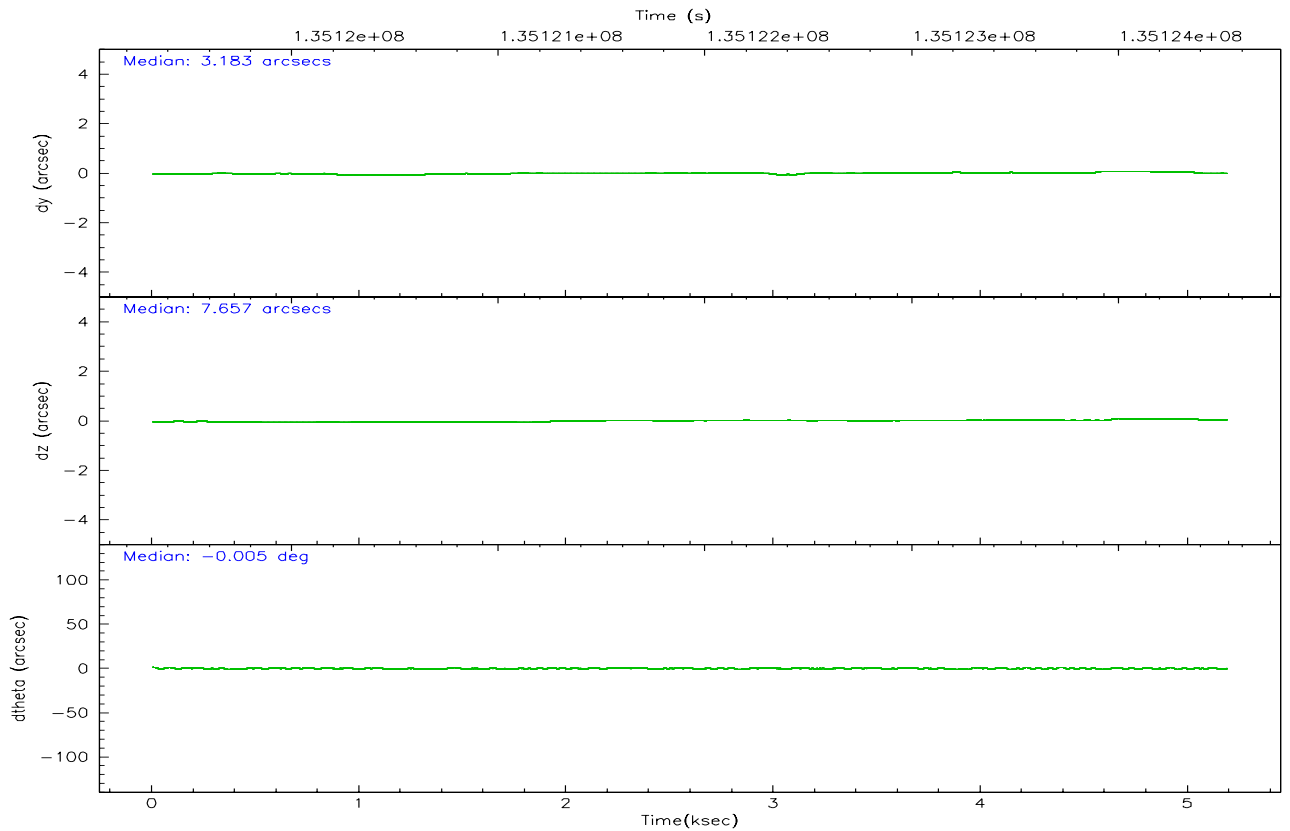
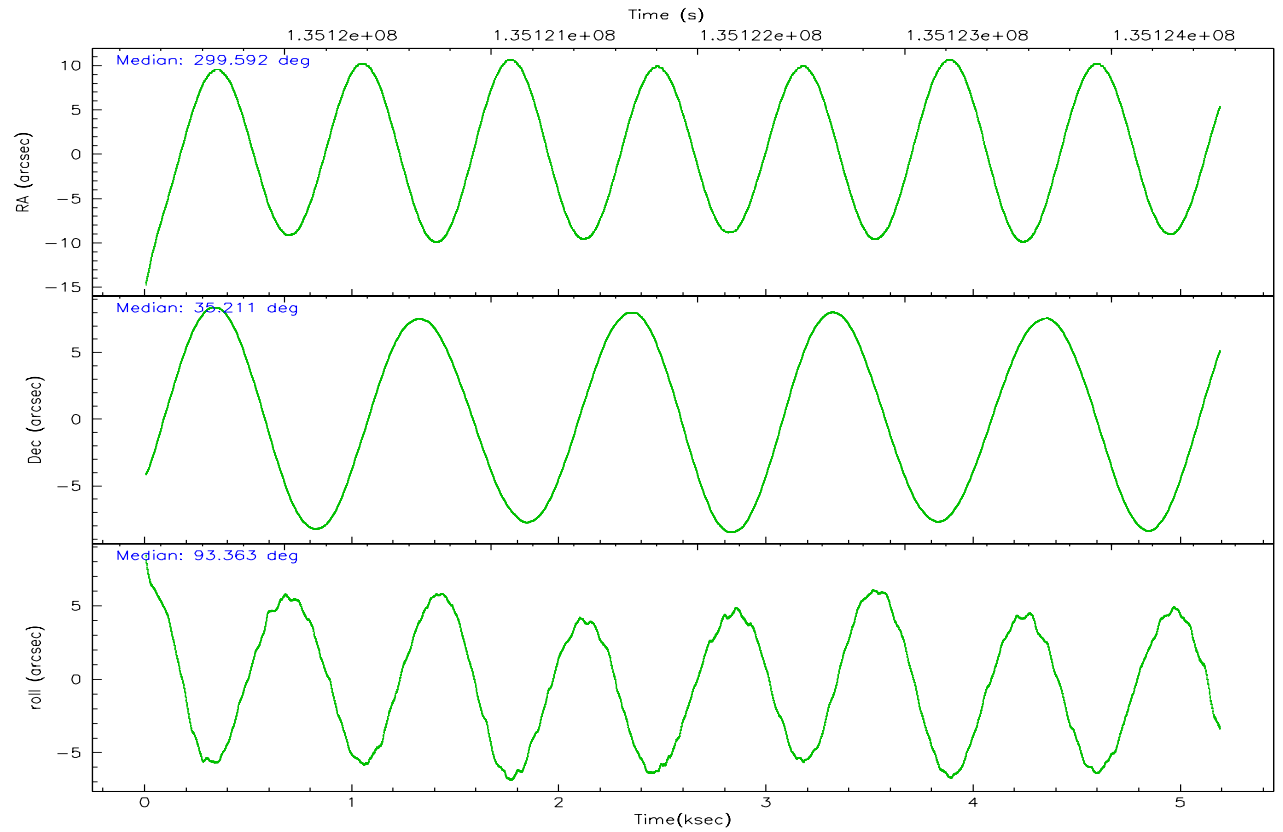
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	65355	125888	226902	74055	253127	156630
	64%	26%	54%	14%	62%	73%
grade 1 events	554	5117	29795	4453	24519	2322
	0%	1%	7%	0%	6%	1%
grade 2 events	8868	145397	47143	100435	43745	20961
	8%	30%	11%	19%	10%	9%
grade 3 events	2590	36146	20043	40827	17648	6500
	2%	7%	4%	8%	4%	3%
grade 4 events	2590	35863	19136	40053	17419	6317
	2%	7%	4%	7%	4%	2%
grade 5 events	857	18533	24409	21261	15471	1721
	0%	3%	5%	4%	3%	0%
grade 6 events	1728	82368	19203	131376	12217	3867
	1%	17%	4%	25%	3%	1%
grade 7 events	18054	32608	32501	97752	19389	15108
	17%	6%	7%	19%	4%	7%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	6	6
Detector	ACIS-456789	ACIS-456789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	GRADED	GRADED	On-chip summing requested	N	N
Observation mode	POINTING	POINTING	Subarray requested	CUSTOM	1/2
Pointing RA	299.610508	299.591762687423	Subarray start row	1	1
Pointing Dec	35.188676	35.21125036609482	Subarray row count	512	512
Pointing Roll	93.199573	93.36700189658109	Alternating exposures requested	N	N
SIM focus pos (mm)	-0.684267	-0.6828225247311905	Primary exposure time	0.000000	1.7
SIM defocus (mm)	0	0.001444936568705701			
SIM translation stage pos (mm)	-184.612523	-184.6110867017414			
SIM translation stage offset (mm)	-5.52	-5.52143588126637			
Phase constraints	Y	Y			
Phase period	5.599847	5.599847			
Phase epoch	51998.668500	51998.668500			
Phase start	0.750000	0.750000			
Phase end	0.760000	0.760000			
Phase start error	0.050000	0.050000			
Phase end error	0.050000	0.050000			
Observation start time	135119522.184000	135118382.0459			
Observation start date	2002-04-13T21:10:58	2002-04-13T20:53:02			
Observation end time	135124522.184000	135125207.52118			
Observation end date	2002-04-13T22:34:18	2002-04-13T22:46:47			
Read mode	TIMED	TIMED			

