

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 21083 - L2 Version 1
Chandra X-Ray Center

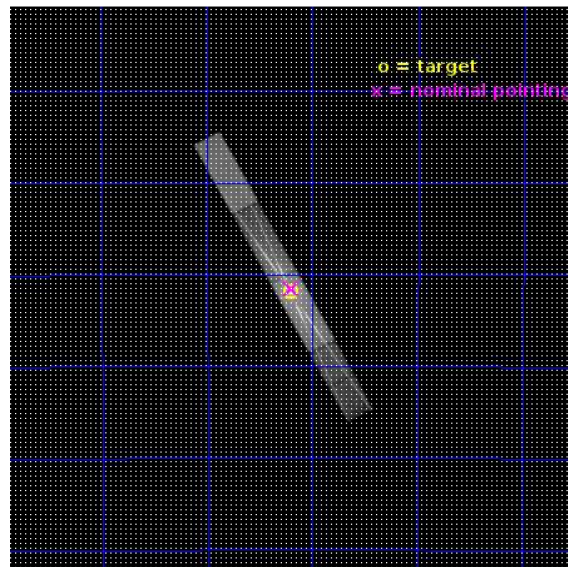
L2 Processing Date : Apr 28 2018

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1 Front

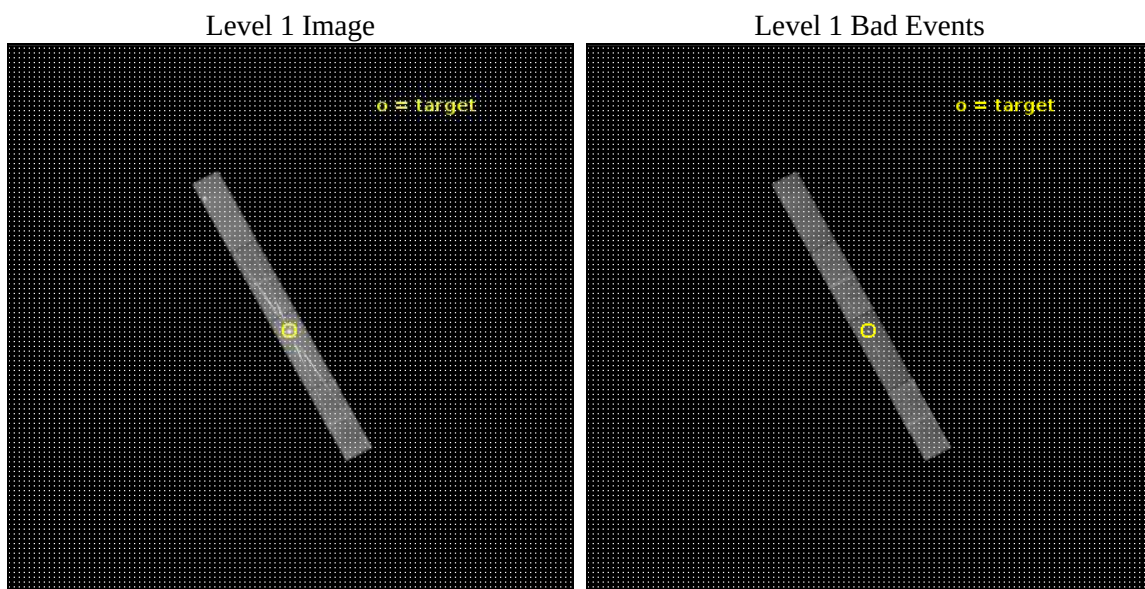
seq_num	402026	Sequence number
obs_id	21083	Observation id
title	Wind energetic and dust scattering halo in Swift J1658.2-4242	Prop
observer	Gabriele Ponti	Principal investigator
object	Swift J1658.2-4242	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	254.552917	Observer's specified target RA [deg]
dec_targ	-42.698917	Observer's specified target Dec [deg]
ra_nom	254.55018538428	Nominal RA [deg]
dec_nom	-42.692482885332	Nominal Dec [deg]
roll_nom	61.88455014526	Nominal Roll [deg]
revision	1	Processing version of data
ontime	30079.041506171	Sum of GTIs [s]
livetime	29084.356513413	Livetime [s]
ontime5	30079.000466228	Sum of GTIs [s]
ontime6	30078.959426165	Sum of GTIs [s]
ontime7	30079.041506171	Sum of GTIs [s]
ontime8	30078.918386221	Sum of GTIs [s]
l2events	419220	Number of level 2 events



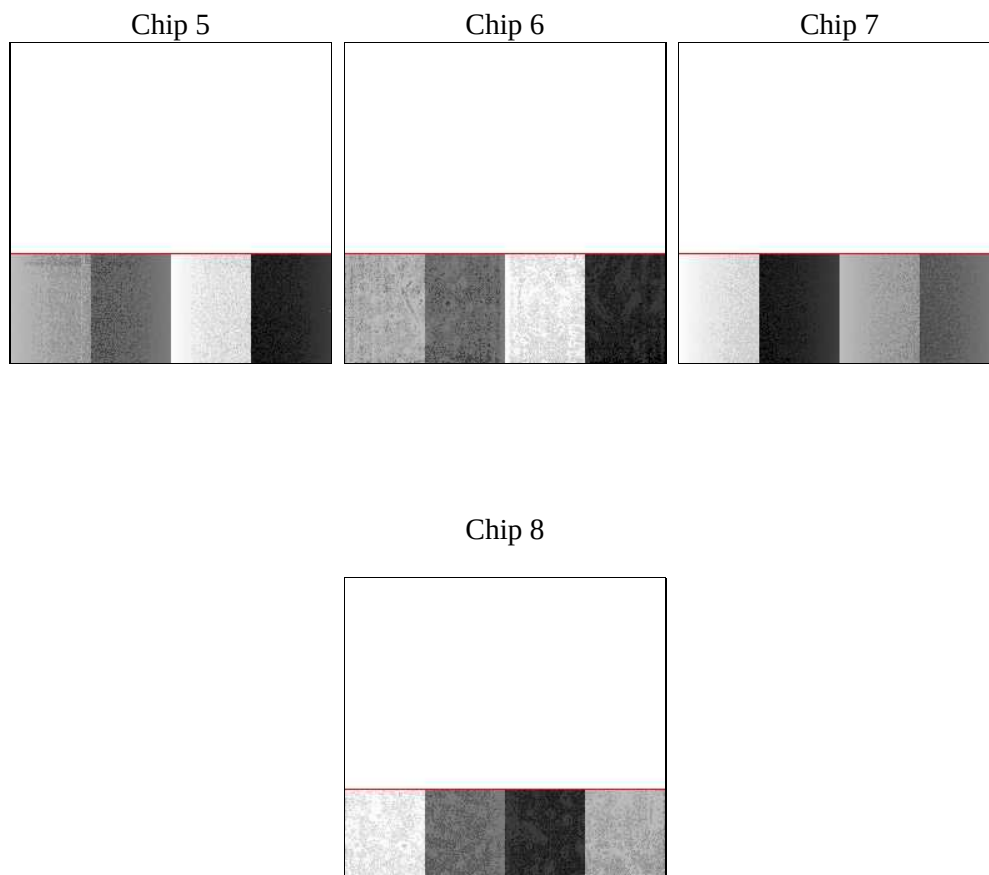
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	30079.041506171	Sum of GTIs [s]
caldsver	4.7.8	 	ontime5	30079.000466228	Sum of GTIs [s]
date	2018-04-28T14:21:41	Date and time of file creation	ontime6	30078.959426165	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	30079.041506171	Sum of GTIs [s]
			ontime8	30078.918386221	Sum of GTIs [s]
			l1events	745550	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4081.70, 4051.66)	src1a sky pixel position
			zo_pos_tgd	(4081.43, 4051.78)	src1a sky pixel position via radetect

2.1.4 Events

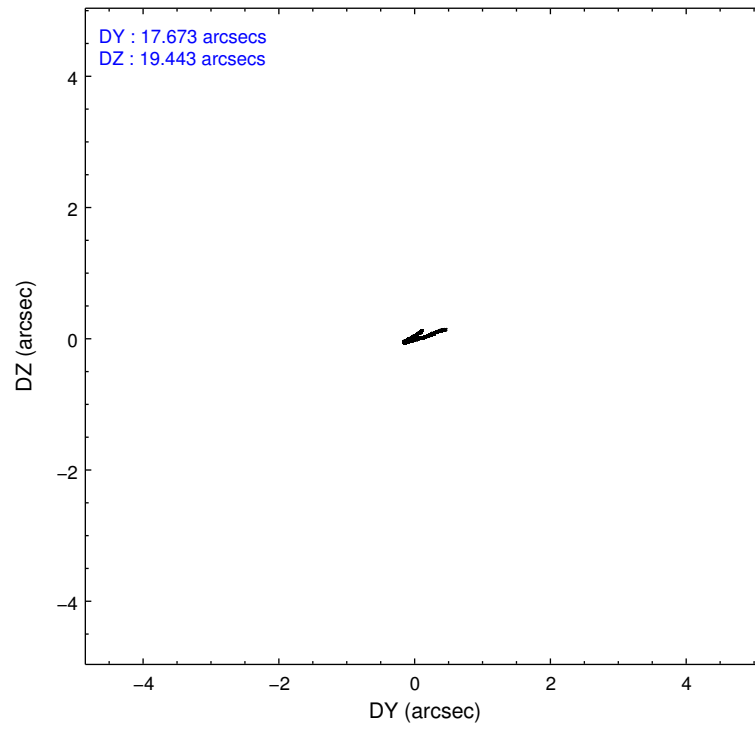
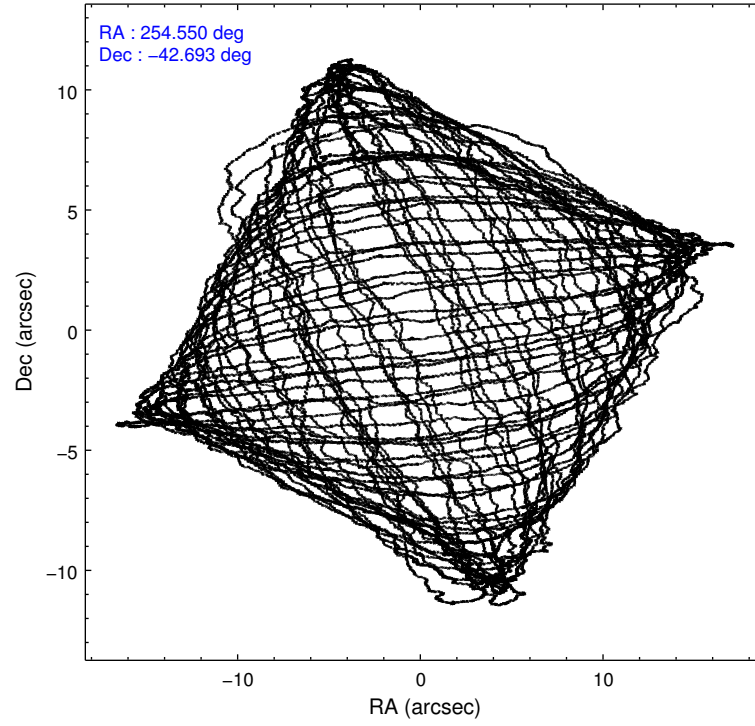
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	135560	182224	306077	121689
rejected events	64749	80434	62843	81513
rejected %	47%	44%	20%	66%

