V&V Reference Report
L2 ASCDS Version : 8.4.5

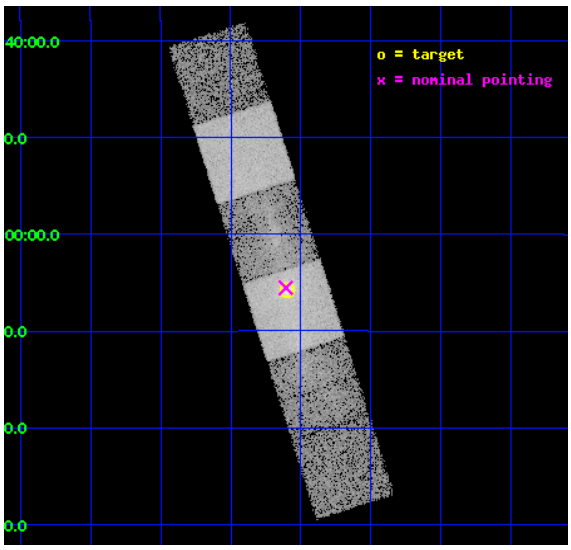
Observation 2208 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Oct 11 2012

Contents

1 Front

seq_num	800147	Sequence number
obs_id	2208	Observation id
title	ACIS-S/HETG OBSERVATIONS OF THE CENTRAL REGION OF THE HYDRA A CLUSTER OF GALAXIES	Proposal title
observer	Dr. J. Jernigan	Principal investigator
object	HYDRA A	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	139.52375	Observer's specified target RA [deg]
dec_targ	-12.095833	Observer's specified target Dec [deg]
ra_nom	139.5267918093	Nominal RA [deg]
dec_nom	-12.092421500257	Nominal Dec [deg]
roll_nom	72.320632820649	Nominal Roll [deg]
revision	3	Processing version of data
ontime	9660.8000089824	Sum of GTIs [s]
livetime	9538.4691422333	Livetime [s]
ontime4	9660.8000089824	Sum of GTIs [s]
ontime5	9660.8000089824	Sum of GTIs [s]
ontime6	9660.8000089824	Sum of GTIs [s]
ontime7	9660.8000089824	Sum of GTIs [s]
ontime8	9657.5590188056	Sum of GTIs [s]
ontime9	9660.8000089824	Sum of GTIs [s]
l2events	116227	Number of level 2 events

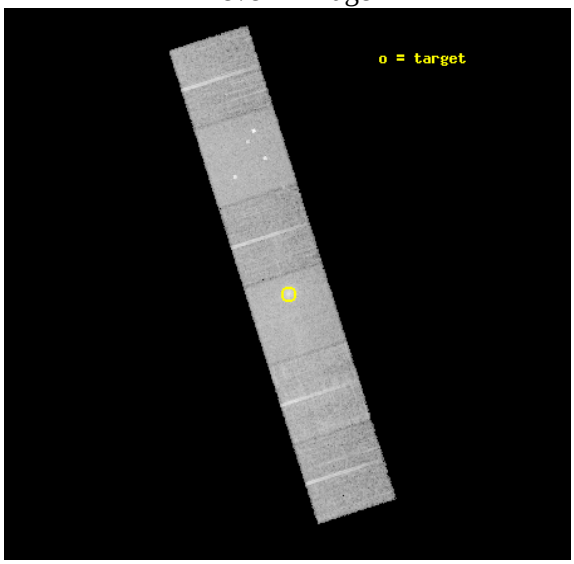


2 OBI

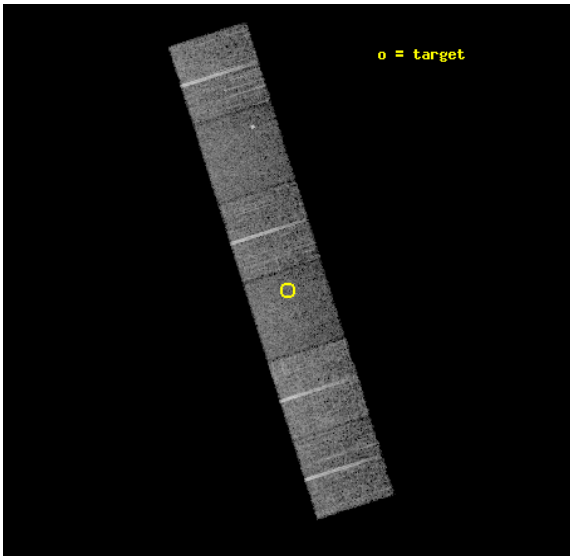
2.1 OBI

2.1.1 Images

Level 1 Image

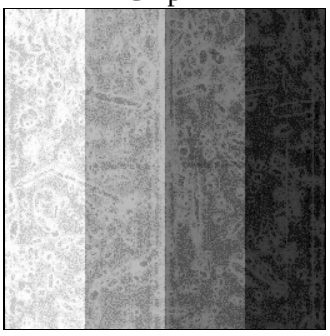


Level 1 Bad Events

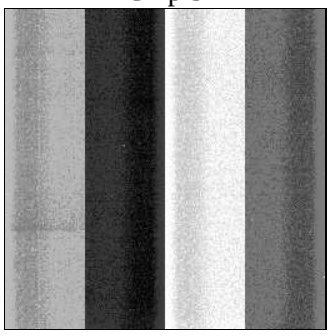


2.1.2 Bias

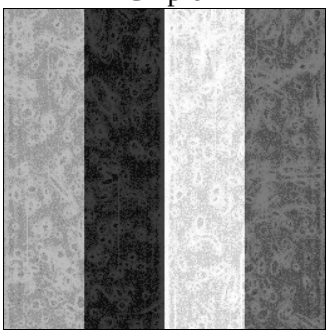
Chip 4



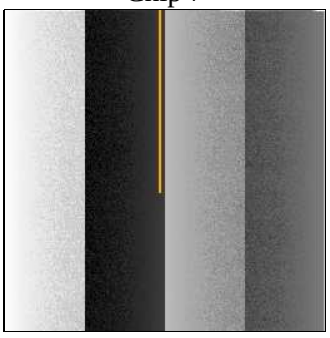
Chip 5



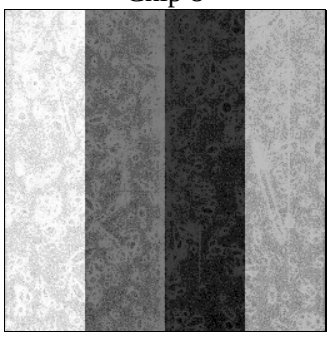
Chip 6



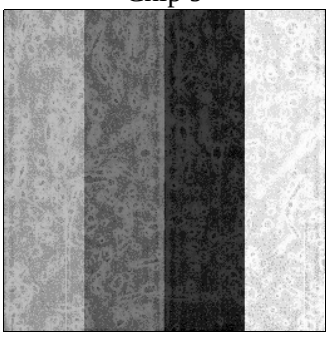
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	8.4.5	Processing system revision
caldbver	4.5.1.1	
date	2012-09-03T16:07:35	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	9550.000000	[s] Scheduled observation exposure time
ontime	9660.8000089824	Sum of GTIs [s]
ontime4	9660.8000089824	Sum of GTIs [s]
ontime5	9660.8000089824	Sum of GTIs [s]
ontime6	9660.8000089824	Sum of GTIs [s]
ontime7	9660.8000089824	Sum of GTIs [s]
ontime8	9657.5590188056	Sum of GTIs [s]
ontime9	9660.8000089824	Sum of GTIs [s]
l1events	443688	Number of level 1 events

2.1.4 Events

	ccd 4	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
level 1 events	66598	85763	64592	87060	81933	57742
rejected events	58273	44305	52032	42409	61138	49588
rejected %	87%	51%	80%	48%	74%	85%

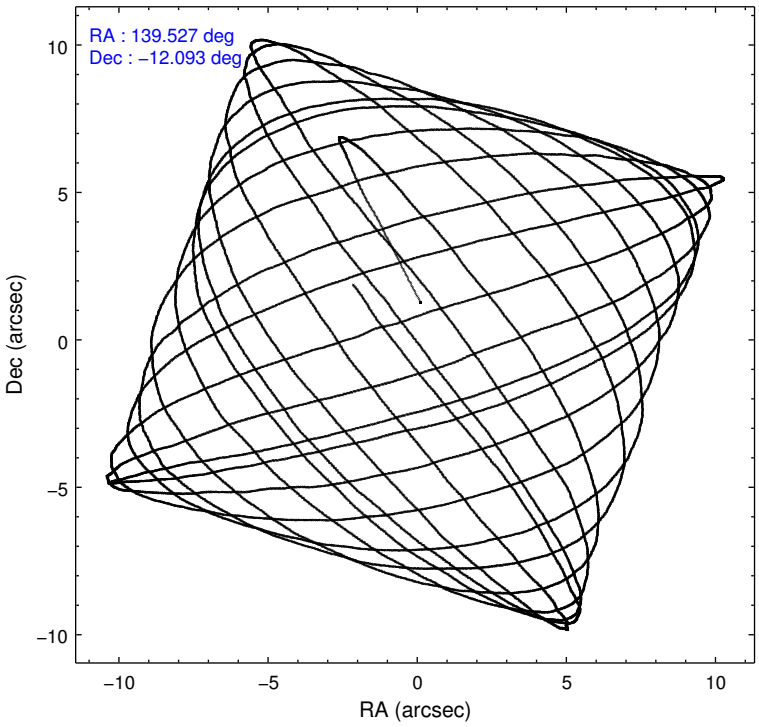
	ccd 4	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
grade 0 events	3726	6245	7225	6176	8471	3759
	5%	7%	11%	7%	10%	6%
grade 1 events	33	601	43	81	49	27
	0%	0%	0%	0%	0%	0%
grade 2 events	1882	11784	1984	9474	3779	1535
	2%	13%	3%	10%	4%	2%
grade 3 events	720	1910	888	4289	2177	721
	1%	2%	1%	4%	2%	1%
grade 4 events	653	1792	876	4337	1984	750
	0%	2%	1%	4%	2%	1%
grade 5 events	2069	6198	2332	6994	3086	2465
	3%	7%	3%	8%	3%	4%
grade 6 events	1346	19742	1593	20384	4388	1389
	2%	23%	2%	23%	5%	2%
grade 7 events	56169	37491	49651	35325	57999	47096
	84%	43%	76%	40%	70%	81%

