V&V Reference Report
L2 ASCDS Version : 7.6.9

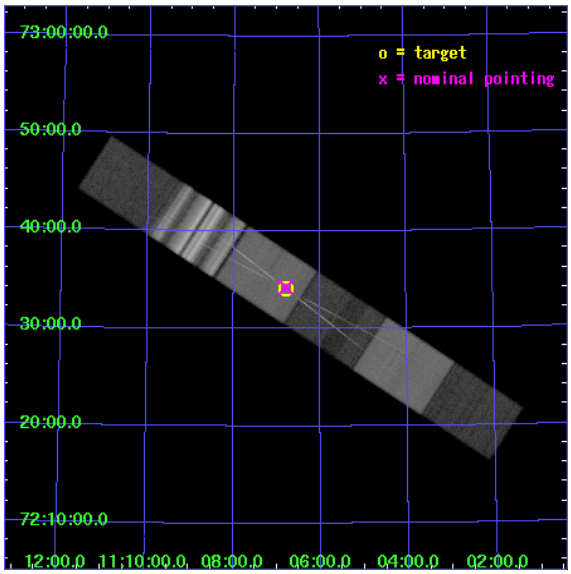
Observation 2080 - L2 Version 001
Chandra X-Ray Center

L2 Processing Date : Nov 15 2006

Contents

1 Front

seq_num	700270
obs_id	2080
title	GAS DYNAMICS AROUND THE BLACK HOLE IN NGC 3516
observer	Dr. Tracey Turner
object	NGC 3516
dtycycle	0
cycle	P
ra_targ	166.6975
dec_targ	72.568611
ra_nom	166.69818308658
dec_nom	72.570789837787
roll_nom	213.00597737665
revision	2
ontime	74537.5
livetime	73333.65472405
ontime4	74534.959009856
ontime5	74537.5
ontime6	74537.5
ontime7	74537.5
ontime8	74532.418009758
ontime9	74534.959009856
l2events	1301607

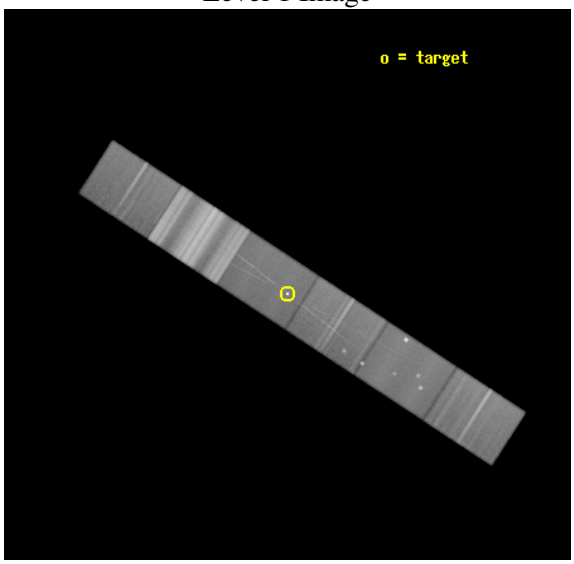


2 OBI

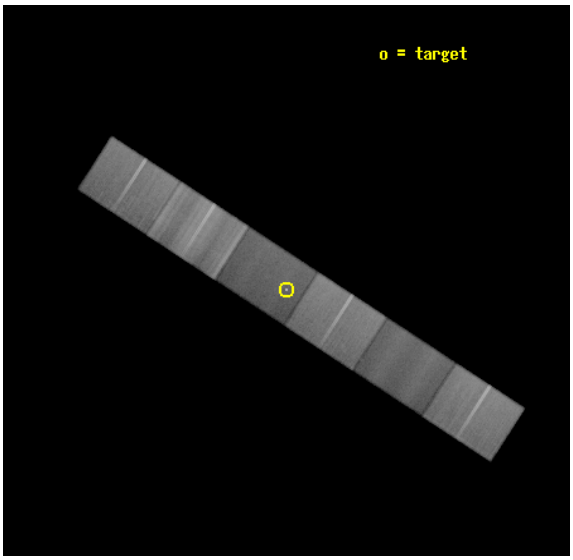
2.1 OBI

2.1.1 Images

Level 1 Image

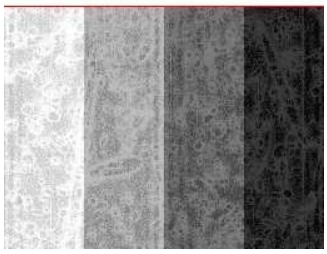


Level 1 Bad Events

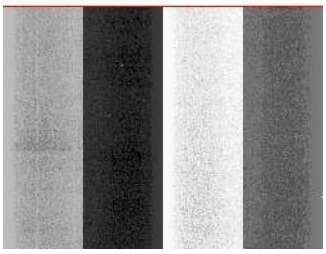


2.1.2 Bias

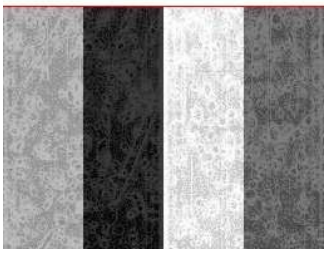
Chip 4



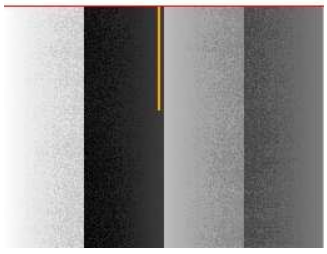
Chip 5



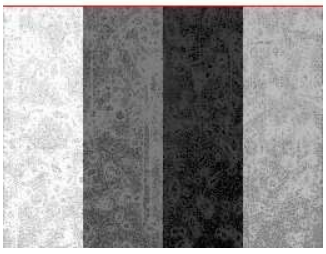
Chip 6



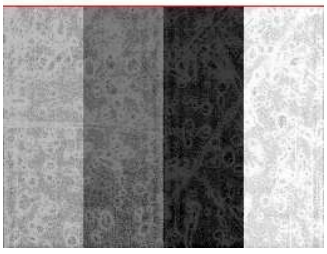
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0
ascdsver	7.6.9
caldbver	3.2.4
date	2006-11-14T20:01:06
revision	2

sched_exp_time	166776.742000
ontime	74581.110729948
ontime4	74578.569739804
ontime5	74581.110729948
ontime6	74581.110729948
ontime7	74581.110729948
ontime8	74576.028739706
ontime9	74578.569739804
l1events	4879453

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	716511	648752	678634	586621	1651783	597152
rejected events	585114	317396	566830	296982	692413	506648
rejected %	81%	48%	83%	50%	41%	84%

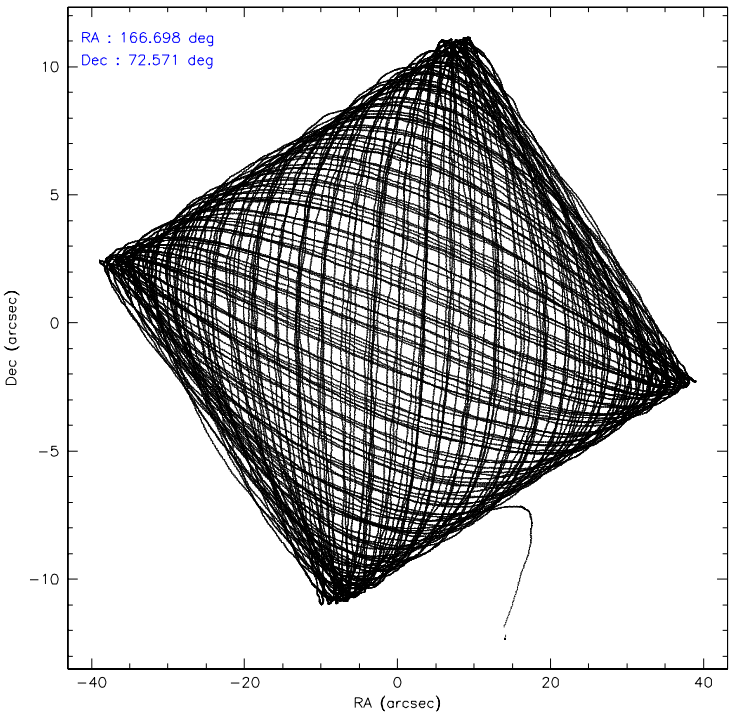
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	59488	49458	57086	25300	259524	42371
	8%	7%	8%	4%	15%	7%
grade 1 events	524	905	449	710	1821	270
	0%	0%	0%	0%	0%	0%
grade 2 events	43194	102738	27789	75925	143871	22521
	6%	15%	4%	12%	8%	3%
grade 3 events	6850	13155	6452	20095	165709	5983
	0%	2%	0%	3%	10%	1%
grade 4 events	6861	13104	6330	19830	146792	5834
	0%	2%	0%	3%	8%	0%
grade 5 events	13219	28041	14750	36999	31745	14888
	1%	4%	2%	6%	1%	2%
grade 6 events	15200	153127	14281	148681	245342	13878
	2%	23%	2%	25%	14%	2%
grade 7 events	571175	288224	551497	259081	656979	491407
	79%	44%	81%	44%	39%	82%

