V&V Reference Report
L2 ASCDS Version : 10.2.4

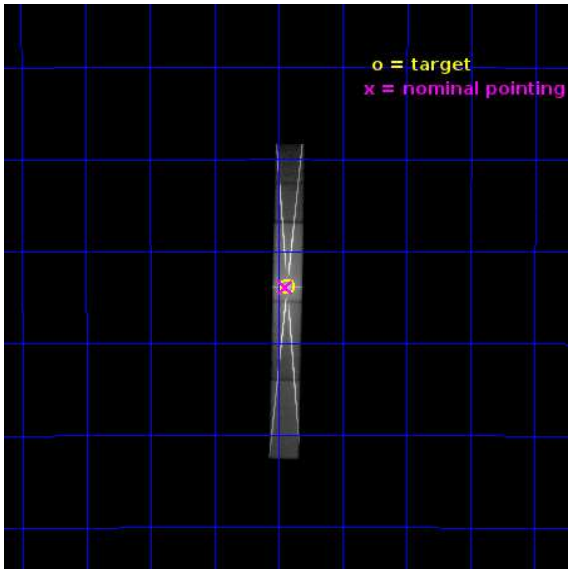
Observation 16492 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Aug 17 2014

Contents

1 Front

seq_num	901123	Sequence number
obs_id	16492	Observation id
title	Detect Broad High Z Lines in GX 3+1	Proposal title
observer	Prof. Claude Canizares	Principal investigator
object	GX 3+1	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	266.983333	Observer's specified target RA [deg]
dec_targ	-26.5635	Observer's specified target Dec [deg]
ra_nom	266.98626714018	Nominal RA [deg]
dec_nom	-26.56515582935	Nominal Dec [deg]
roll_nom	271.05147010267	Nominal Roll [deg]
revision	1	Processing version of data
ontime	45081.37722379	Sum of GTIs [s]
livetime	43590.579408035	Livetime [s]
ontime5	45081.336183786	Sum of GTIs [s]
ontime6	45081.295143783	Sum of GTIs [s]
ontime7	45081.37722379	Sum of GTIs [s]
ontime8	45081.25410378	Sum of GTIs [s]
l2events	4374759	Number of level 2 events

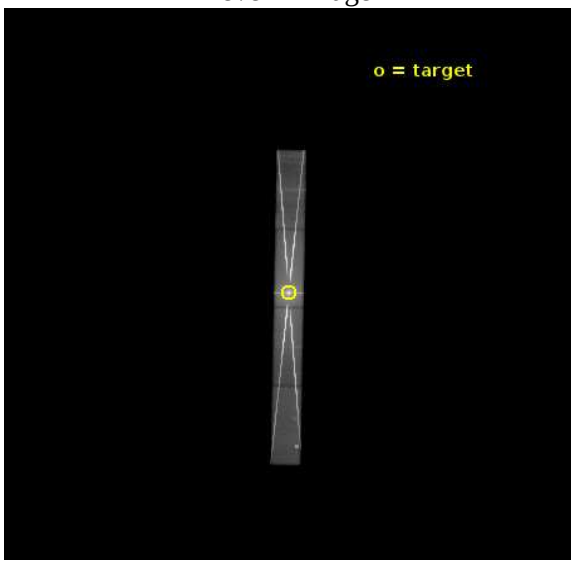


2 OBI

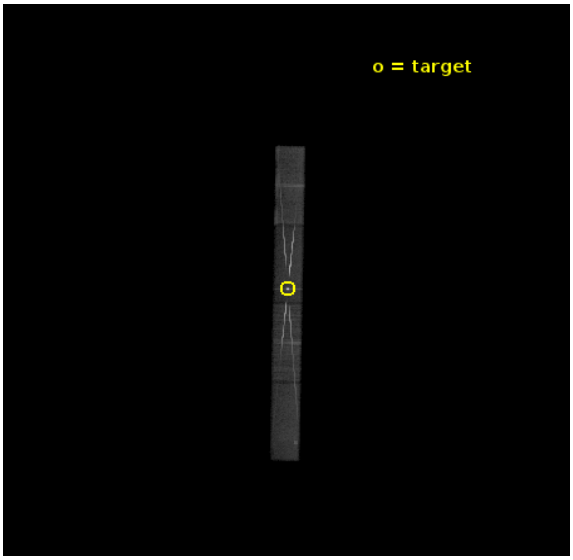
2.1 OBI

2.1.1 Images

Level 1 Image

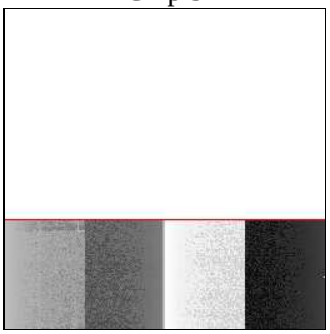


Level 1 Bad Events

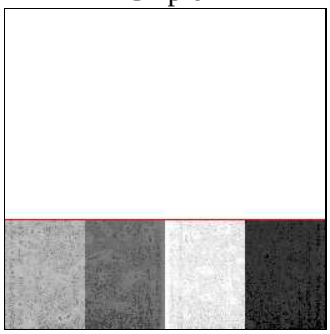


2.1.2 Bias

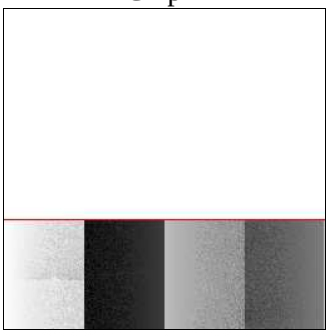
Chip 5



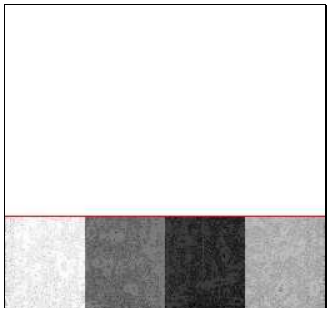
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.2.4	Processing system revision
caldbver	4.6.2	
date	2014-08-18T01:52:11	Date and time of file creation
revision	1	Processing version of data

sched_exp_time	45000.000000	[s] Scheduled observation exposure time
ontime	45081.37722379	Sum of GTIs [s]
ontime5	45081.336183786	Sum of GTIs [s]
ontime6	45081.295143783	Sum of GTIs [s]
ontime7	45081.37722379	Sum of GTIs [s]
ontime8	45081.25410378	Sum of GTIs [s]
l1events	4992020	Number of level 1 events
tgmethod	FINDZO	Method used to create src1a file
zo_pos	(4113.37, 4107.00)	src1a sky pixel position
zo_pos_tgd	(4113.38, 4107.77)	src1a sky pixel position via tgdetect

2.1.4 Events

	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	331041	1814255	2355178	491546
rejected events	70271	126075	165723	88026
rejected %	21%	6%	7%	17%

	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	76882	1193116	417856	298115
	23%	65%	17%	60%
grade 1 events	1186	20285	9506	1421
	0%	1%	0%	0%
grade 2 events	73845	229780	530985	49411
	22%	12%	22%	10%
grade 3 events	21109	81615	234104	17823
	6%	4%	9%	3%
grade 4 events	21002	79949	233239	17284
	6%	4%	9%	3%
grade 5 events	13020	21619	54065	6569
	3%	1%	2%	1%
grade 6 events	67941	103771	773332	20901
	20%	5%	32%	4%
grade 7 events	56056	84120	102091	80022
	16%	4%	4%	16%

2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-5678	ACIS-5678
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	266.970101	266.9862671401821
[deg] Pointing Dec	-26.541847	-26.56515582935011
[deg] Pointing Roll	270.887626	271.0514701026706
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-182.132523	-182.1344861297048
[mm] SIM translation stage offset	-8	-7.998036453302973
[s] Observation start time (MET)	524622177.184000	524621218.95625
Observation start date	2014-08-17T00:21:50	2014-08-17T00:06:58
[s] Observation end time (MET)	524667177.184000	524668245.95886
Observation end date	2014-08-17T12:51:50	2014-08-17T13:10:45
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	1	1
Subarray row count	350	350
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	1.2

