V&V Reference Report
L2 ASCDS Version : 7.6.10

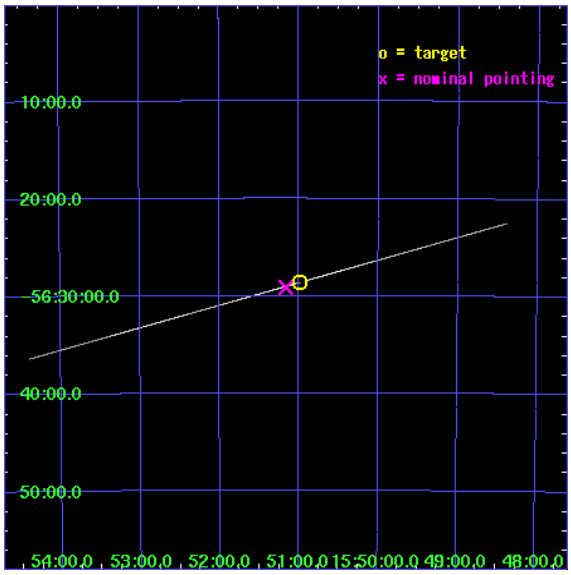
Observation 689 - L2 Version 001
Chandra X-Ray Center

L2 Processing Date : May 23 2007

Contents

1 Front

seq_num	400056
obs_id	689
title	AXAF OBSERVATIONS OF A BRIGHT BLACK HOLE X-RAY BINARY IN OUTBURST
observer	Prof. Walter Lewin
object	XTE J1550-564 (OUTBURST DECAY)
ra_targ	237.745417
dec_targ	-56.476472
ra_nom	237.79088720892
dec_nom	-56.485427056936
roll_nom	344.35368668677
revision	5
ontime	3124.25
livetime	3112.0458984375
ontime4	3124.25
ontime5	3124.25
ontime6	3124.25
ontime7	3124.25
ontime8	3124.25
ontime9	3124.25
l2events	54977

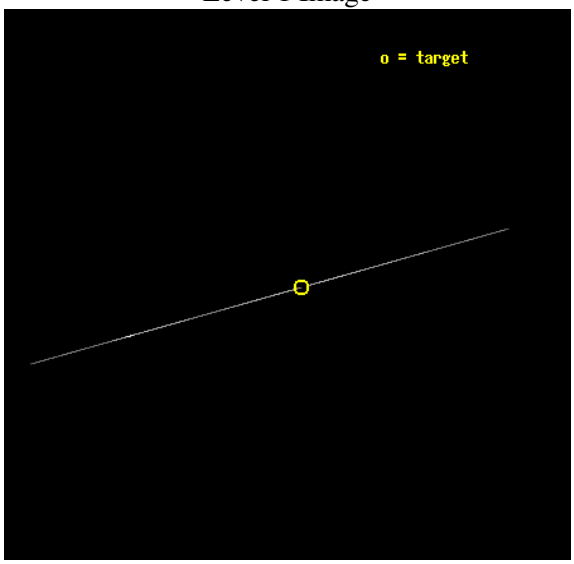


2 OBI

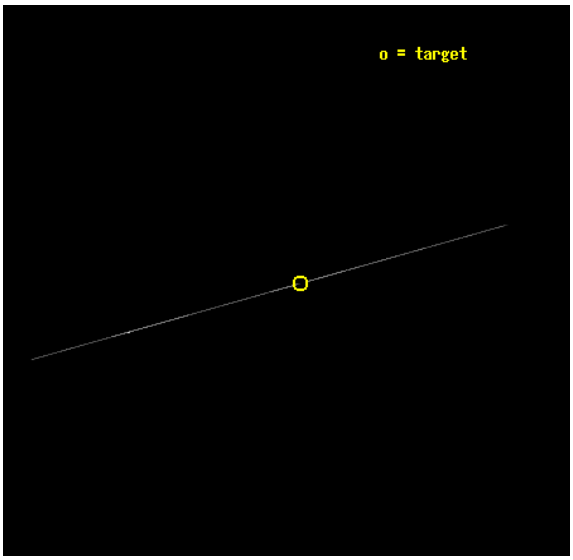
2.1 OBI

2.1.1 Images

Level 1 Image



Level 1 Bad Events



2.1.2 Parameters

obi_num	0
ascdsver	7.6.10
caldbver	3.4.0
date	2007-05-23T11:18:42
revision	4

sched_exp_time	2913.563000
ontime	3124.25
ontime4	3124.25
ontime5	3124.25
ontime6	3124.25
ontime7	3124.25
ontime8	3124.25
ontime9	3124.25
l1events	95174

2.1.3 Events

	ccd 4	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
level 1 events	5957	30810	13272	22717	15699	6719
rejected events	1984	8253	2341	5636	3676	2198
rejected %	33%	26%	17%	24%	23%	32%

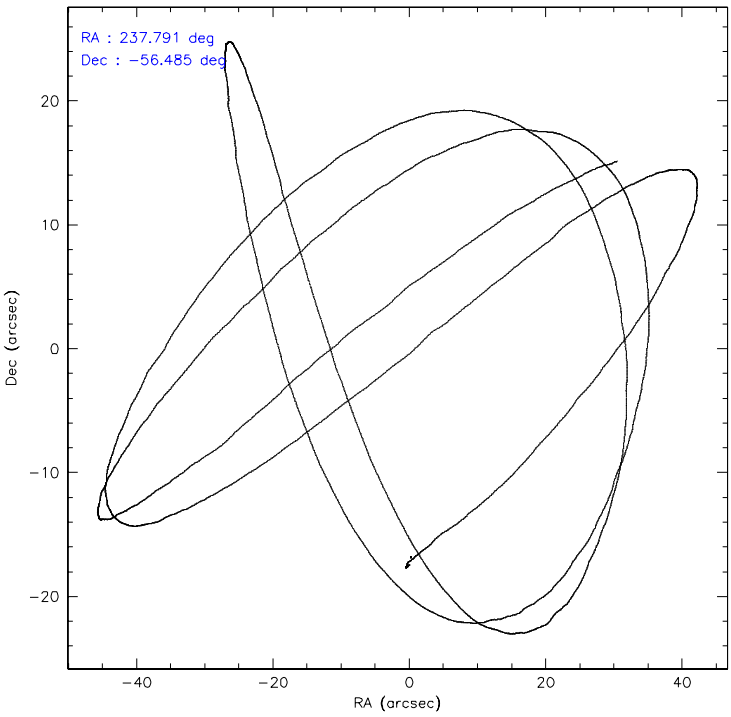
	ccd 4	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
grade 0 events	507	10011	594	1520	1748	651
	8%	32%	4%	6%	11%	9%
grade 1 events	15	21	12	26	29	18
	0%	0%	0%	0%	0%	0%
grade 2 events	2175	7681	8797	6128	7733	2419
	36%	24%	66%	26%	49%	36%
grade 3 events	778	476	704	974	1201	696
	13%	1%	5%	4%	7%	10%
grade 4 events	788	439	677	1087	1125	781
	13%	1%	5%	4%	7%	11%
grade 5 events	772	1878	953	2114	1256	1006
	12%	6%	7%	9%	8%	14%
grade 6 events	922	10304	1535	10868	2607	1148
	15%	33%	11%	47%	16%	17%
grade 7 events	0	0	0	0	0	0
	0%	0%	0%	0%	0%	0%

