V&V Reference Report
L2 ASCDS Version : 7.6.9

Observation 1896 - L2 Version 001
Chandra X-Ray Center

L2 Processing Date : Dec 19 2006

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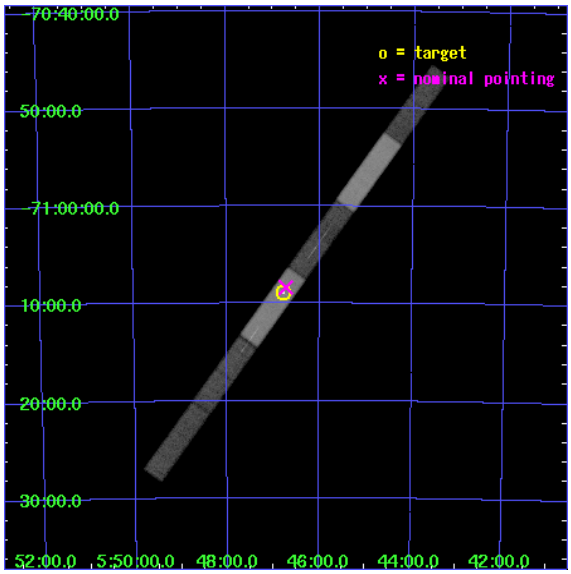
1 Front

seq_num	300044
obs_id	1896
title	X-RAY SPECTROSCOPY OF THE BRIGHT SUPERSOFT SOURCES CAL 83 AND CAL 87
observer	Dr. Jochen Greiner
object	CAL 87
dtycycle	0
cycle	P
ra_targ	86.693833
dec_targ	-71.148333
ra_nom	86.680771689021
dec_nom	-71.139539814848
roll_nom	125.88633303765
revision	2
ontime	97764.0
livetime	93909.936217629
ontime4	97764.0
ontime5	97764.0
ontime6	97764.0
ontime7	97764.0
ontime8	97764.0
ontime9	97764.0
l2events	272489

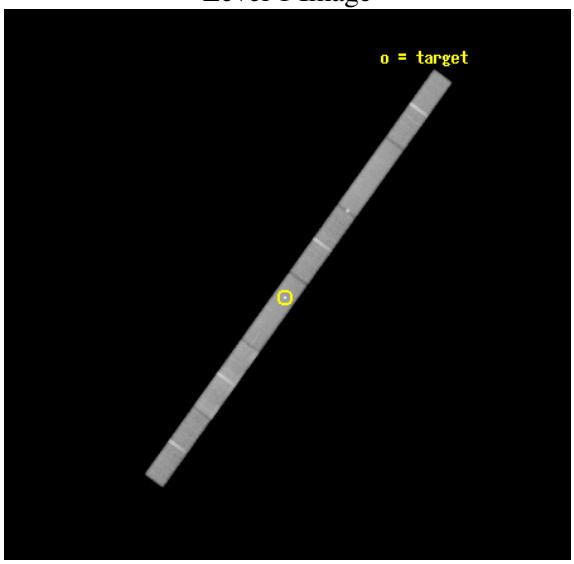


2 OBI

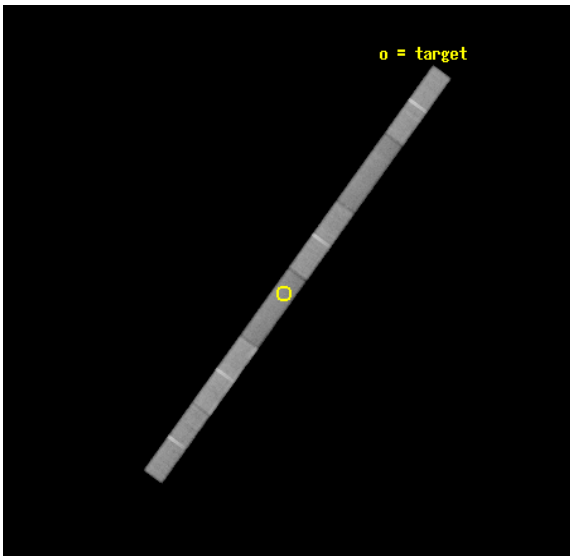
2.1 OBI

2.1.1 Images

Level 1 Image

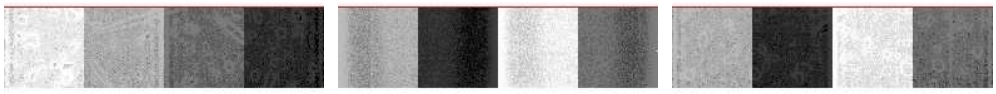


Level 1 Bad Events



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	2006-12-19T15:53:48
revision	2

sched_exp_time	97535.134000
ontime	97831.540613934
ontime4	97831.540613934
ontime5	97831.540613934
ontime6	97831.540613934
ontime7	97831.540613934
ontime8	97831.540613934
ontime9	97832.581653938
l1events	1366869

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	228854	239369	209276	224065	270717	194588
rejected events	205085	130303	186436	126787	221140	172404
rejected %	89%	54%	89%	56%	81%	88%

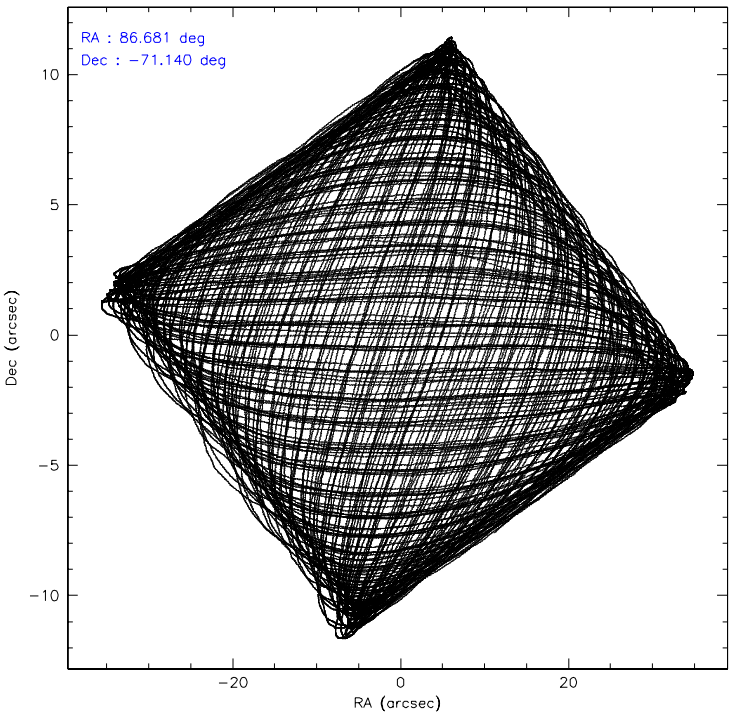
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	8670	8966	8600	9711	14063	7976
	3%	3%	4%	4%	5%	4%
grade 1 events	66	368	46	175	101	54
	0%	0%	0%	0%	0%	0%
grade 2 events	4746	30620	3938	21235	9571	3782
	2%	12%	1%	9%	3%	1%
grade 3 events	3329	5419	3377	8924	6464	3389
	1%	2%	1%	3%	2%	1%
grade 4 events	3223	5187	3231	8772	6086	3173
	1%	2%	1%	3%	2%	1%
grade 5 events	5792	14054	6629	17310	8498	6651
	2%	5%	3%	7%	3%	3%
grade 6 events	3832	58975	3718	48687	13517	3879
	1%	24%	1%	21%	4%	1%
grade 7 events	199196	115780	179737	109251	212417	165684
	87%	48%	85%	48%	78%	85%

