V&V Reference Report
L2 ASCDS Version : 7.6.7.1

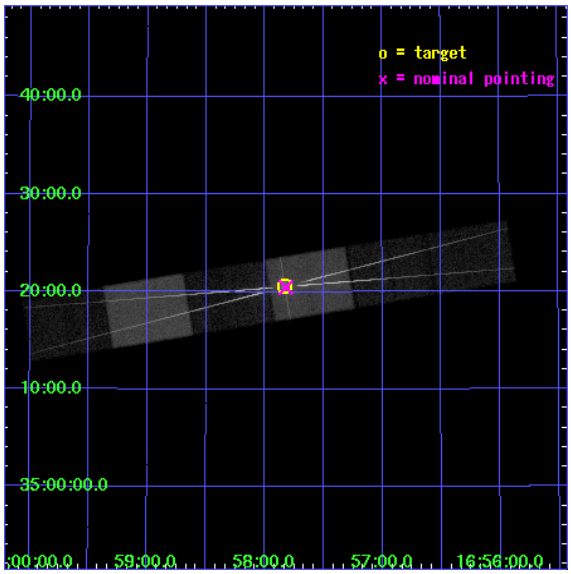
Observation 6149 - L2 Version 002
Chandra X-Ray Center

L2 Processing Date : Apr 10 2006

Contents

1 Front

seq_num	400367
obs_id	6149
title	Using the Intensity Dips in Hercules X-1 to Probe the Inner Accretion Disk
observer	Dr. Mario Jimenez-Garate
object	Her X-1
dtycycle	0
cycle	P
ra_targ	254.4575
dec_targ	35.342389
ra_nom	254.45531420711
dec_nom	35.341013654614
roll_nom	350.70431033796
revision	2
ontime	22140.0
livetime	21782.419796619
ontime4	22140.0
ontime5	22140.0
ontime6	22140.0
ontime7	22140.0
ontime8	22140.0
ontime9	22140.0
l2events	346423

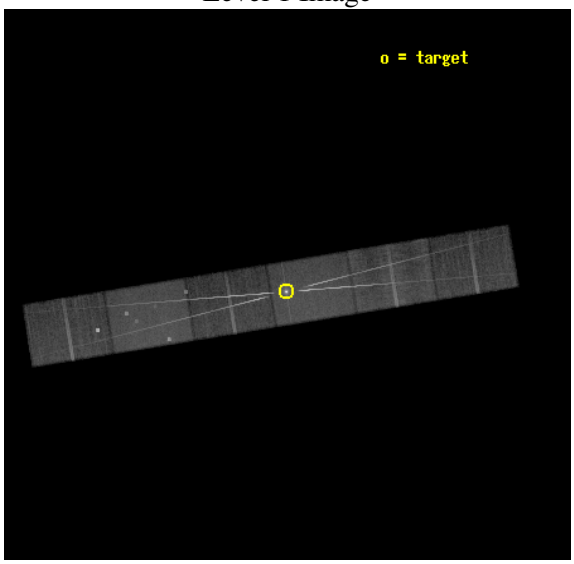


2 OBI

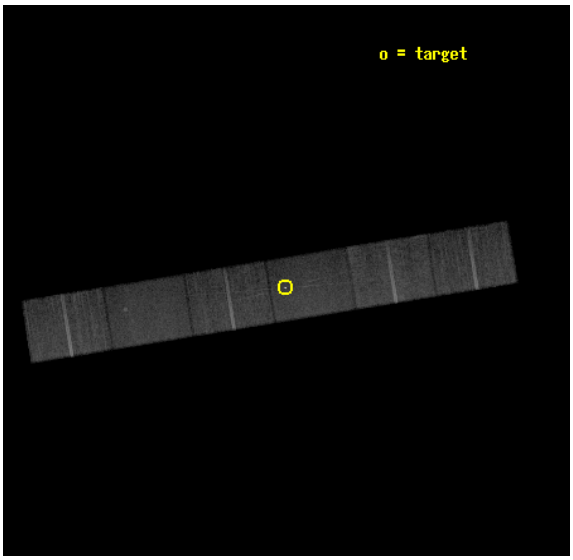
2.1 OBI

2.1.1 Images

Level 1 Image

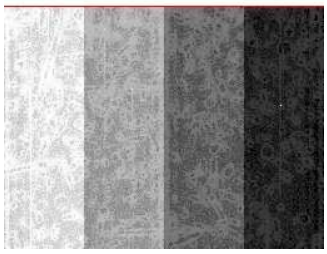


Level 1 Bad Events

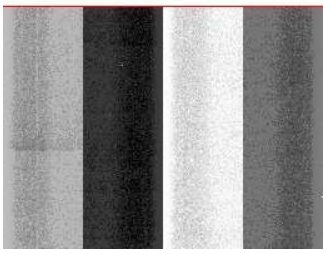


2.1.2 Bias

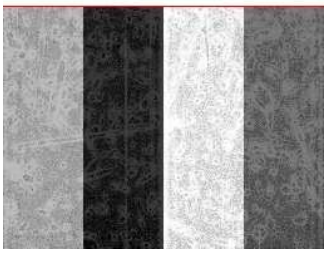
Chip 4



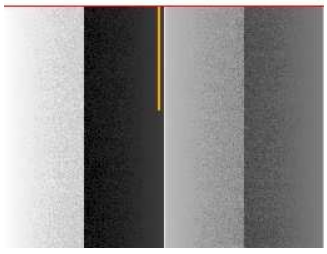
Chip 5



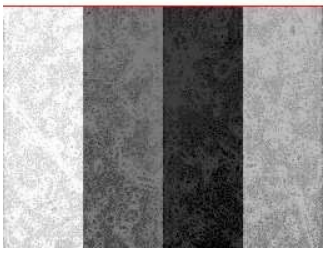
Chip 6



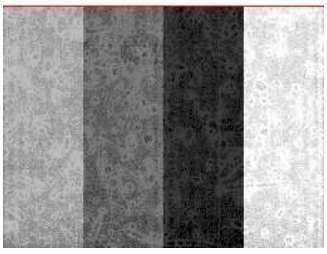
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0
ascdsver	7.6.7.1
caldbver	3.2.1
date	2006-04-10T22:36:28
revision	2

sched_exp_time	22000.000000
ontime	22897.03257966
ontime4	22897.03257966
ontime5	22897.03257966
ontime6	22897.03257966
ontime7	22897.03257966
ontime8	22897.03257966
ontime9	22897.03257966
l1events	1137808

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	160798	215837	186345	248107	190274	136447
rejected events	134333	115398	120775	117745	137060	116429
rejected %	83%	53%	64%	47%	72%	85%

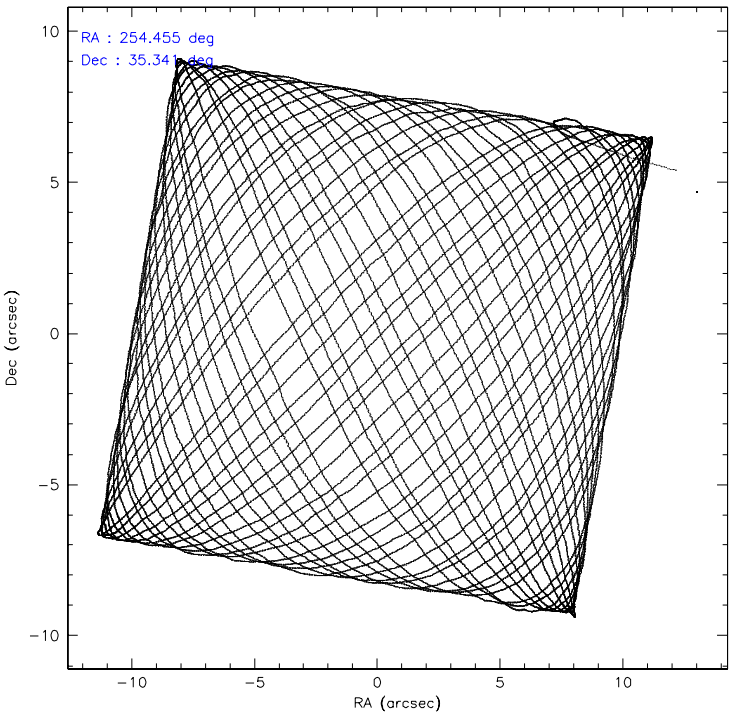
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	17065	13861	42265	16303	25573	9909
	10%	6%	22%	6%	13%	7%
grade 1 events	148	559	314	354	184	75
	0%	0%	0%	0%	0%	0%
grade 2 events	3829	30960	9887	34544	9916	3640
	2%	14%	5%	13%	5%	2%
grade 3 events	1911	3355	3861	9500	4429	1879
	1%	1%	2%	3%	2%	1%
grade 4 events	1783	3253	3860	9753	4239	1834
	1%	1%	2%	3%	2%	1%
grade 5 events	5741	10063	6344	14122	8207	6445
	3%	4%	3%	5%	4%	4%
grade 6 events	2785	52306	6631	63002	10286	3308
	1%	24%	3%	25%	5%	2%
grade 7 events	127536	101480	113183	100529	127440	109357
	79%	47%	60%	40%	66%	80%