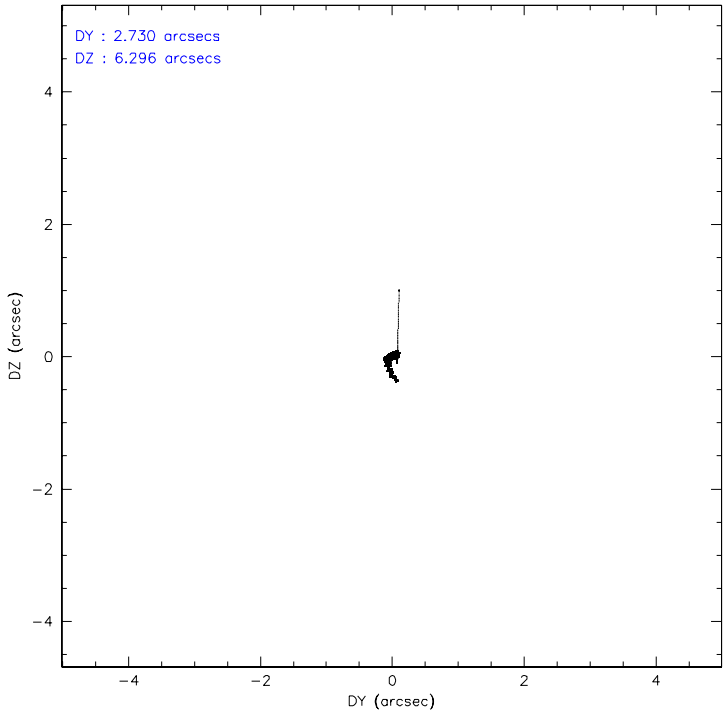
2.2 Compared Parameters

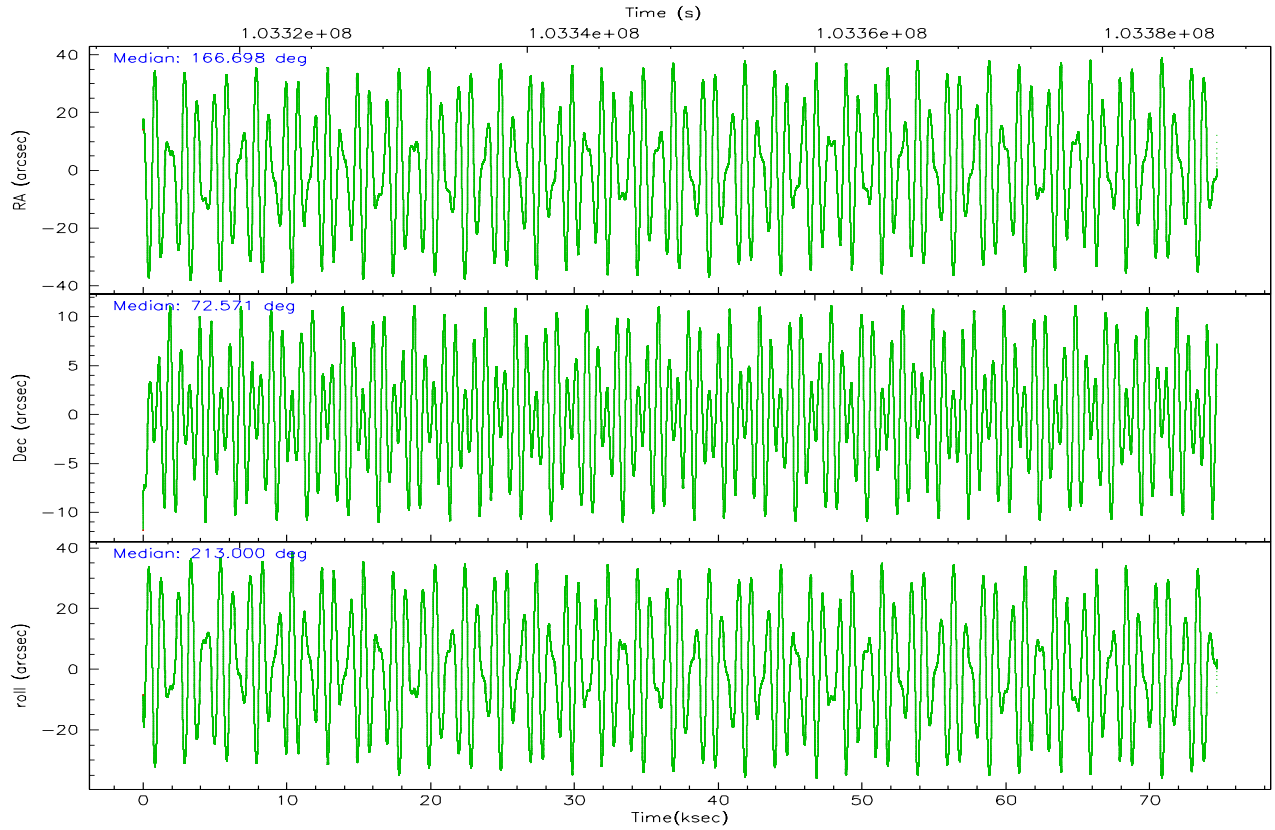
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	166.738847	166.6981830865776
Pointing Dec	72.595253	72.57078983778749
Pointing Roll	212.810544	213.0059773766493
Window start time	103215664.184000	103215664.184000
Window stop time	103478464.184000	103478464.184000
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-187.132523	-187.1228876879999
SIM translation stage offset (mm)	-3	-3.009634895007935
Observation start time	103313563.184000	103312554.42113
Observation start date	2001-04-10T18:11:39	2001-04-10T17:55:54
Observation end time	103480340.184000	103387992.88655
Observation end date	2001-04-12T16:31:16	2001-04-11T14:53:12
Read mode	TIMED	TIMED

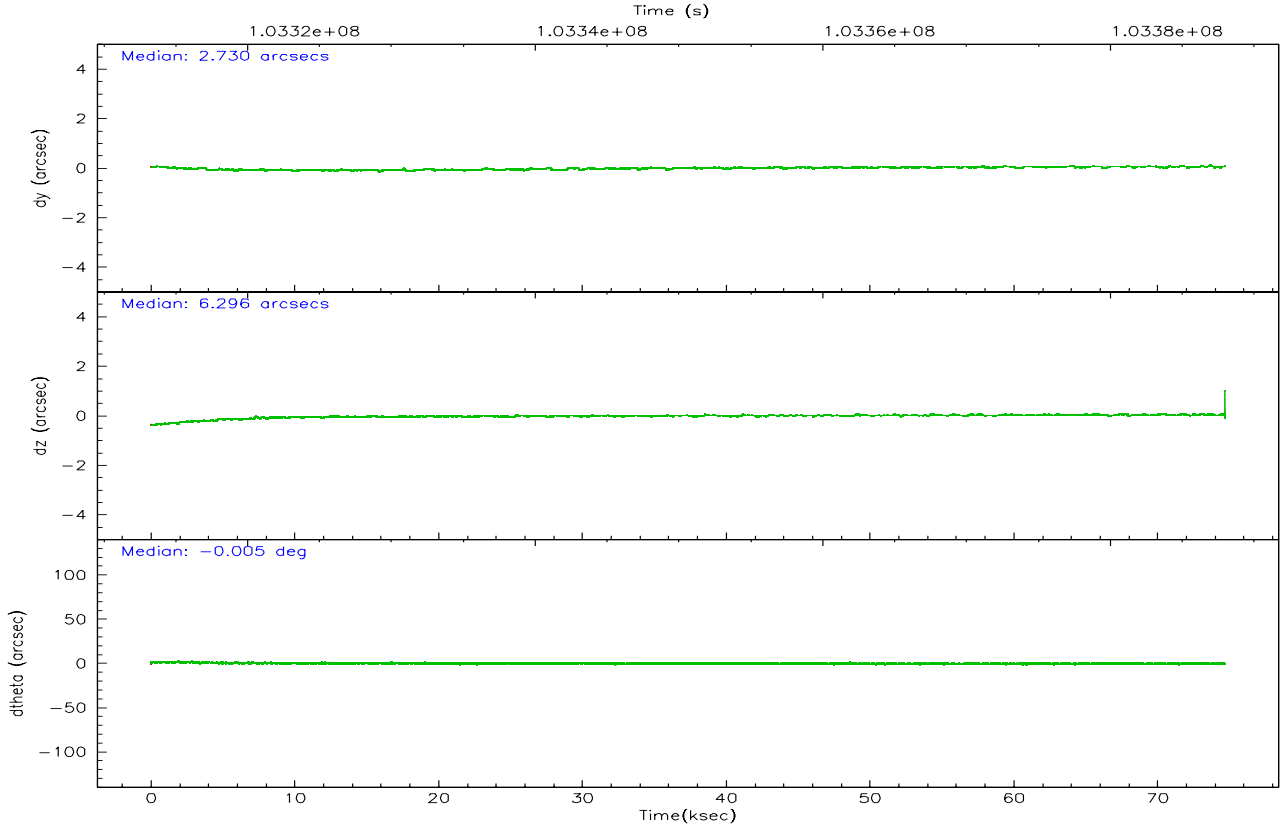
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	1	1
Subarray row count	774	774
Alternating exposures requested	N	N
Primary exposure time	0.000000	2.5

2.3 Aspect


RA : 166.698 deg
Dec : 72.571 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−40
−20
0
20
40


DY : 2.730 arcsecs
DZ : 6.296 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: 166.698 deg
RA (arcsec)
Median: 72.571 deg
Dec (arcsec)
Median: 213.000 deg
roll (arcsec)
Time(ksec)

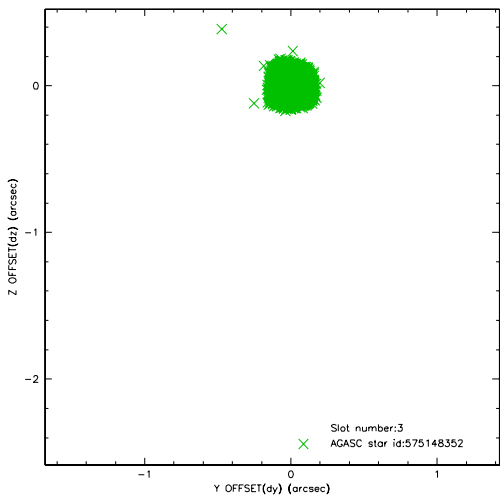

Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: 2.730 arcsecs
dy (arcsec)
Median: 6.296 arcsecs
dz (arcsec)
Median: −0.005 deg
dtheta (arcsec)
Time(ksec)