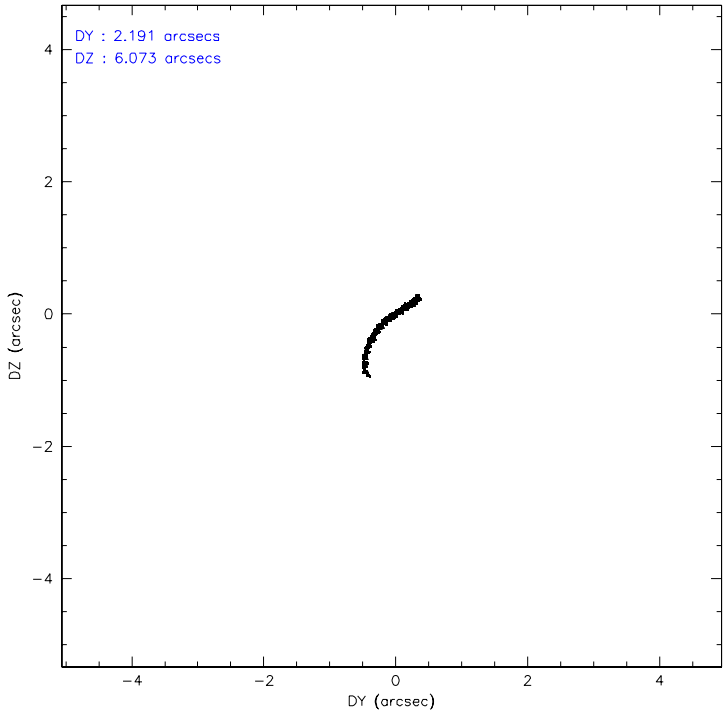
2.2 Compared Parameters

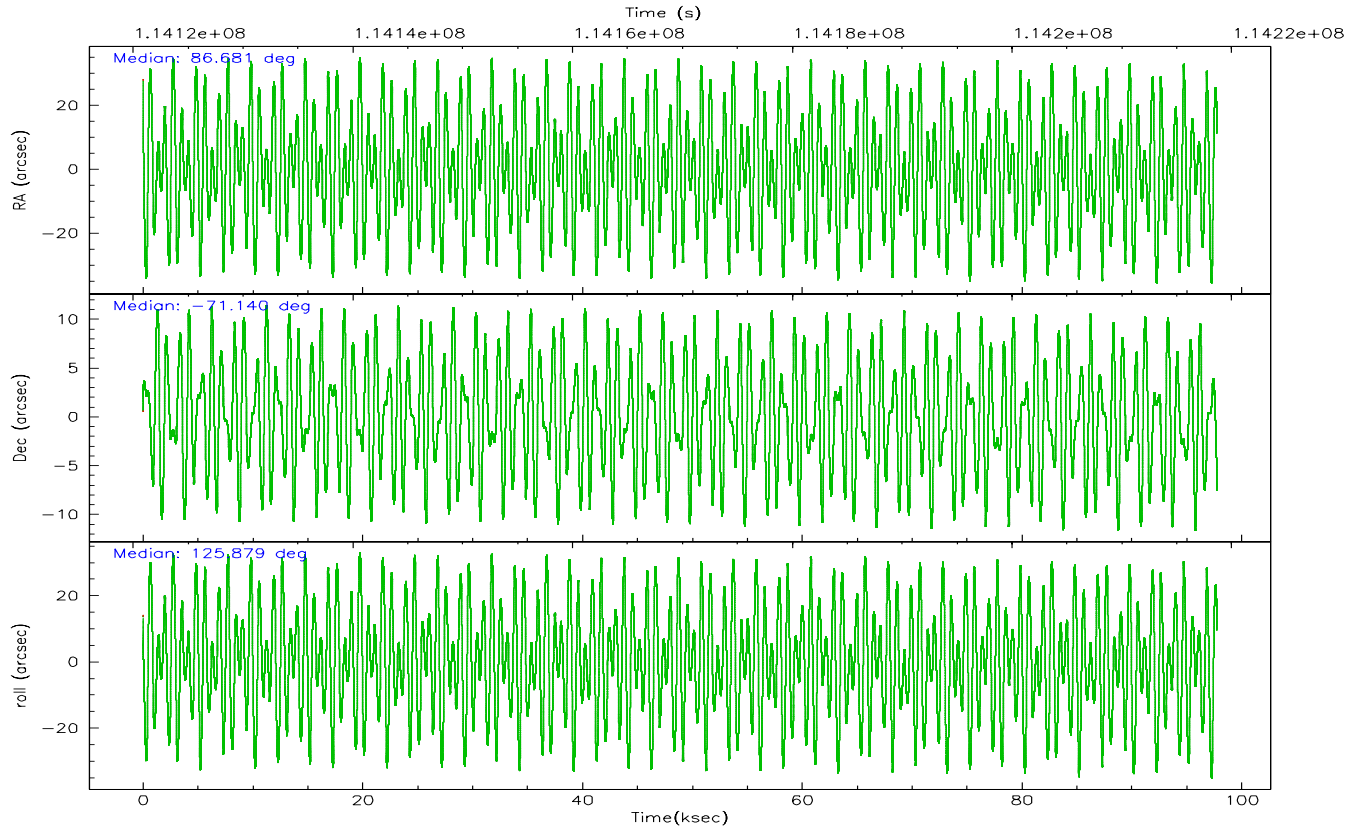
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	LETG	LETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	86.758187	86.68077168902126
Pointing Dec	-71.150395	-71.13953981484782
Pointing Roll	125.802966	125.8863330376456
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-182.132523	-182.1370004450064
SIM translation stage offset (mm)	-8	-7.995522138001405
Observation start time	114121134.184000	114120152.79273
Observation start date	2001-08-13T20:17:50	2001-08-13T20:02:32
Observation end time	114218669.184000	114218983.29662
Observation end date	2001-08-14T23:23:25	2001-08-14T23:29:43
Read mode	TIMED	TIMED

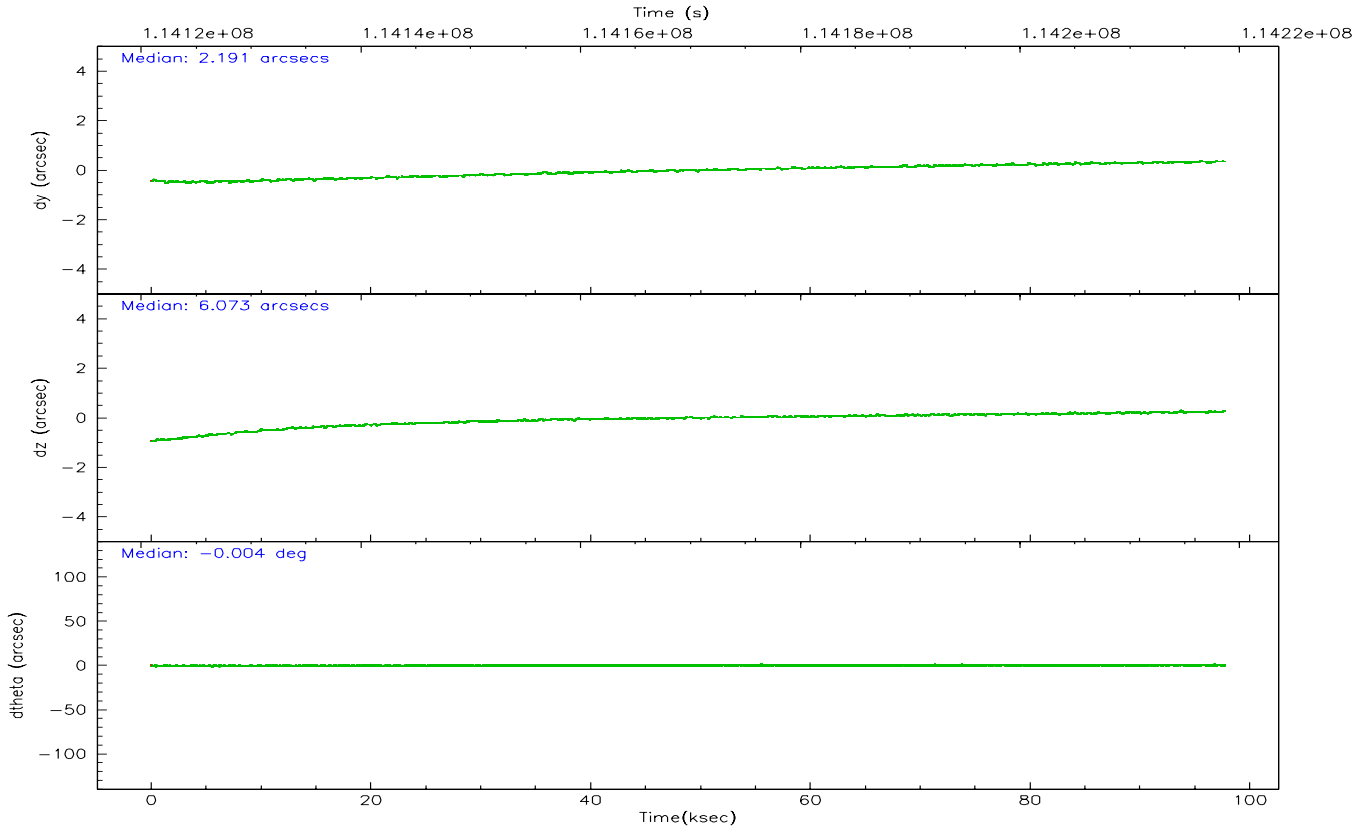
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	1/4
Subarray start row	49	49
Subarray row count	256	256
Alternating exposures requested	N	N
Primary exposure time	0.000000	1

2.3 Aspect


RA : 86.681 deg
Dec : −71.140 deg
10
5
0
−5
−10
Dec (arcsec)
−20
0
20
RA (arcsec)


DY : 2.191 arcsecs
DZ : 6.073 arcsecs
4
2
0
−2
−4
DZ (arcsec)
−4
−2
0
2
4
DY (arcsec)


Time (s)
1.1412e+08
1.1414e+08
1.1416e+08
1.1418e+08
1.142e+08
1.1422e+08
Median: 86.681 deg
RA (arcsec)
Median: −71.140 deg
Dec (arcsec)
Median: 125.879 deg
roll (arcsec)
Time(ksec)

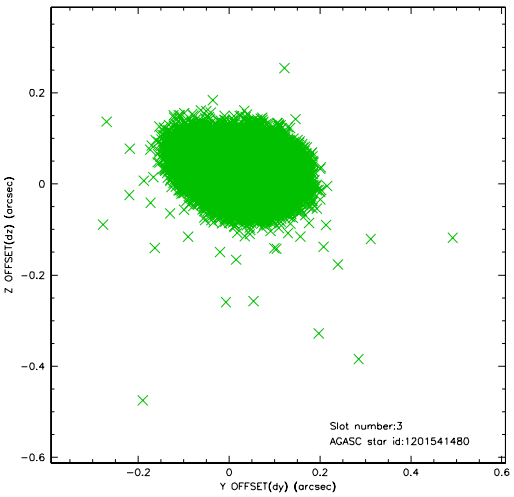

Time (s)
1.1412e+08
1.1414e+08
1.1416e+08
1.1418e+08
1.142e+08
1.1422e+08
Median: 2.191 arcsecs
dy (arcsec)
Median: 6.073 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