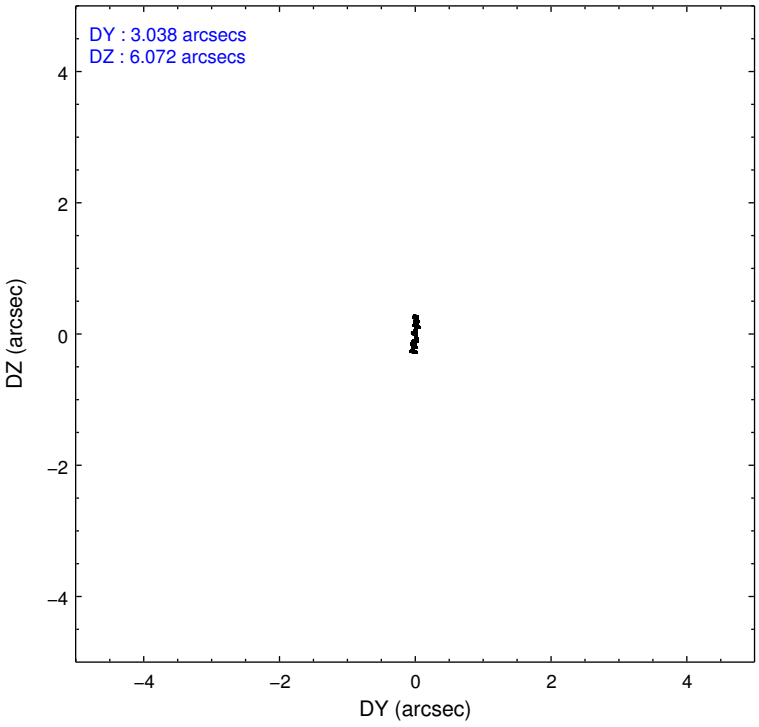
2.2 Compared Parameters

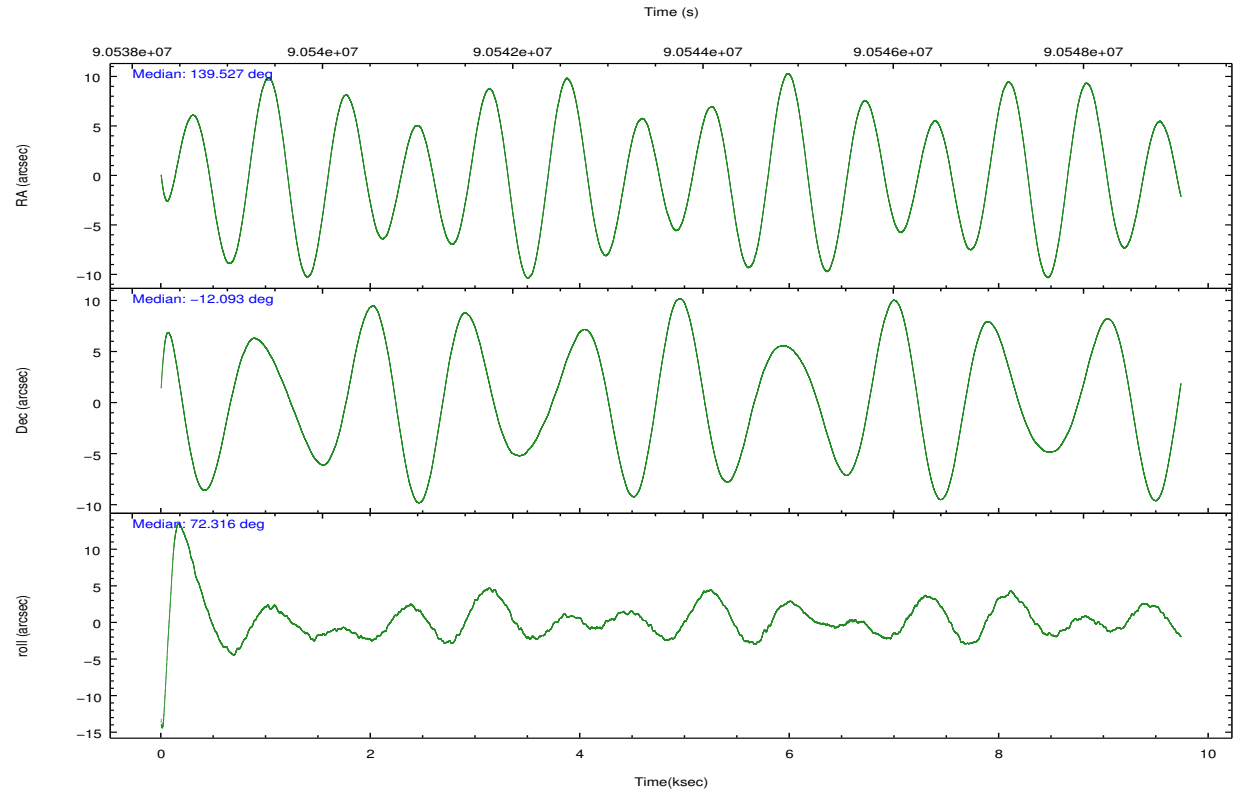
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	139.532944	139.5267918093033
[deg] Pointing Dec	-12.119041	-12.09242150025721
[deg] Pointing Roll	72.165326	72.32063282064948
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1400660498719
[mm] SIM translation stage offset	0	0.00754346686406393
[s] Observation start time (MET)	90538983.184000	90537941.51741
Observation start date	2000-11-13T21:41:59	2000-11-13T21:25:41
[s] Observation end time (MET)	90548533.184000	90548984.86783101
Observation end date	2000-11-14T00:21:09	2000-11-14T00:29:44
Read mode	TIMED	TIMED

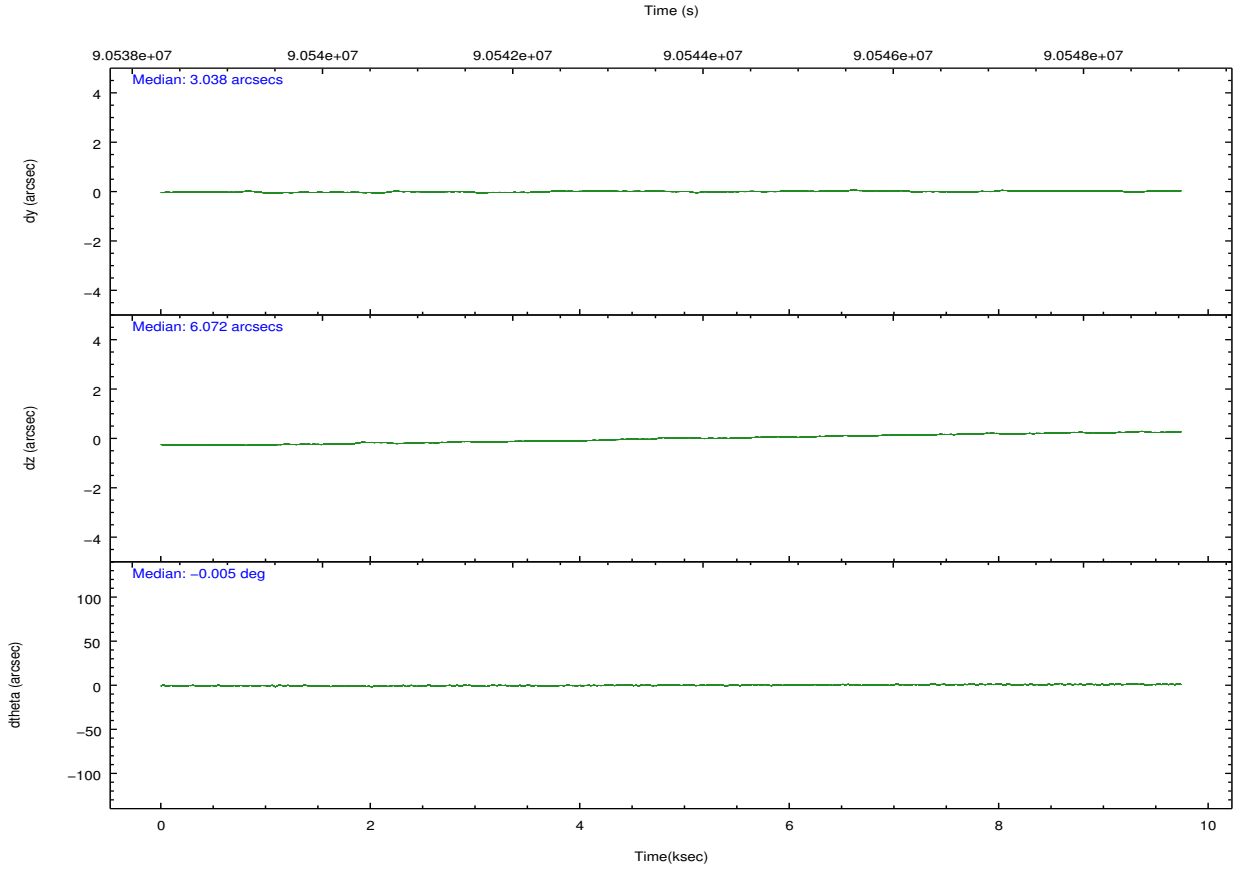
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 139.527 deg
Dec : −12.093 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 3.038 arcsecs
DZ : 6.072 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
9.0538e+07
9.054e+07
9.0542e+07
9.0544e+07
9.0546e+07
9.0548e+07
Median: 139.527 deg
RA (arcsec)
Median: −12.093 deg
Dec (arcsec)
Median: 72.316 deg
roll (arcsec)
Time(ksec)

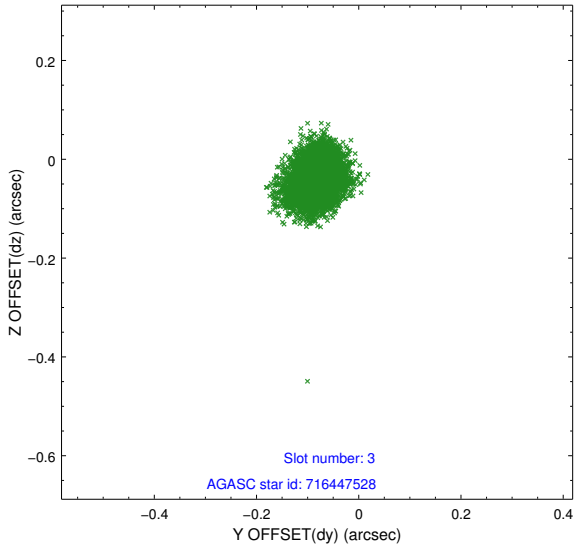

Time (s)
9.0538e+07
9.054e+07
9.0542e+07
9.0544e+07
9.0546e+07
9.0548e+07
Median: 3.038 arcsecs
dy (arcsec)
Median: 6.072 arcsecs
dz (arcsec)
Median: −0.005 deg
dtheta (arcsec)
Time(ksec)