2.3 Aspect



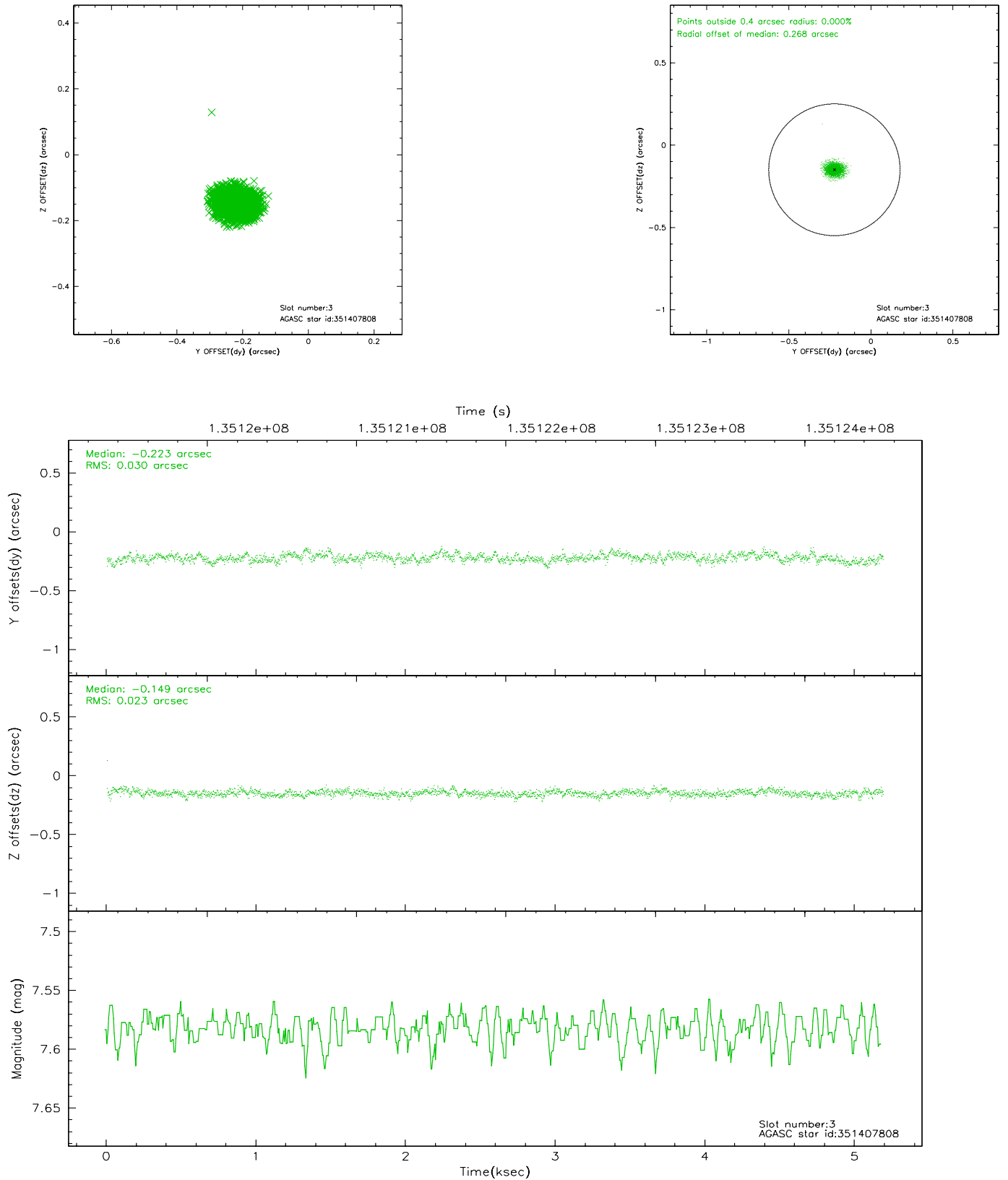


Slot Statistics

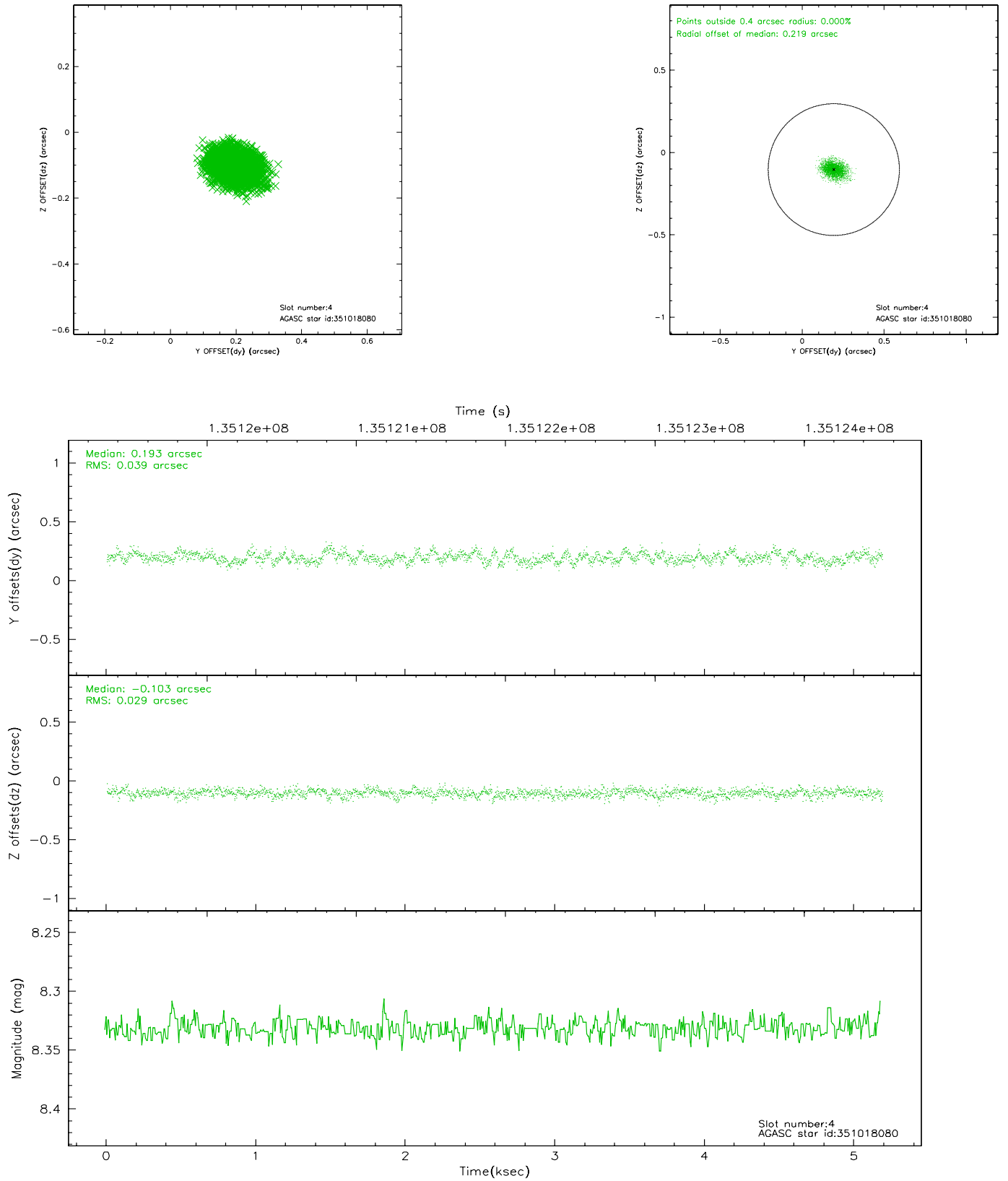
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	1266	-0.018	-0.008	0.005	0.010	0.000000	0.000000	-755.42	-1842.69
1	FID	ACIS-S-4	7.19	1265	-0.024	0.019	0.006	0.010	0.000000	0.000000	2157.29	64.56
2	FID	ACIS-S-6	7.39	1265	0.016	-0.005	0.007	0.011	0.000000	0.000000	408.06	703.24
3	GUIDE	351407808	7.58	2531	-0.223	-0.149	0.039	0.066	299.102647	35.790086	2247.56	1359.61
4	GUIDE	351018080	8.33	2531	0.193	-0.103	0.051	0.085	299.327312	34.581247	-2134.74	960.24
5	GUIDE	351024856	8.54	2531	0.028	0.213	0.081	0.122	300.374482	35.139033	-296.51	-2235.61
6	GUIDE	351022664	8.91	2531	0.039	0.057	0.072	0.114	300.391114	34.583094	-2297.27	-2190.09
7	GUIDE	351414960	9.18	2530	-0.043	-0.011	0.087	0.133	298.994276	35.824617	2390.36	1667.06