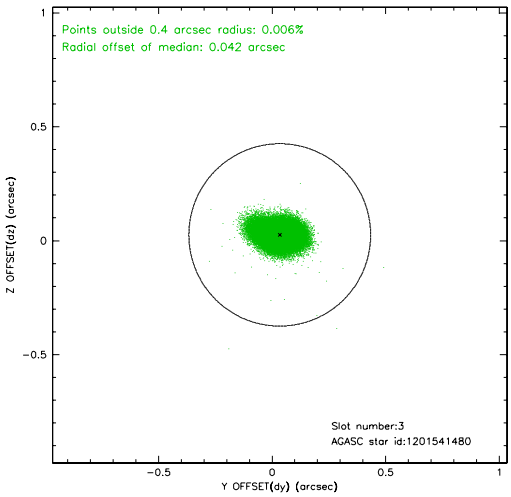
Slot Statistics

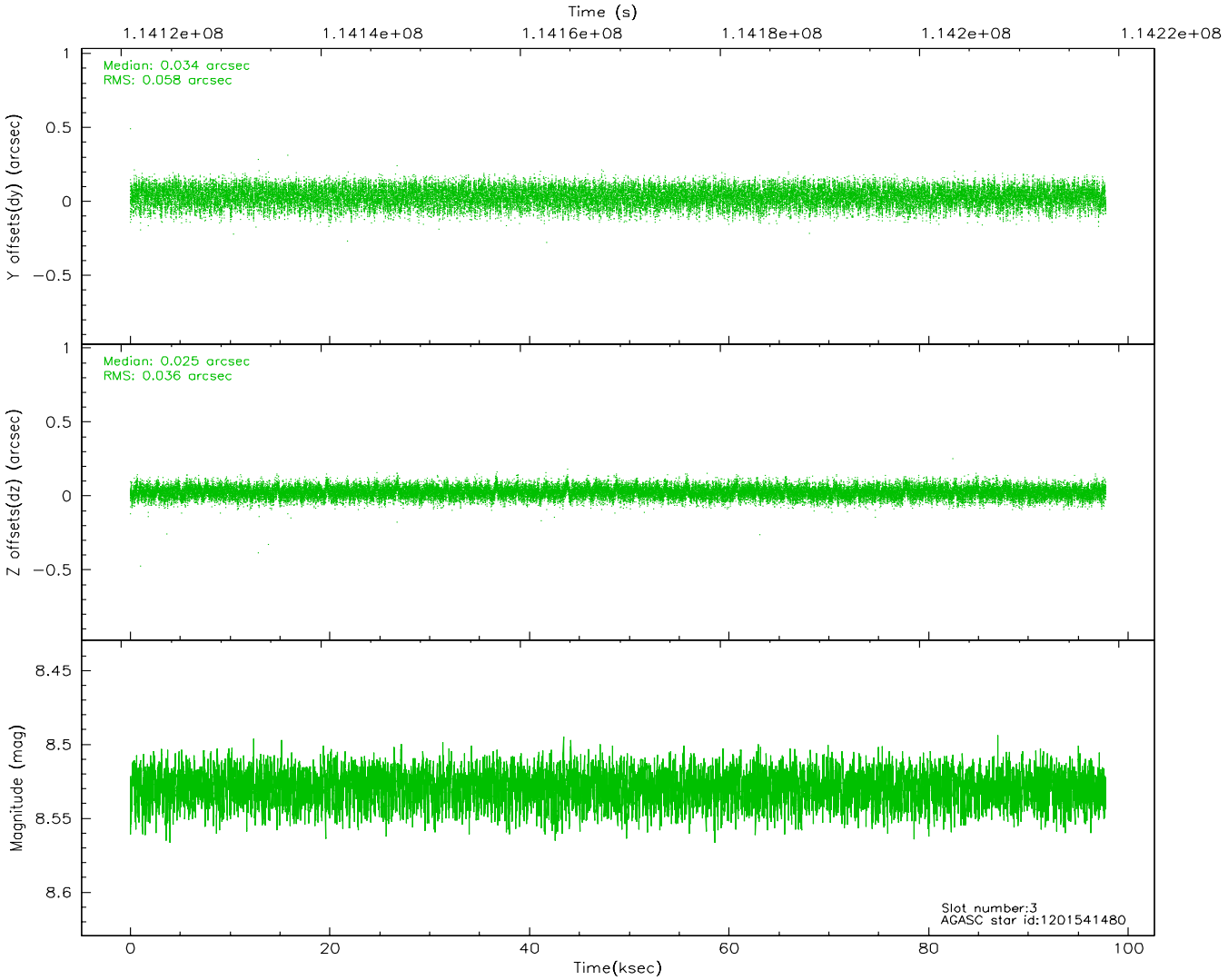
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	23846	-0.040	-0.065	0.014	0.027	0.000000	0.000000	-754.24	-1891.90
1	FID	ACIS-S-4	7.18	23845	-0.001	0.036	0.007	0.015	0.000000	0.000000	2159.12	16.74
2	FID	ACIS-S-5	7.22	23844	0.009	0.036	0.013	0.024	0.000000	0.000000	-1807.14	10.33
3	GUIDE	1201541480	8.53	47686	0.034	0.025	0.072	0.118	87.080483	-70.345903	2120.67	-2009.69
4	GUIDE	1201537144	9.09	47673	-0.017	0.068	0.085	0.131	88.780878	-70.947923	-830.36	-2330.50
5	GUIDE	1201543584	9.02	47679	0.033	-0.020	0.057	0.093	85.968298	-71.060698	797.45	563.40
6	GUIDE	1202072464	9.45	47659	0.046	0.031	0.106	0.167	86.698095	-71.603515	-1282.55	1009.76
7	GUIDE	1202072504	9.11	47670	-0.095	-0.107	0.091	0.143	84.613647	-71.282090	1029.15	2312.24