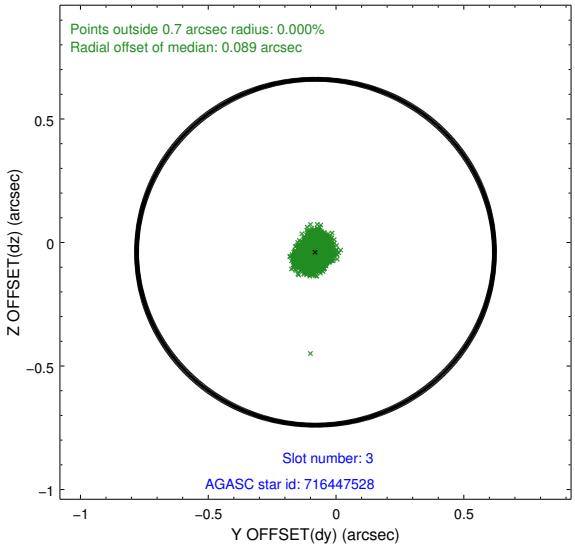
Slot Statistics

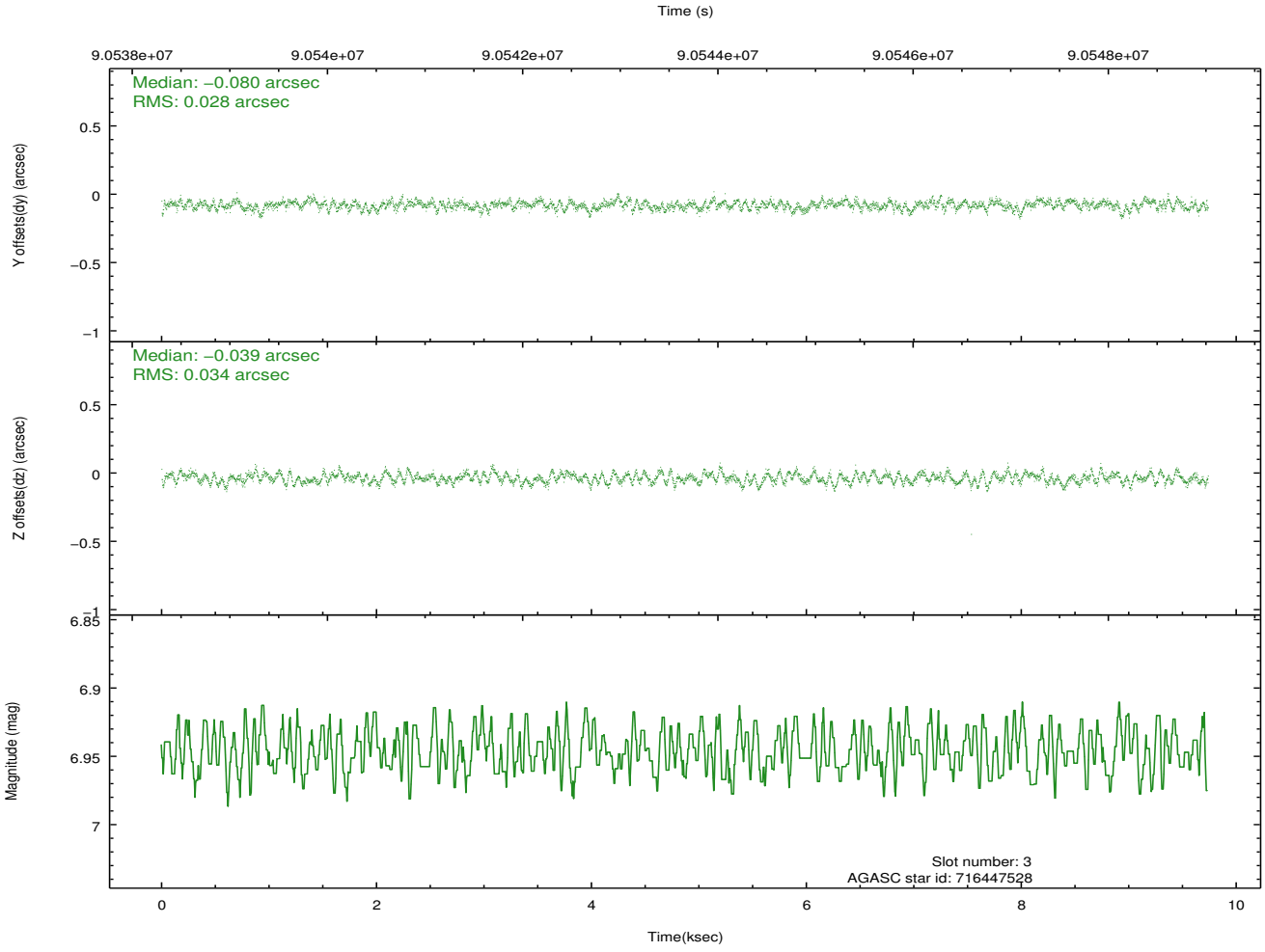
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.12	2375	-0.027	0.013	0.007	0.011	0.000000	0.000000	-755.69	-1727.19
1	FID	ACIS-S-4	7.21	2374	-0.014	0.009	0.006	0.011	0.000000	0.000000	2157.33	180.75
2	FID	ACIS-S-5	7.24	2374	0.010	-0.014	0.007	0.011	0.000000	0.000000	-1807.80	174.98
3	GUIDE	716447528	6.95	4750	-0.080	-0.039	0.047	0.074	139.371683	-11.961966	364.64	713.48
4	GUIDE	716447608	8.43	4751	-0.050	-0.028	0.068	0.104	139.107687	-11.923612	210.39	1640.89
5	GUIDE	716578888	9.26	4750	-0.335	0.170	0.084	0.136	139.858876	-11.605741	2110.85	-528.03
6	GUIDE	716454552	9.02	4746	0.236	-0.139	0.069	0.113	139.524204	-12.319370	-694.63	-192.23
7	GUIDE	716452328	8.82	4749	0.234	0.039	0.072	0.117	138.982178	-12.235590	-994.28	1715.18