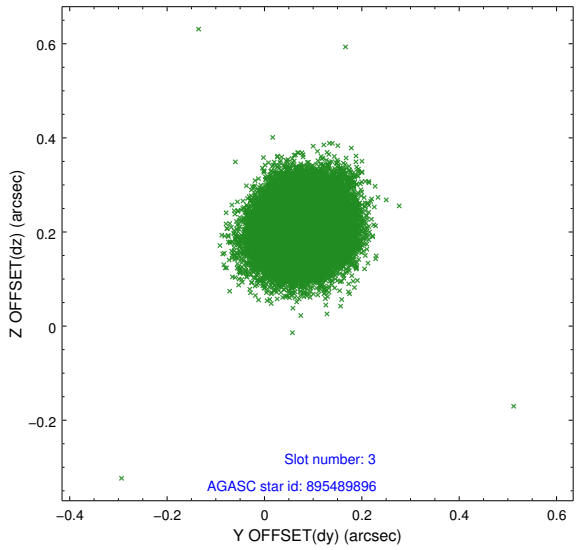
2.3 Aspect

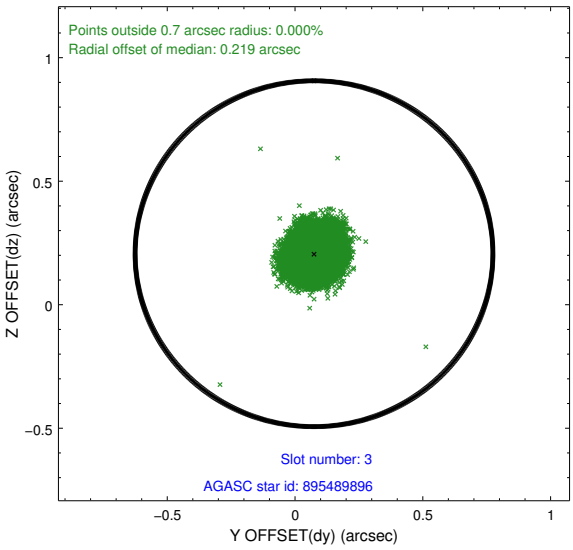
Slot Statistics

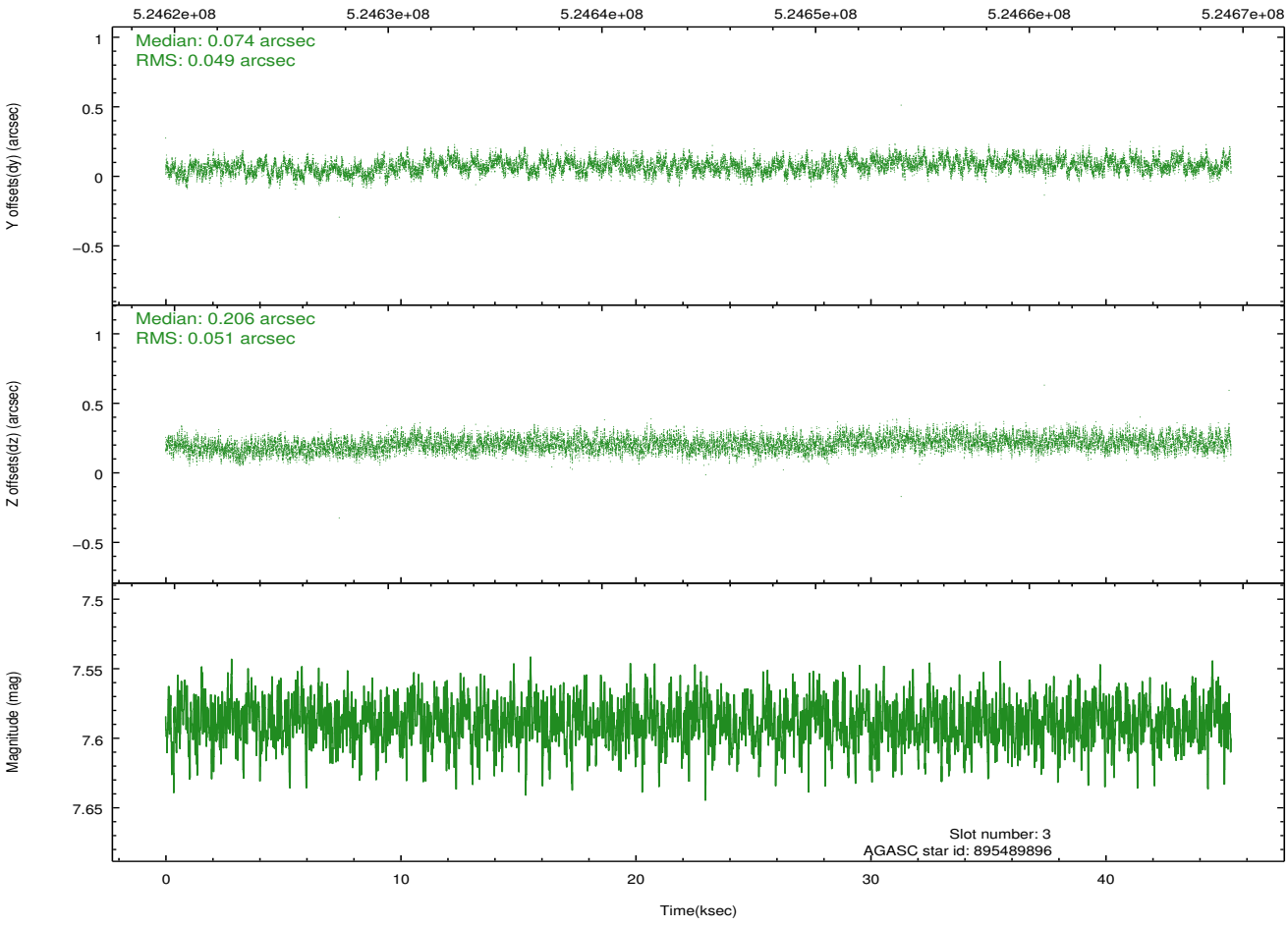
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.95	11058	-0.218	-0.116	0.014	0.044	0.000000	0.000000	-775.75	-1905.42
1	FID	ACIS-S-4	7.03	11058	0.237	0.144	0.018	0.040	0.000000	0.000000	2138.07	3.19
2	FID	ACIS-S-6	7.24	11058	-0.044	-0.024	0.010	0.015	0.000000	0.000000	386.51	640.48
3	GUIDE	895489896	7.59	22114	0.074	0.206	0.077	0.118	266.605795	-26.200300	-1245.47	-1157.54
4	GUIDE	896008728	9.22	22100	-0.007	-0.141	0.115	0.182	267.399580	-27.194977	2374.84	1338.62
5	GUIDE	896009152	7.30	22115	-0.179	-0.060	0.102	0.152	267.588100	-27.061669	1907.47	1951.83
6	GUIDE	896013040	7.34	22110	0.154	0.107	0.062	0.100	266.506589	-26.972299	1529.86	-1510.77
7	GUIDE	896008536	8.58	22104	-0.045	-0.111	0.082	0.137	267.569332	-27.063788	1913.33	1891.61