2.4 Star Slots

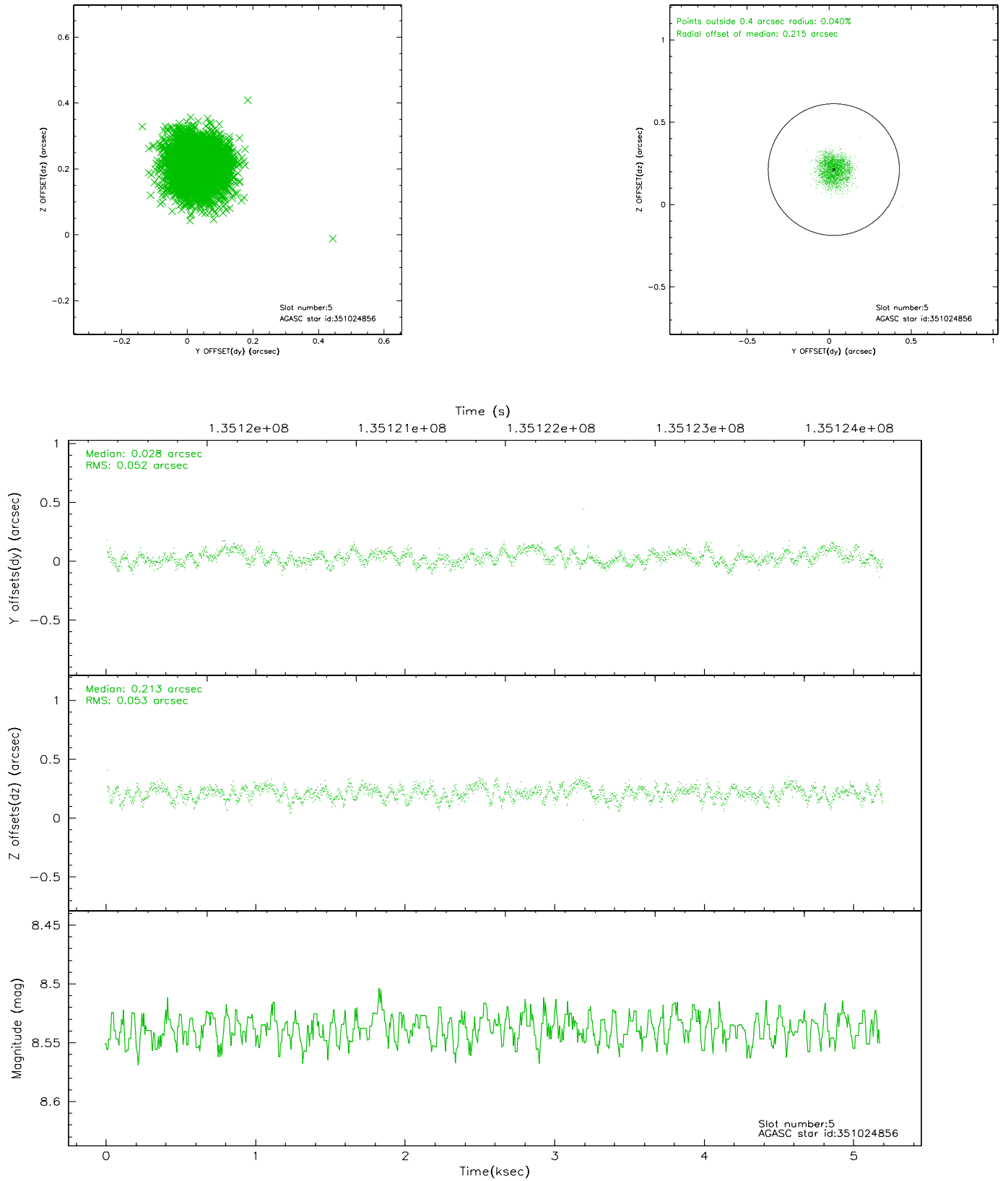
2.4.1 Slot 3



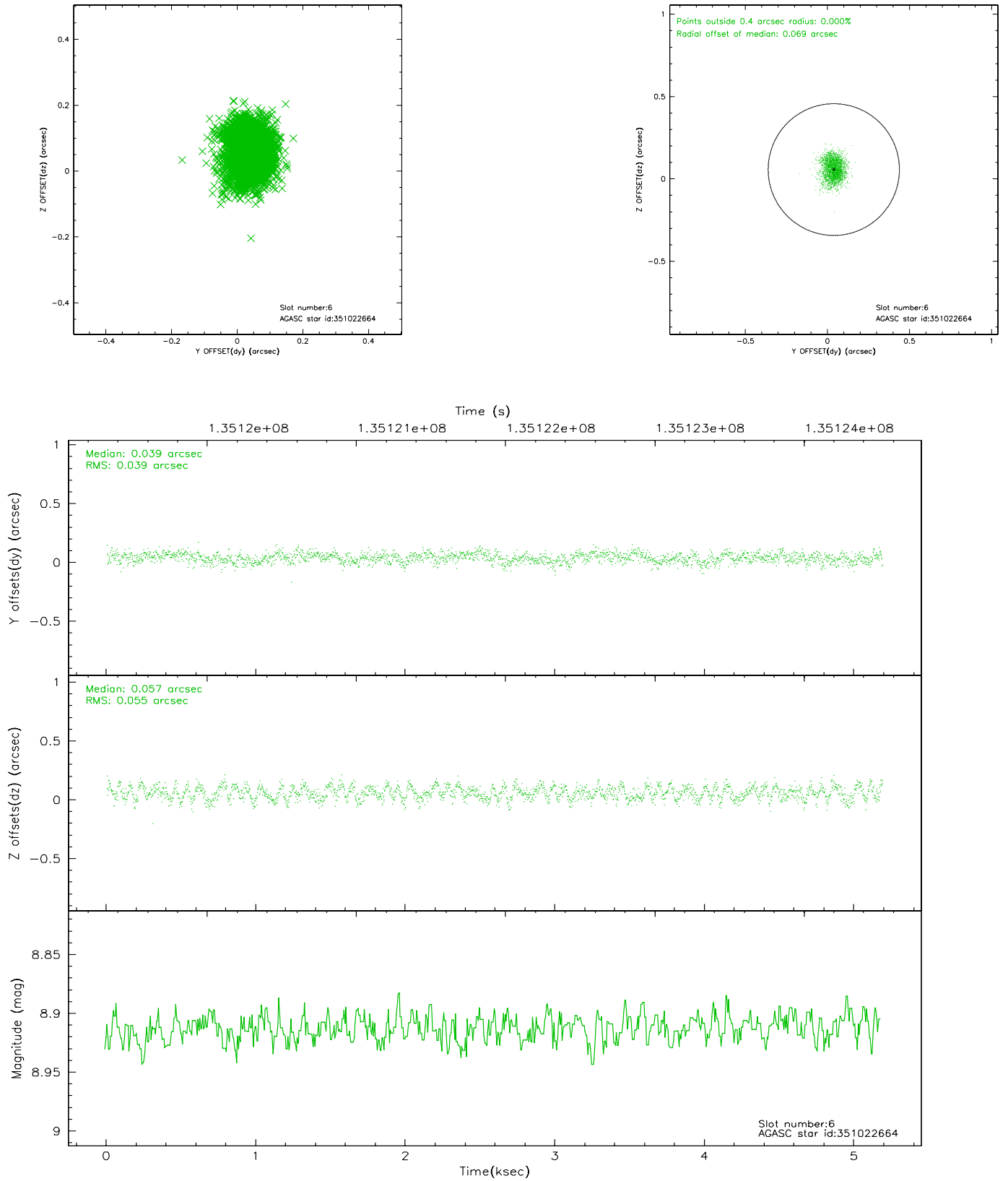
2.4.2 Slot 4



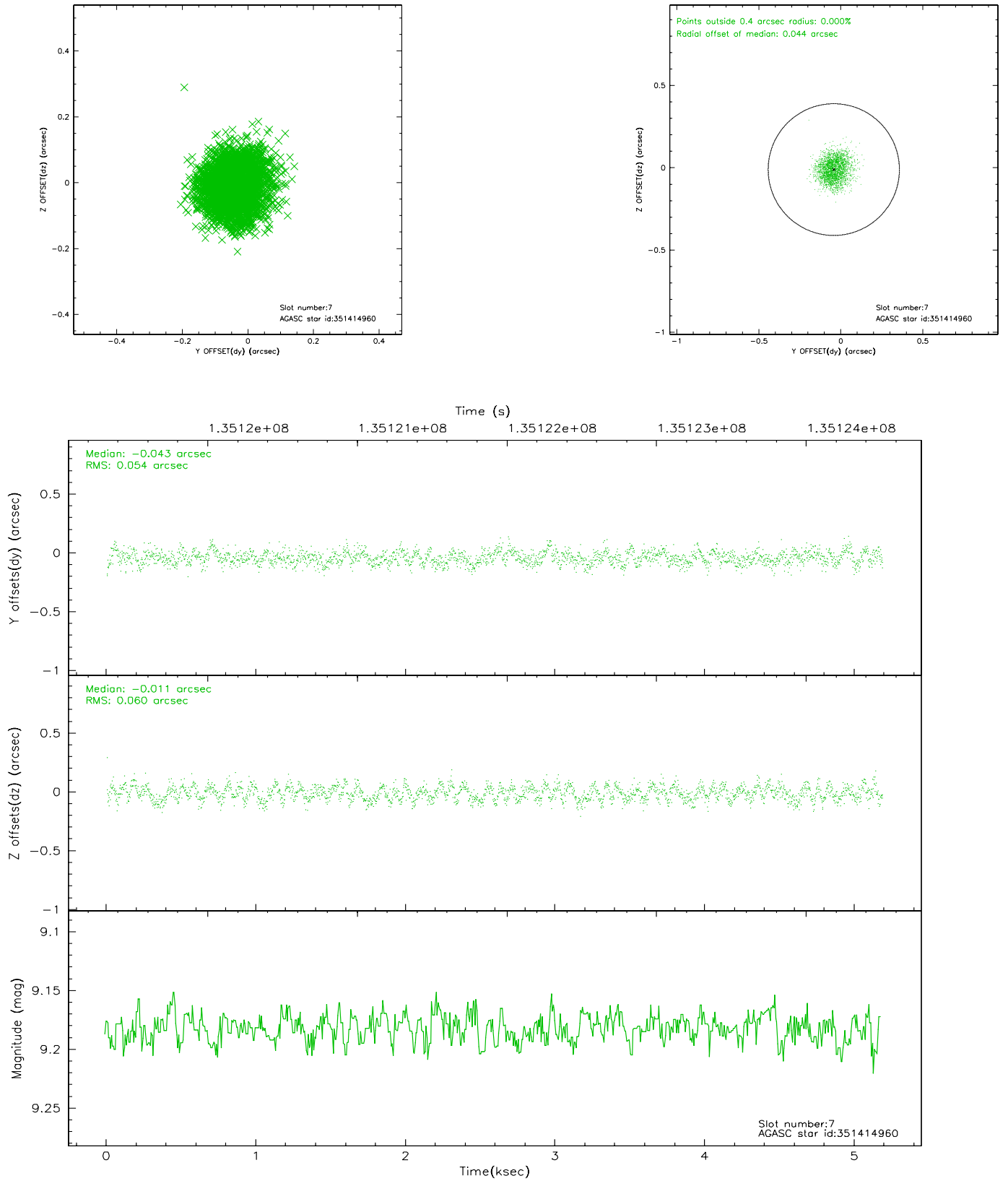
