V&V Reference Report
L2 ASCDS Version : 7.6.10

Observation 702 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Jul 30 2007

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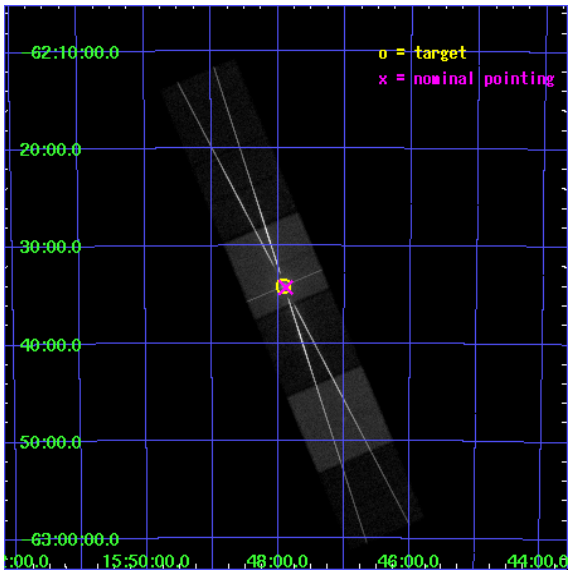
1 Front

seq_num	400069
obs_id	702
title	RESOLVING LOW ENERGY LINES FROM LMXRB
observer	Dr Lorella Angelini
object	X1543-62
dtycycle	0
cycle	P
ra_targ	236.977917
dec_targ	-62.568056
ra_nom	236.97082635434
dec_nom	-62.571274895901
roll_nom	247.17707977248
revision	3
ontime	27747.200025842
livetime	27395.848271756
ontime4	27747.200025842
ontime5	27747.200025842
ontime6	27747.200025842
ontime7	27747.200025842
ontime8	27743.959065601
ontime9	27747.200025842
l2events	870357

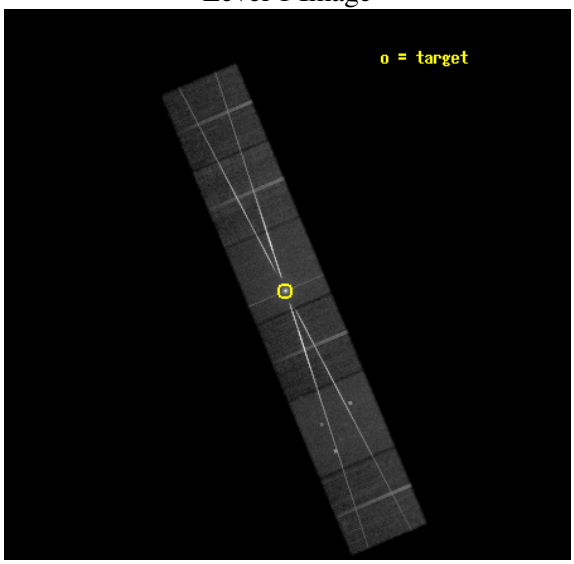


2 OBI

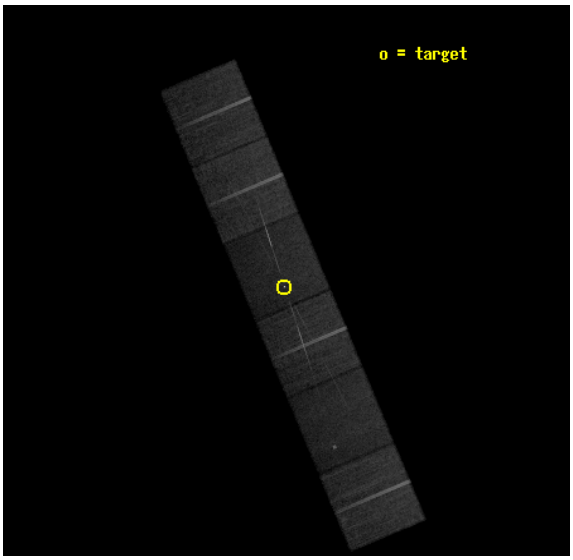
2.1 OBI

2.1.1 Images

Level 1 Image

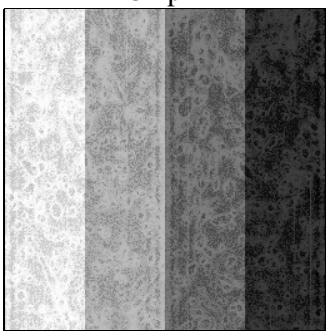


Level 1 Bad Events

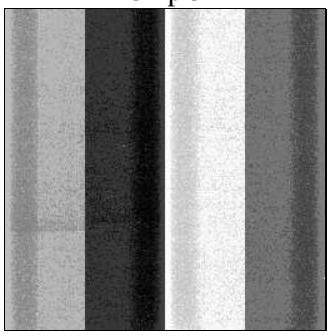


2.1.2 Bias

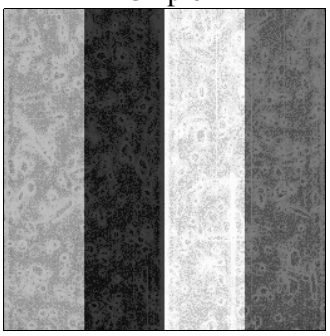
Chip 4



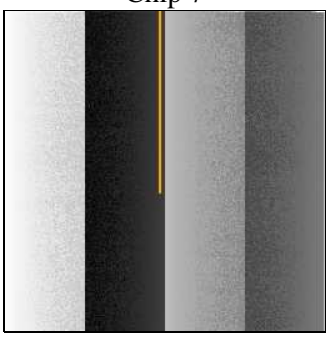
Chip 5



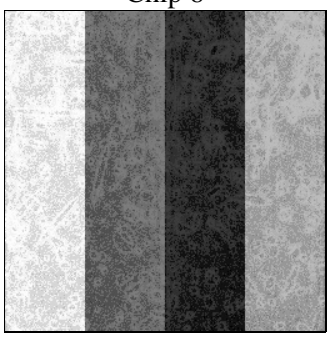
Chip 6



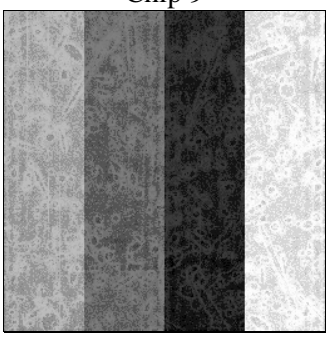
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0
ascdsver	7.6.10
caldbver	3.4.0
date	2007-06-07T02:04:41
revision	2

sched_exp_time	27990.000000
ontime	27747.200025842
ontime4	27747.200025842
ontime5	27747.200025842
ontime6	27747.200025842
ontime7	27747.200025842
ontime8	27743.959065601
ontime9	27747.200025842
l1events	1847178

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	207212	294331	397284	428359	329383	190609
rejected events	171578	122103	158201	125599	174510	147722
rejected %	82%	41%	39%	29%	52%	77%

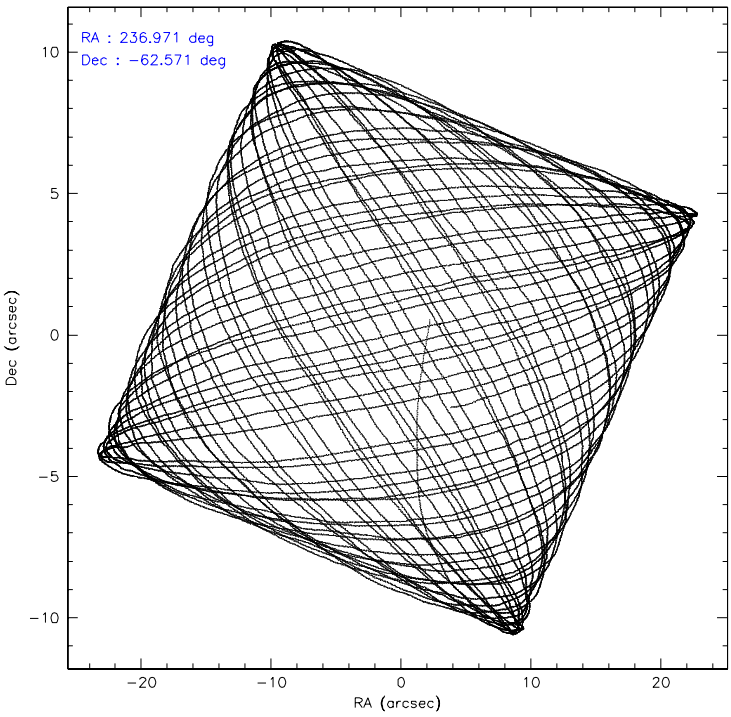
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	21444	41337	179802	60380	107365	27334
	10%	14%	45%	14%	32%	14%
grade 1 events	150	1178	2295	1230	822	161
	0%	0%	0%	0%	0%	0%
grade 2 events	6234	48329	28757	70909	19606	6213
	3%	16%	7%	16%	5%	3%
grade 3 events	2266	10729	10189	32636	7864	2633
	1%	3%	2%	7%	2%	1%
grade 4 events	2086	10429	9902	32277	7520	2592
	1%	3%	2%	7%	2%	1%
grade 5 events	5595	17682	8238	23366	8956	6797
	2%	6%	2%	5%	2%	3%
grade 6 events	3614	61444	10482	106642	12553	4126
	1%	20%	2%	24%	3%	2%
grade 7 events	165823	103203	147619	100919	164697	140753
	80%	35%	37%	23%	50%	73%