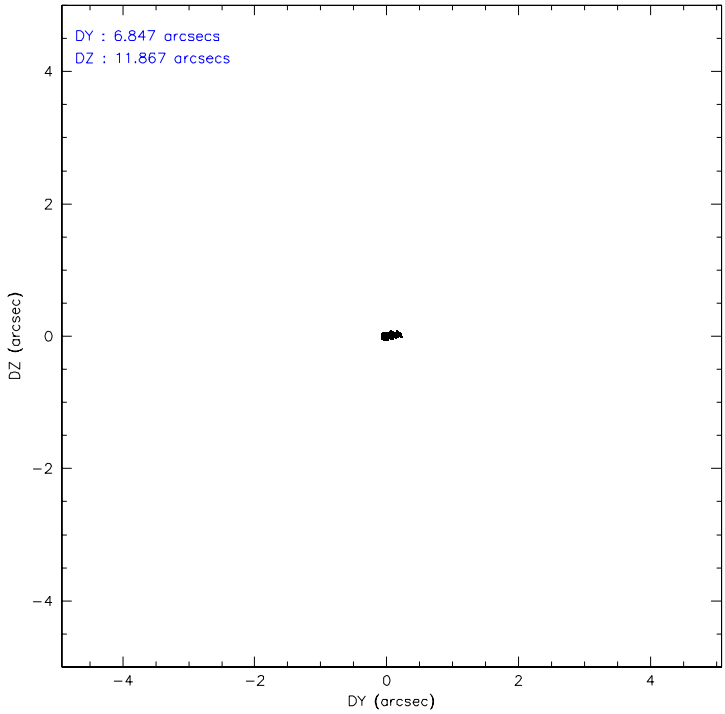
2.2 Compared Parameters

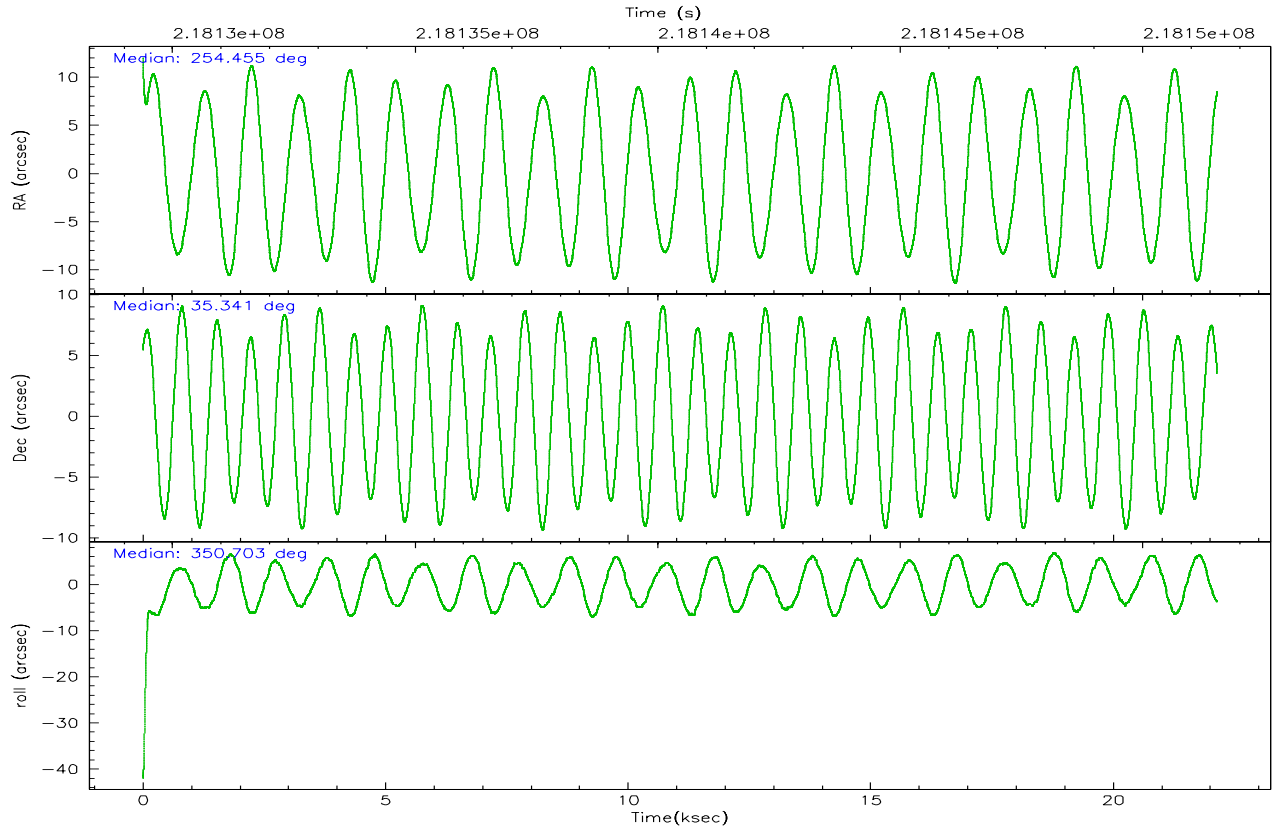
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	254.424260	254.4553142071136
Pointing Dec	35.331013	35.34101365461389
Pointing Roll	350.565668	350.7043103379604
Window start time	218125864.184000	218125864.184000
Window stop time	218152864.184000	218152864.184000
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-187.132523	-187.1254020033014
SIM translation stage offset (mm)	-3	-3.007120579706367
Phase constraints	Y	Y
Phase period	1.700167	1.700167
Phase epoch	51310.760000	51310.760000
Phase start	0.750000	0.750000
Phase end	0.900000	0.900000
Phase start error	0.020000	0.020000
Phase end error	0.010000	0.010000
Observation start time	218129534.184000	218128061.84861
Observation start date	2004-11-29T15:31:10	2004-11-29T15:07:41
Observation end time	218151534.184000	218152489.64971
Observation end date	2004-11-29T21:37:50	2004-11-29T21:54:49
Read mode	TIMED	TIMED

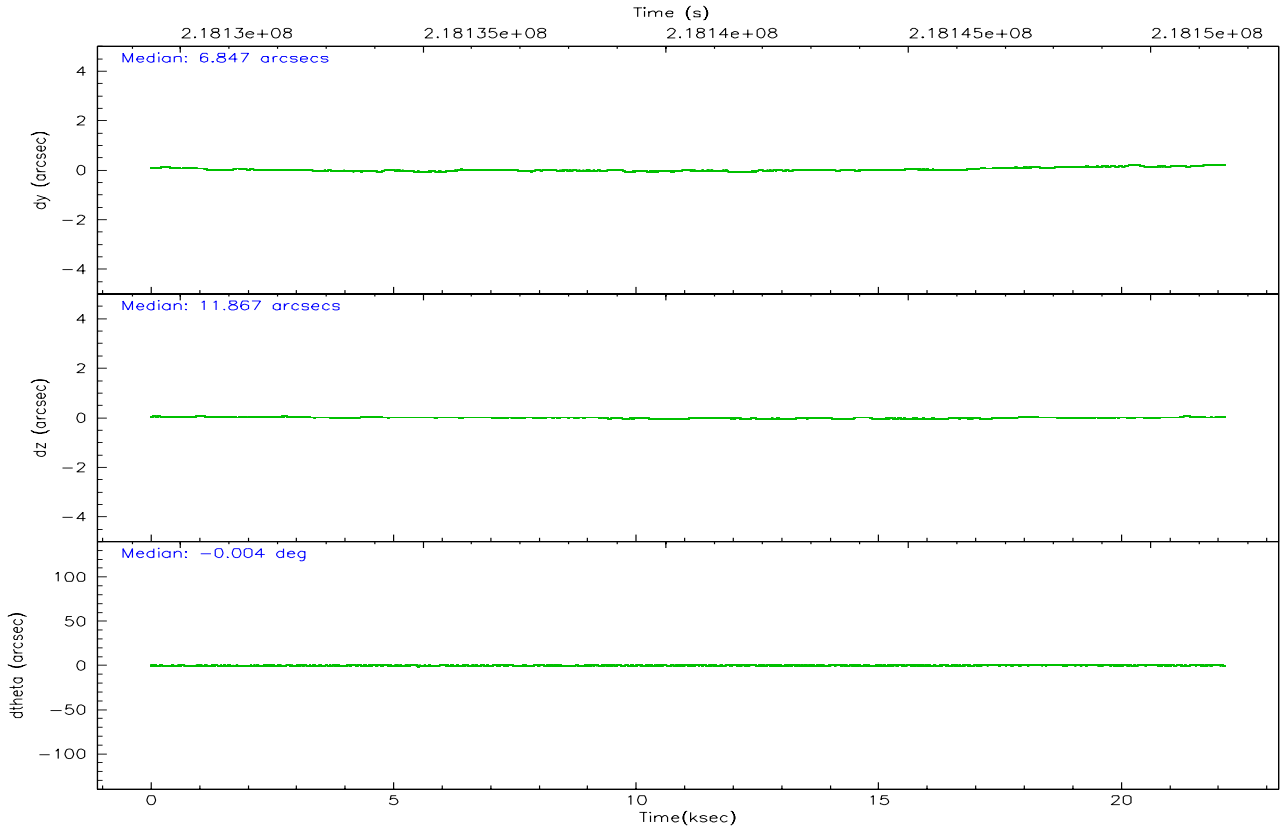
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	1	1
Subarray row count	774	774
Alternating exposures requested	N	N
Primary exposure time	0.000000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

2.3 Aspect


RA : 254.455 deg
Dec : 35.341 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 6.847 arcsecs
DZ : 11.867 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: 254.455 deg
RA (arcsec)
Median: 35.341 deg
Dec (arcsec)
Median: 350.703 deg
roll (arcsec)
Time(ksec)

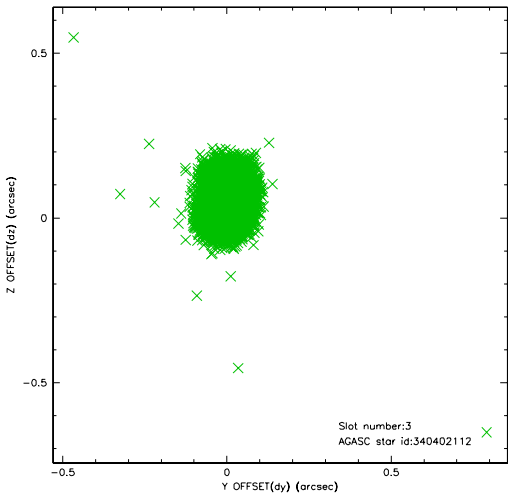

Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: 6.847 arcsecs
dy (arcsec)
Median: 11.867 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