2.4 Star Slots

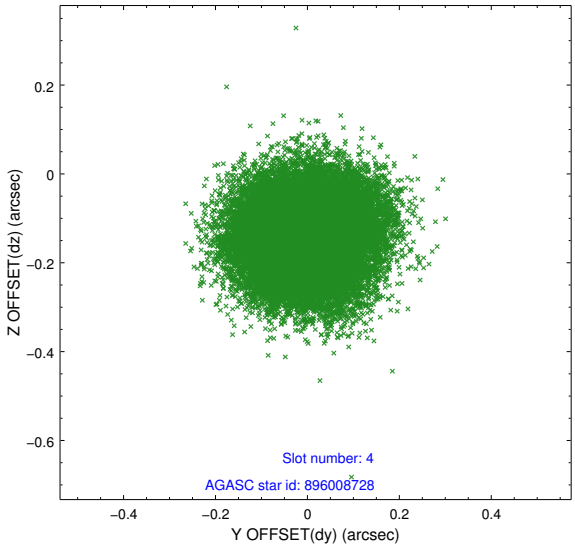
2.4.1 Slot 3

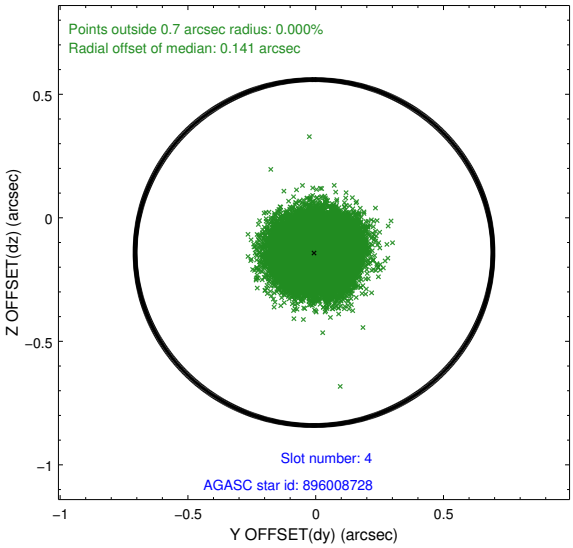


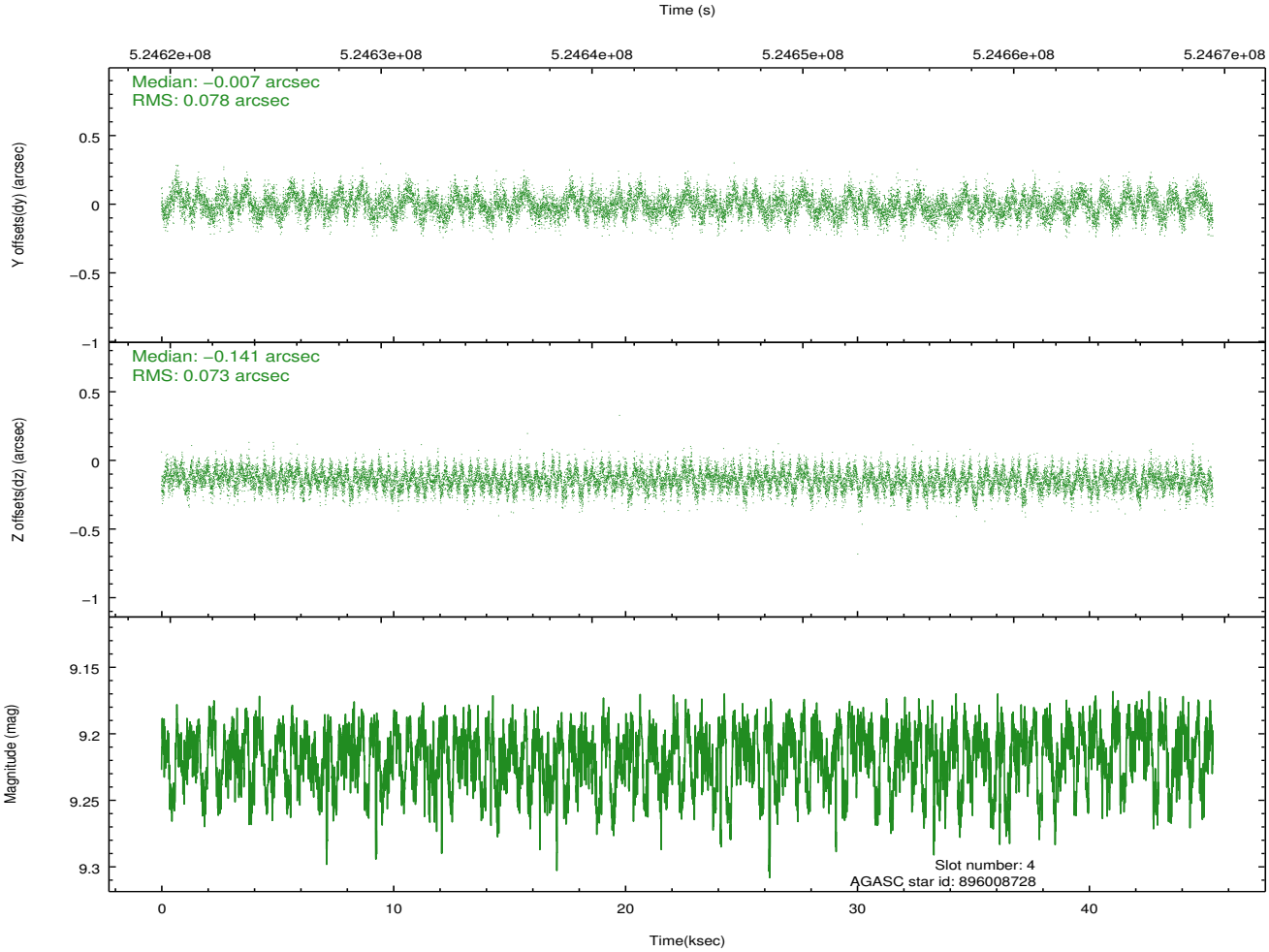




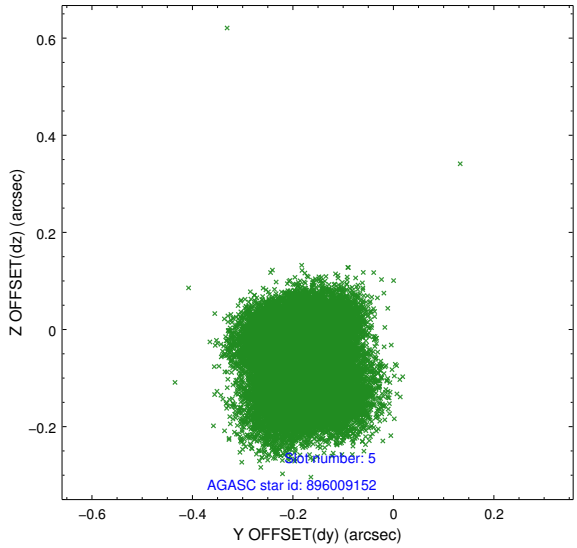
2.4.2 Slot 4

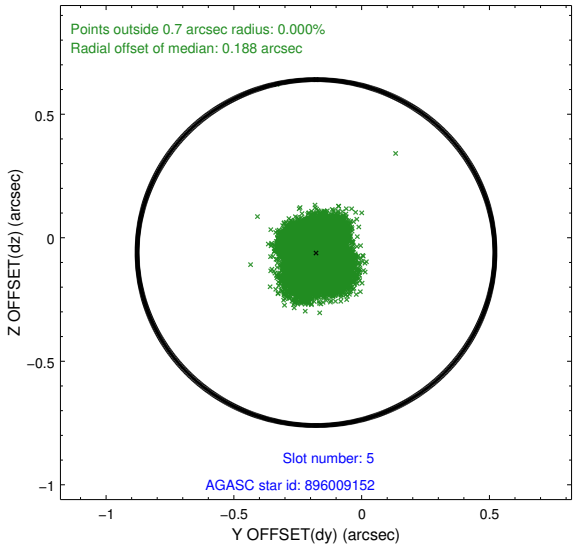

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 896008728

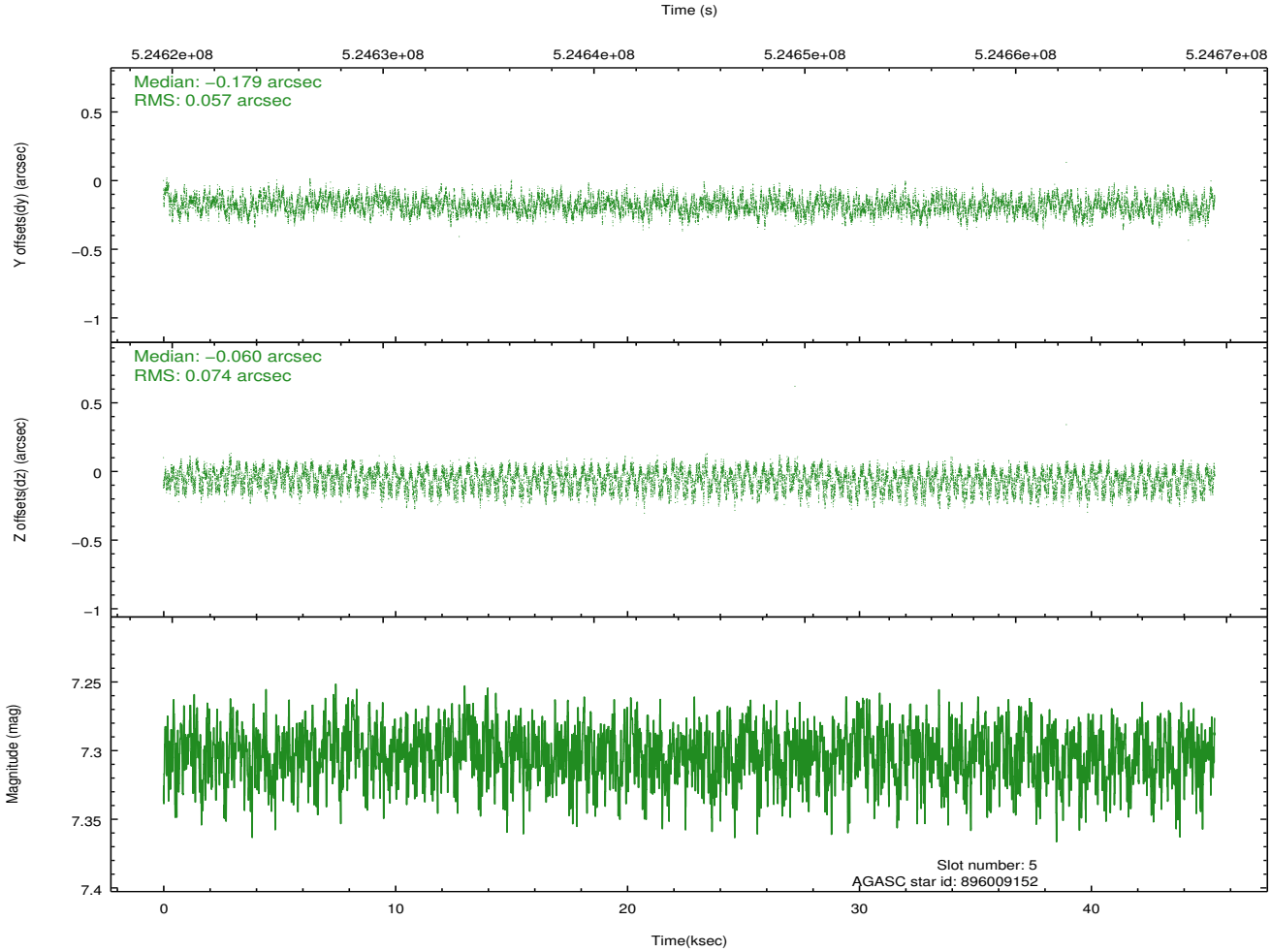

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.141 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 896008728


Time (s)
Median: −0.007 arcsec
RMS: 0.078 arcsec
Y offsets(dy) (arcsec)
Median: −0.141 arcsec
RMS: 0.073 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 896008728
Time(ksec)