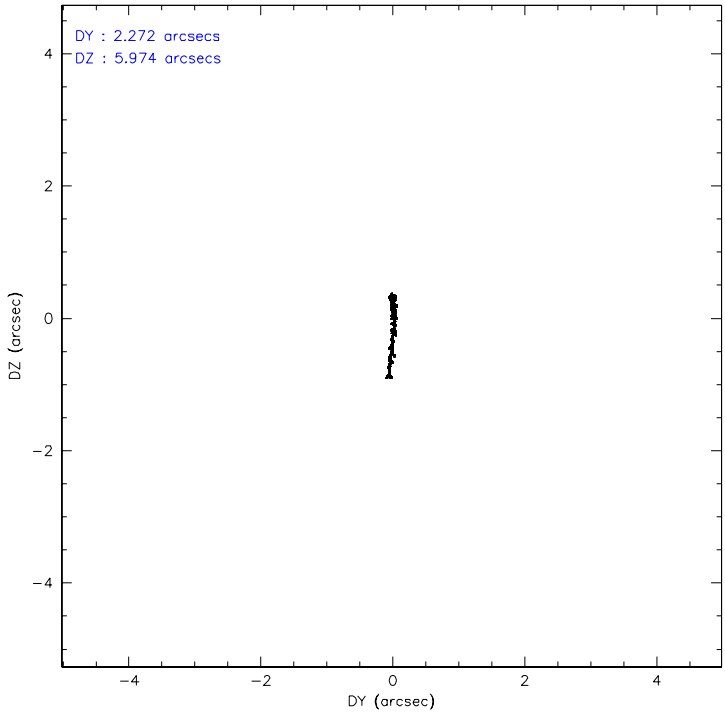
2.2 Compared Parameters

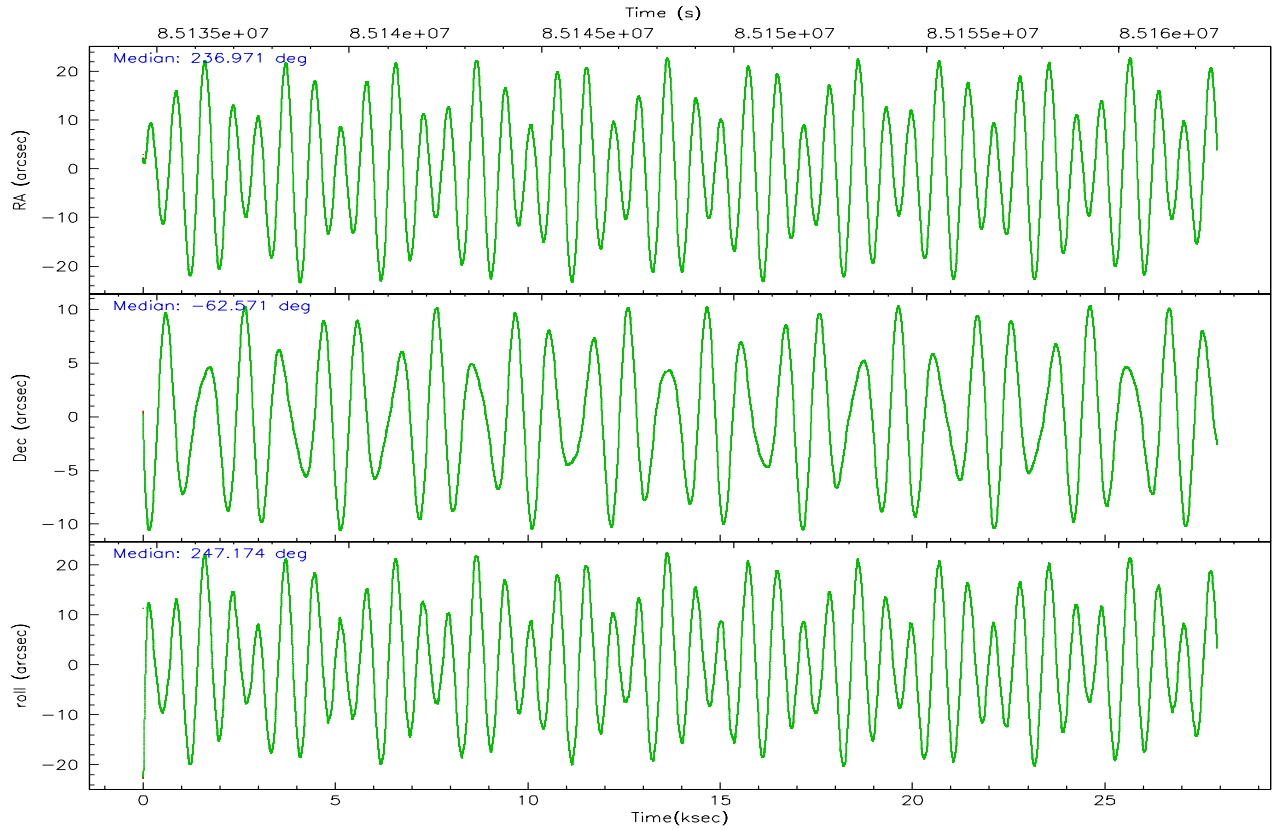
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	236.962995	236.9708263543365
Pointing Dec	-62.544142	-62.57127489590099
Pointing Roll	247.013517	247.1770797724763
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-190.132523	-190.1400660498719
SIM translation stage offset (mm)	0	0.00754346686406393
Observation start time	85134834.184000	85133840.47590999
Observation start date	2000-09-12T08:32:50	2000-09-12T08:17:20
Observation end time	85162824.184000	85163316.402017
Observation end date	2000-09-12T16:19:20	2000-09-12T16:28:36
Read mode	TIMED	TIMED

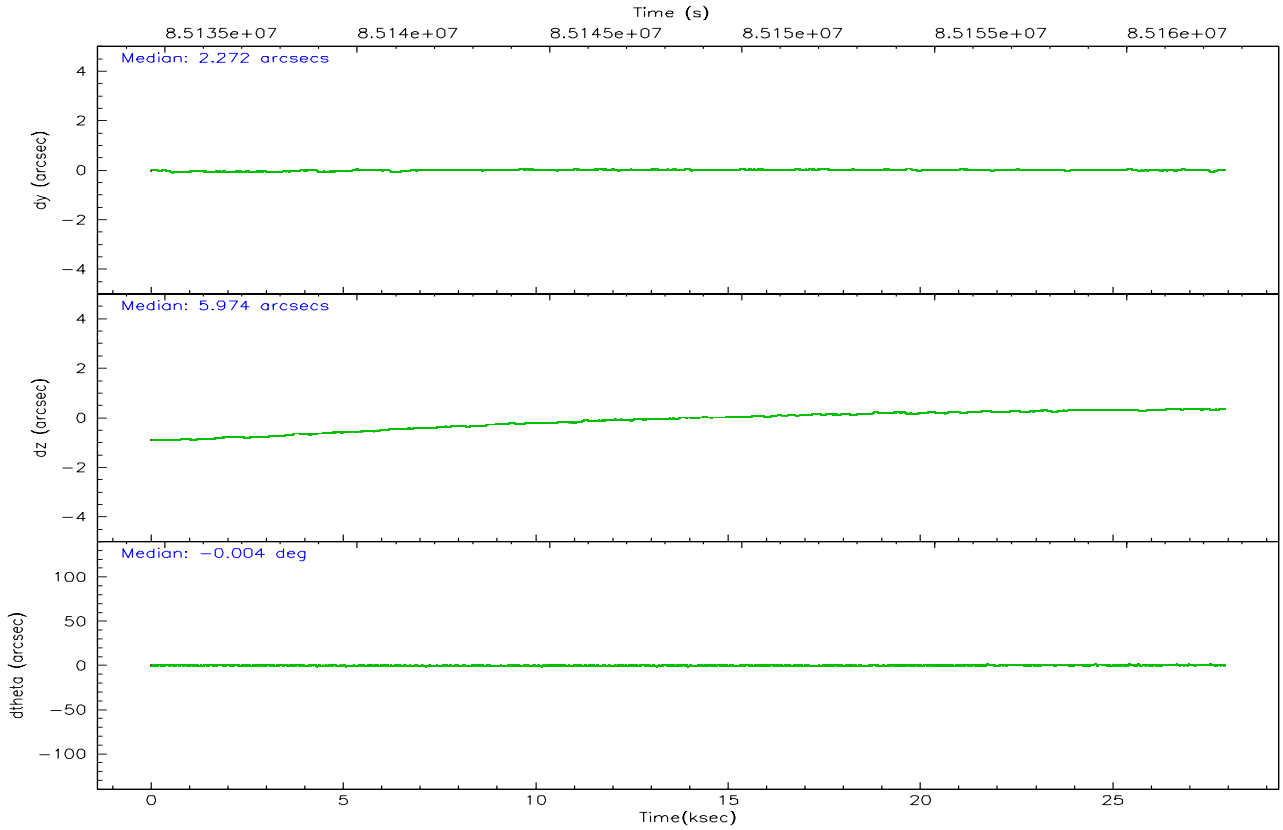
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	3.200000	3.2

2.3 Aspect


RA : 236.971 deg
Dec : −62.571 deg
10
5
0
−5
−10
Dec (arcsec)
−20
−10
0
10
20
RA (arcsec)


DY : 2.272 arcsecs
DZ : 5.974 arcsecs
4
2
0
−2
−4
DZ (arcsec)
−4
−2
0
2
4
DY (arcsec)


Time (s)
8.5135e+07
8.514e+07
8.5145e+07
8.515e+07
8.5155e+07
8.516e+07
Median: 236.971 deg
RA (arcsec)
Median: −62.571 deg
Dec (arcsec)
Median: 247.174 deg
roll (arcsec)
Time(ksec)

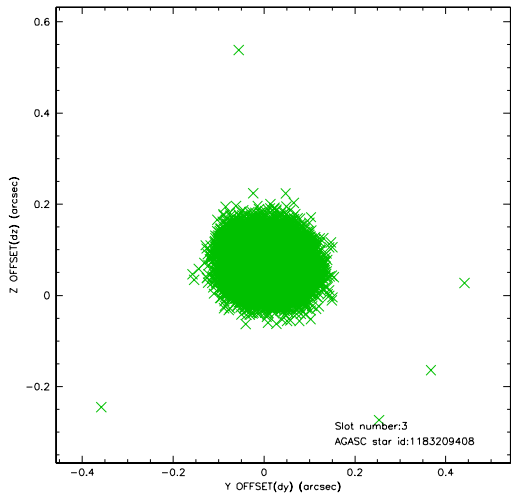

Time (s)
8.5135e+07
8.514e+07
8.5145e+07
8.515e+07
8.5155e+07
8.516e+07
Median: 2.272 arcsecs
dy (arcsec)
Median: 5.974 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