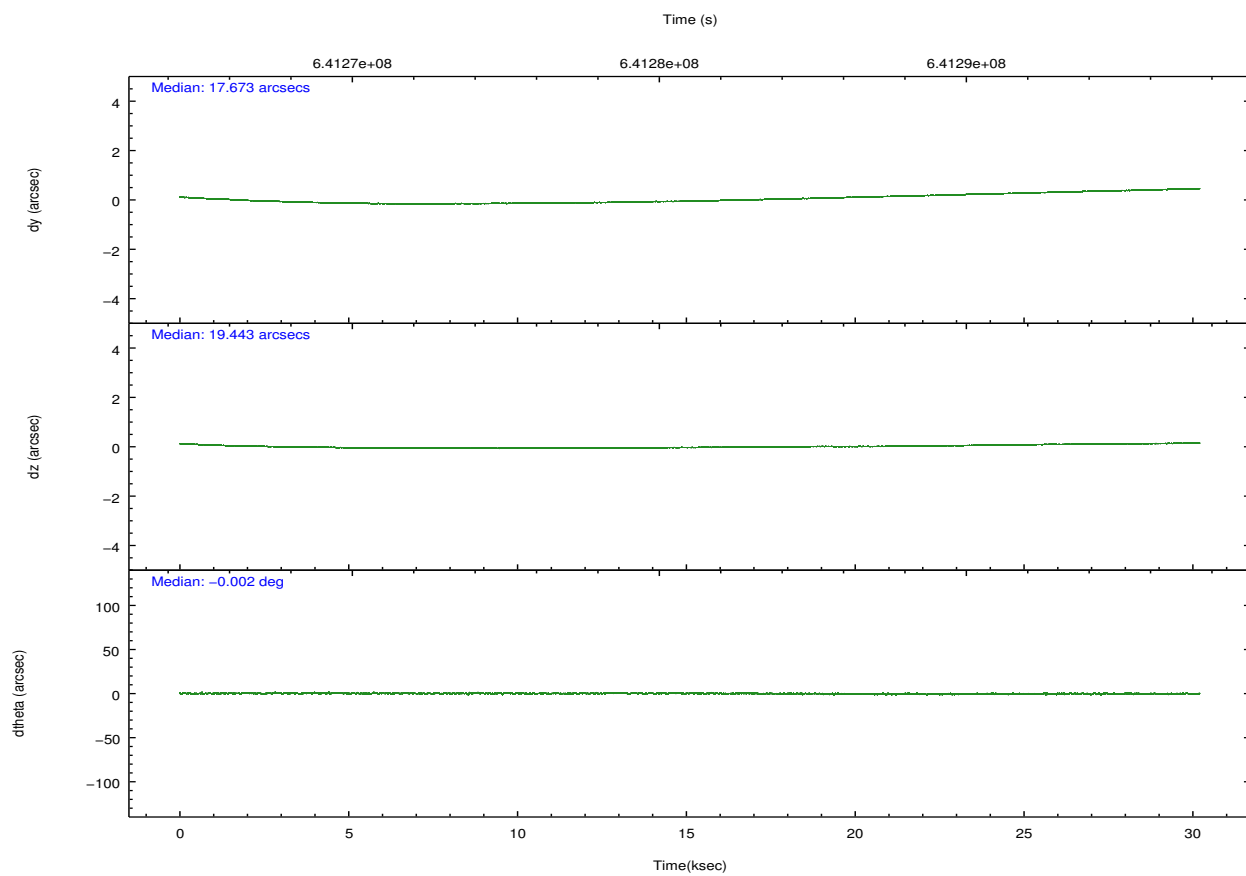
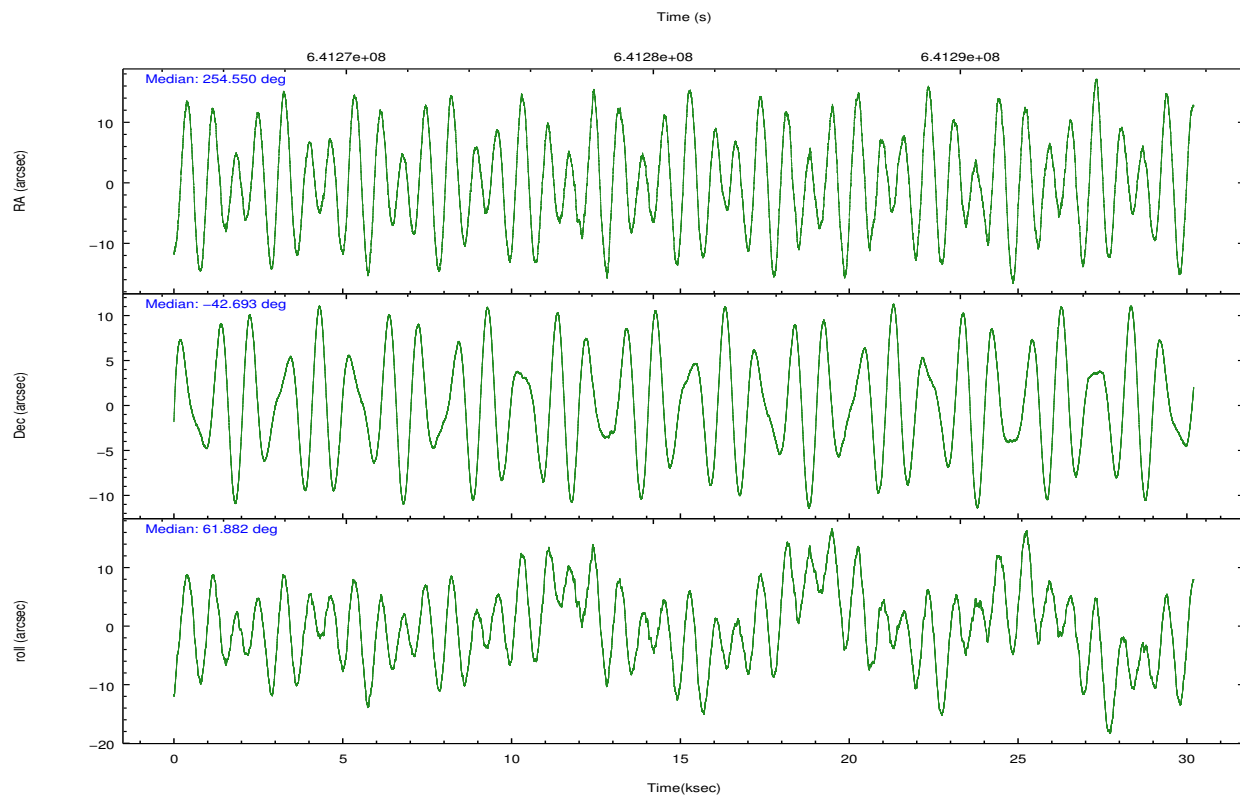
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	10033	65005	39523	16502
	7%	35%	12%	13%
grade 1 events	424	262	729	85
	0%	0%	0%	0%
grade 2 events	20126	16114	55429	8157
	14%	8%	18%	6%
grade 3 events	4000	5718	24732	3583
	2%	3%	8%	2%
grade 4 events	3524	5733	24333	3355
	2%	3%	7%	2%
grade 5 events	8820	3875	13268	5067
	6%	2%	4%	4%
grade 6 events	33130	9221	99228	8579
	24%	5%	32%	7%
grade 7 events	55503	76296	48835	76361
	40%	41%	15%	62%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	254.551909	254.5501853842807	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	-42.719904	-42.69248288533227	Subarray start row	1	1
[deg] Pointing Roll	61.729095	61.88455014526012	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	1.2
[mm] SIM translation stage pos	-182.132523	-182.1370004450064			
[mm] SIM translation stage offset	-8	-7.995522138001405			
[s] Observation start time (MET)	641266075.184000	641265245.4356			
Observation start date	2018-04-28T01:26:46	2018-04-28T01:14:05			
[s] Observation end time (MET)	641296075.184000	641296909.73748			
Observation end date	2018-04-28T09:46:46	2018-04-28T10:01:49			
Read mode	TIMED	TIMED			