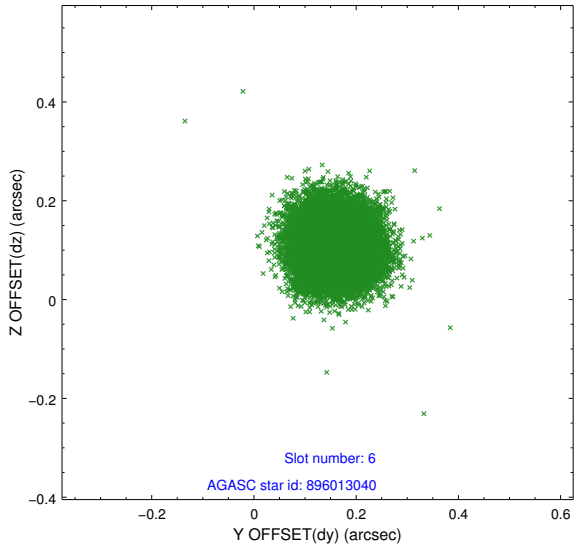
2.4.3 Slot 5

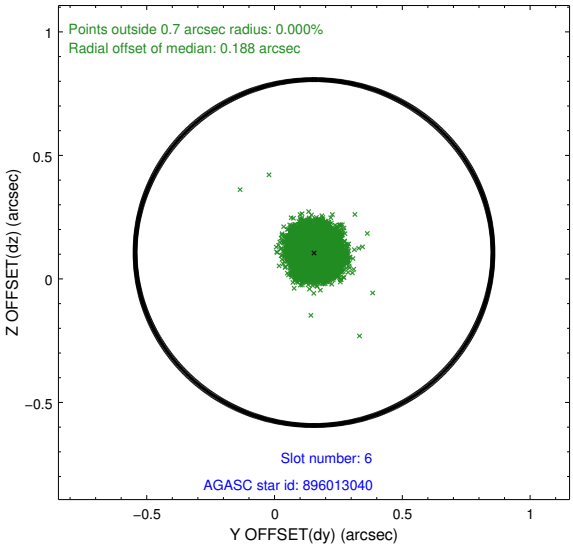

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 896009152

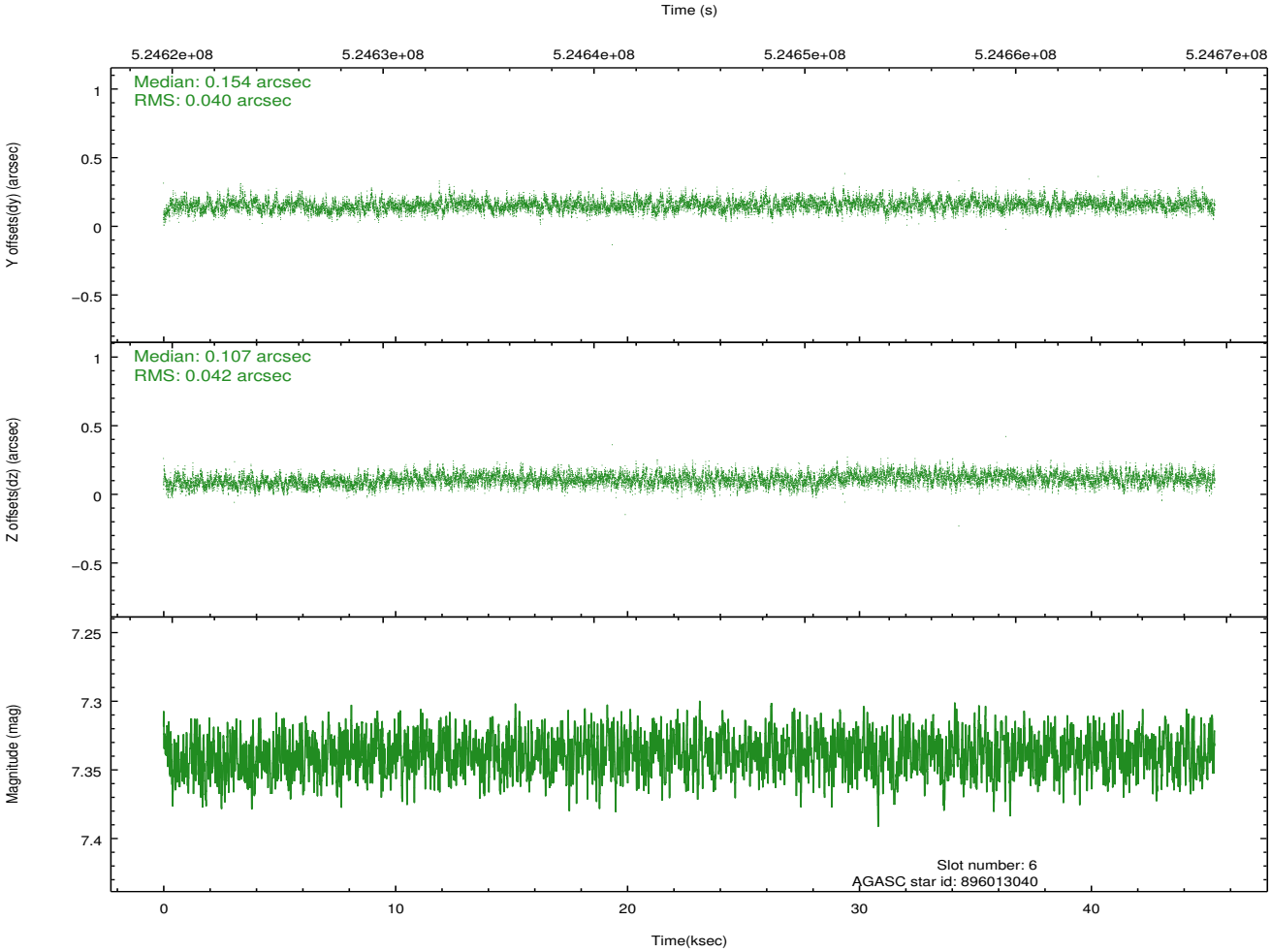

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.188 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 896009152


Time (s)
Median: −0.179 arcsec
RMS: 0.057 arcsec
Y offsets(dy) (arcsec)
Median: −0.060 arcsec
RMS: 0.074 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 896009152
Time(ksec)

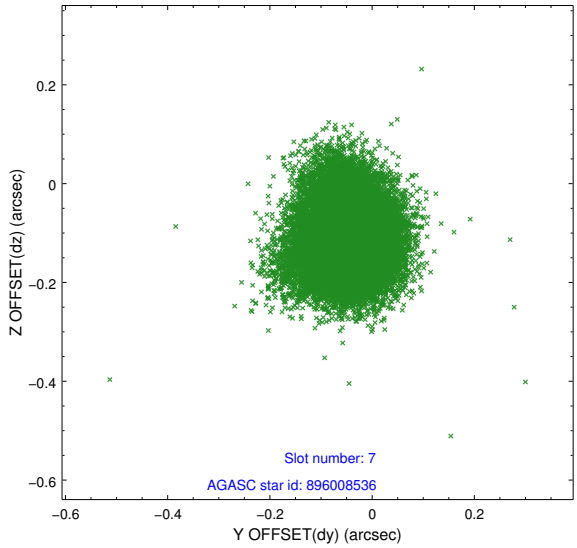
2.4.4 Slot 6

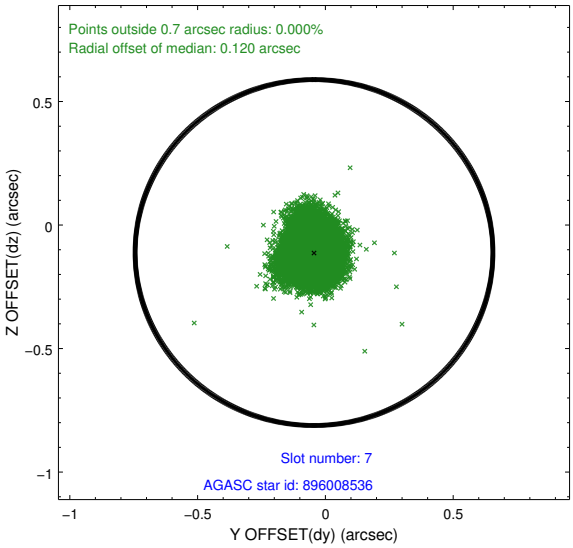

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 896013040

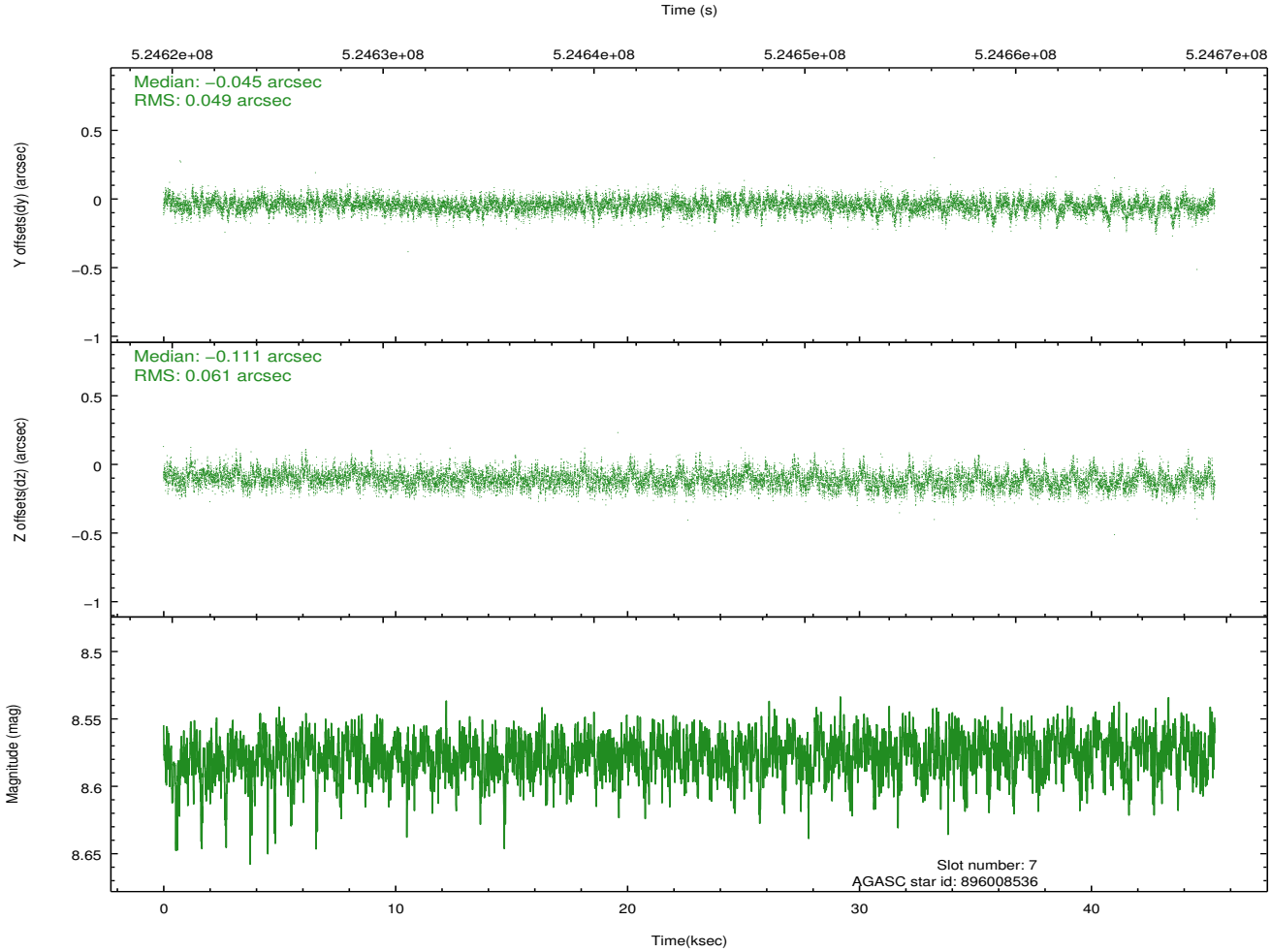

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.188 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 896013040


Time (s)
Median: 0.154 arcsec
RMS: 0.040 arcsec
Y offsets(dy) (arcsec)
Median: 0.107 arcsec
RMS: 0.042 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 896013040
Time(ksec)

2.4.5 Slot 7

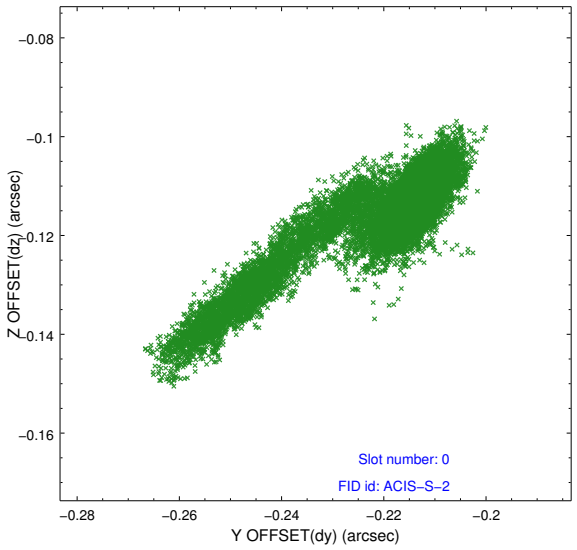

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 896008536

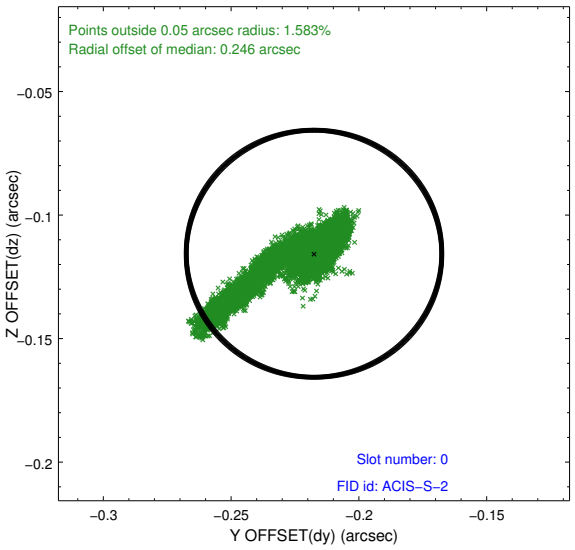

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.120 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 896008536

