V&V Reference Report
L2 ASCDS Version : 7.6.10

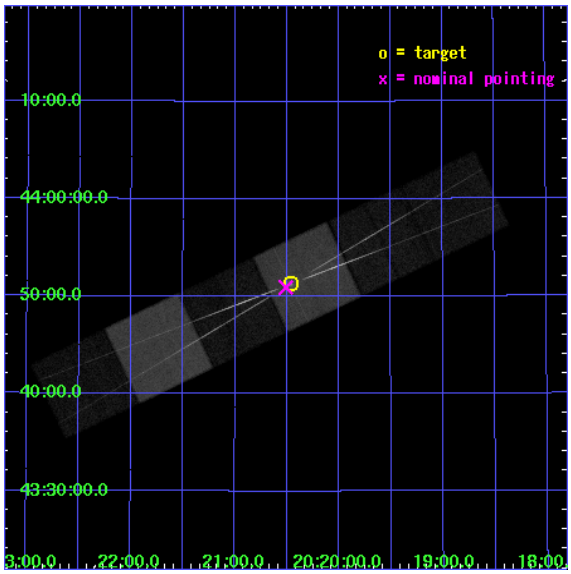
Observation 2337 - L2 Version 4
Chandra X-Ray Center

L2 Processing Date : Aug 7 2007

Contents

1 Front

seq_num	200124
obs_id	2337
title	CAPTURING WR140 AT PERIASTRON WITH THE CHANDRA HETG
observer	Mr Andrew Pollock
object	WR140
dtycycle	0
cycle	P
ra_targ	305.116667
dec_targ	43.854528
ra_nom	305.12773578694
dec_nom	43.848767951248
roll_nom	334.59785355702
revision	4
ontime	46124.759082705
livetime	45540.699610204
ontime4	46124.75908272
ontime5	46128.00004296
ontime6	46128.00004296
ontime7	46124.759082705
ontime8	46128.00004296
ontime9	46128.00004296
l2events	526393

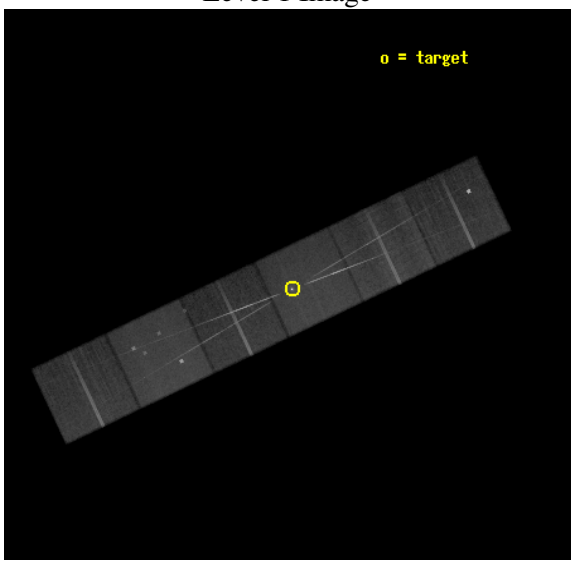


2 OBI

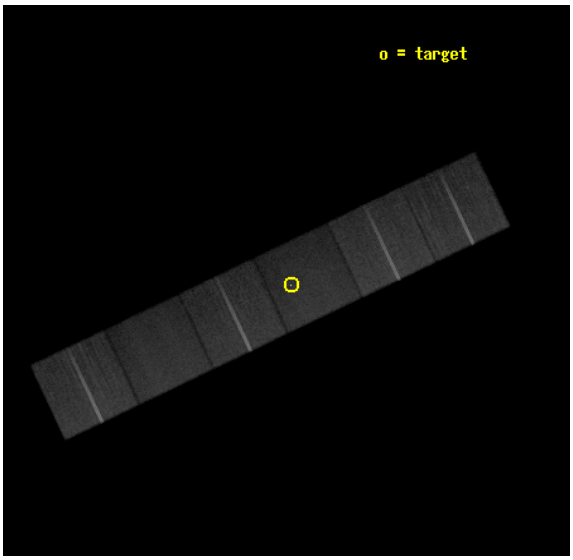
2.1 OBI

2.1.1 Images

Level 1 Image

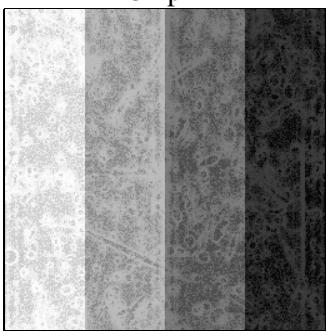


Level 1 Bad Events

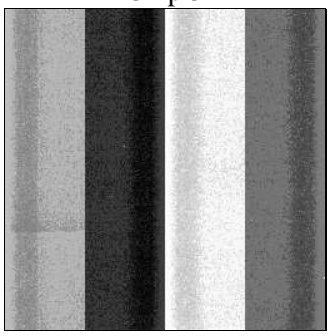


2.1.2 Bias

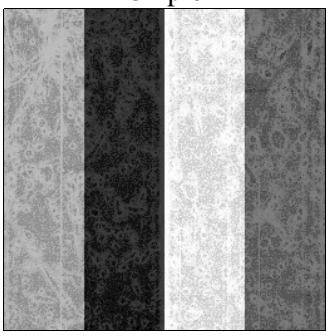
Chip 4



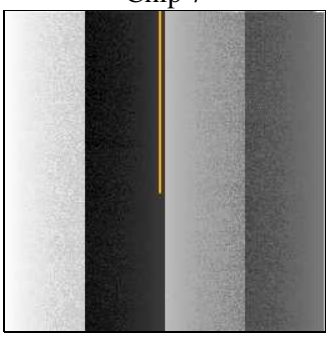
Chip 5



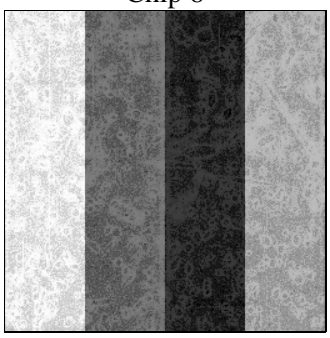
Chip 6



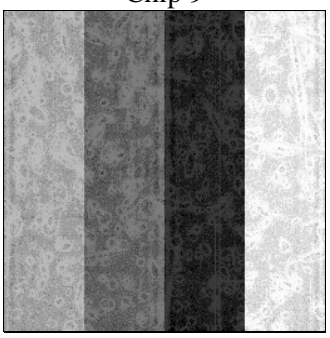
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0
ascdsver	7.6.10
caldbver	3.4.0
date	2007-06-22T00:43:18
revision	3

sched_exp_time	46000.000000
ontime	46124.759082705
ontime4	46124.75908272
ontime5	46128.00004296
ontime6	46128.00004296
ontime7	46124.759082705
ontime8	46128.00004296
ontime9	46128.00004296
l1events	2090551

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	306473	394808	321060	405759	368575	293876
rejected events	271767	209940	250460	216117	280758	244506
rejected %	88%	53%	78%	53%	76%	83%

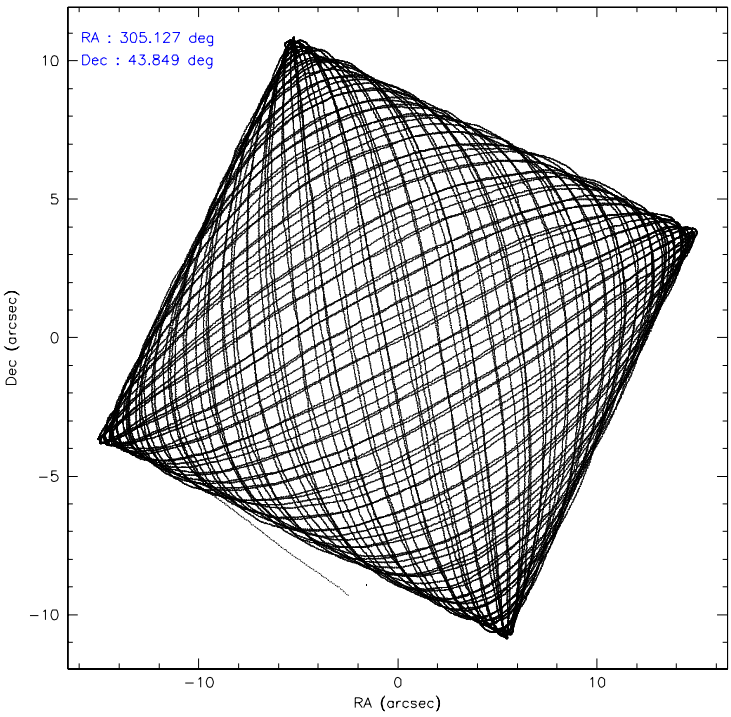
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	15099	27261	43873	22865	37414	29647
	4%	6%	13%	5%	10%	10%
grade 1 events	158	595	247	620	261	214
	0%	0%	0%	0%	0%	0%
grade 2 events	8037	51387	10736	39639	17139	6890
	2%	13%	3%	9%	4%	2%
grade 3 events	3202	8391	4445	18058	7813	3339
	1%	2%	1%	4%	2%	1%
grade 4 events	2939	7924	4433	18273	7327	3314
	0%	2%	1%	4%	1%	1%
grade 5 events	9885	29427	11773	35449	14966	11880
	3%	7%	3%	8%	4%	4%
grade 6 events	5661	91338	7565	92158	18730	6540
	1%	23%	2%	22%	5%	2%
grade 7 events	261492	178485	237988	178697	264925	232052
	85%	45%	74%	44%	71%	78%