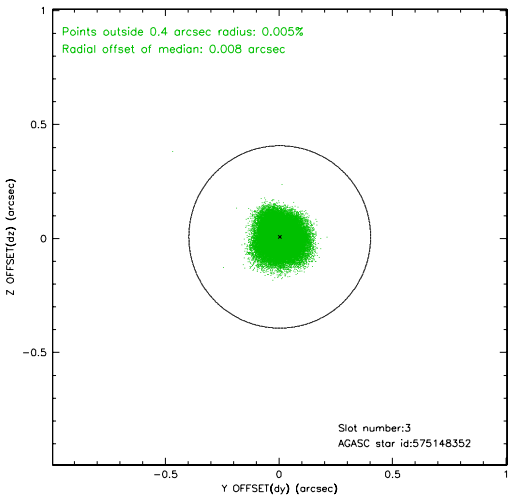
Slot Statistics

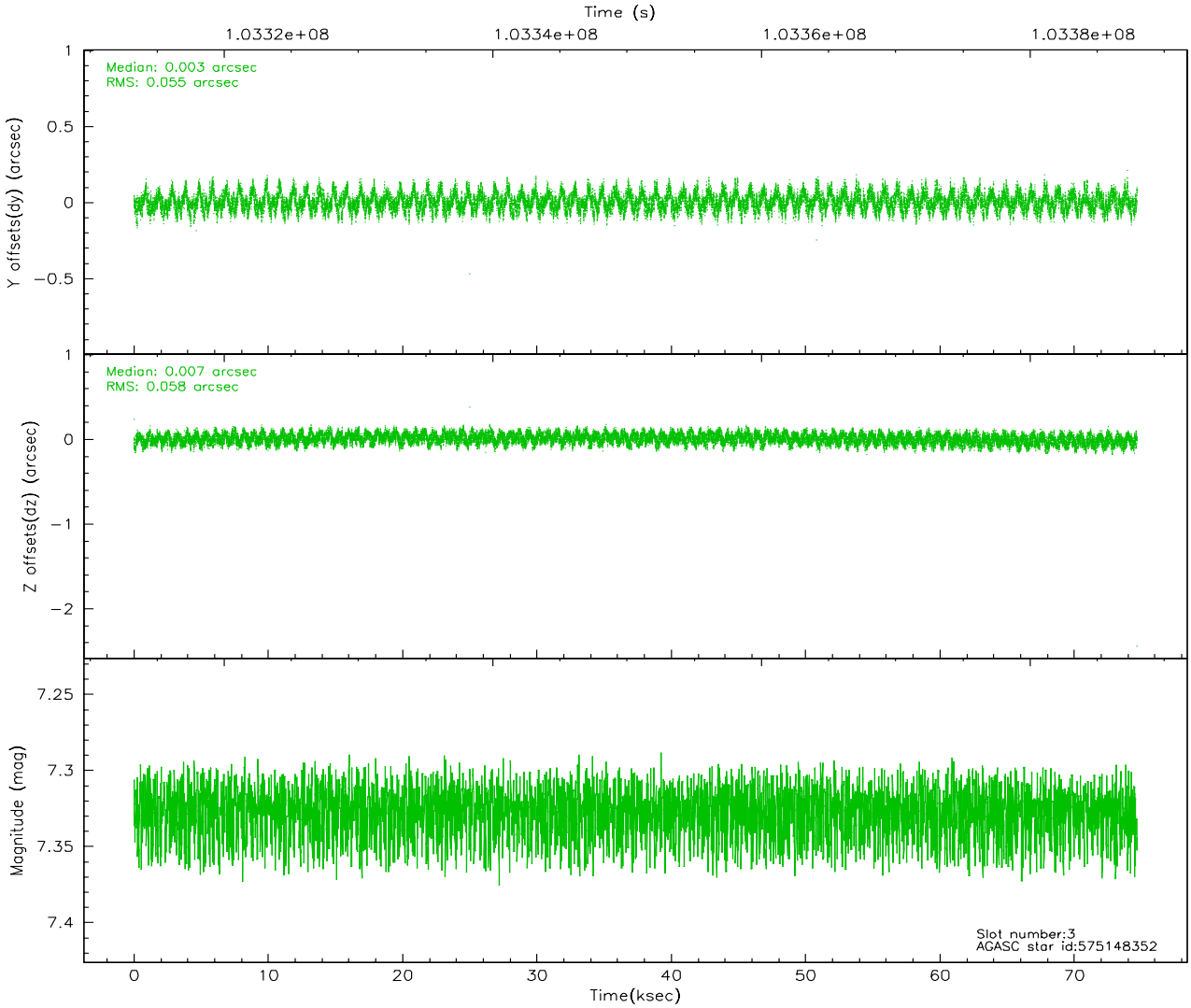
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.19	18219	-0.006	0.066	0.008	0.018	0.000000	0.000000	940.86	-1785.13
1	FID	ACIS-S-5	7.24	18217	0.022	0.029	0.009	0.021	0.000000	0.000000	-1808.12	112.47
2	FID	ACIS-S-6	7.38	18218	-0.038	-0.084	0.009	0.019	0.000000	0.000000	406.48	756.22
3	GUIDE	575148352	7.33	36428	0.003	0.007	0.086	0.130	167.090916	71.958979	909.90	2136.92
4	GUIDE	575150616	8.22	36422	0.028	0.020	0.078	0.121	167.218511	72.045663	622.81	1949.57
5	GUIDE	575541080	8.94	36408	-0.034	-0.057	0.071	0.113	167.870403	73.115273	-2015.35	-942.05
6	GUIDE	575543720	9.34	36403	-0.000	-0.005	0.095	0.152	164.695945	72.631615	1753.16	-1330.75
7	GUIDE	575541344	9.37	36350	0.004	0.038	0.096	0.152	166.947366	72.953762	-884.95	-966.02