2.4 Star Slots

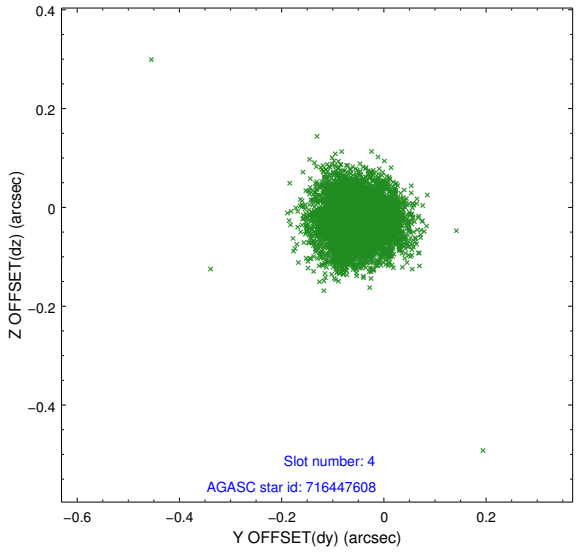
2.4.1 Slot 3

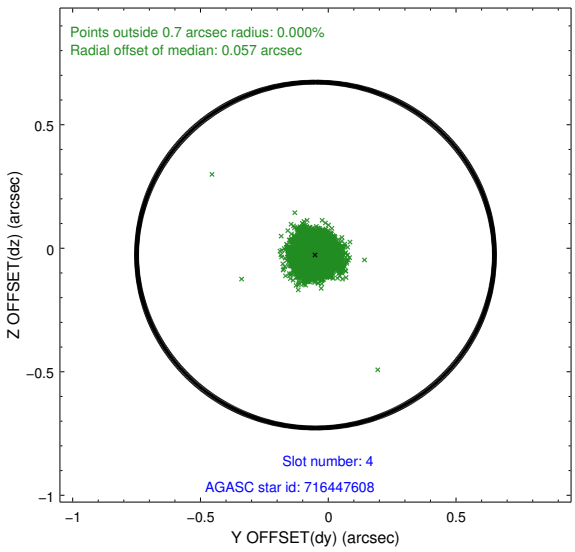


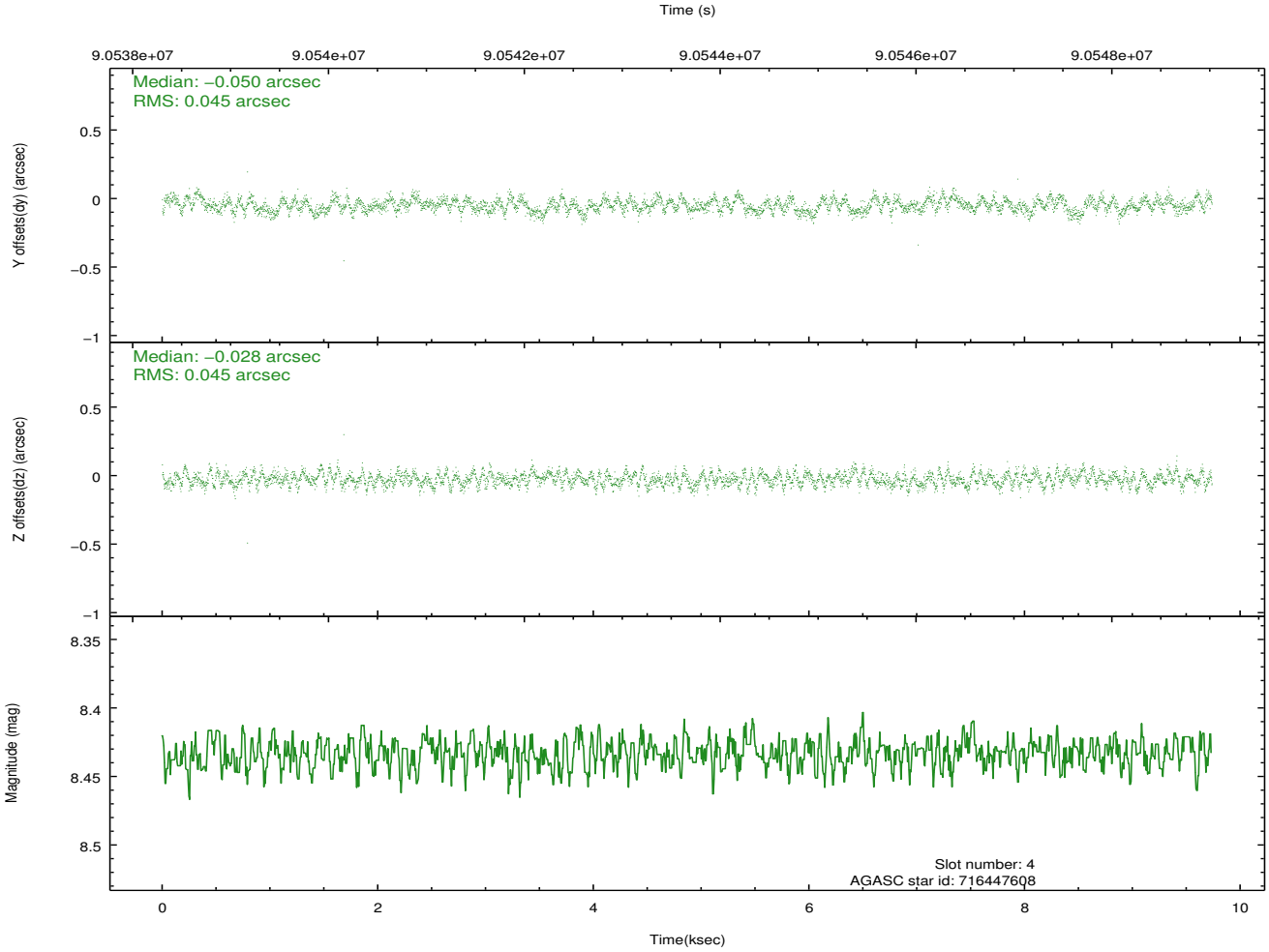




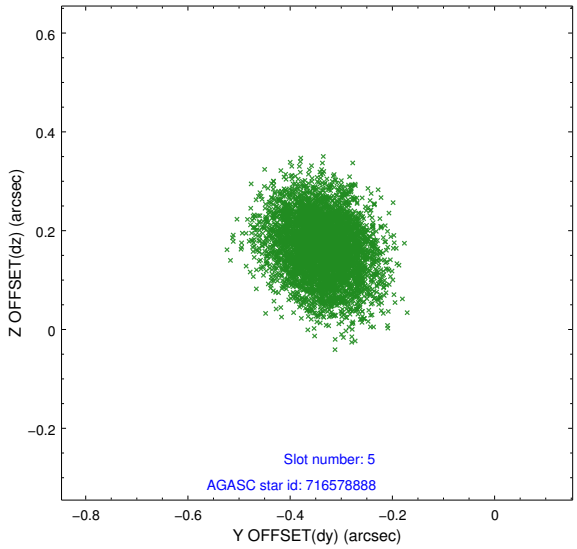
2.4.2 Slot 4

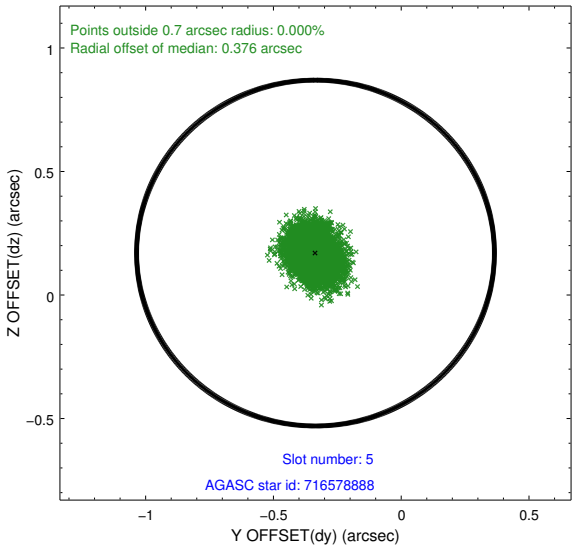

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 716447608

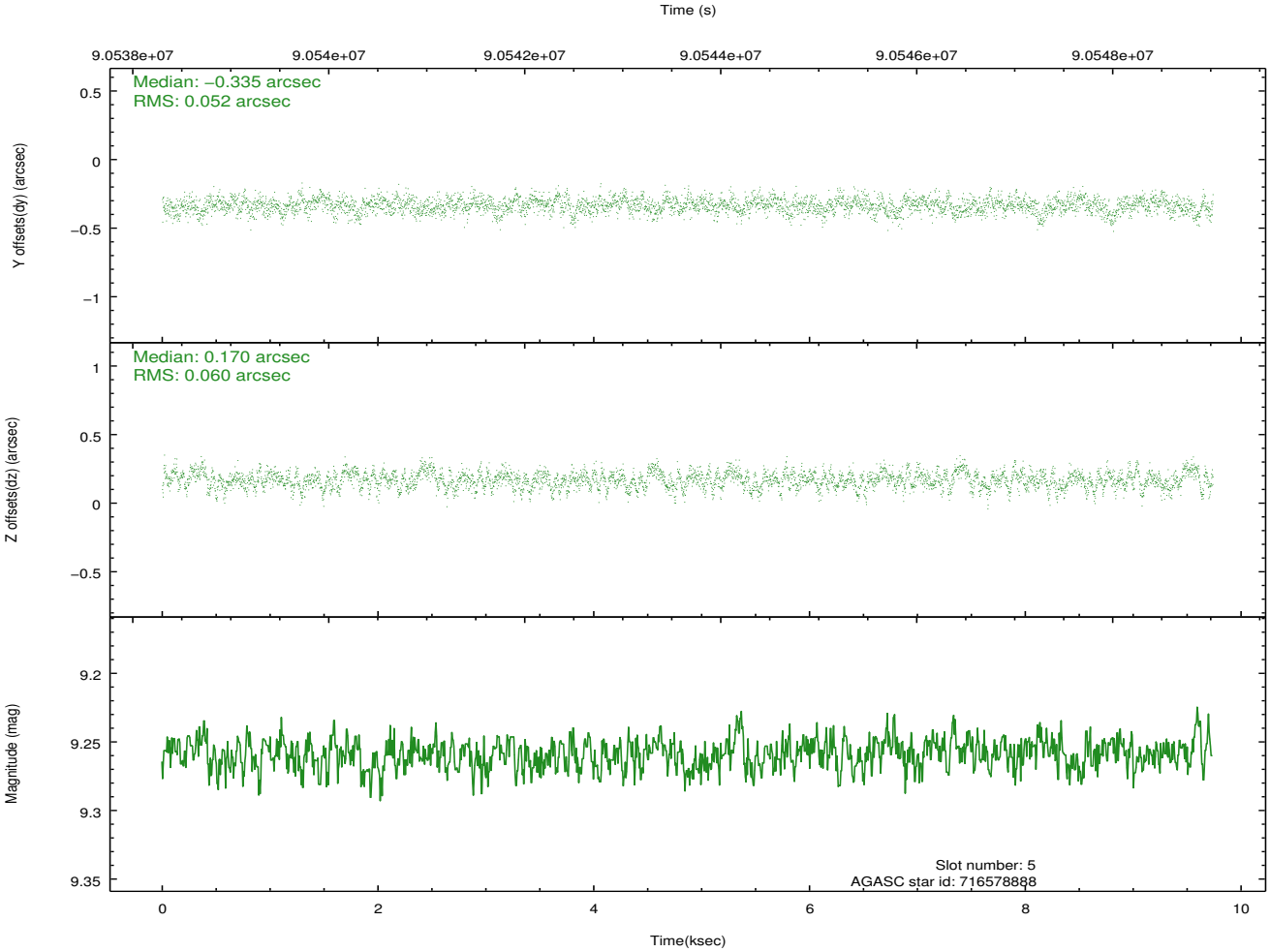

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.057 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 716447608


Time (s)
Median: −0.050 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: −0.028 arcsec
RMS: 0.045 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 716447608
Time(ksec)

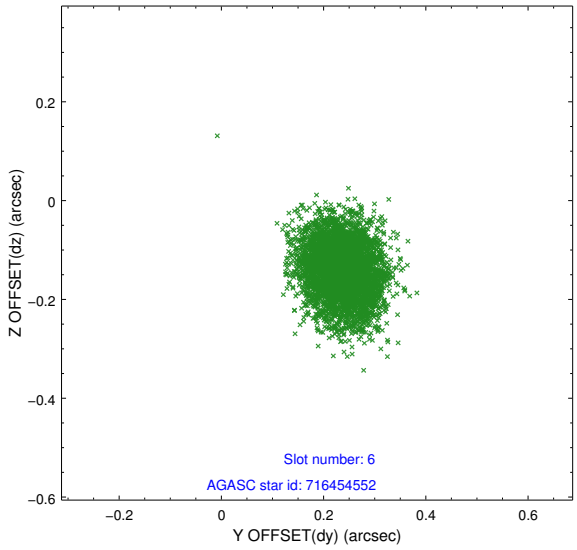
2.4.3 Slot 5

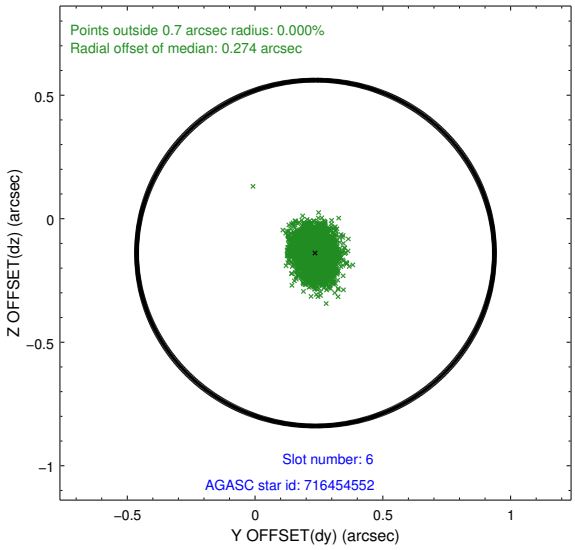

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 716578888

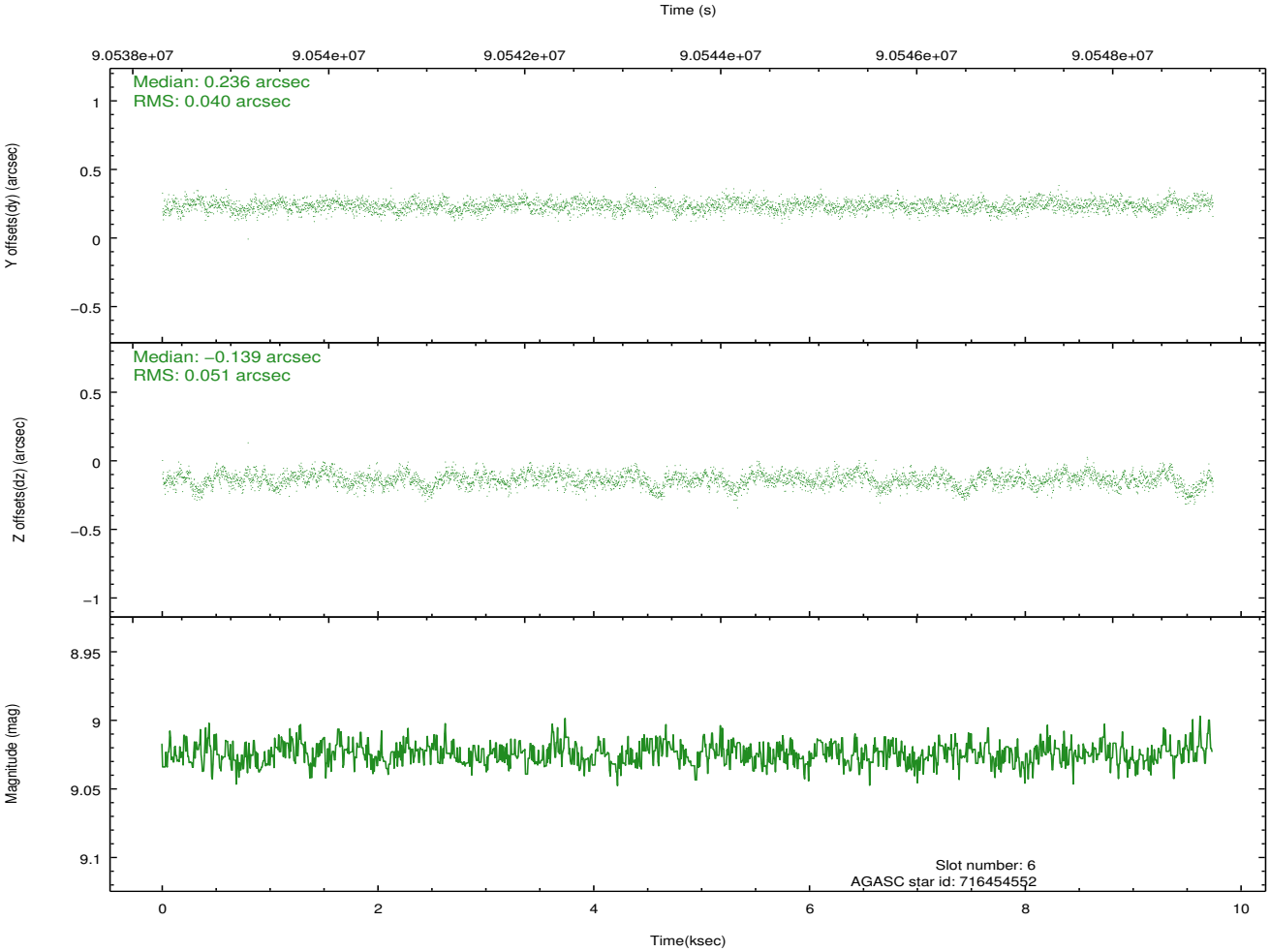

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.376 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 716578888


Time (s)
Median: −0.335 arcsec
RMS: 0.052 arcsec
Y offsets(dy) (arcsec)
Median: 0.170 arcsec
RMS: 0.060 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 716578888
Time(ksec)