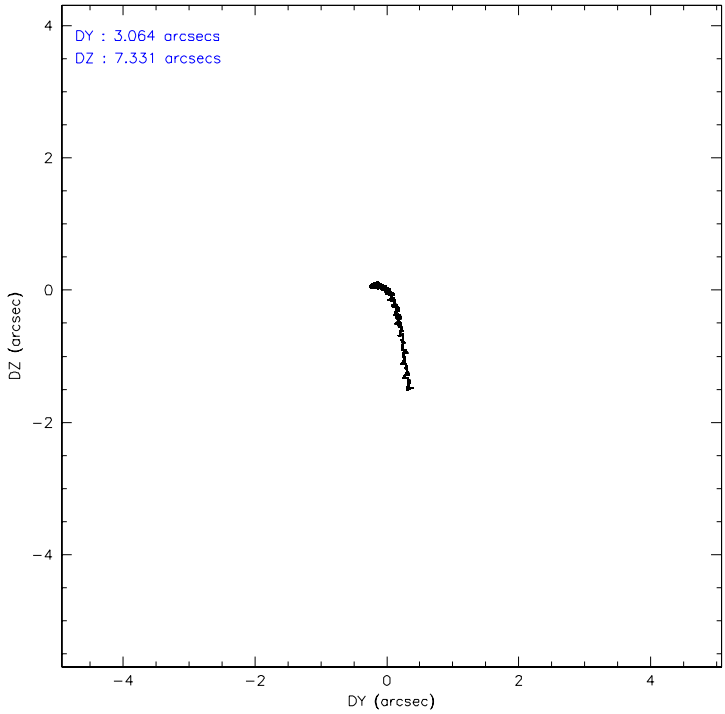
2.2 Compared Parameters

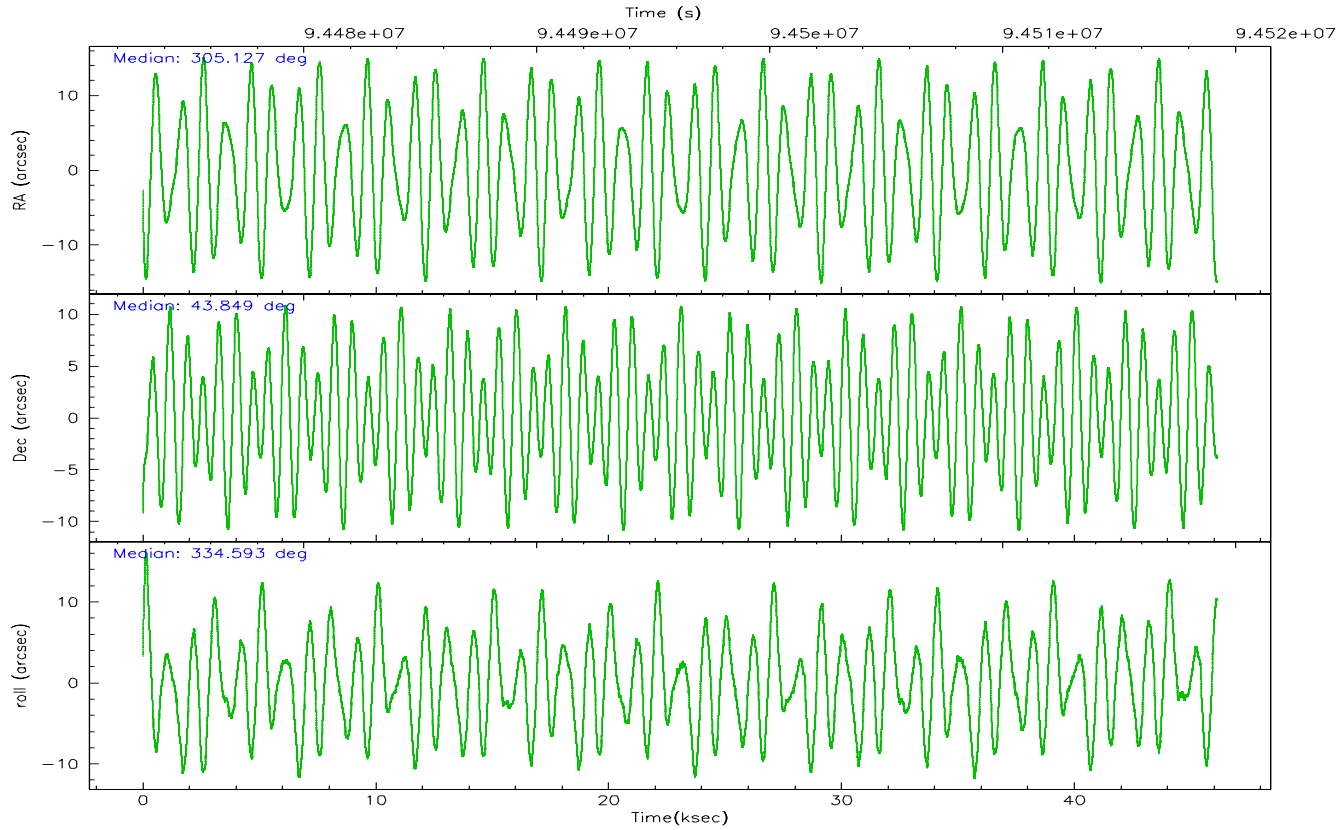
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	305.089992	305.1277357869379
Pointing Dec	43.846363	43.84876795124782
Pointing Roll	334.467371	334.5978535570185
SIM focus pos (mm)	-0.684267	-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	94473225.184000	94472008.51774999
Observation start date	2000-12-29T10:32:41	2000-12-29T10:13:28
Observation end time	94519225.184000	94520328.04460099
Observation end date	2000-12-29T23:19:21	2000-12-29T23:38:48
Read mode	TIMED	TIMED

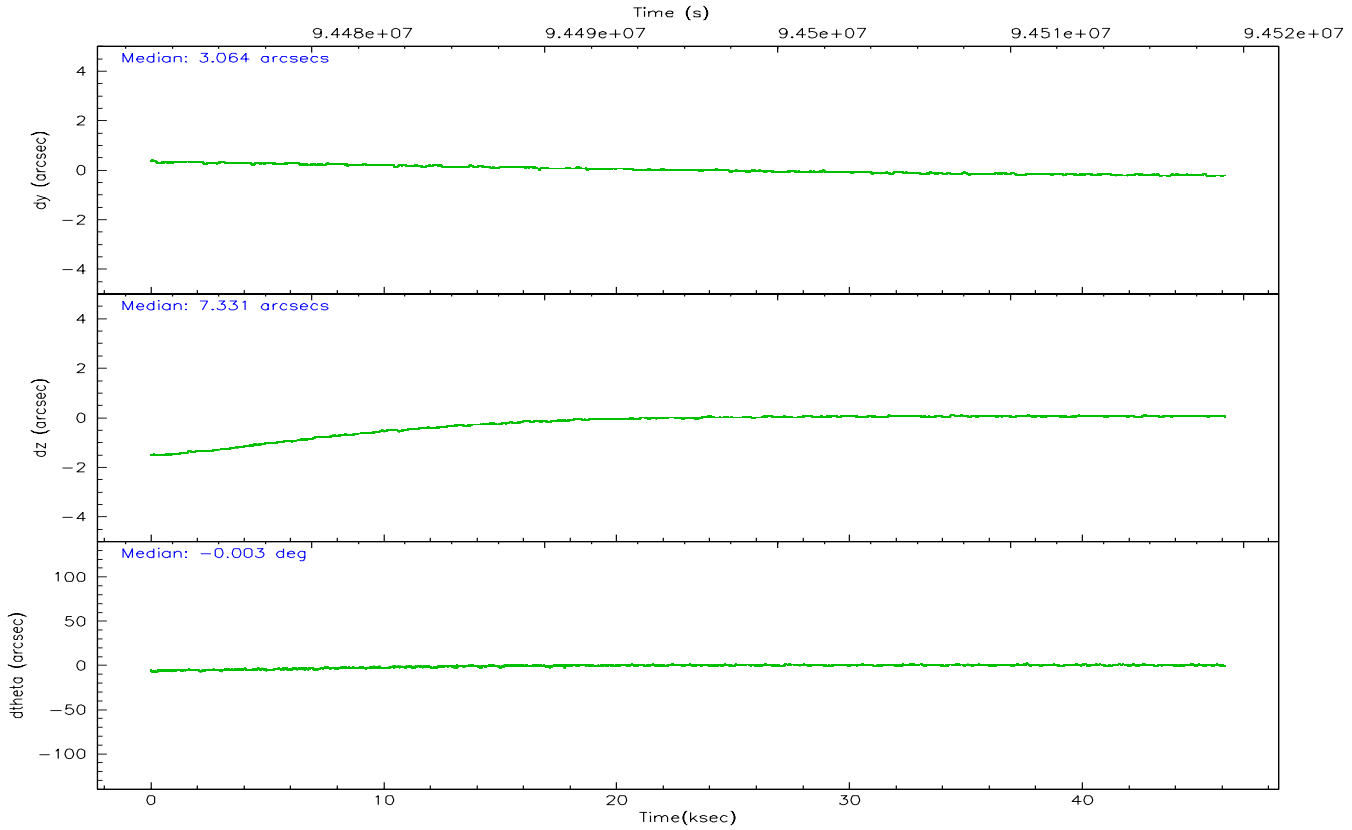
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 305.127 deg
Dec : 43.849 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
0
10


DY : 3.064 arcsecs
DZ : 7.331 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
9.448e+07
9.449e+07
9.45e+07
9.451e+07
9.452e+07
Median: 305.127 deg
RA (arcsec)
Median: 43.849 deg
Dec (arcsec)
Median: 334.593 deg
roll (arcsec)
Time(ksec)

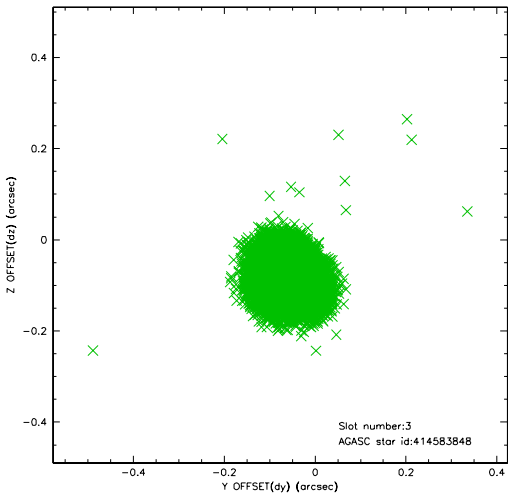

Time (s)
9.448e+07
9.449e+07
9.45e+07
9.451e+07
9.452e+07
Median: 3.064 arcsecs
dy (arcsec)
Median: 7.331 arcsecs
dz (arcsec)
Median: −0.003 deg
dtheta (arcsec)
Time(ksec)