2.4 Star Slots

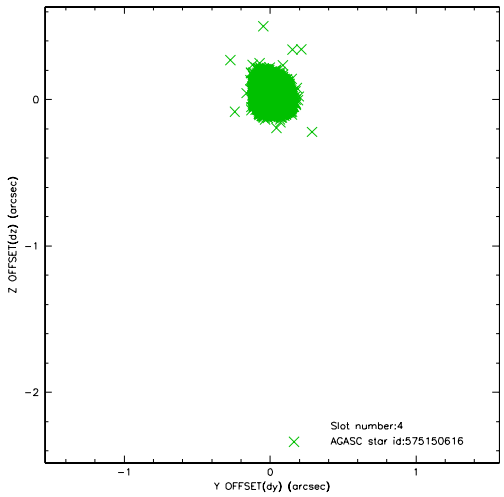
2.4.1 Slot 3

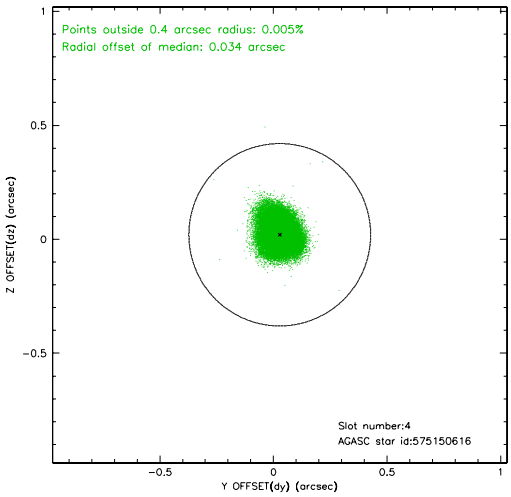


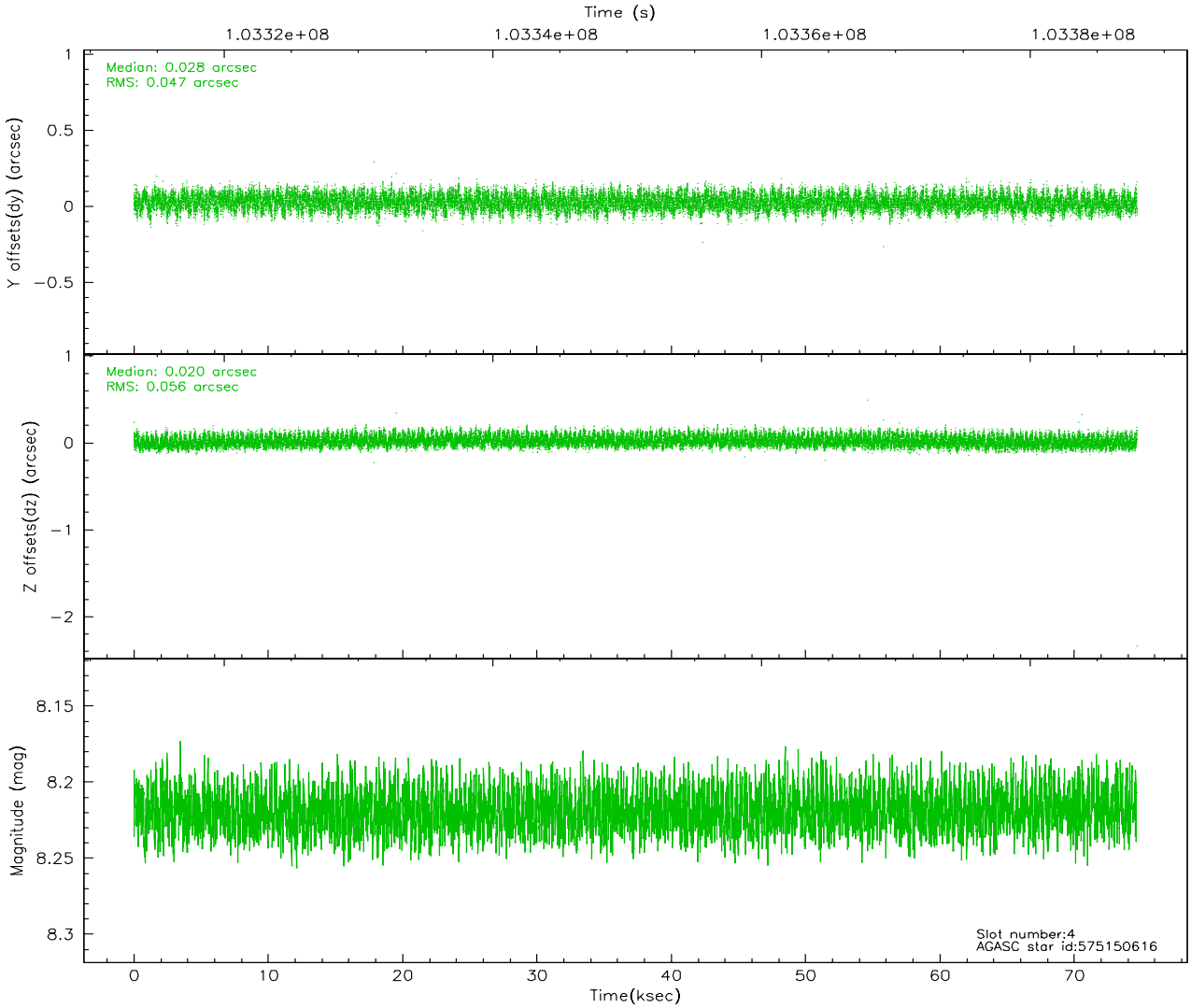




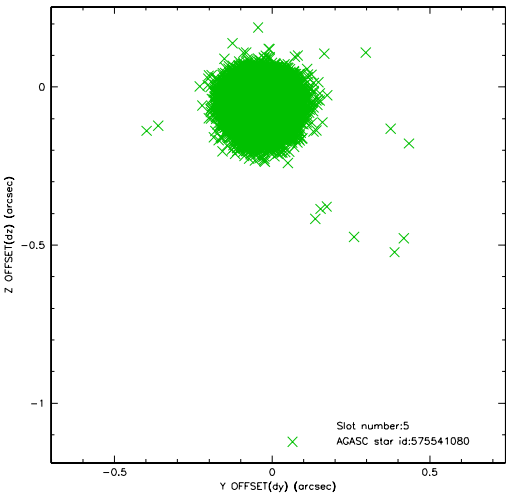
2.4.2 Slot 4

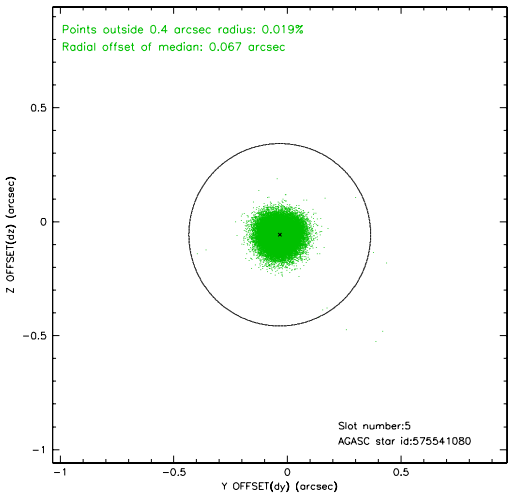

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:575150616

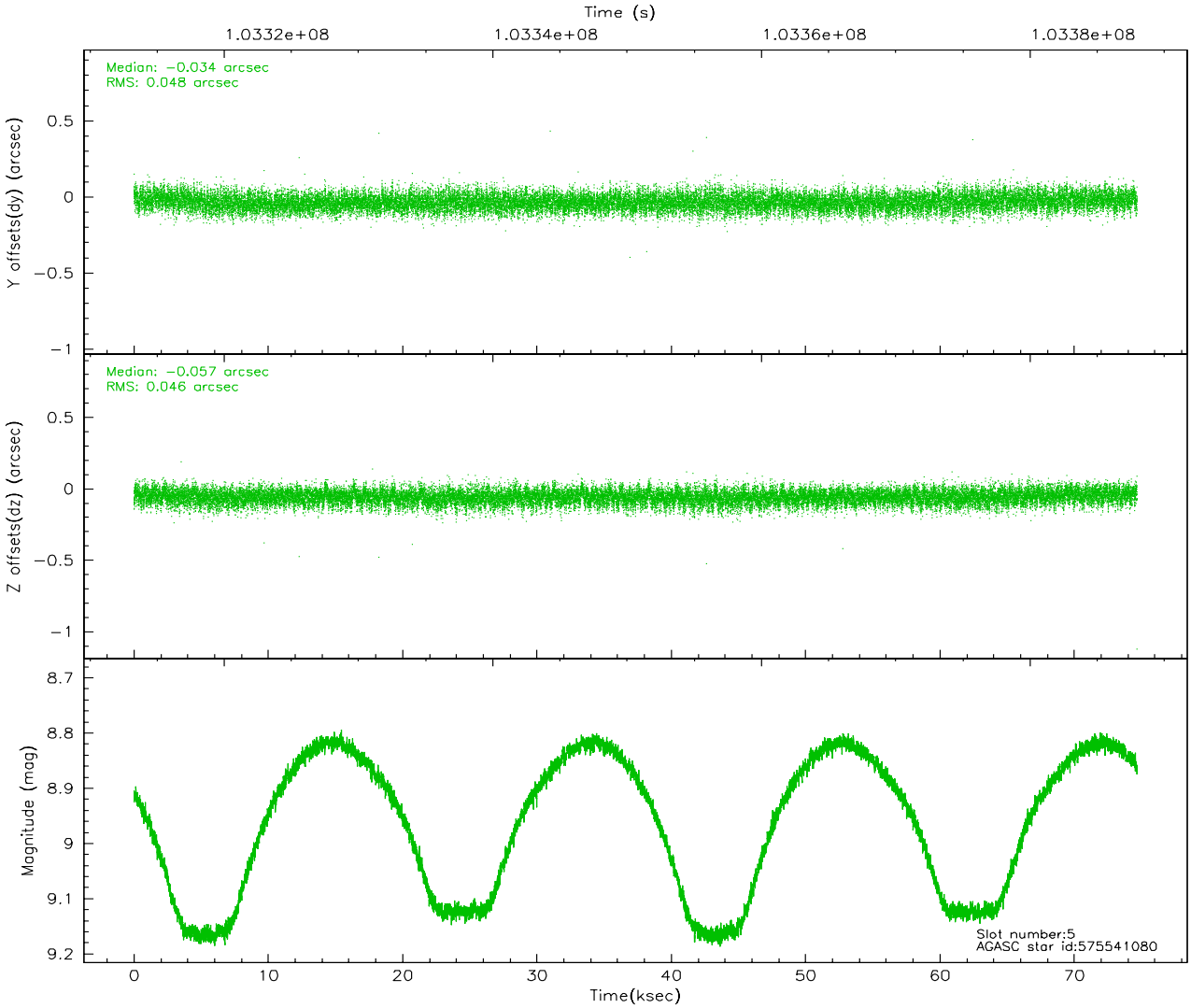

Points outside 0.4 arcsec radius: 0.005%
Radial offset of median: 0.034 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:575150616


Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: 0.028 arcsec
RMS: 0.047 arcsec
Y offsets(dy) (arcsec)
Median: 0.020 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:575150616
Time(ksec)

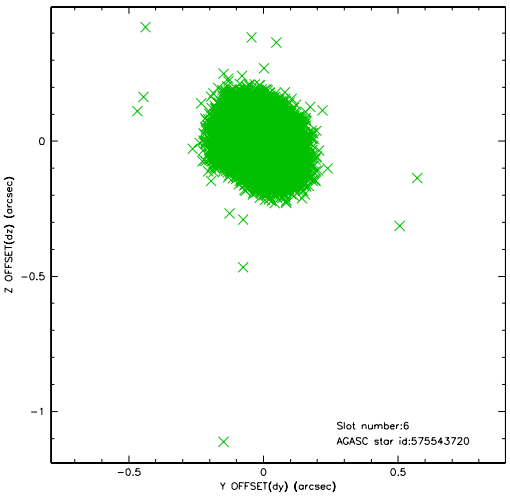
2.4.3 Slot 5

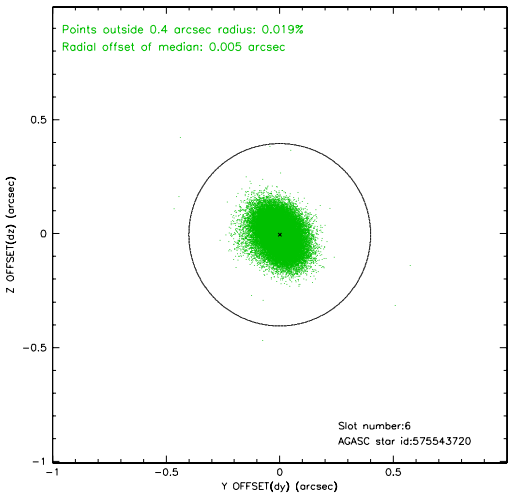

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:575541080

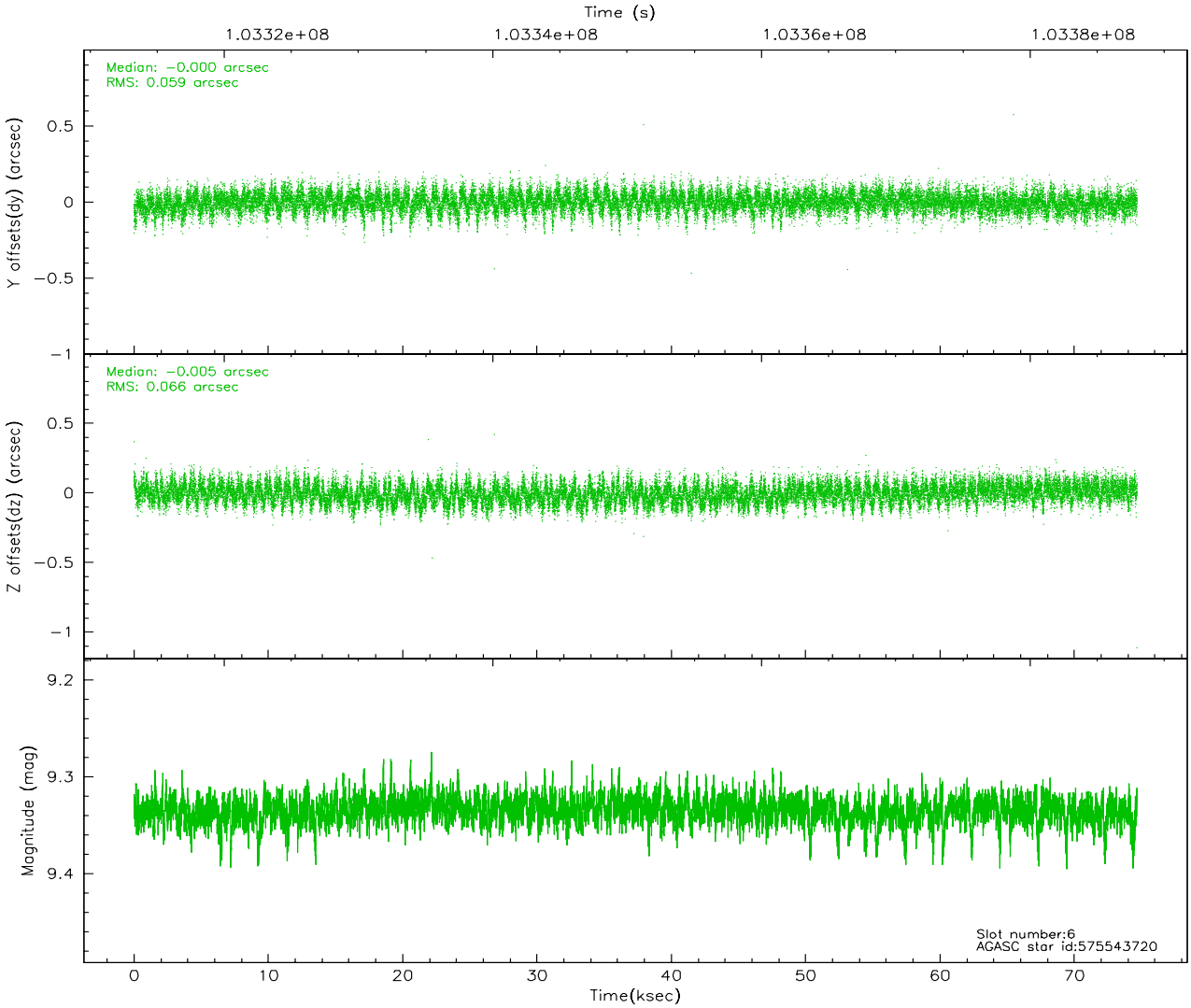

Points outside 0.4 arcsec radius: 0.019%
Radial offset of median: 0.067 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:575541080


Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: −0.034 arcsec
RMS: 0.048 arcsec
Y offsets(dy) (arcsec)
Median: −0.057 arcsec
RMS: 0.046 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:575541080
Time(ksec)