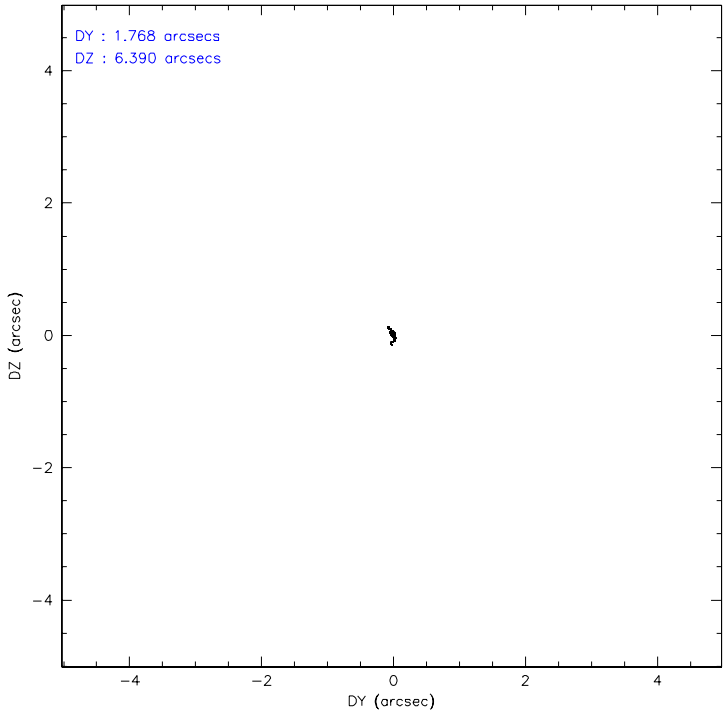
2.2 Compared Parameters

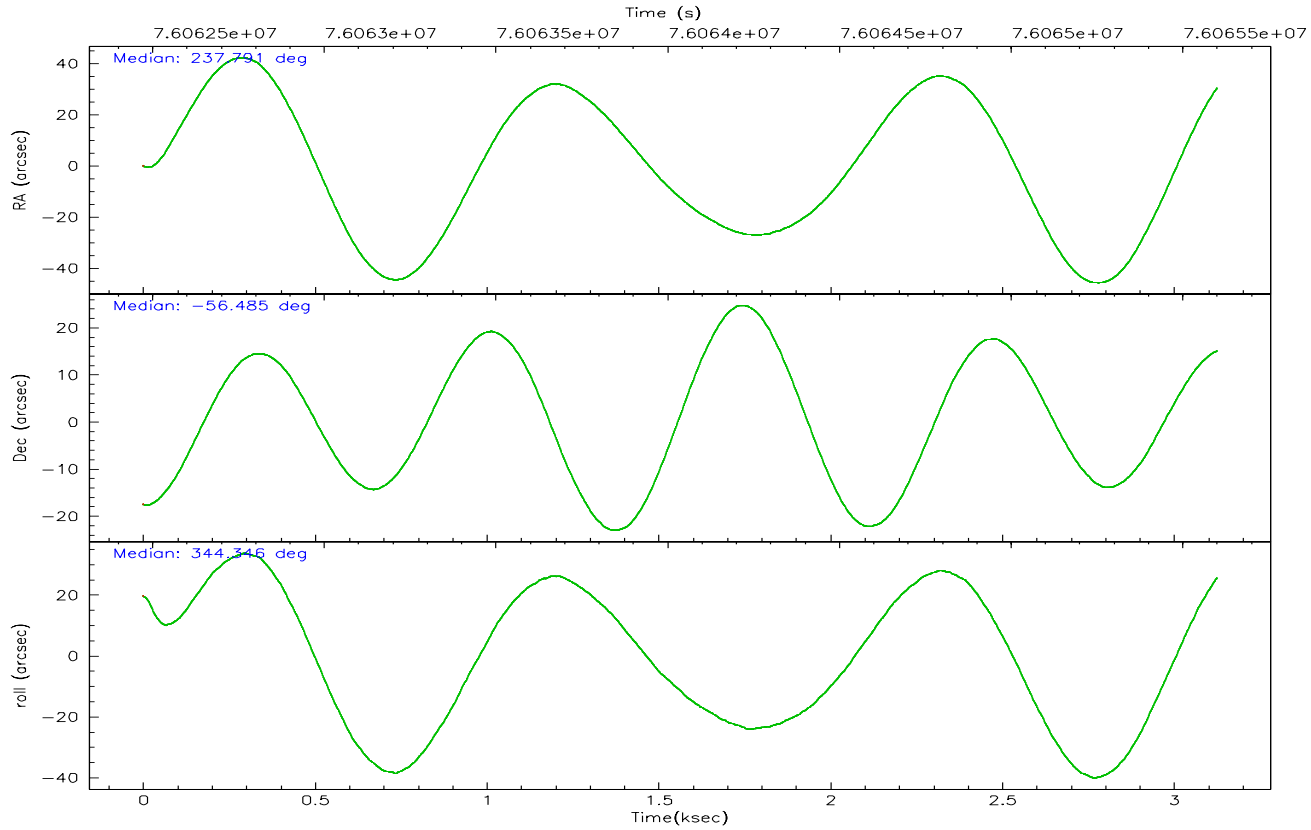
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	CC33_GRADED	CC33_GRADED
Observation mode	POINTING	POINTING
Pointing RA	237.742612	237.7908872089216
Pointing Dec	-56.492327	-56.48542705693585
Pointing Roll	344.156737	344.3536866867728
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-200.132523	-200.1369836888744
SIM translation stage offset (mm)	10	10.00446110586662
Observation start time	76062688.184000	76061575.901482
Observation start date	2000-05-30T08:30:24	2000-05-30T08:12:55
Observation end time	76065601.184000	76065910.626642
Observation end date	2000-05-30T09:18:57	2000-05-30T09:25:10
Read mode	CONTINUOUS	CONTINUOUS

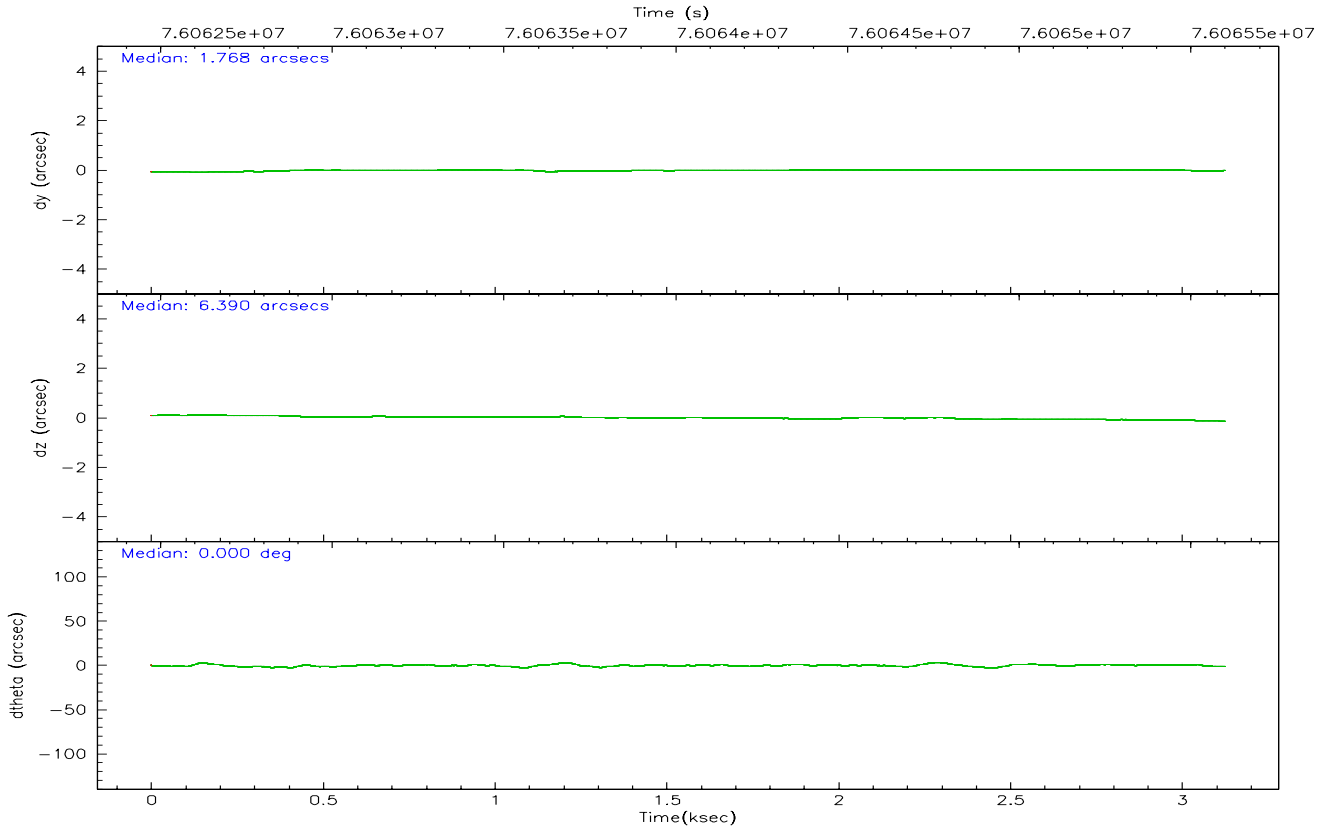
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	0

2.3 Aspect


RA : 237.791 deg
Dec : −56.485 deg
Dec (arcsec)
RA (arcsec)
20
10
0
−10
−20
−40
−20
0
20
40


DY : 1.768 arcsecs
DZ : 6.390 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
7.60625e+07
7.6063e+07
7.60635e+07
7.6064e+07
7.60645e+07
7.6065e+07
7.60655e+07
Median: 237.791 deg
RA (arcsec)
Median: −56.485 deg
Dec (arcsec)
Median: 344.346 deg
roll (arcsec)
Time(ksec)

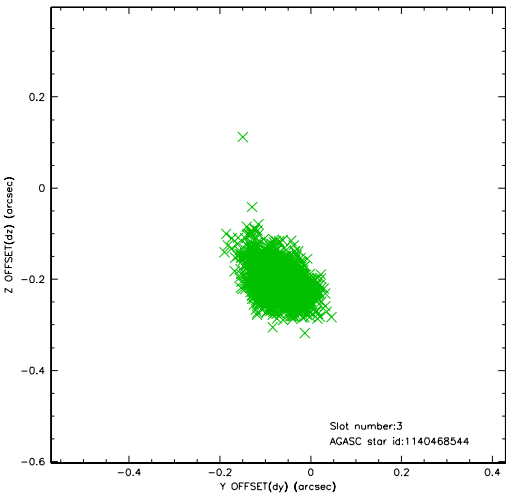

Time (s)
7.60625e+07
7.6063e+07
7.60635e+07
7.6064e+07
7.60645e+07
7.6065e+07
7.60655e+07
Median: 1.768 arcsecs
dy (arcsec)
Median: 6.390 arcsecs
dz (arcsec)
Median: 0.000 deg
dtheta (arcsec)
Time(ksec)