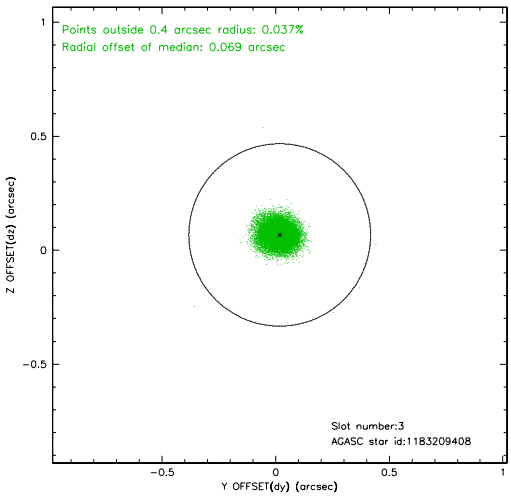
Slot Statistics

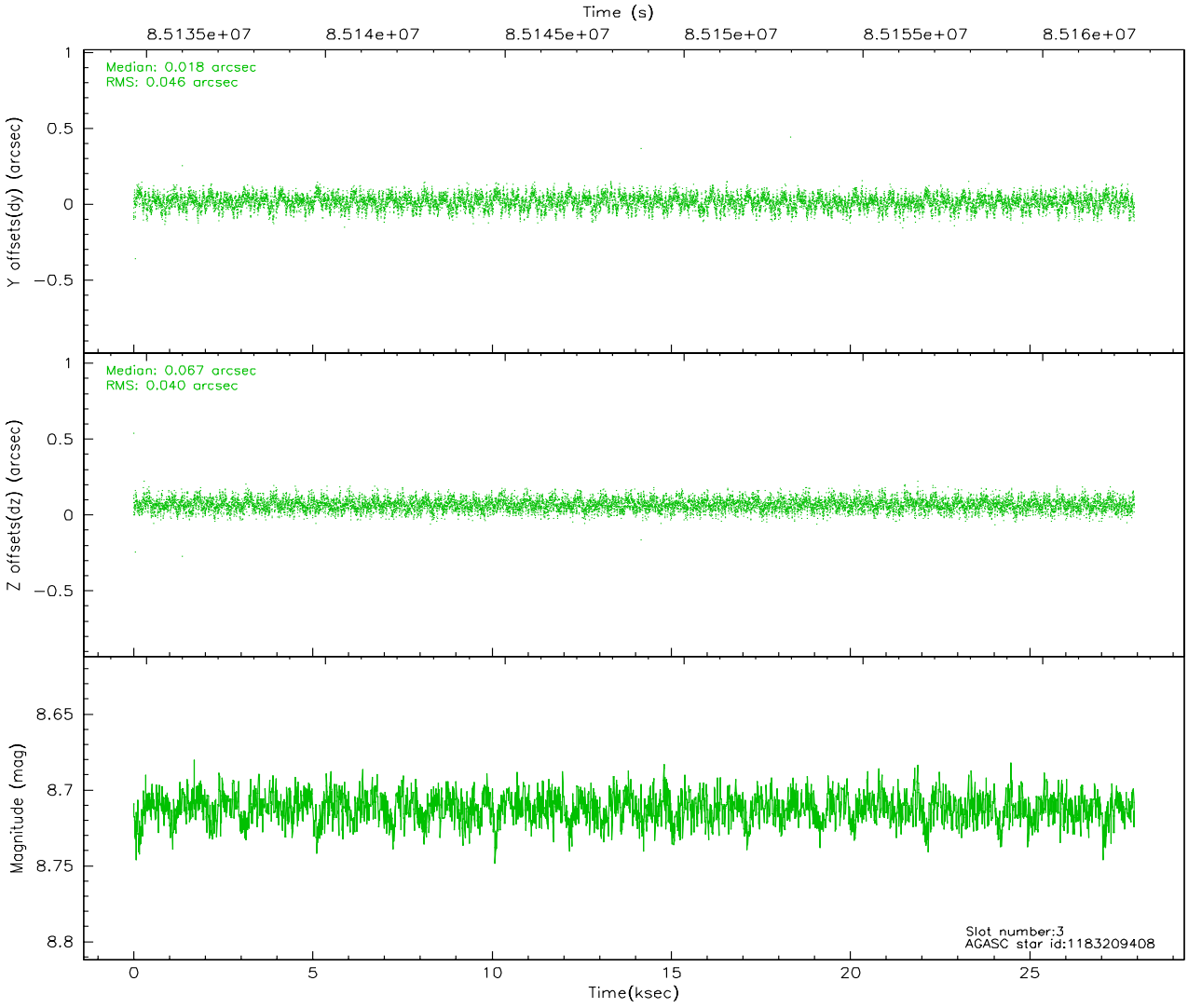
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	6811	0.038	0.028	0.015	0.026	0.000000	0.000000	-754.85	-1726.97
1	FID	ACIS-S-3	7.36	6810	-0.061	-0.053	0.019	0.040	0.000000	0.000000	58.14	-1856.35
2	FID	ACIS-S-4	7.20	6812	-0.005	0.027	0.007	0.014	0.000000	0.000000	2158.46	181.41
3	GUIDE	1183209408	8.71	13618	0.018	0.067	0.064	0.104	237.705131	-63.010355	1078.68	1774.90
4	GUIDE	1183198328	8.79	13620	-0.131	-0.119	0.074	0.114	236.222922	-61.997390	-1316.25	-1917.10
5	GUIDE	1183208704	8.86	13620	0.155	0.050	0.078	0.124	236.306731	-63.131978	2370.91	-153.92
6	GUIDE	1183192312	9.40	13610	0.024	0.046	0.080	0.129	238.126227	-62.276476	-1630.88	1424.28
7	GUIDE	1183187560	9.55	13616	-0.064	-0.045	0.084	0.136	236.833951	-62.217883	-995.98	-657.52

