

V&V Reference Report

L2 ASCDS Version : 7.6.8.1

Observation 2742 - L2 Version 002
Chandra X-Ray Center

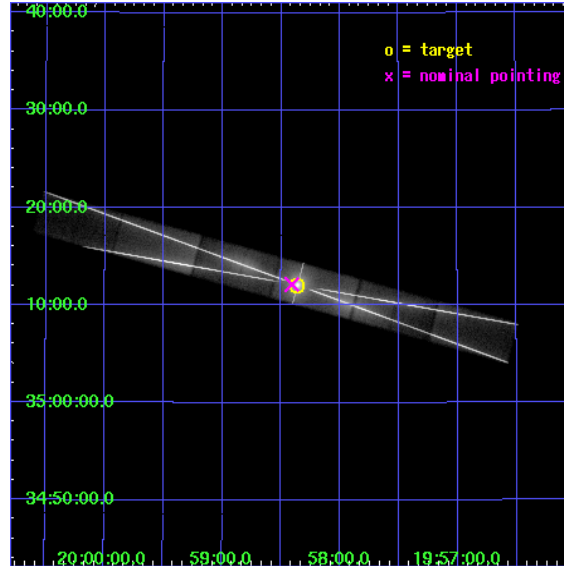
L2 Processing Date : Oct 11 2006

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1 Front

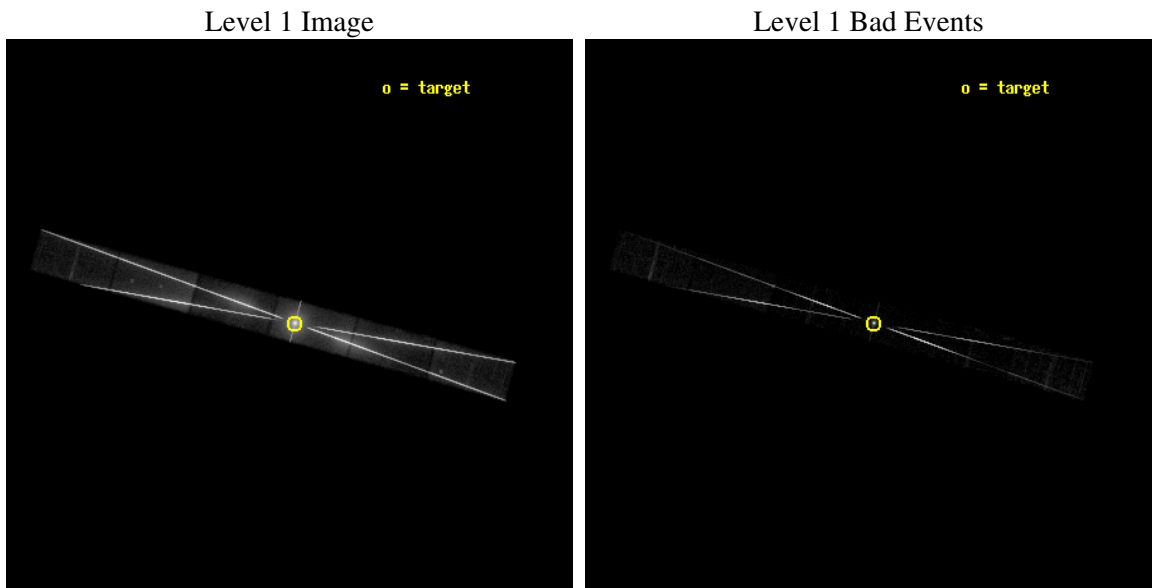
seq_num	400222
obs_id	2742
title	PHASE RESOLVED HIGH ENERGY RESOLUTION SPECTROSCOPY OF THE BLACK HOLE X-RAY BAINARY CYGNUS X-1
observer	Prof. Shuang Nan Zhang
object	CYG X-1
dtcycle	0
cycle	P
ra_targ	299.590417
dec_targ	35.201611
ra_nom	299.60231796869
dec_nom	35.202531006003
roll_nom	15.235563222379
revision	3
ontime	1917.4713388681
livetime	1872.2724785621
ontime4	4751.8349295259
ontime5	4133.7813647091
ontime6	1464.3773468286
ontime7	1917.4713388681
ontime8	1873.5621470809
ontime9	4142.4842922091
l2events	1690939



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	1
ascdsver	7.6.8.1
caldbver	3.2.3
date	2006-08-29T18:54:55
revision	2

sched_exp_time	5000.000000
ontime	1937.7758072168
ontime4	4773.8804079592
ontime5	4154.0858330578
ontime6	1483.3649273515
ontime7	1937.7758072168
ontime8	1894.2497275919
ontime9	4164.5298005491
l1events	2156104

2.1.3 Events

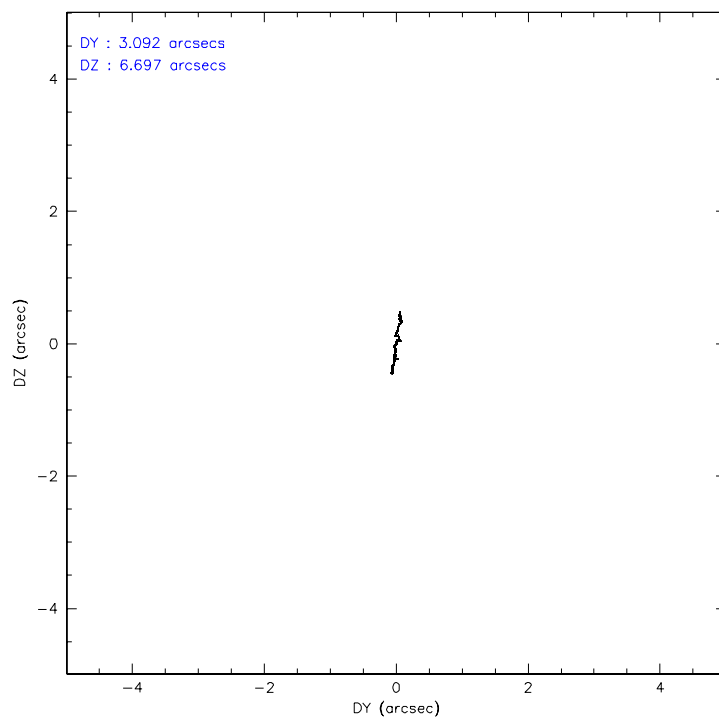
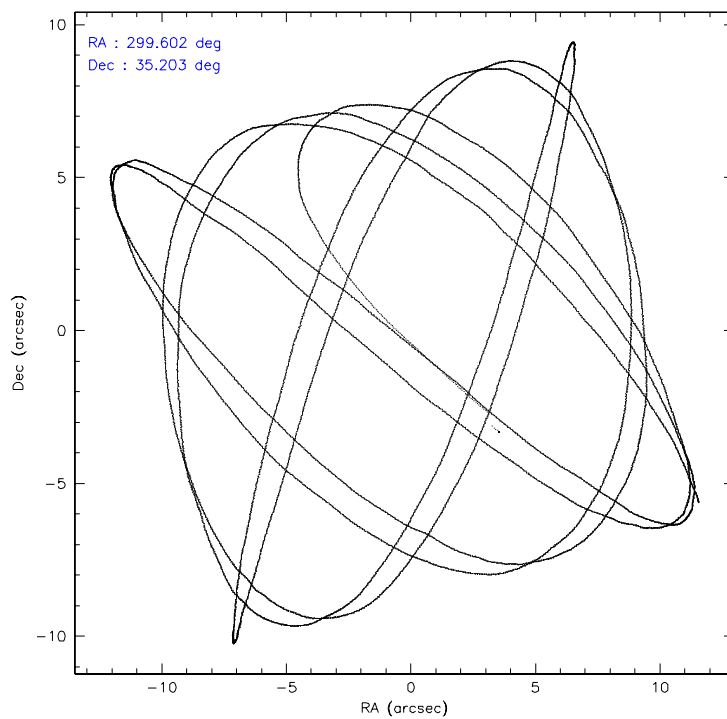
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	108615	480048	430886	505750	404678	226127
rejected events	17112	60987	96415	128170	63931	18734
rejected %	15%	12%	22%	25%	15%	8%