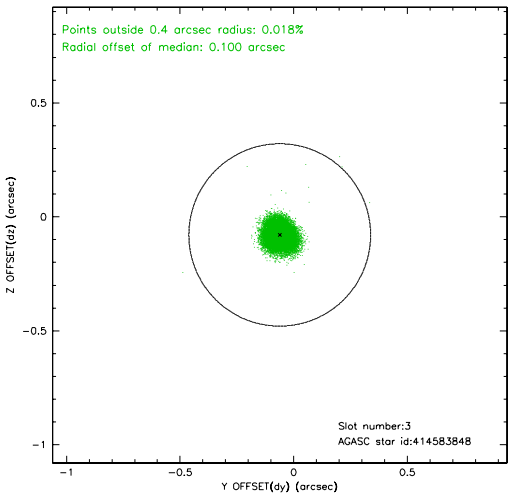
Slot Statistics

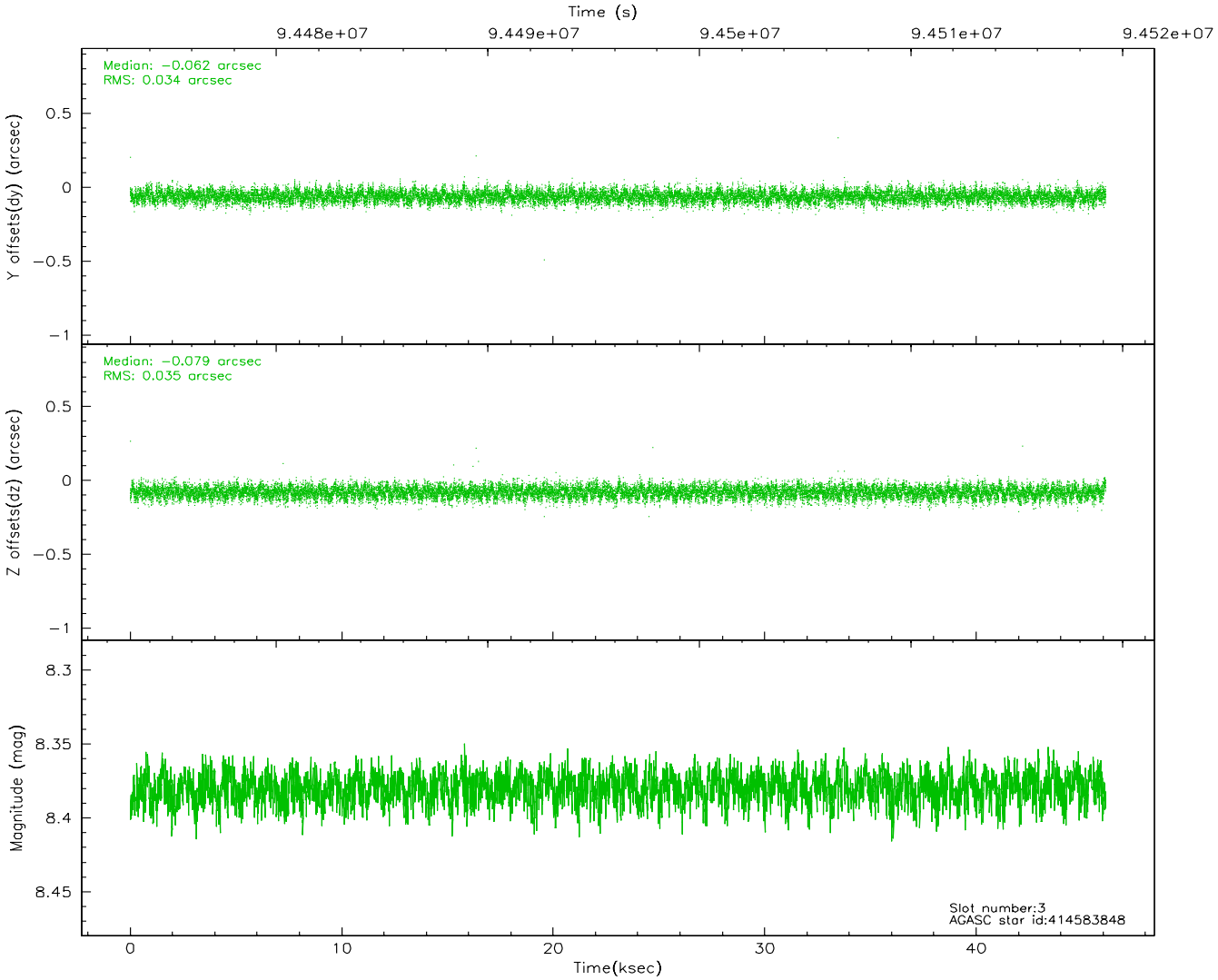
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	11250	0.014	0.036	0.011	0.029	0.000000	0.000000	-755.73	-1728.20
1	FID	ACIS-S-4	7.20	11247	-0.086	-0.016	0.016	0.040	0.000000	0.000000	2157.47	180.21
2	FID	ACIS-S-5	7.23	11249	0.040	-0.012	0.011	0.019	0.000000	0.000000	-1808.54	173.91
3	GUIDE	414583848	8.38	22497	-0.062	-0.079	0.052	0.084	304.983045	43.966065	-435.13	269.31
4	GUIDE	414583128	8.33	22498	-0.000	-0.011	0.054	0.088	304.426562	44.225700	-2135.17	500.44
5	GUIDE	414724728	8.97	22497	0.083	-0.011	0.076	0.126	305.252472	43.377115	1112.53	-1340.72
6	GUIDE	414712520	9.12	22497	-0.080	-0.002	0.075	0.120	305.370655	43.250269	1589.46	-1618.14
7	GUIDE	414716648	9.42	22456	0.062	0.102	0.087	0.145	305.537797	44.191148	507.48	1621.00