2.4 Star Slots

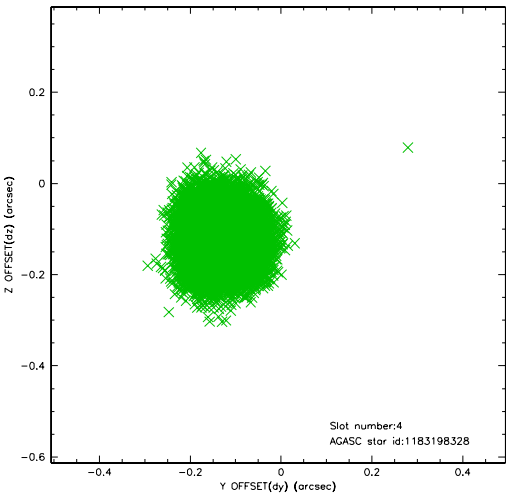
2.4.1 Slot 3

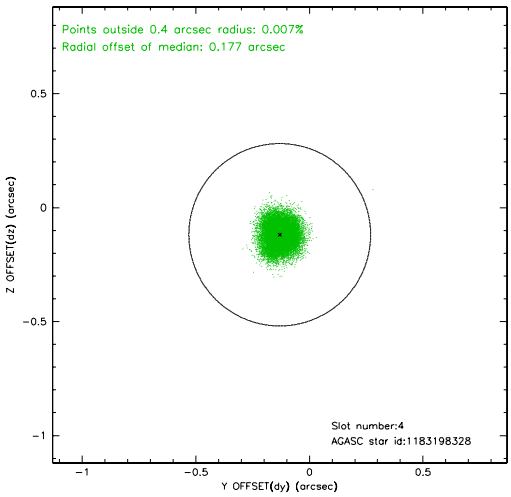


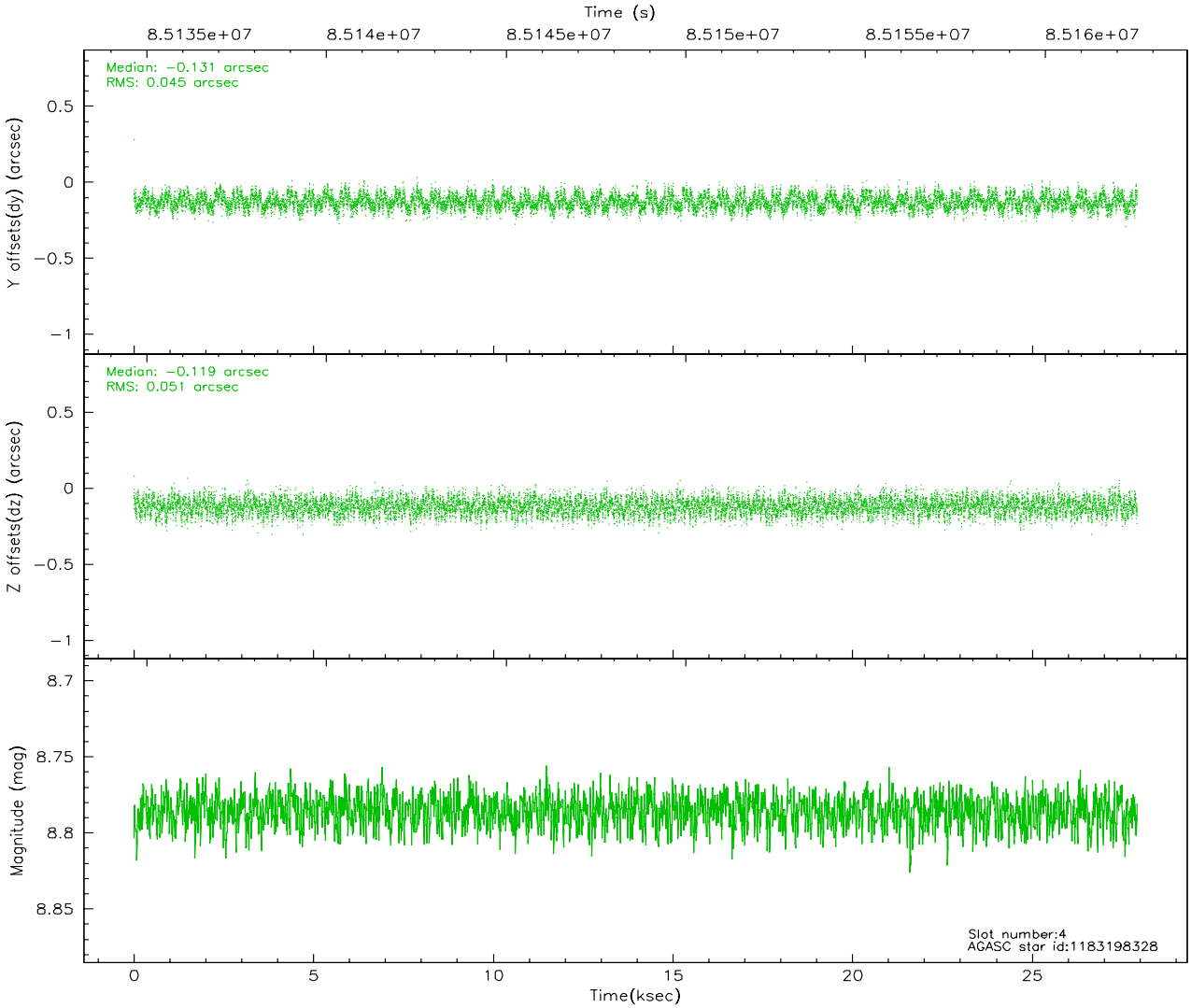




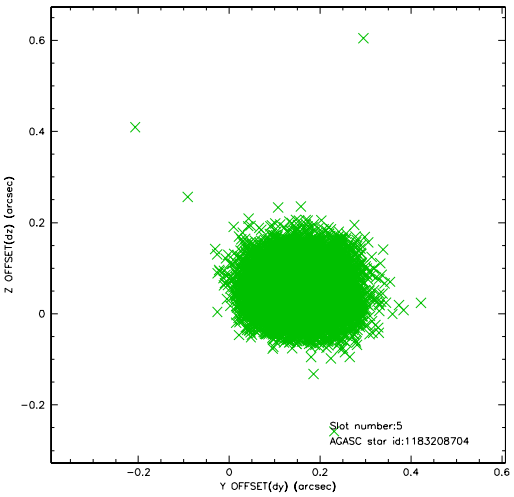
2.4.2 Slot 4

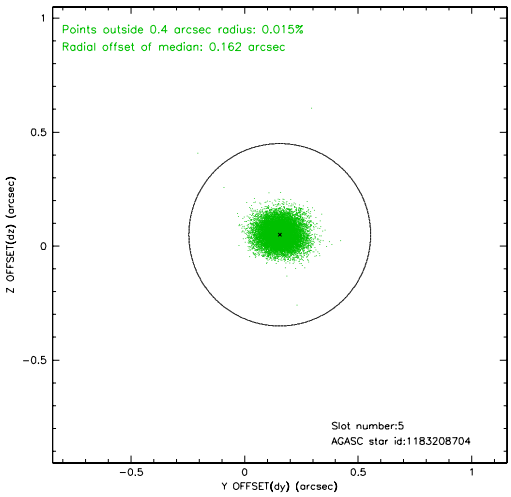

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1183198328

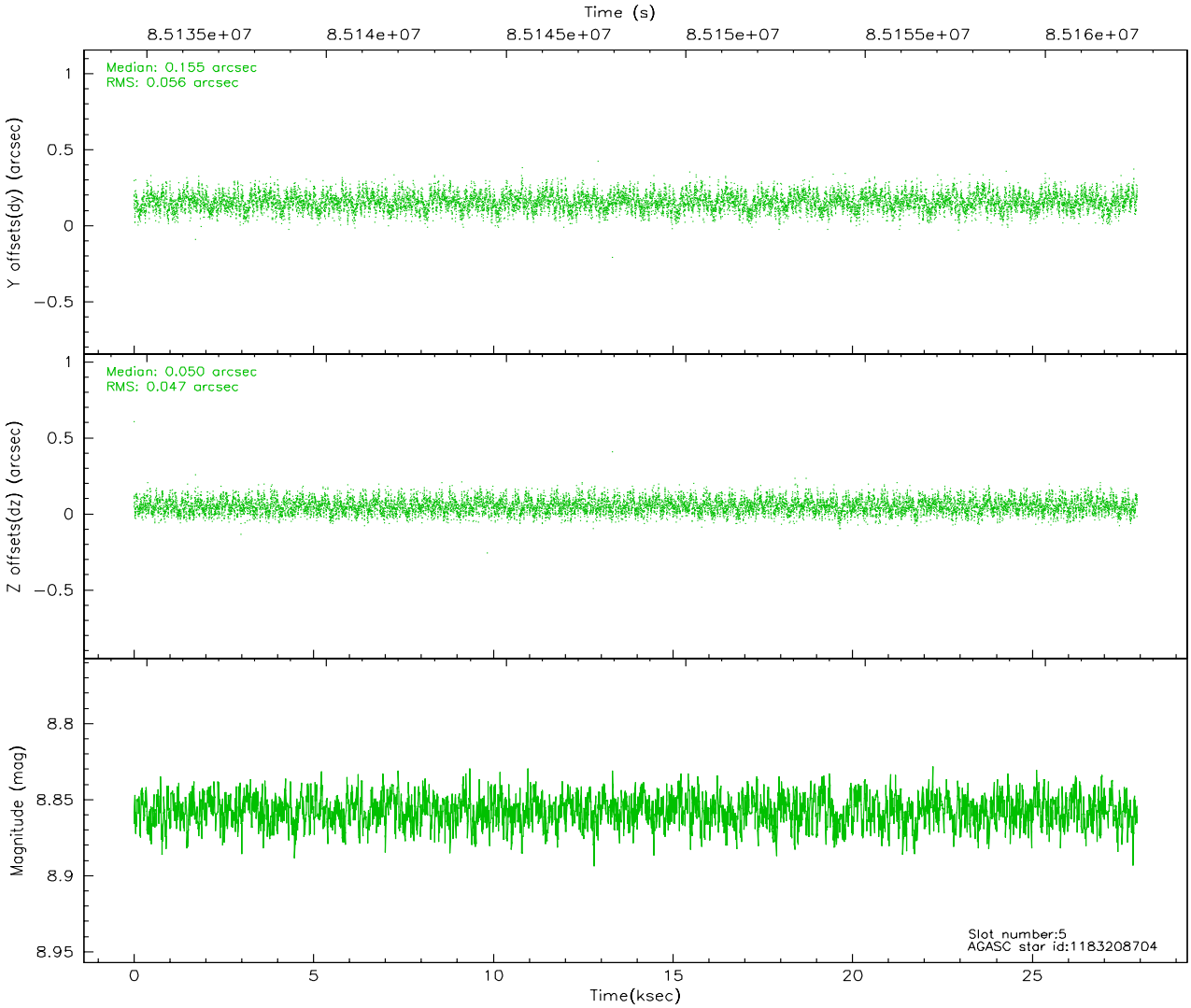

Points outside 0.4 arcsec radius: 0.007%
Radial offset of median: 0.177 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1183198328


Time (s)
Median: −0.131 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: −0.119 arcsec
RMS: 0.051 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:1183198328
Time(ksec)

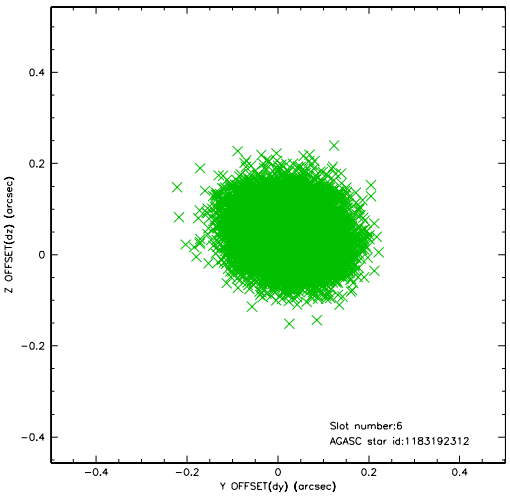
2.4.3 Slot 5

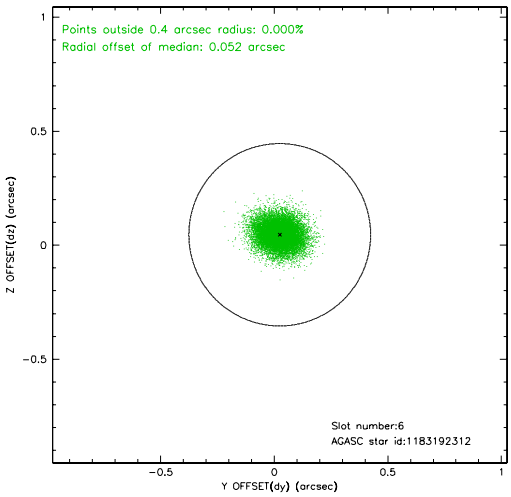

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1183208704

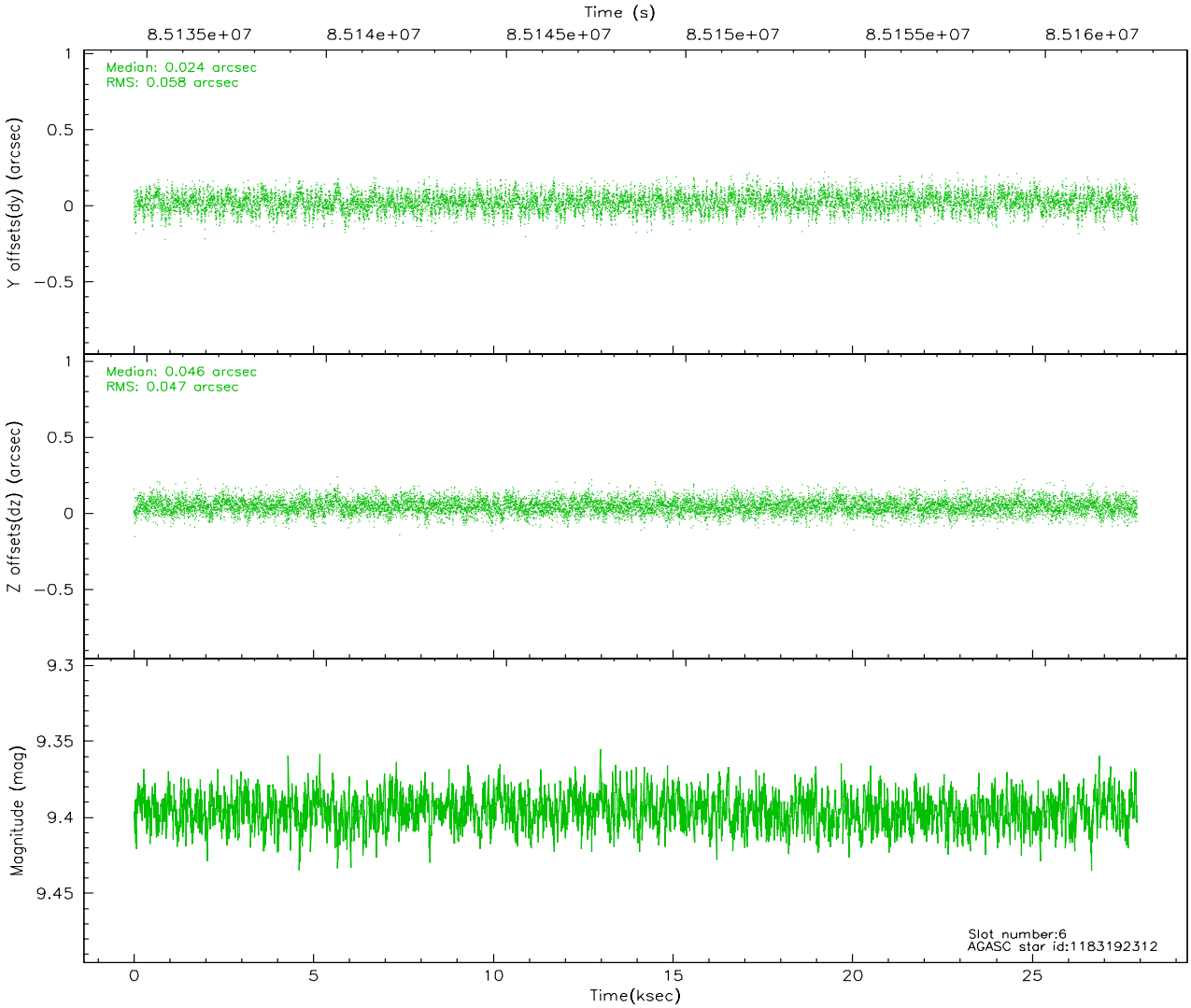

Points outside 0.4 arcsec radius: 0.015%
Radial offset of median: 0.162 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1183208704


Time (s)
8.5135e+07
8.514e+07
8.5145e+07
8.515e+07
8.5155e+07
8.516e+07
Median: 0.155 arcsec
RMS: 0.056 arcsec
Y offsets(dy) (arcsec)
Median: 0.050 arcsec
RMS: 0.047 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:1183208704
Time(ksec)