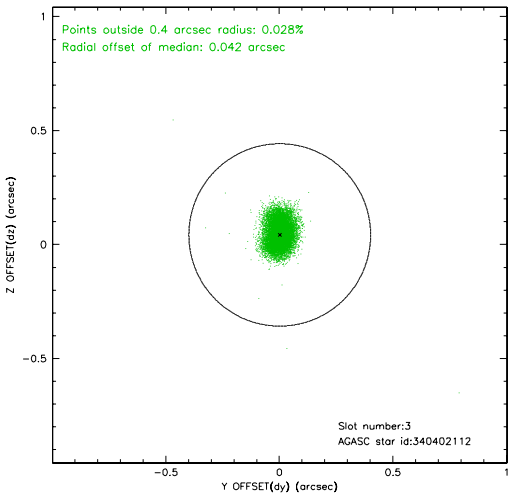
Slot Statistics

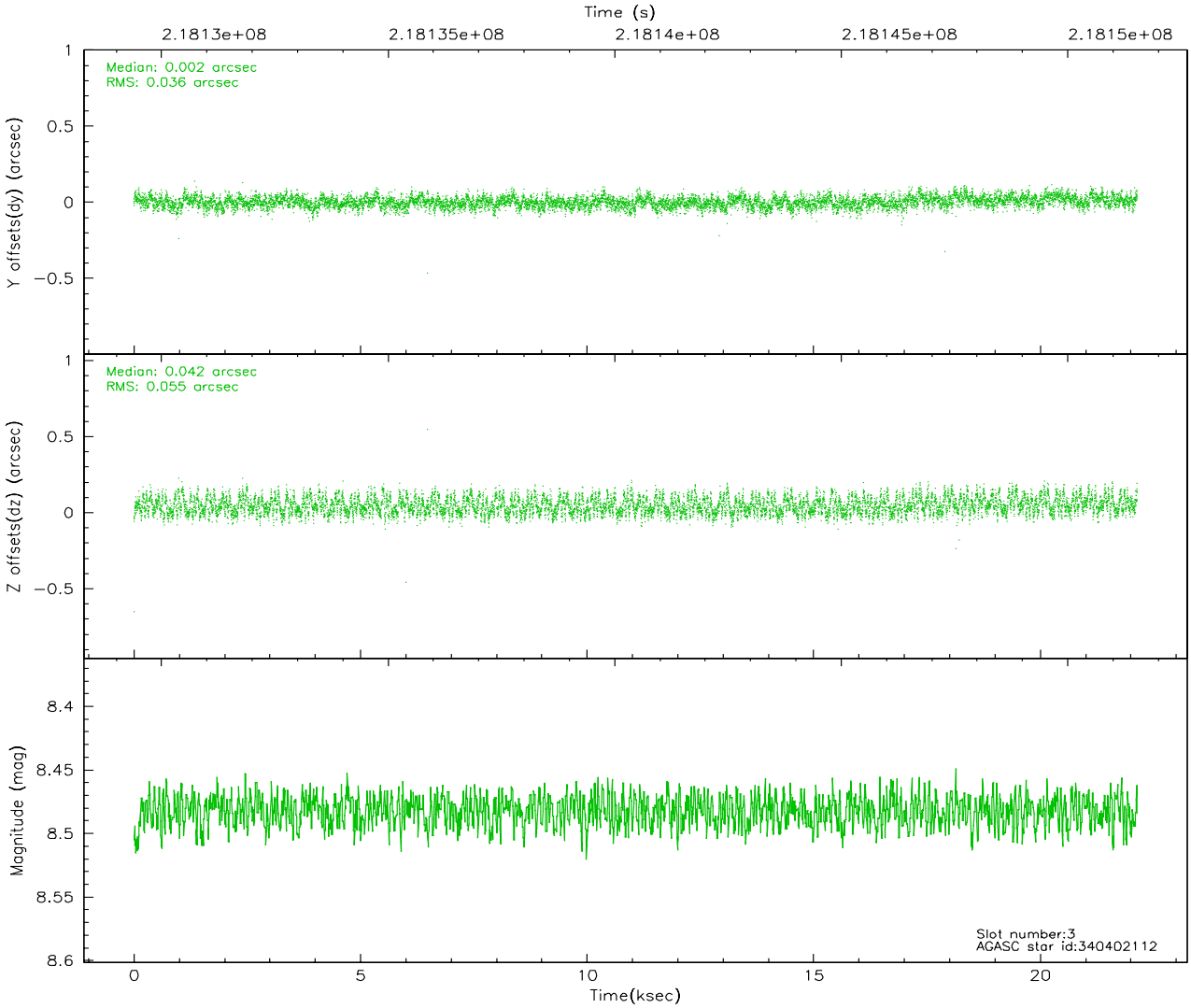
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	5401	-0.060	-0.068	0.009	0.022	0.000000	0.000000	-759.46	-1795.32
1	FID	ACIS-S-4	7.18	5401	0.073	0.048	0.008	0.030	0.000000	0.000000	2153.86	113.11
2	FID	ACIS-S-5	7.23	5402	-0.043	0.029	0.009	0.019	0.000000	0.000000	-1812.10	106.92
3	GUIDE	340402112	8.48	10799	0.002	0.042	0.069	0.110	253.640936	34.860529	-2006.21	-2041.21
4	GUIDE	340534080	8.84	10800	0.047	-0.034	0.059	0.096	255.228954	35.471551	2243.01	895.08
5	GUIDE	340536192	7.73	10797	0.028	0.057	0.051	0.083	254.294567	35.286536	-349.24	-220.05
6	GUIDE	340401120	8.17	10800	0.047	-0.039	0.059	0.096	253.574895	35.128140	-2348.55	-1120.07
7	GUIDE	340534896	8.59	10795	-0.122	-0.028	0.061	0.098	255.288450	35.541682	2371.00	1173.99