2.4 Star Slots

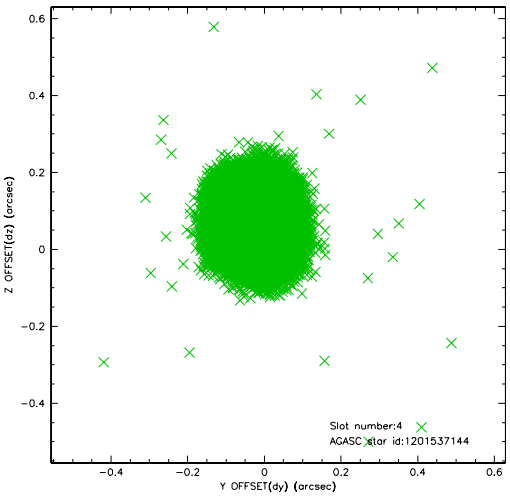
2.4.1 Slot 3

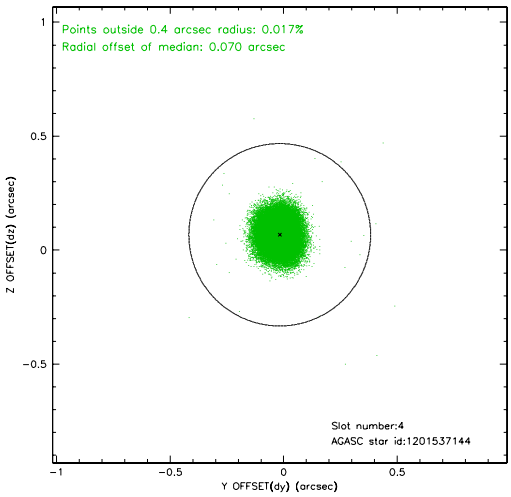


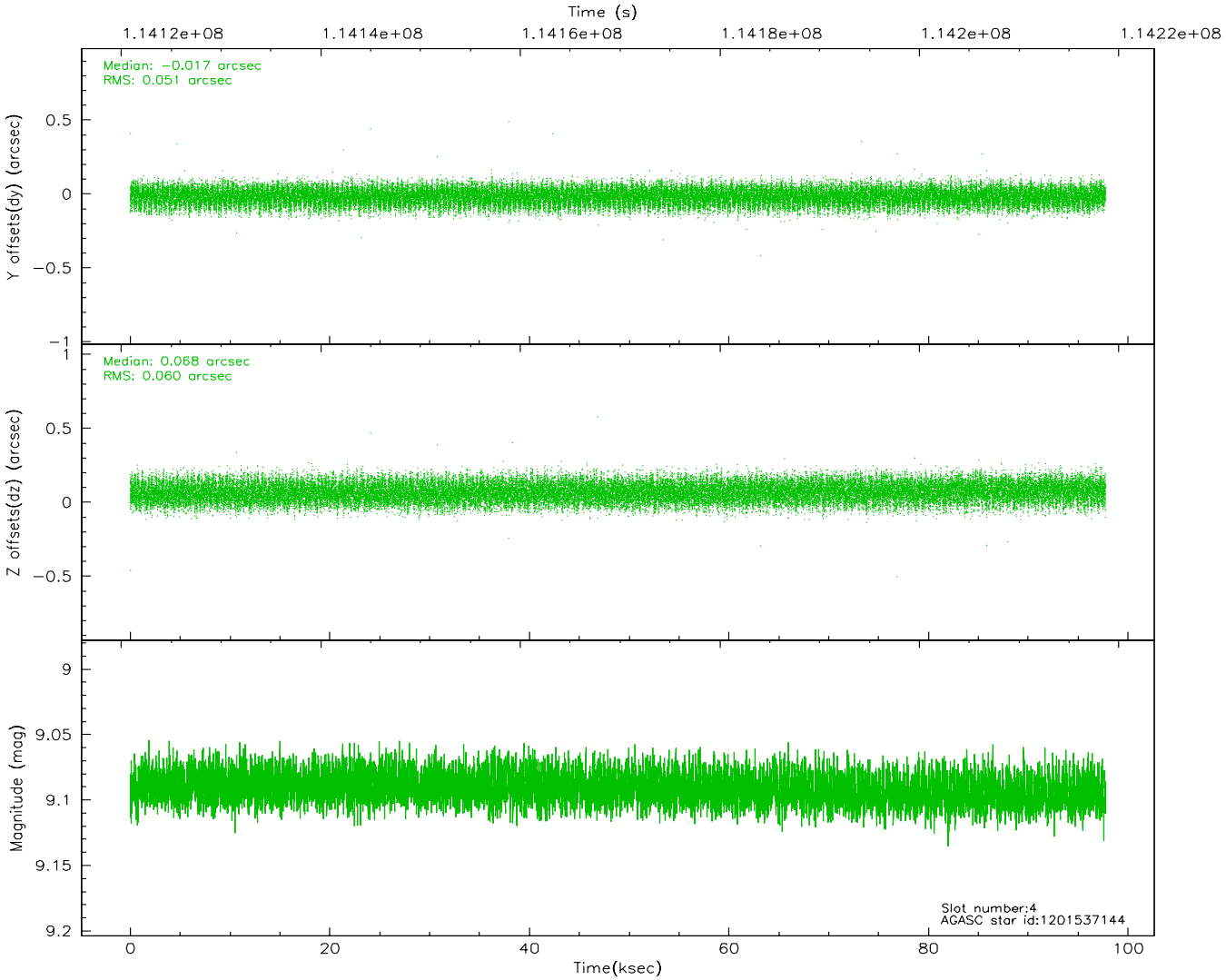




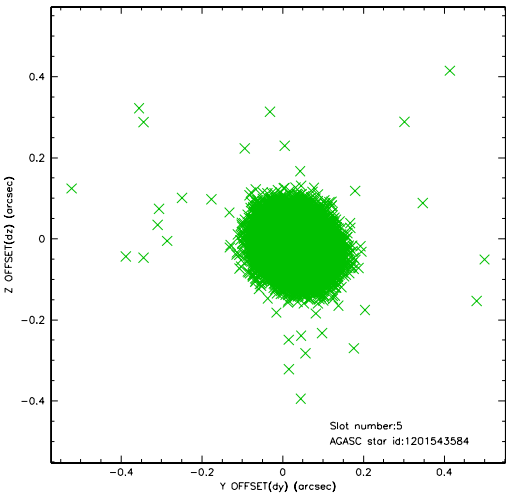
2.4.2 Slot 4

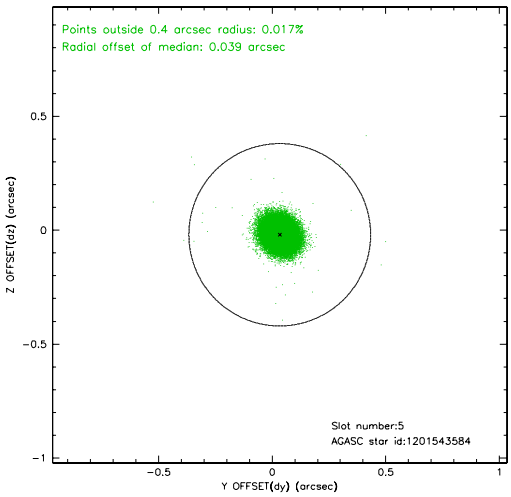

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1201537144

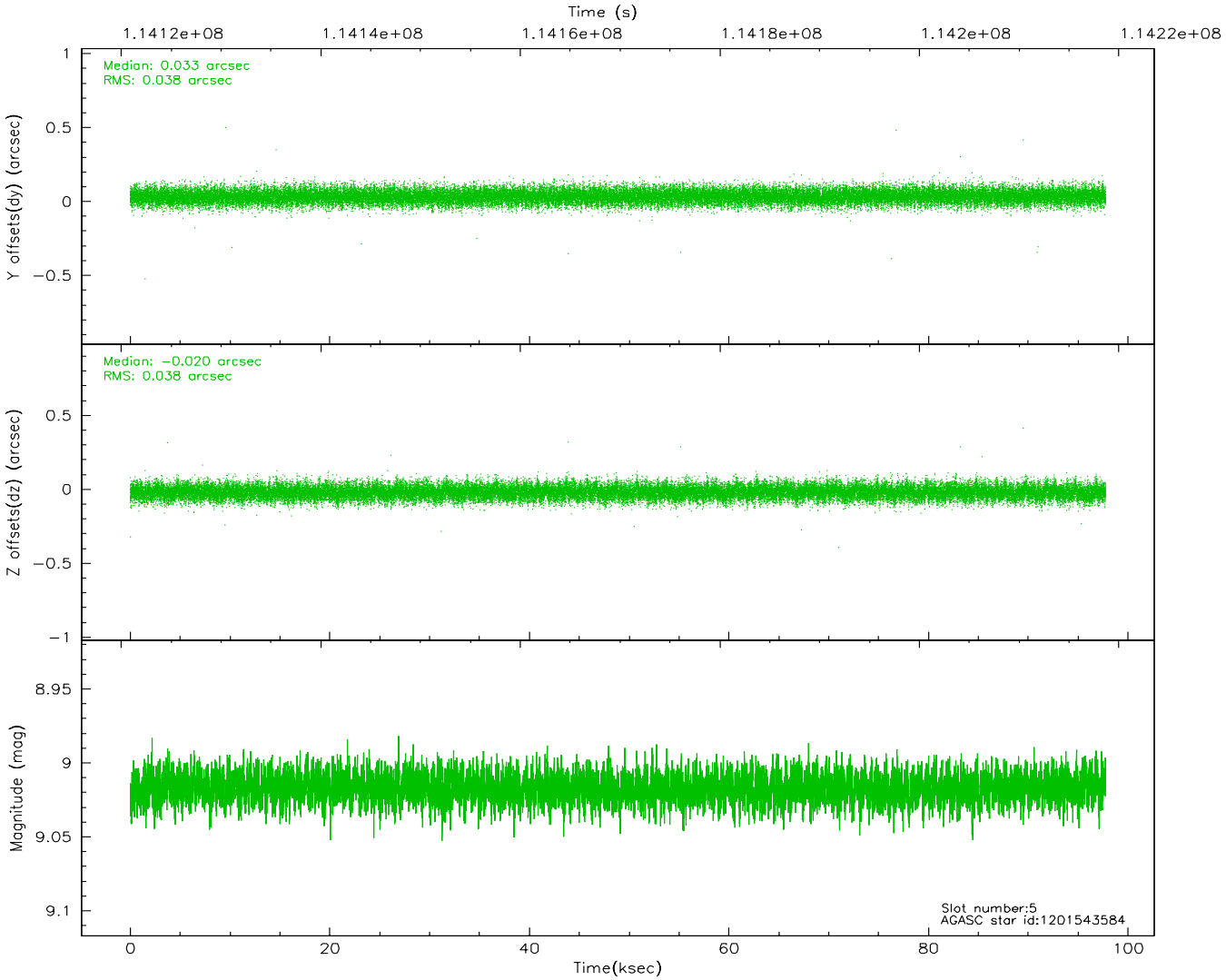

Points outside 0.4 arcsec radius: 0.017%
Radial offset of median: 0.070 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1201537144


Time (s)
Median: −0.017 arcsec
RMS: 0.051 arcsec
Y offsets(dy) (arcsec)
Median: 0.068 arcsec
RMS: 0.060 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:1201537144
Time(ksec)