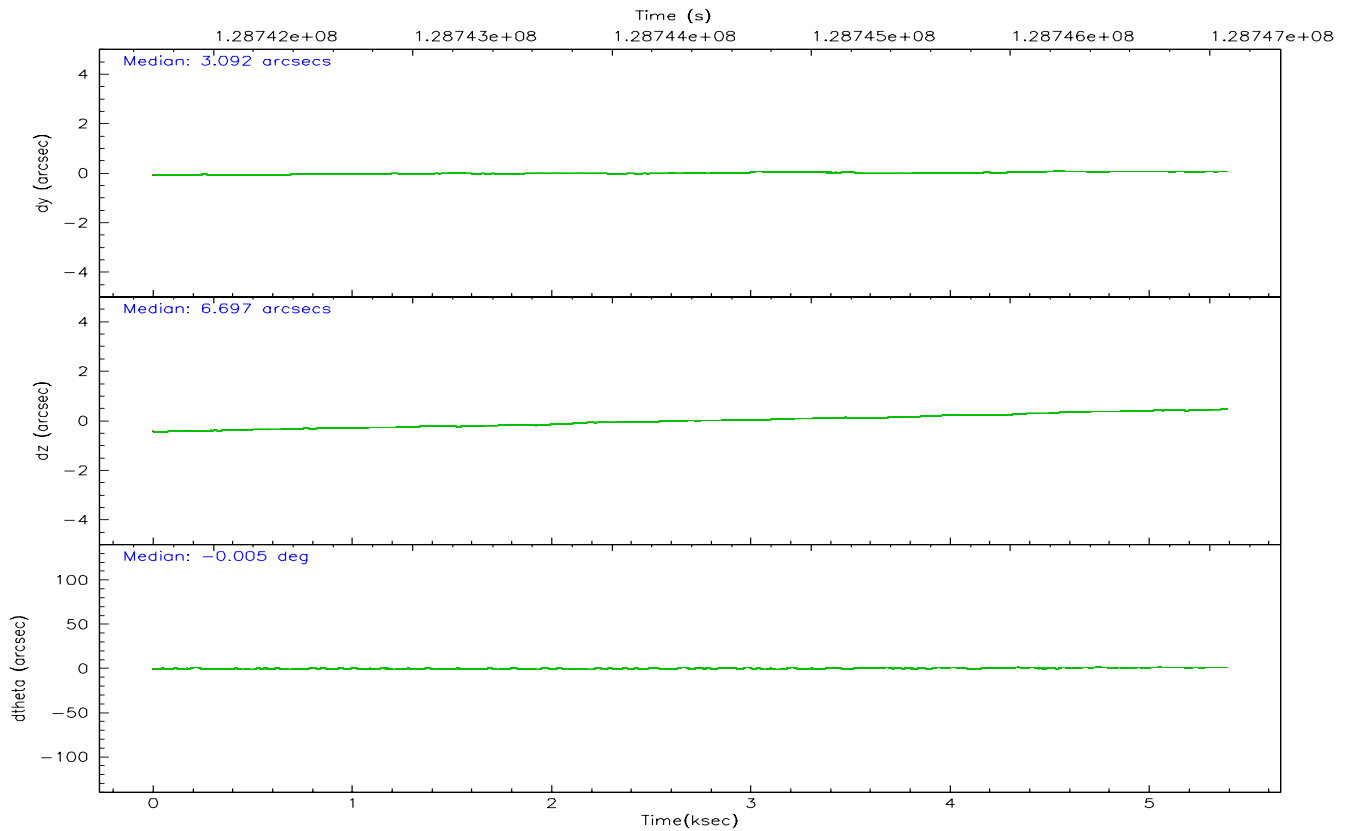
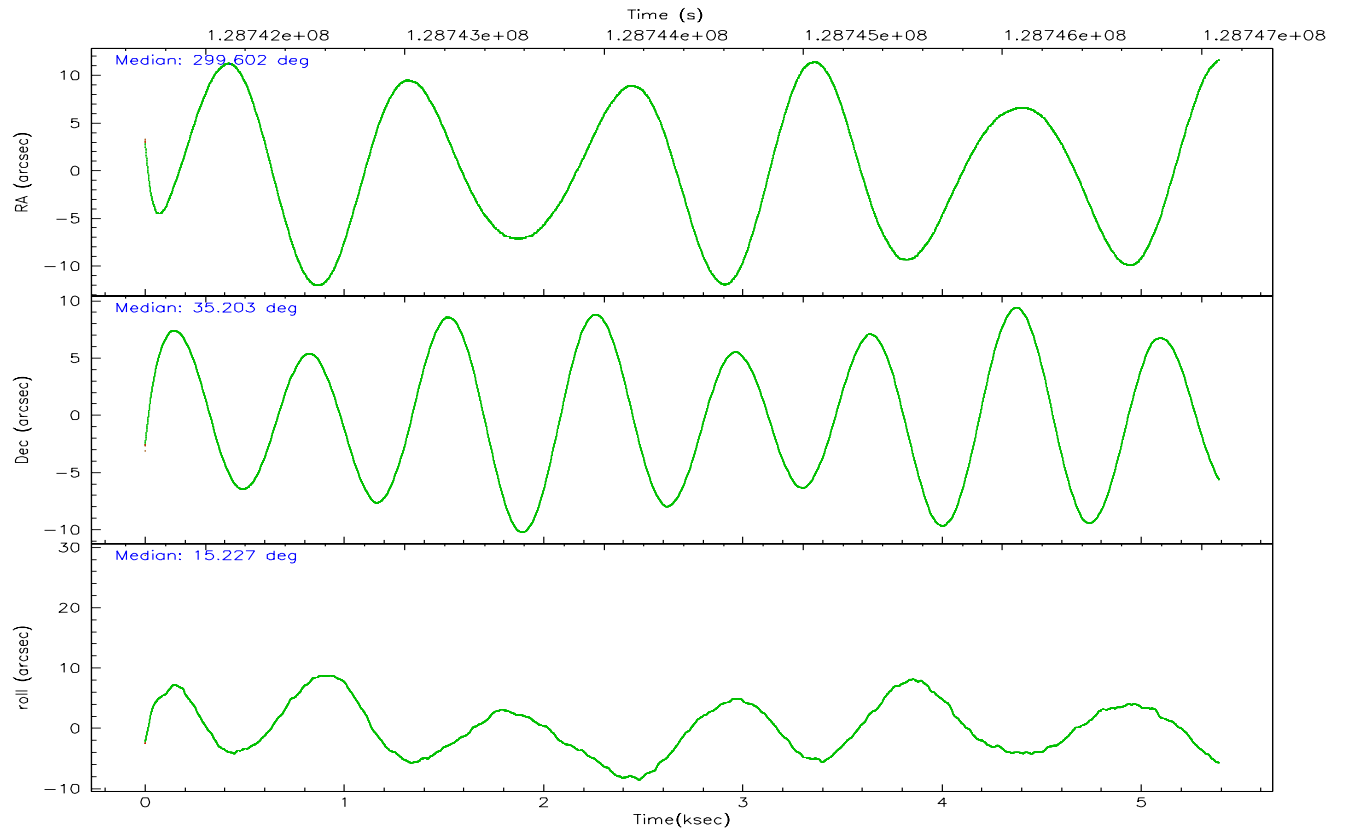
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	73511	120546	226248	70075	251304	167237
	67%	25%	52%	13%	62%	73%
grade 1 events	678	5530	31436	4564	25919	2758
	0%	1%	7%	0%	6%	1%
grade 2 events	10246	145248	49366	97896	44663	22958
	9%	30%	11%	19%	11%	10%
grade 3 events	3035	35064	20878	38797	17812	6984
	2%	7%	4%	7%	4%	3%
grade 4 events	3094	35121	20159	38116	17830	6877
	2%	7%	4%	7%	4%	3%
grade 5 events	818	19552	25984	21355	16517	1810
	0%	4%	6%	4%	4%	0%
grade 6 events	2027	85090	21879	136392	12731	4337
	1%	17%	5%	26%	3%	1%
grade 7 events	15206	33897	34936	98555	17902	13166
	13%	7%	8%	19%	4%	5%

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	299.579064	299.6023179686949	Subarray start row	1	1
Pointing Dec	35.182881	35.20253100600321	Subarray row count	512	512
Pointing Roll	15.092359	15.23556322237855	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	0.500000	0.500000			
Phase end	0.510000	0.510000			
Phase start error	0.050000	0.050000			
Phase end error	0.050000	0.050000			
Observation start time	128742088.184000	128741011.67535			
Observation start date	2002-01-30T01:40:24	2002-01-30T01:23:31			
Observation end time	128747088.184000	128747979.11313			
Observation end date	2002-01-30T03:03:44	2002-01-30T03:19:39			
Read mode	TIMED	TIMED			