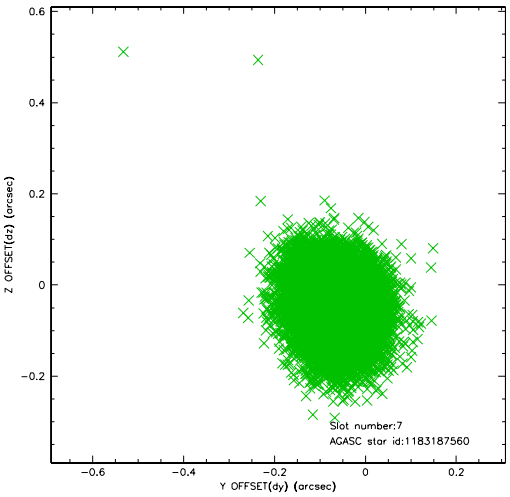
2.4.4 Slot 6

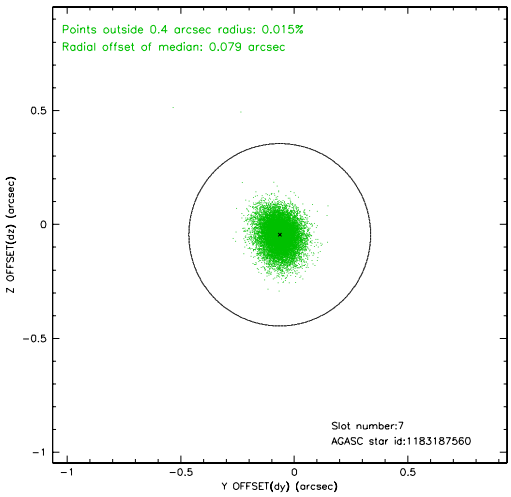

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1183192312

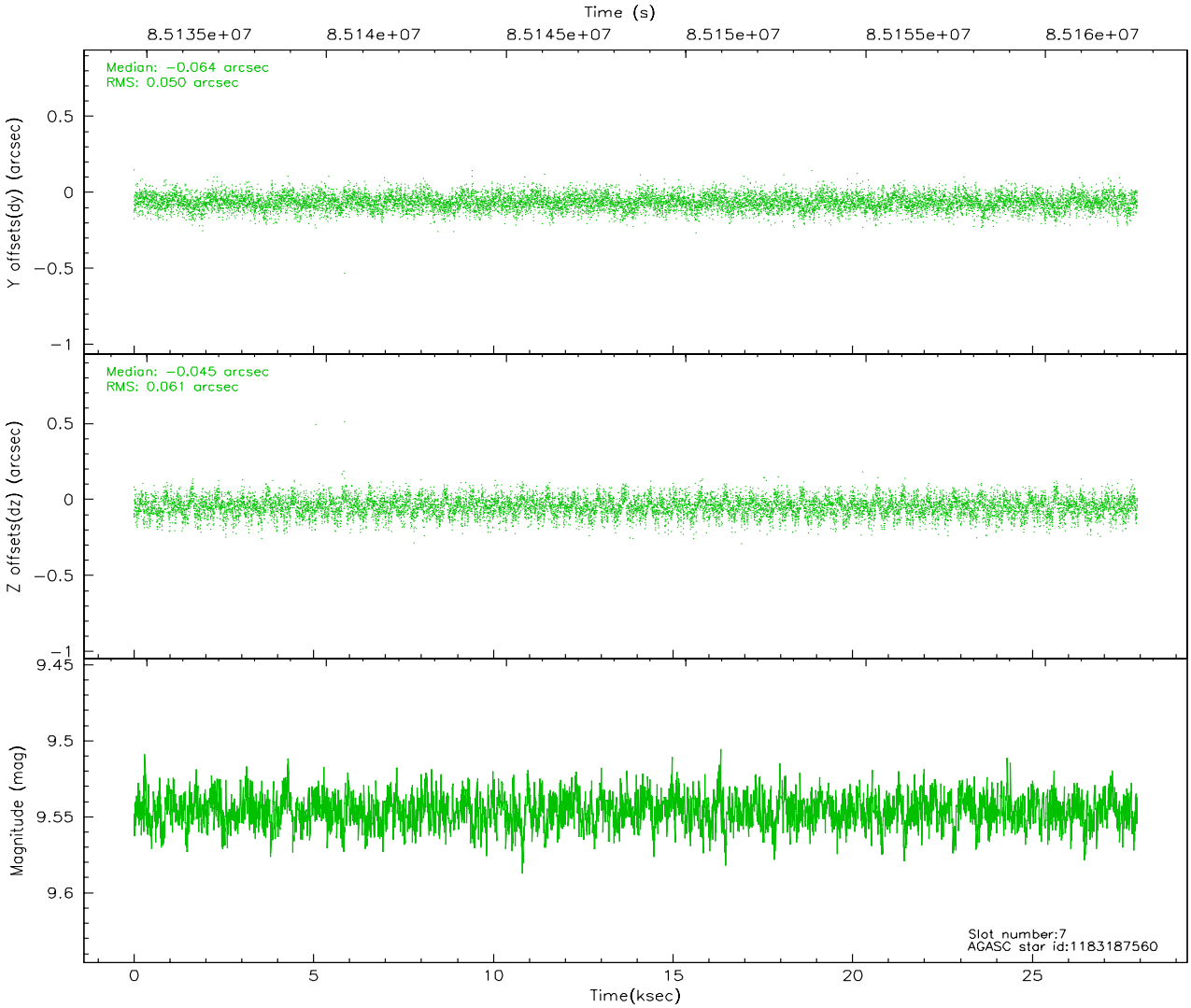

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.052 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1183192312


Time (s)
8.5135e+07
8.514e+07
8.5145e+07
8.515e+07
8.5155e+07
8.516e+07
Median: 0.024 arcsec
RMS: 0.058 arcsec
Y offsets(dy) (arcsec)
Median: 0.046 arcsec
RMS: 0.047 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:1183192312
Time(ksec)

2.4.5 Slot 7

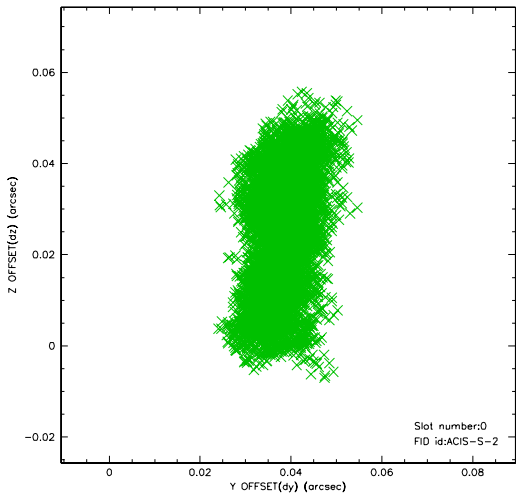

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1183187560

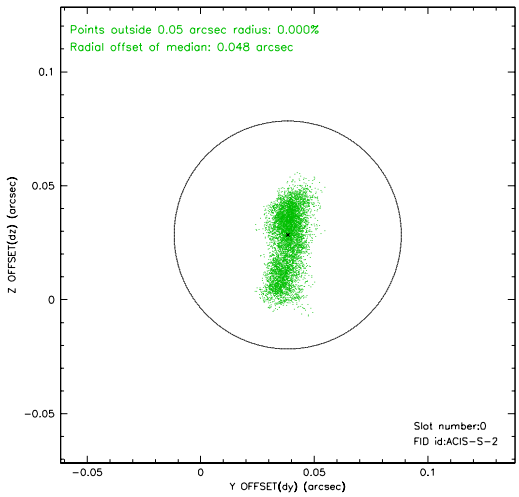

Points outside 0.4 arcsec radius: 0.015%
Radial offset of median: 0.079 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1183187560

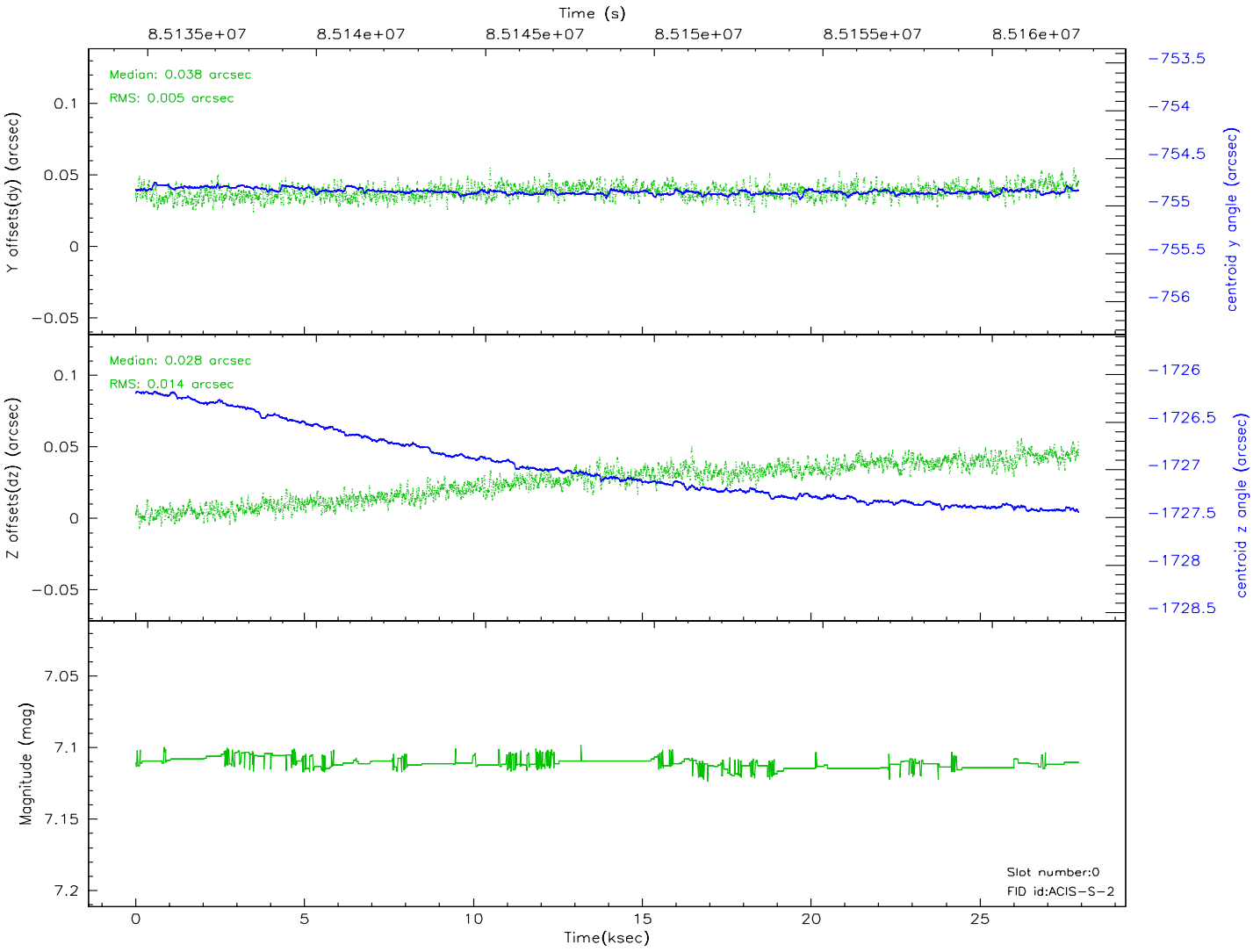

Time (s)
8.5135e+07
8.514e+07
8.5145e+07
8.515e+07
8.5155e+07
8.516e+07
Median: −0.064 arcsec
RMS: 0.050 arcsec
Y offsets(dy) (arcsec)
Median: −0.045 arcsec
RMS: 0.061 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:1183187560
Time(ksec)