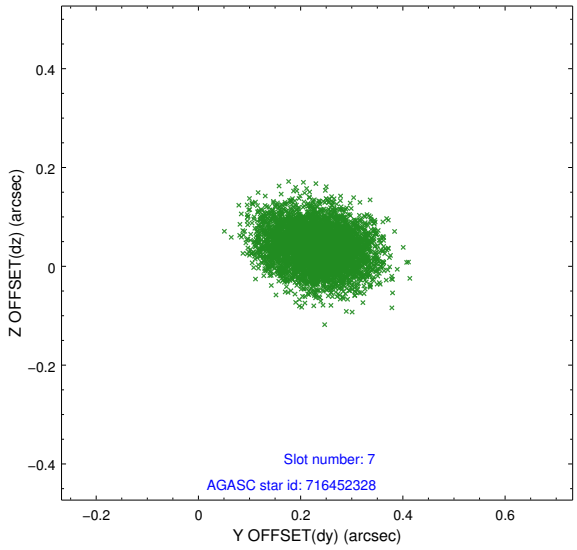
2.4.4 Slot 6

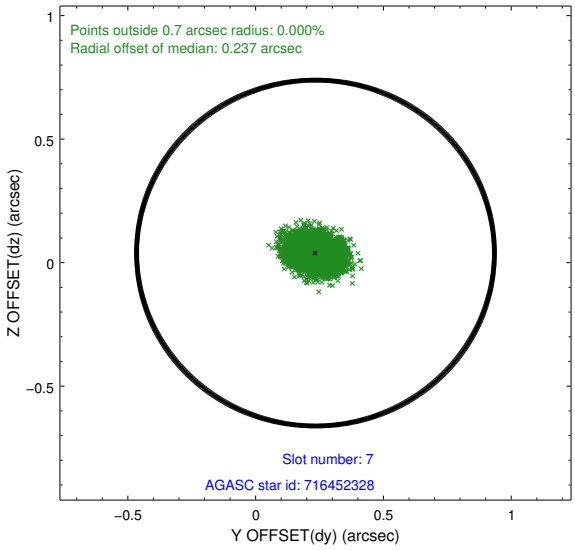

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 716454552

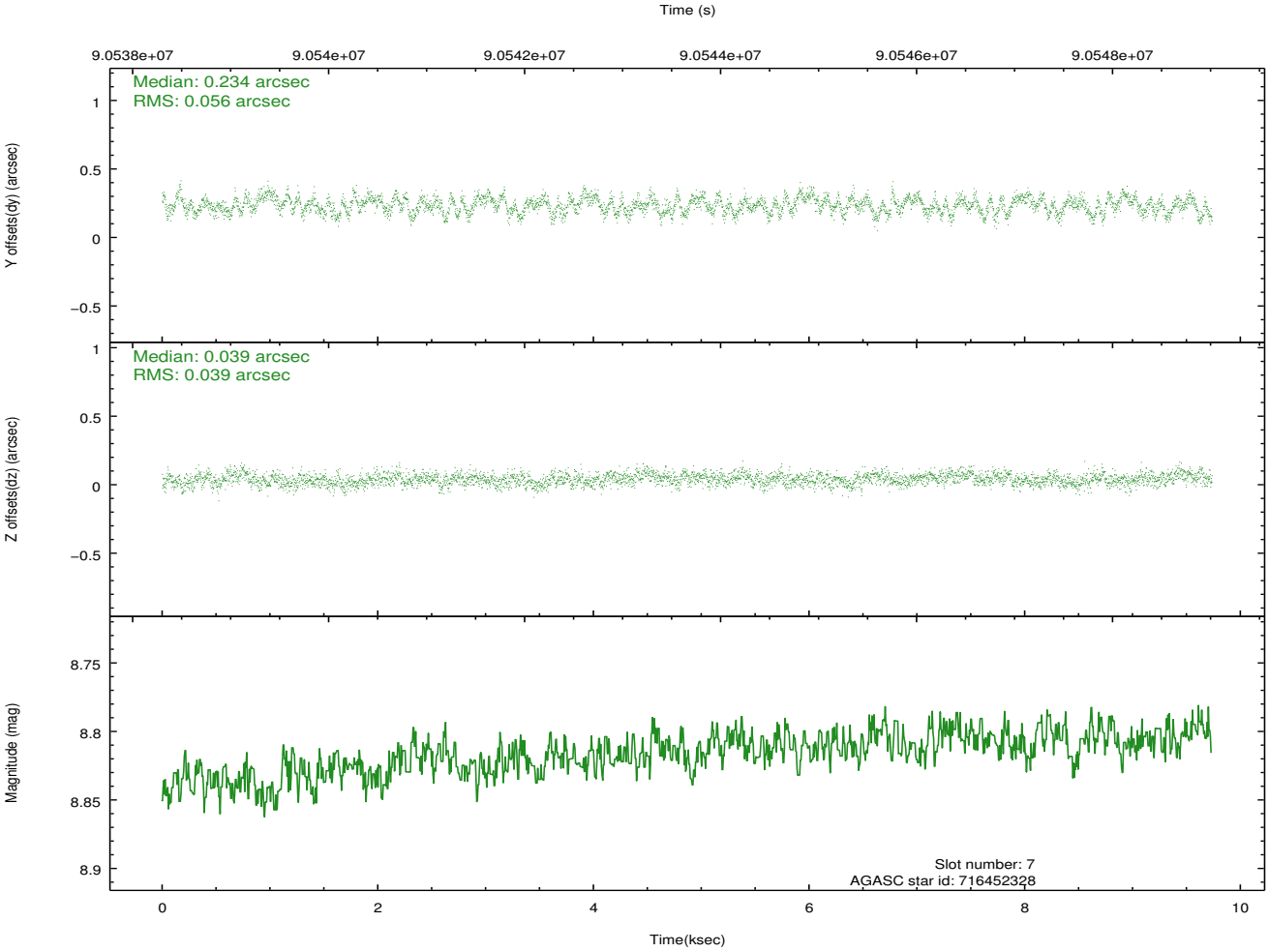

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.274 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 716454552


Time (s)
Median: 0.236 arcsec
RMS: 0.040 arcsec
Y offsets(dy) (arcsec)
Median: −0.139 arcsec
RMS: 0.051 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 716454552
Time(ksec)

2.4.5 Slot 7

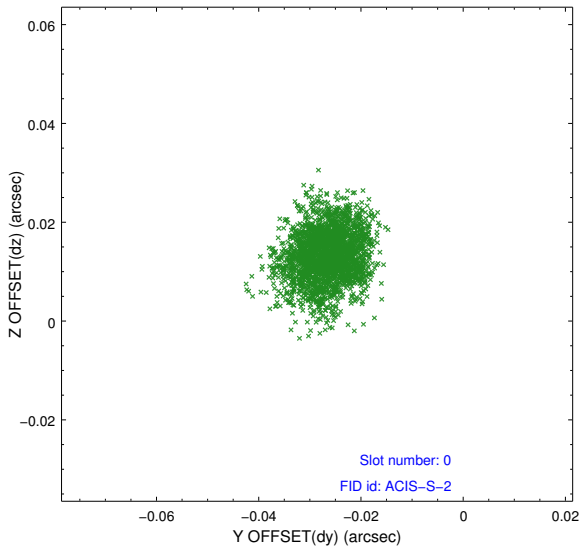

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 716452328

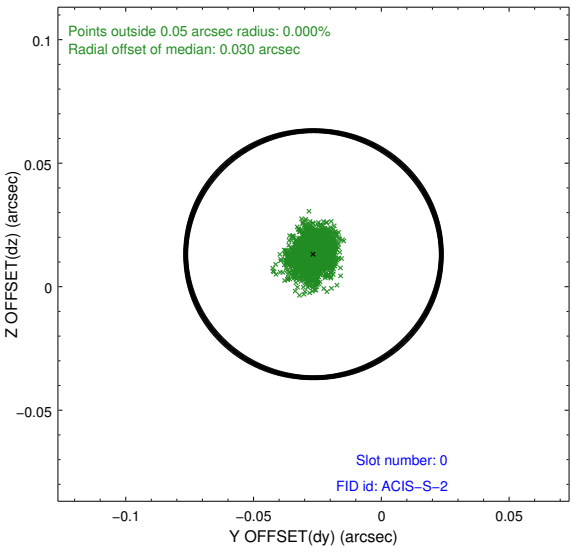

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.237 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 716452328

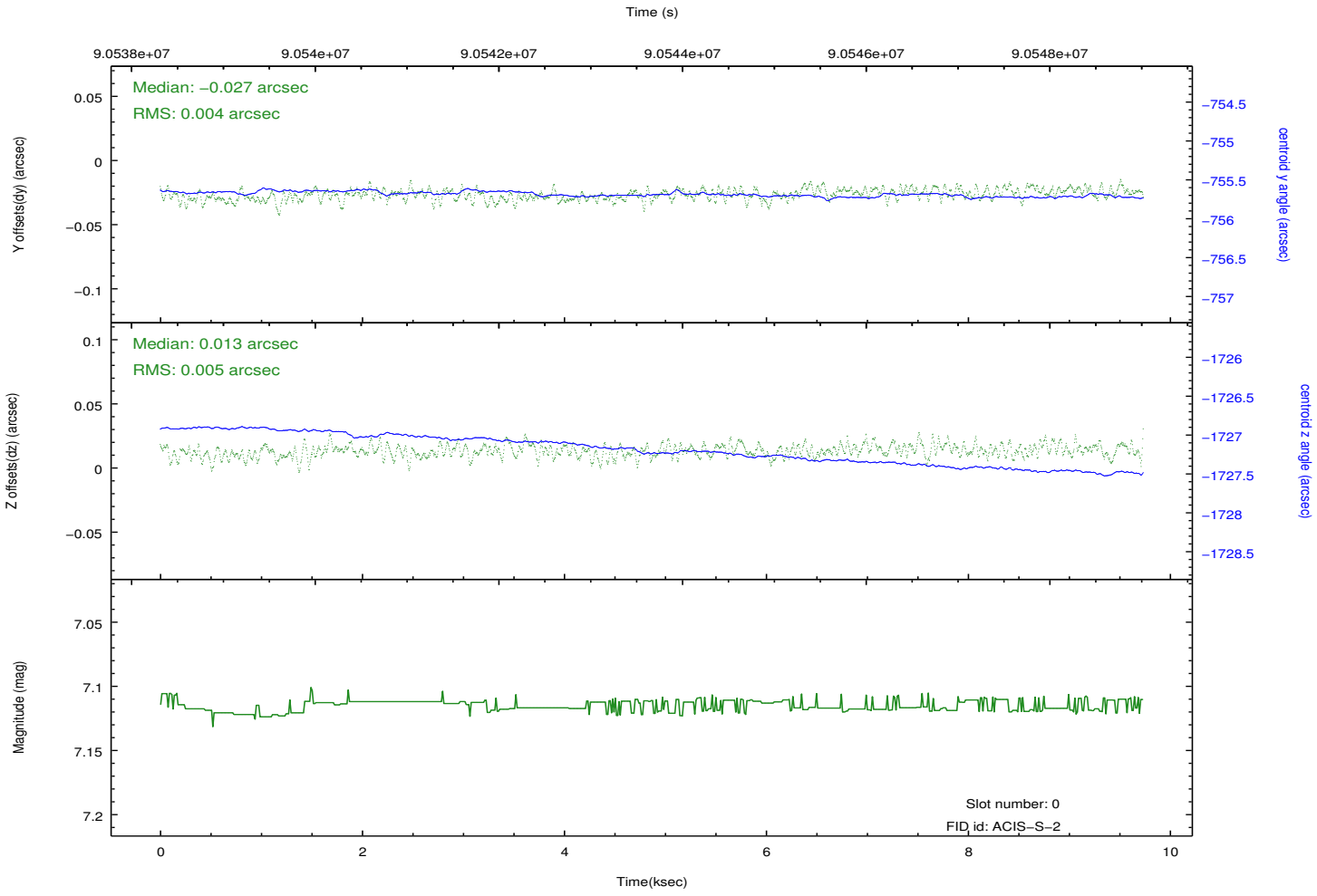

Time (s)
Median: 0.234 arcsec
RMS: 0.056 arcsec
Y offsets(dy) (arcsec)
Median: 0.039 arcsec
RMS: 0.039 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 716452328
Time(ksec)