2.3 Aspect



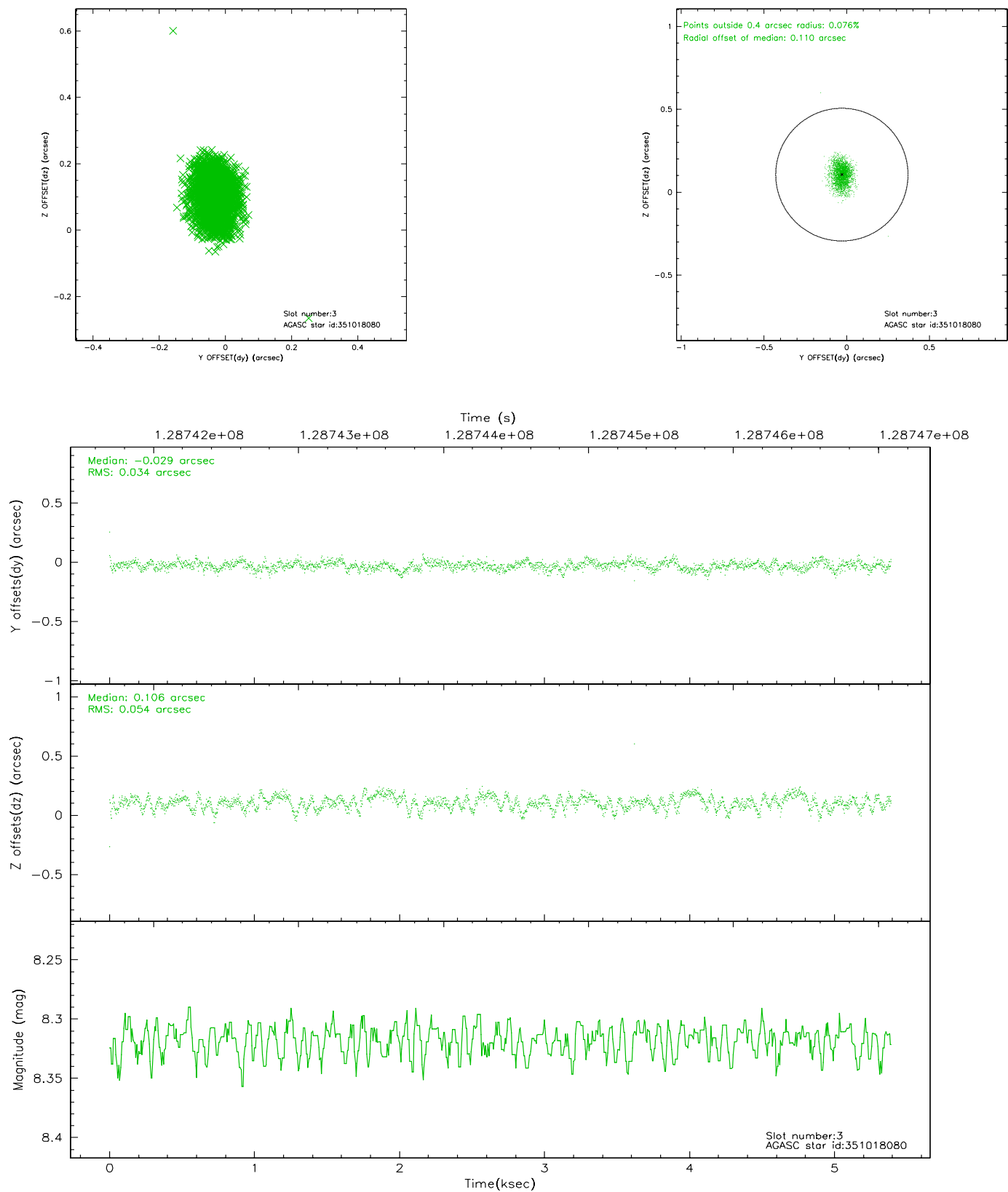


Slot Statistics

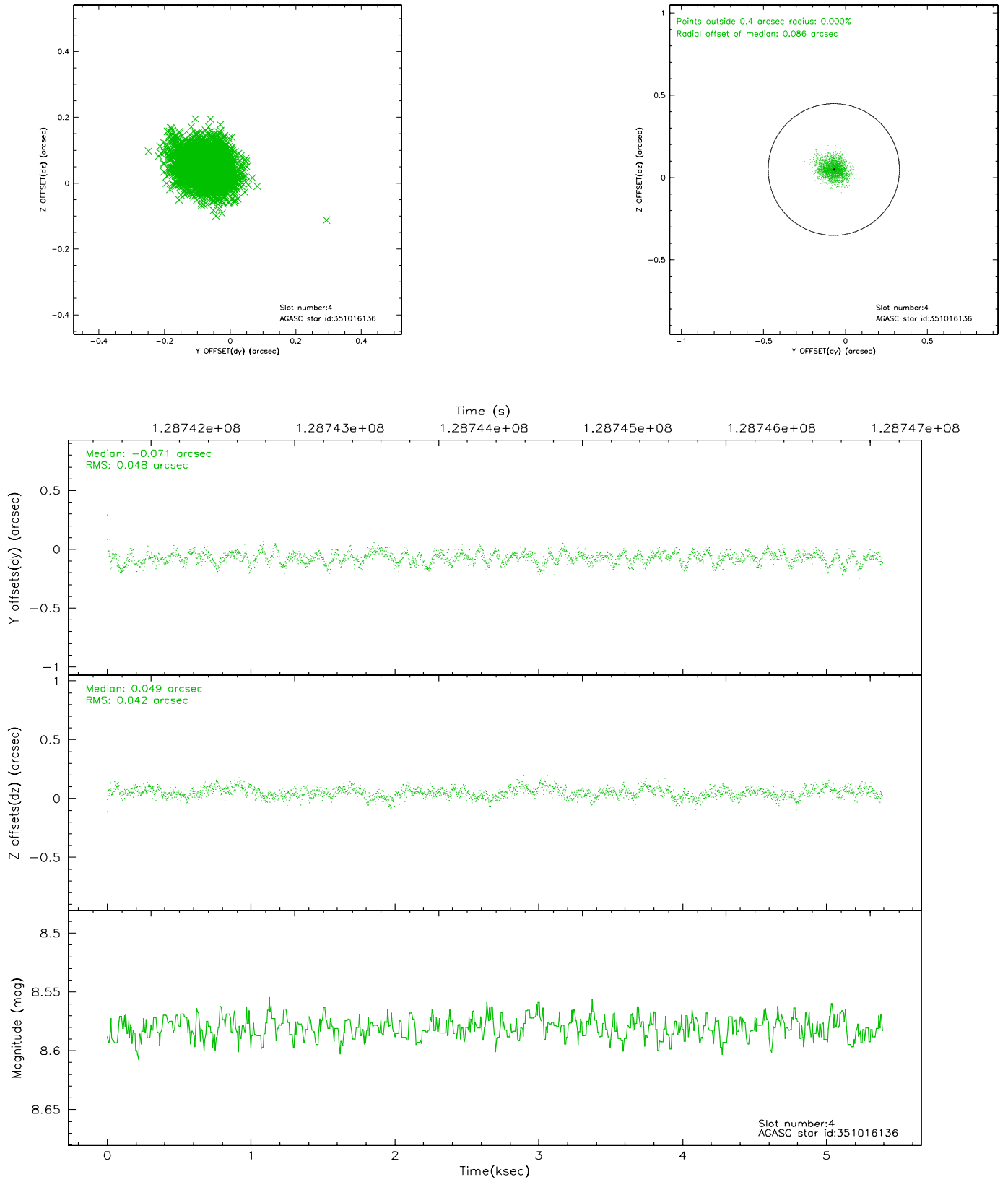
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	1316	-0.036	-0.027	0.007	0.012	0.000000	0.000000	-755.37	-1841.72
1	FID	ACIS-S-4	7.19	1316	-0.040	0.025	0.006	0.011	0.000000	0.000000	2157.38	65.60
2	FID	ACIS-S-5	7.23	1316	0.045	0.010	0.007	0.012	0.000000	0.000000	-1806.71	60.49
3	GUIDE	351018080	8.32	2629	-0.029	0.106	0.066	0.111	299.327312	34.581247	-1283.84	-1896.77
4	GUIDE	351016136	8.58	2631	-0.071	0.049	0.067	0.109	300.302636	34.786391	1695.78	-1928.81
5	GUIDE	351024856	8.55	2631	-0.029	0.142	0.064	0.100	300.374482	35.139033	2222.98	-754.08
6	GUIDE	351406096	8.91	2629	0.057	-0.153	0.075	0.117	299.076637	35.711249	-921.14	2221.26
7	GUIDE	351406432	8.86	2630	0.066	-0.143	0.089	0.139	299.163921	35.698316	-688.58	2109.94