2.5 FID Slots

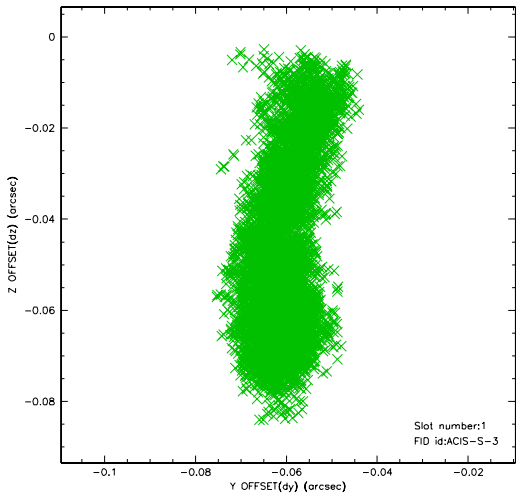
2.5.1 Slot 0

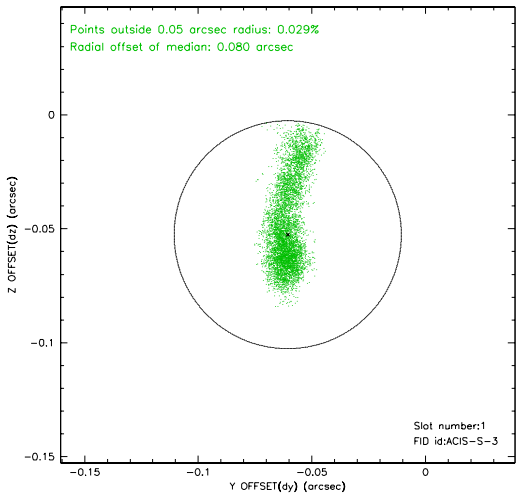


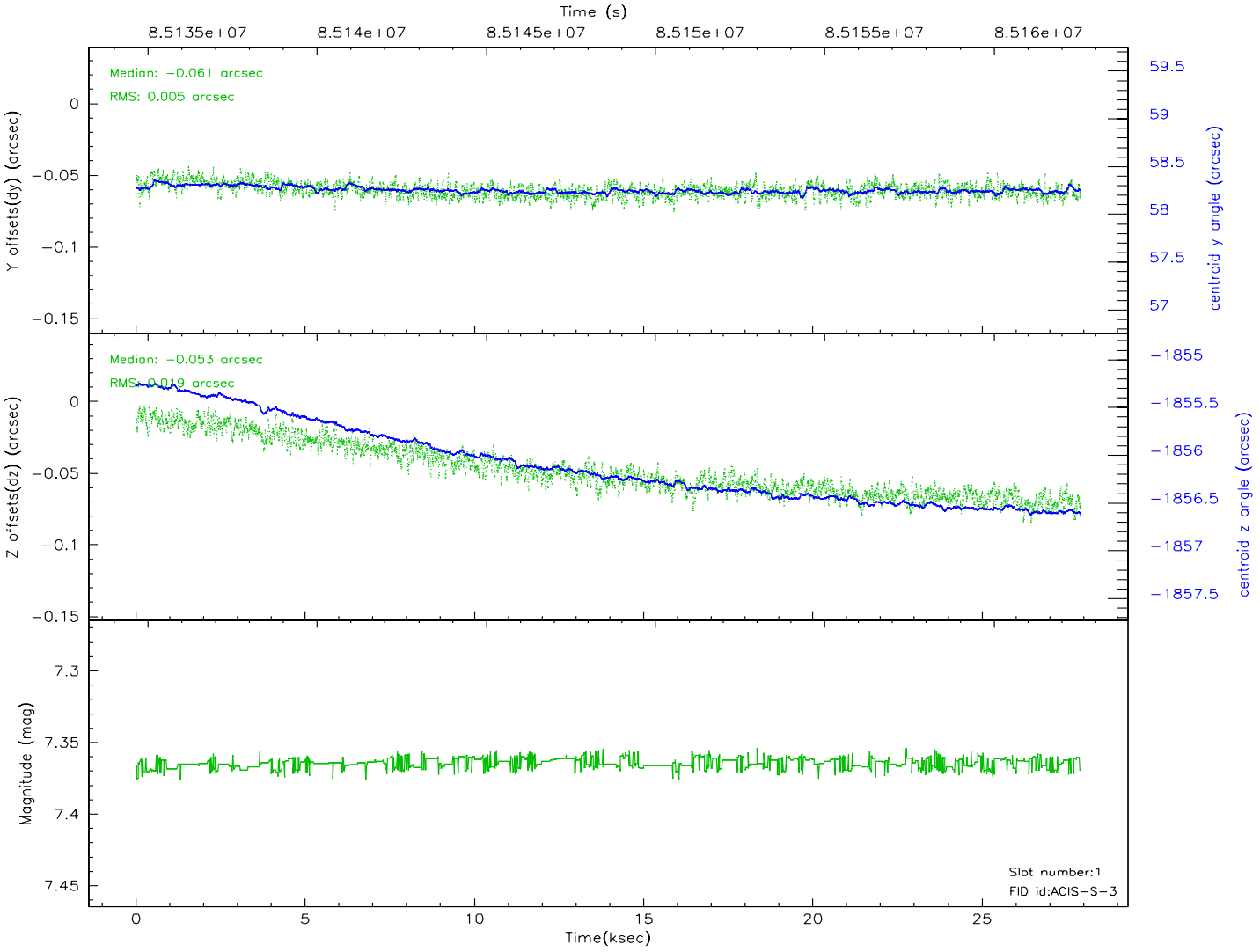




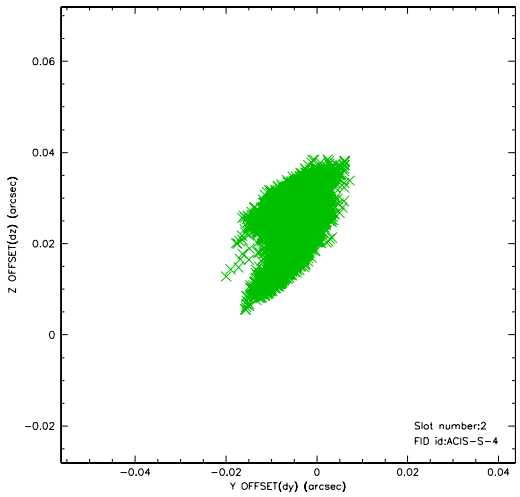
2.5.2 Slot 1

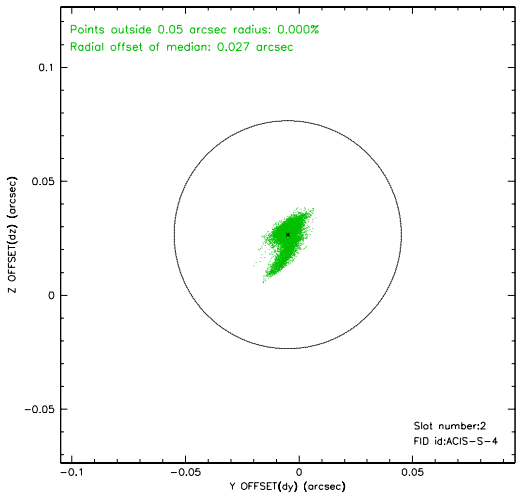

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-3

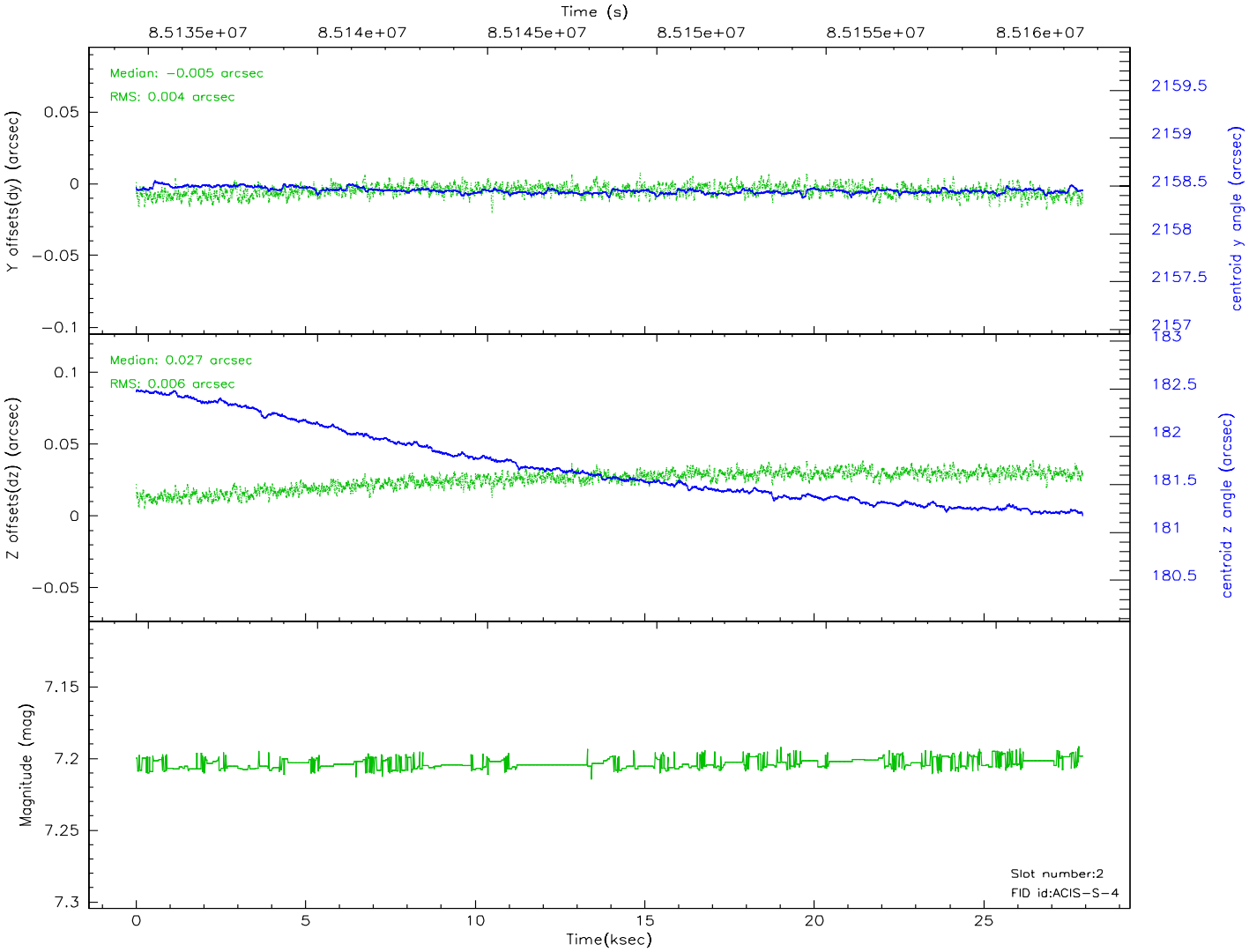

Points outside 0.05 arcsec radius: 0.029%
Radial offset of median: 0.080 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-3


Time (s)
Median: −0.061 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.053 arcsec
RMS: 0.019 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:1
FID id:ACIS-S-3
Time(ksec)

2.5.3 Slot 2

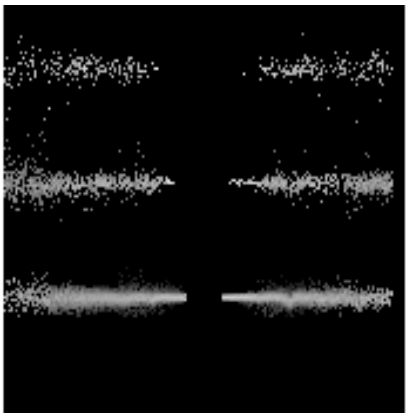

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-4


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.027 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-4