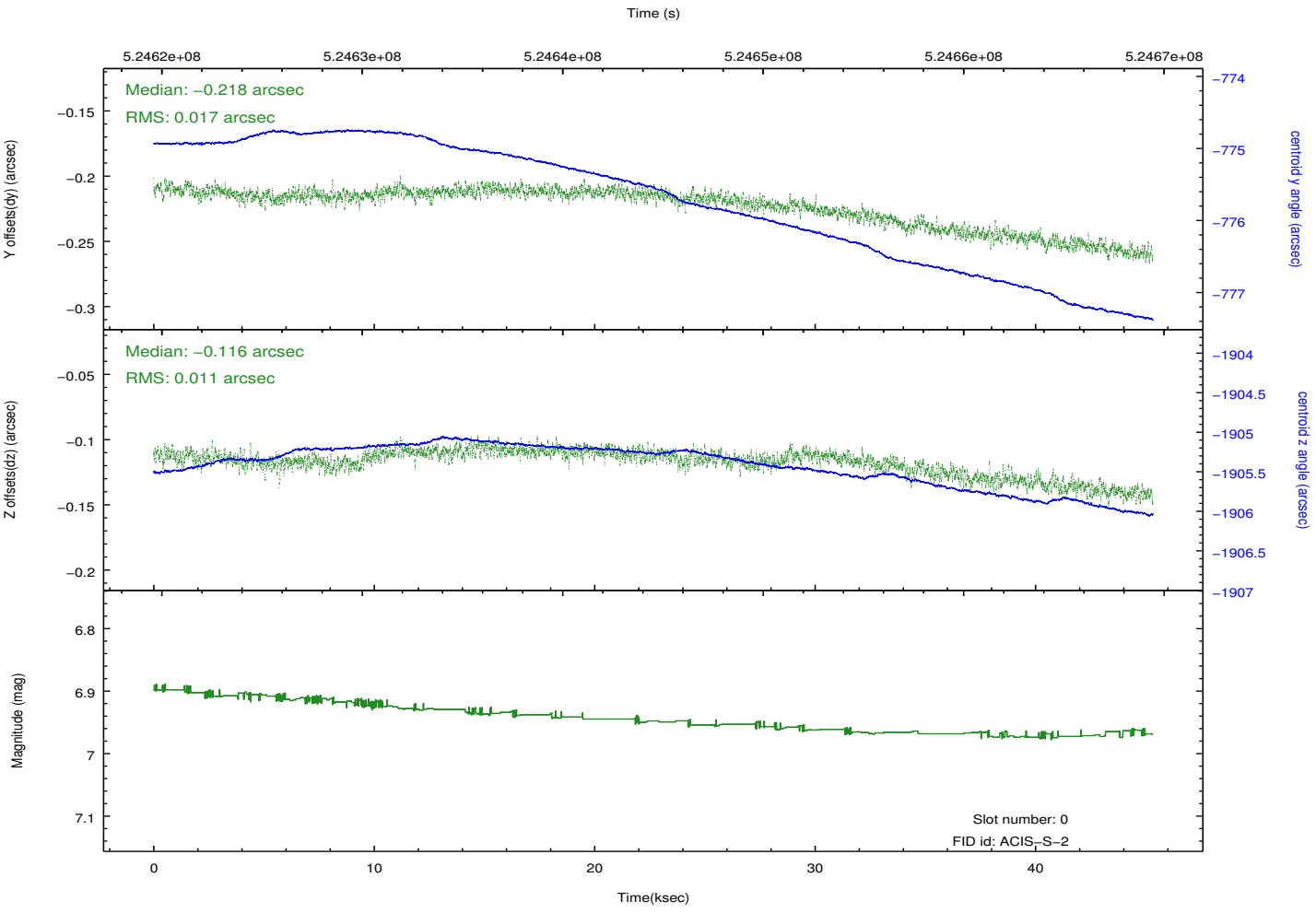

Time (s)
Median: −0.045 arcsec
RMS: 0.049 arcsec
Y offsets(dy) (arcsec)
Median: −0.111 arcsec
RMS: 0.061 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 896008536
Time(ksec)