2.4 Star Slots

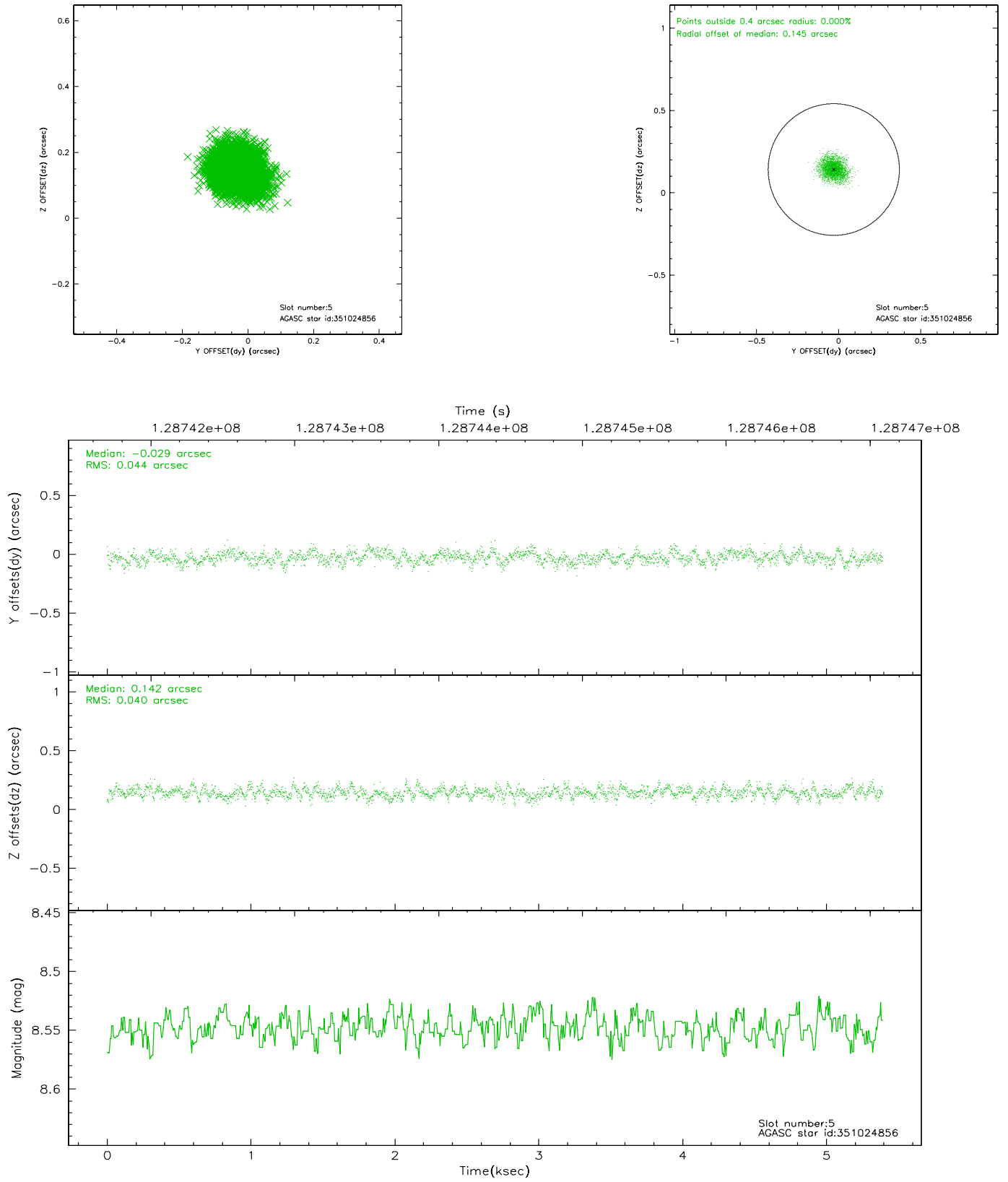
2.4.1 Slot 3



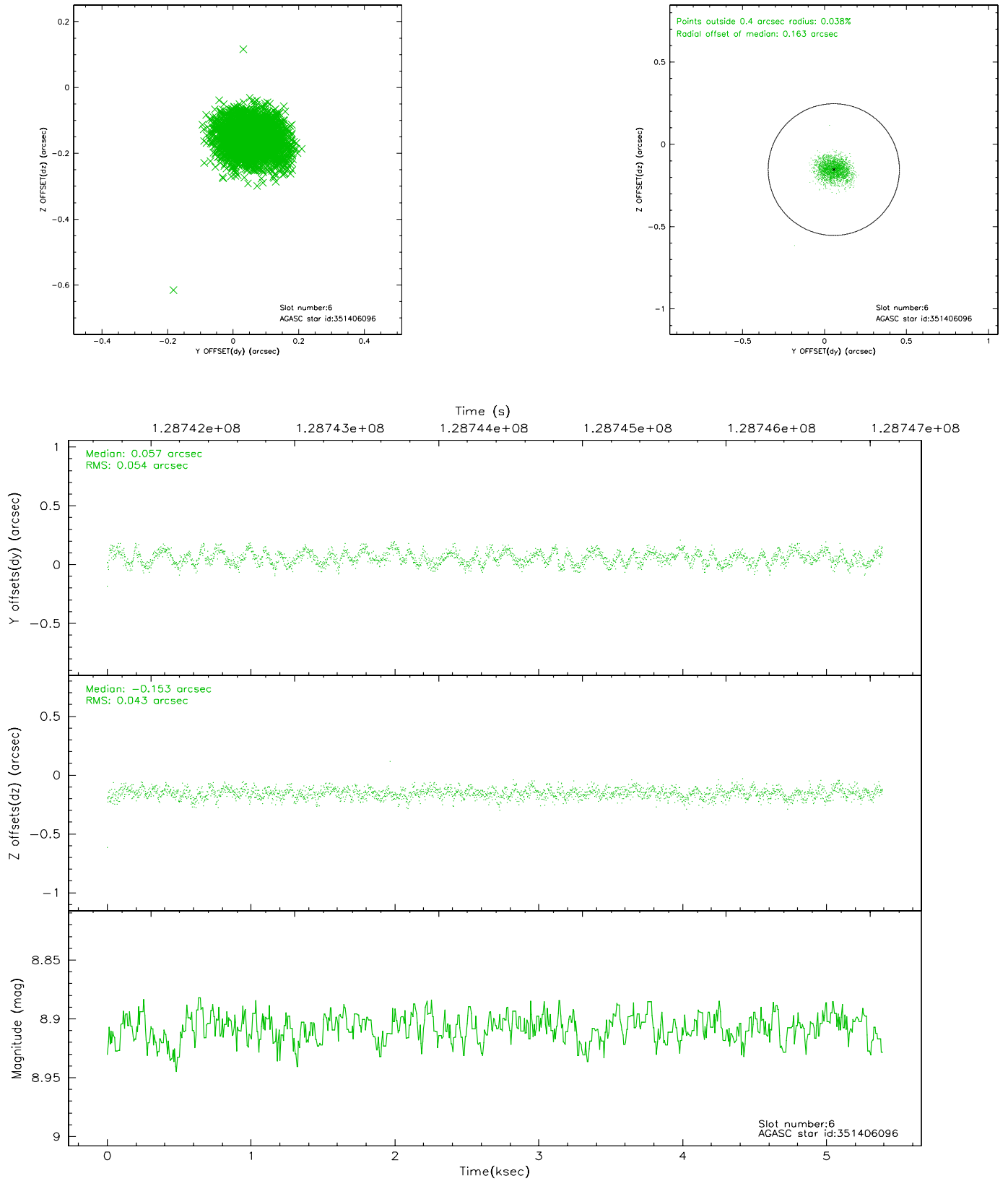
2.4.2 Slot 4



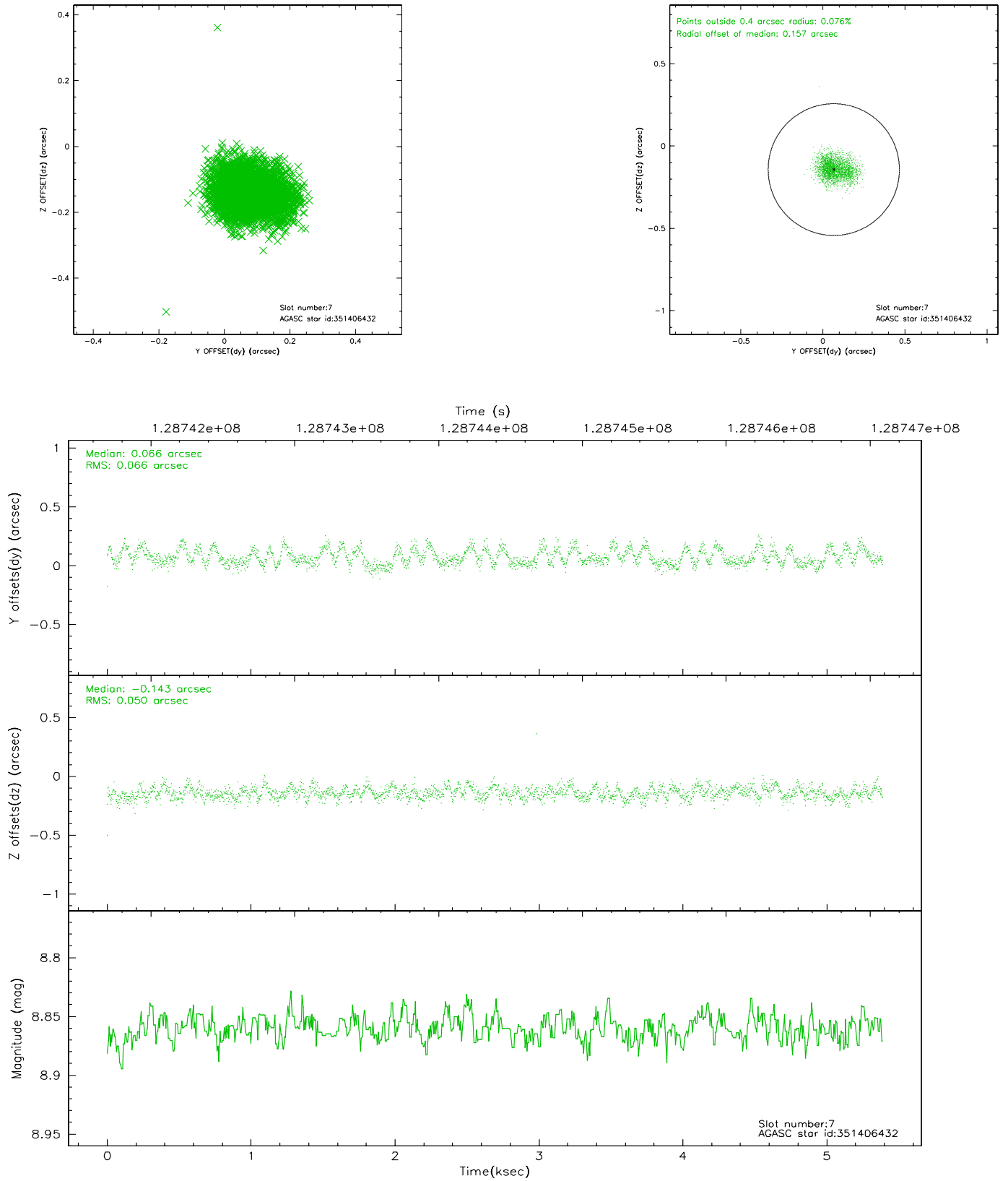
2.4.3 Slot 5



2.4.4 Slot 6

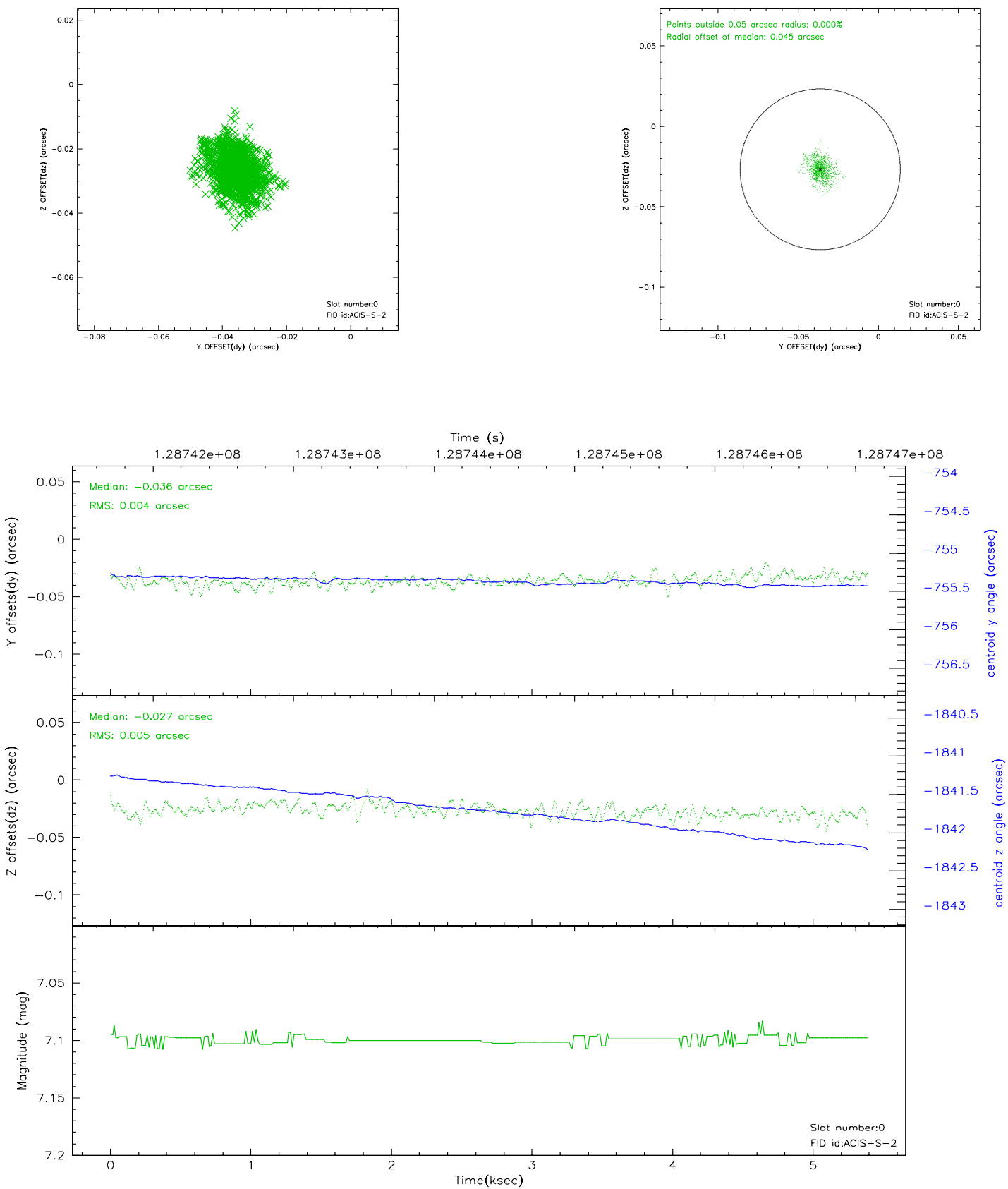