2.3 Aspect



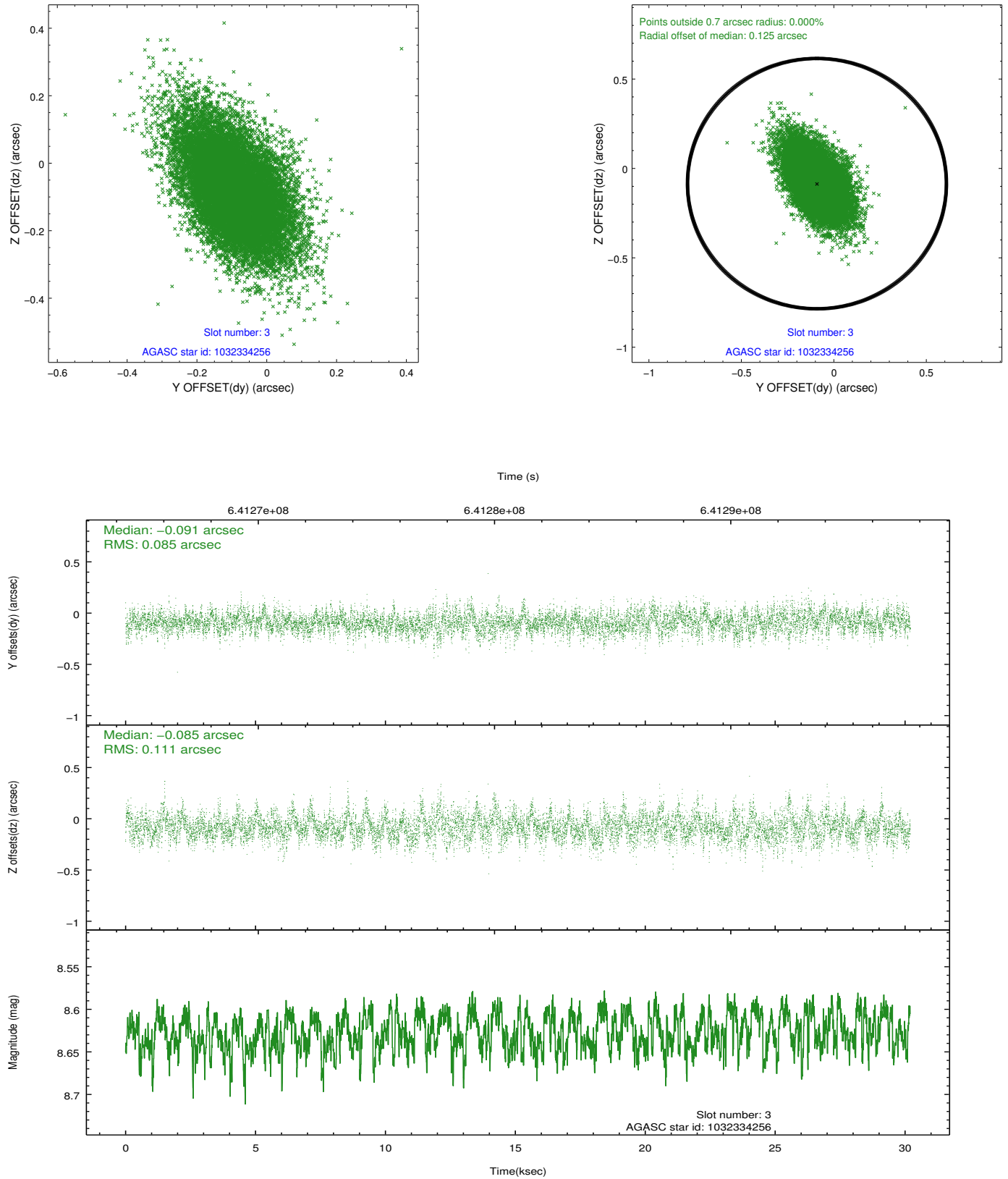


Slot Statistics

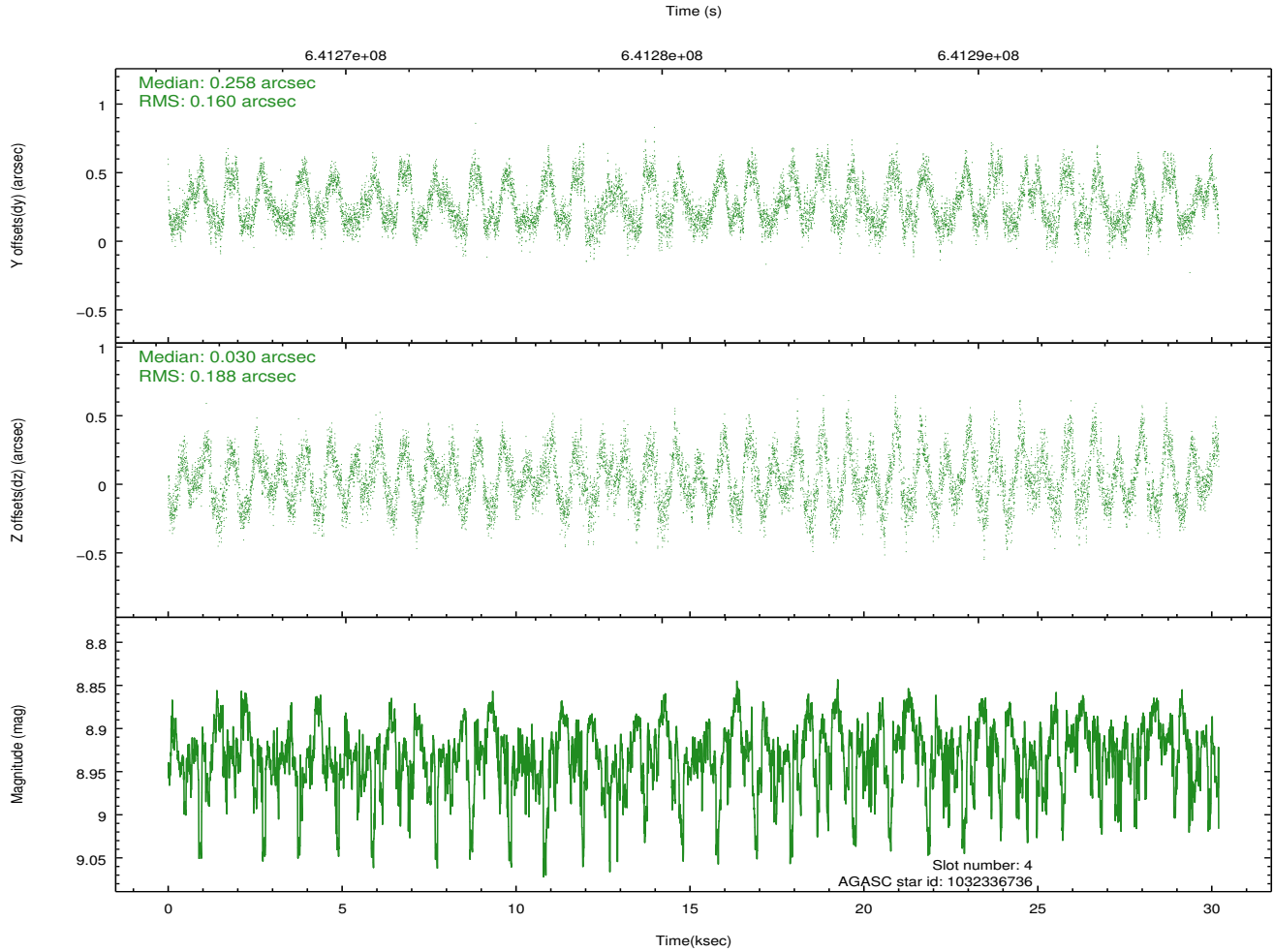
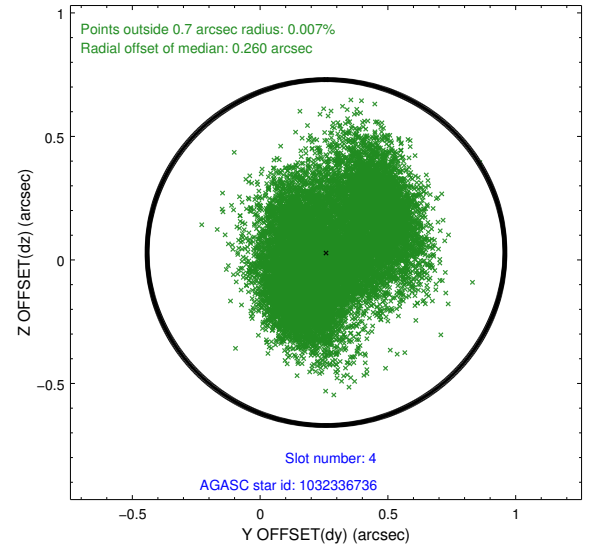
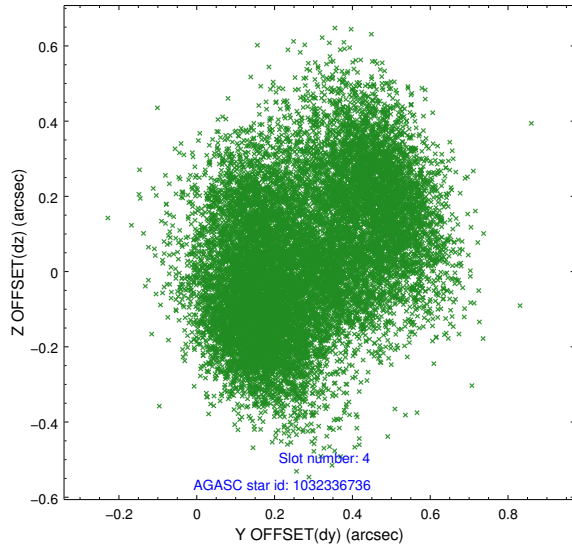
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	7.14	7367	-0.371	-0.250	0.008	0.014	0.000000	0.000000	-770.65	-1905.88
1	FID		ACIS-S-4	7.23	7367	0.398	0.218	0.008	0.013	0.000000	0.000000	2143.44	2.83
2	FID		ACIS-S-6	7.45	7366	-0.055	0.040	0.010	0.015	0.000000	0.000000	391.85	640.21
3	GUIDE	used	1032334256	8.63	14723	-0.091	-0.085	0.142	0.253	253.972883	-43.070868	-1838.50	740.21
4	GUIDE	used	1032336736	8.93	14721	0.258	0.030	0.271	0.400	254.770818	-42.975293	-536.88	-943.42
5	GUIDE	used	1032340976	7.77	14731	-0.717	-0.710	0.142	0.248	254.202894	-41.913283	2112.14	2197.53
6	GUIDE	used	1032848432	8.41	14721	0.308	0.399	0.142	0.240	254.987189	-43.220778	-1049.08	-1860.51
7	GUIDE	used	1032861000	8.69	14721	0.227	0.354	0.184	0.289	254.244013	-43.232603	-2009.34	-163.38