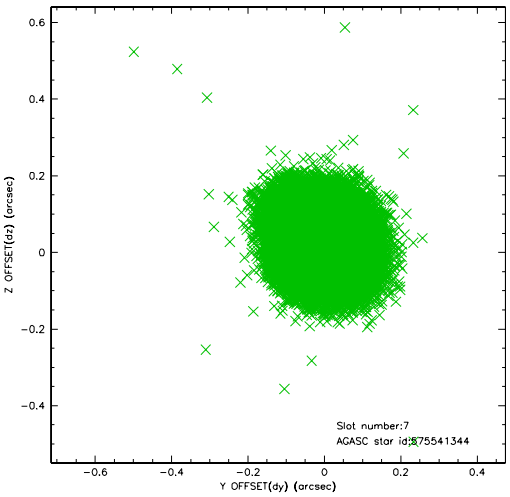
2.4.4 Slot 6

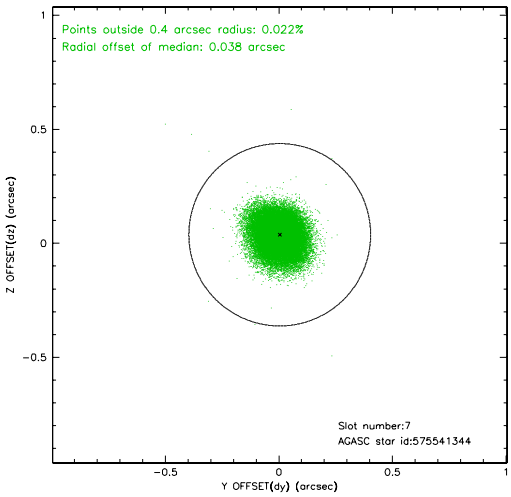

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:575543720

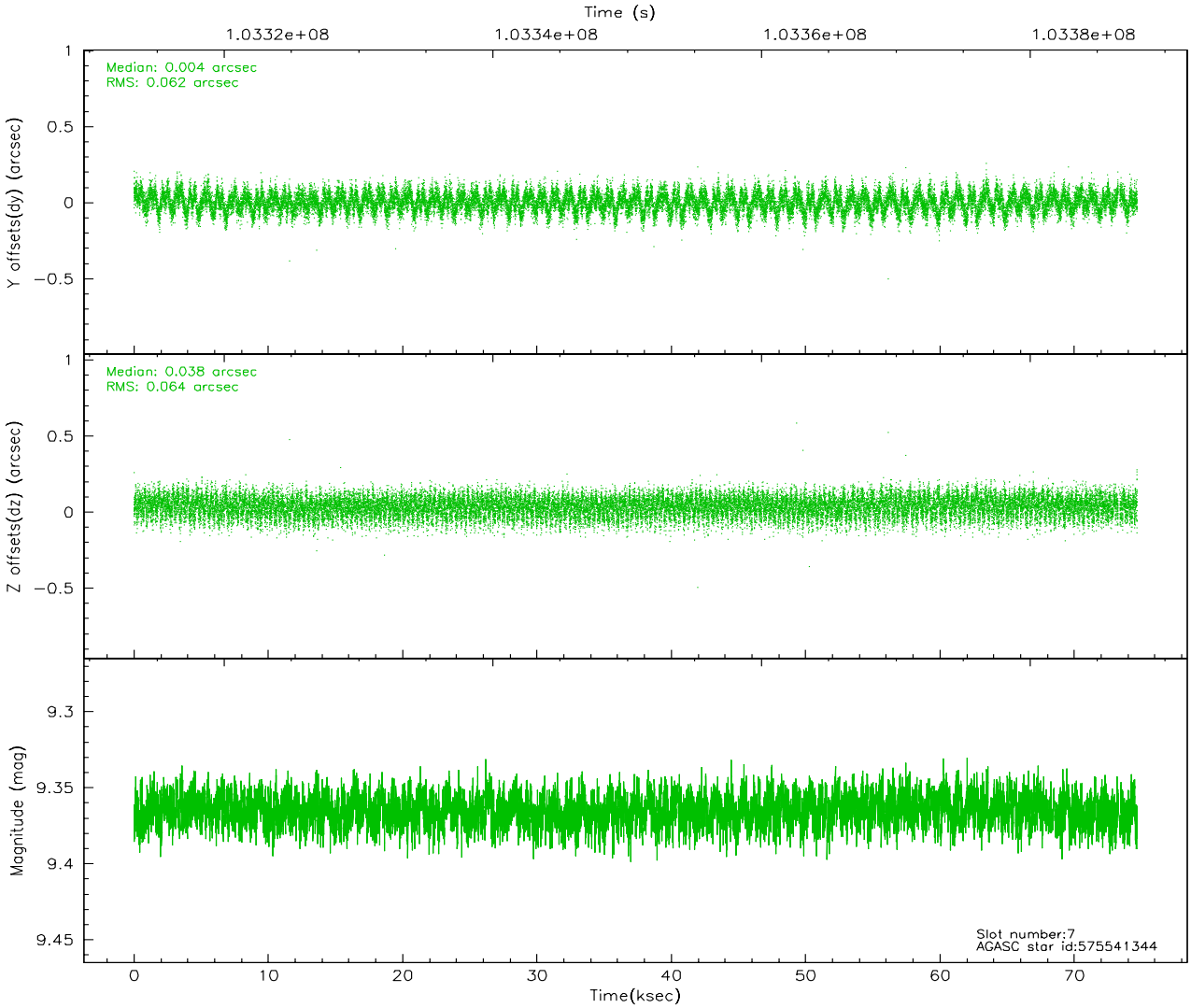

Points outside 0.4 arcsec radius: 0.019%
Radial offset of median: 0.005 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:575543720


Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: −0.000 arcsec
RMS: 0.059 arcsec
Y offsets(dy) (arcsec)
Median: −0.005 arcsec
RMS: 0.066 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:575543720
Time(ksec)

2.4.5 Slot 7

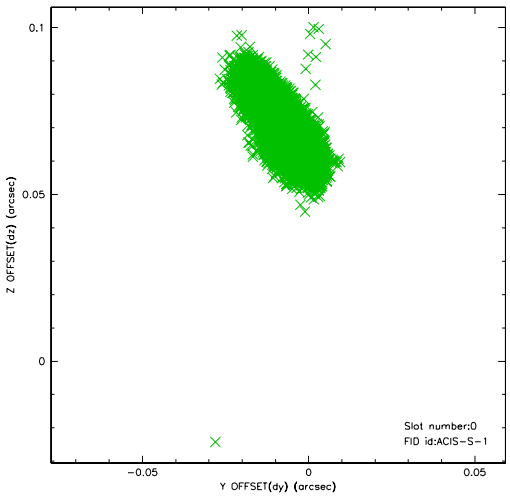

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:575541344

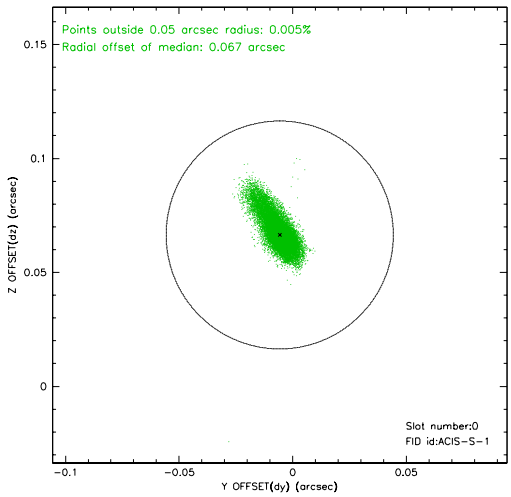

Points outside 0.4 arcsec radius: 0.022%
Radial offset of median: 0.038 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:575541344

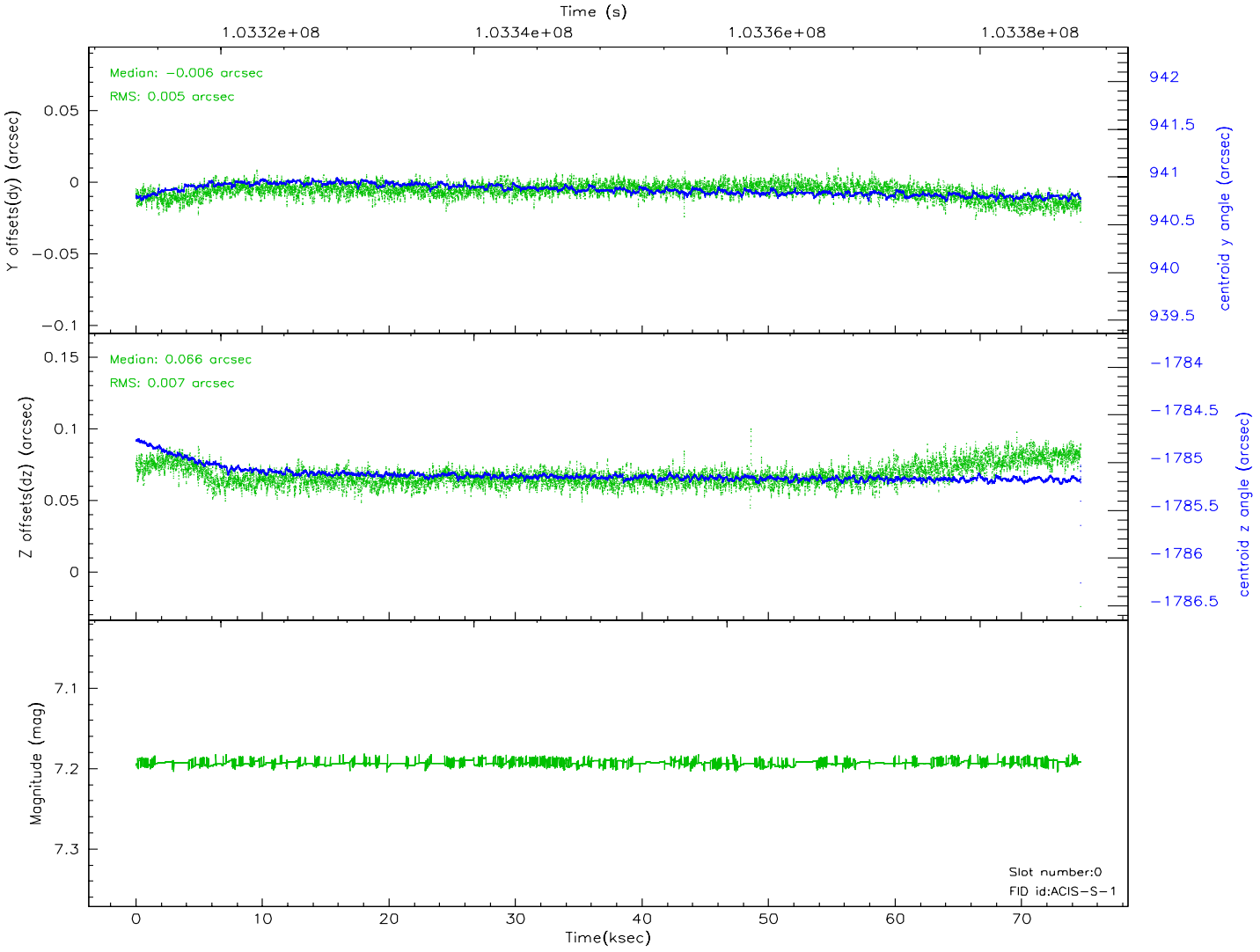

Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: 0.004 arcsec
RMS: 0.062 arcsec
Y offsets(dy) (arcsec)
Median: 0.038 arcsec
RMS: 0.064 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:575541344
Time(ksec)