2.4.5 Slot 7

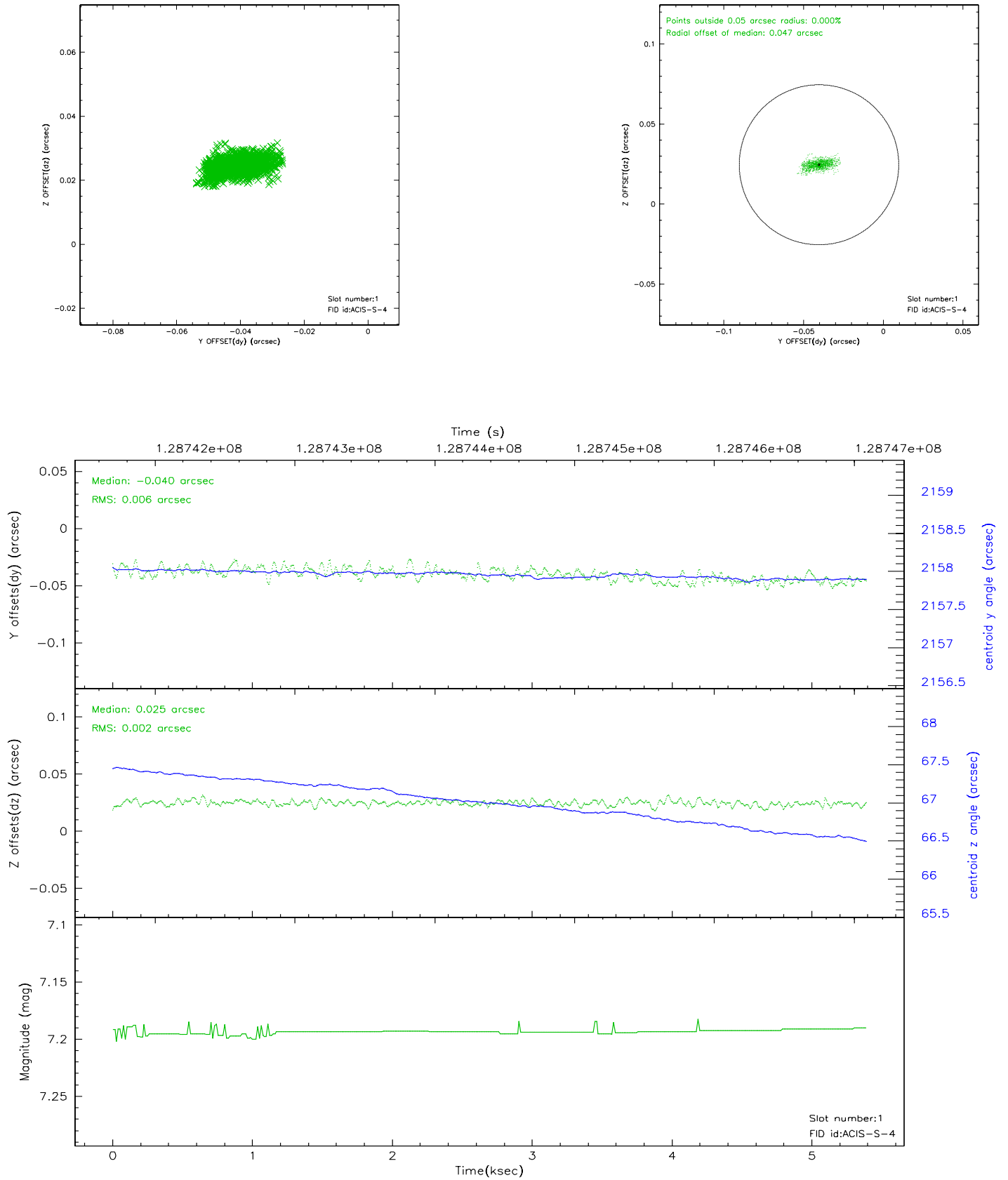


2.5 FID Slots

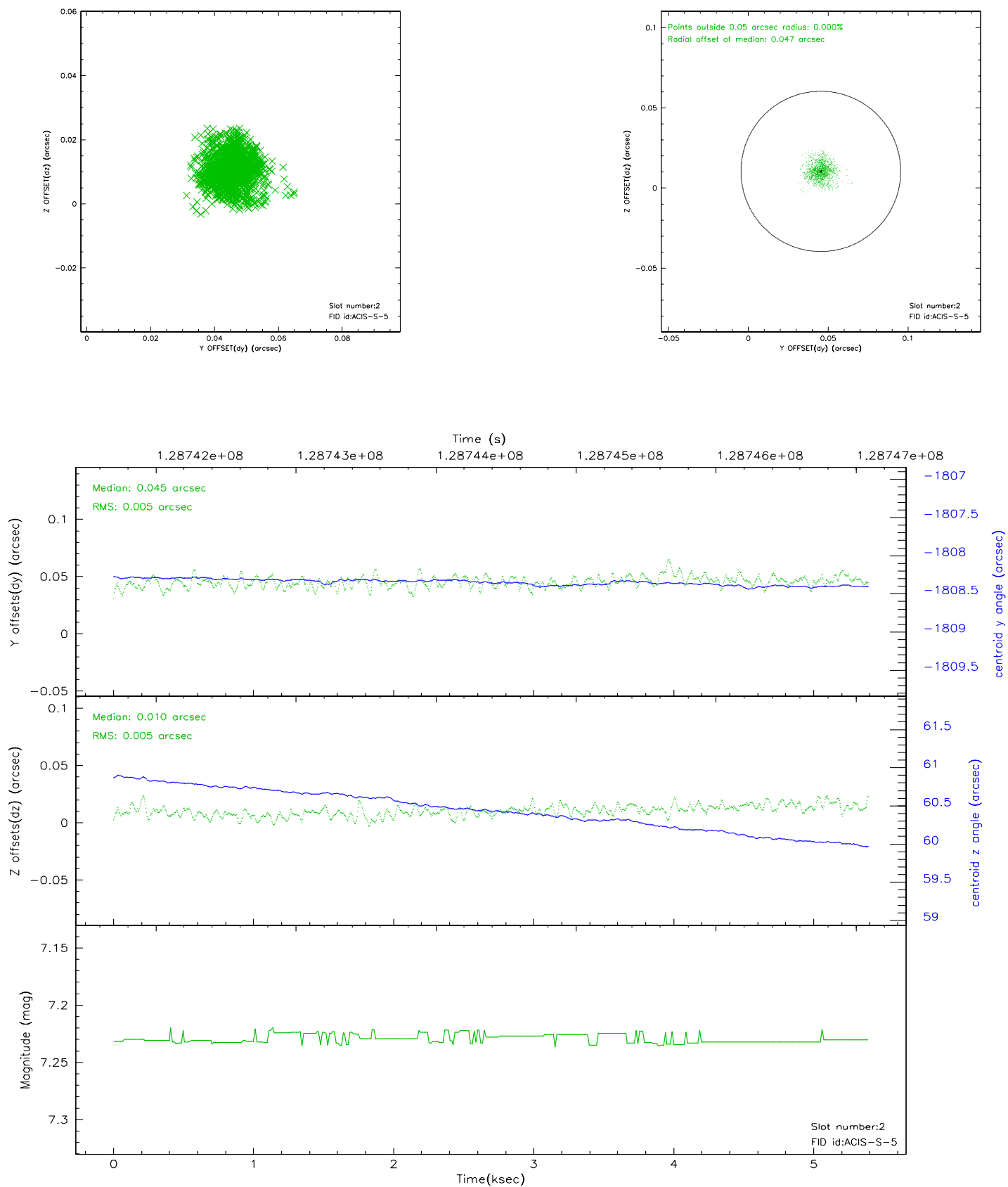
2.5.1 Slot 0



2.5.2 Slot 1

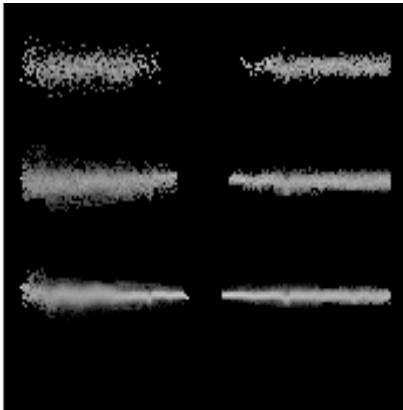


2.5.3 Slot 2

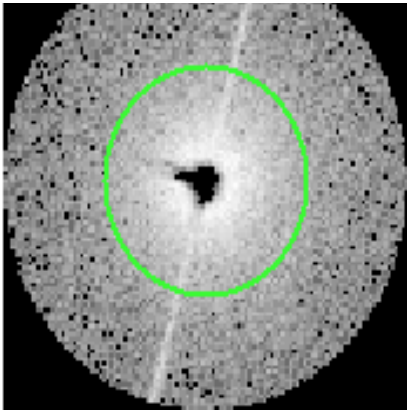