2.4 Star Slots

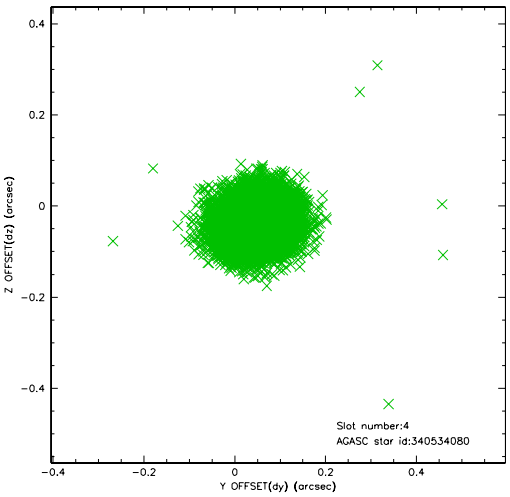
2.4.1 Slot 3

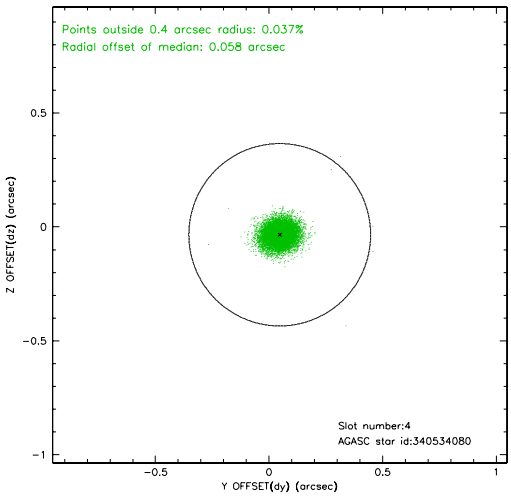


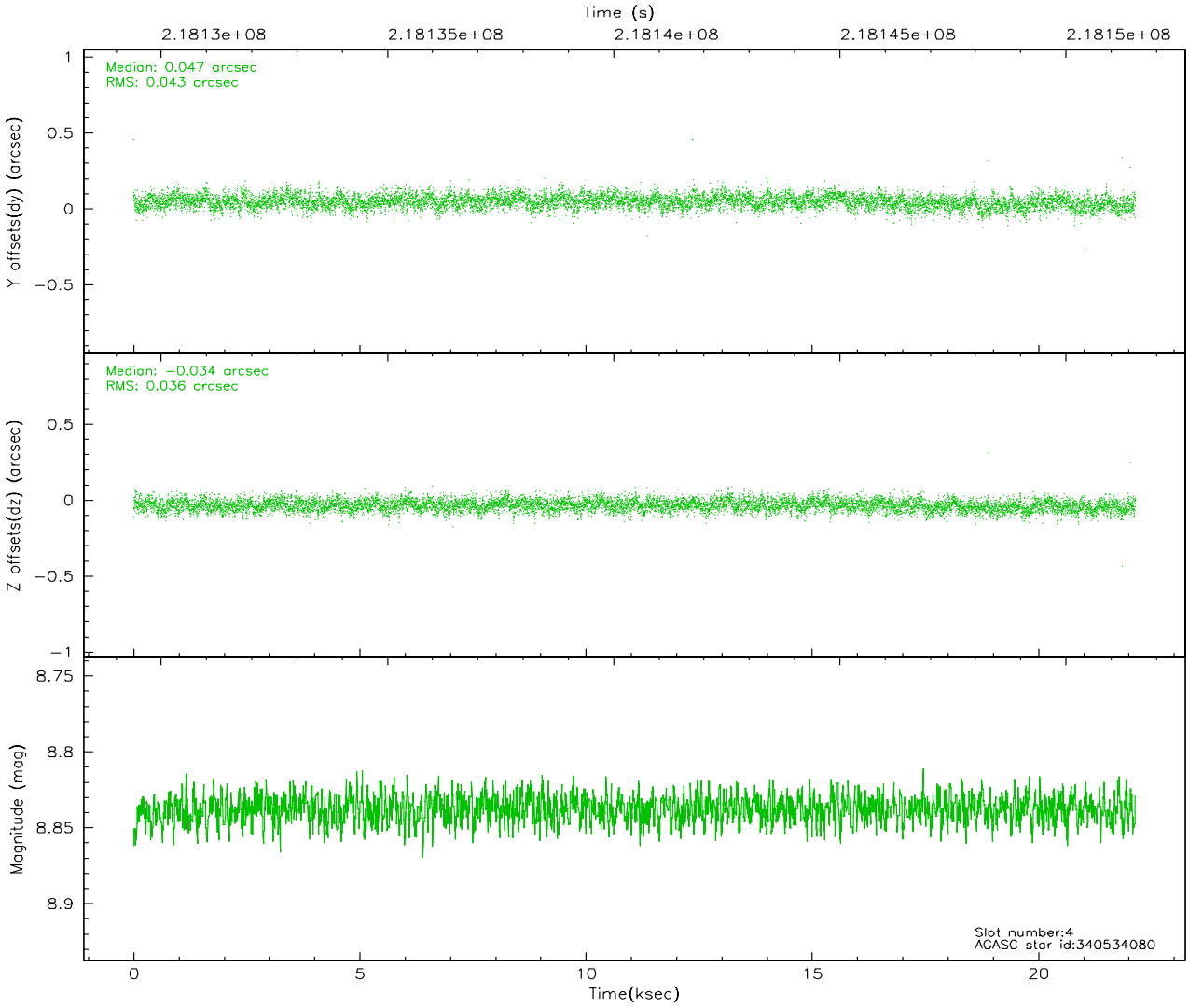




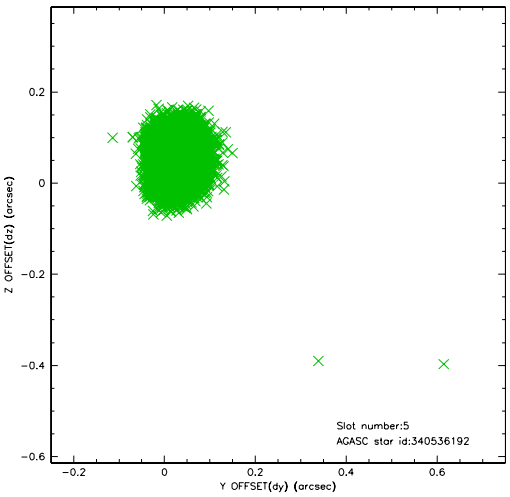
2.4.2 Slot 4

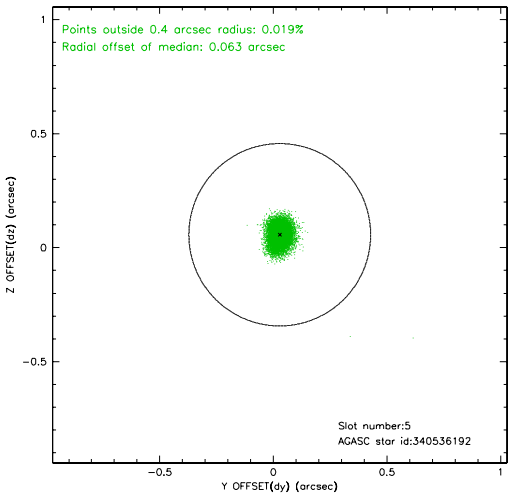

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:340534080

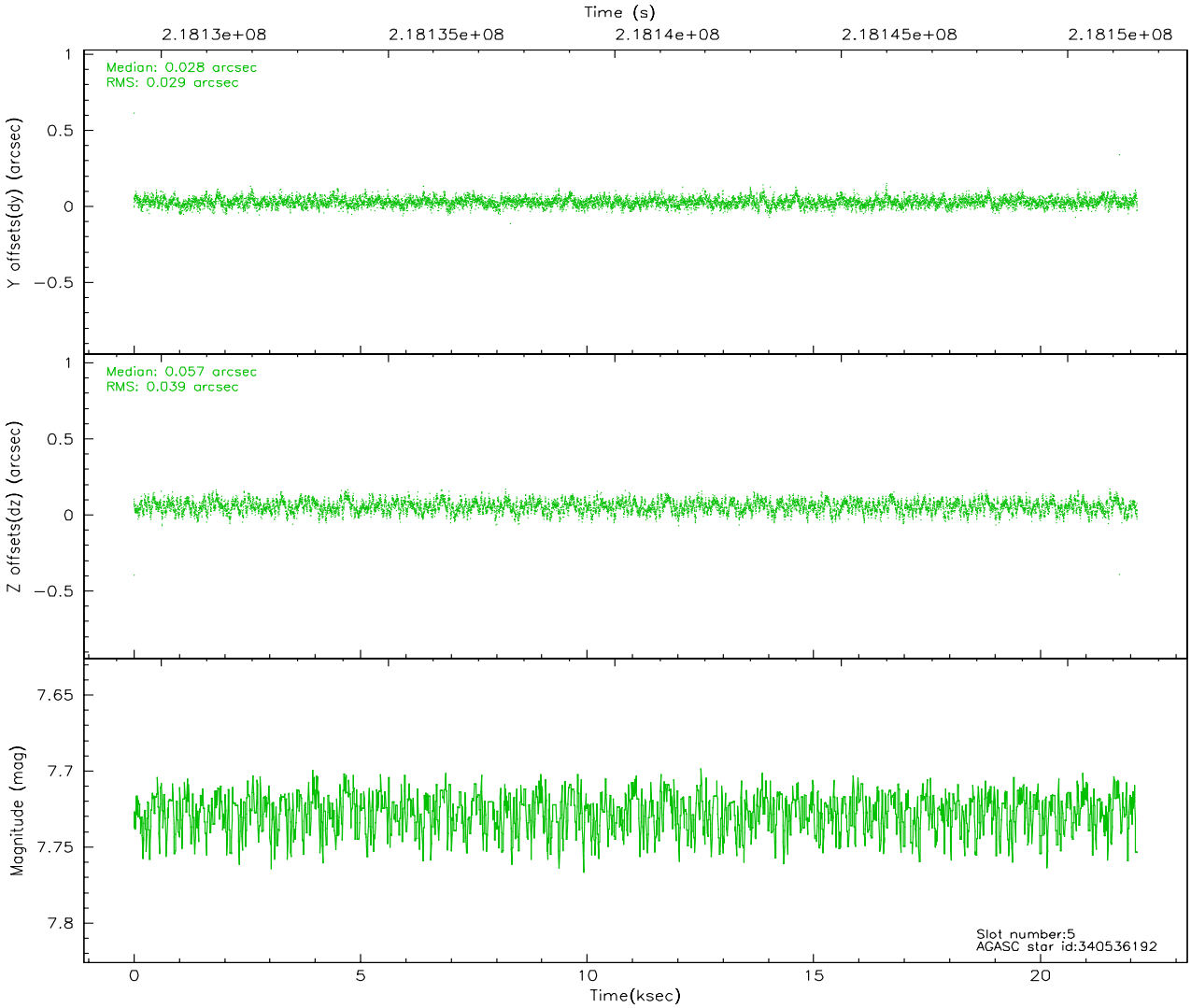

Points outside 0.4 arcsec radius: 0.037%
Radial offset of median: 0.058 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:340534080


Time (s)
Median: 0.047 arcsec
RMS: 0.043 arcsec
Y offsets(dy) (arcsec)
Median: −0.034 arcsec
RMS: 0.036 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:340534080
Time(ksec)

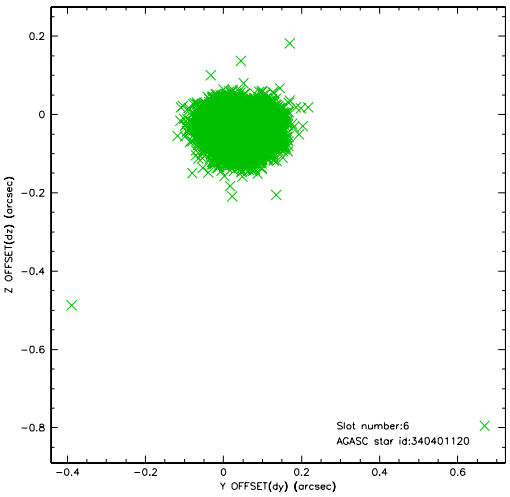
2.4.3 Slot 5

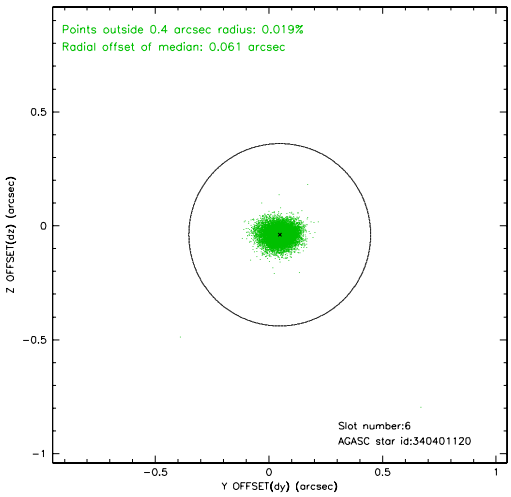

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:340536192

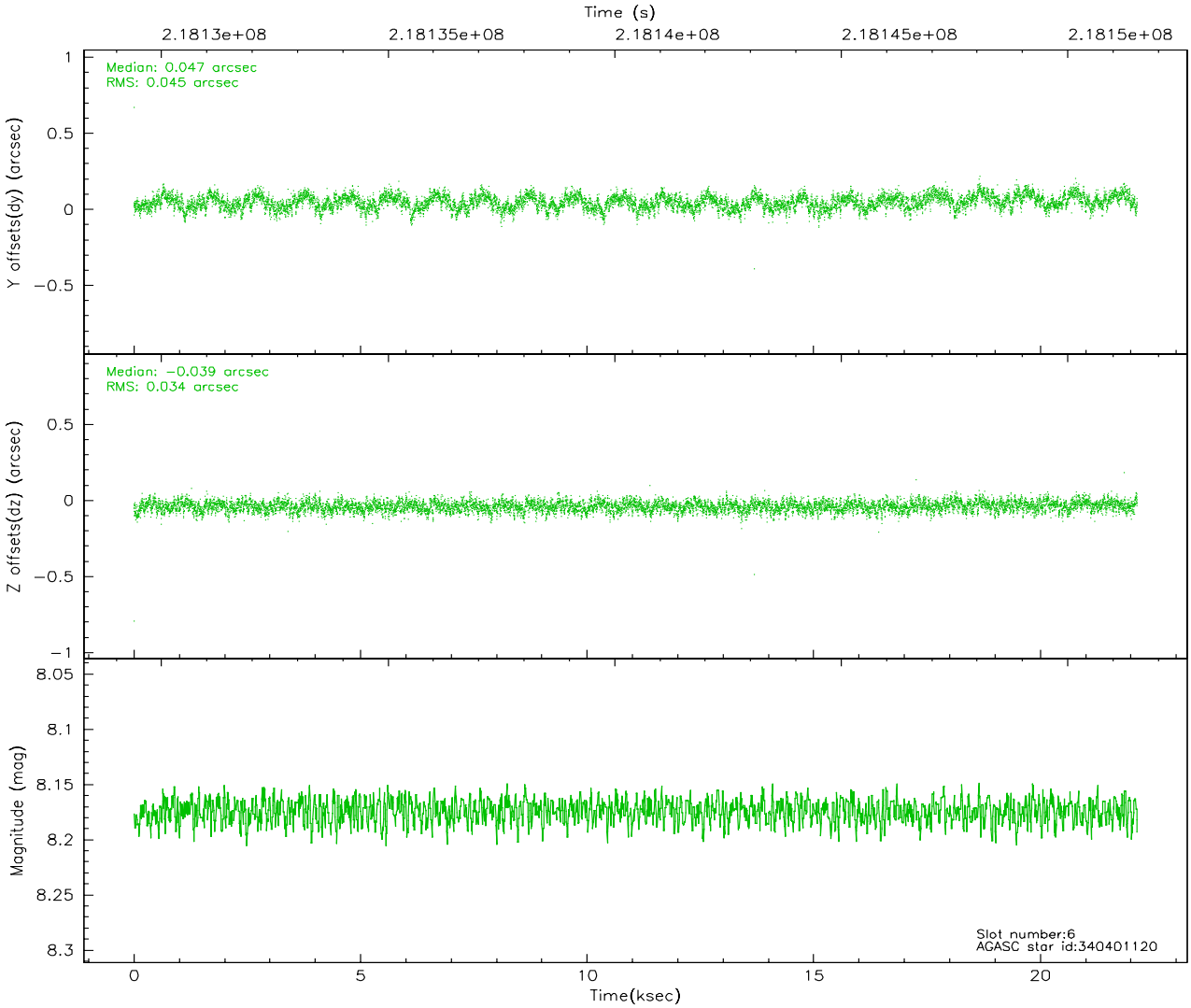

Points outside 0.4 arcsec radius: 0.019%
Radial offset of median: 0.063 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:340536192


Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: 0.028 arcsec
RMS: 0.029 arcsec
Y offsets(dy) (arcsec)
Median: 0.057 arcsec
RMS: 0.039 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:340536192
Time(ksec)