2.4 Star Slots

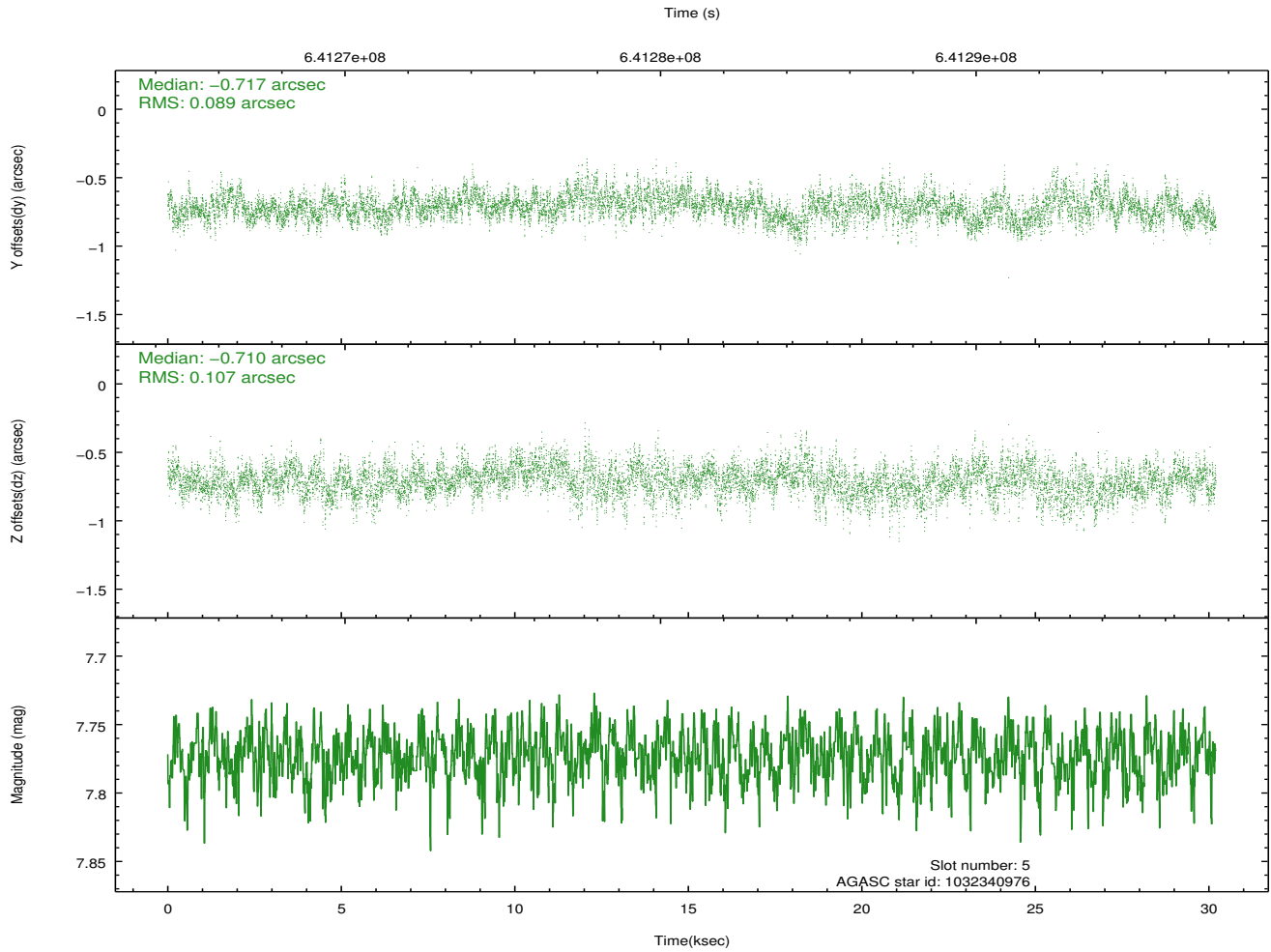
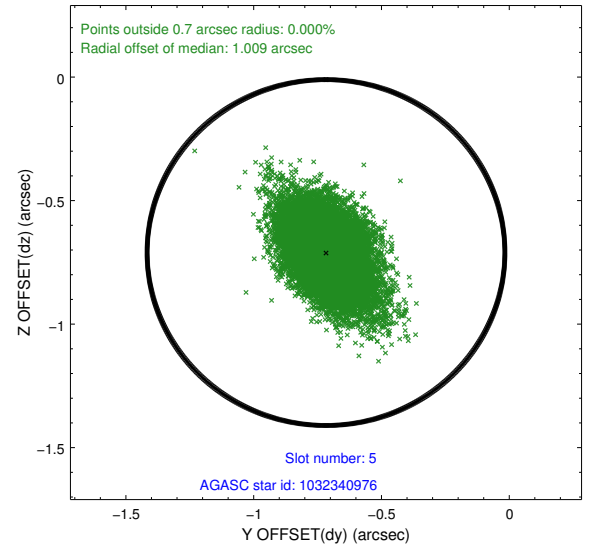
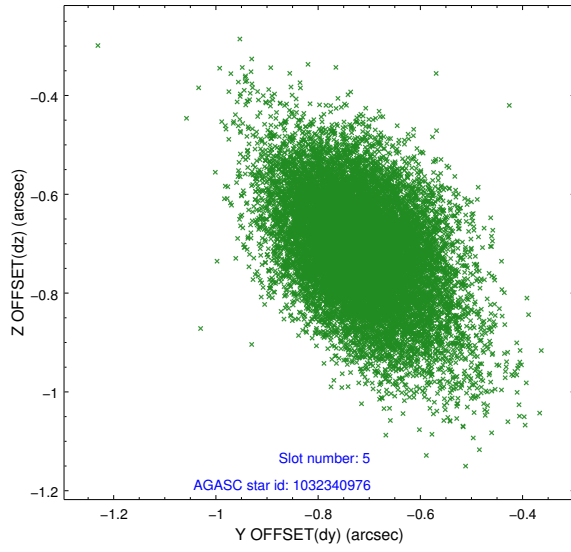
2.4.1 Slot 3



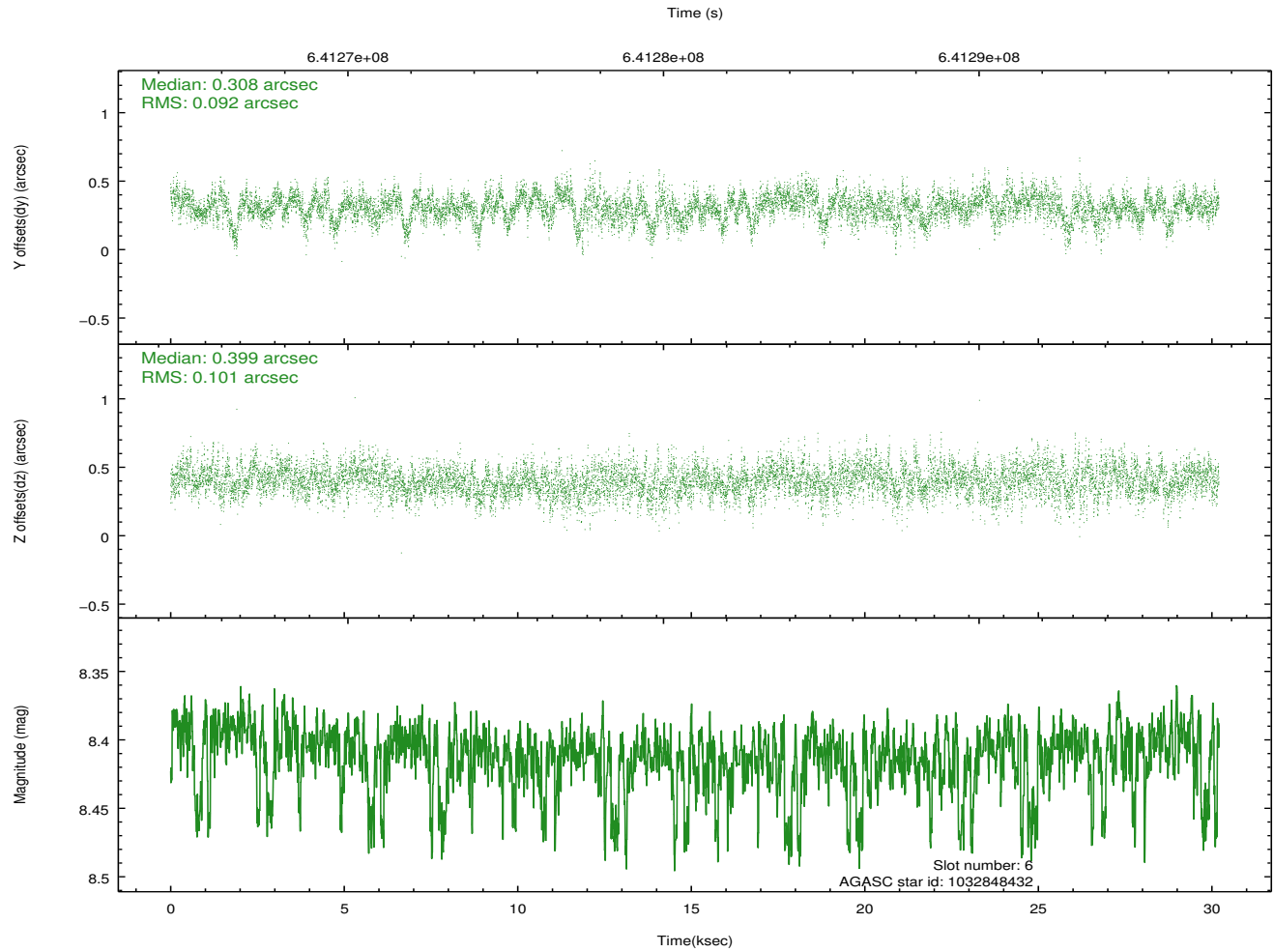
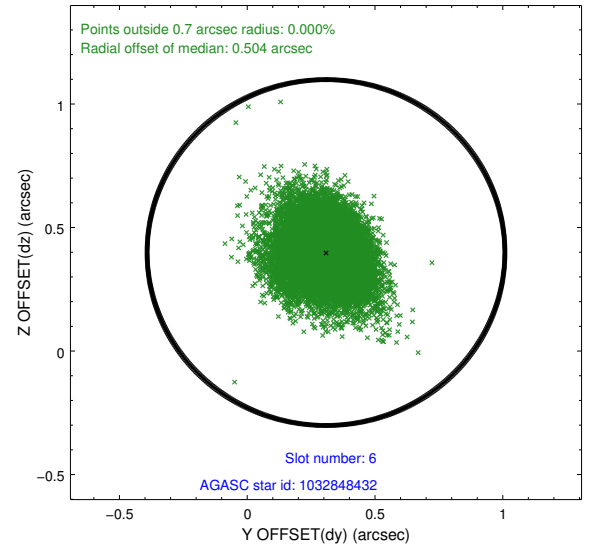
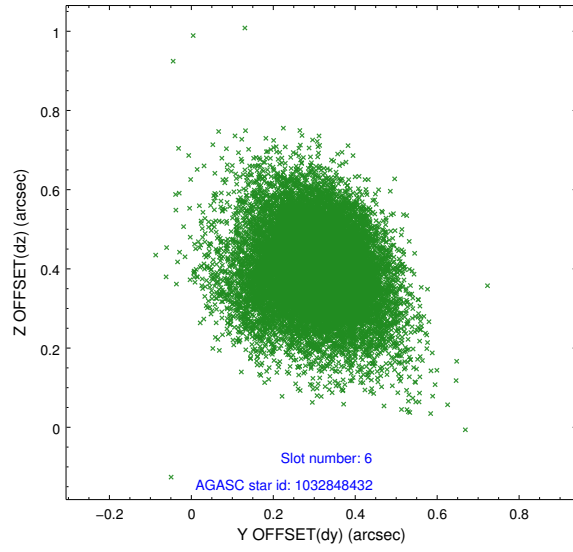
2.4.2 Slot 4