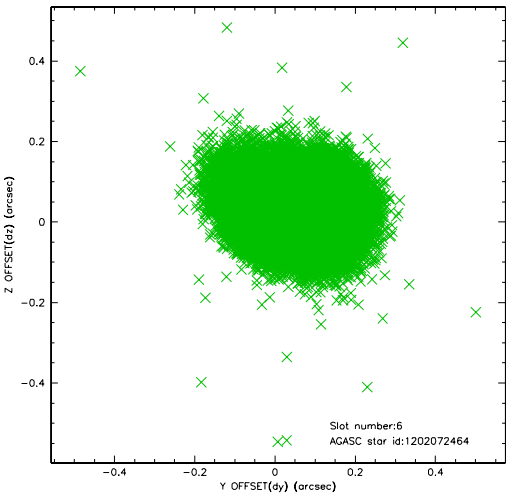
2.4.3 Slot 5

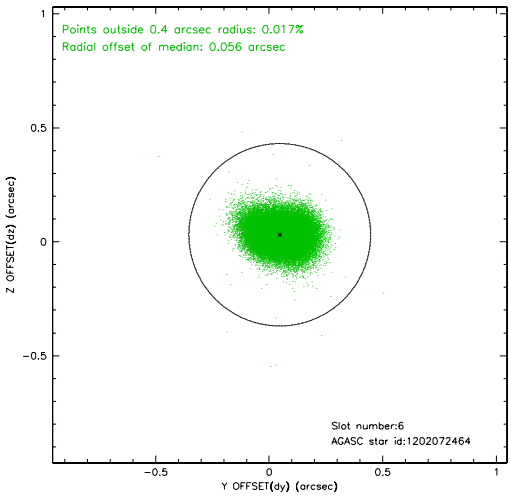

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1201543584

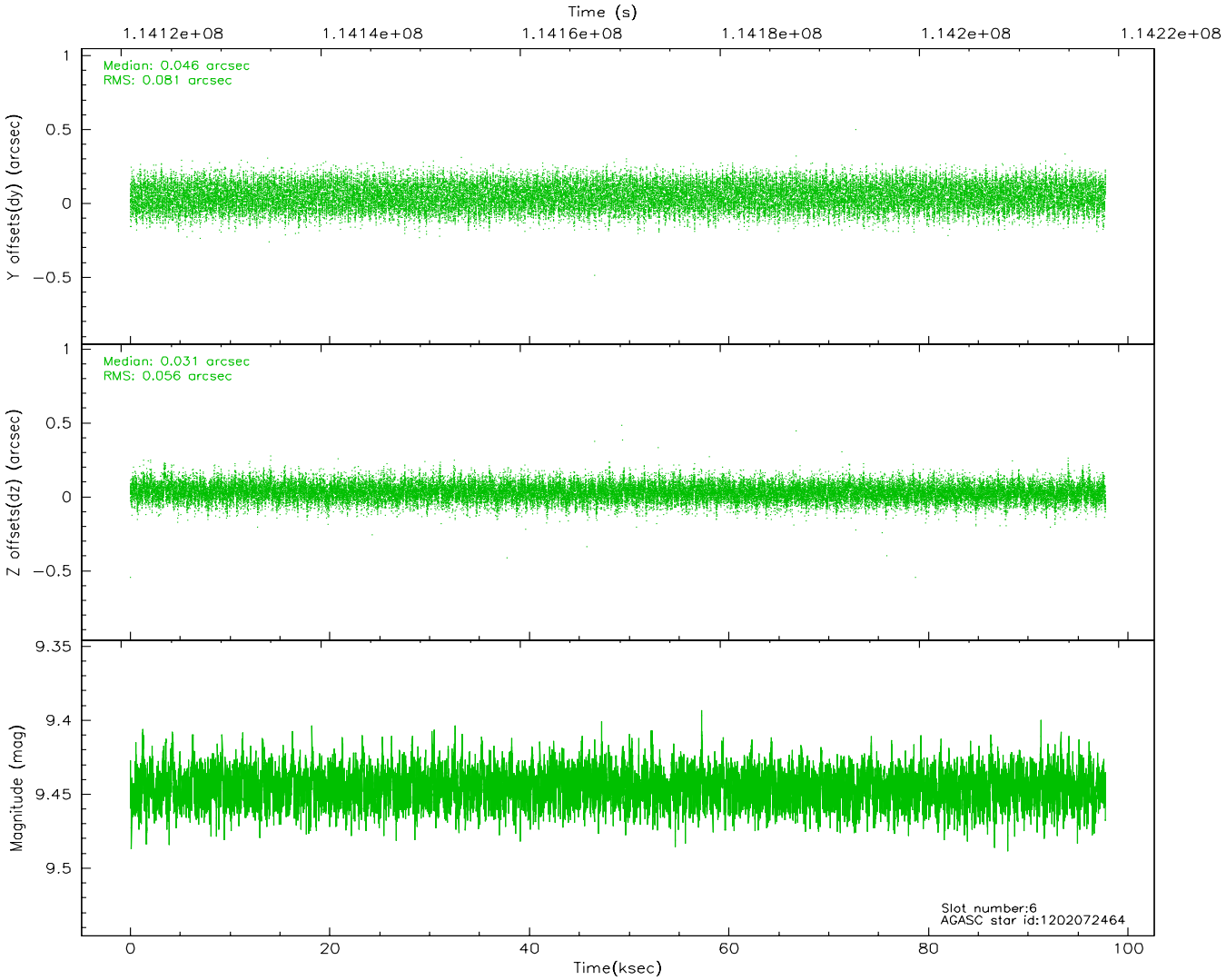

Points outside 0.4 arcsec radius: 0.017%
Radial offset of median: 0.039 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1201543584


Time (s)
Median: 0.033 arcsec
RMS: 0.038 arcsec
Y offsets(dy) (arcsec)
Median: −0.020 arcsec
RMS: 0.038 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:1201543584
Time(ksec)

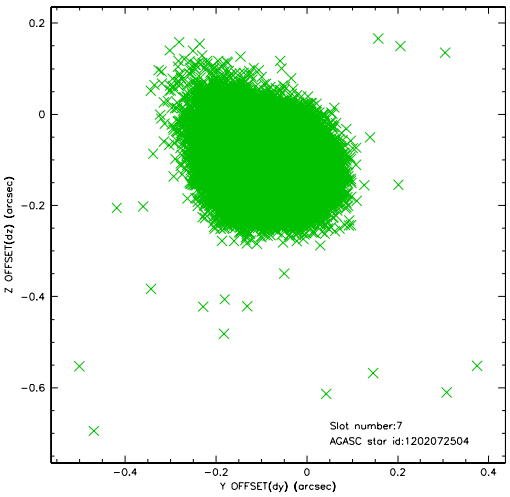
2.4.4 Slot 6

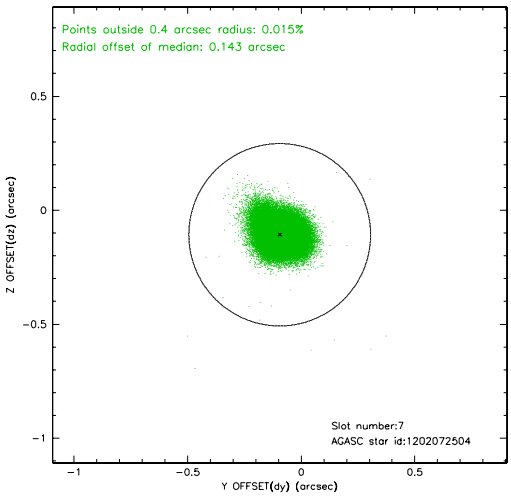

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1202072464

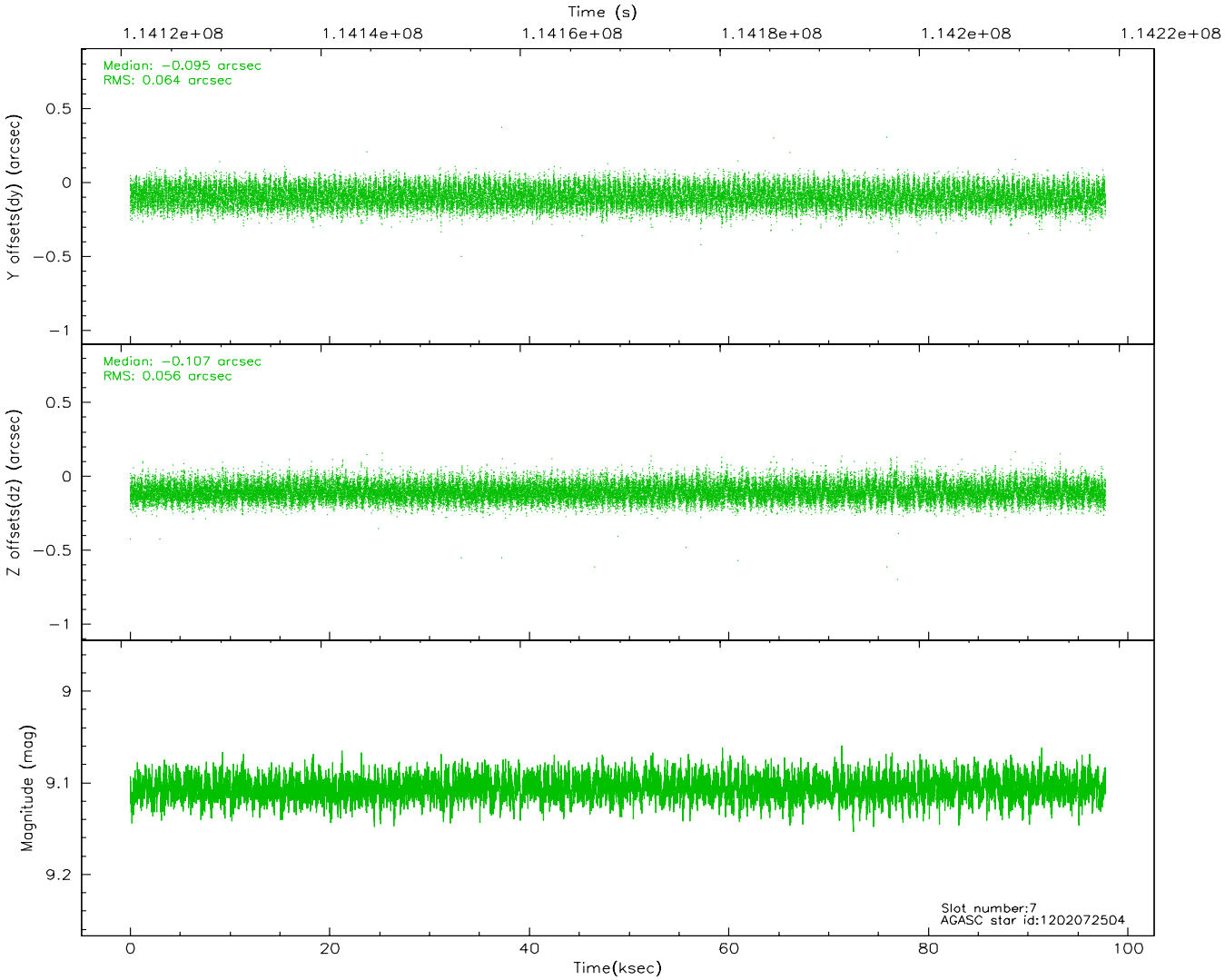

Points outside 0.4 arcsec radius: 0.017%
Radial offset of median: 0.056 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1202072464