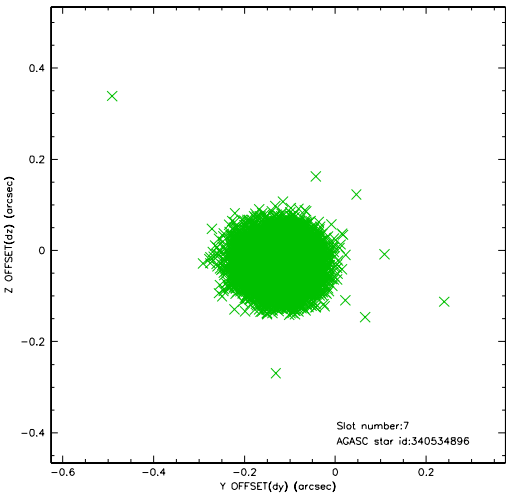
2.4.4 Slot 6

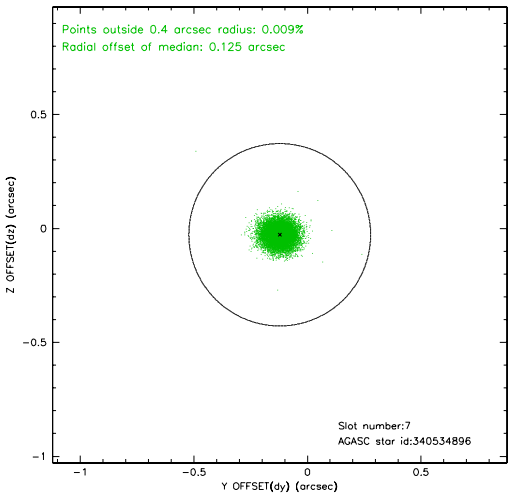

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:340401120

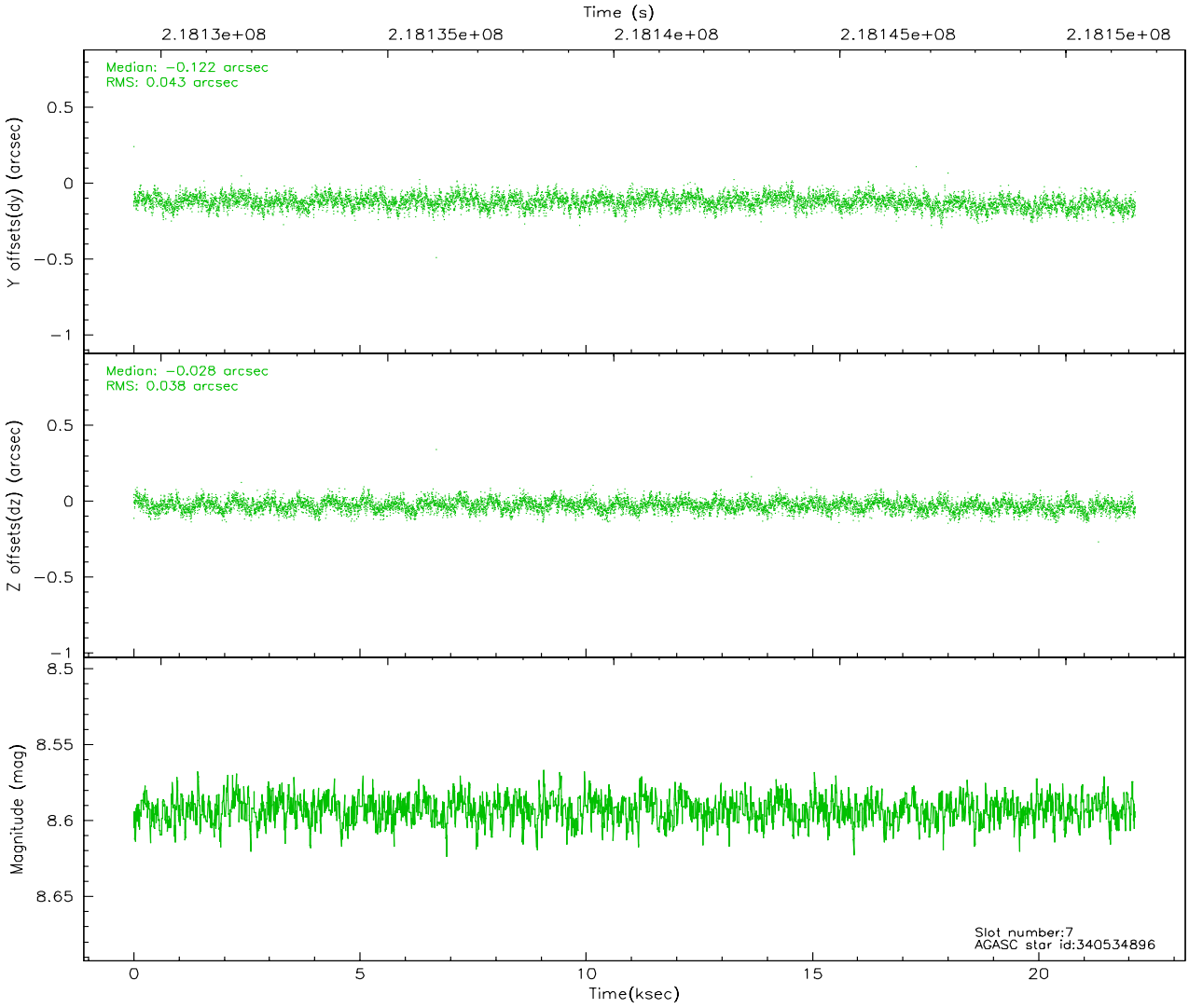

Points outside 0.4 arcsec radius: 0.019%
Radial offset of median: 0.061 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:340401120


Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: 0.047 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: −0.039 arcsec
RMS: 0.034 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:340401120
Time(ksec)

2.4.5 Slot 7

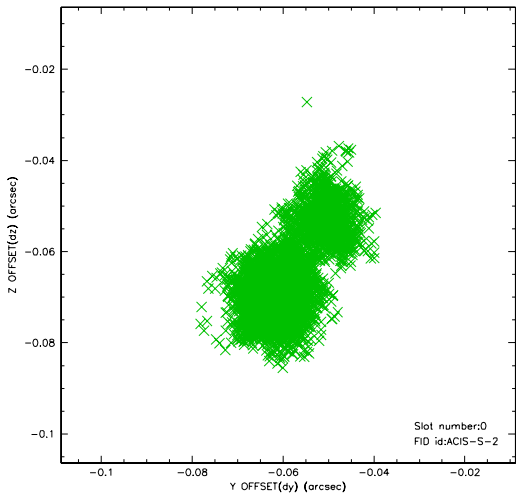

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:340534896

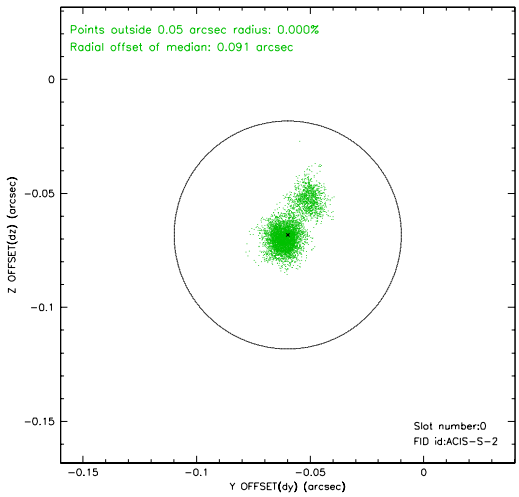

Points outside 0.4 arcsec radius: 0.009%
Radial offset of median: 0.125 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:340534896

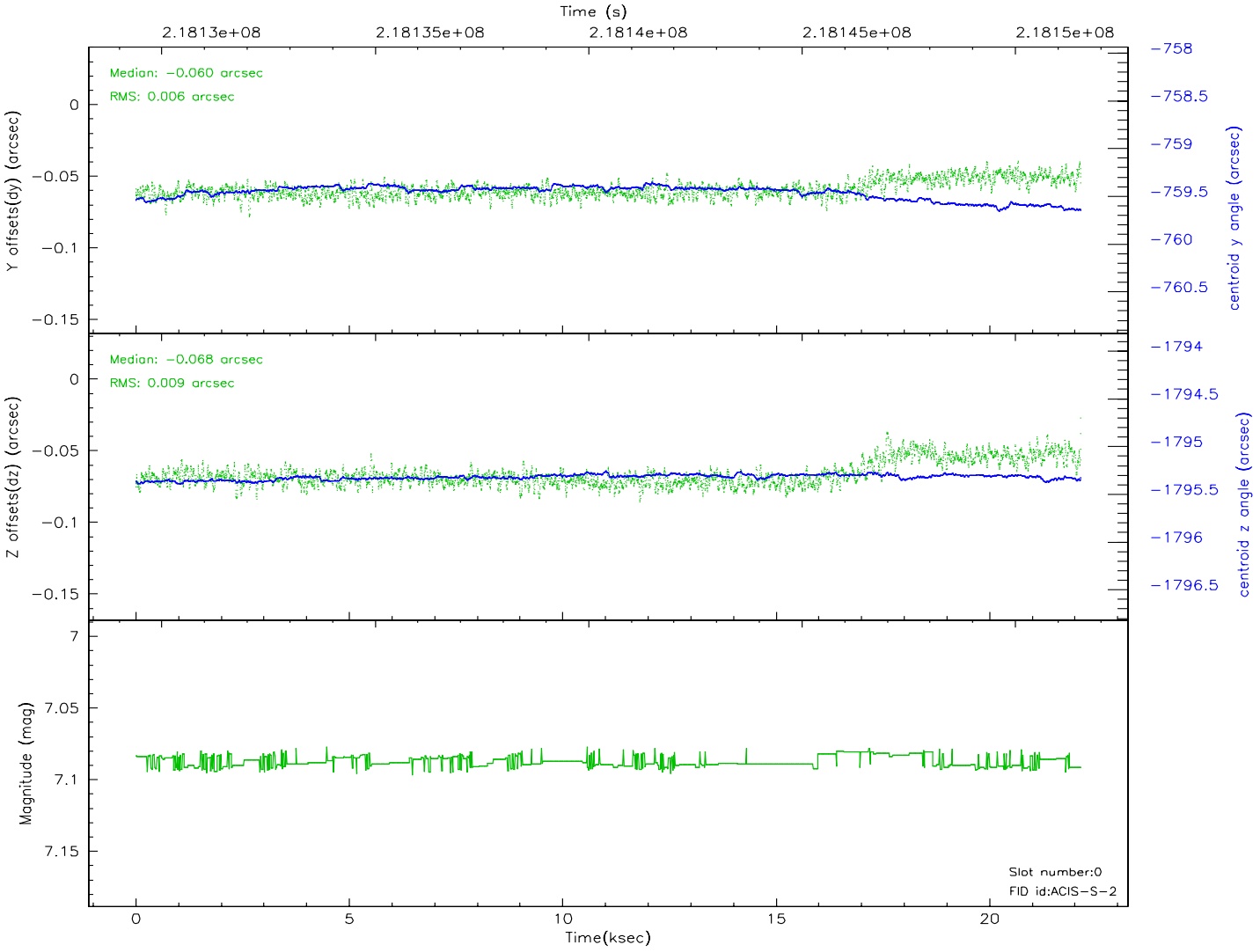

Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: −0.122 arcsec
RMS: 0.043 arcsec
Y offsets(dy) (arcsec)
Median: −0.028 arcsec
RMS: 0.038 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:340534896
Time(ksec)