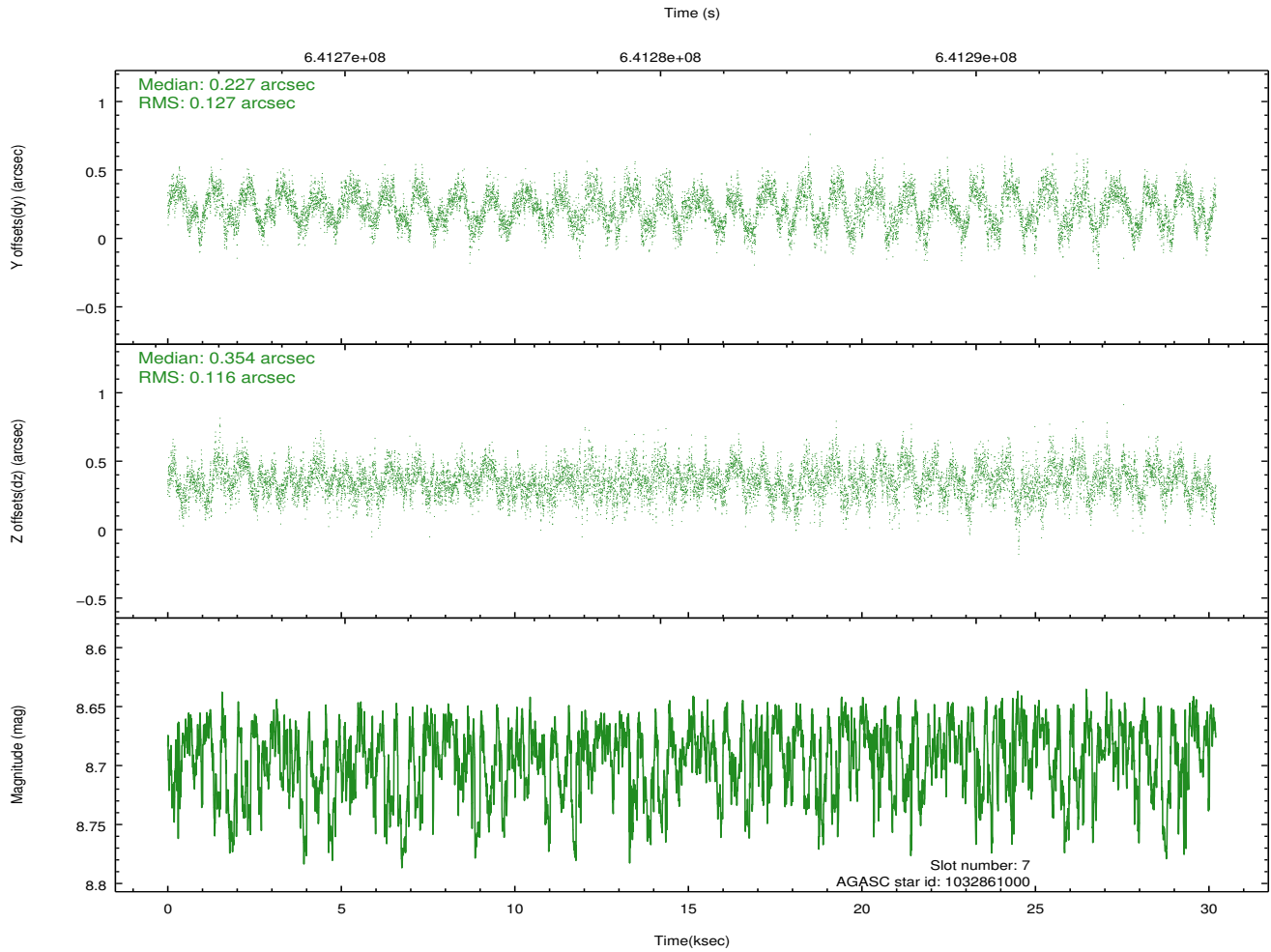
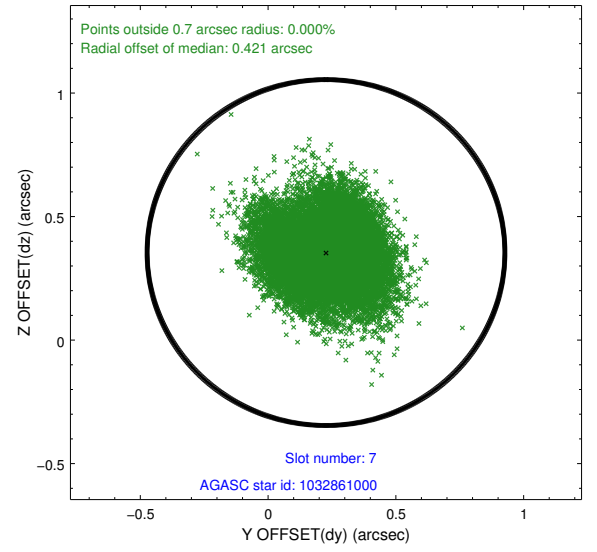
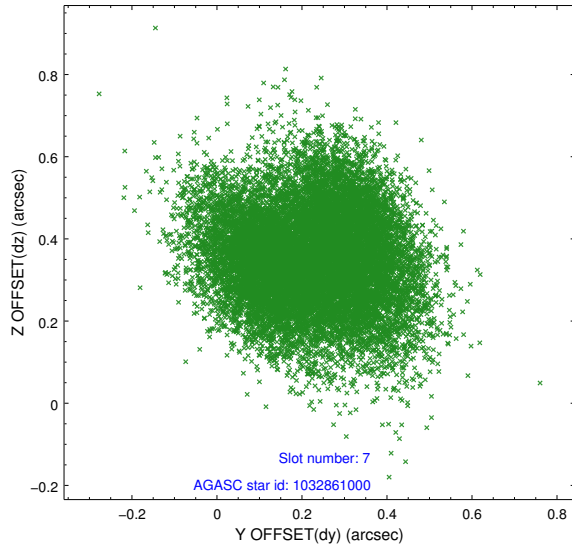
2.4.3 Slot 5