2.5 FID Slots

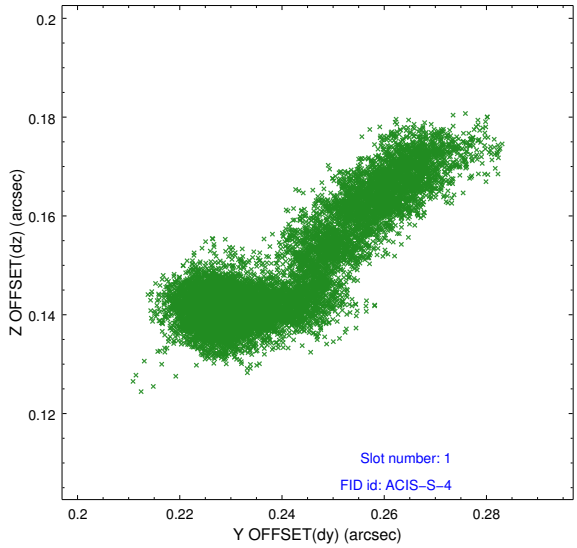
2.5.1 Slot 0

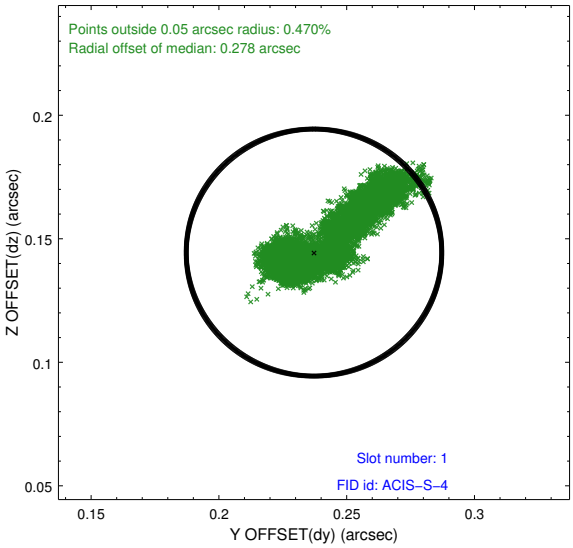


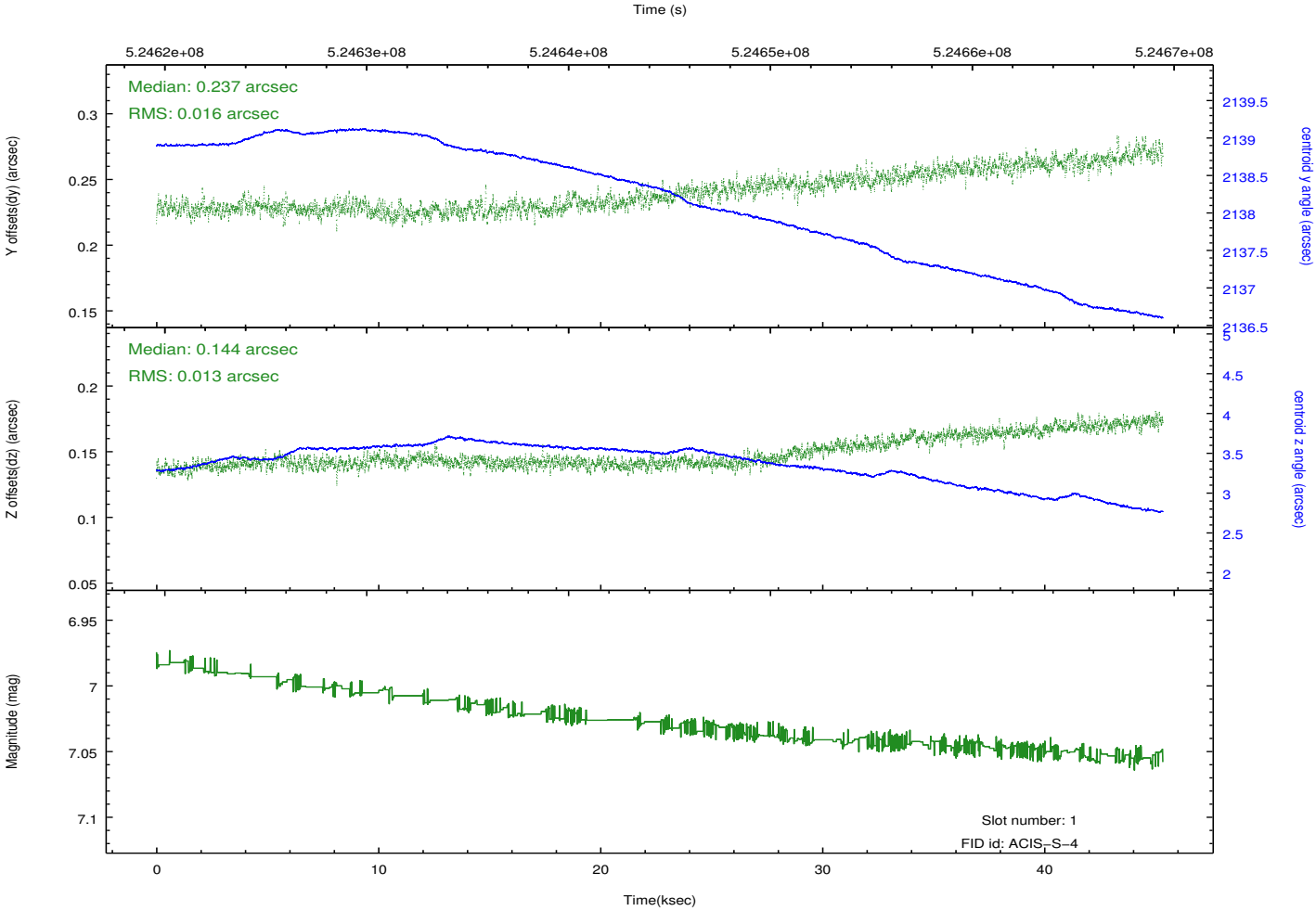




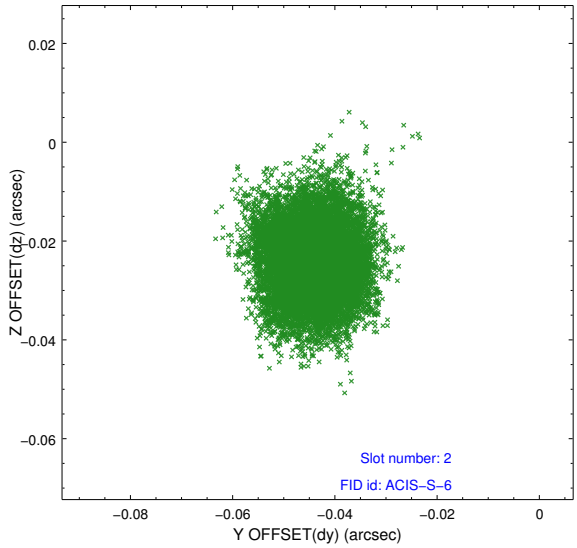
2.5.2 Slot 1

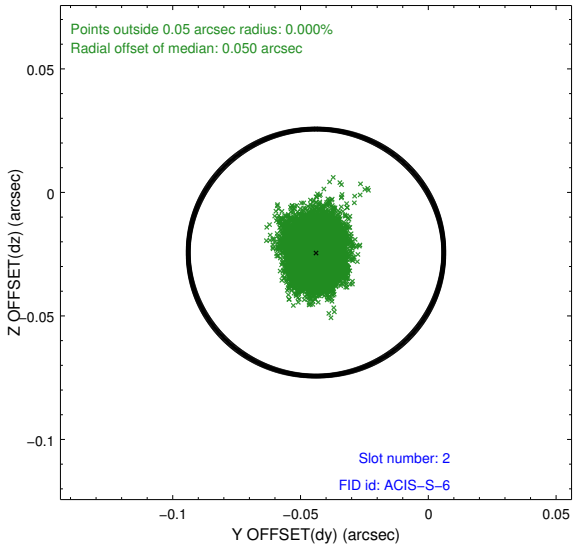

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

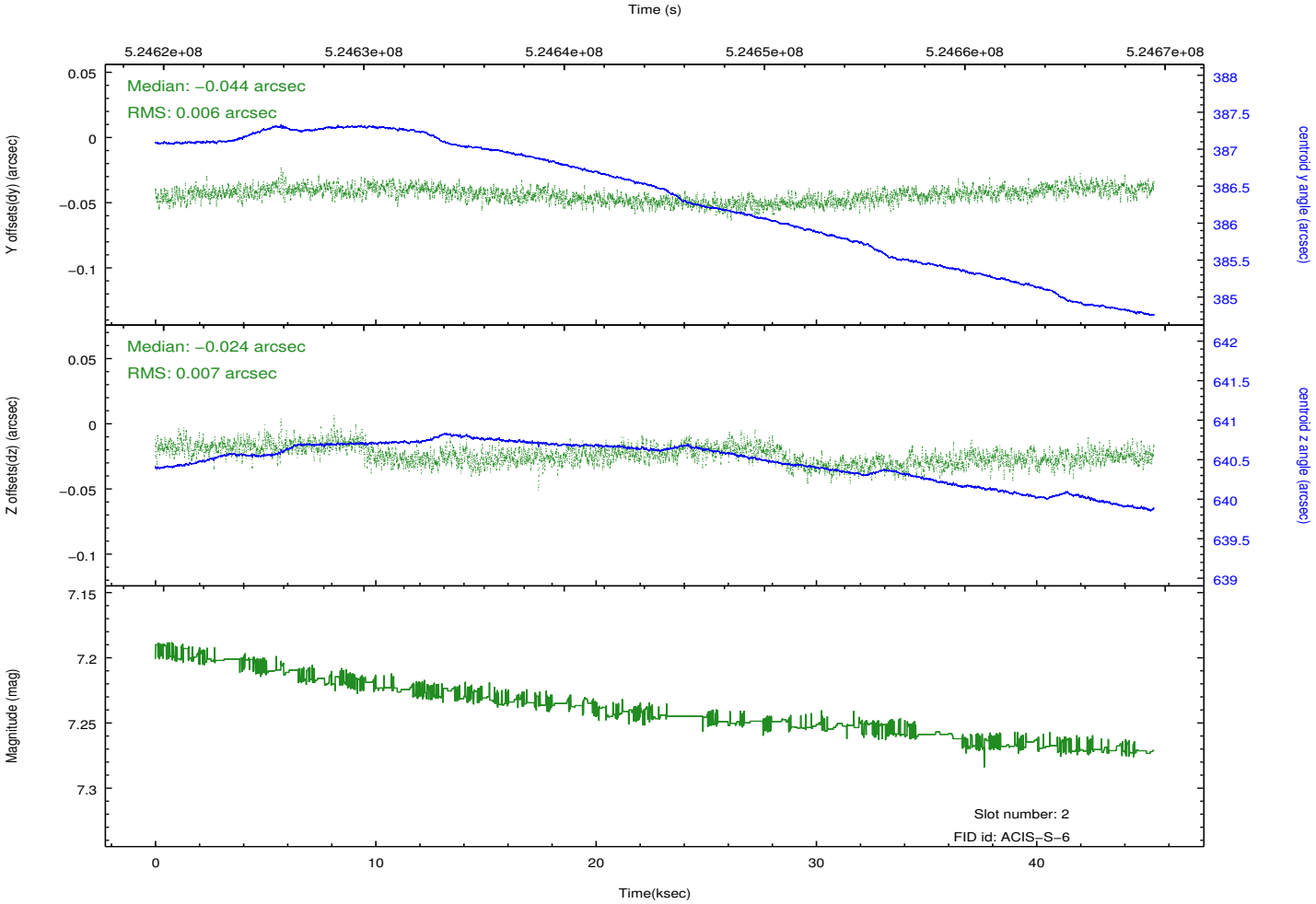

Points outside 0.05 arcsec radius: 0.470%
Radial offset of median: 0.278 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.237 arcsec
RMS: 0.016 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.144 arcsec
RMS: 0.013 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−S−4
Time(ksec)

2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−6

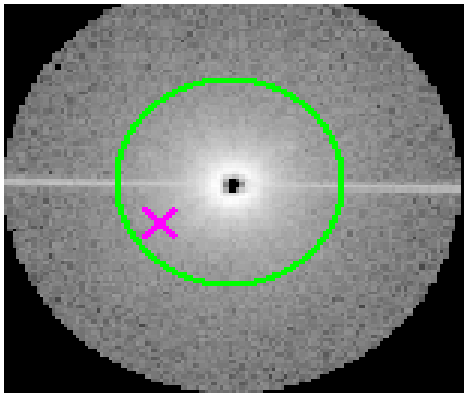

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.050 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−6


Time (s)
Median: −0.044 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
Median: −0.024 arcsec
RMS: 0.007 arcsec
Z offsets(dz) (arcsec)
centroid y angle (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−6
Time(ksec)