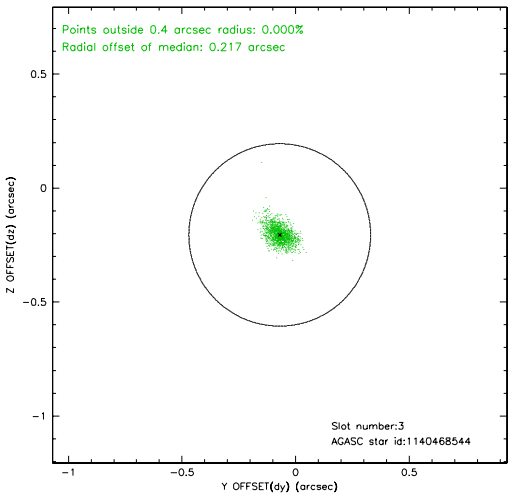
Slot Statistics

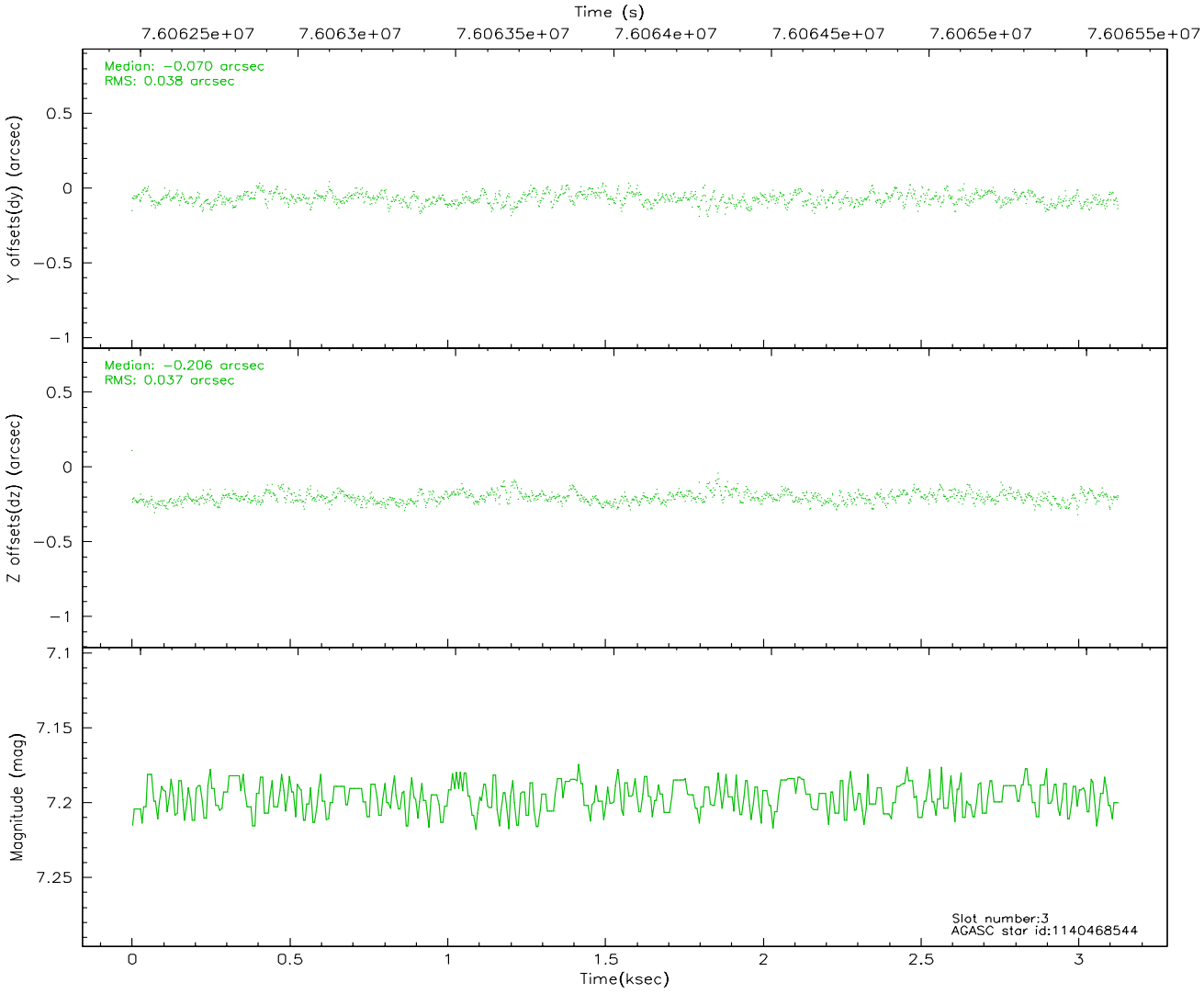
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.13	763	0.122	0.189	0.011	0.020	0.000000	0.000000	-754.96	-1521.07
1	FID	ACIS-S-4	7.23	763	-0.121	-0.109	0.008	0.016	0.000000	0.000000	2157.30	385.08
2	FID	ACIS-S-5	7.22	763	-0.032	-0.071	0.008	0.016	0.000000	0.000000	-1805.19	381.41
3	GUIDE	1140468544	7.20	1526	-0.070	-0.206	0.055	0.093	237.524626	-55.920475	-985.73	1858.05
4	GUIDE	1141004216	8.14	1526	-0.021	0.088	0.067	0.116	237.245988	-56.471011	-971.12	-199.42
5	GUIDE	1140989920	8.89	1526	-0.110	0.075	0.086	0.139	237.647305	-57.151120	467.58	-2333.86
6	GUIDE	1141000720	9.21	1525	0.102	0.019	0.082	0.137	238.678440	-56.280404	1594.05	1229.65
7	GUIDE	1140984088	9.47	1525	0.095	0.016	0.087	0.141	237.763213	-56.698871	242.92	-704.70