2.5 FID Slots

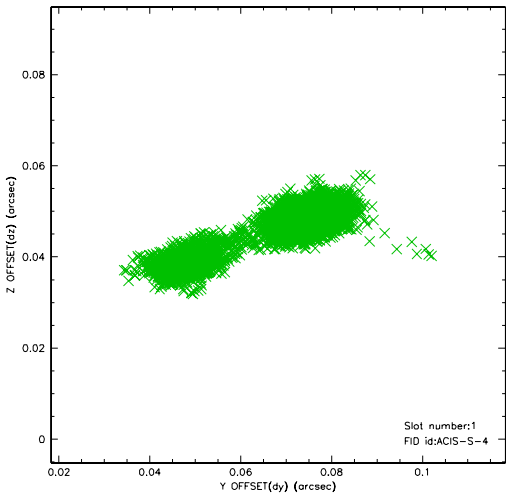
2.5.1 Slot 0

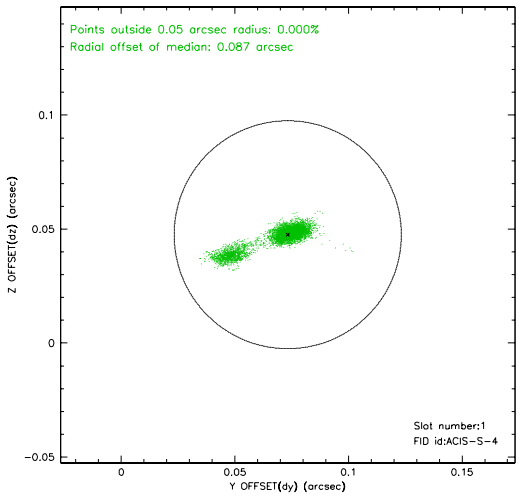


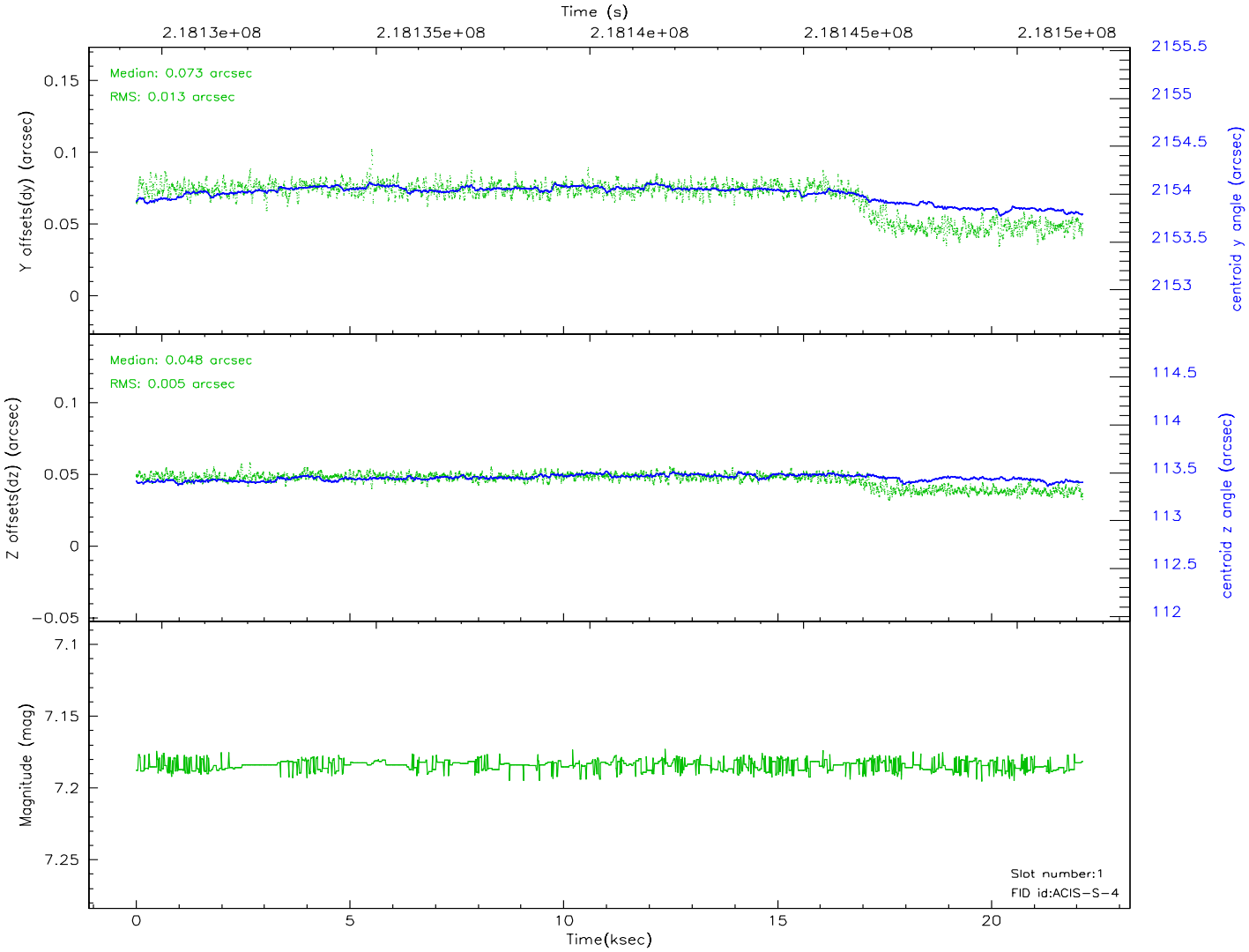




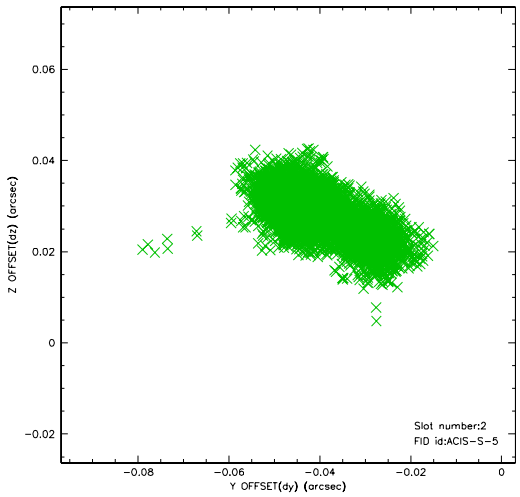
2.5.2 Slot 1

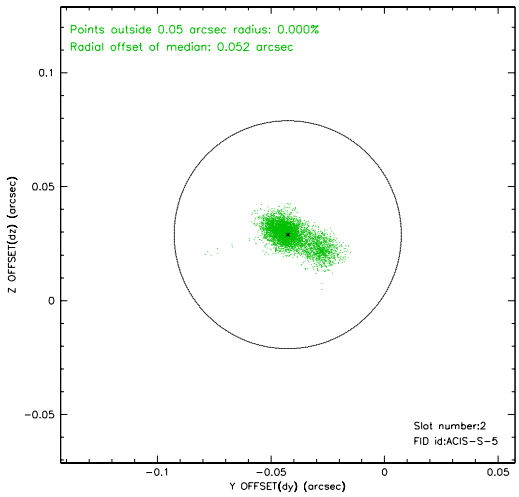

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

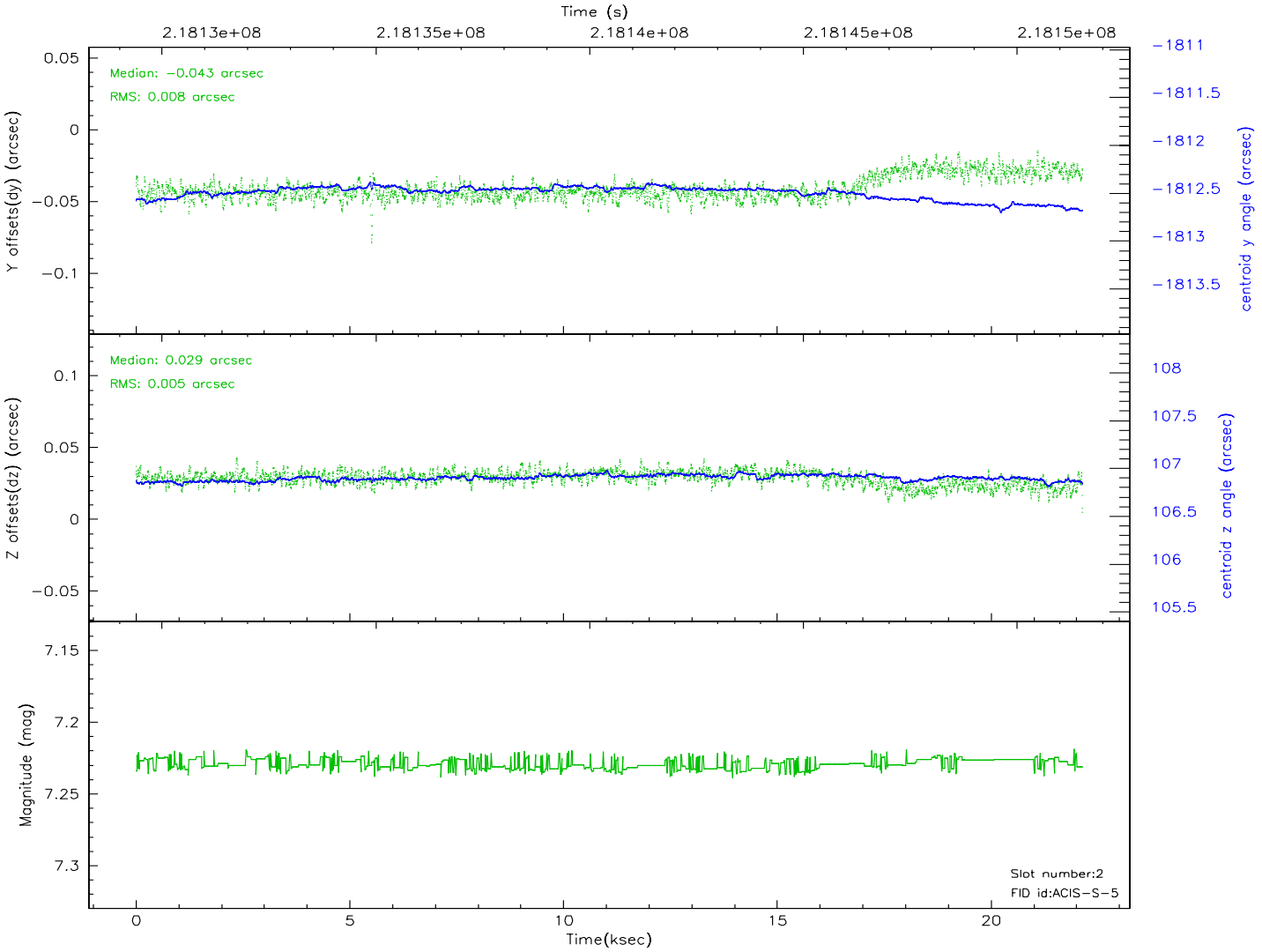

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.087 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
Median: 0.073 arcsec
RMS: 0.013 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.048 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

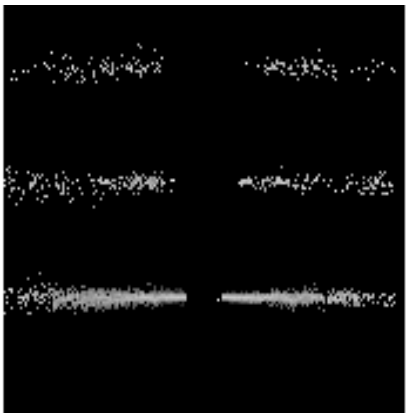

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.052 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5