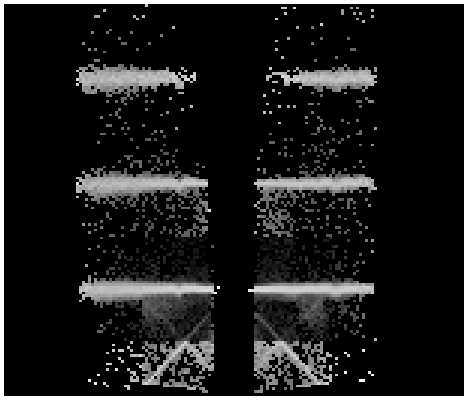
3 Gratings

3.1 HEG Arm

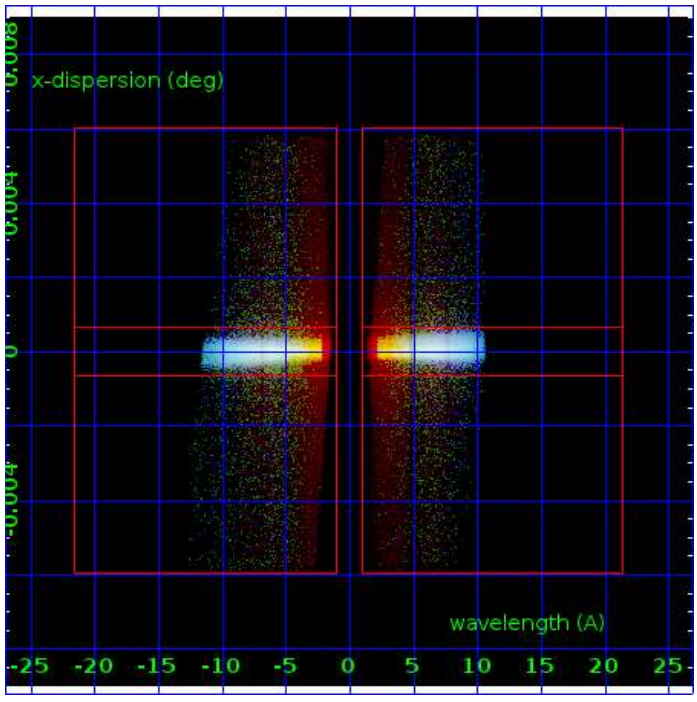
HEG Order Sort 123



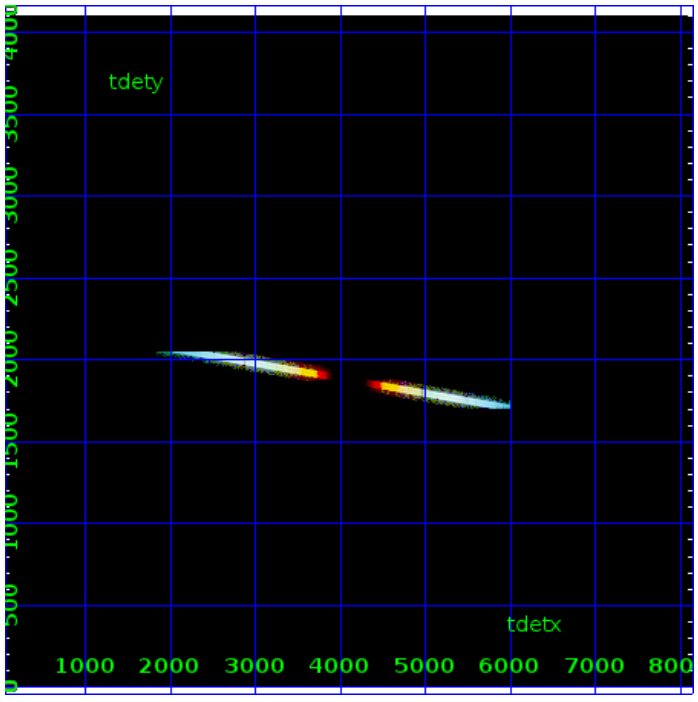
HEG Zero Order



HEG Order Sort ALL

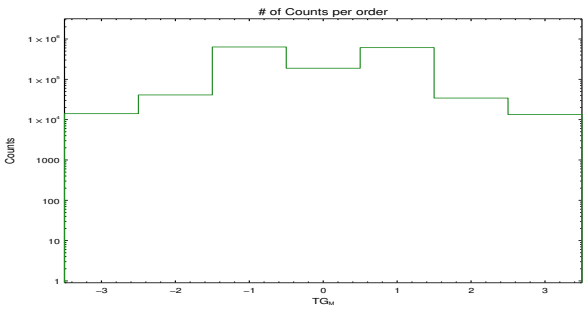


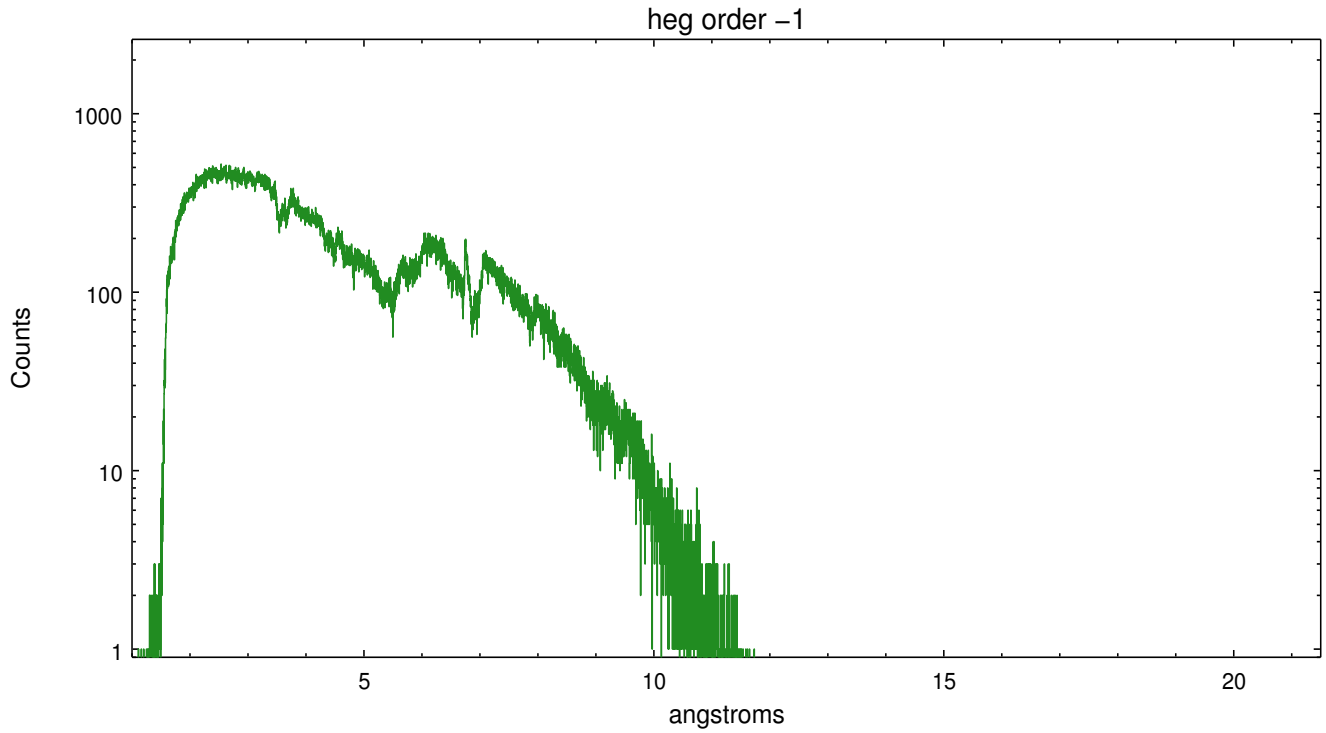
Spot Image HEG

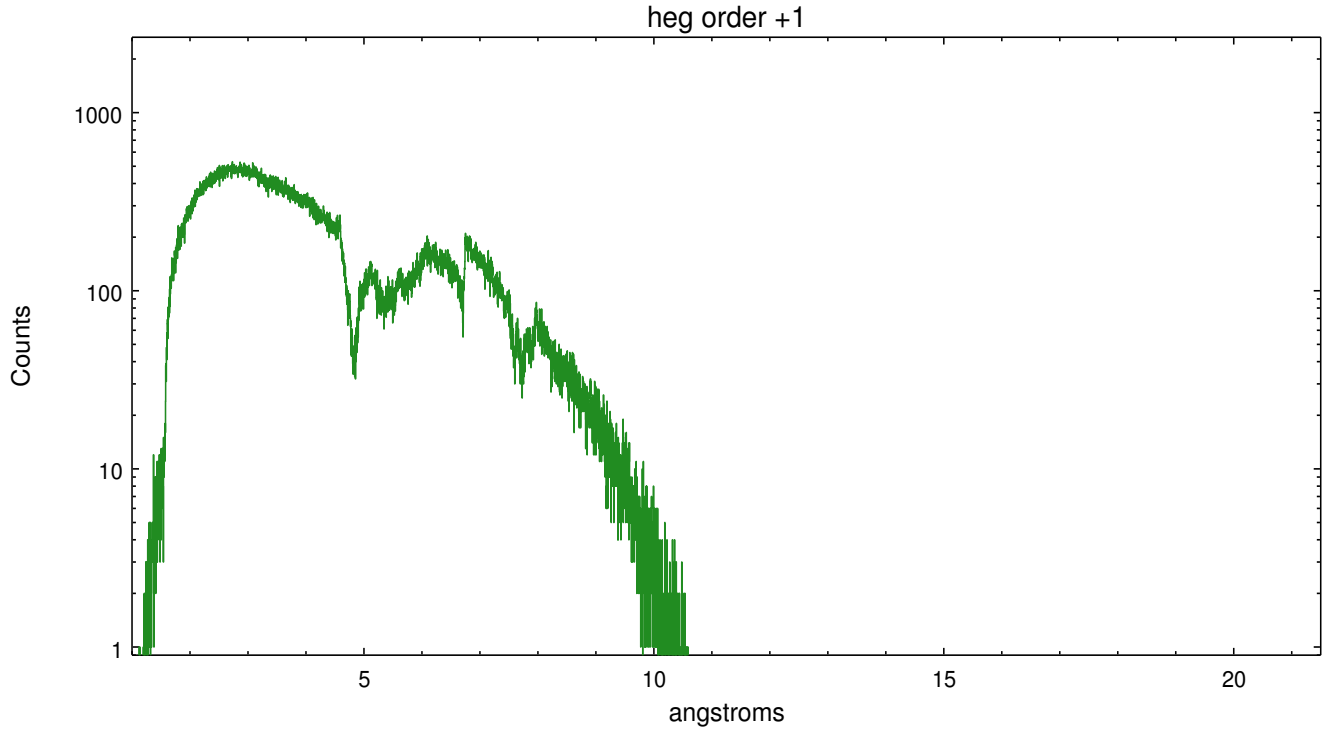


Full Detector HEG

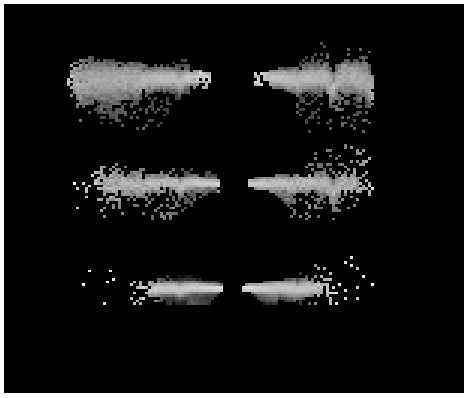
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	14087	40994	634277	188206	611036	34295	13429