2.4 Star Slots

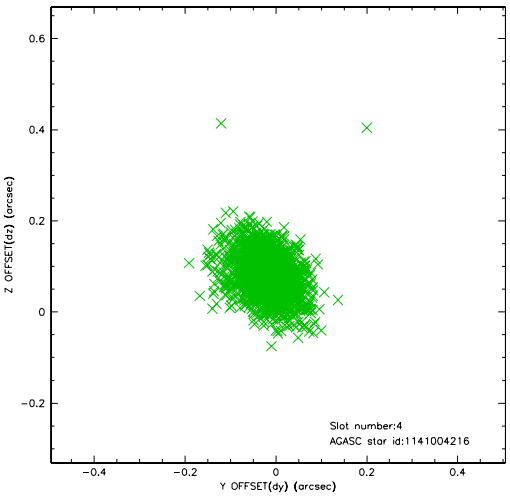
2.4.1 Slot 3

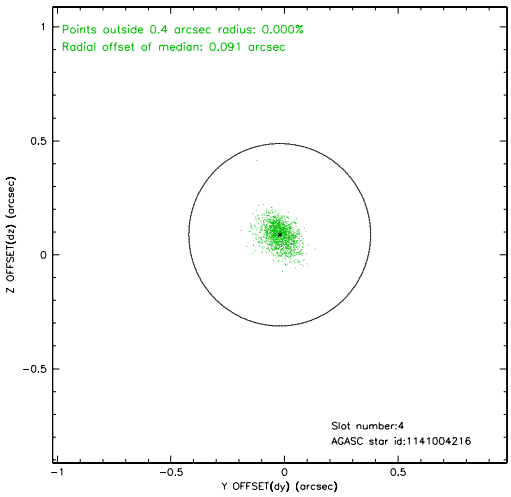


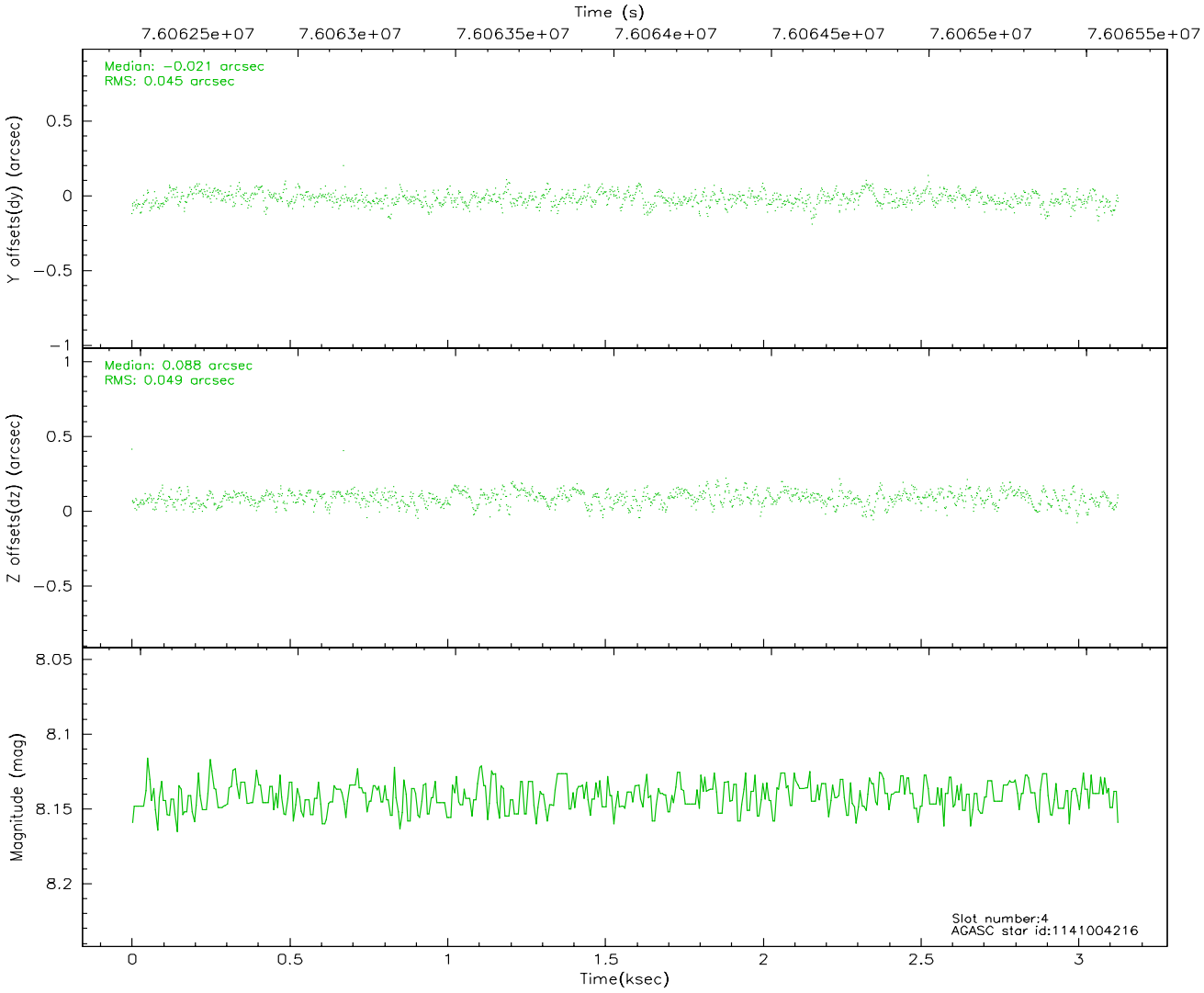




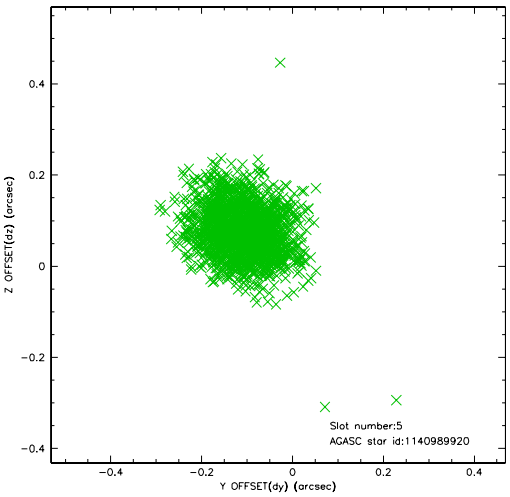
2.4.2 Slot 4

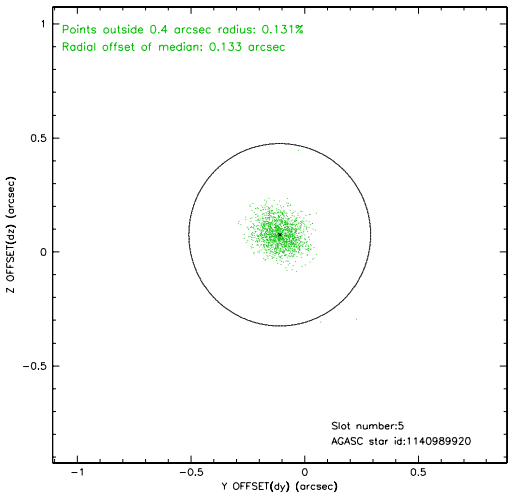

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1141004216

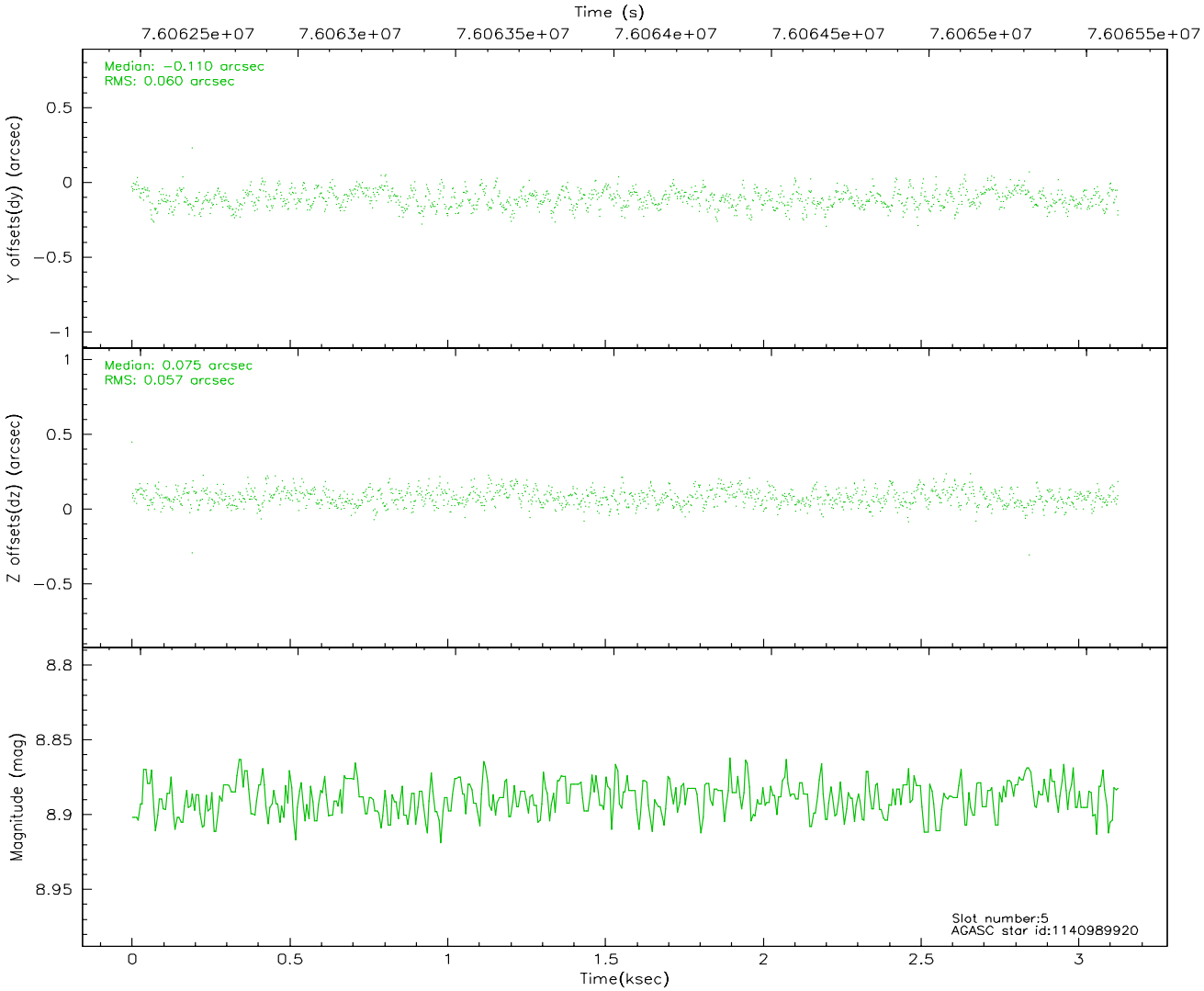

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.091 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1141004216


Time (s)
Median: −0.021 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: 0.088 arcsec
RMS: 0.049 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:1141004216
Time(ksec)

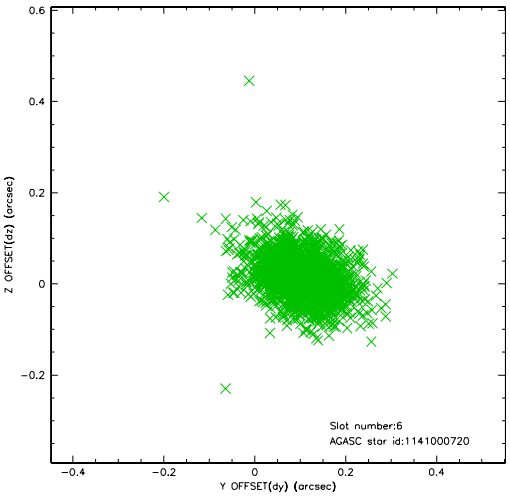
2.4.3 Slot 5

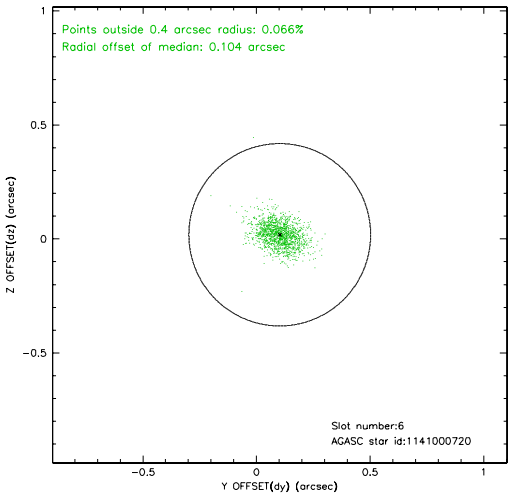

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1140989920

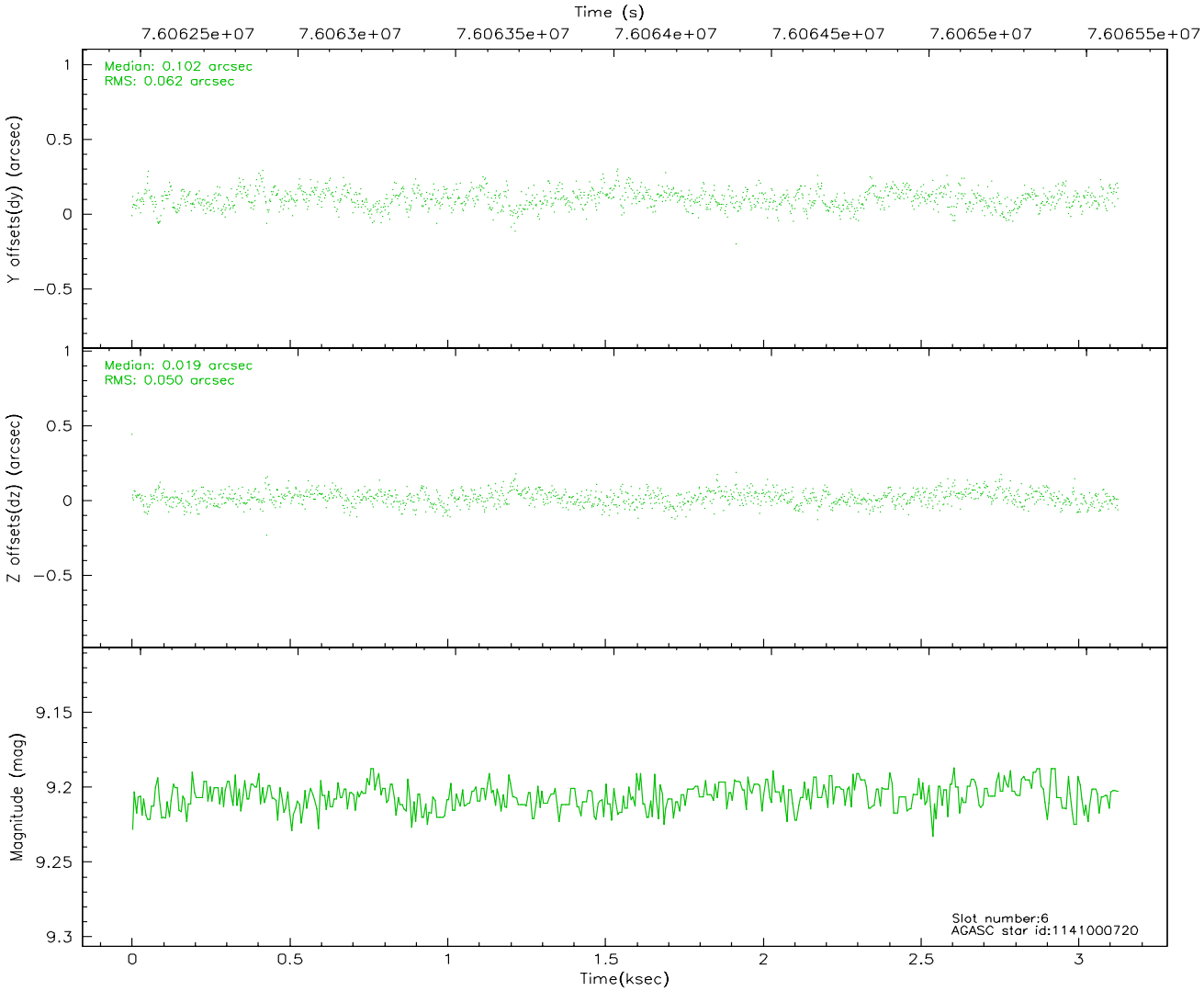

Points outside 0.4 arcsec radius: 0.131%
Radial offset of median: 0.133 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1140989920


Time (s)
Median: −0.110 arcsec
RMS: 0.060 arcsec
Y offsets(dy) (arcsec)
Median: 0.075 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:1140989920
Time(ksec)