2.4 Star Slots

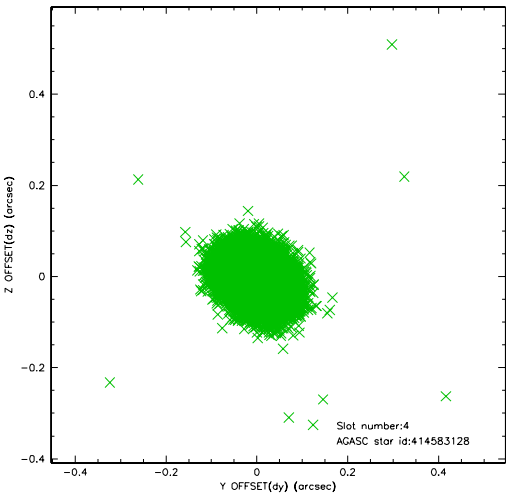
2.4.1 Slot 3

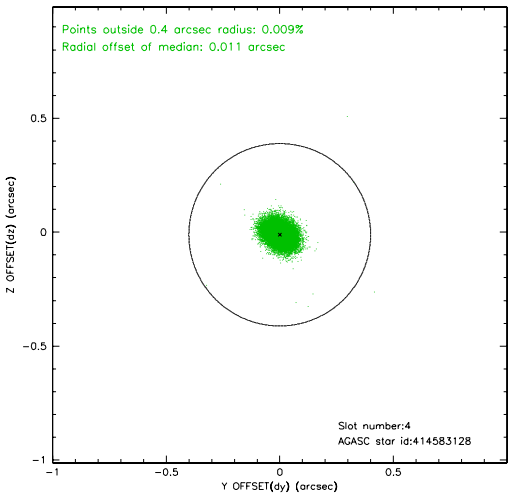


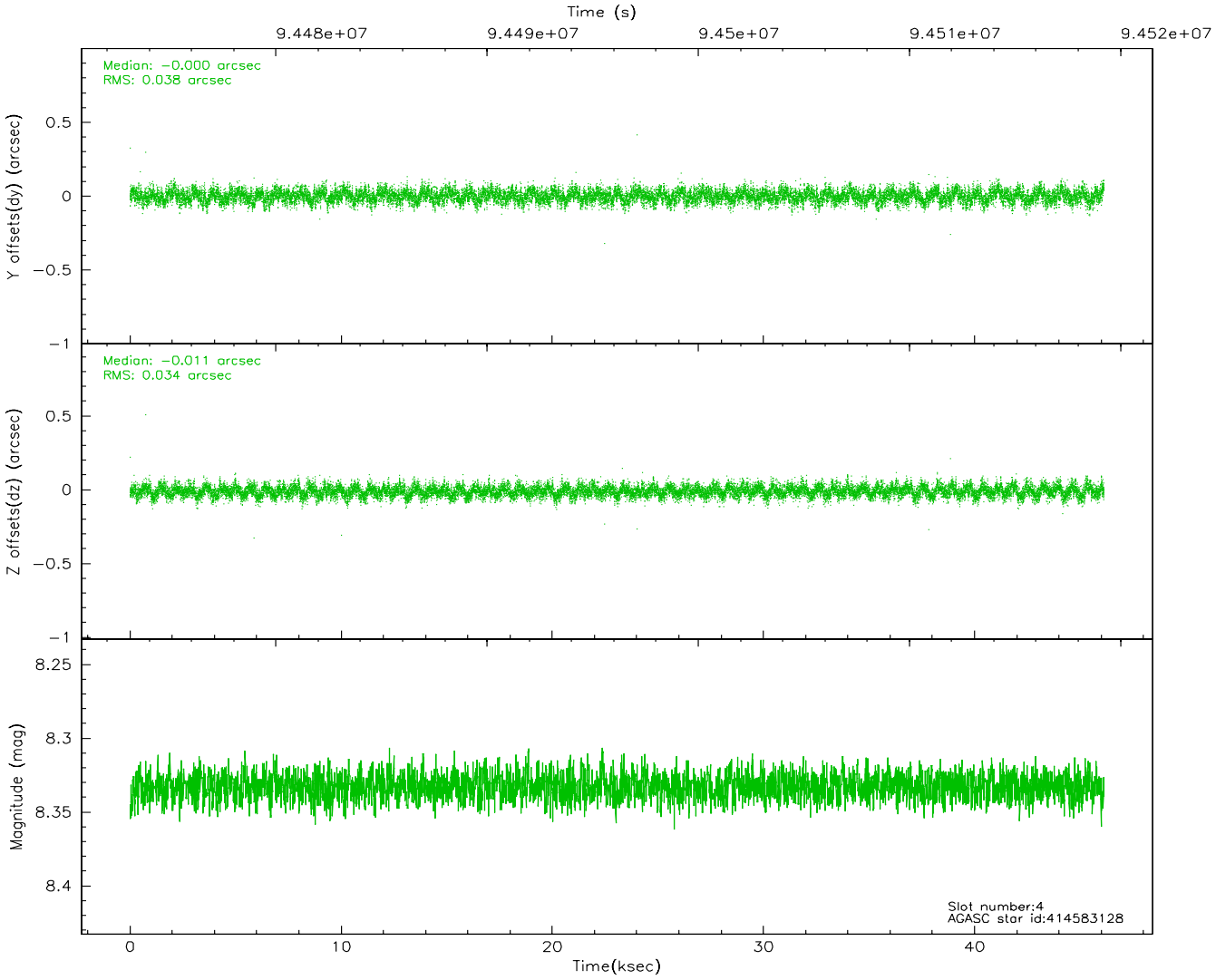




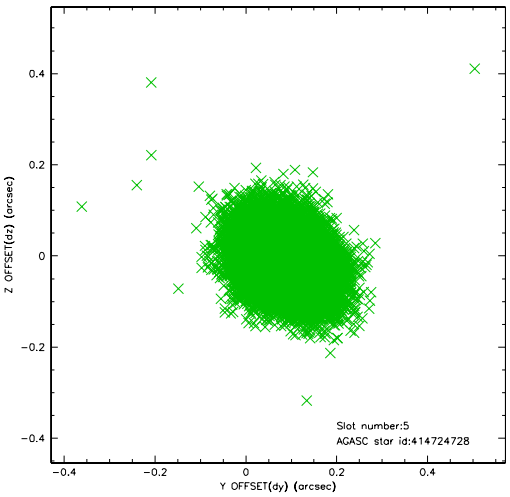
2.4.2 Slot 4

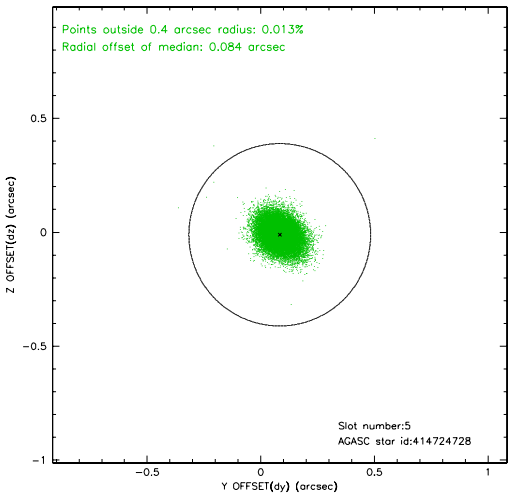

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:414583128

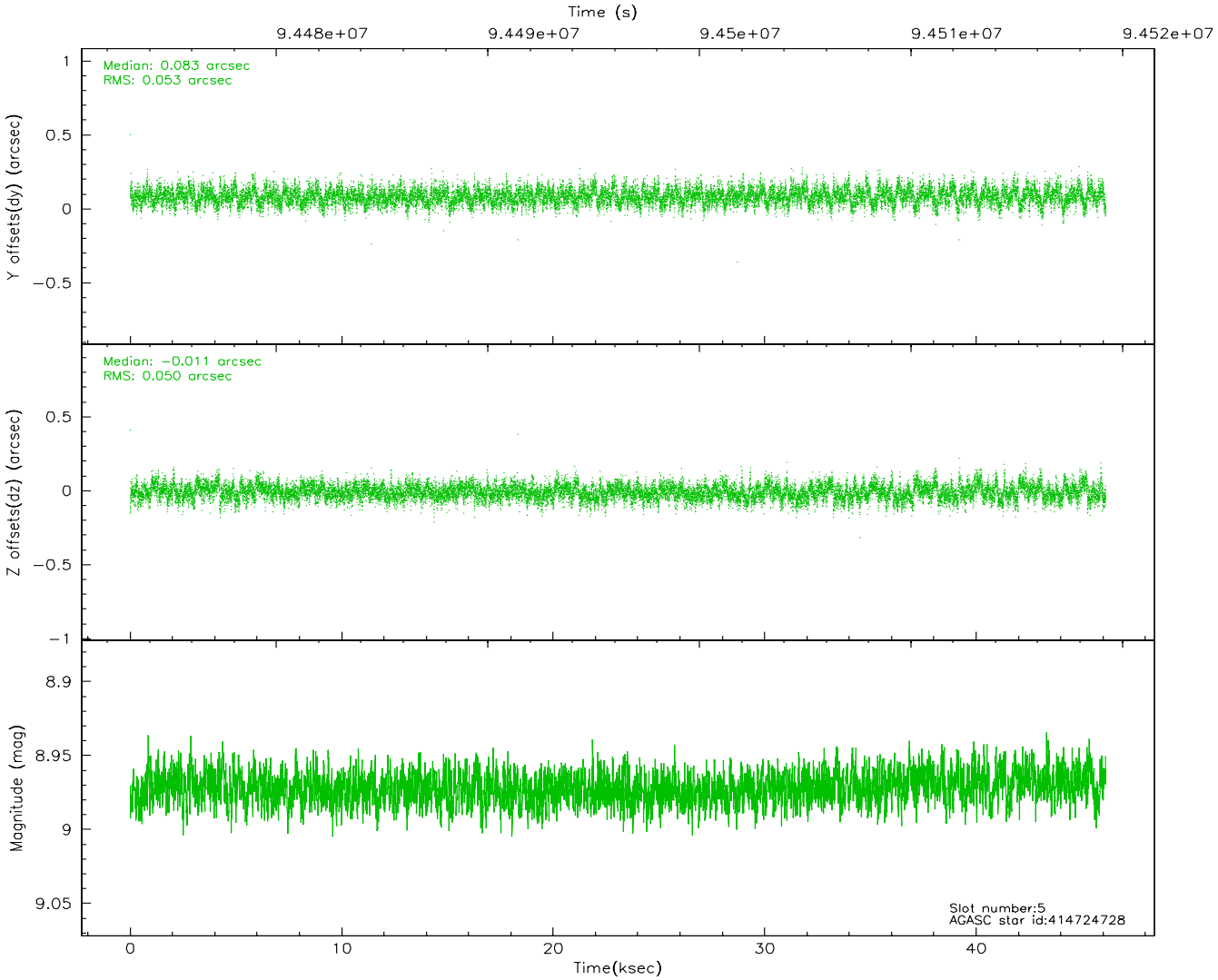

Points outside 0.4 arcsec radius: 0.009%
Radial offset of median: 0.011 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:414583128


Time (s)
9.448e+07
9.449e+07
9.45e+07
9.451e+07
9.452e+07
Median: −0.000 arcsec
RMS: 0.038 arcsec
Y offsets(dy) (arcsec)
Median: −0.011 arcsec
RMS: 0.034 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:414583128
Time(ksec)

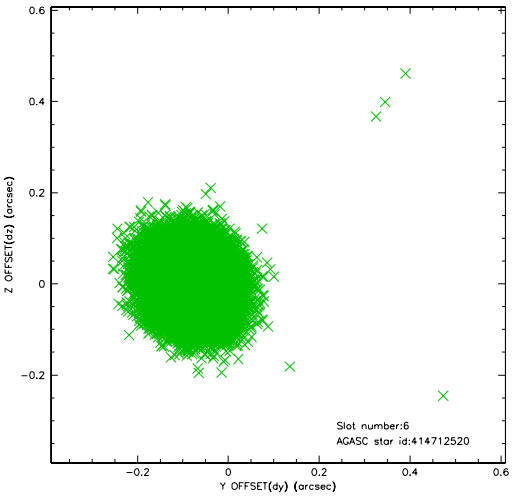
2.4.3 Slot 5

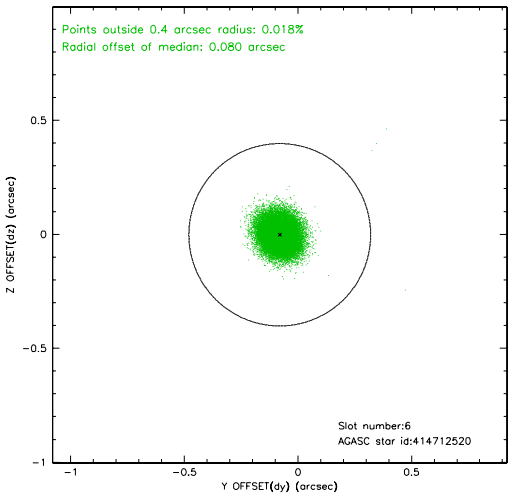

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:414724728

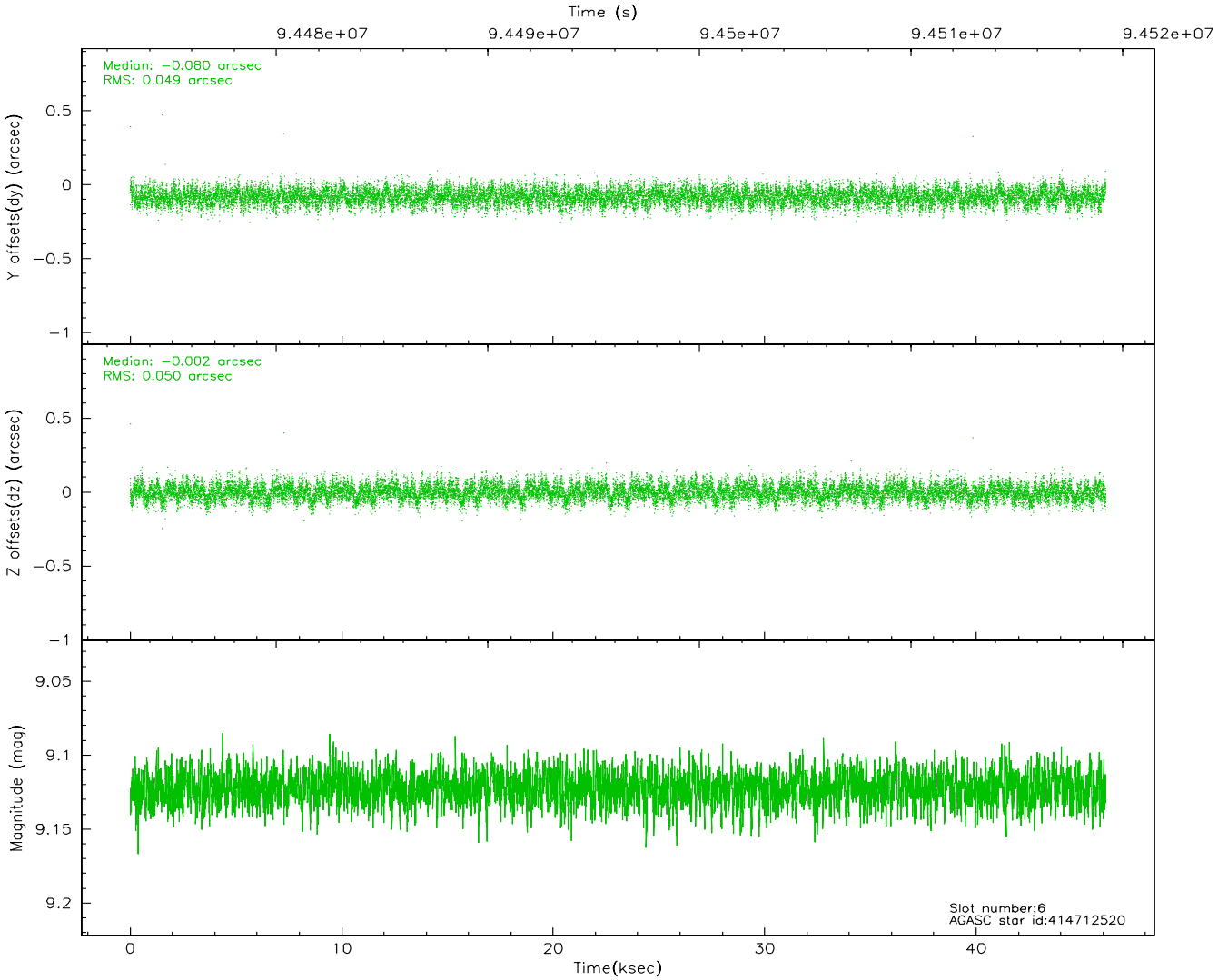

Points outside 0.4 arcsec radius: 0.013%
Radial offset of median: 0.084 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:414724728


Time (s)
9.448e+07
9.449e+07
9.45e+07
9.451e+07
9.452e+07
Median: 0.083 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: −0.011 arcsec
RMS: 0.050 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:414724728
Time(ksec)