2.4.3 Slot 5



2.4.4 Slot 6

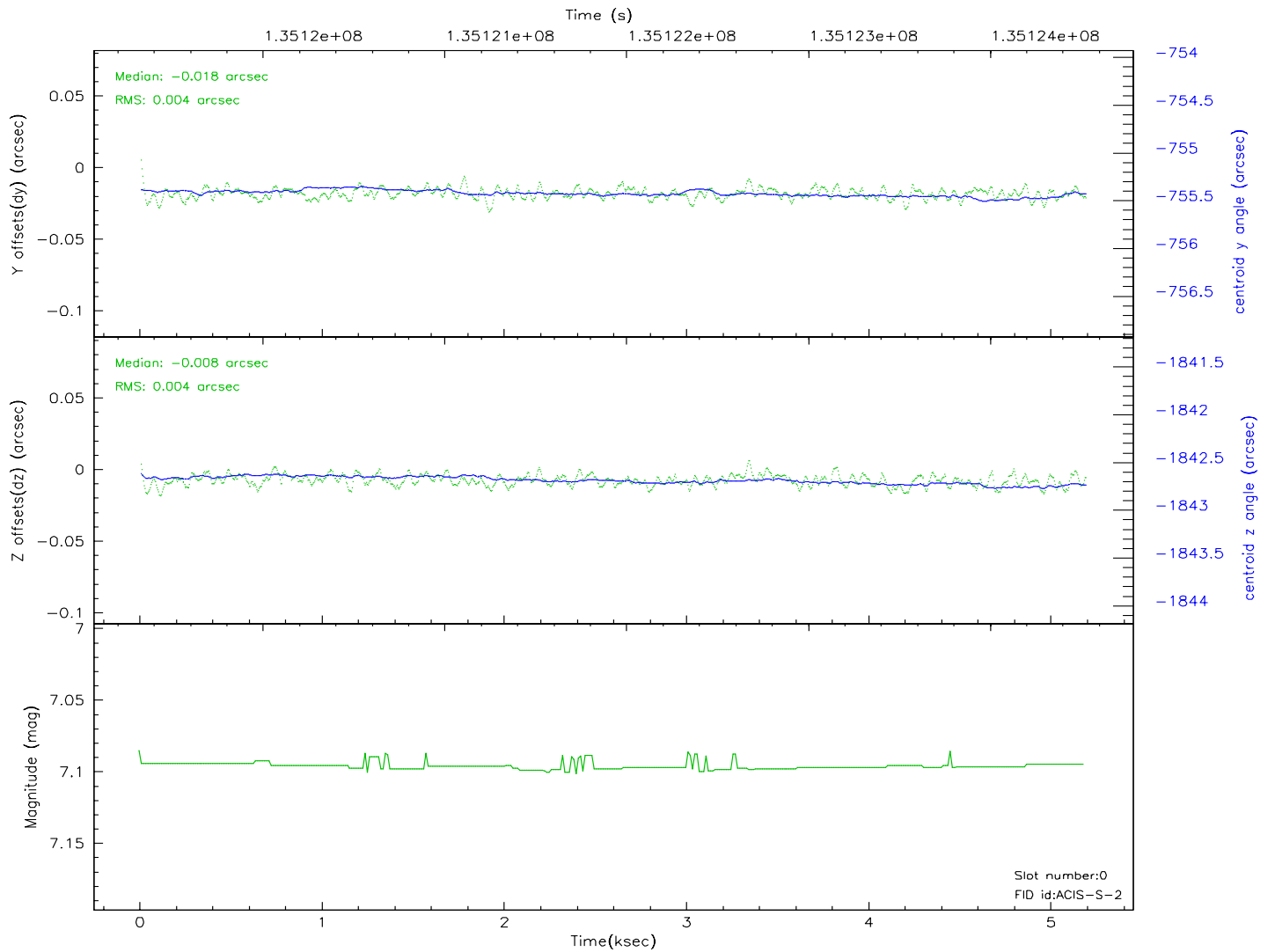
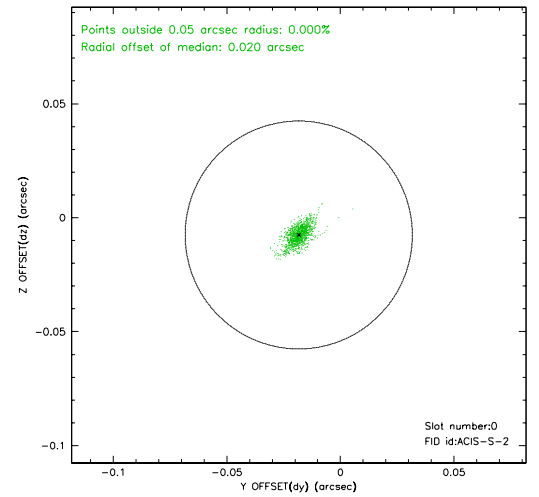
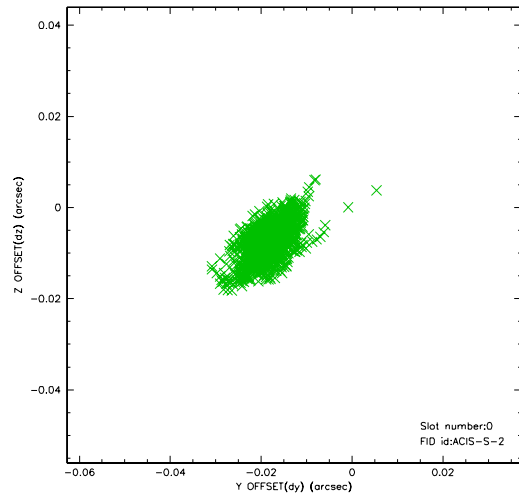