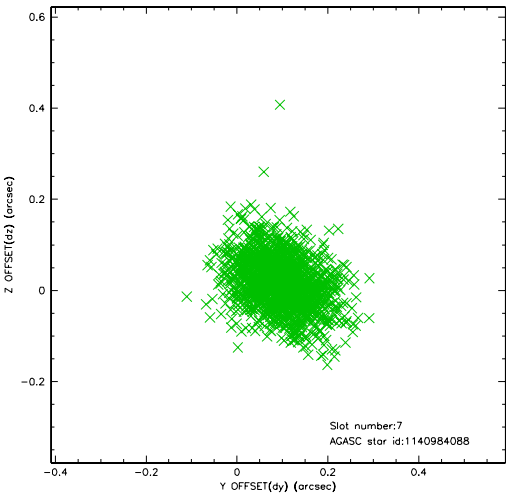
2.4.4 Slot 6

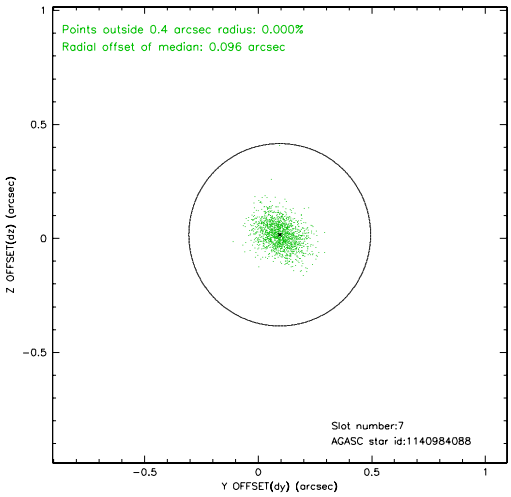

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1141000720

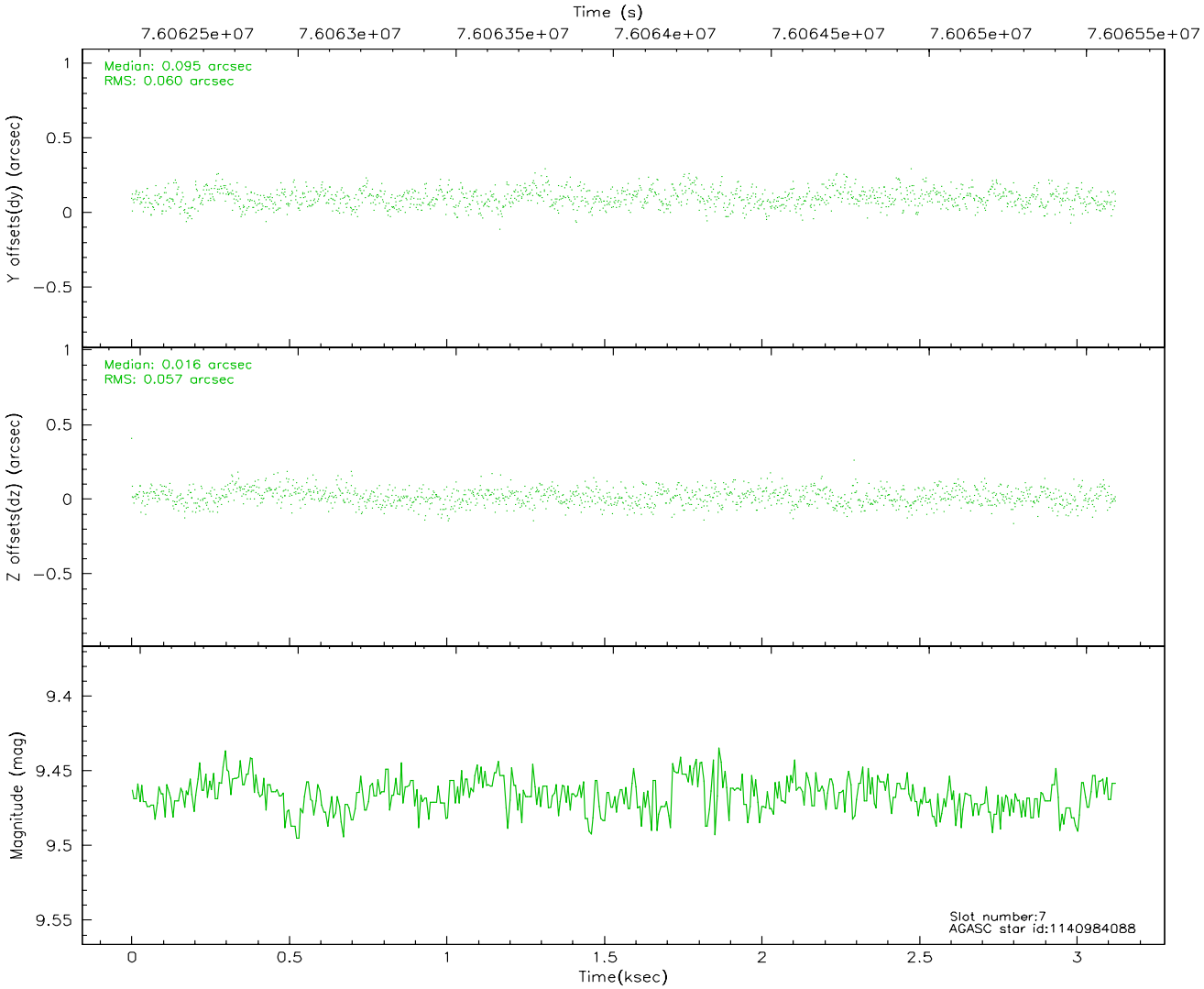

Points outside 0.4 arcsec radius: 0.066%
Radial offset of median: 0.104 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1141000720


Time (s)
Median: 0.102 arcsec
RMS: 0.062 arcsec
Y offsets(dy) (arcsec)
Median: 0.019 arcsec
RMS: 0.050 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:1141000720
Time(ksec)

2.4.5 Slot 7

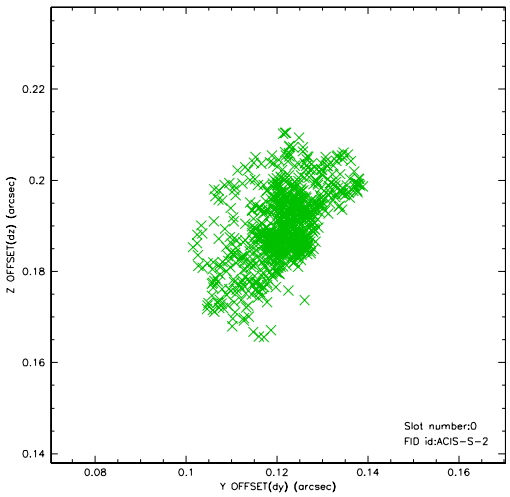

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1140984088

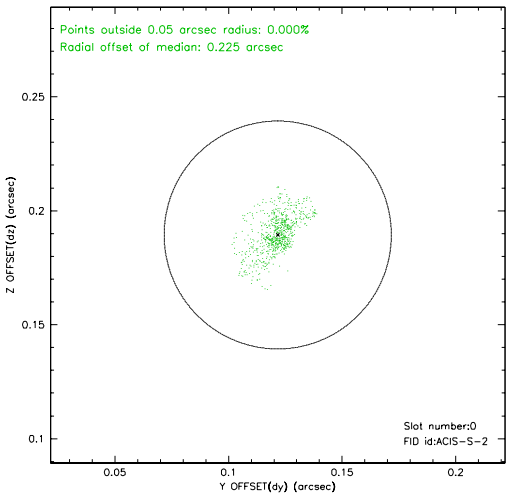

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.096 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1140984088

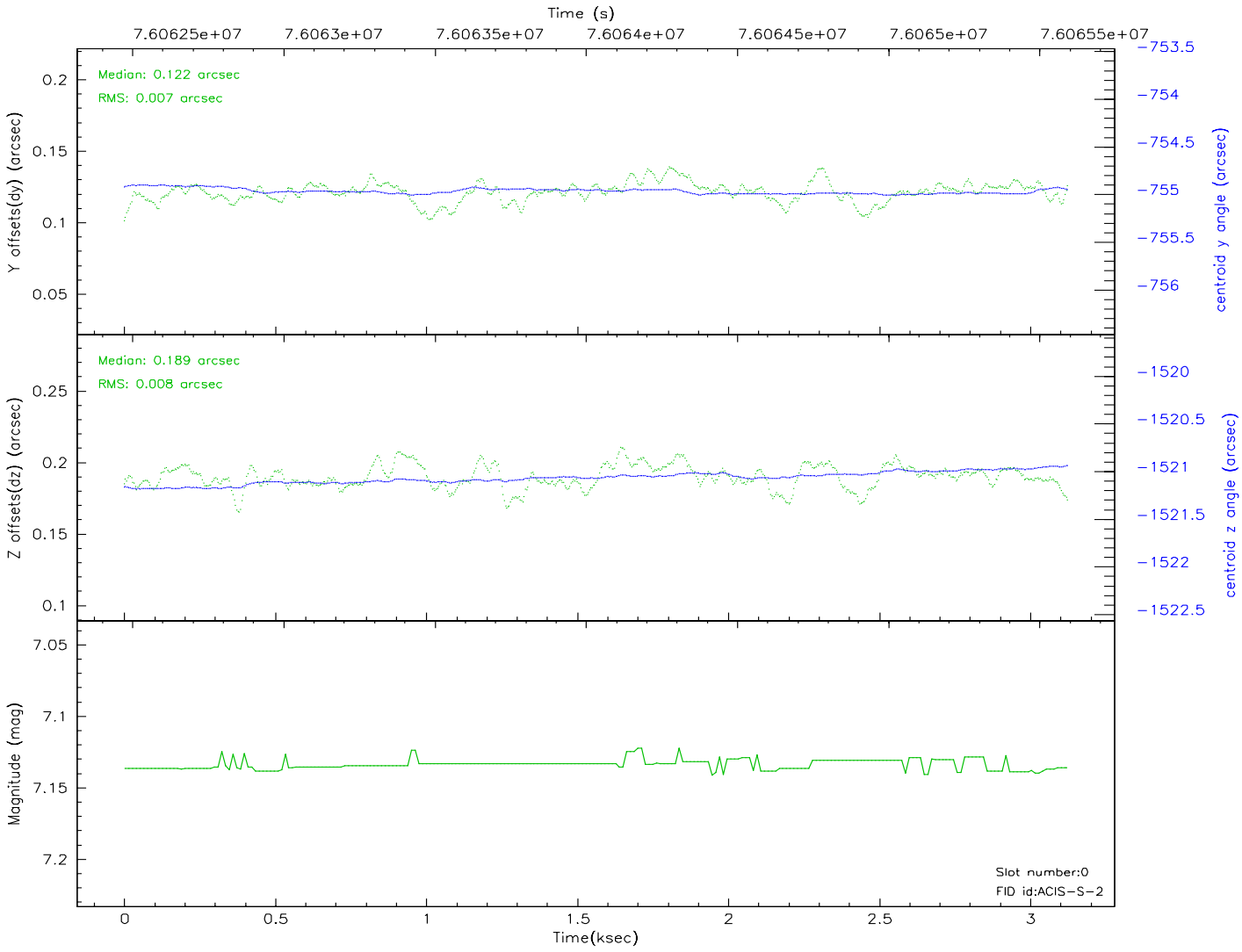

Time (s)
Median: 0.095 arcsec
RMS: 0.060 arcsec
Y offsets(dy) (arcsec)
Median: 0.016 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:1140984088
Time(ksec)