3 Gratings

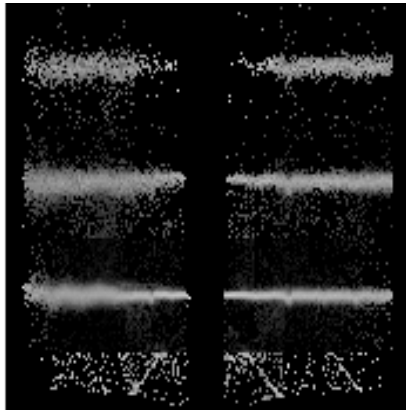
3.1 HEG Arm



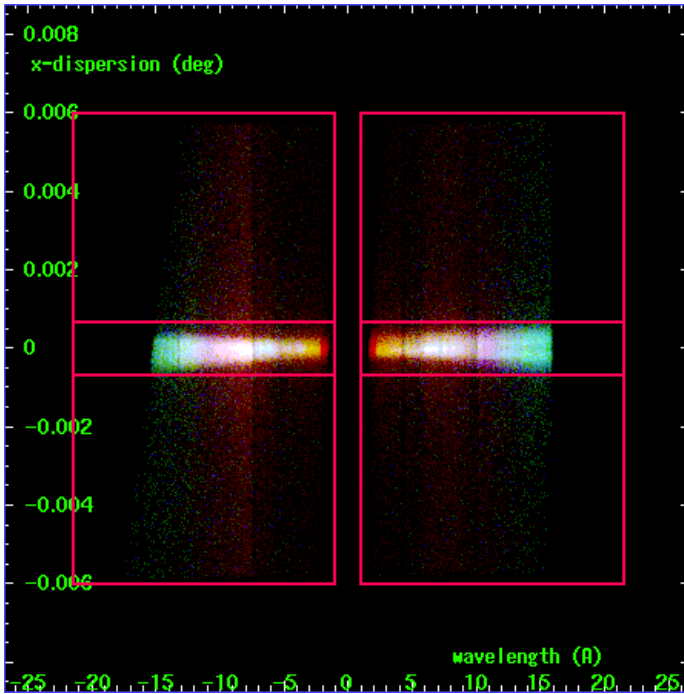
HEG Order Sort 123



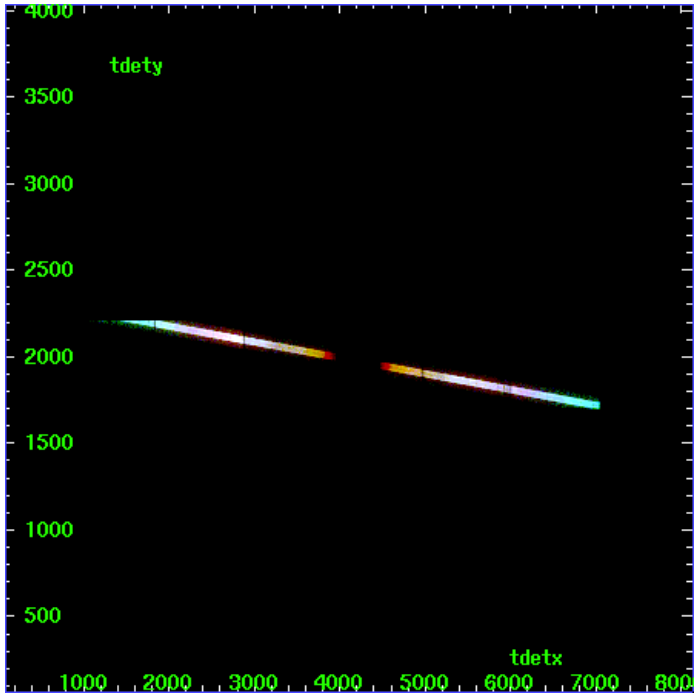
HEG Zero Order



HEG Order Sort ALL