2.5 FID Slots

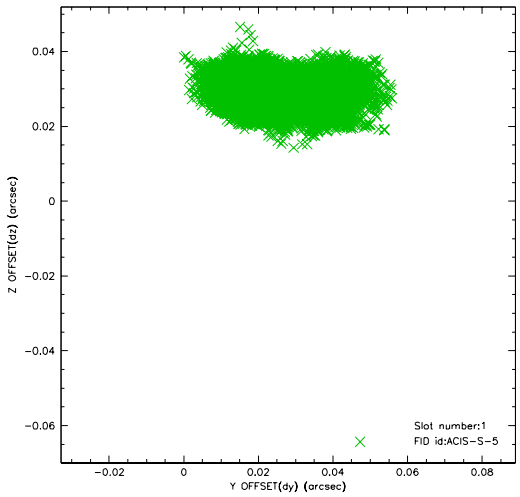
2.5.1 Slot 0

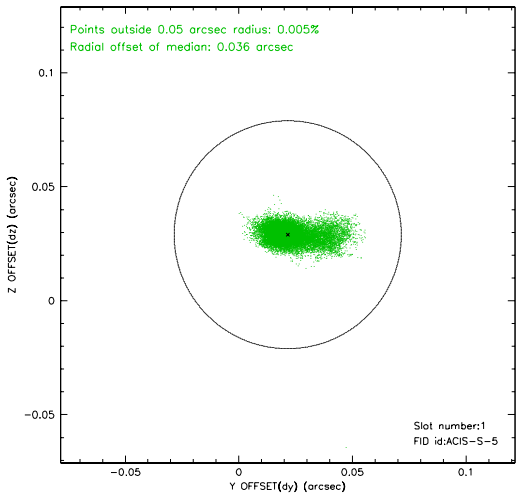


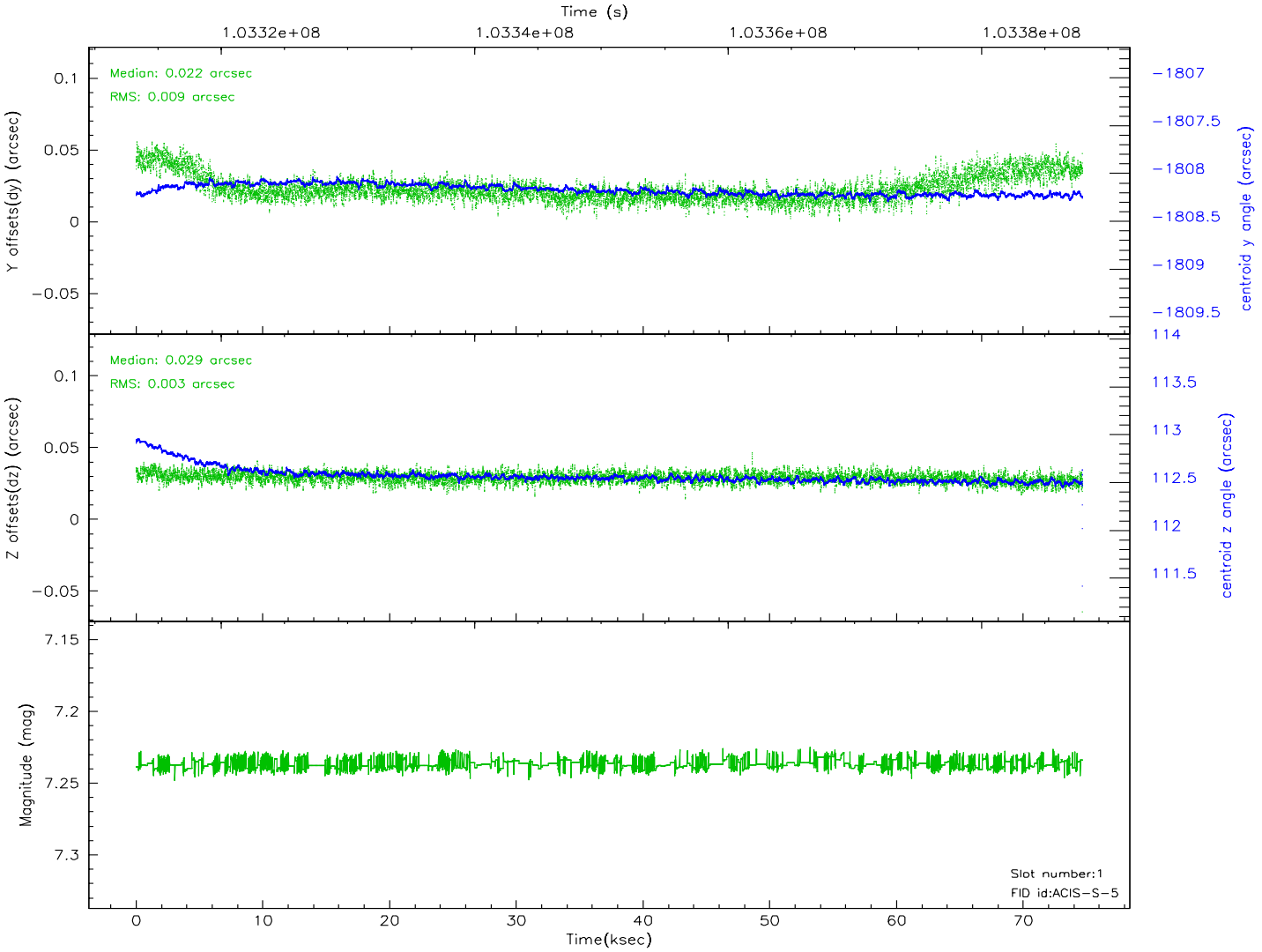




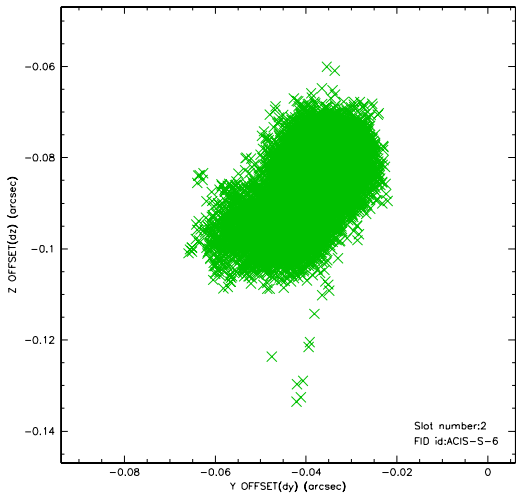
2.5.2 Slot 1

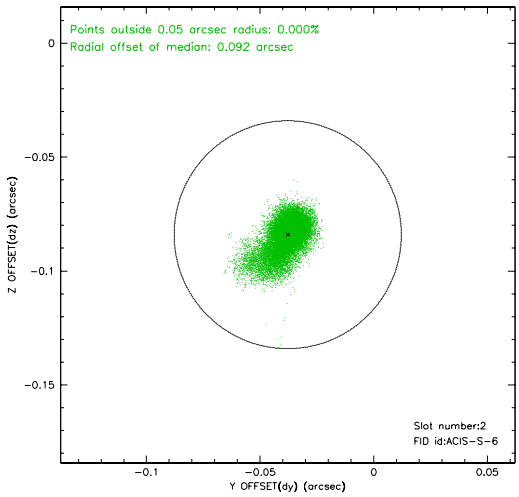

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-5

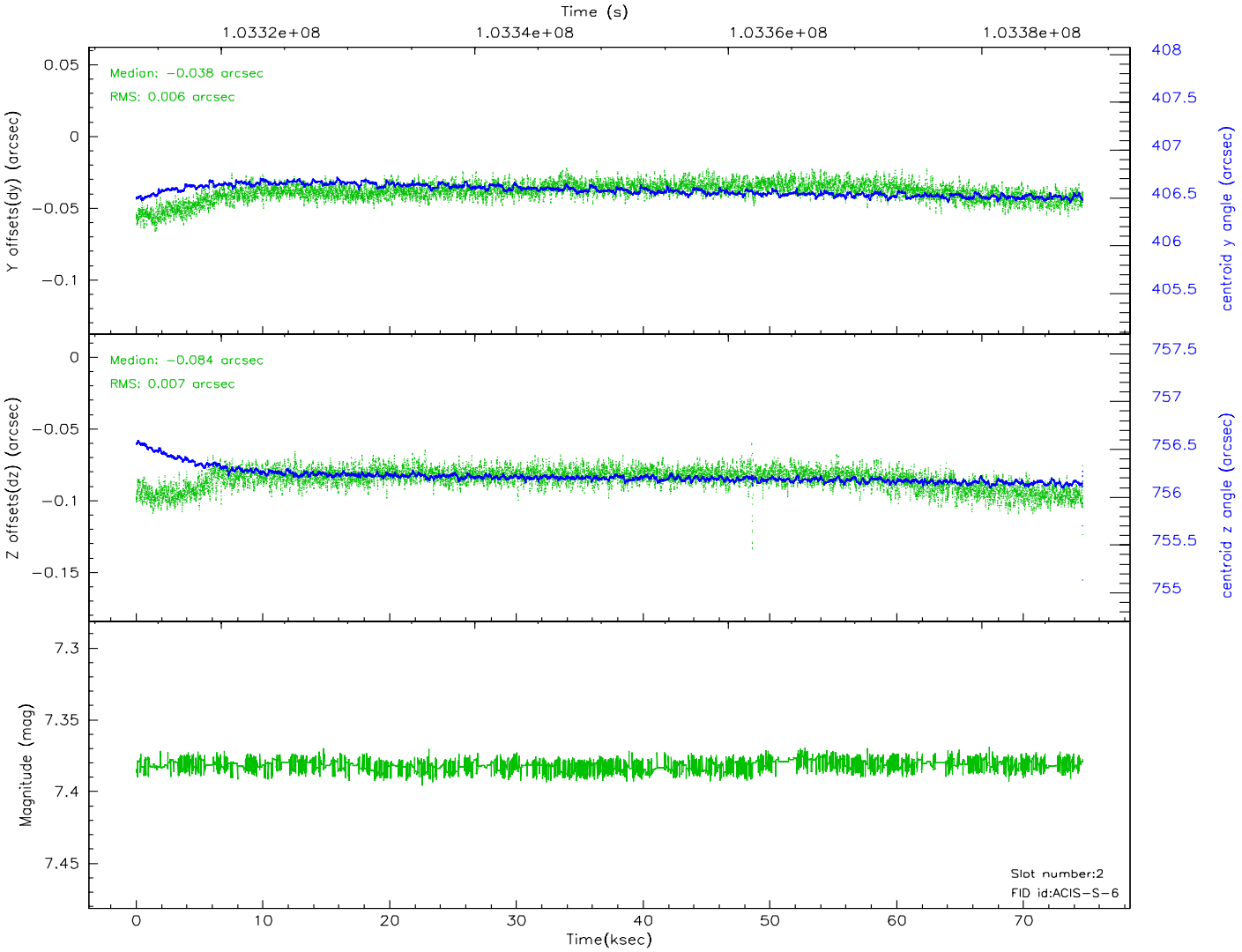

Points outside 0.05 arcsec radius: 0.005%
Radial offset of median: 0.036 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-5


Time (s)
1.0332e+08
1.0334e+08
1.0336e+08
1.0338e+08
Median: 0.022 arcsec
RMS: 0.009 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.029 arcsec
RMS: 0.003 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:1
FID id:ACIS-S-5
Time(ksec)

2.5.3 Slot 2

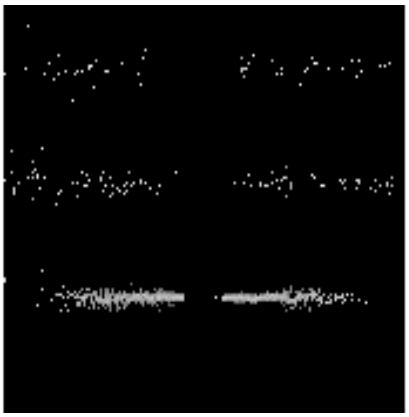

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-6


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.092 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-6