2.5 FID Slots

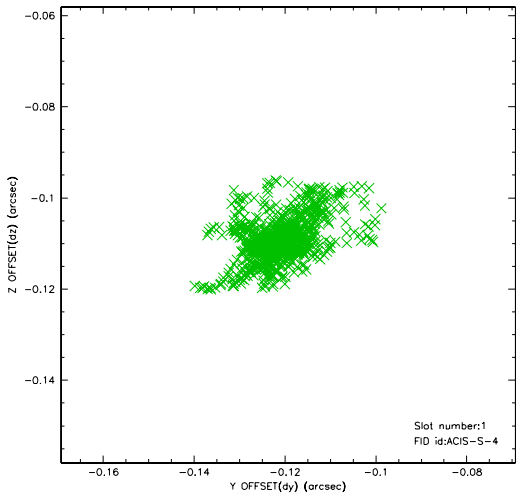
2.5.1 Slot 0

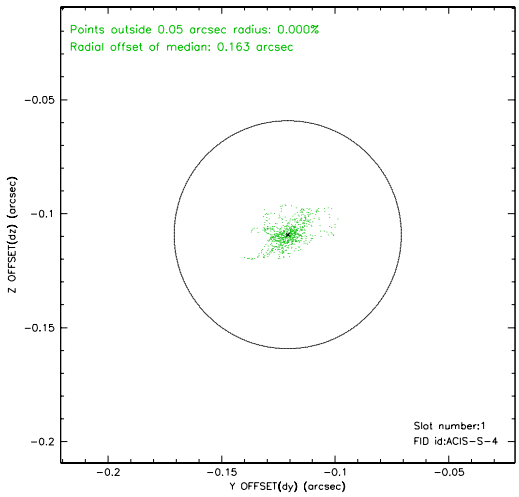


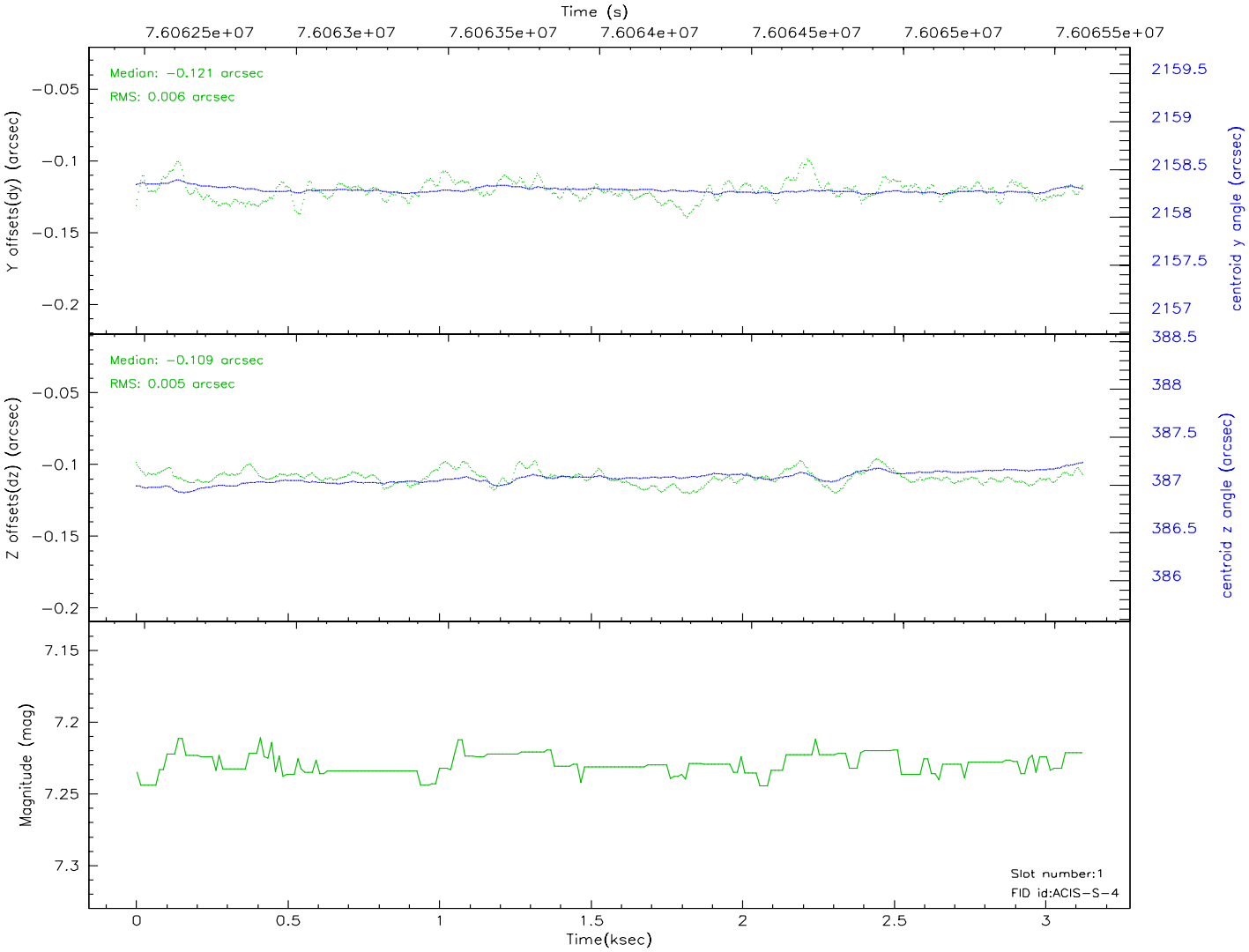




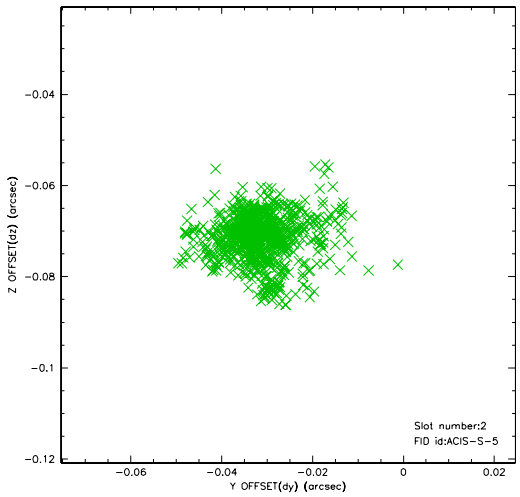
2.5.2 Slot 1

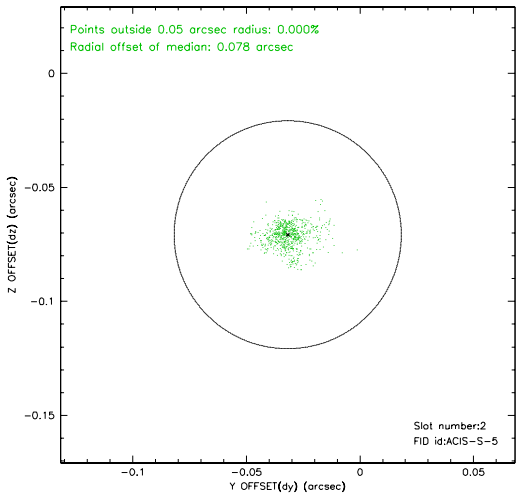

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

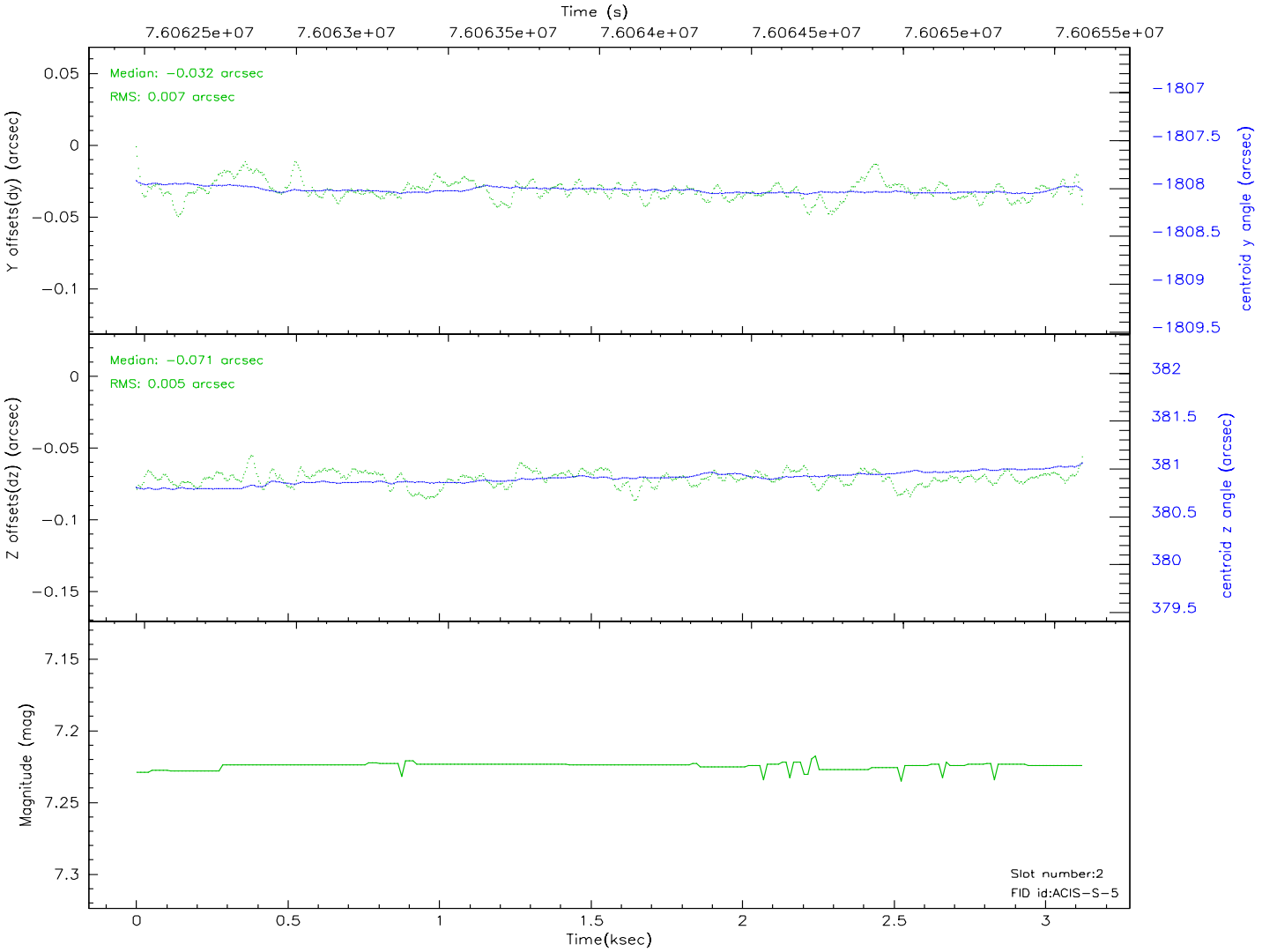

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.163 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
Median: −0.121 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.109 arcsec
RMS: 0.005 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