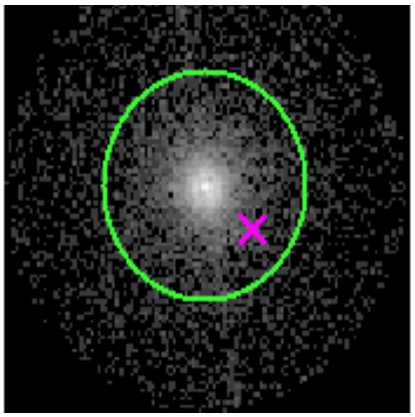

Time (s)
2.1813e+08
2.18135e+08
2.1814e+08
2.18145e+08
2.1815e+08
Median: −0.043 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.029 arcsec
RMS: 0.005 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-5
Time(ksec)

3 Gratings

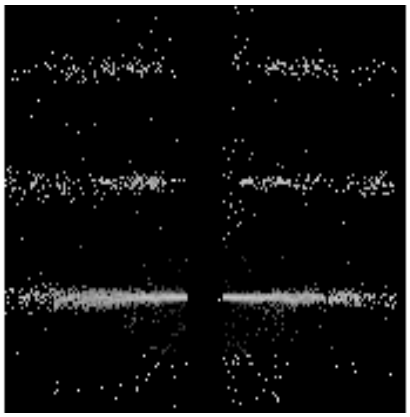
3.1 HEG Arm



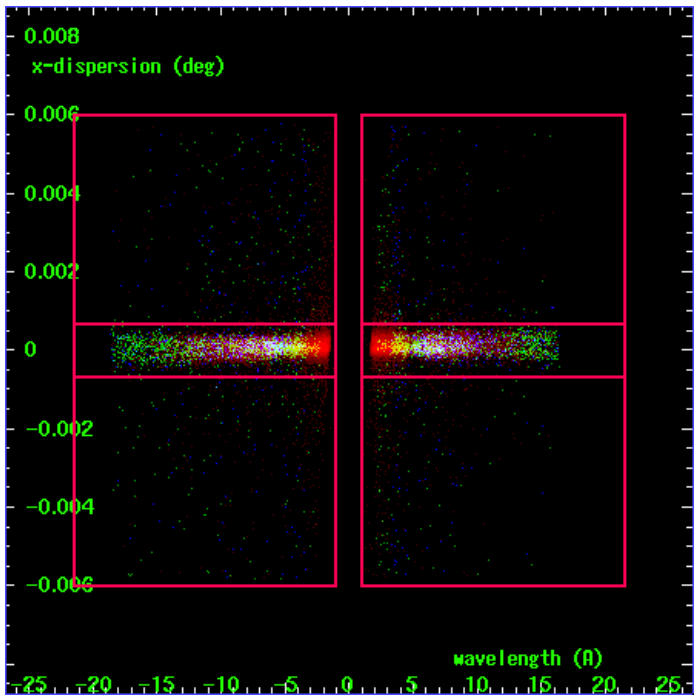
HEG Order Sort 123



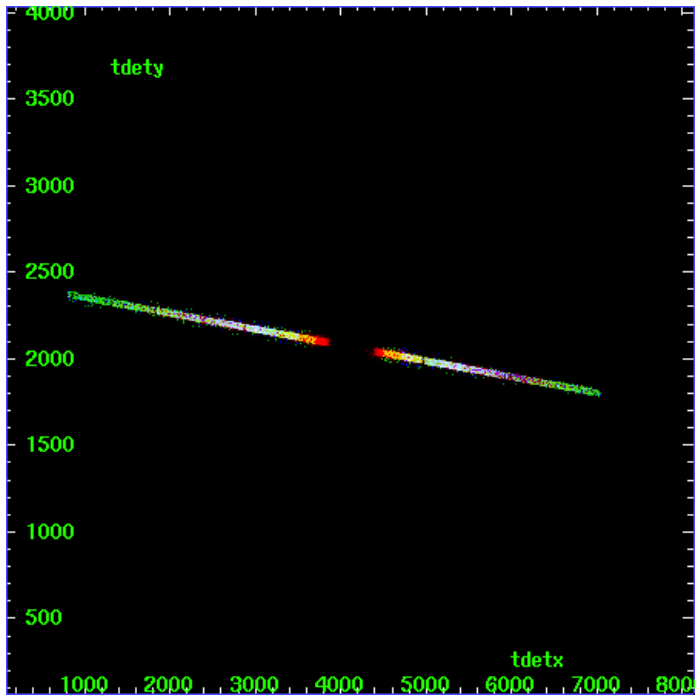
HEG Zero Order



HEG Order Sort ALL

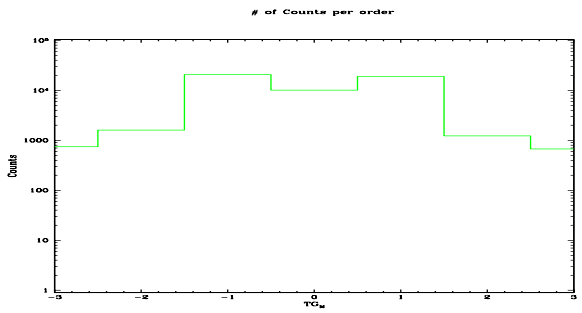


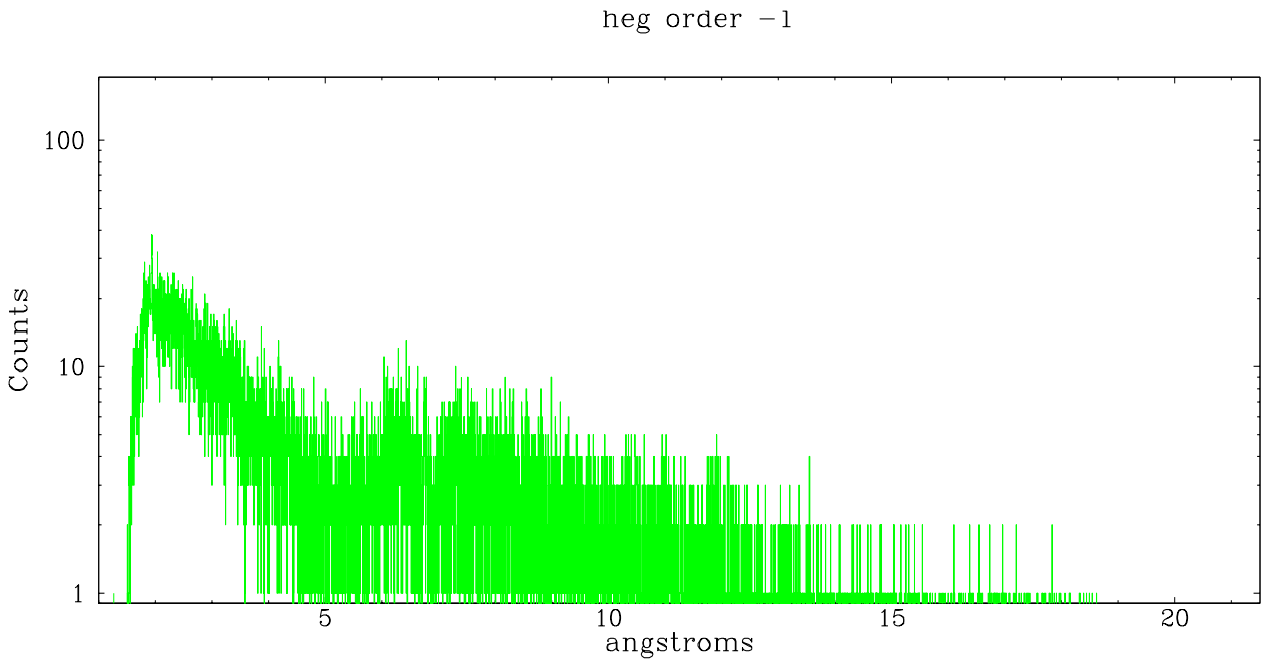
Spot Image HEG

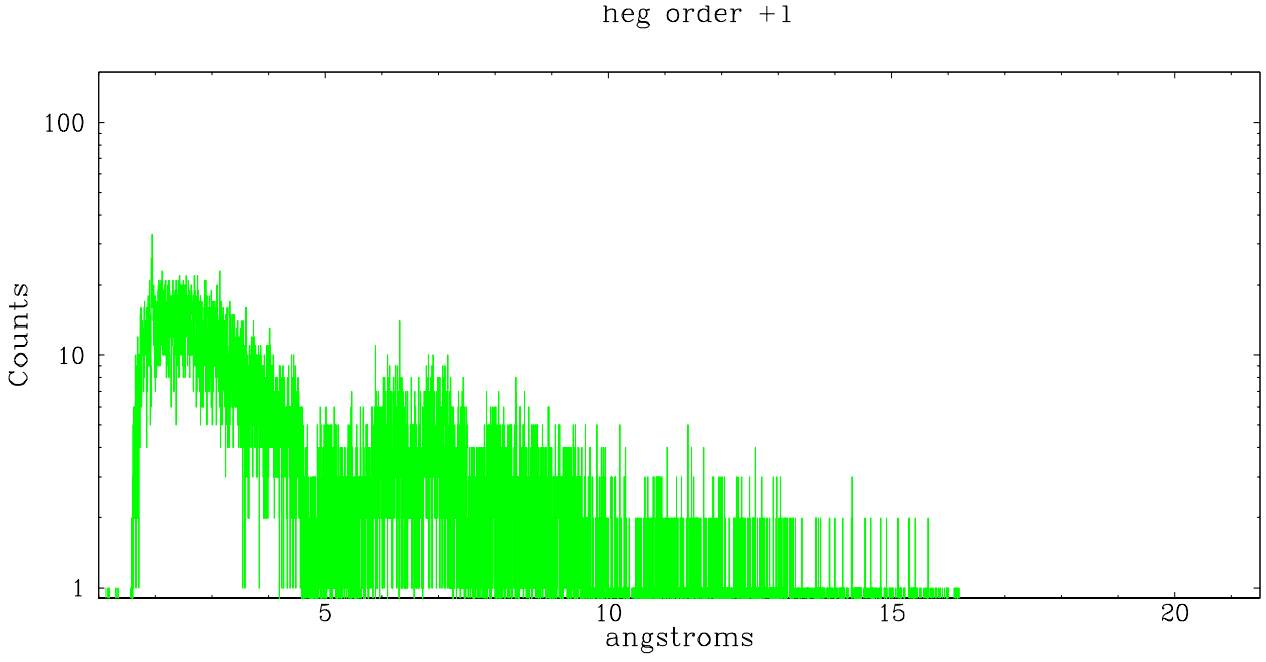


Full Detector HEG

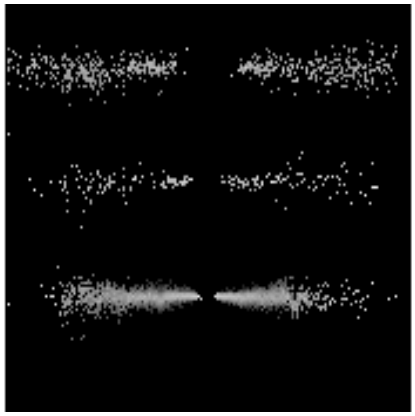
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	746	1599	20691	10093	18943	1230	676