2.4.5 Slot 7

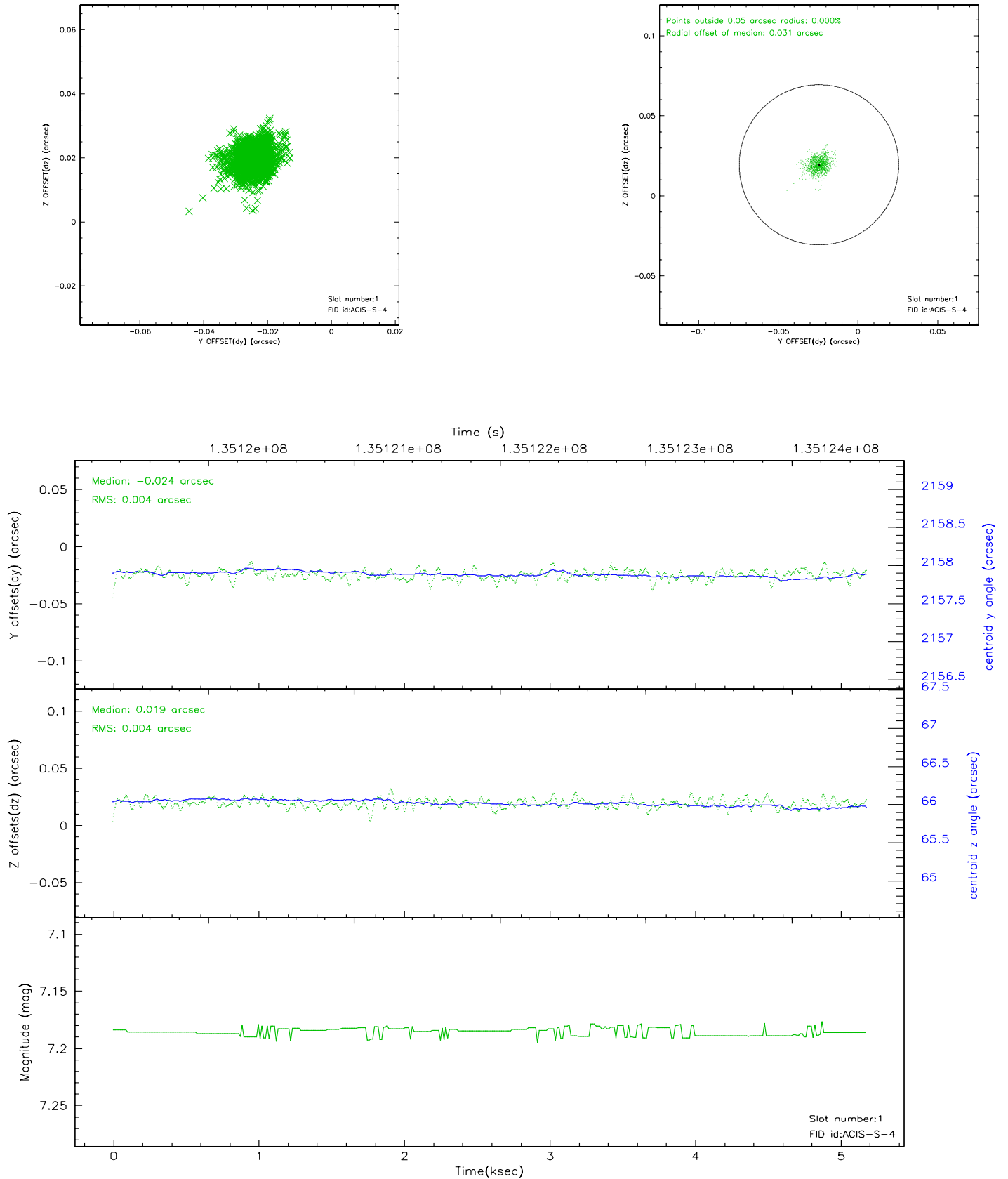


2.5 FID Slots

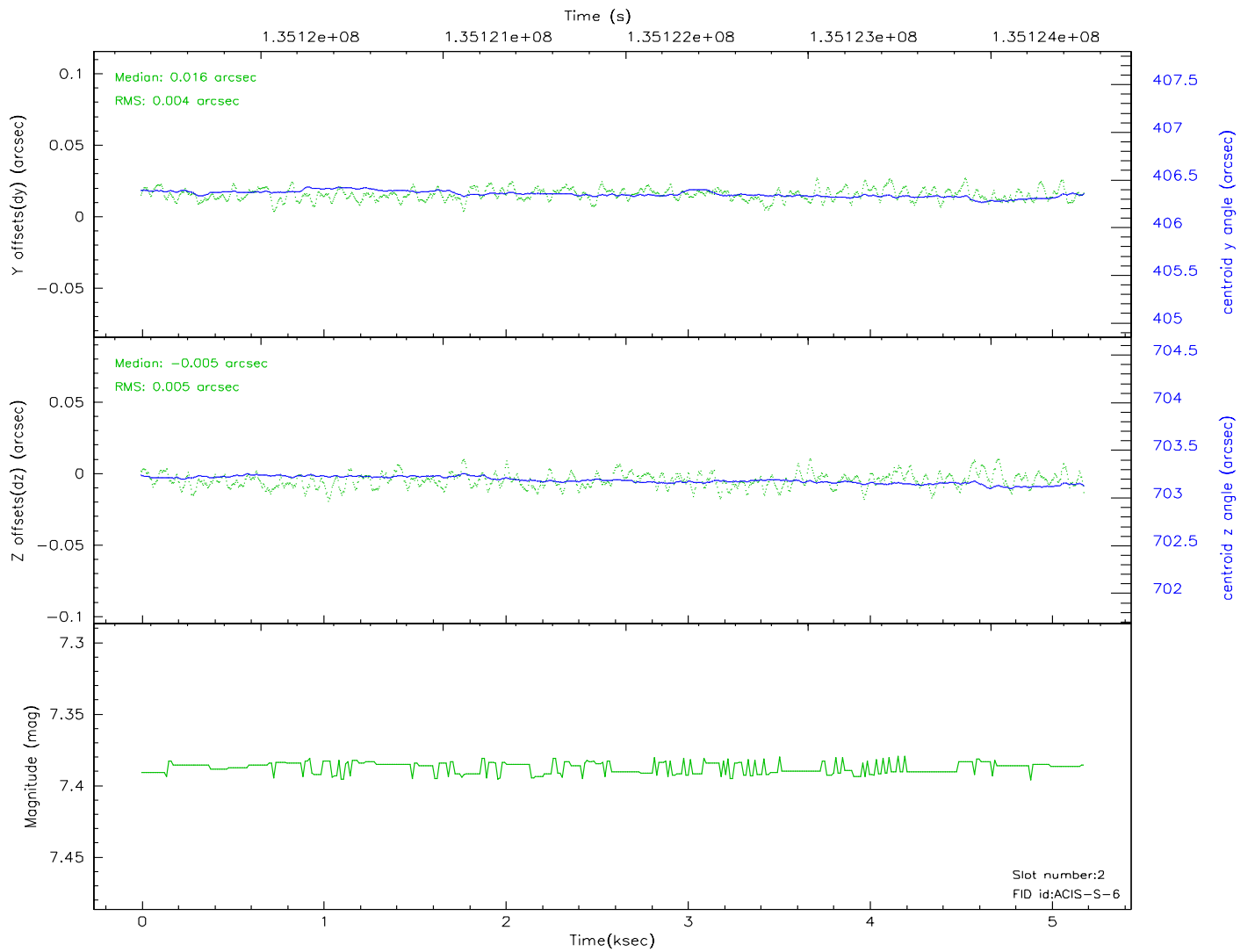
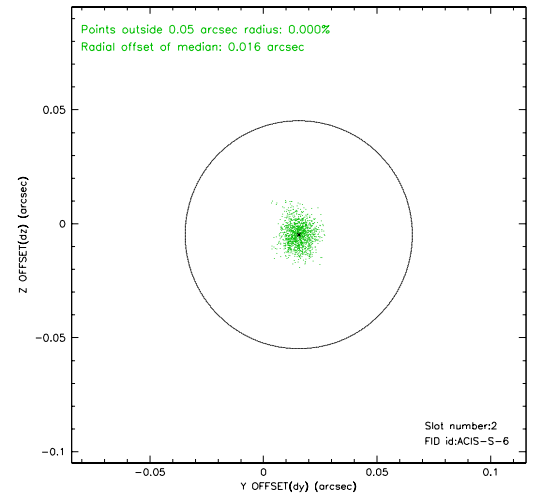
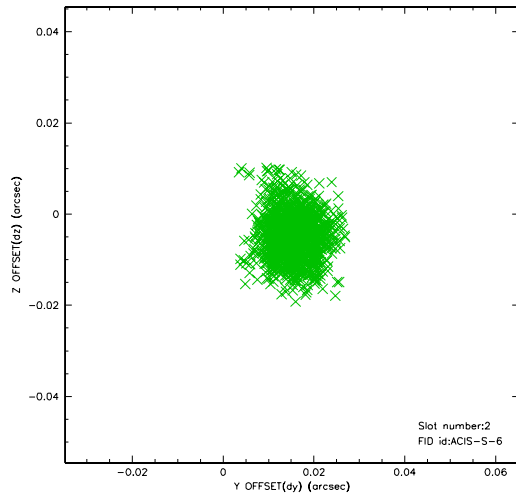
2.5.1 Slot 0