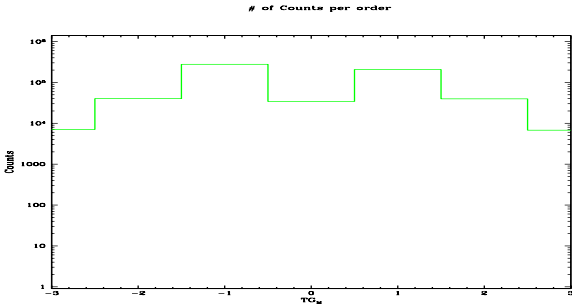


Spot Image HEG

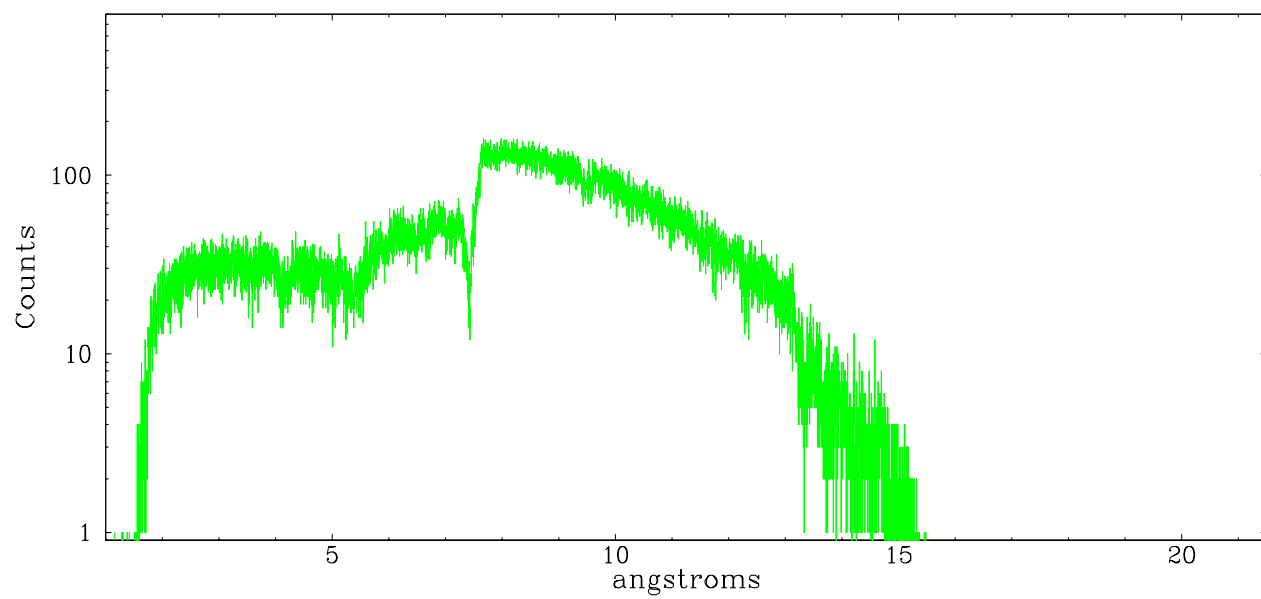


Full Detector HEG

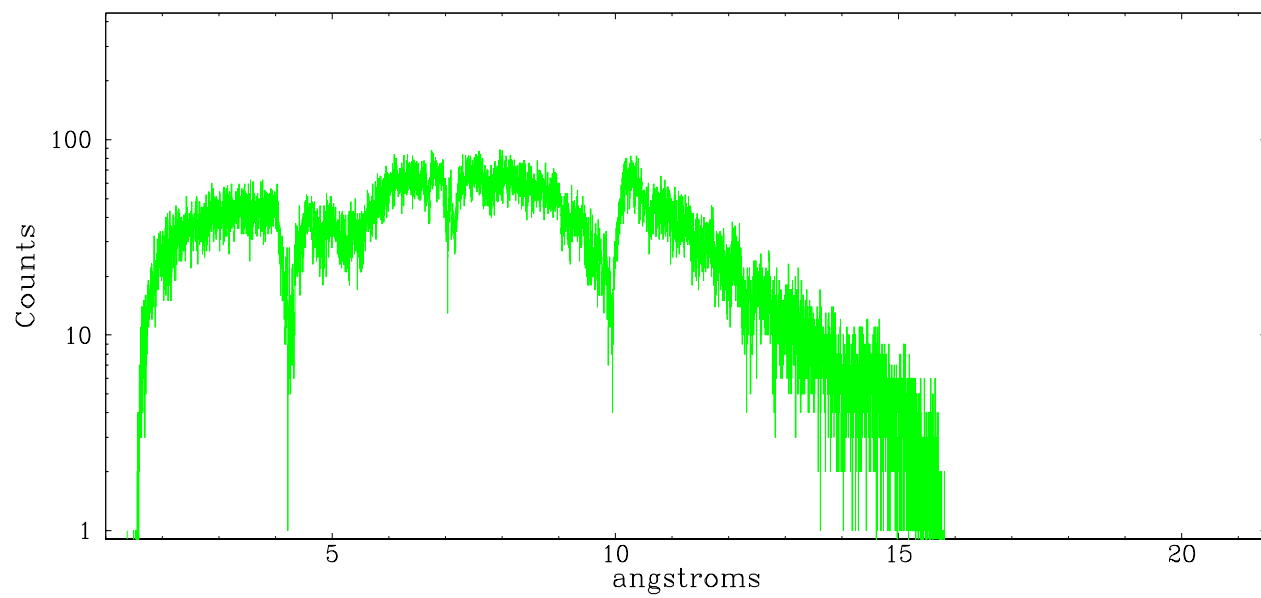
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	7080	40041	278067	34035	206405	39465	6781