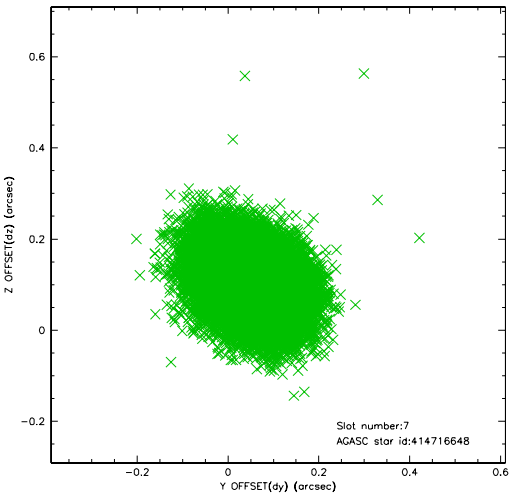
2.4.4 Slot 6

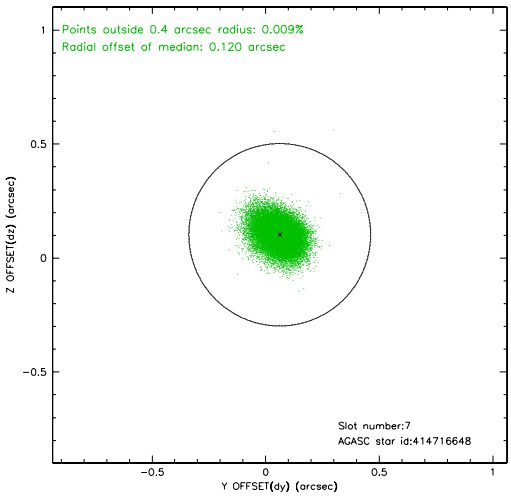

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:414712520

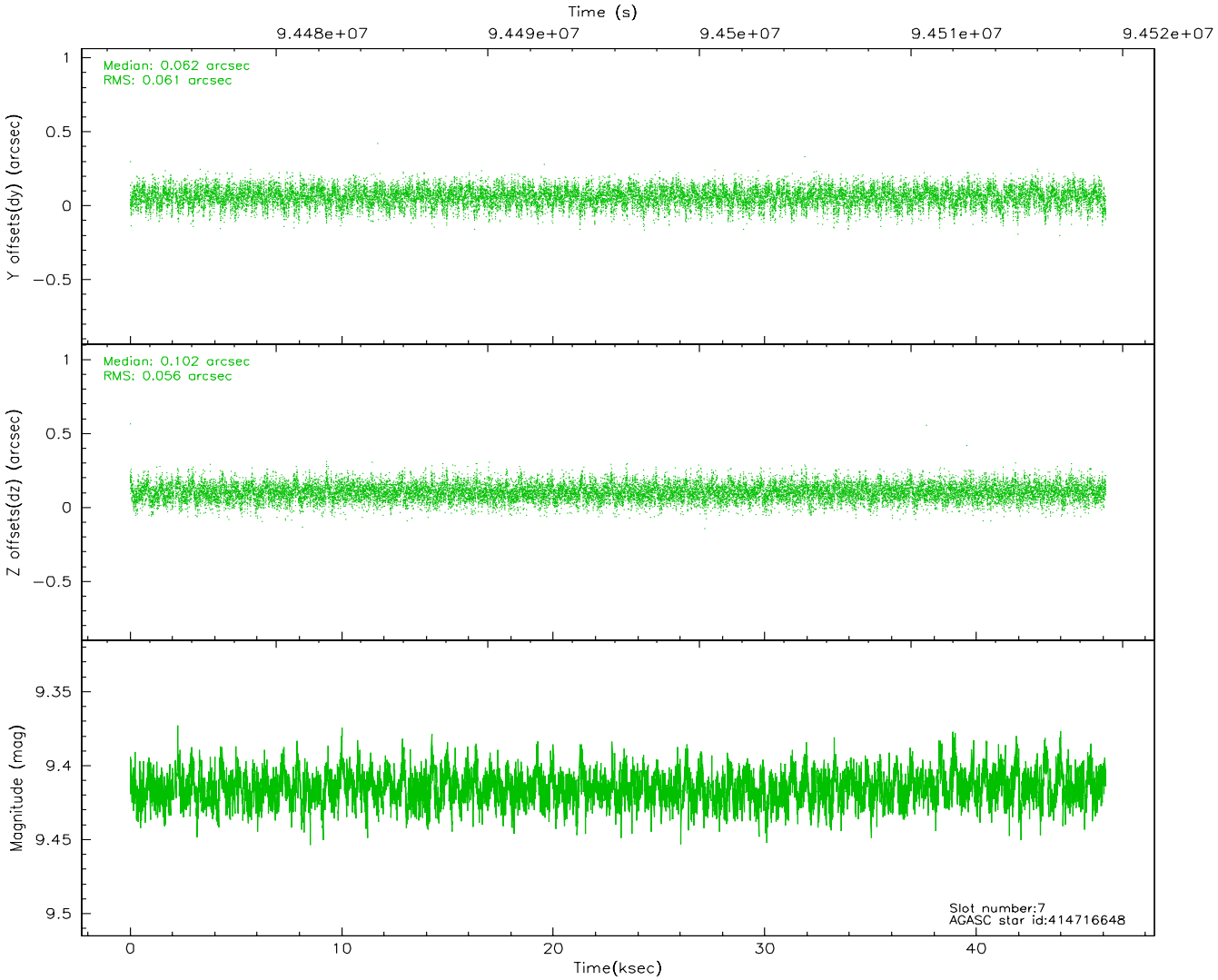

Points outside 0.4 arcsec radius: 0.018%
Radial offset of median: 0.080 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:414712520


Time (s)
Median: −0.080 arcsec
RMS: 0.049 arcsec
Y offsets(dy) (arcsec)
Median: −0.002 arcsec
RMS: 0.050 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:414712520
Time(ksec)

2.4.5 Slot 7

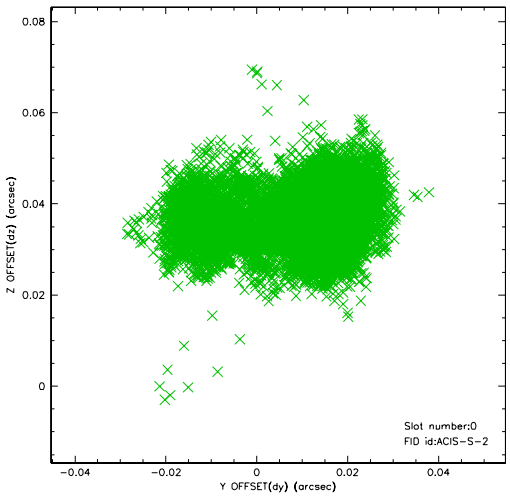

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:414716648

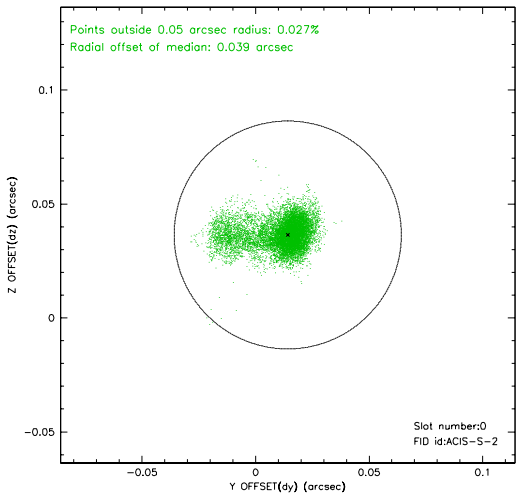

Points outside 0.4 arcsec radius: 0.009%
Radial offset of median: 0.120 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:414716648

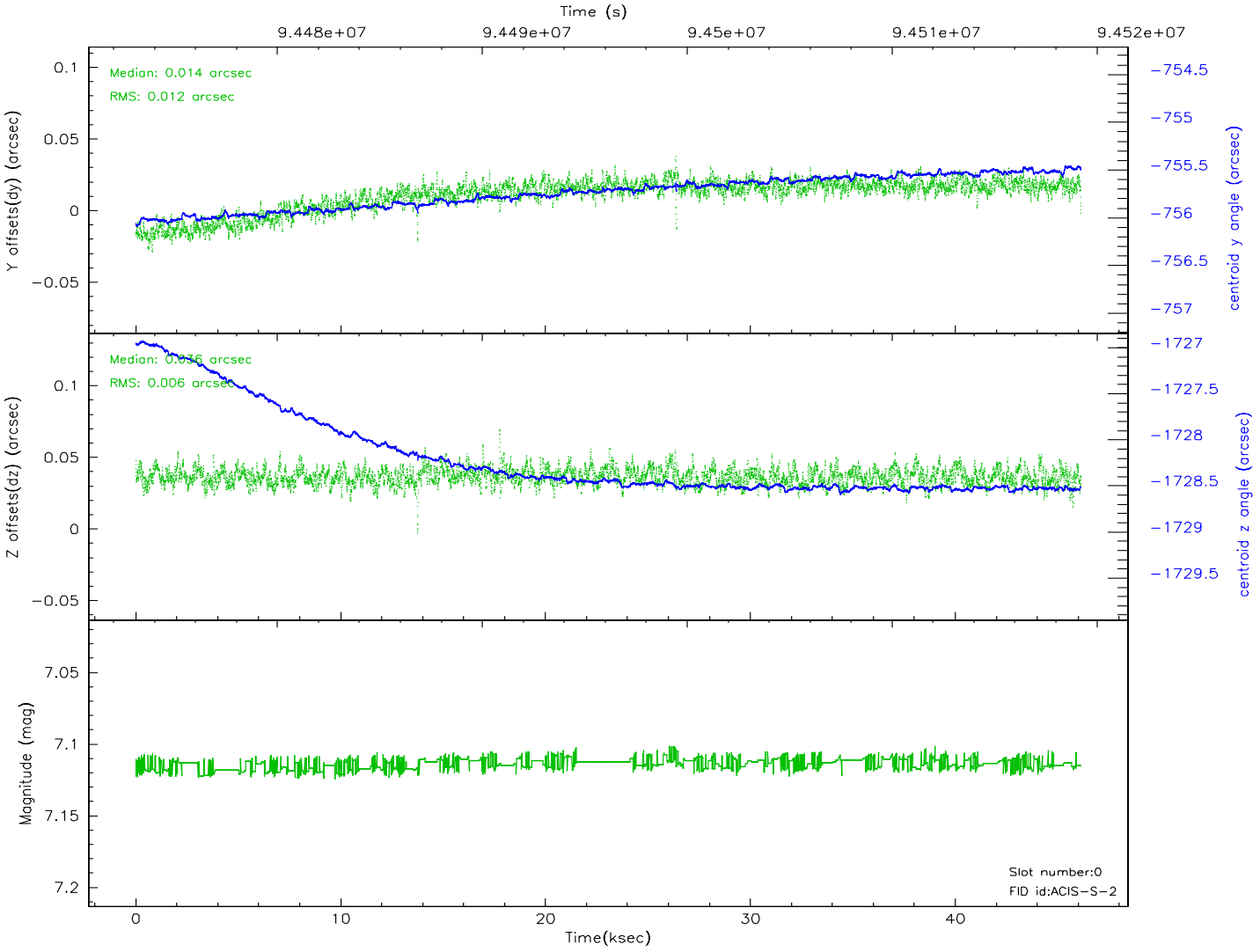

Time (s)
9.448e+07
9.449e+07
9.45e+07
9.451e+07
9.452e+07
Median: 0.062 arcsec
RMS: 0.061 arcsec
Y offsets(dy) (arcsec)
Median: 0.102 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:414716648
Time(ksec)