2.5.2 Slot 1

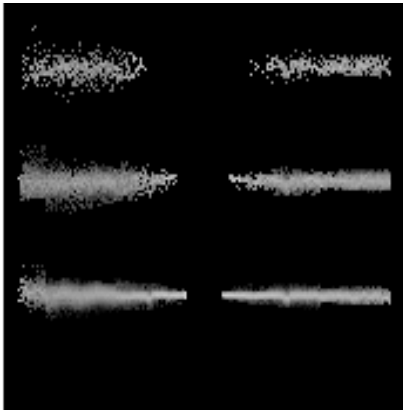


2.5.3 Slot 2

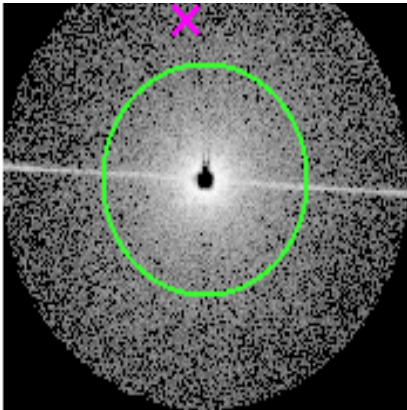


3 Gratings

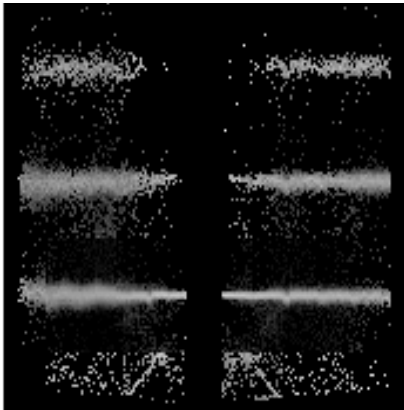
3.1 HEG Arm



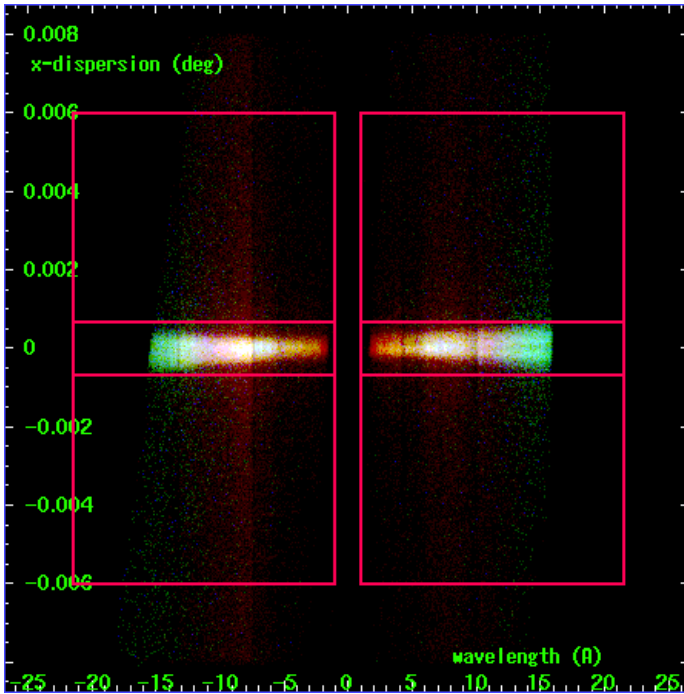
HEG Order Sort 123



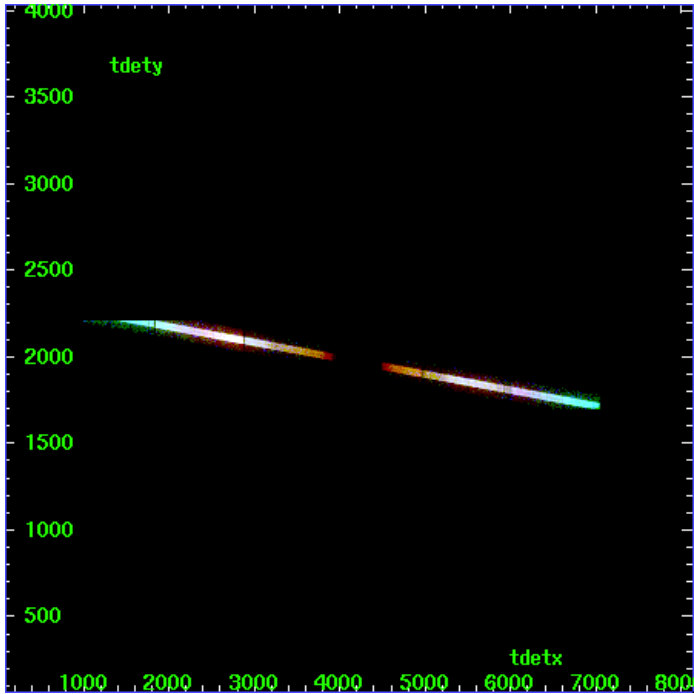
HEG Zero Order



HEG Order Sort ALL

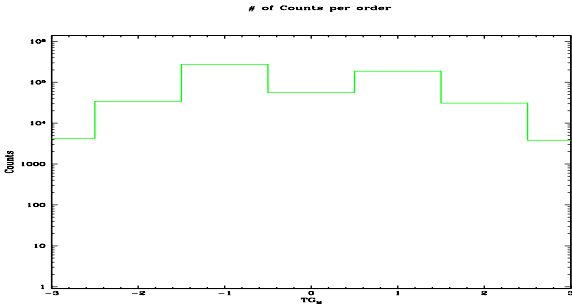


Spot Image HEG

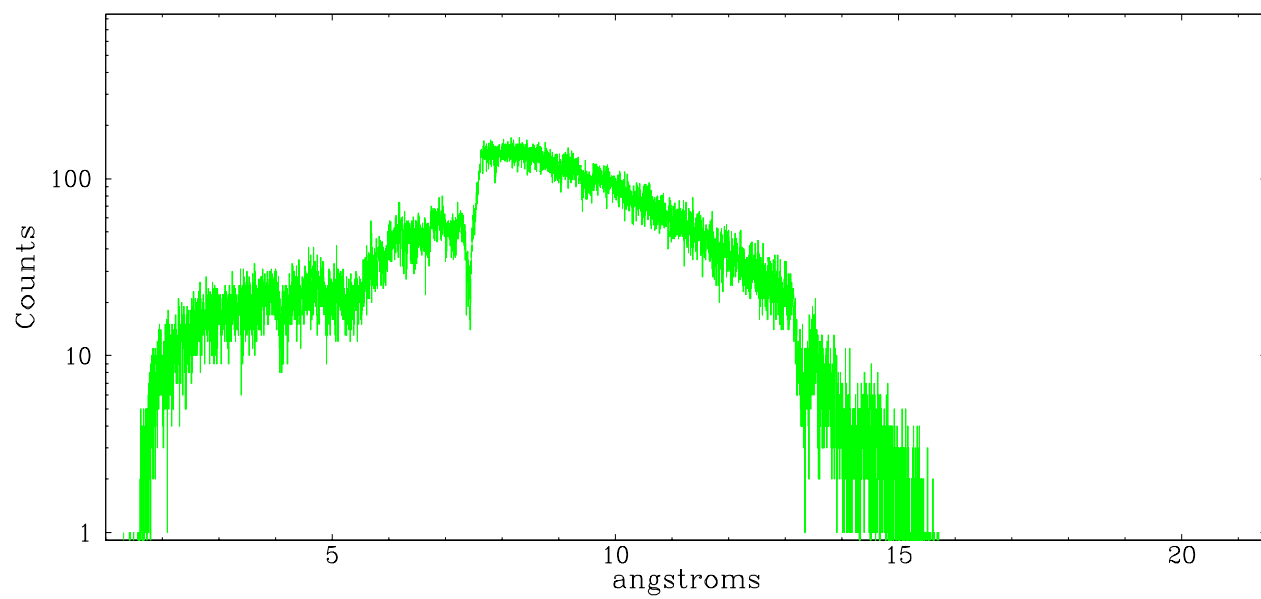


Full Detector HEG

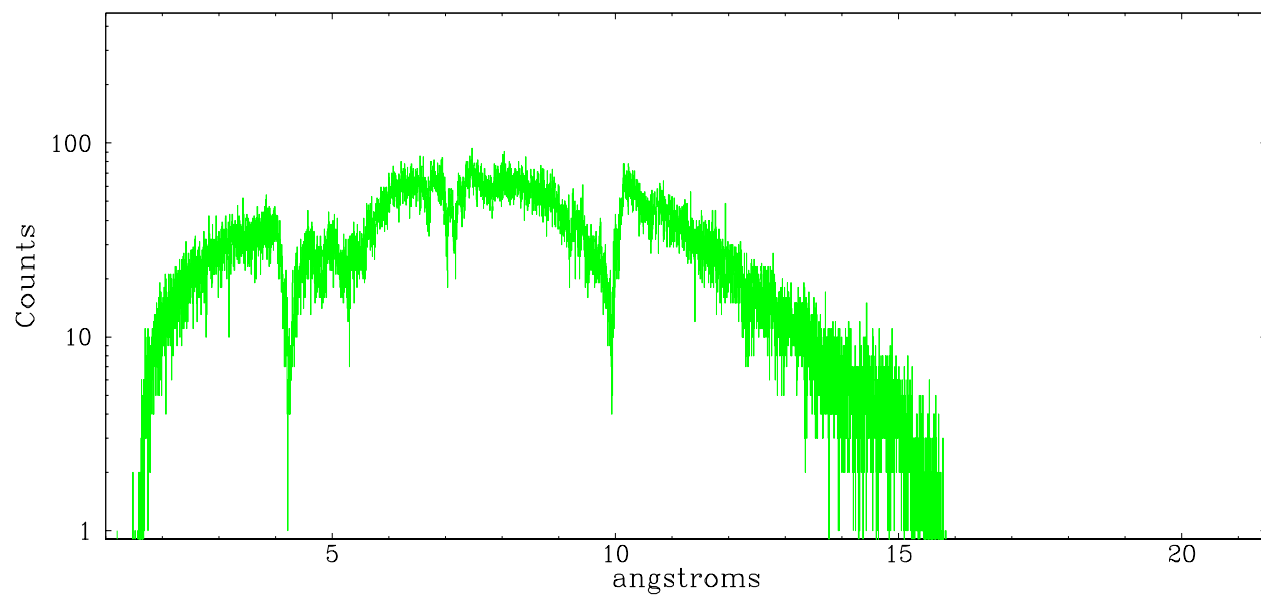
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	4241	33827	275415	55444	185840	30922	3821