Time (s)
Median: 0.046 arcsec
RMS: 0.081 arcsec
Y offsets(dy) (arcsec)
Median: 0.031 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:1202072464
Time(ksec)

2.4.5 Slot 7

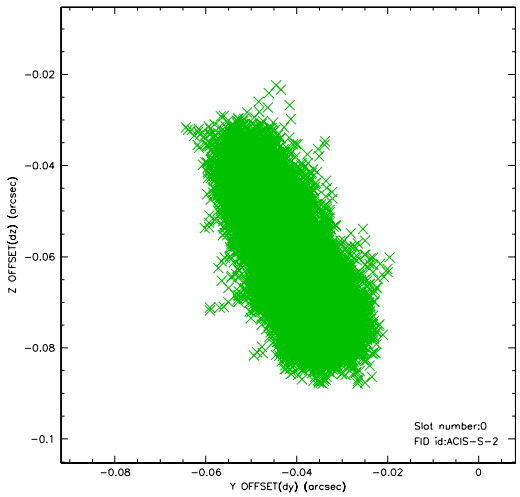

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1202072504

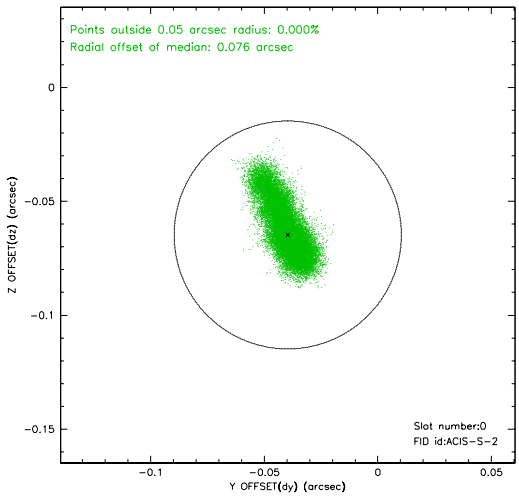

Points outside 0.4 arcsec radius: 0.015%
Radial offset of median: 0.143 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1202072504

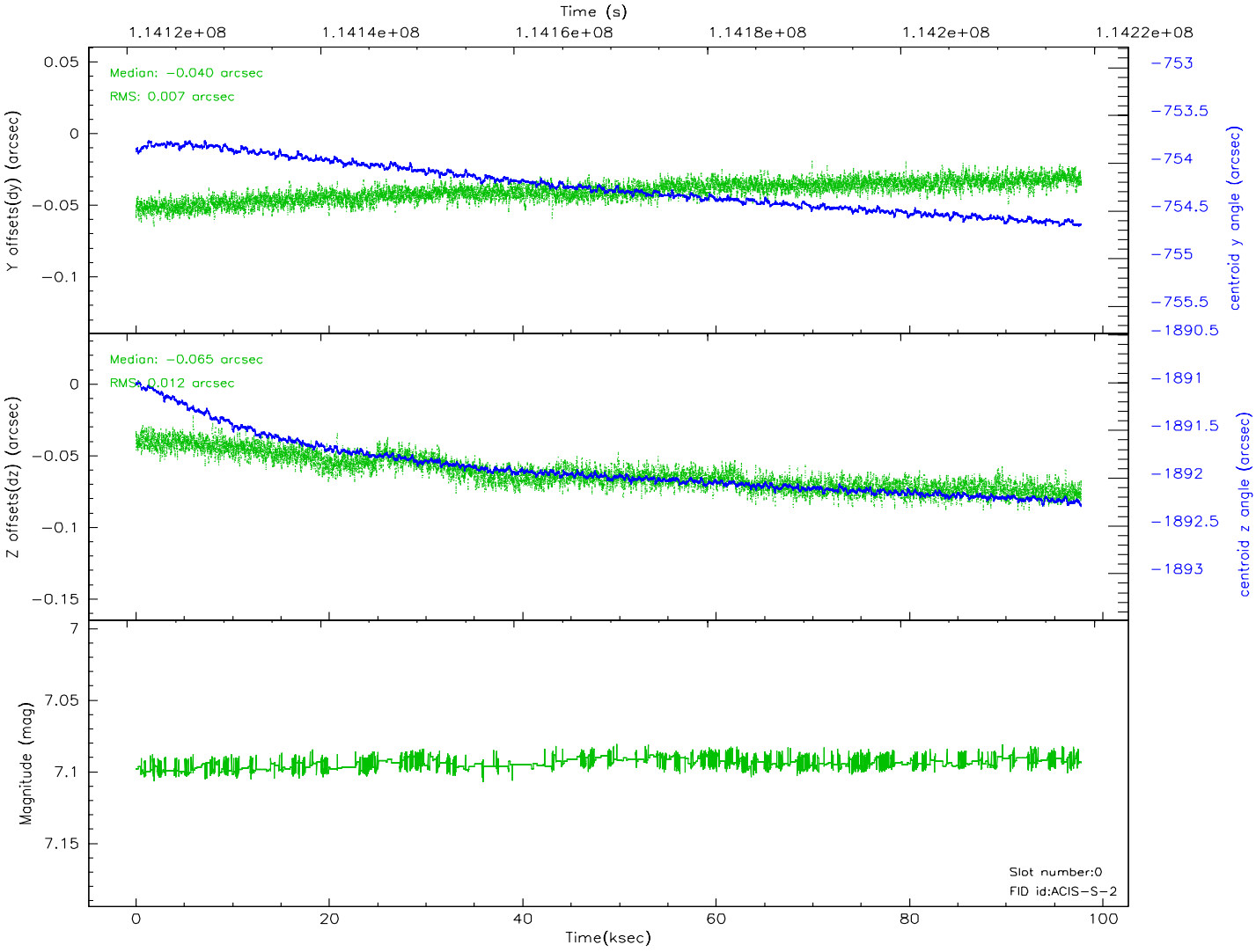

Time (s)
Median: −0.095 arcsec
RMS: 0.064 arcsec
Y offsets(dy) (arcsec)
Median: −0.107 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:1202072504
Time(ksec)