2.5 FID Slots

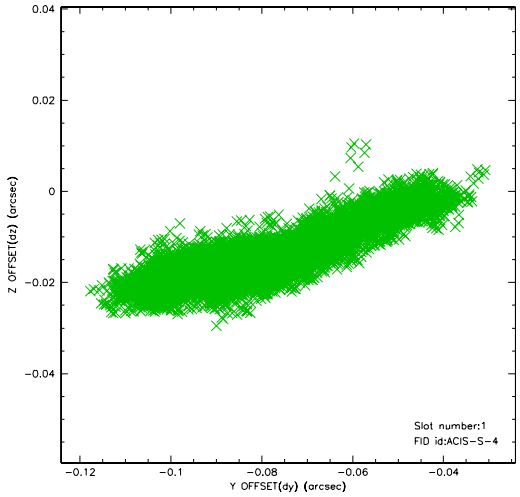
2.5.1 Slot 0

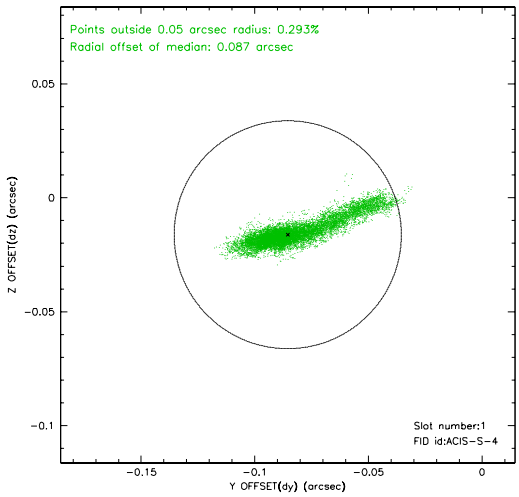


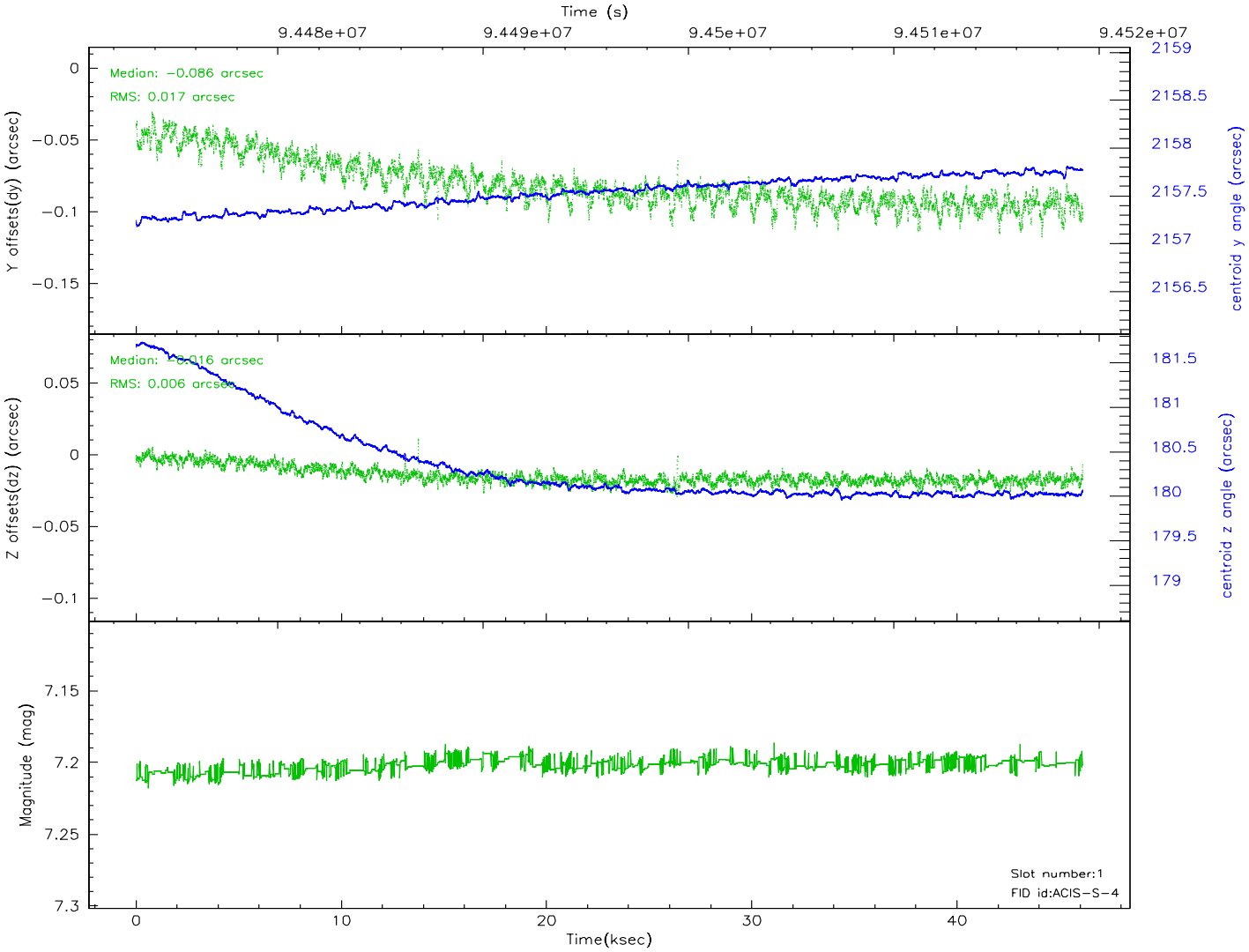




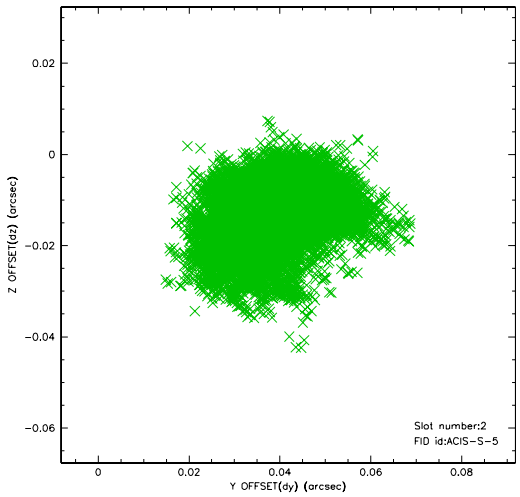
2.5.2 Slot 1

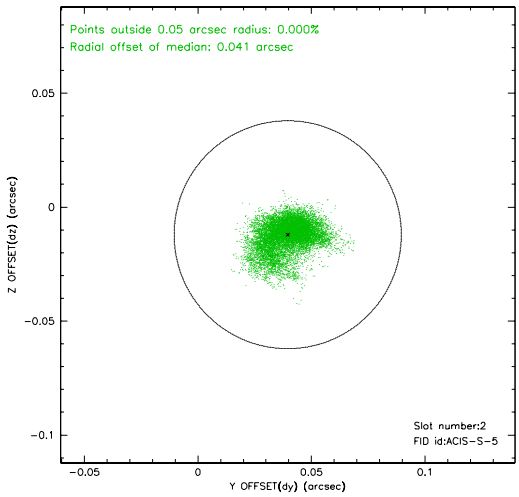

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

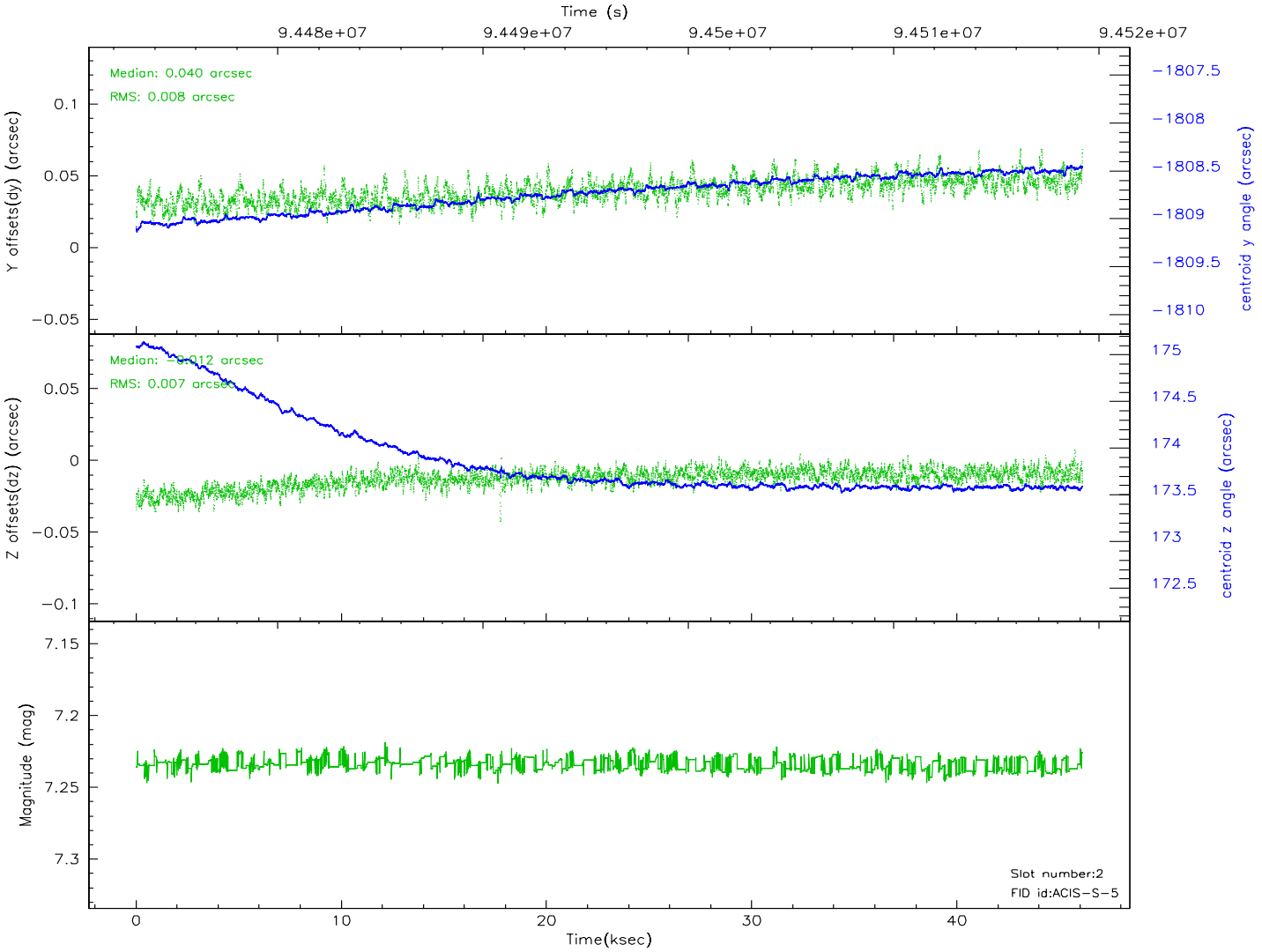

Points outside 0.05 arcsec radius: 0.293%
Radial offset of median: 0.087 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
Median: −0.086 arcsec
RMS: 0.017 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.016 arcsec
RMS: 0.006 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

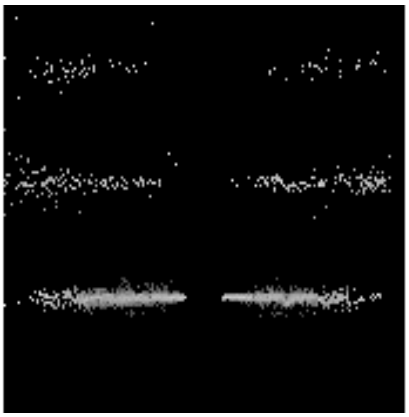

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.041 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5