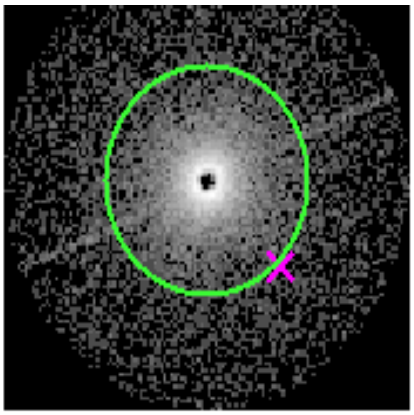

Time (s)
Median: −0.005 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.027 arcsec
RMS: 0.006 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-4
Time(ksec)

3 Gratings

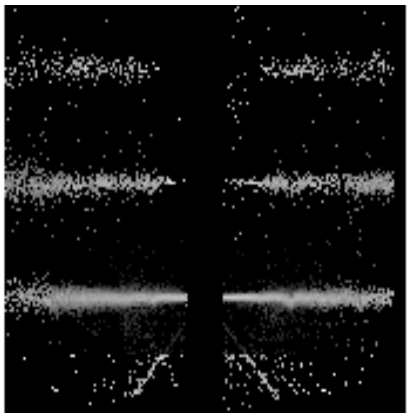
3.1 HEG Arm



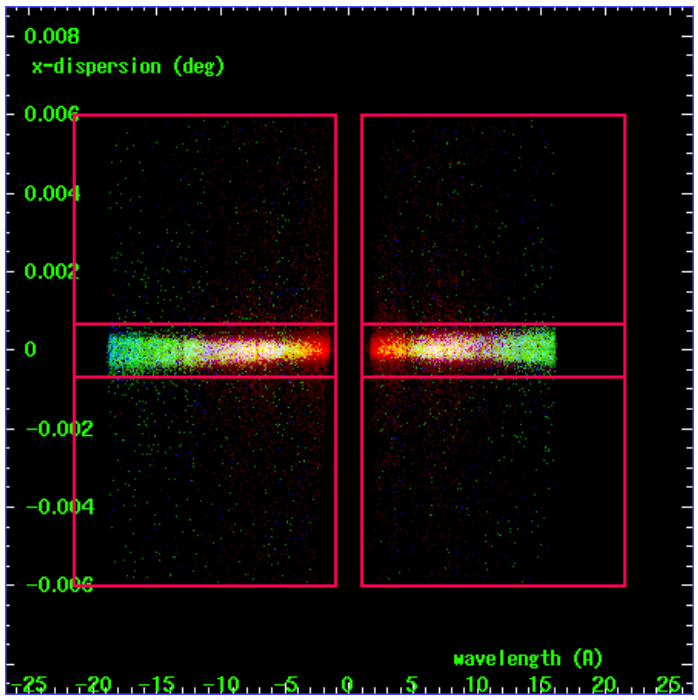
HEG Order Sort 123



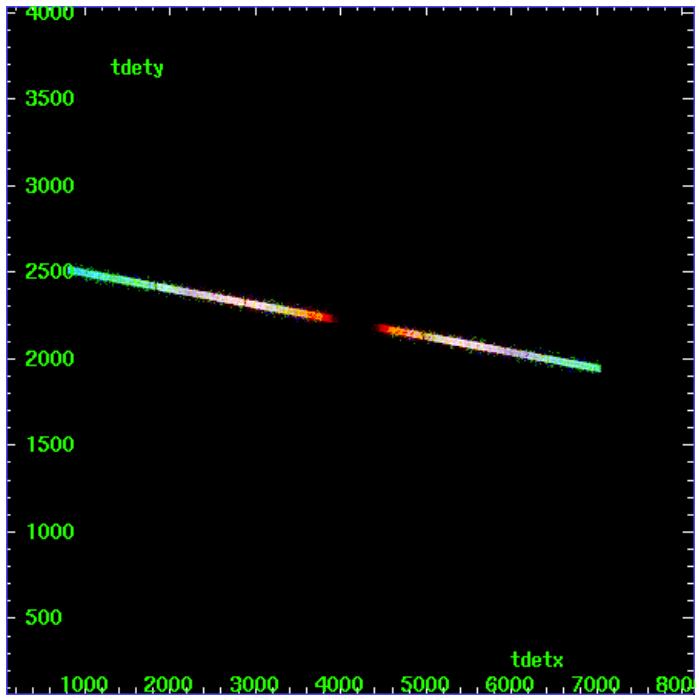
HEG Zero Order



HEG Order Sort ALL

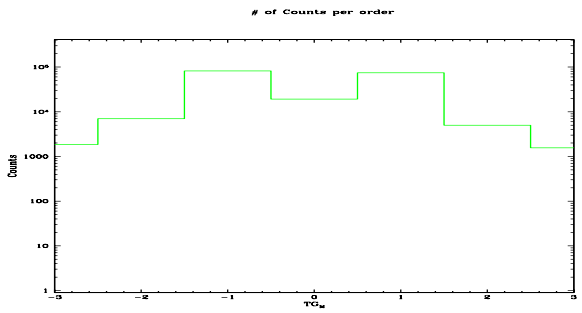


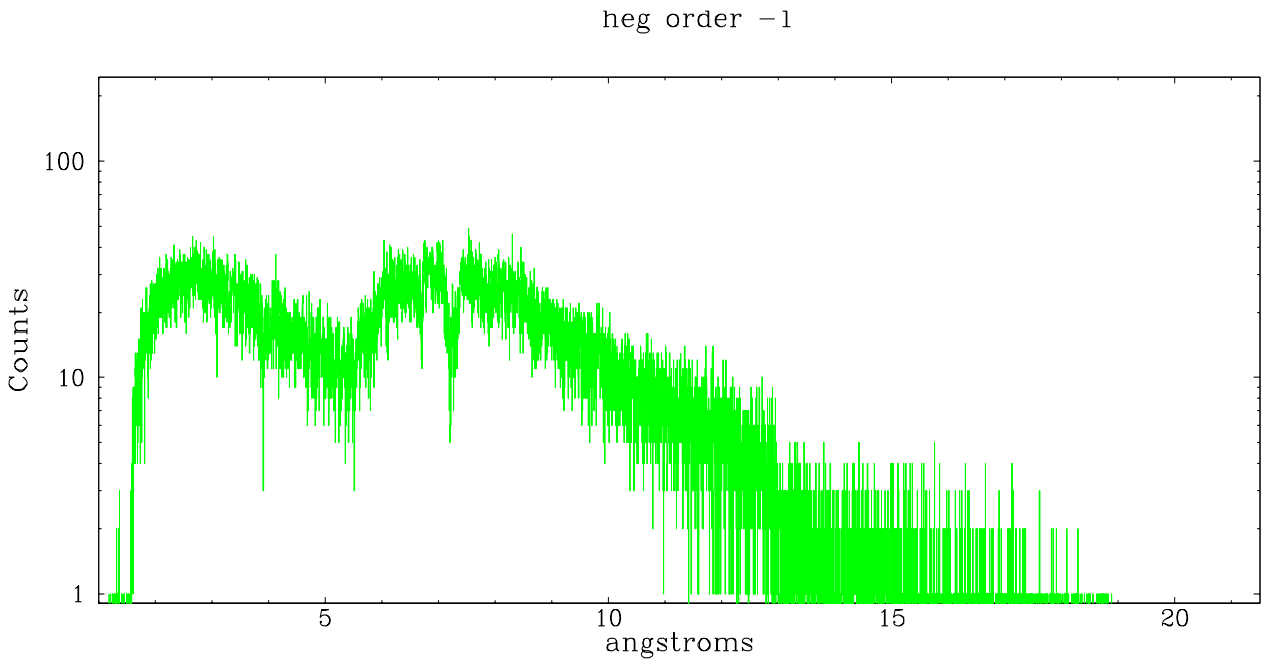
Spot Image HEG

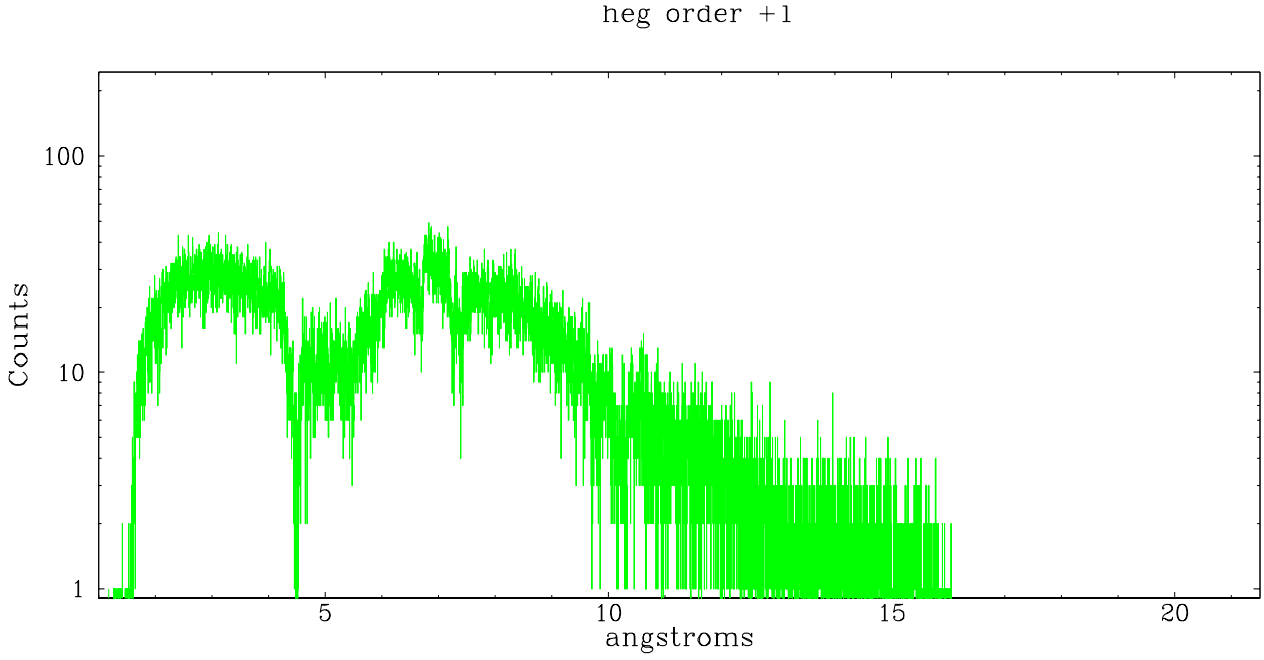


Full Detector HEG

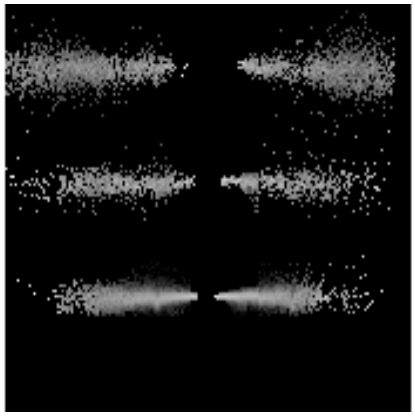
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1858	6995	81974	19252	74326	4981	1553