2.5 FID Slots

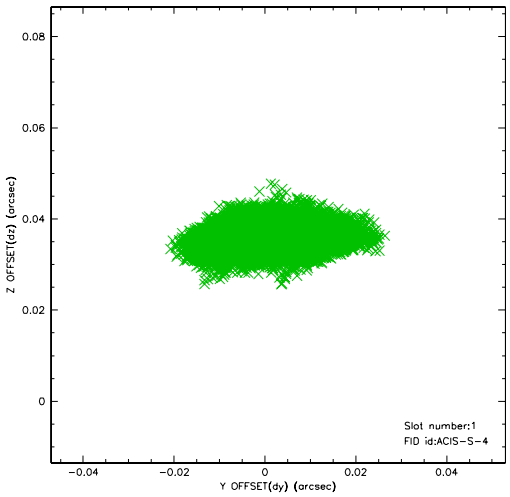
2.5.1 Slot 0

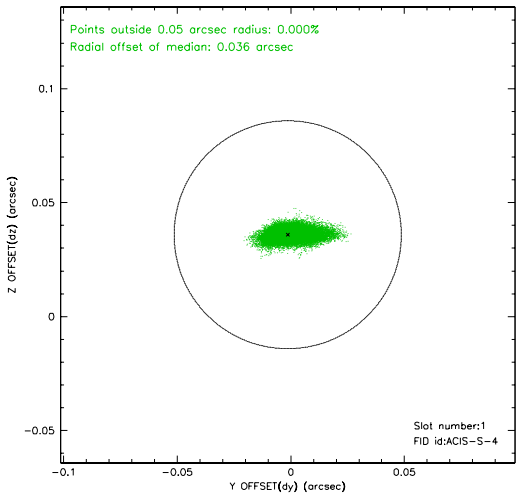


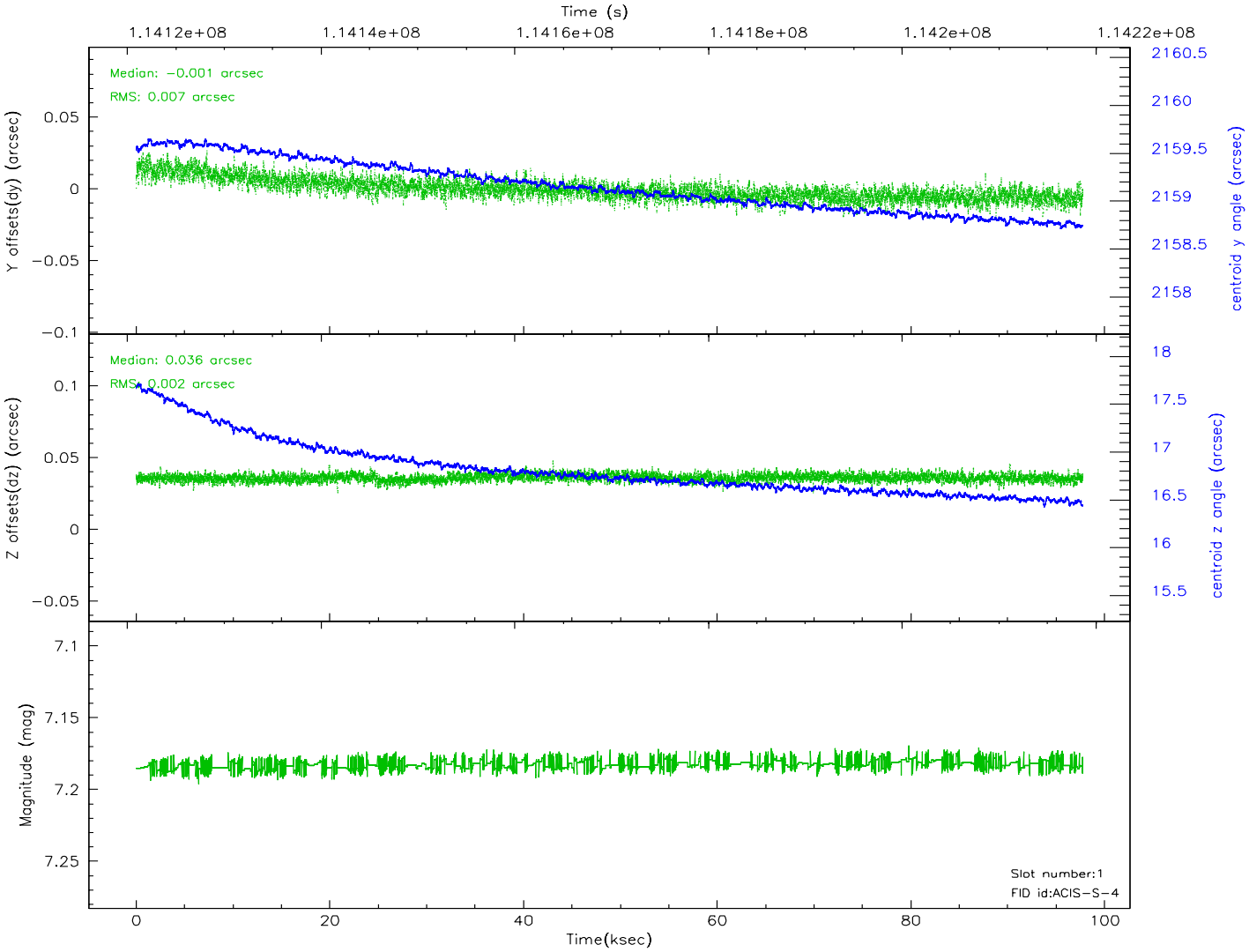




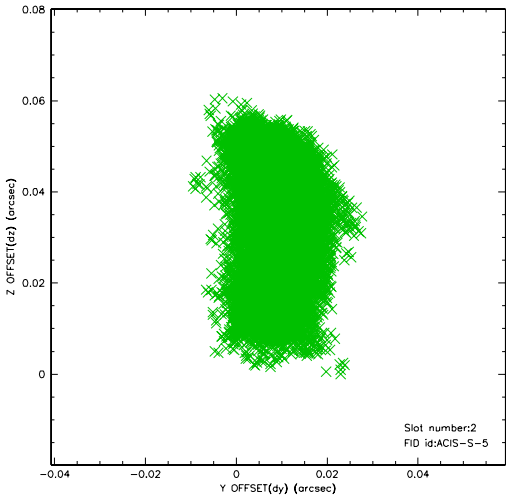
2.5.2 Slot 1

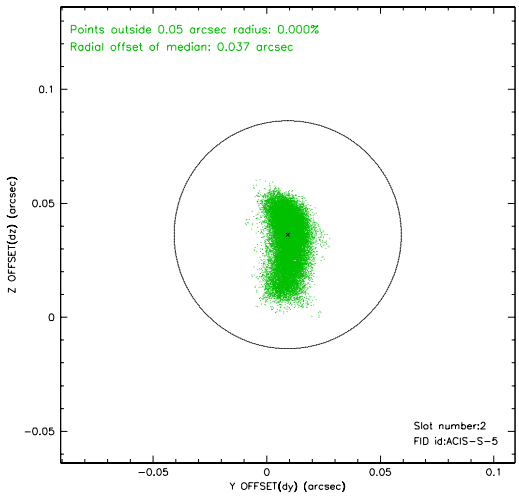

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

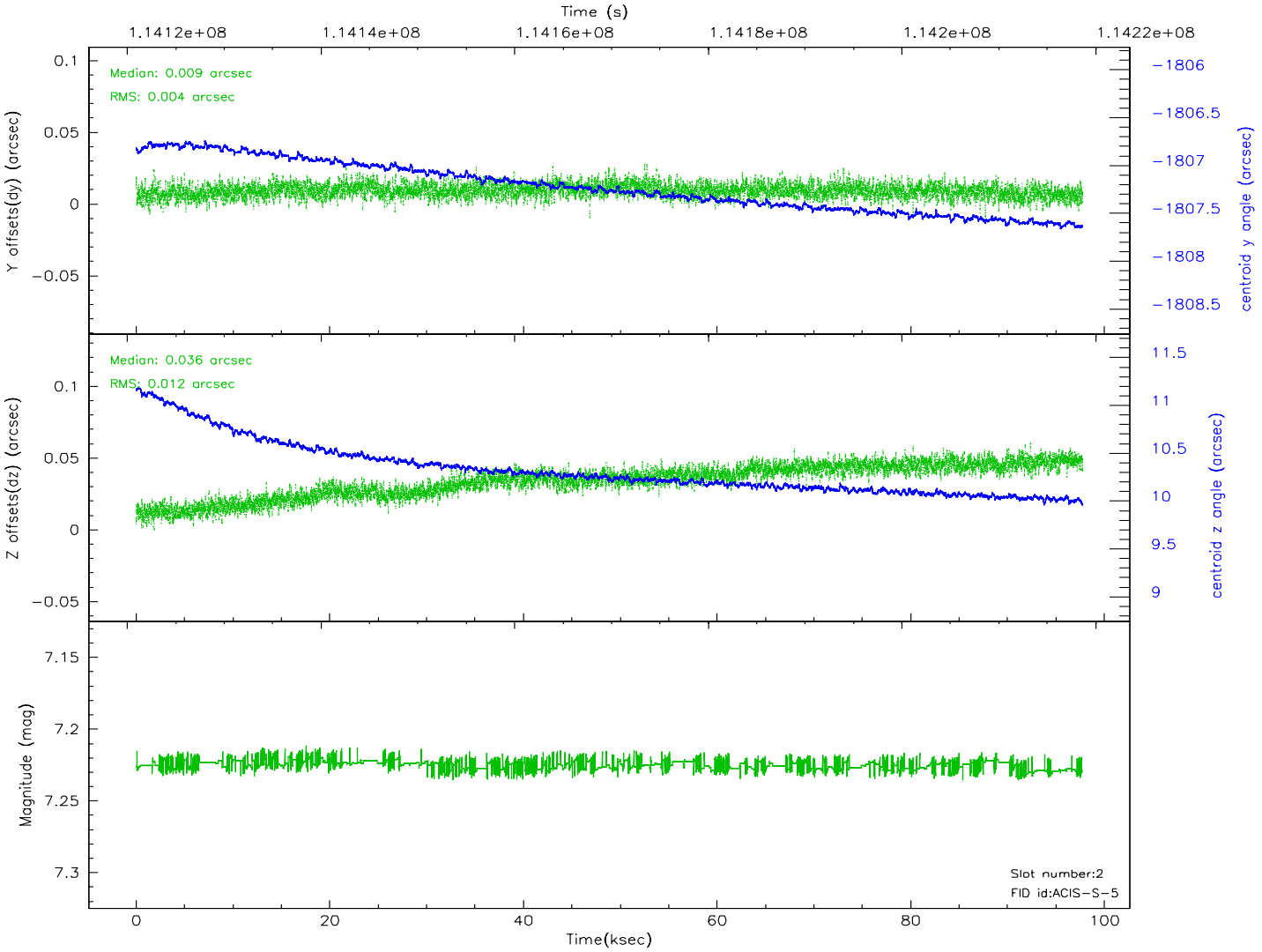

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.036 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
Median: −0.001 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.036 arcsec
RMS: 0.002 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

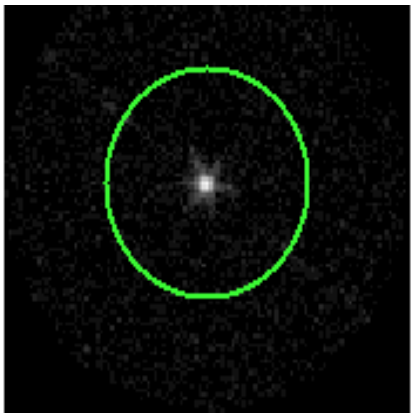

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.037 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Time (s)
Median: 0.009 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
Median: 0.036 arcsec
RMS: 0.012 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