2.4.4 Slot 6

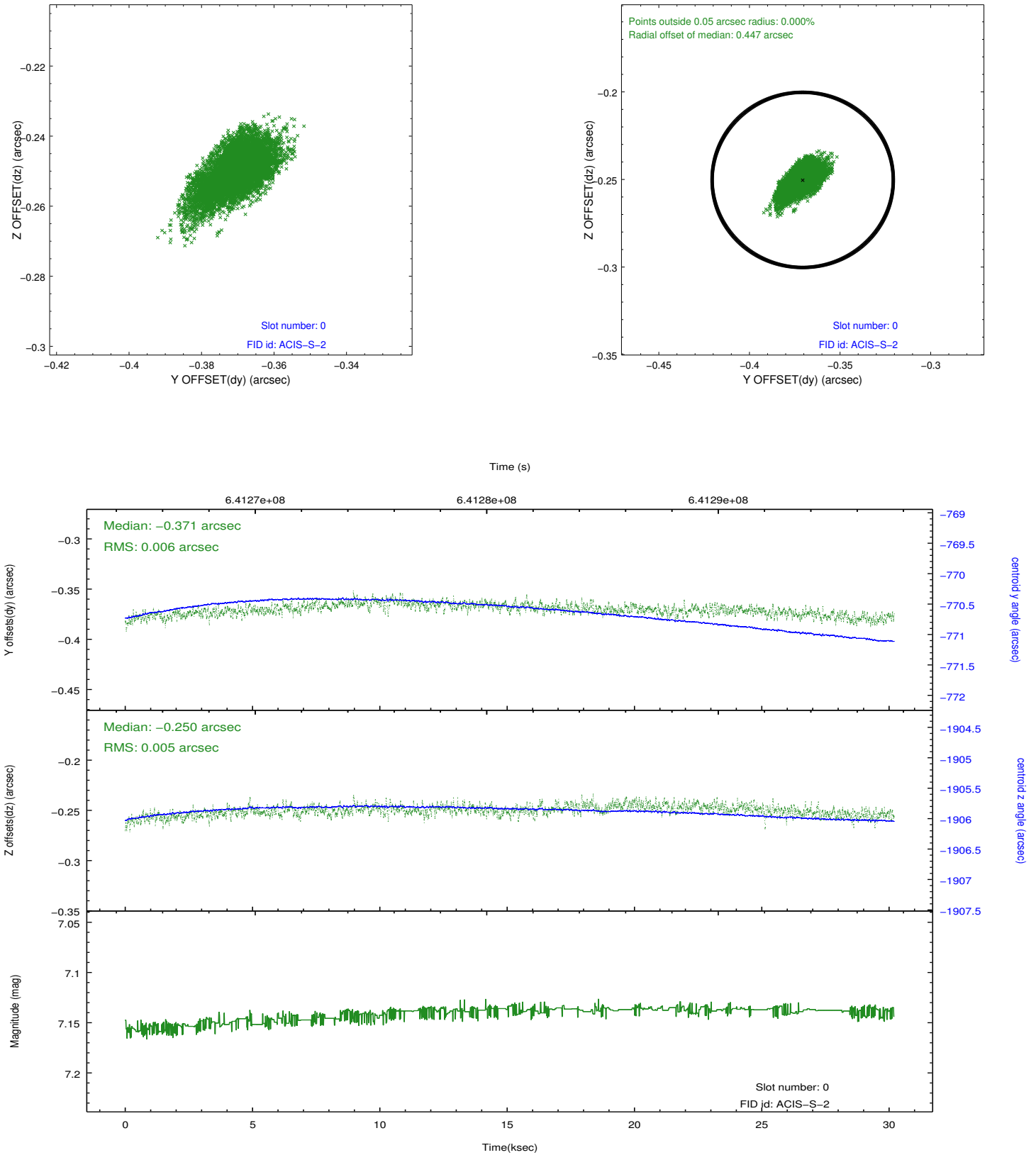


2.4.5 Slot 7

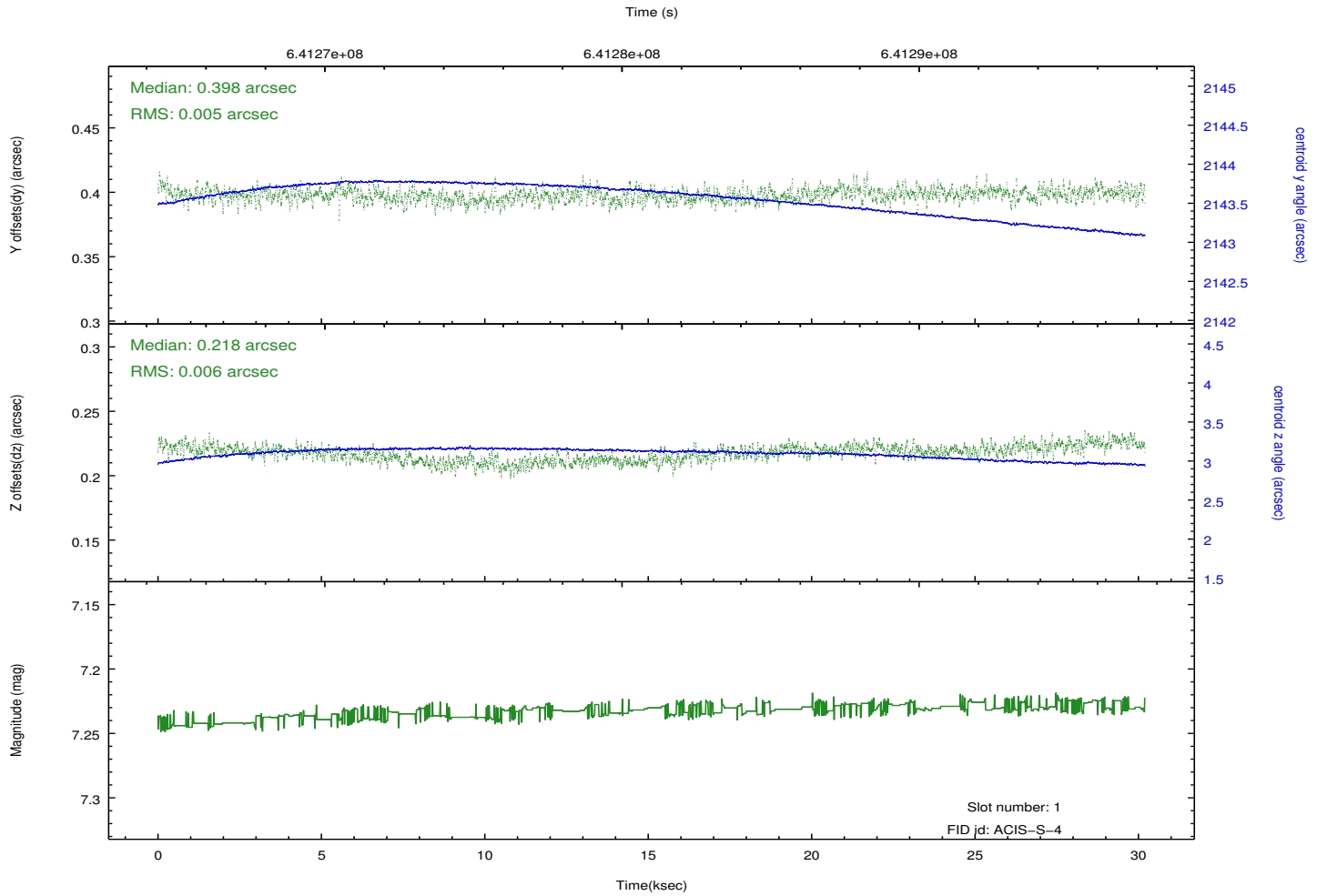
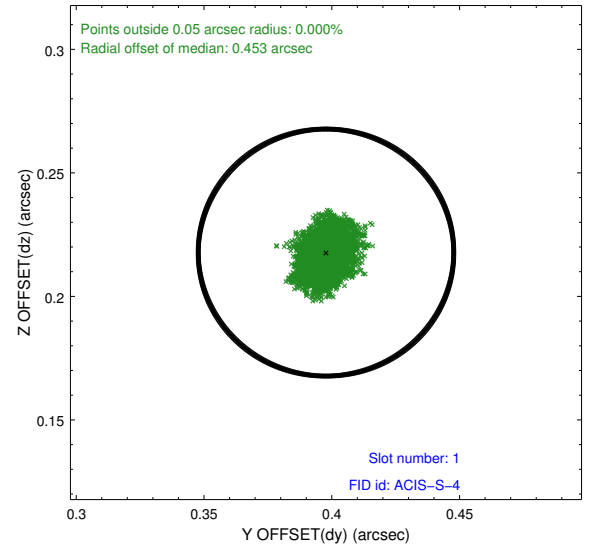
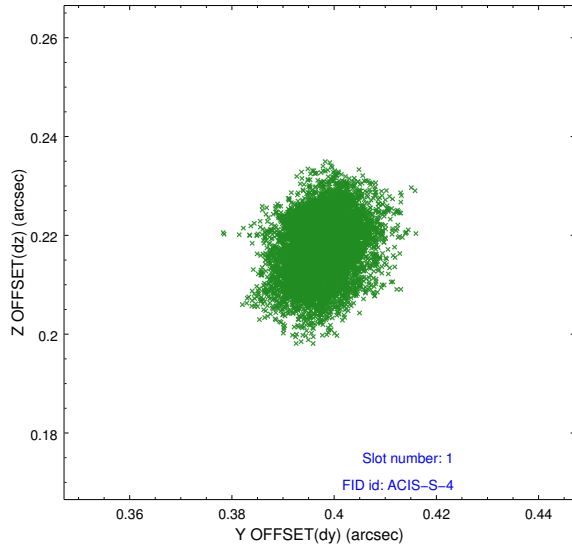