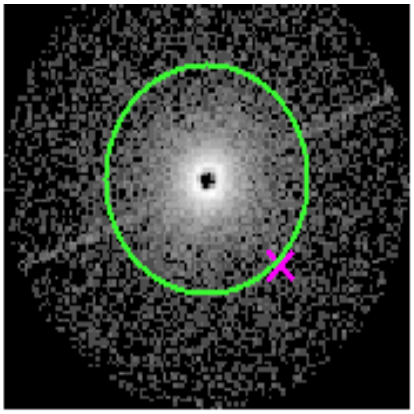

heg order −1
100
10
1
Counts
5
10
15
20
angstroms


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

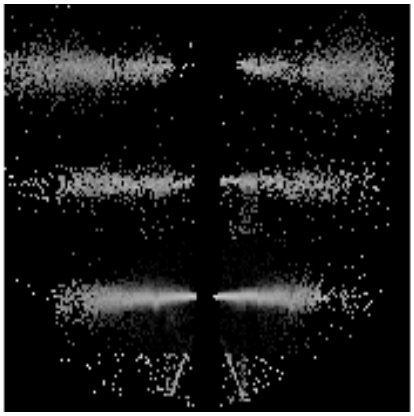
3.2 MEG Arm



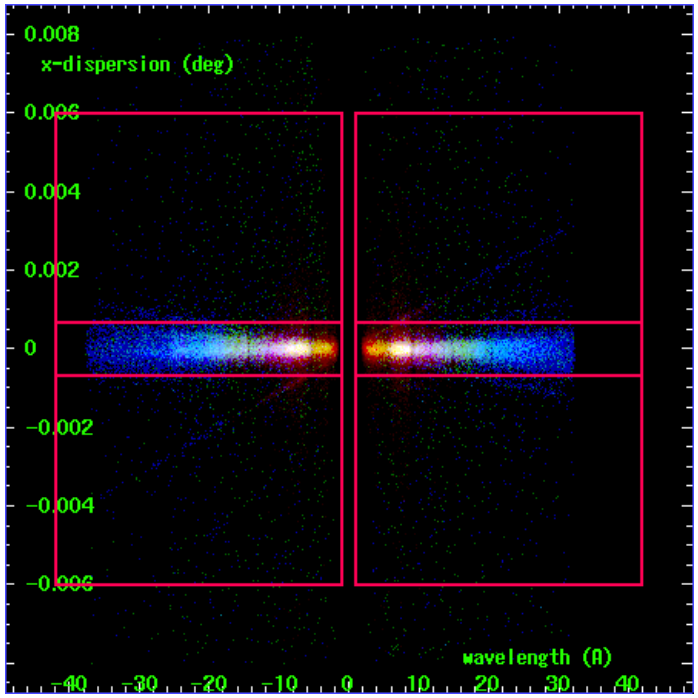
MEG Order Sort 123



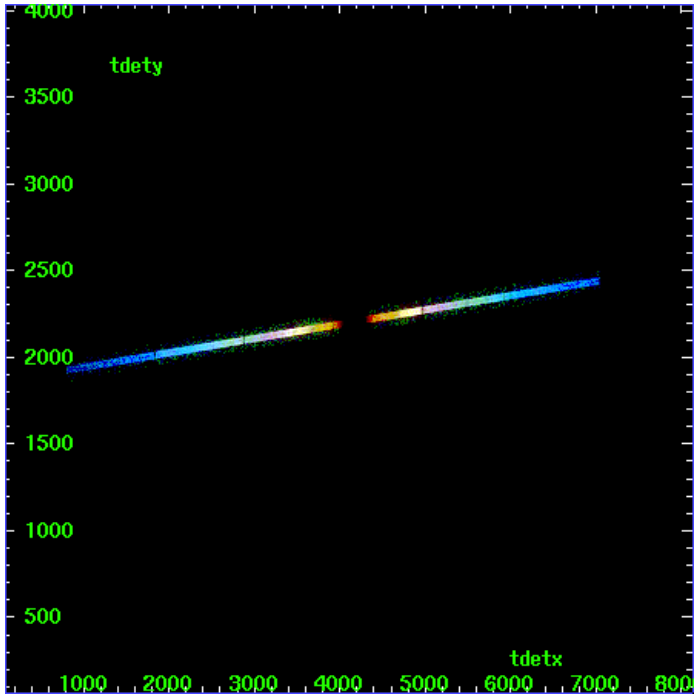
MEG Zero Order



MEG Order Sort ALL

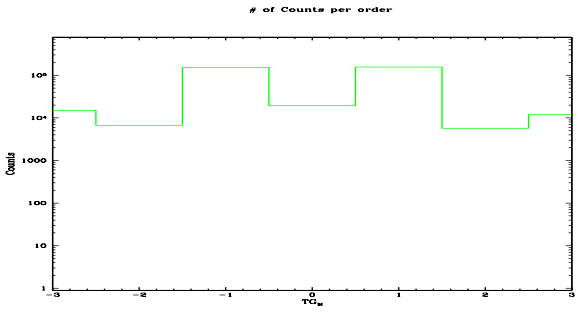


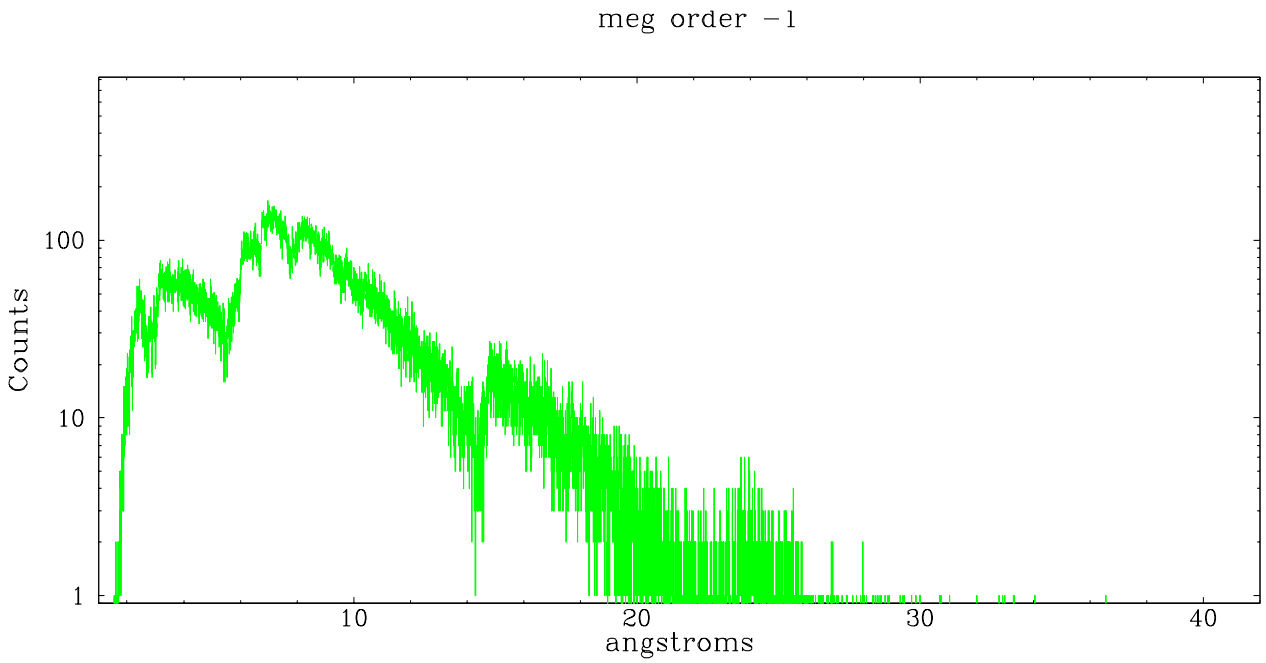
Spot Image MEG

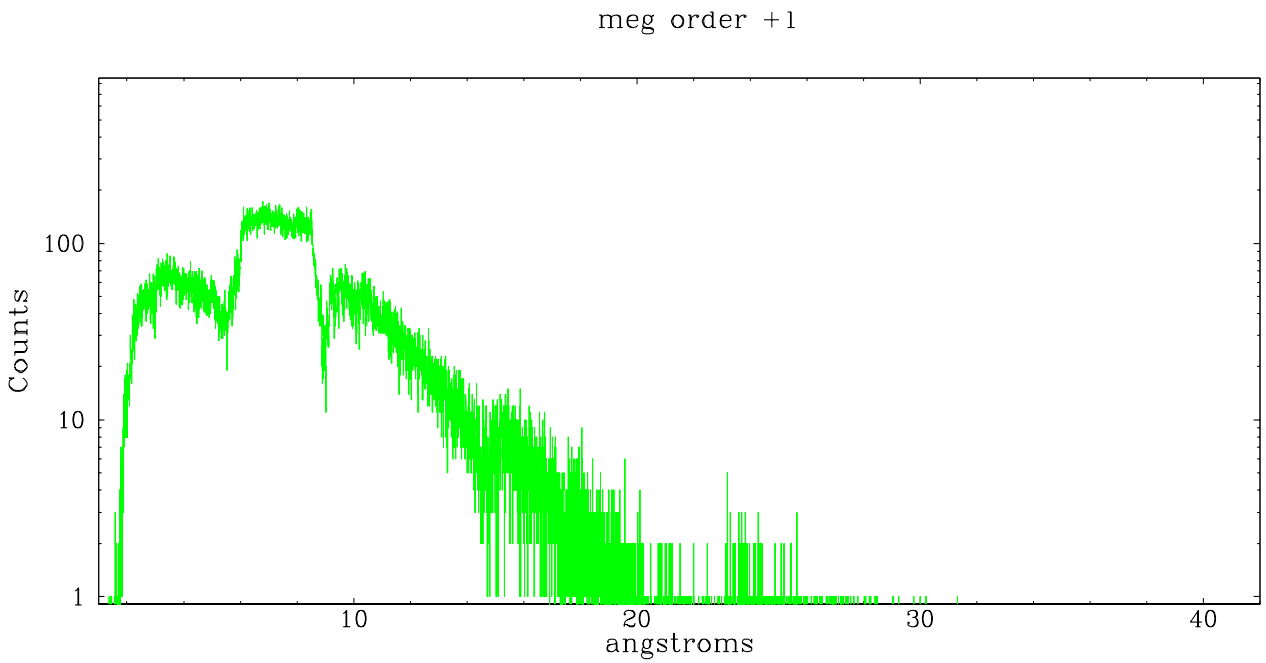


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	14958	6690	152513	19252	156054	5713	11961




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


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

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2007.08.03
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	27.75

A.2 Comments

Zeroth order severely piled up and 'cratered'. Standard data processing software did not correctly
locate the zeroth order due to pileup. Manual intervention was used to input the correct sky coordinates (x=4073.97; y=4117.89) into the *src1a.fits file table. These corrected coordinates were determined using
a software tool developed by CXC called findzero, which is expected to be
released in CIAO (currently in ISIS). The tool calculates the point of intersection of the
readout streak and the meg arm (preferred position), or the readout streak
and the heg arm. The zeroth order source position determined by the standard
pipeline processing using the tool tgdetect was not used in this processing. The newly determined
zeroth order coordinates have been placed in the *src1a.fits file, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running
tgdetect on the data. Spectral arms are also piled up.