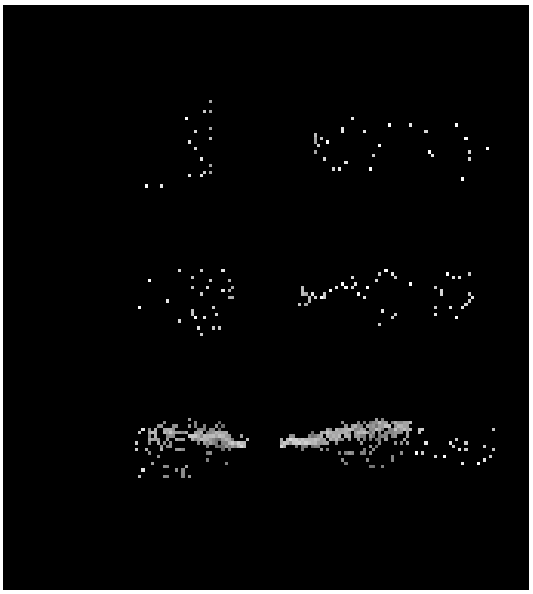

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.078 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Time (s)
Median: −0.032 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.071 arcsec
RMS: 0.005 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-5
Time(ksec)

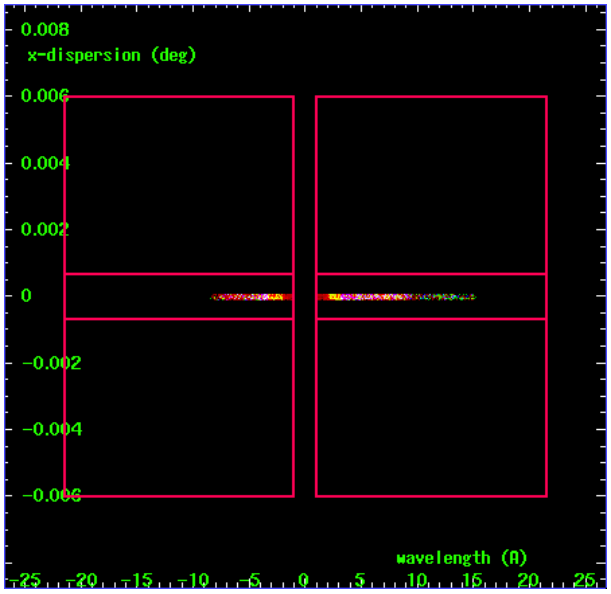
3 Gratings

3.1 HEG Arm

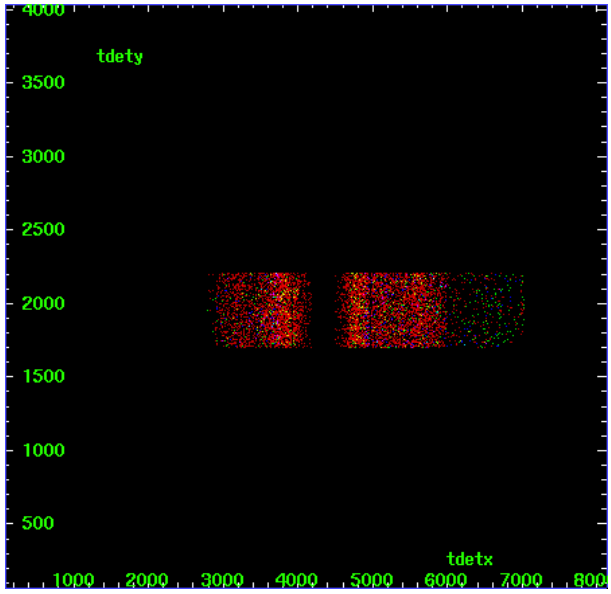


HEG Order Sort 123

HEG Order Sort ALL

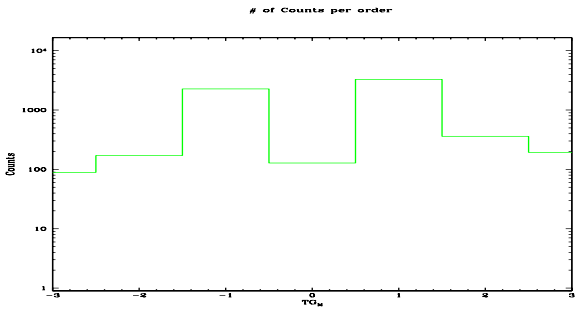


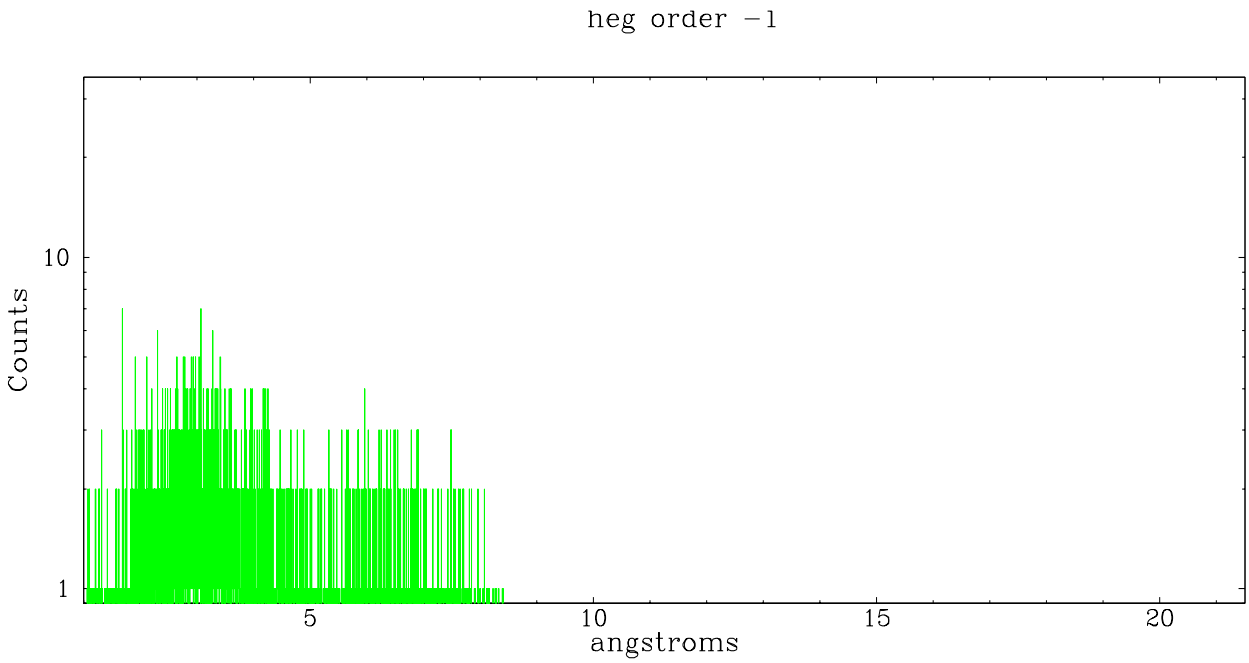
Spot Image HEG

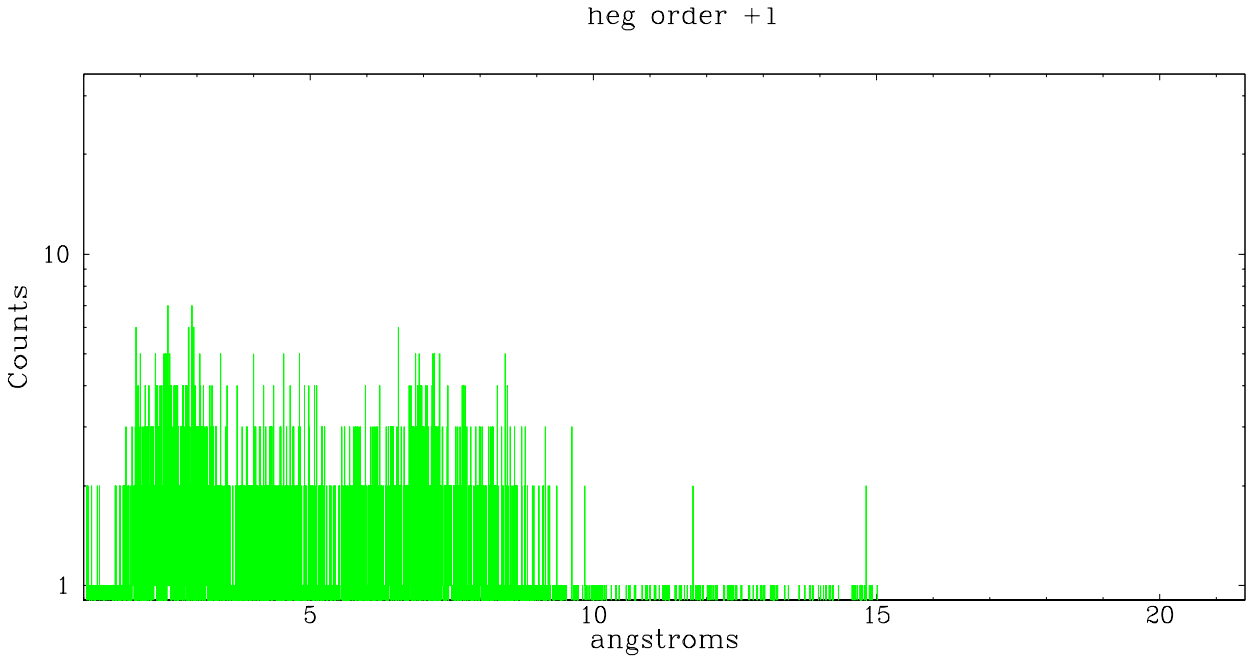


Full Detector HEG

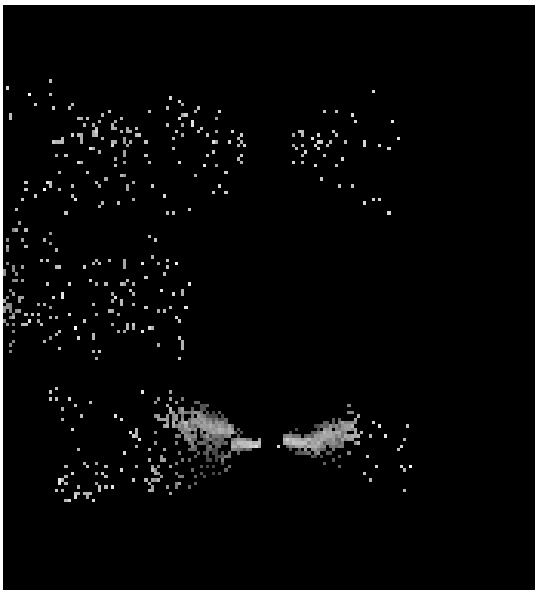
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	89	171	2274	128	3290	360	193




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

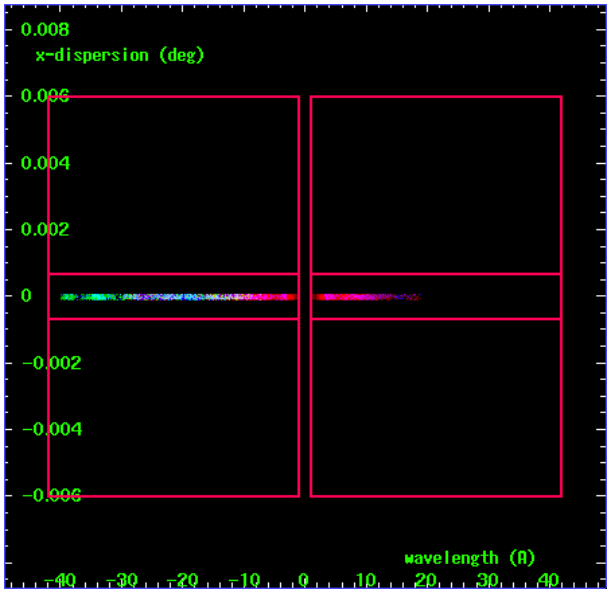

heg order +1