2.5 FID Slots

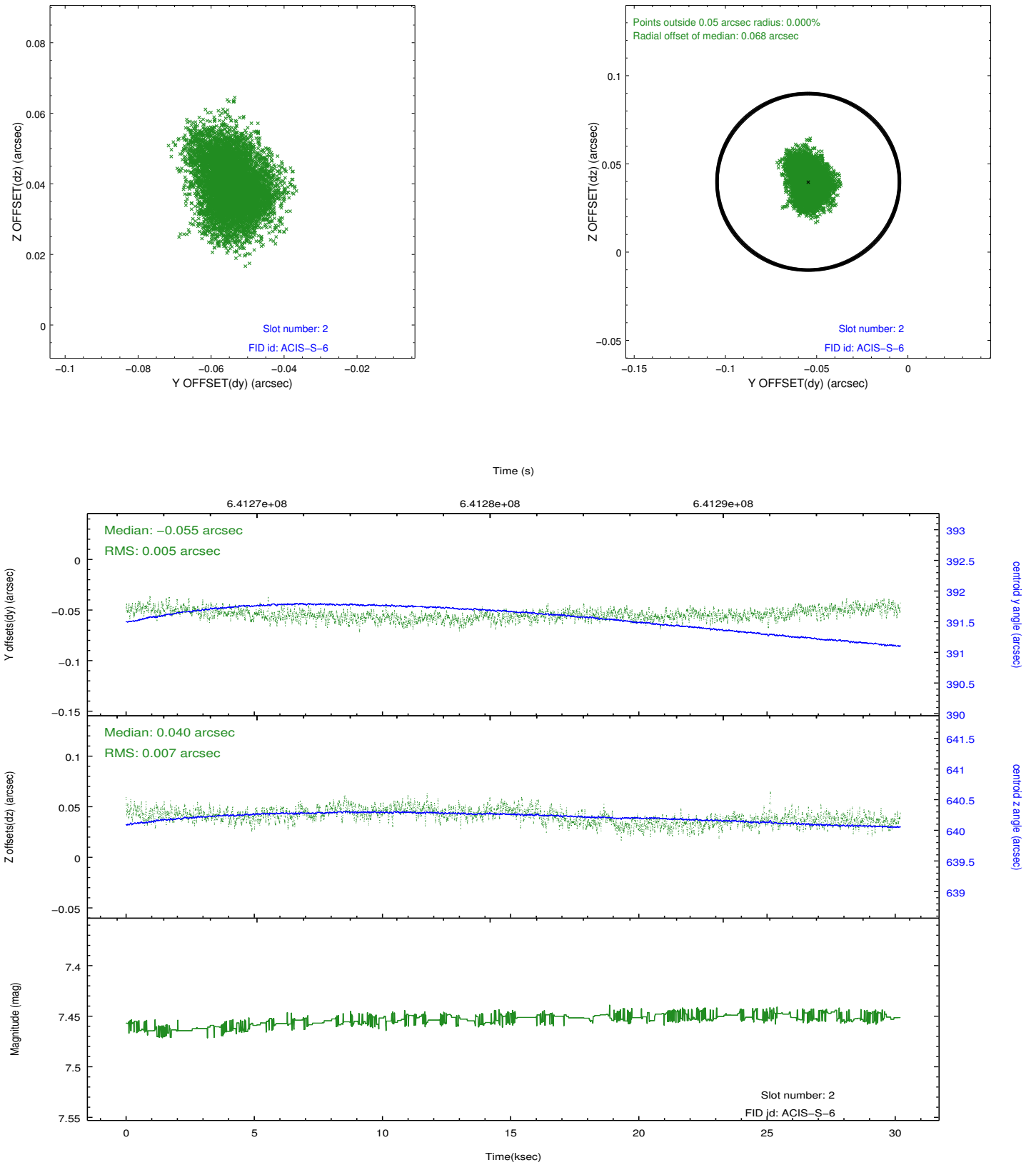
2.5.1 Slot 0



2.5.2 Slot 1

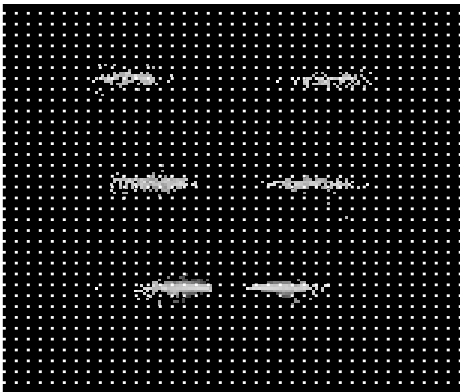


2.5.3 Slot 2

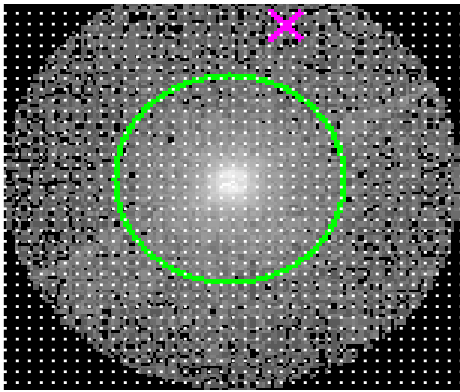


3 Gratings

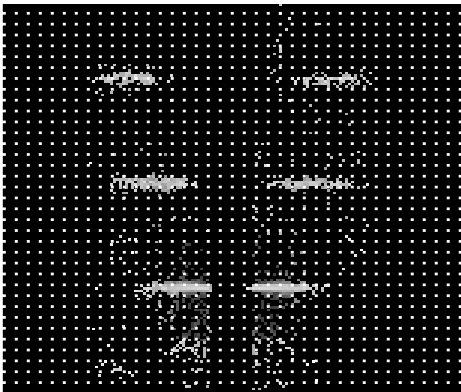
3.1 HEG Arm



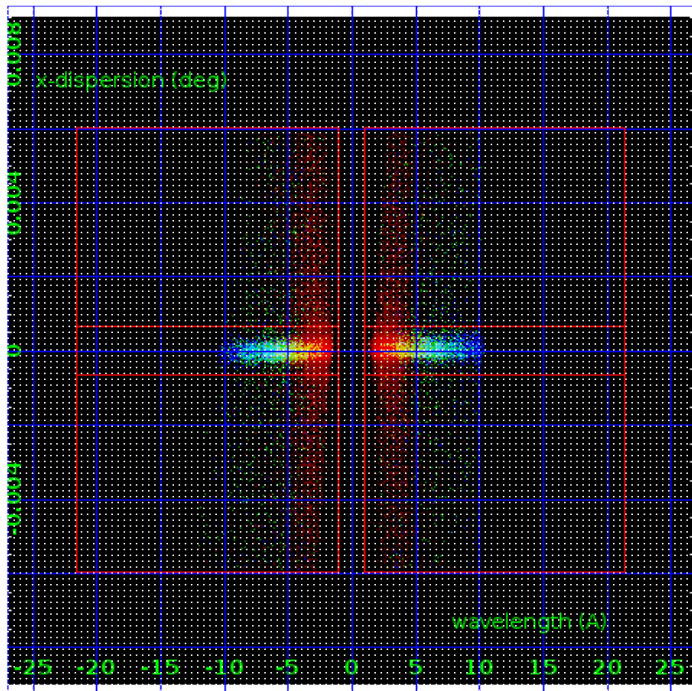
HEG Order Sort 123



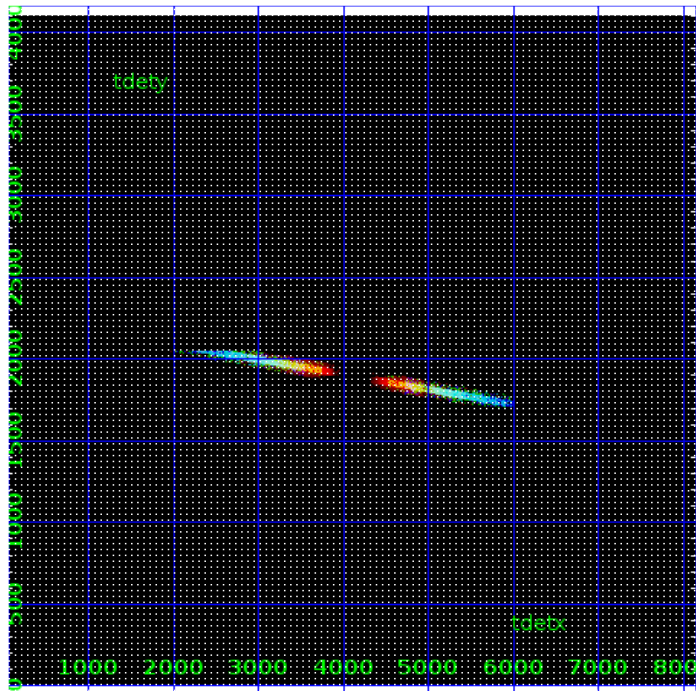
HEG Zero Order



HEG Order Sort ALL

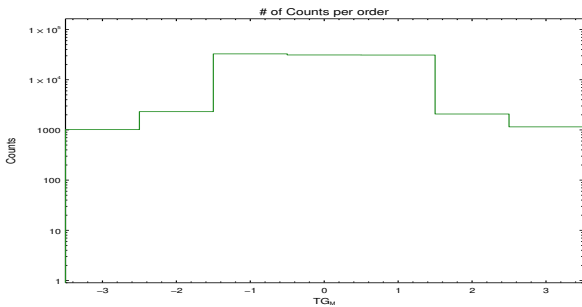


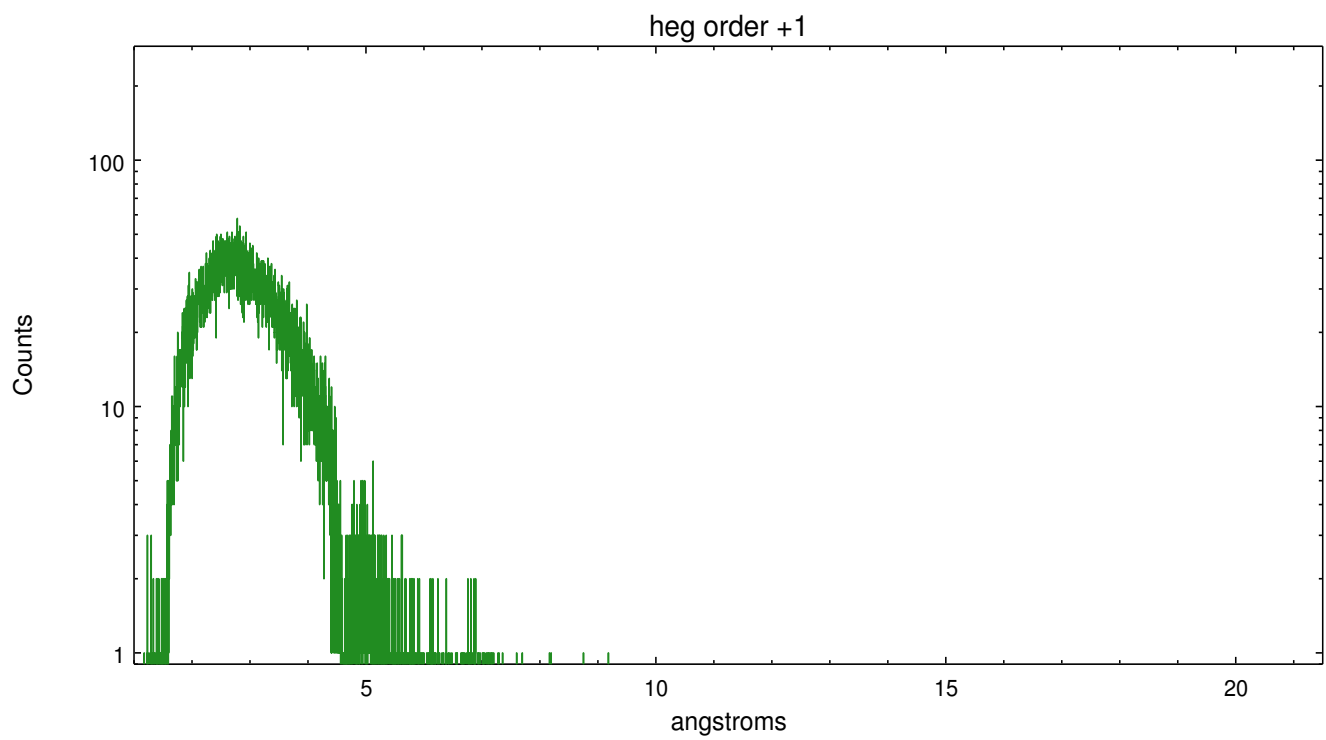
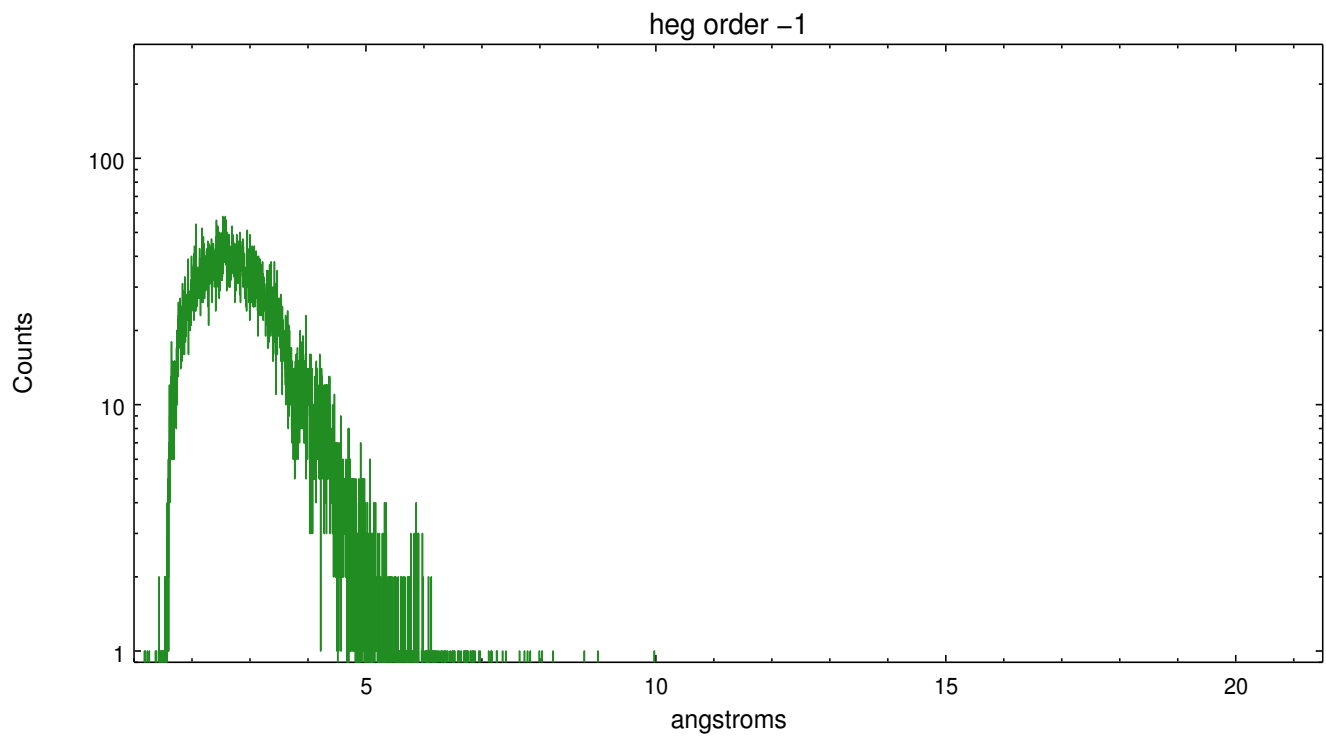
Spot Image HEG



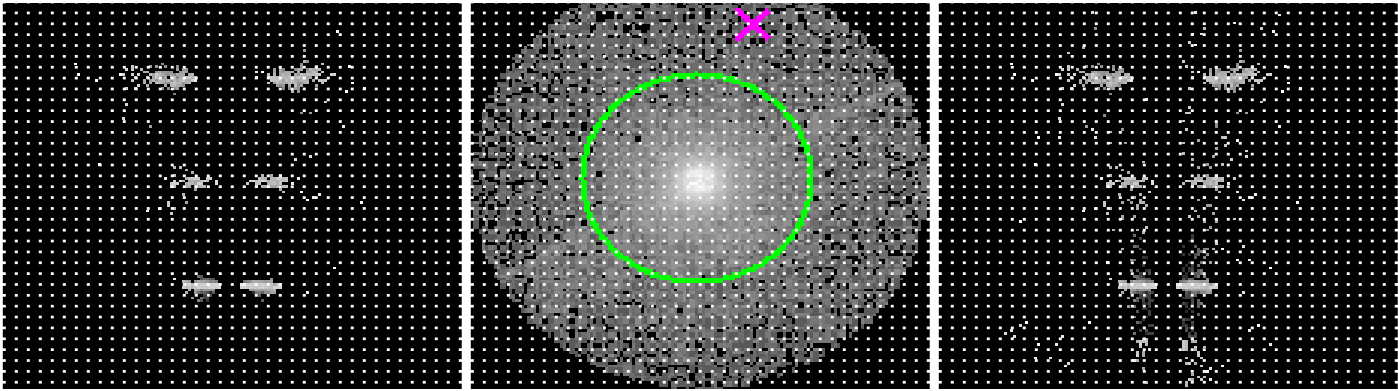
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1015	2314	32766	31176	31033	2076	1151