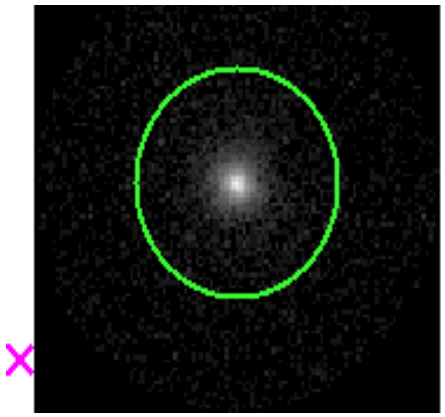

Time (s)
Median: 0.040 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
Median: -0.012 arcsec
RMS: 0.007 arcsec
Z offsets(dz) (arcsec)
centroid y angle (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-5
Time(ksec)

3 Gratings

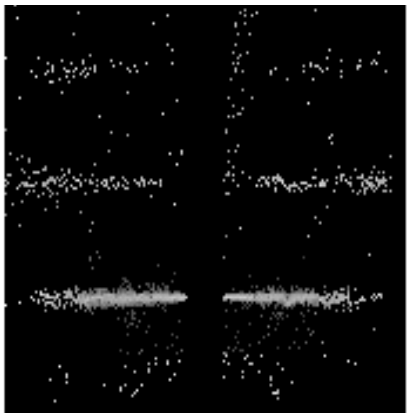
3.1 HEG Arm



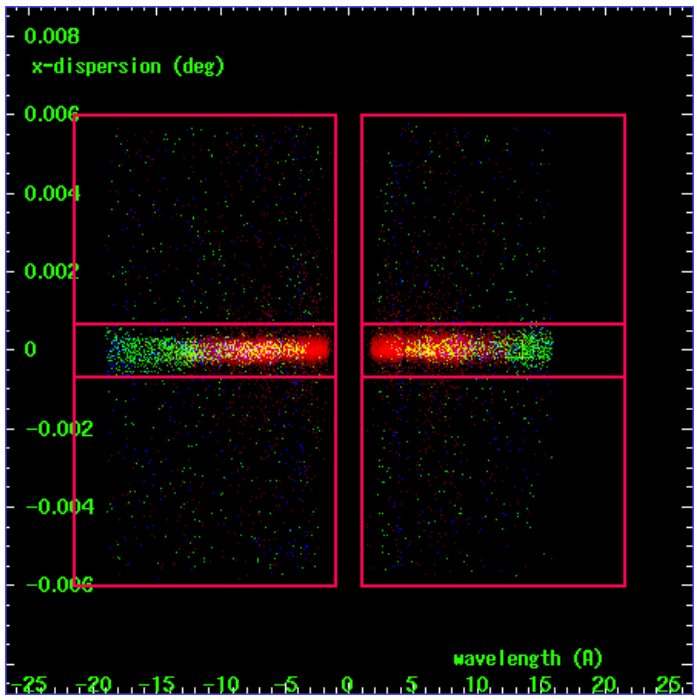
HEG Order Sort 123



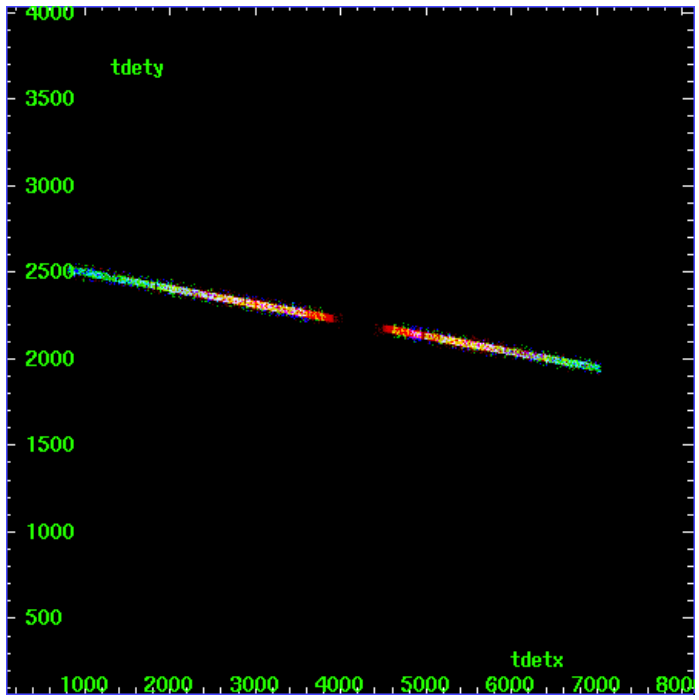
HEG Zero Order



HEG Order Sort ALL

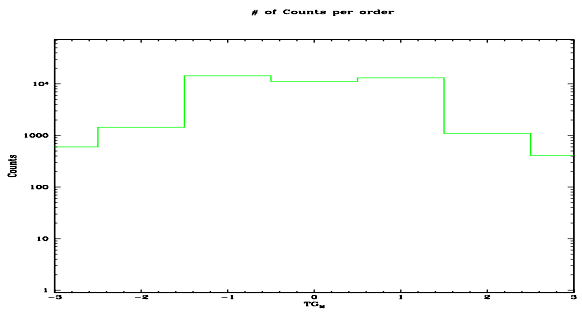


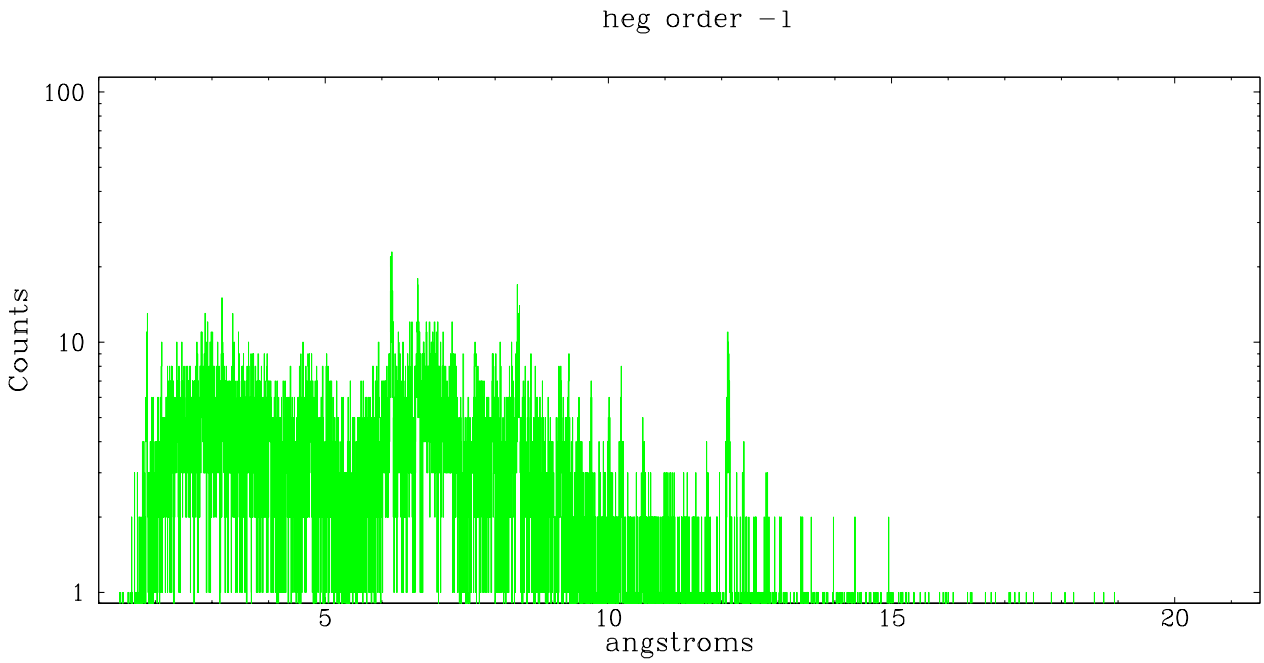
Spot Image HEG

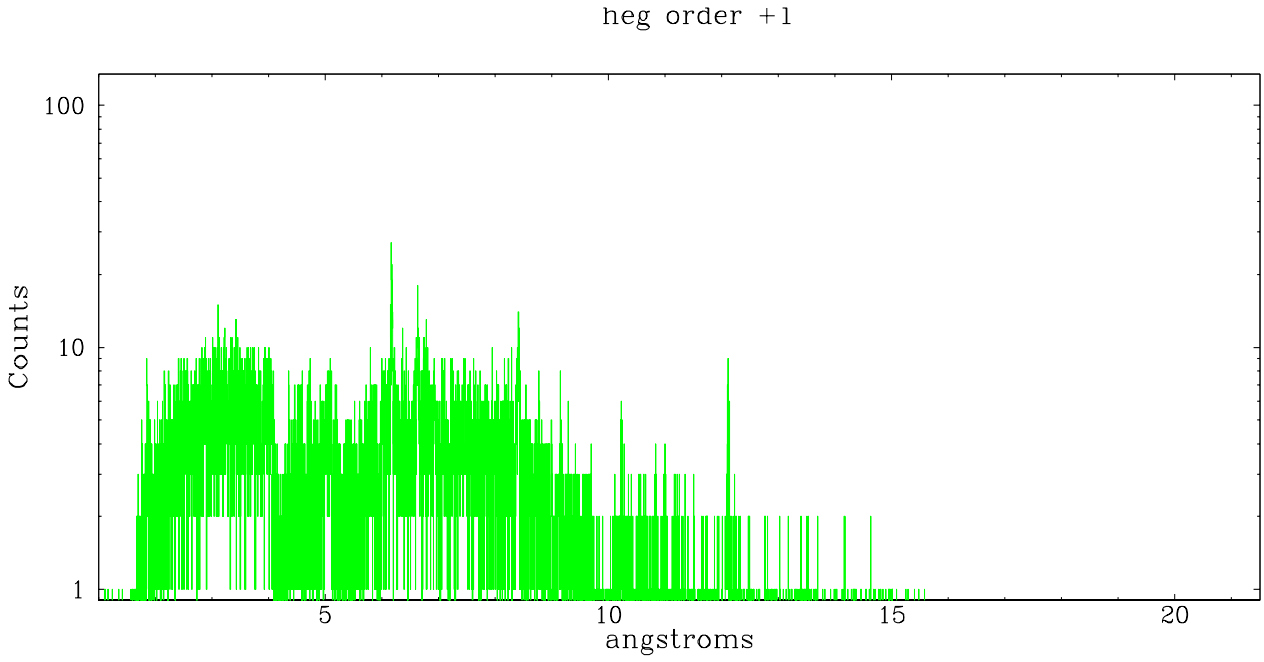


Full Detector HEG

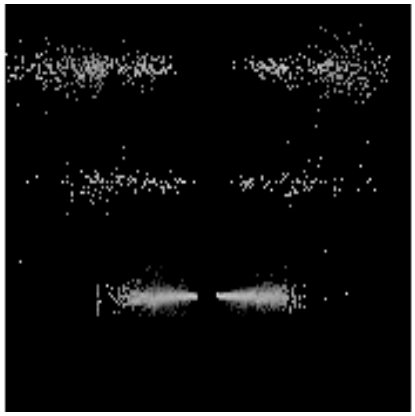
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	599	1439	14391	11143	13122	1091	409