2.5 FID Slots

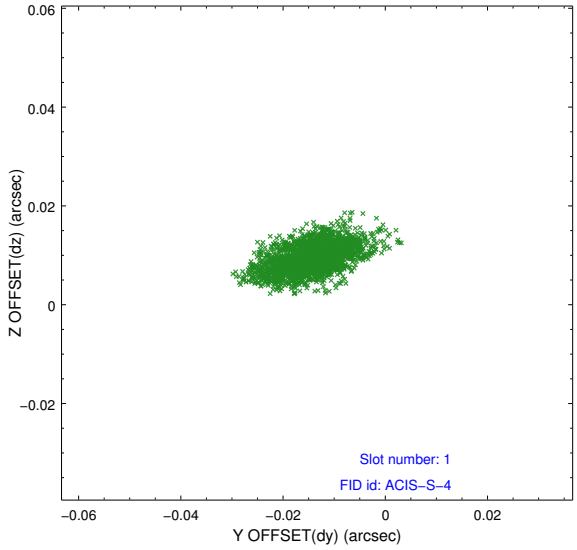
2.5.1 Slot 0

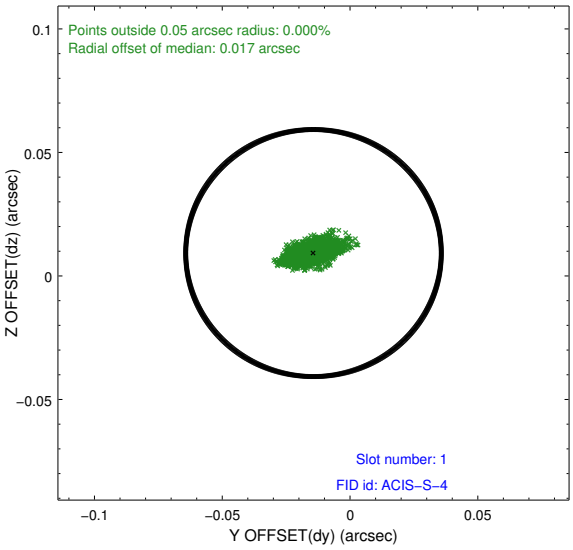


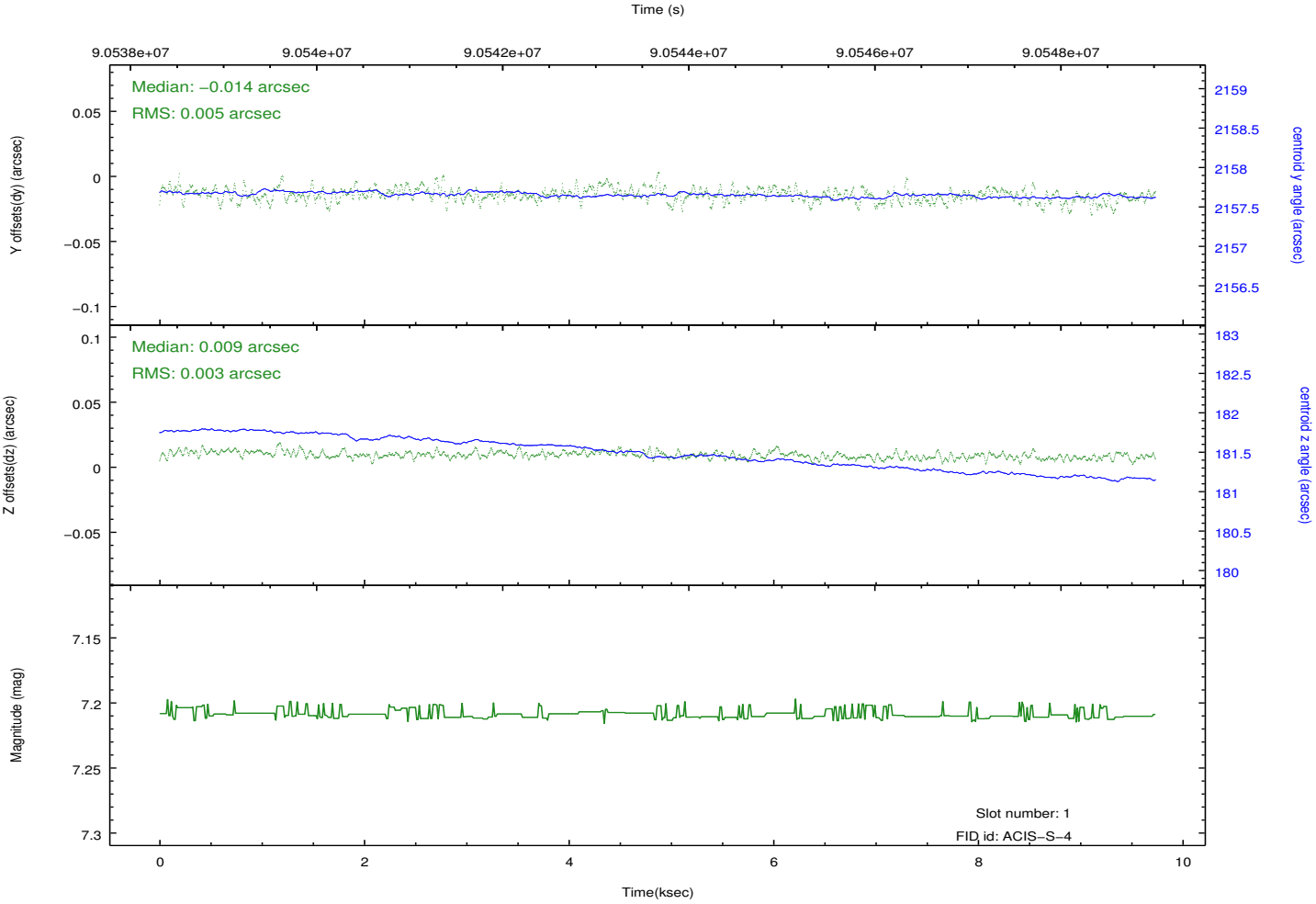




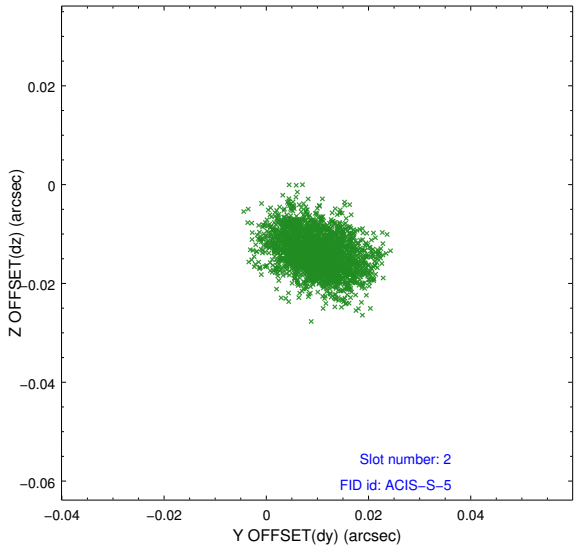
2.5.2 Slot 1

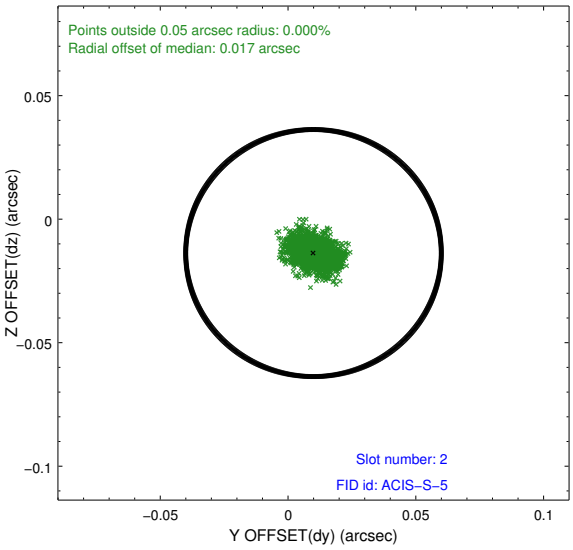

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

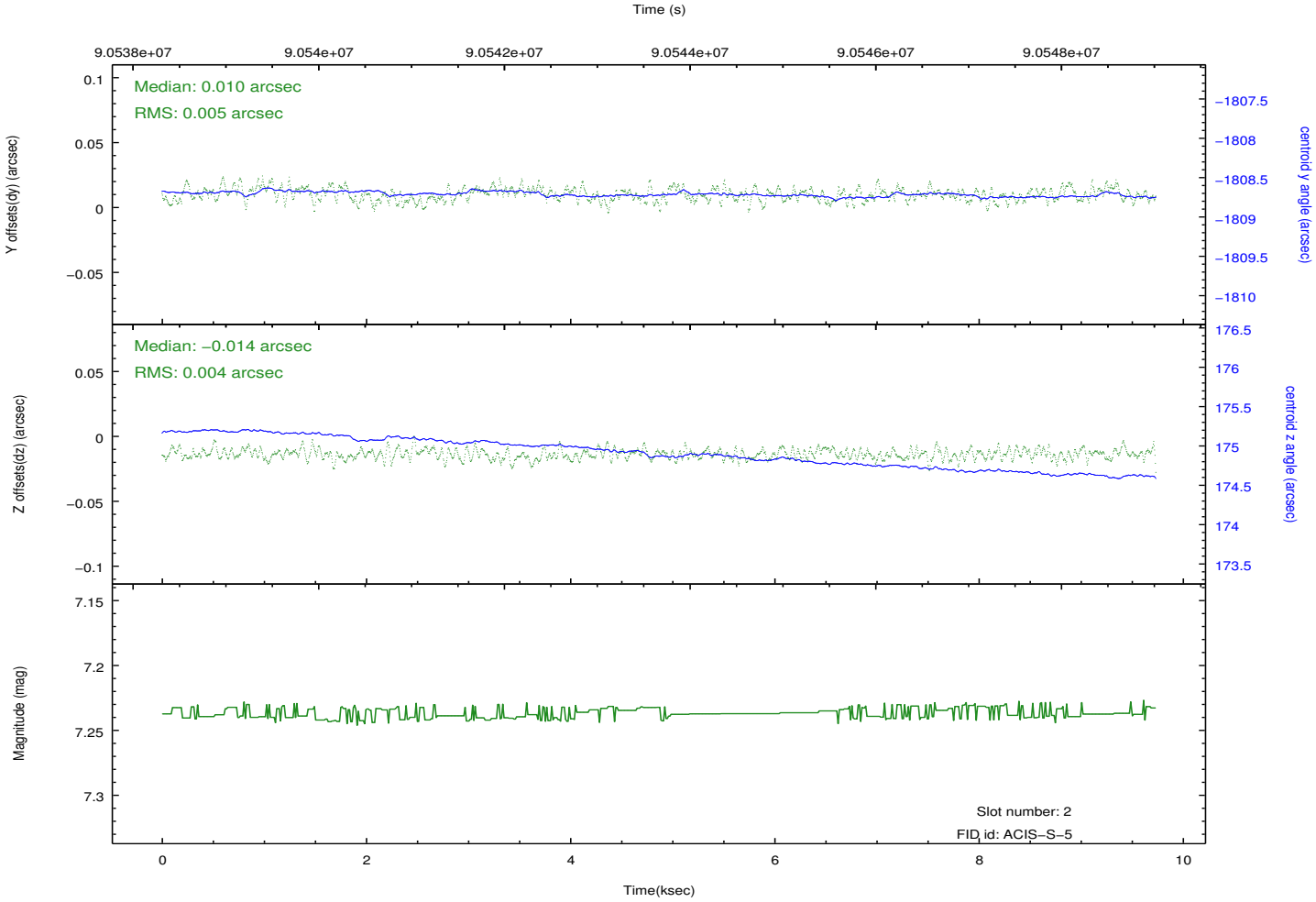

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.017 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: −0.014 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.009 arcsec
RMS: 0.003 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

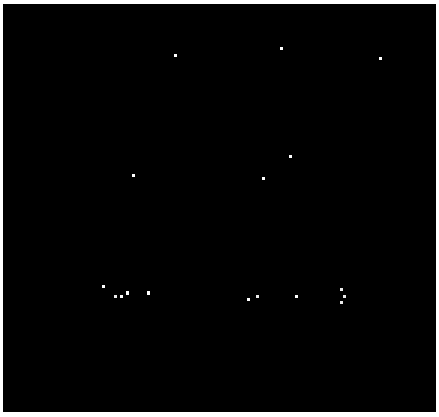

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.017 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5

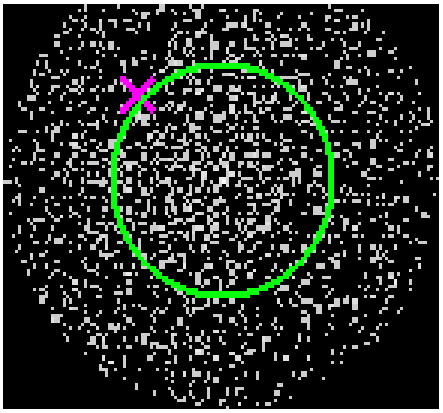

Time (s)
Median: 0.010 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.014 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−5
Time(ksec)