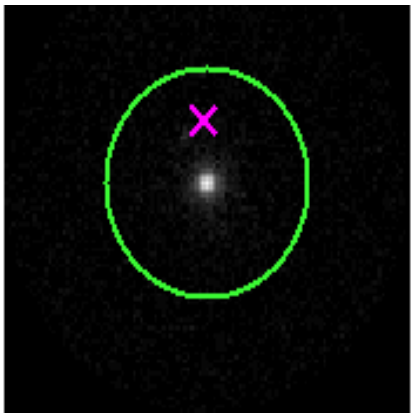

Time (s)
Median: −0.038 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.084 arcsec
RMS: 0.007 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-6
Time(ksec)

3 Gratings

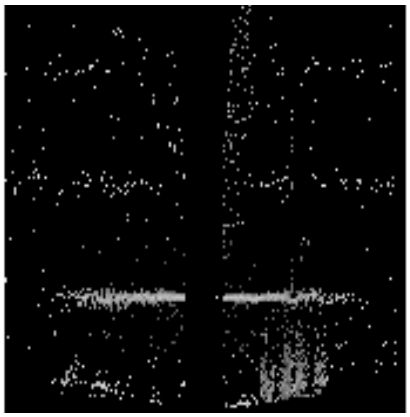
3.1 HEG Arm



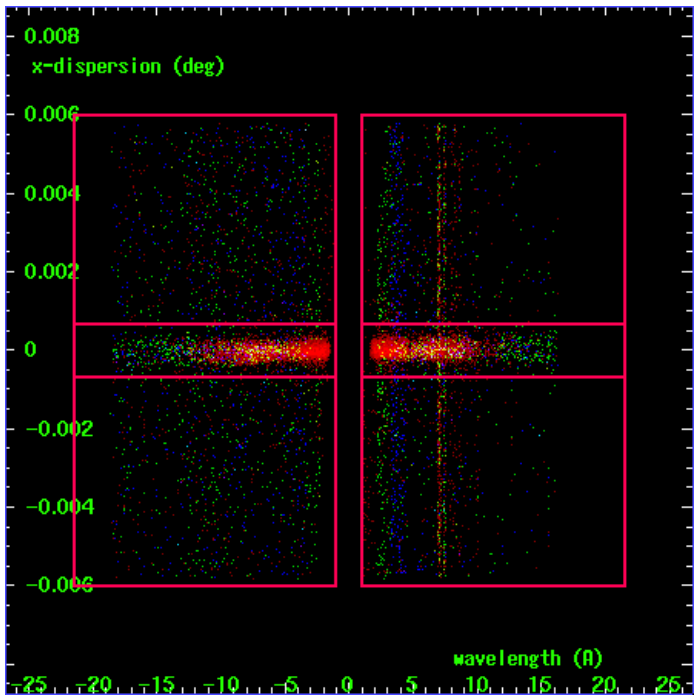
HEG Order Sort 123



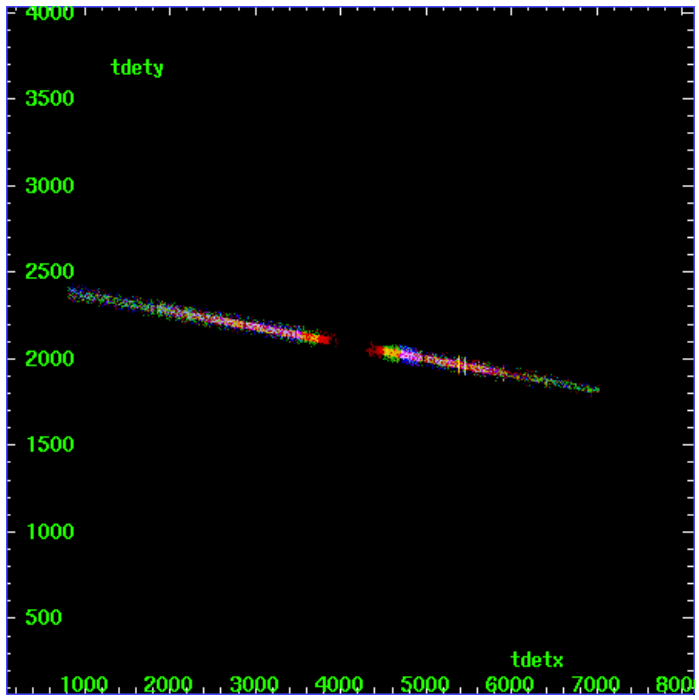
HEG Zero Order



HEG Order Sort ALL

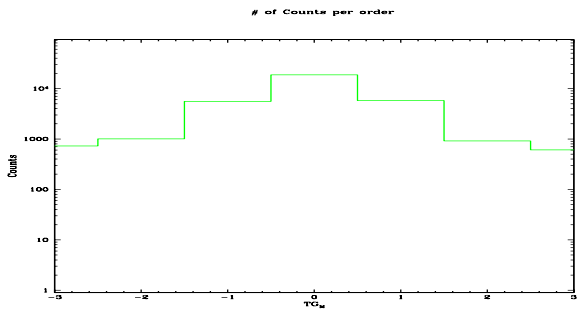


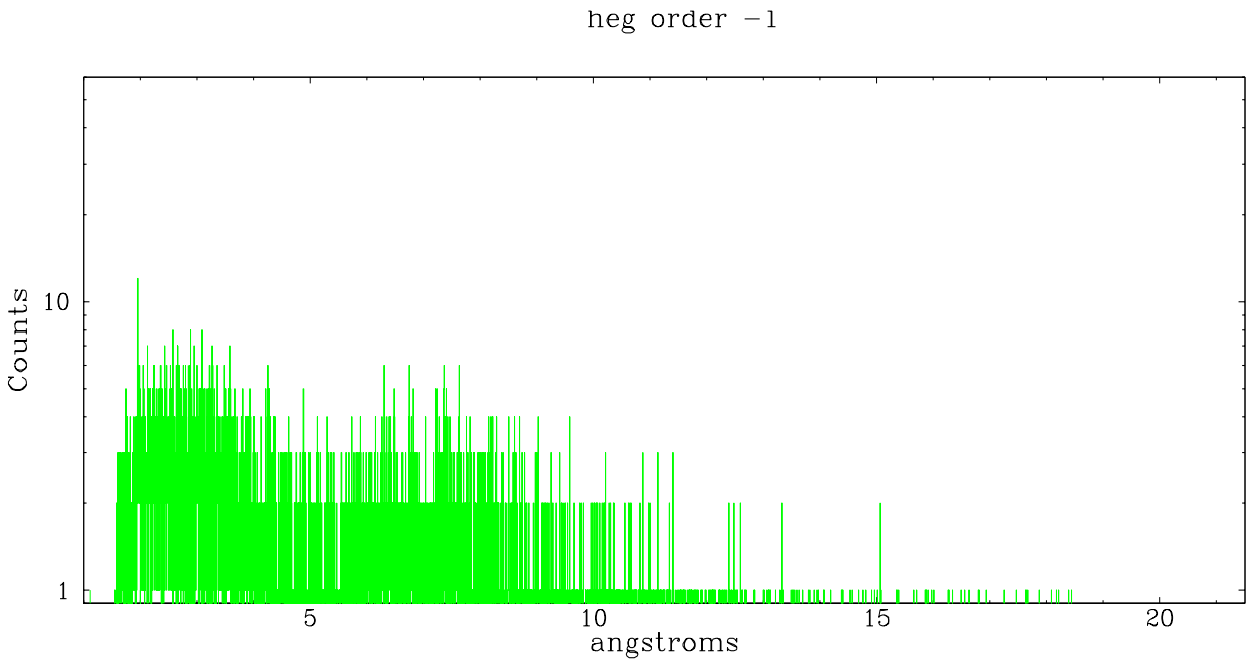
Spot Image HEG

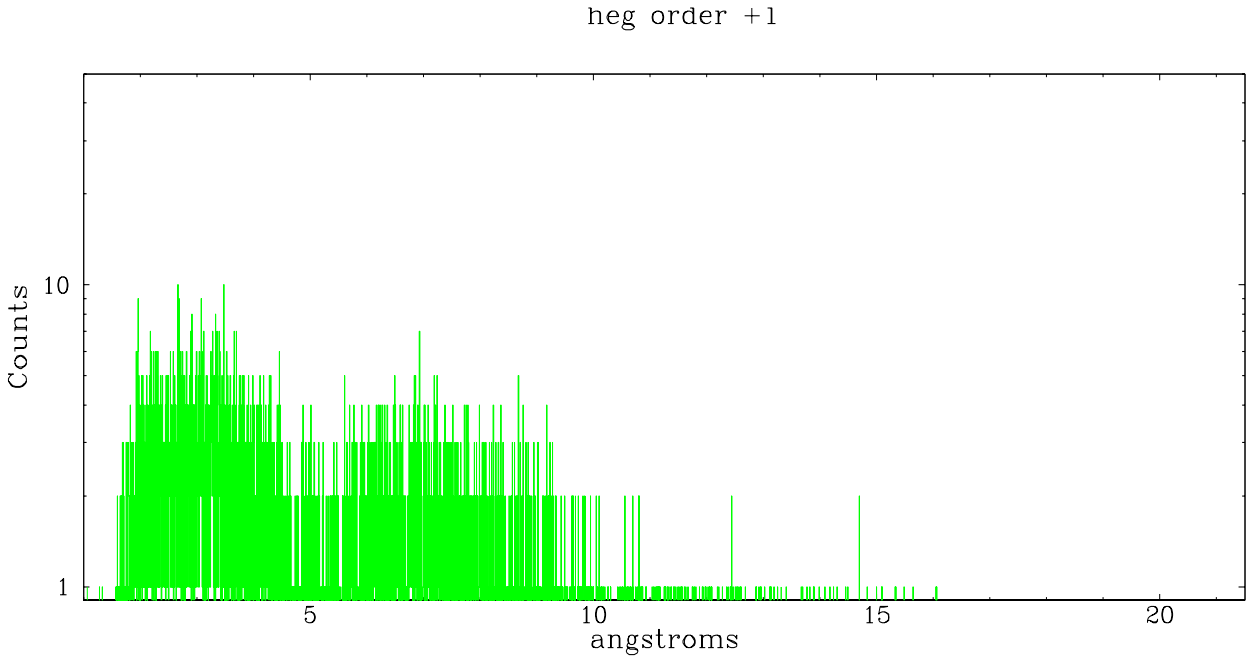


Full Detector HEG

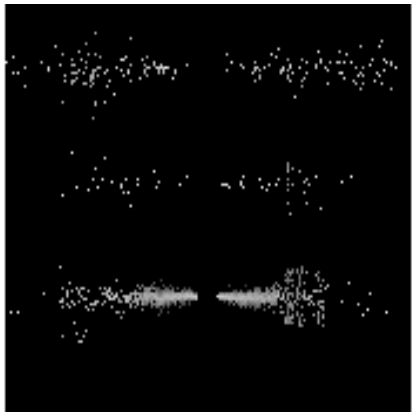
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	725	1004	5559	18609	5781	914	606