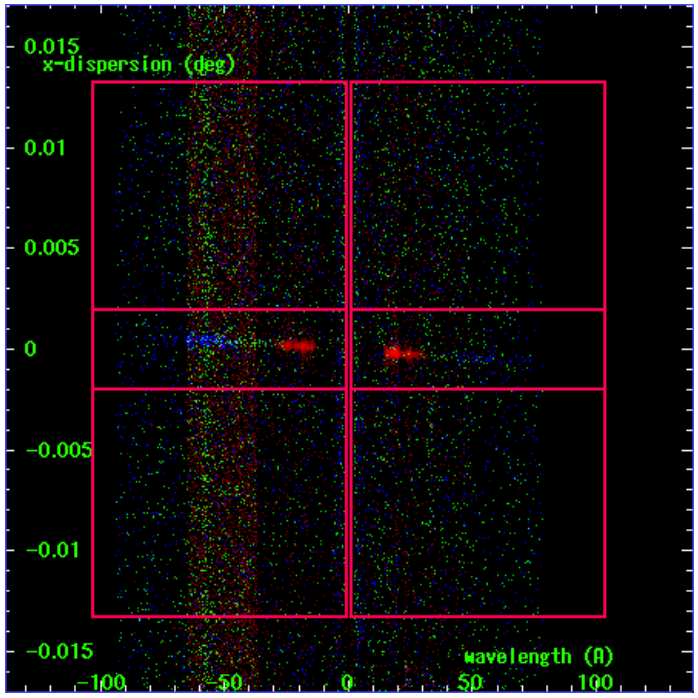
3.1 LETG Arm

LETG Order Sort 123

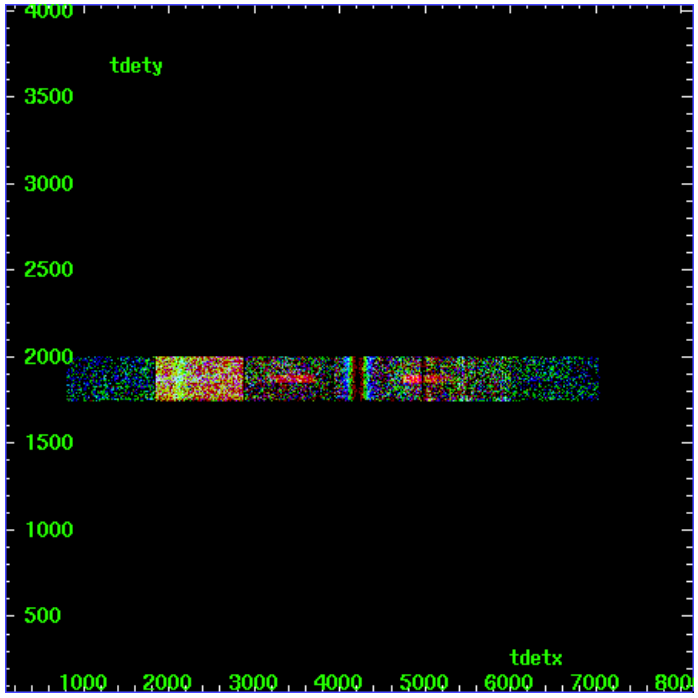


LETG Zero Order

LETG Order Sort ALL

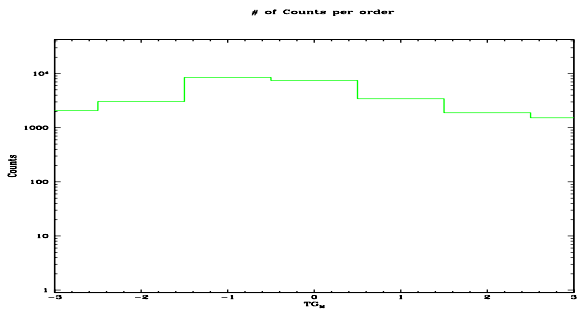


Spot Image LETG

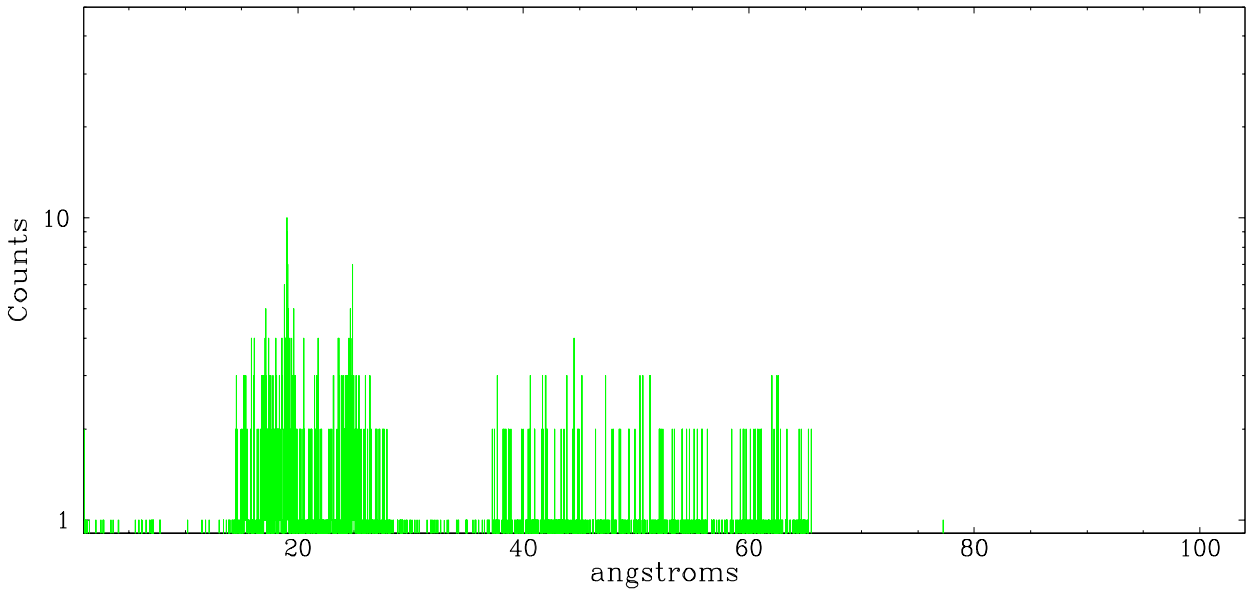


Full Detector LETG

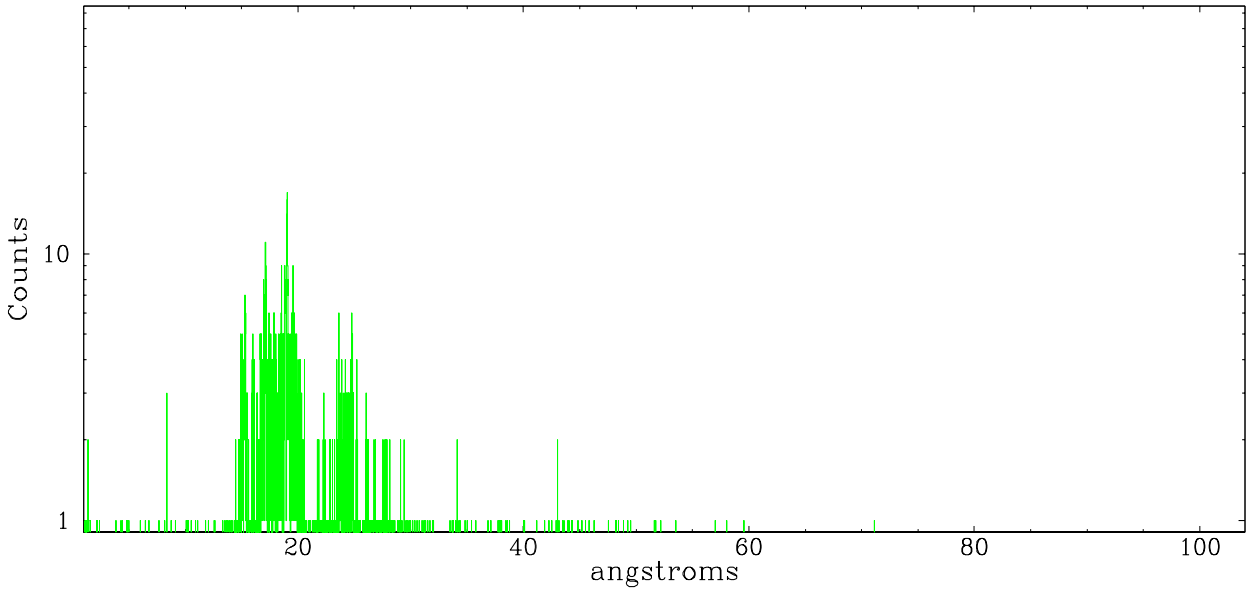
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2072	3034	8457	7474	3435	1893	1527



leg order −1



leg order +1



A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2006.12.20
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	97.764

A.2 Comments

```
Pointing OK; automatic warning since the 'Planned Pointing RA' is
86.758187, but the actual pointing of 86.68077
is within 1 arcmin of the obcat RA of 86.693833; object is clearly
detected.
```