3 Gratings

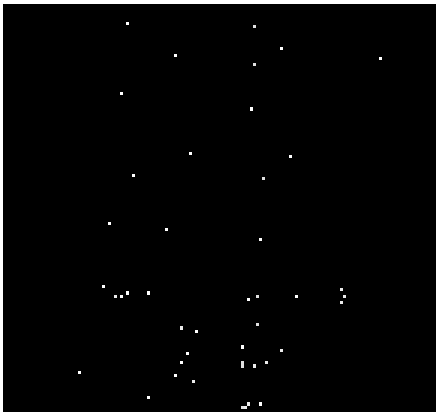
3.1 HEG Arm



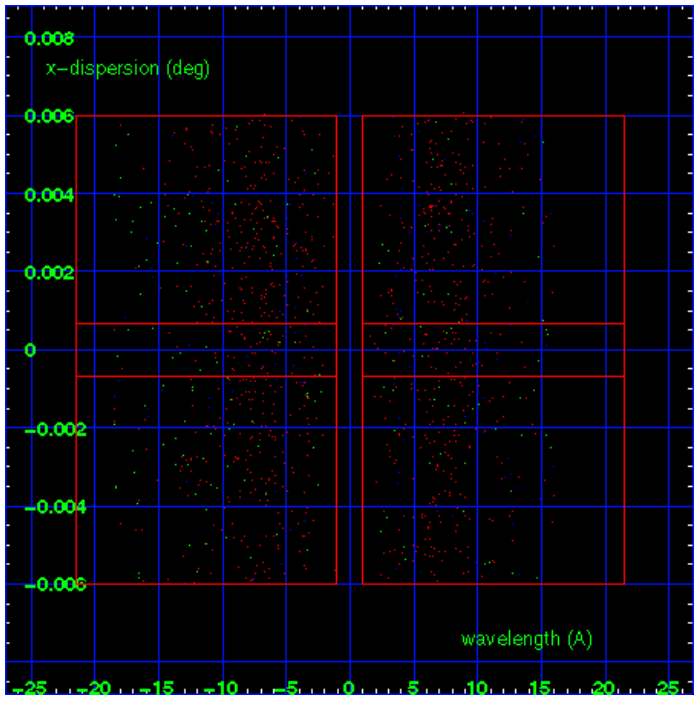
HEG Order Sort 123



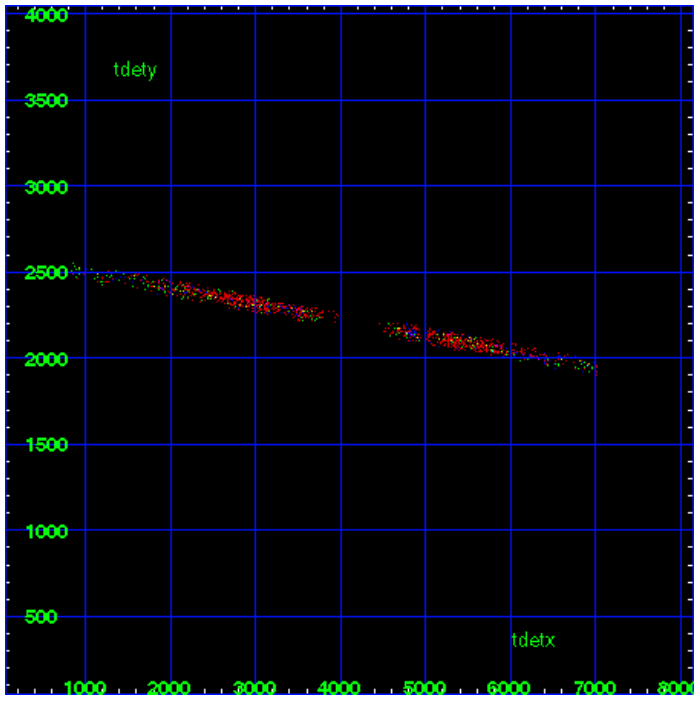
HEG Zero Order



HEG Order Sort ALL

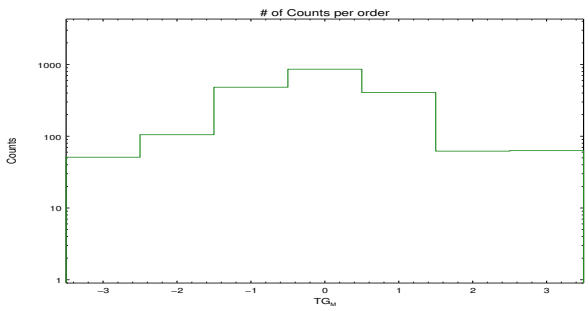


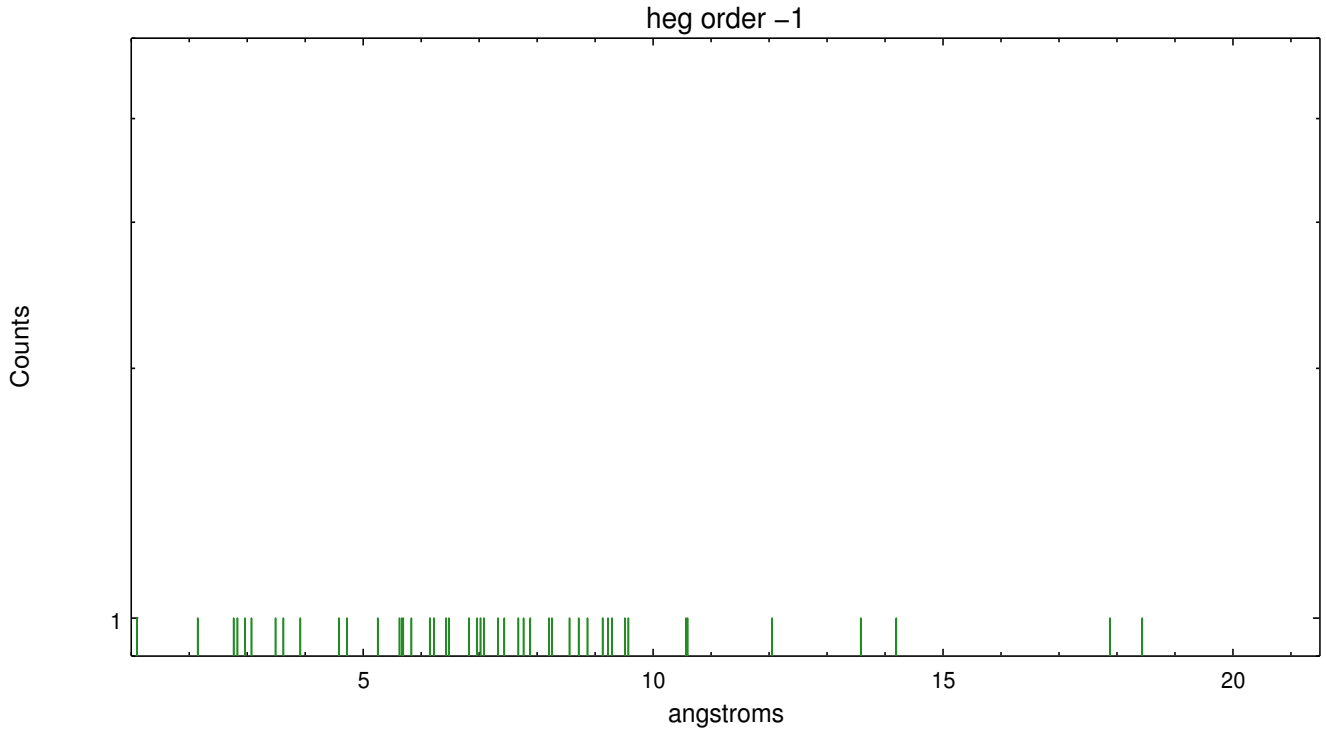
Spot Image HEG

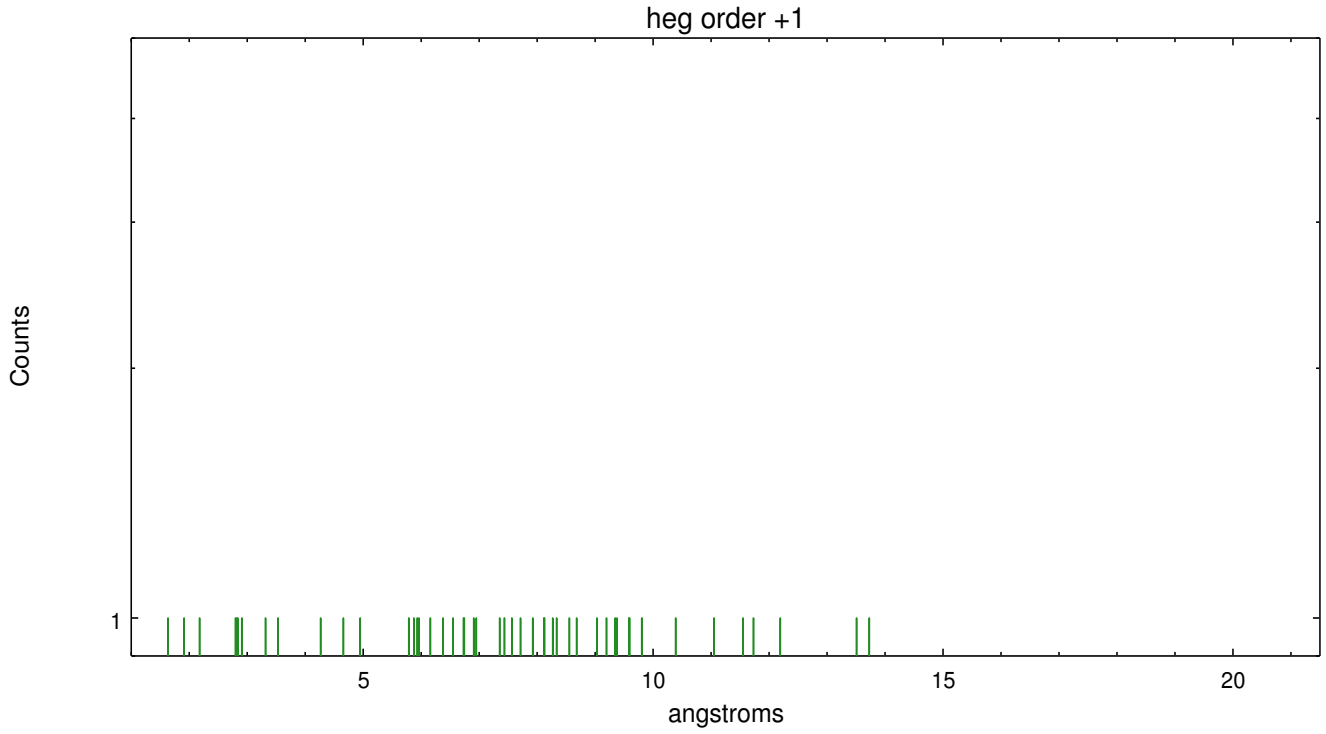


Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	51	105	482	859	407	62	63

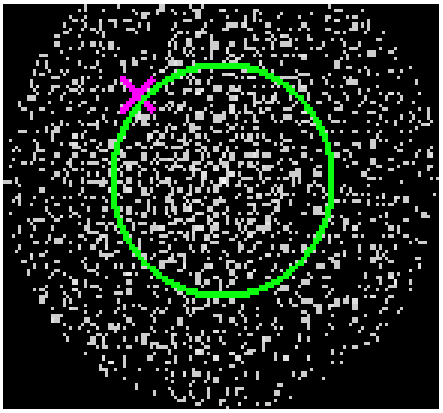



heg order −1
Counts
1
5
10
15
20
angstroms

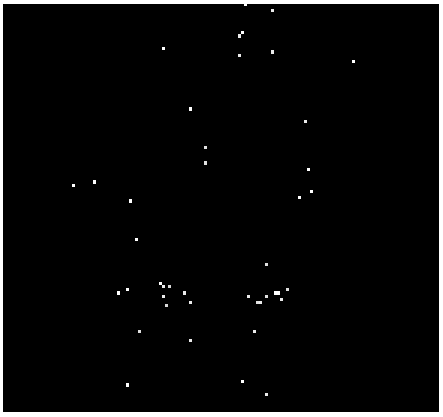

heg order +1
Counts
1
5
10
15
20
angstroms

3.2 MEG Arm

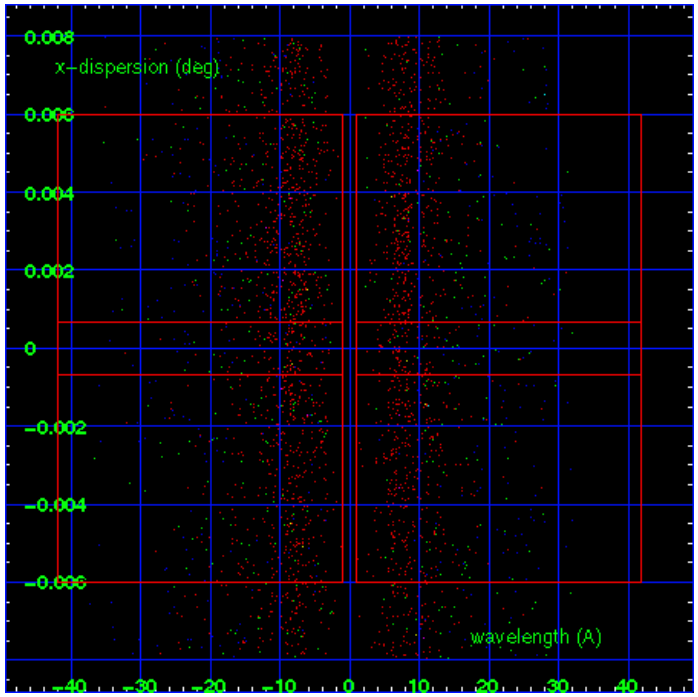
MEG Order Sort 123



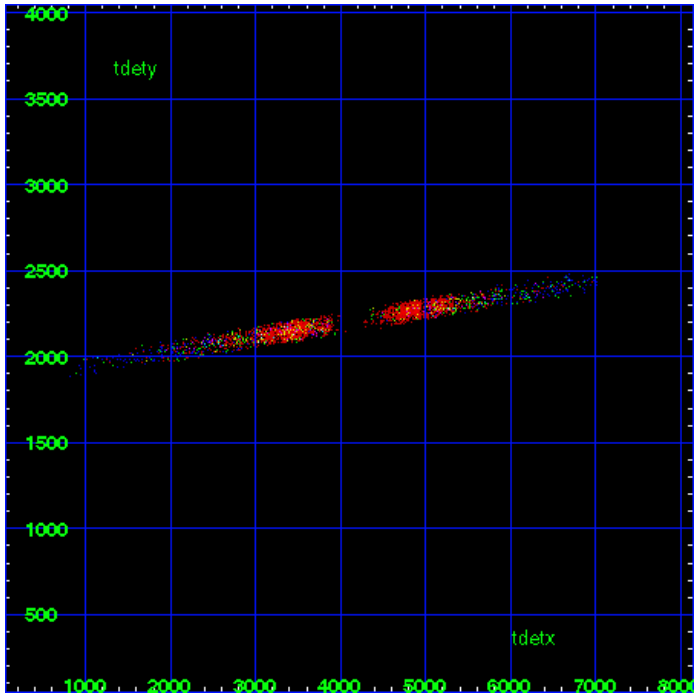
MEG Zero Order



MEG Order Sort ALL

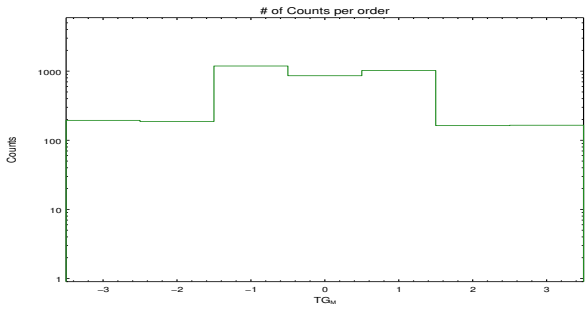


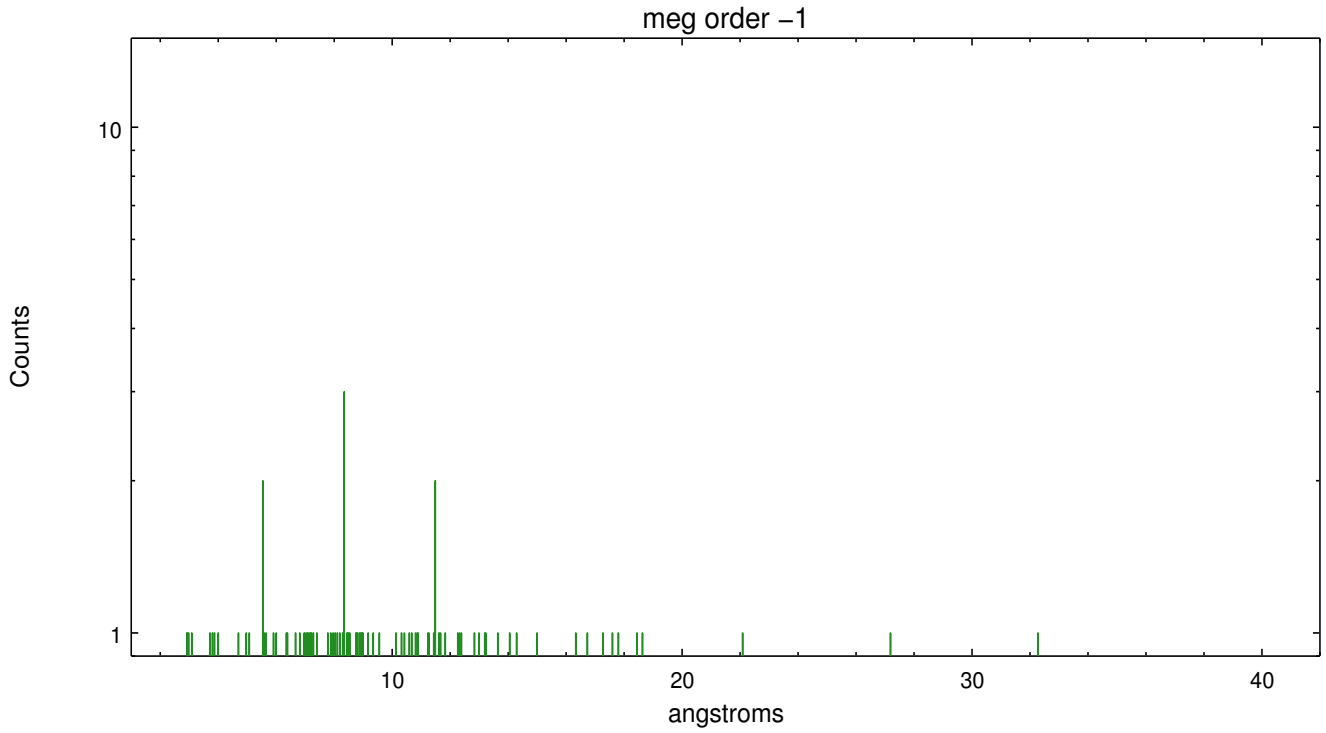
Spot Image MEG

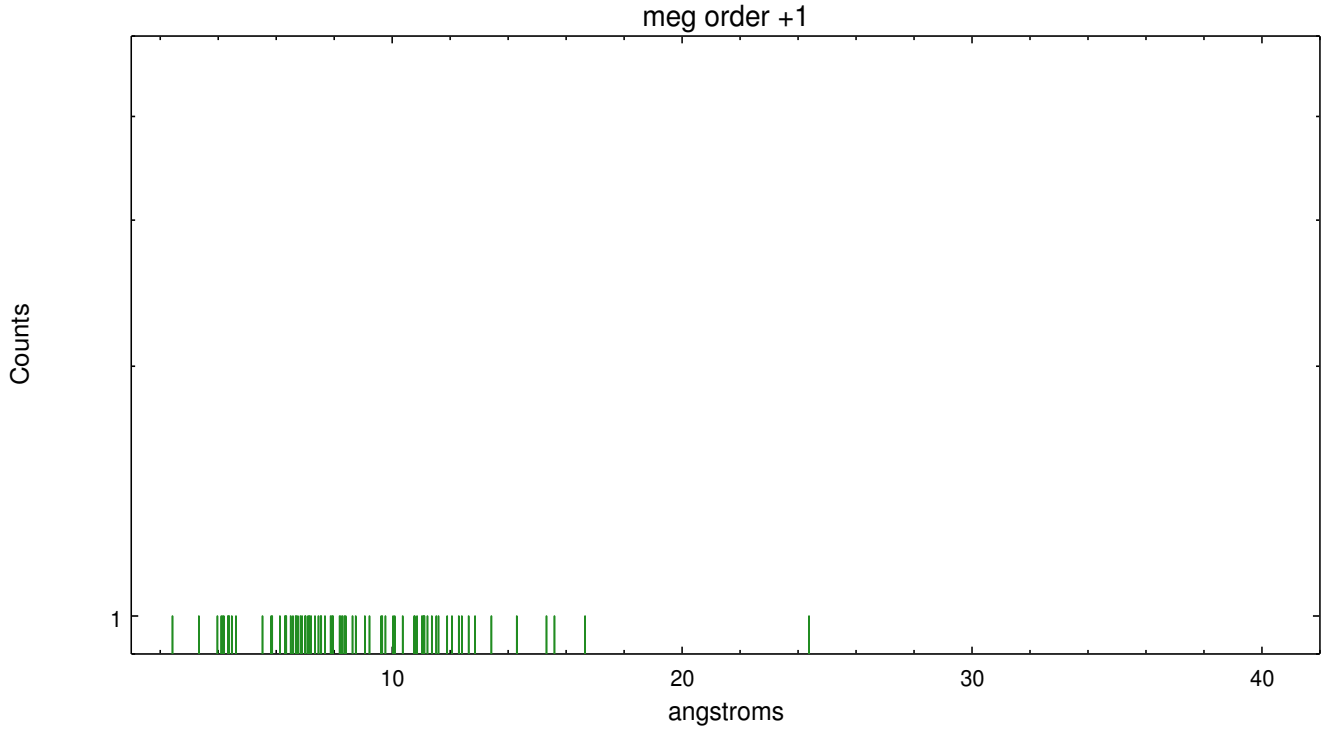


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	194	187	1187	859	1021	163	165




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


meg order +1
Counts
1
10
20
30
40
angstroms

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.10.12
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.558

A.2 Comments

Standard software processing technique using the tool tgdetect failed to determine an accurate position for the zeroth order for this observation. The source is extended. The position of the zeroth order was chosen to be the position of the brightest emission (sky coordinates x=4119.25, y=4073.75).
Note this is not the same position as used in TGCat. For grating analysis of localized X-ray emission within the extended emission, the investigator will need to extract one or more dispersed spectra using user-defined zeroth order positions for all positions of interest. ===
The spectral data supplied in this processing are only energy-calibrated for the particular zeroth order position selected. WARNING: there are no standard ciao tools for analysis of grating spectra from extended sources. The shape of an emission 'line' will be the shape of the zero order spatial structure convolved with the instrumental LSF. Grating extractions can be used, but need to be combined with custom spatial-spectral analysis, since wavelength is multi-valued at any particular diffraction angle. === The spectral lines are spatially-broadened and the rmfs are not valid.
===
Charge time for this ObsId remains at previous value of 9.558 ks, although with the current processing the charge time would be 9.661 ks.