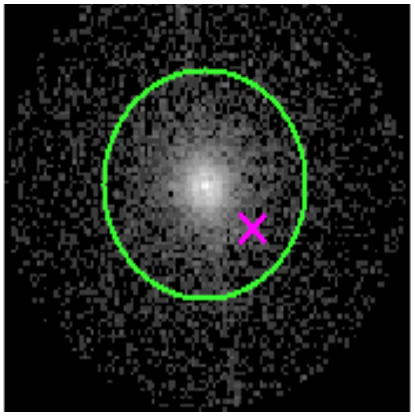

heg order −1
100
10
1
Counts
5
10
15
20
angstroms


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

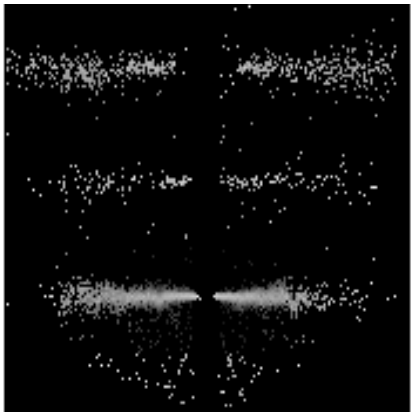
3.2 MEG Arm



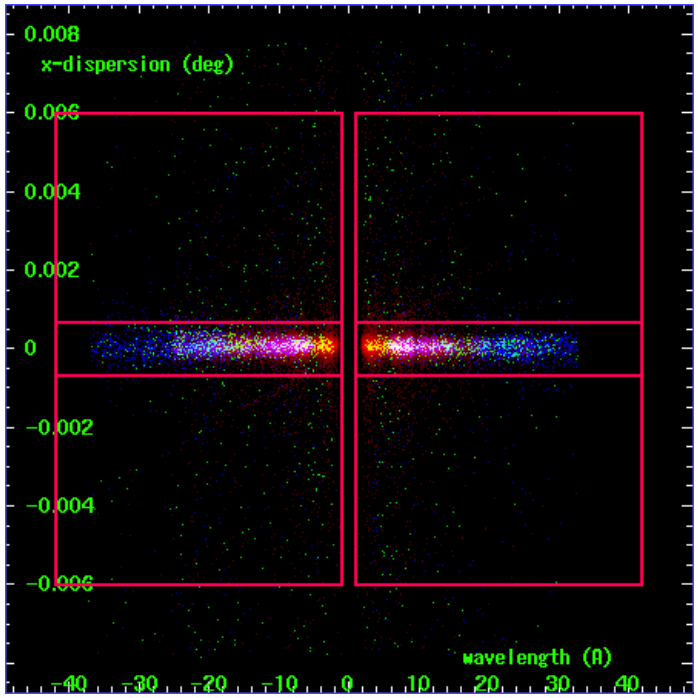
MEG Order Sort 123



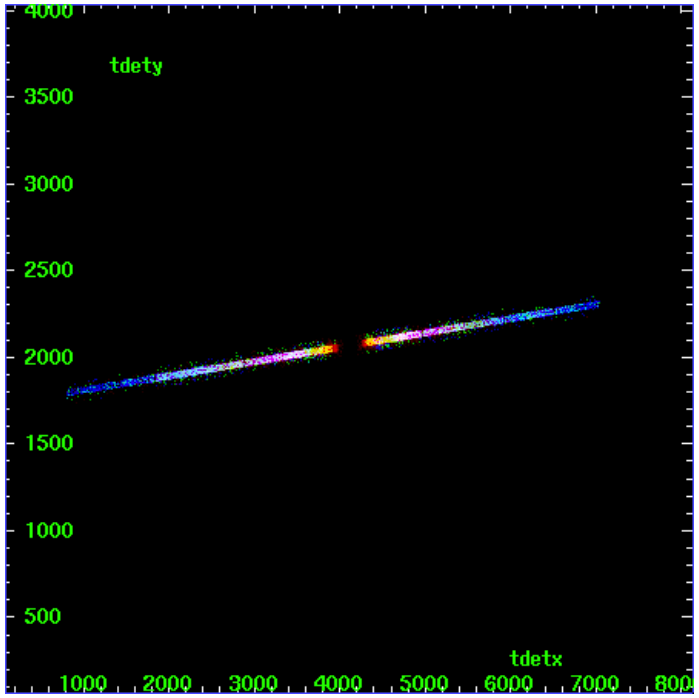
MEG Zero Order



MEG Order Sort ALL

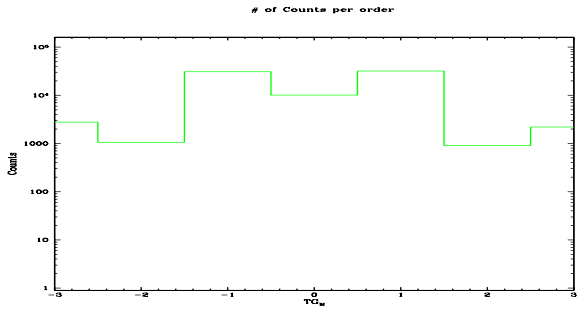


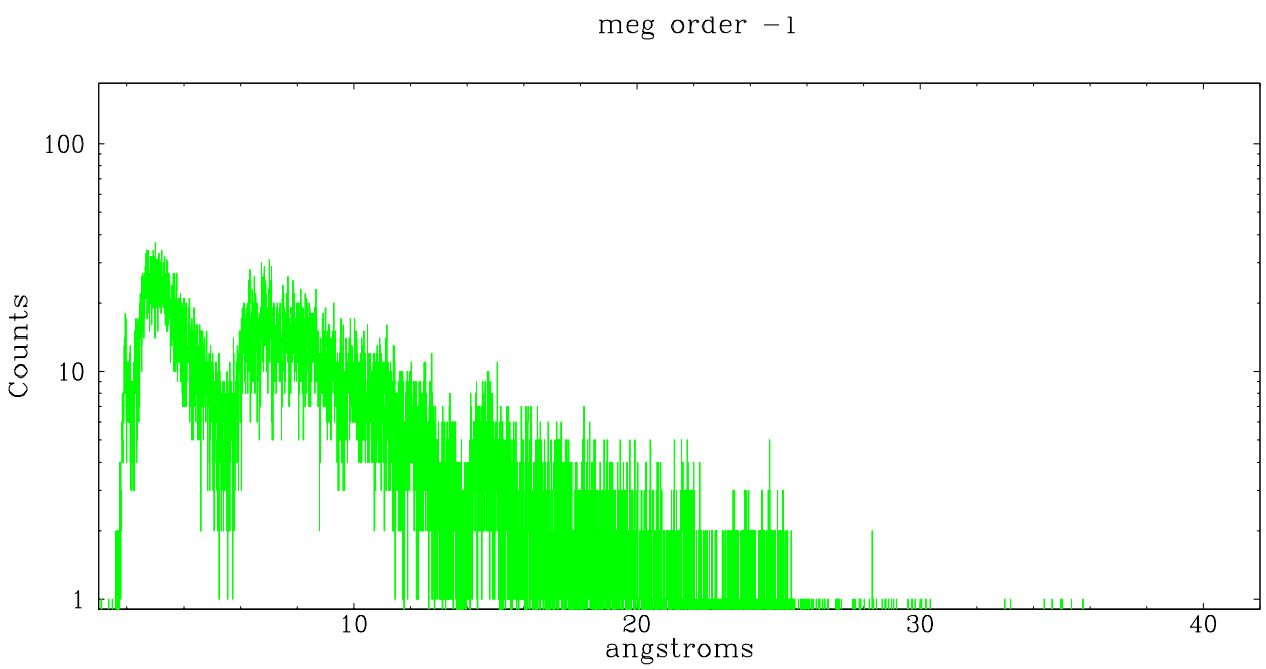
Spot Image MEG

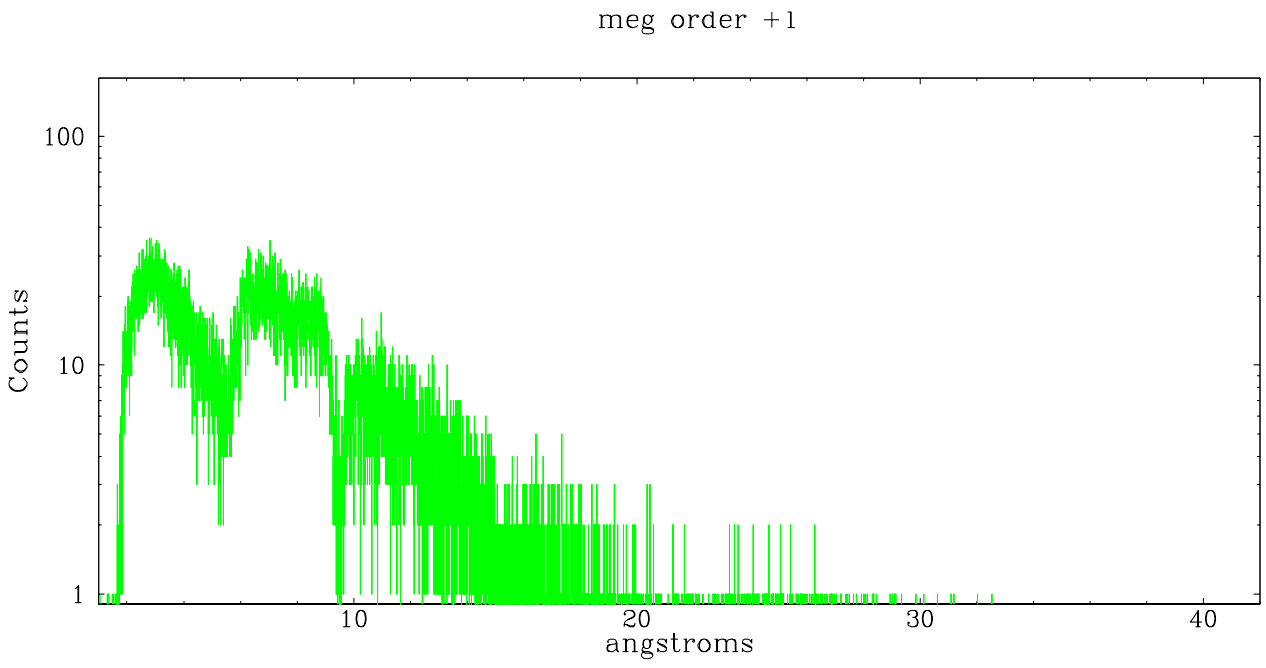


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2763	1060	30868	10093	31980	905	2194




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	Jen Lauer
V&V Date (YYYY-MM-DD)	2006.04.11
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	22.14

A.2 Comments

```
Window constraint met. Phase constraint met.
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