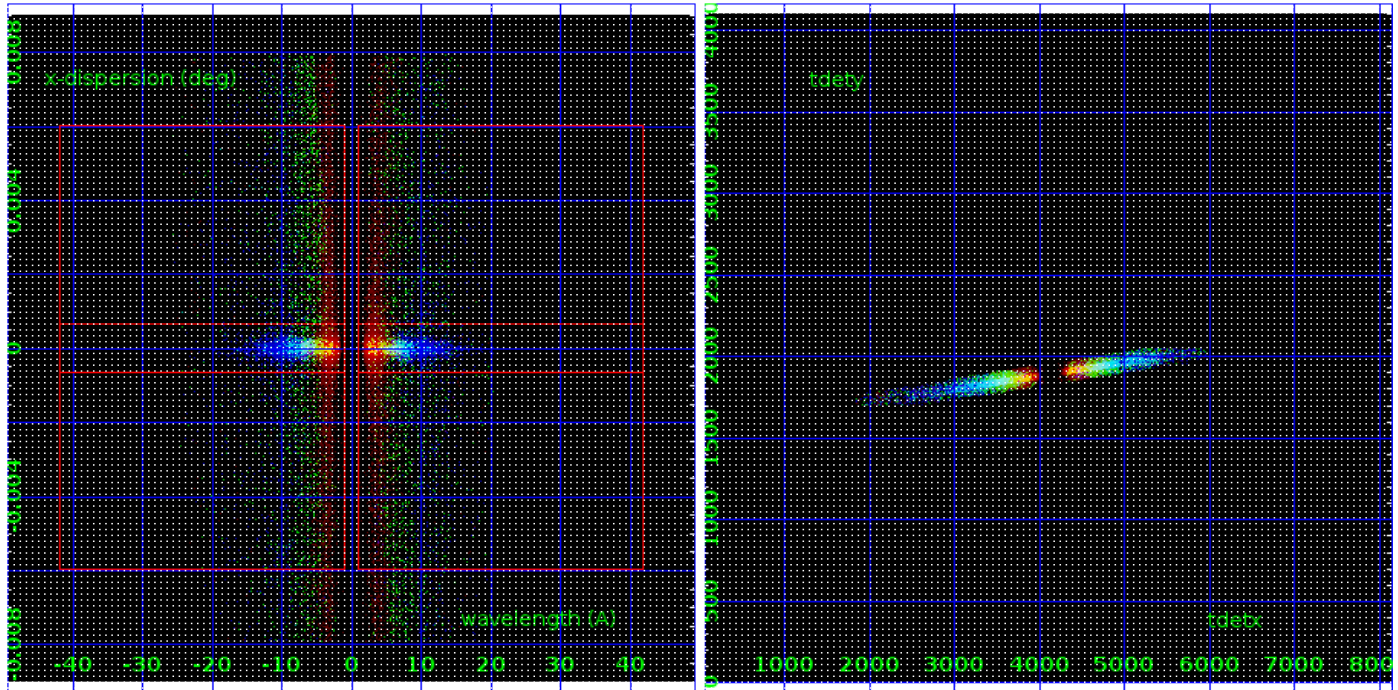
3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

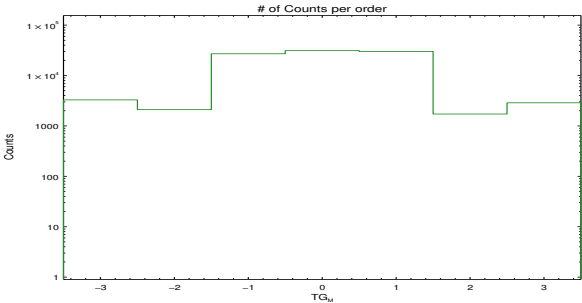
MEG Order Sort ALL

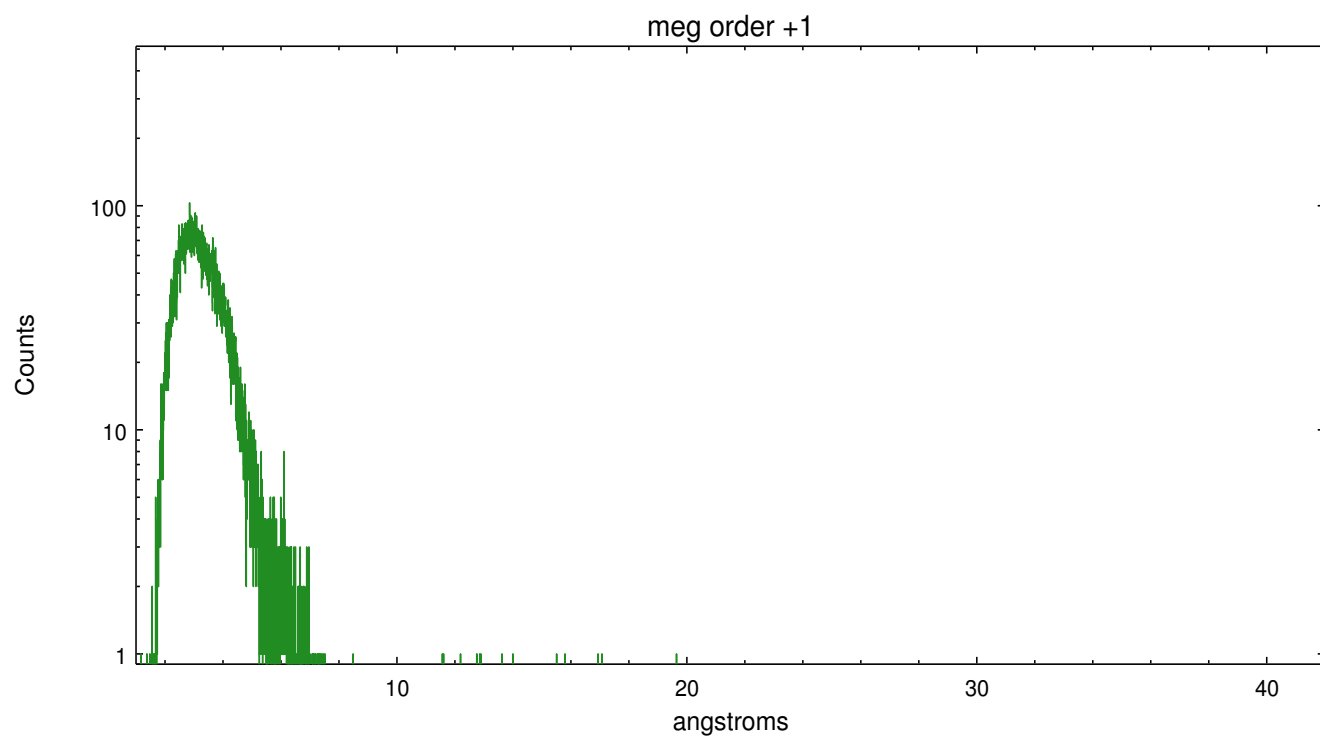
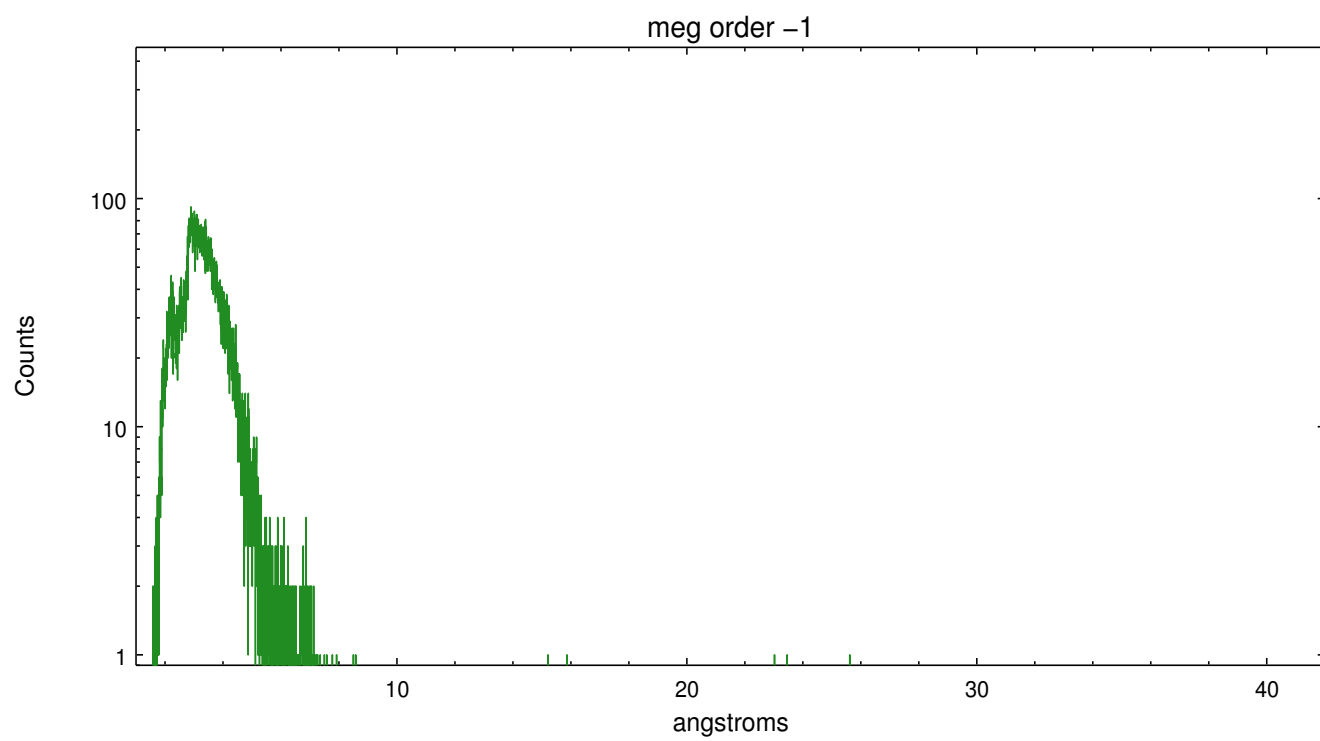


Spot Image MEG

Full Detector MEG

	order	order	order	order	order	order	order
	-3	-2	-1	0	1	2	3
Events	3287	2105	27056	31176	30038	1723	2879





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2018.04.30
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.079041506171

A.2 Comments

The focal plane temperature during the first approximately 8 ksec of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
- 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
- 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
- 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
- 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.

In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.

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Zeroth order is extended. The zeroth order sky position was determined using a software tool developed by CXO called findzero, which is available in CIAO as part of the tgddetect2 tool. The tool calculates the point of intersection of the readout streak on the ACIS CCD and the meg

dispersed spectral arm, rather than using a centroid position of the source. The findzero results are more accurate than source centroid in this case.