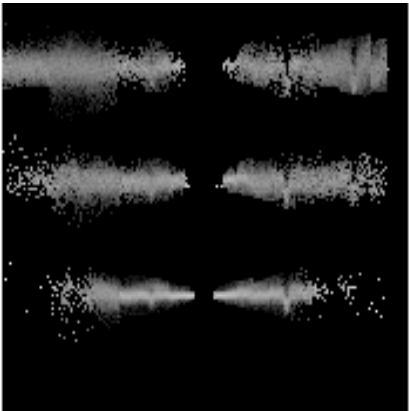
heg order -1



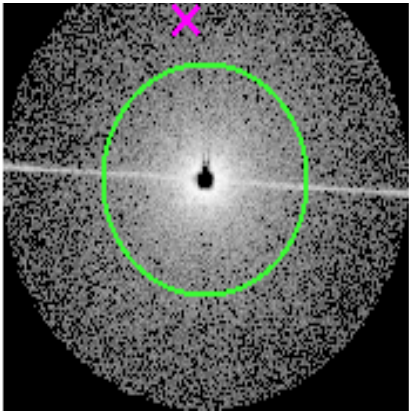
heg order +1



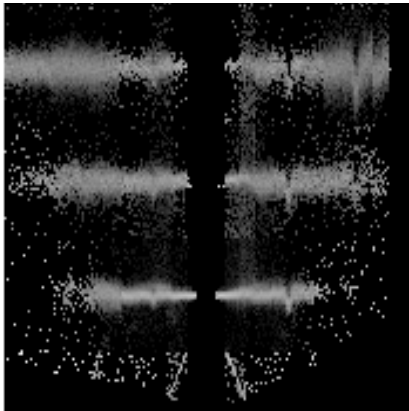
3.2 MEG Arm



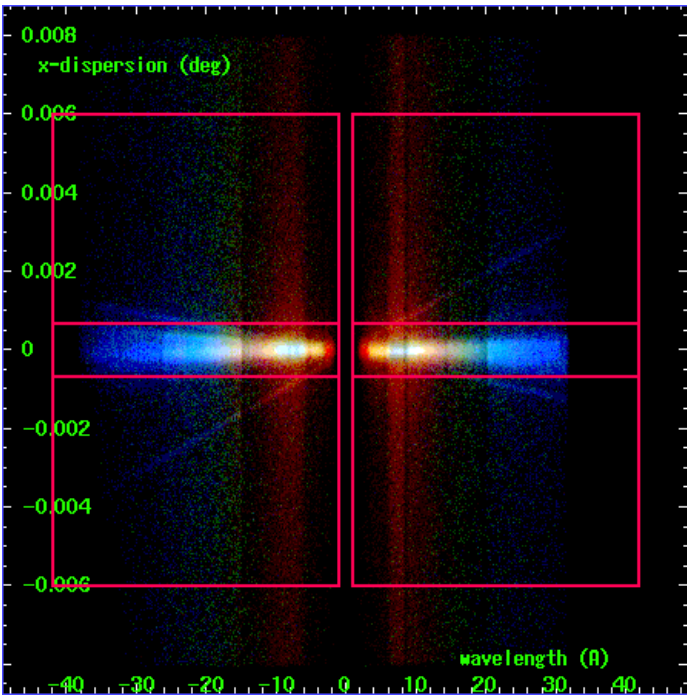
MEG Order Sort 123



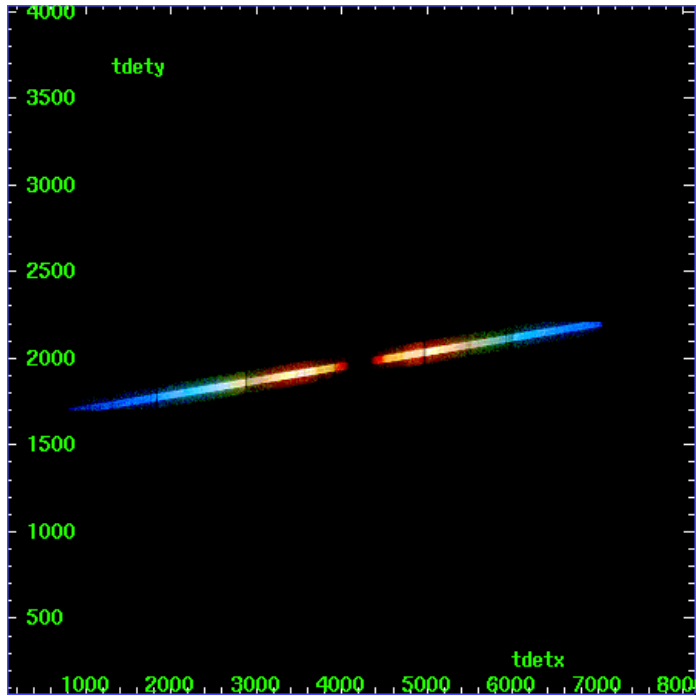
MEG Zero Order



MEG Order Sort ALL

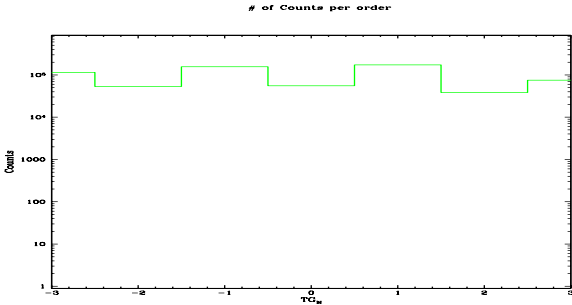


Spot Image MEG

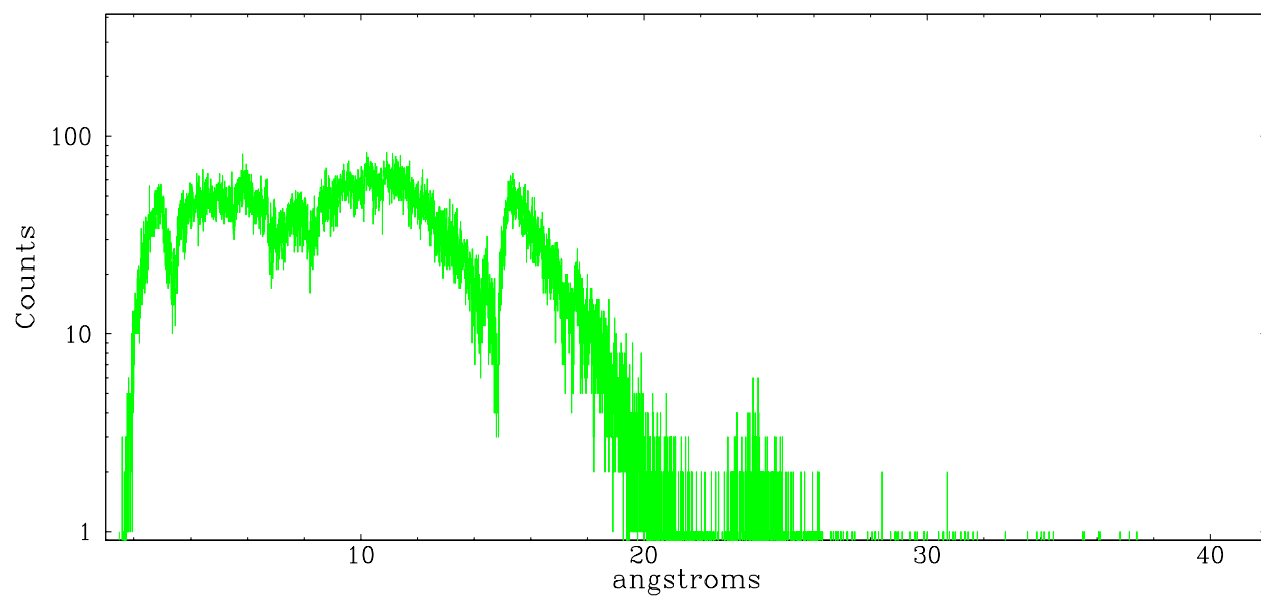


Full Detector MEG

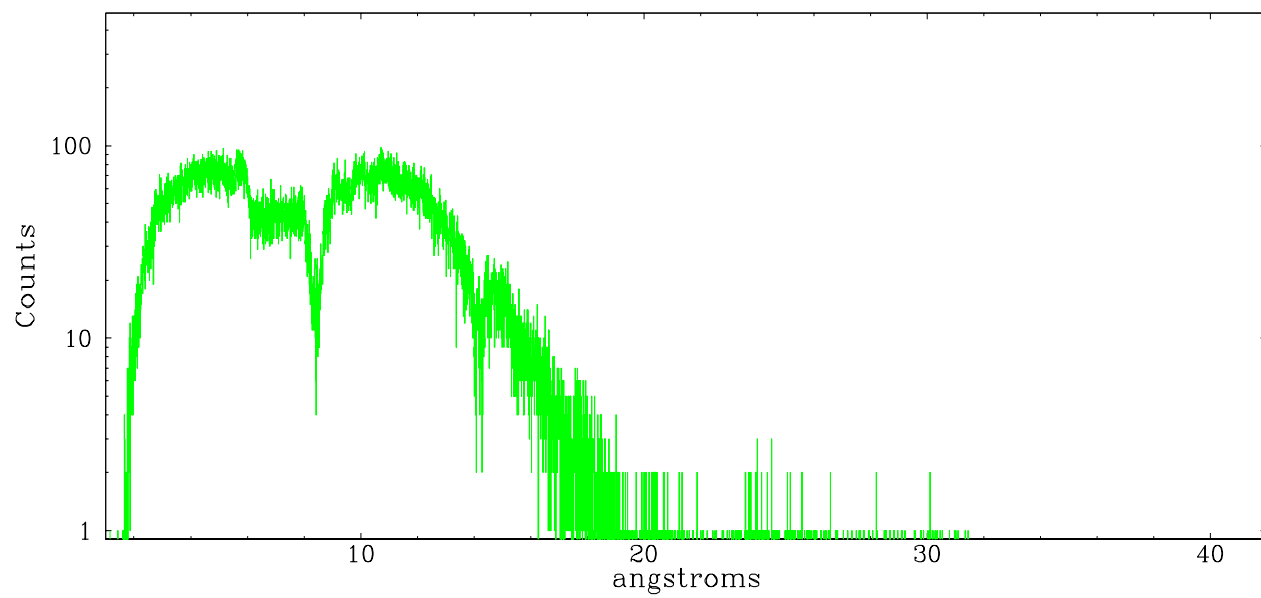
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	114468	52993	156711	55444	173021	38183	74867



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2006.09.28
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	5.231

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 in the tool `tg_create_mask` to input the correct sky coordinates: `x=4167.81, y=4093.48`, using the user-supplied coordinate option (see CIAO description of this tool). The zeroth order source position determined by the software in the tool `tgdetect` were not used in this processing, although the `*scrla.fits` file contains the erroneous coordinates determined by `tgdetect`. The `*evtla.fits` file has the corrected coordinates, which were used to produce the extracted spectral data.

Charge time for this ObsId remains at original value of 5.231 ks, although with the current processing the charge time would have been 2.480 ksec due to telemetry saturation and dropped exposures on some chips.

The temperature-dependent gain calibration is applied to this graded mode observation, although the gain is not well-calibrated for front-illuminated chips with no CTI correction applied. Graded mode observations do not have a CTI correction applied. The result is that the order sorting algorithm is not as precise as it is in other modes.

Charge time:

New charge time is less than existing charge time used in previously distributed version

NEW CHARGE TIME = 2.480311 ks, 1 Obs

EXISTING CHARGE TIME = 5.231000 ks, 1 Obs.

Variation in Chips > 15% threshold.

Low Chip 6, ONTIME=1602.712447 seconds

High Chip 4, ONTIME=4643.672241 seconds

Chip 8, ONTIME=1949.963874 seconds is less than 80% of scheduled time=5000.000000 seconds

Chip 7, ONTIME=2480.310934 seconds is less than 80% of scheduled time=5000.000000 seconds

Chip 6, ONTIME=1602.712447 seconds is less than 80% of scheduled time=5000.000000 seconds

ONTIME of 2480.3109337986 seconds is less than 85% of expected scheduled time of 5000 seconds