Counts
10
1
5
10
15
20
angstroms

3.2 MEG Arm

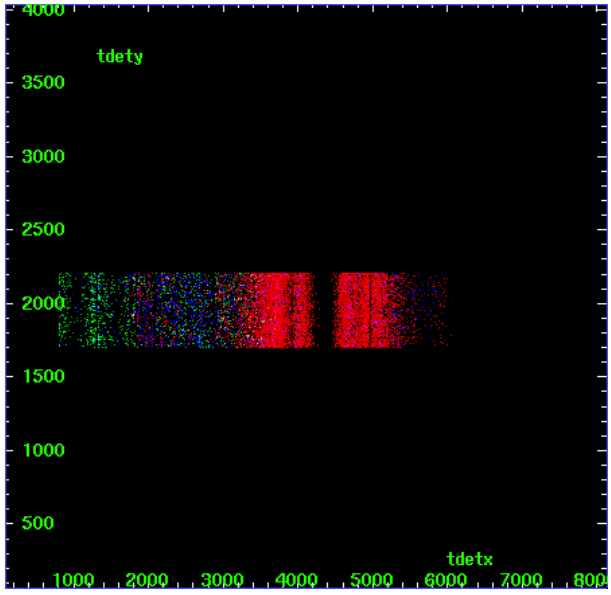


MEG Order Sort 123

MEG Order Sort ALL

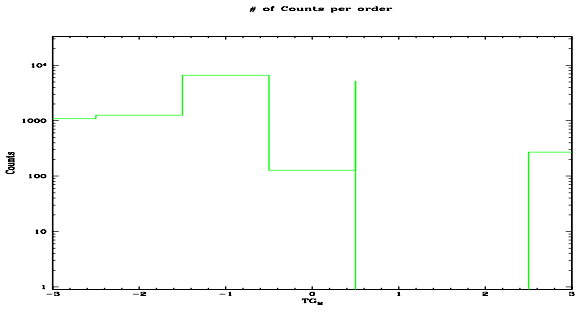


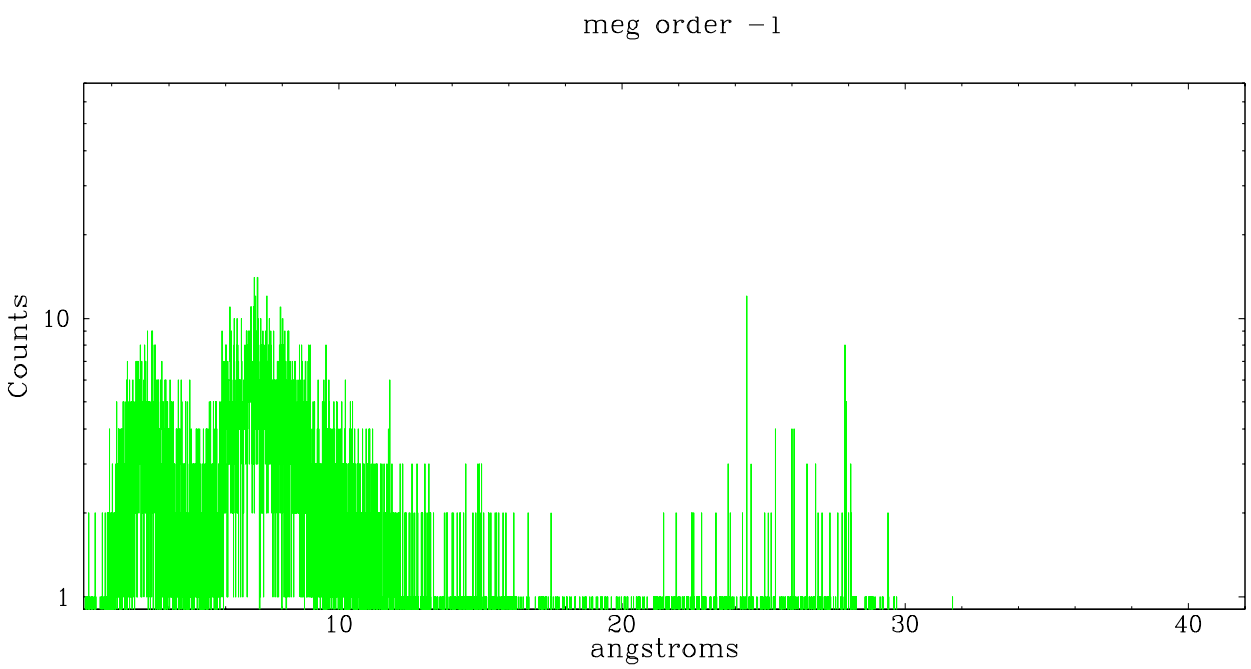
Spot Image MEG

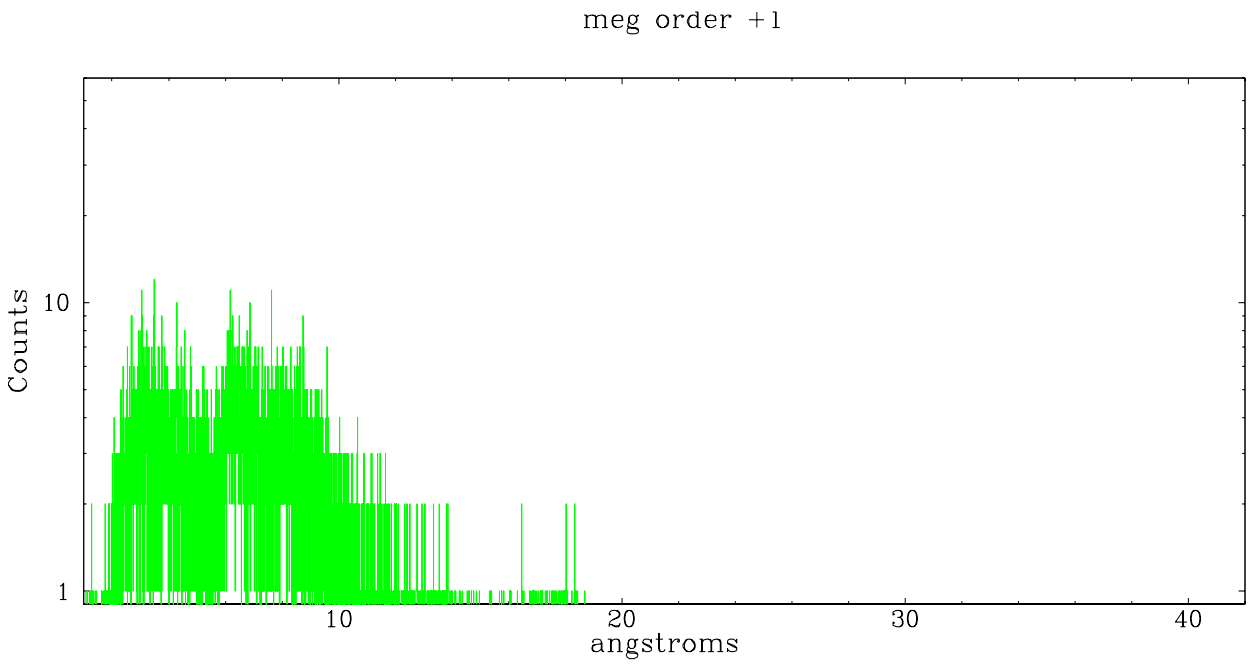


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1081	1260	6611	128	5172	0	271




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


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

A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2007.05.23
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	3.109

A.2 Comments

```
Charge time:
Charge time for this ObsId remains at previous value of 3.109 ks.

zero order blocked, cc-mode: required 'dead-reckoning' based on
source coordinates and aspect solution to get a good zero order
centroid
for grating wavelength calibration.
```