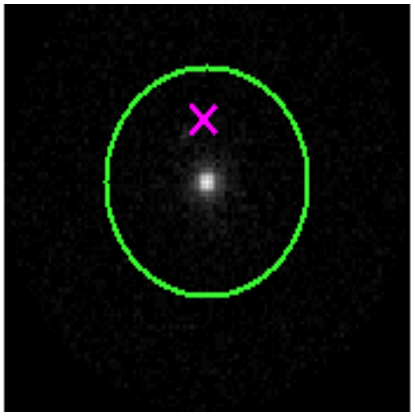

heg order −1
Counts
10
1
5
10
15
20
angstroms


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

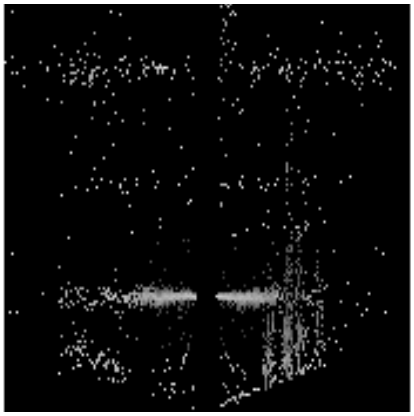
3.2 MEG Arm



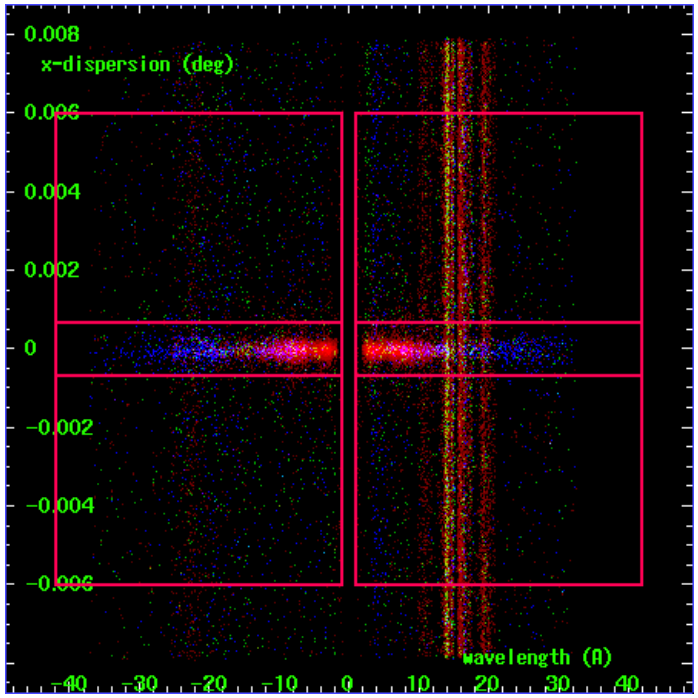
MEG Order Sort 123



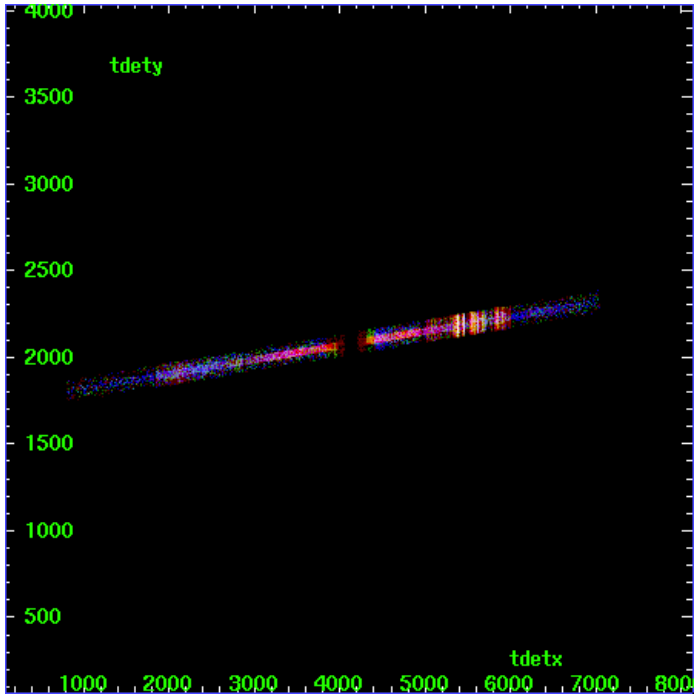
MEG Zero Order



MEG Order Sort ALL

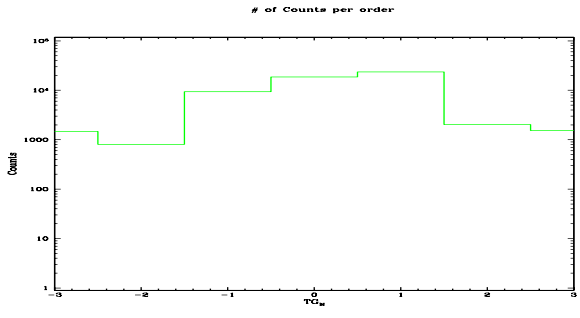


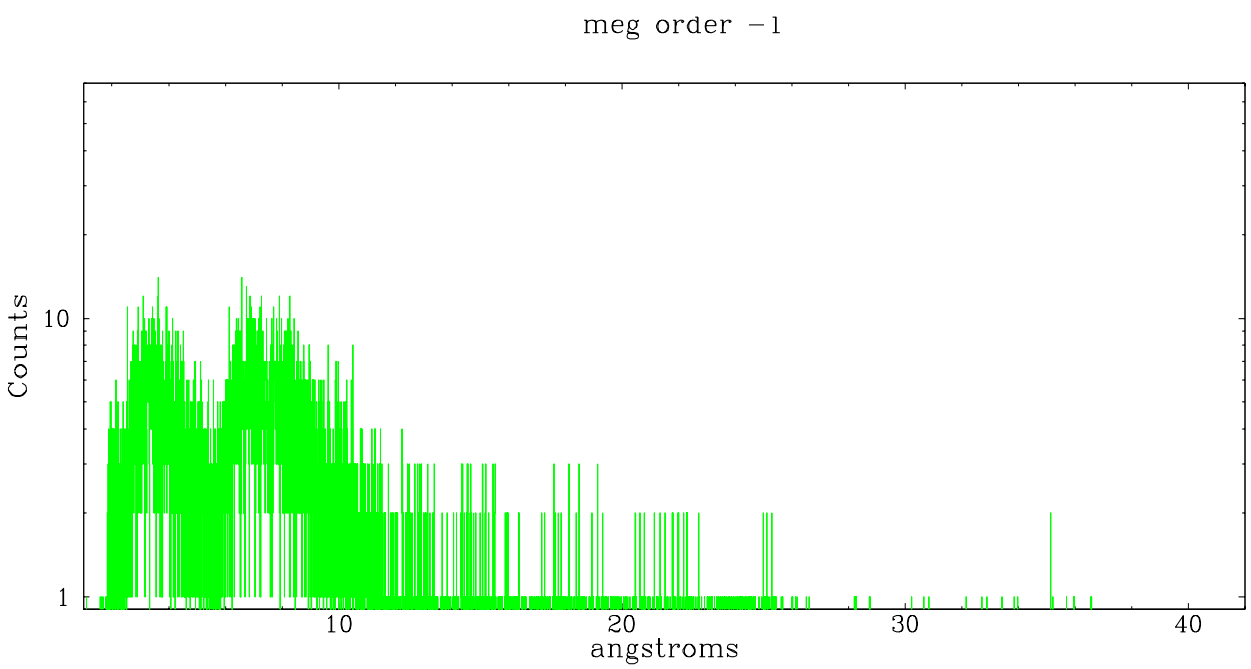
Spot Image MEG

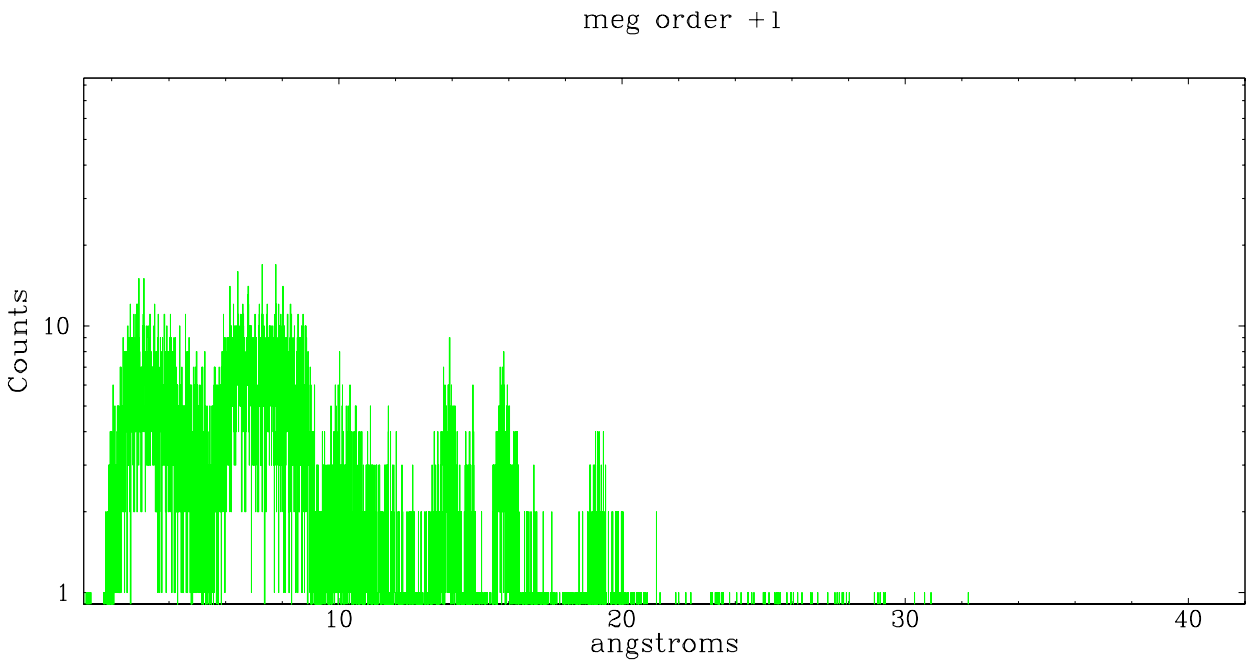


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1474	805	9386	18609	23627	2022	1533




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)	2006.11.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	74.539

A.2 Comments

```
Window request: Apr 9 2001 3:00PM Apr 12 2001 4:00PM
actual: 2001-04-10T17:55:54 2001-04-11T14:53:12
(OK)

RADMON TRIP

Obsid 2080 was terminated with an autonomous RADMON trip on day
101, 14:51. The observation began at day 100, 18:11 (obsid
transition).
```