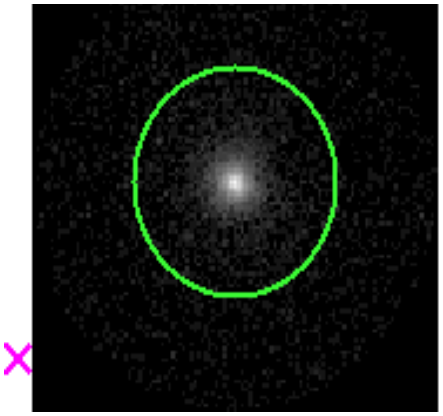

heg order −1
100
10
1
Counts
5
10
15
20
angstroms


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

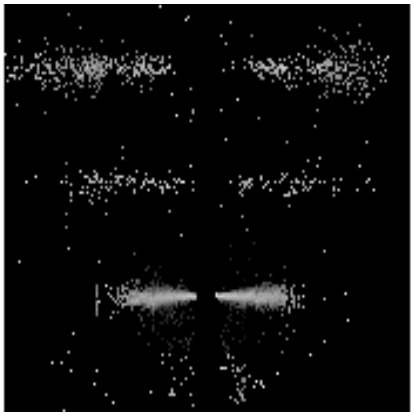
3.2 MEG Arm



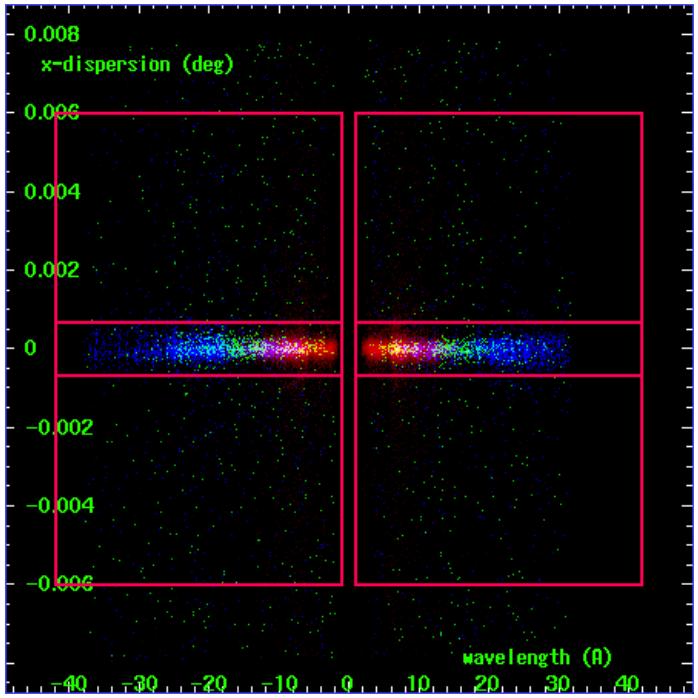
MEG Order Sort 123



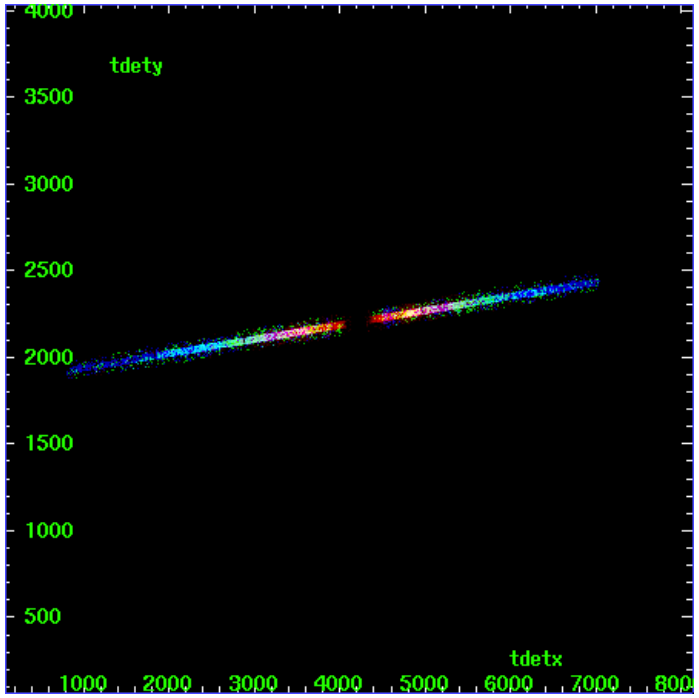
MEG Zero Order



MEG Order Sort ALL

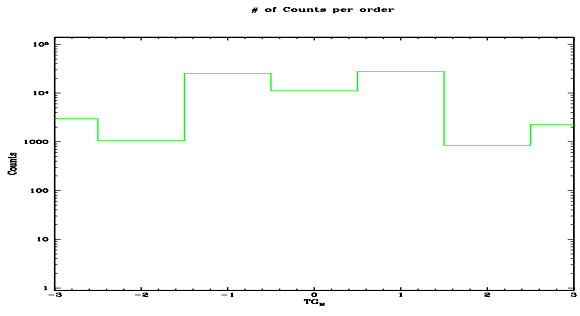


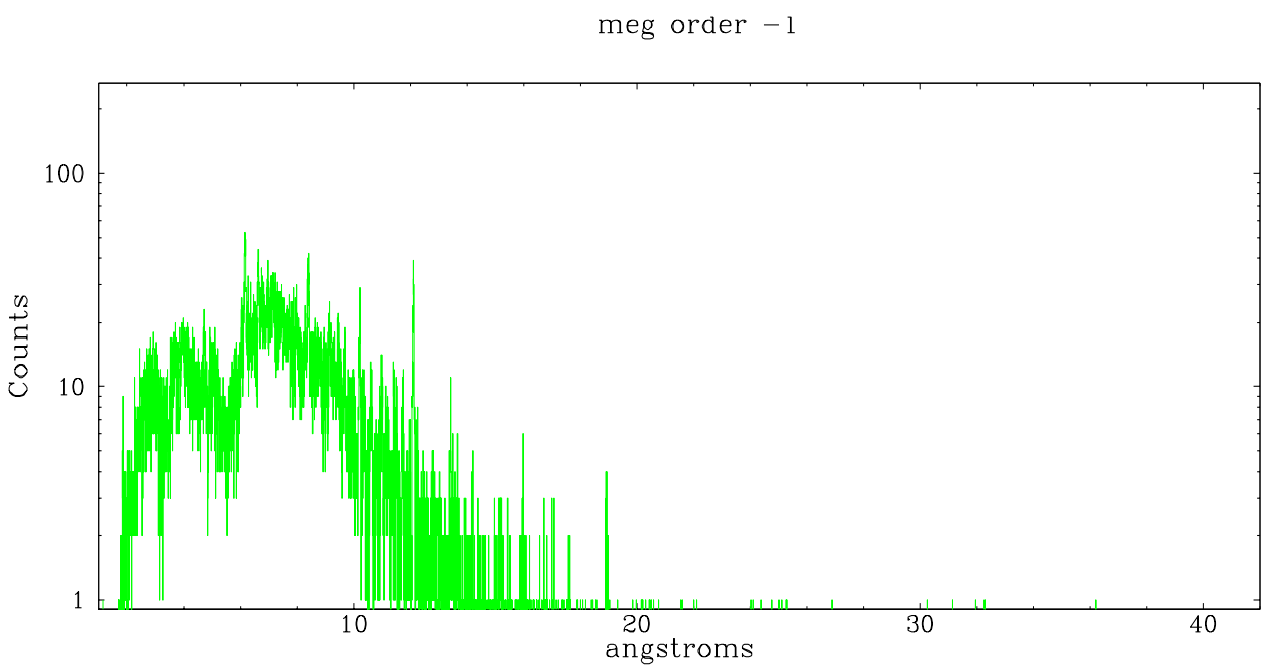
Spot Image MEG

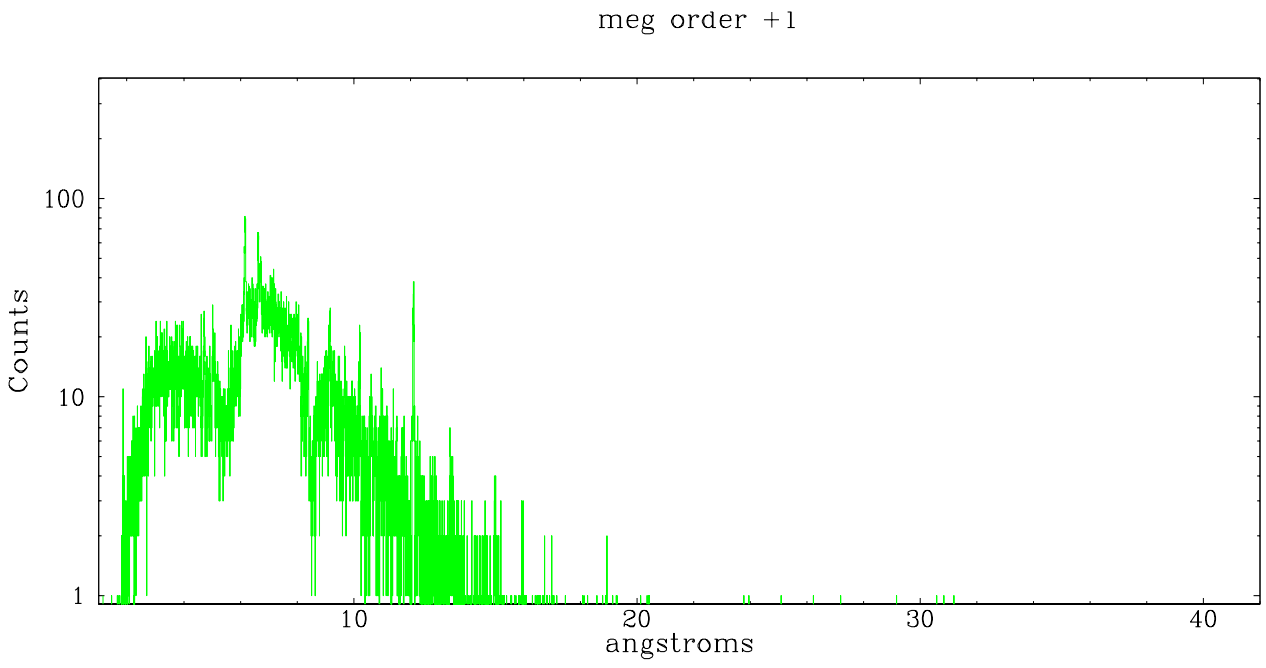


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	3005	1054	25363	11143	27856	845	2278




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


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

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2007.08.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	46.124

A.2 Comments

```
Target is assumed to be at its brightest before absorption set
in.=======
========Zeroth order piled up. 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=4155.44; y=4138.59) 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.
```