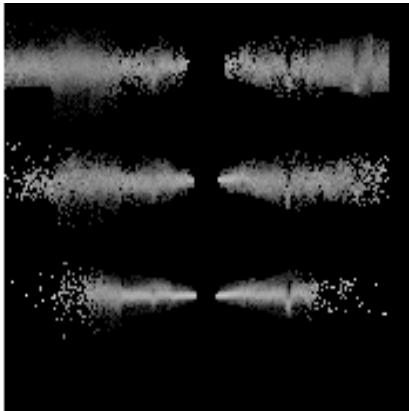
heg order -1



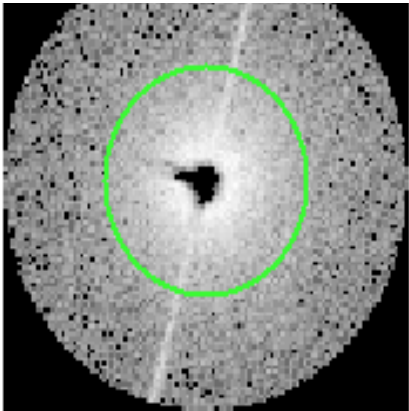
heg order +1



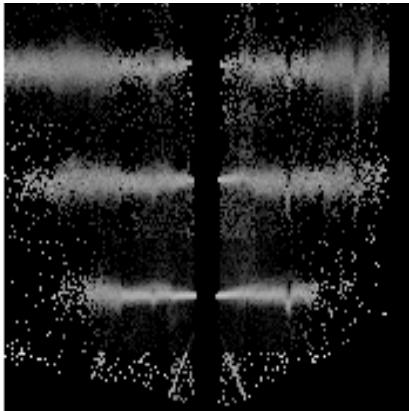
3.2 MEG Arm



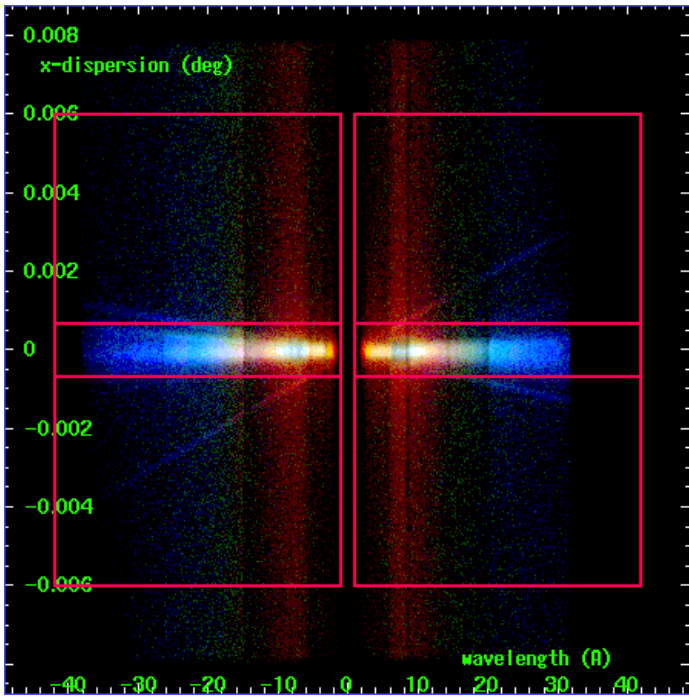
MEG Order Sort 123



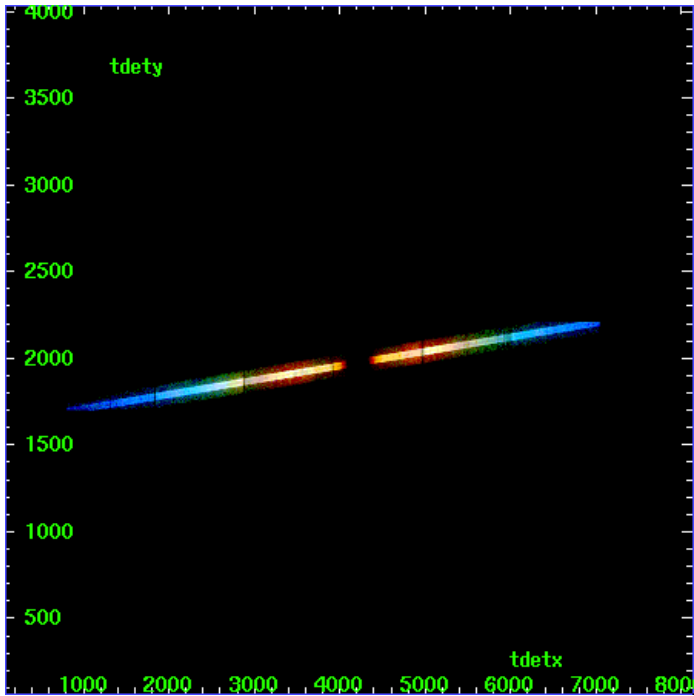
MEG Zero Order



MEG Order Sort ALL

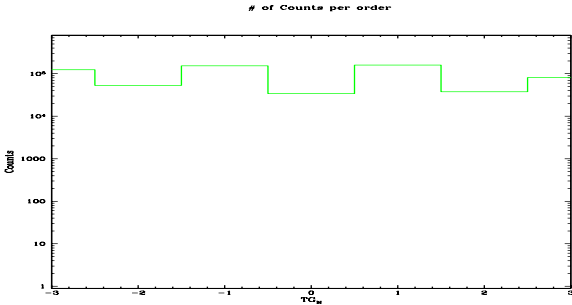


Spot Image MEG

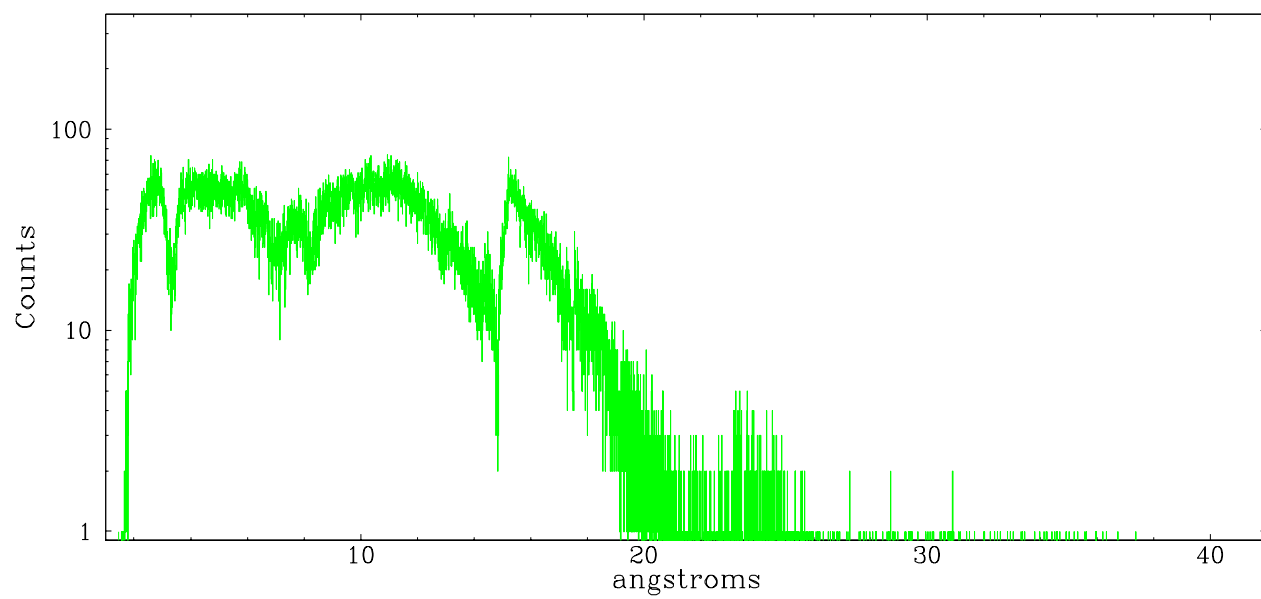


Full Detector MEG

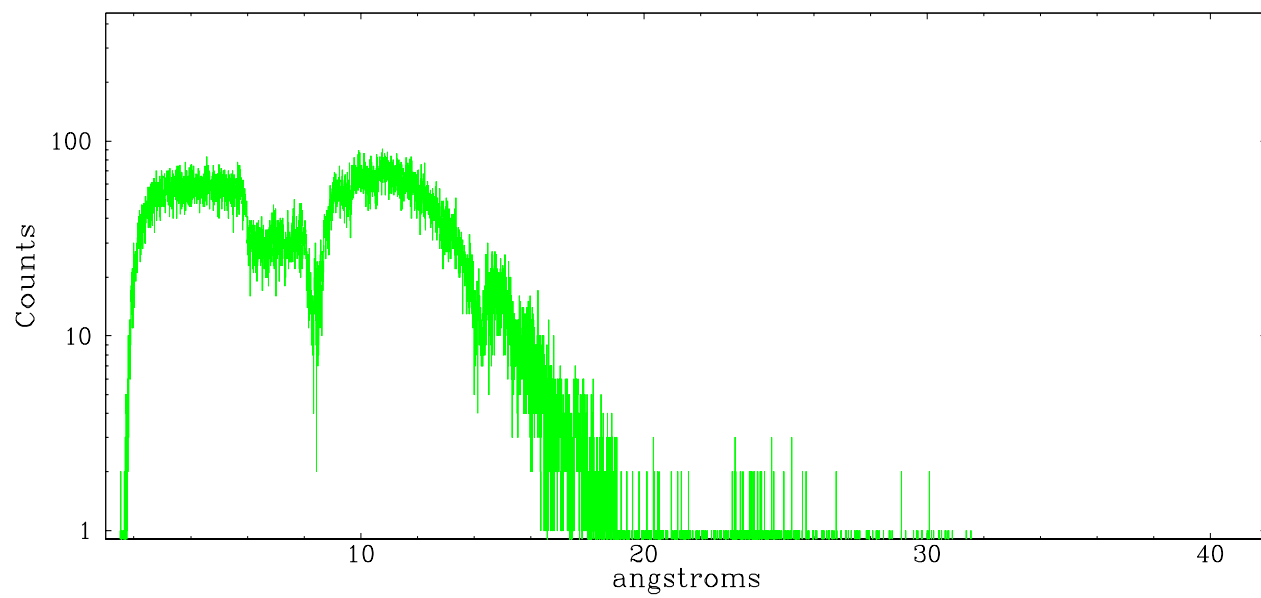
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	123695	53010	154009	34035	160425	37648	81629



meg order -1



meg order +1



A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2006.11.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	4.752

A.2 Comments

Charge time: used highest chip. Time varies with chip due to saturation, since the source is very bright.

Spectral extraction - The zero order manually determined centroid from streak-heg intersection gives $(x_0, y_0) = (4168.17, 4089.73)$. Since the zero order is saturated and there is a pileup hole in the image, `tgdetect` found some centroid about 10 pixels away. Data were processed with the manually determined position.

The spectrum is clearly visible in an image of bad events. This is likely due to pileup which causes grade migration into bad event grades.