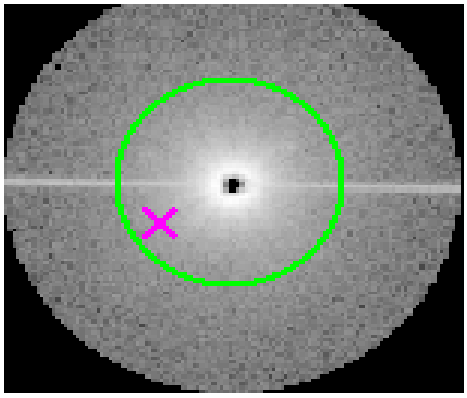

heg order −1
Counts
1000
100
10
1
5
10
15
20
angstroms


heg order +1
Counts
1000
100
10
1
5
10
15
20
angstroms

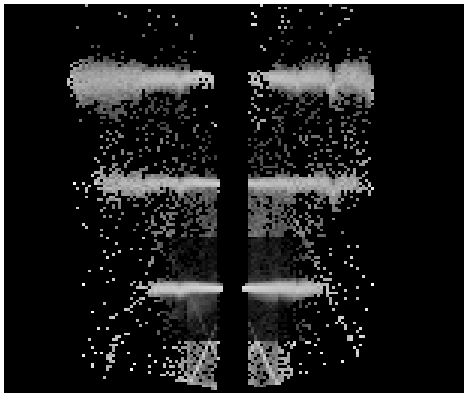
3.2 MEG Arm



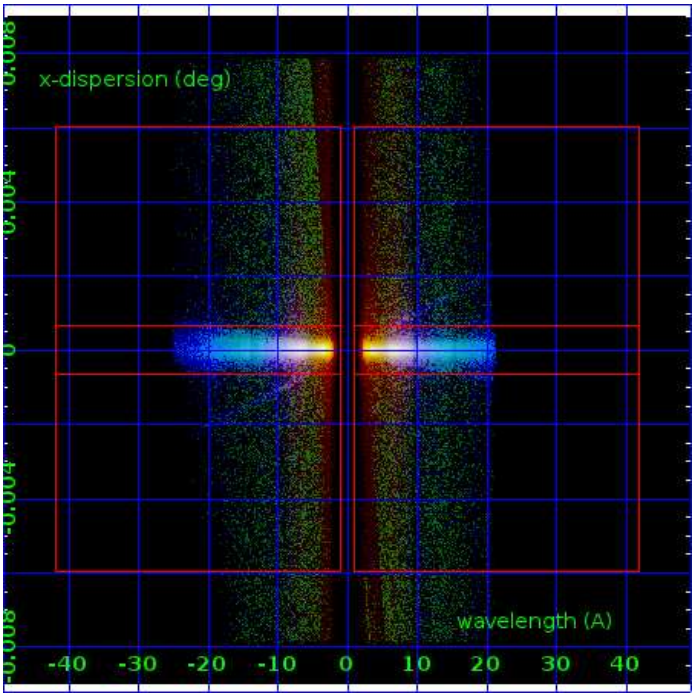
MEG Order Sort 123



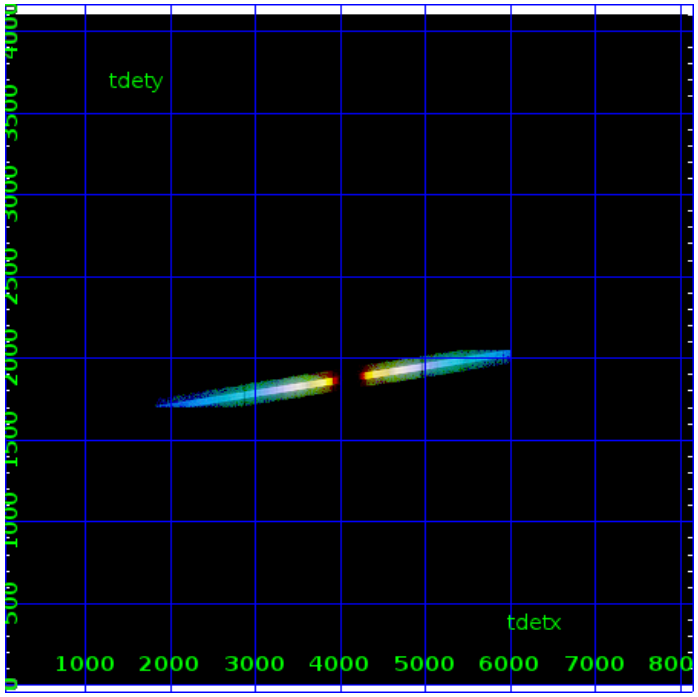
MEG Zero Order



MEG Order Sort ALL

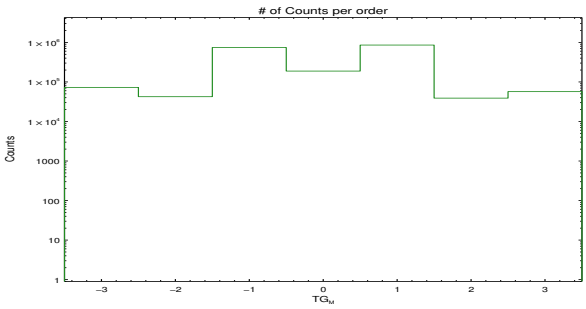


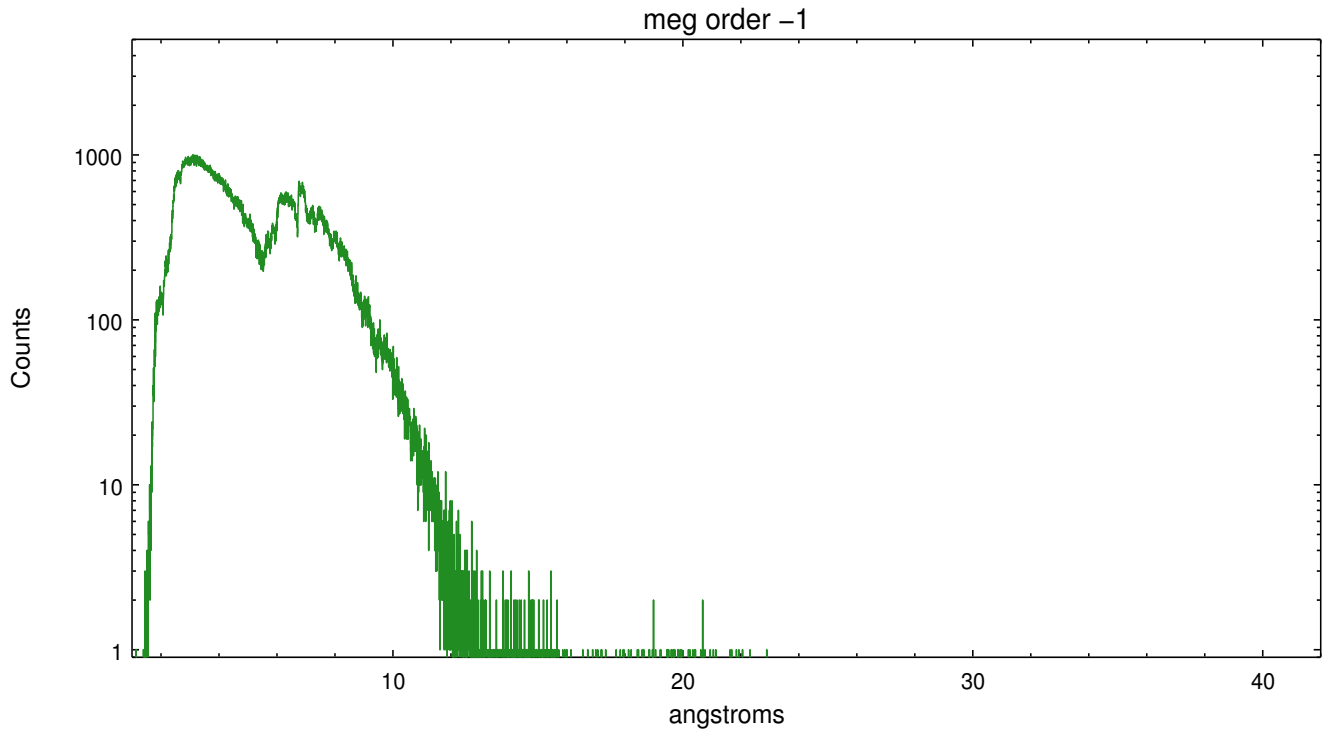
Spot Image MEG

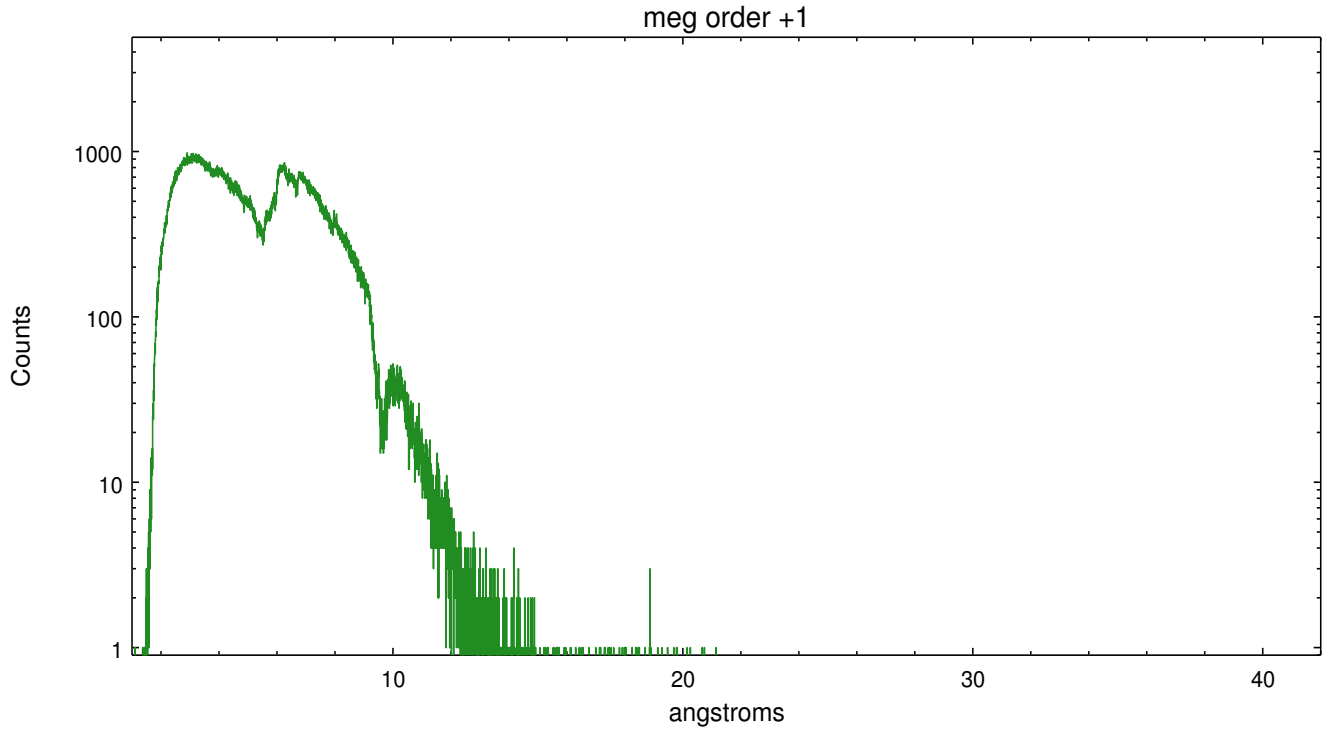


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	72797	42373	742559	188206	857045	38940	56929




meg order −1
Counts
1000
100
10
1
10
20
30
40
angstroms


meg order +1
Counts
1000
100
10
1
10
20
30
40
angstroms

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2014.08.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	45.08137722379

A.2 Comments

Zeroth order piled up. The zeroth order sky position was determined using a software tool developed by CXC called findzero, which is available in CIAO as part of the tgdetect2 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. Spectral arms are also piled up.