V&V Reference Report
L2 ASCDS Version : 8.1.1

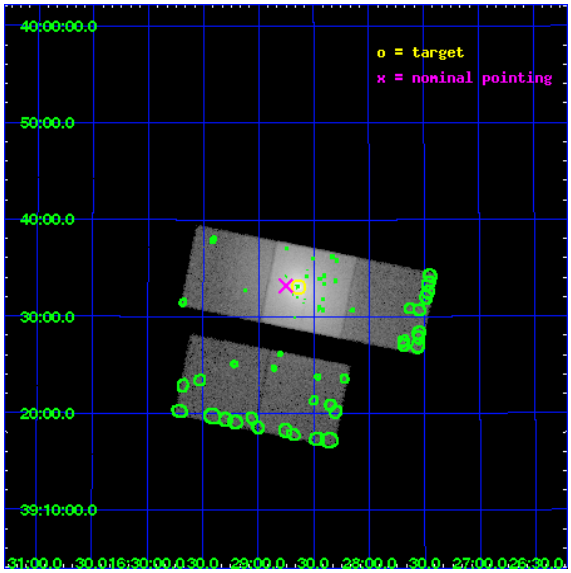
Observation 498 - L2 Version 4
Chandra X-Ray Center

L2 Processing Date : Nov 25 2009

Contents

1 Front

seq_num	800006	Sequence number
obs_id	498	Observation id
title	THE COOLING FLOW IN A2199	Proposal title
observer	Professor Andrew Fabian	Principal investigator
object	A2199	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	247.160417	Observer's specified target RA
dec_targ	39.550833	Observer's specified target Dec
ra_nom	247.1878884669	Nominal RA
dec_nom	39.553079142281	Nominal Dec
roll_nom	11.279825650247	Nominal Roll
revision	4	Processing version of data
ontime	19164.132786386	Sum of GTIs [s]
livetime	18921.464997789	Livetime [s]
ontime2	19164.091746382	Sum of GTIs [s]
ontime3	19164.009666383	Sum of GTIs [s]
ontime6	19160.809716247	Sum of GTIs [s]
ontime7	19164.132786386	Sum of GTIs [s]
ontime8	19163.968626387	Sum of GTIs [s]
l2events	564745	Number of level 2 events

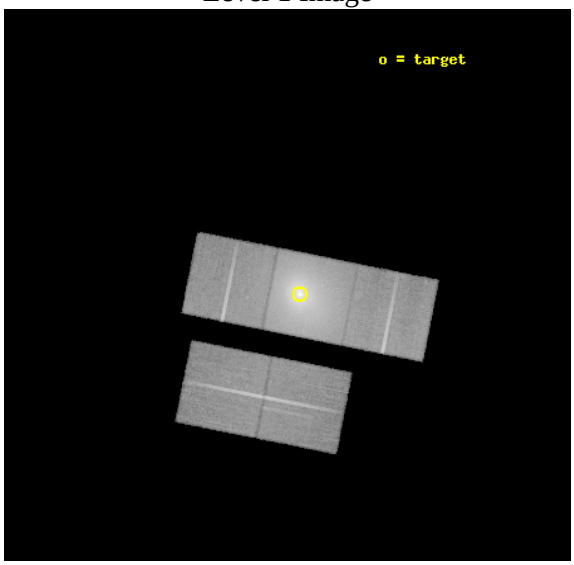


2 OBI

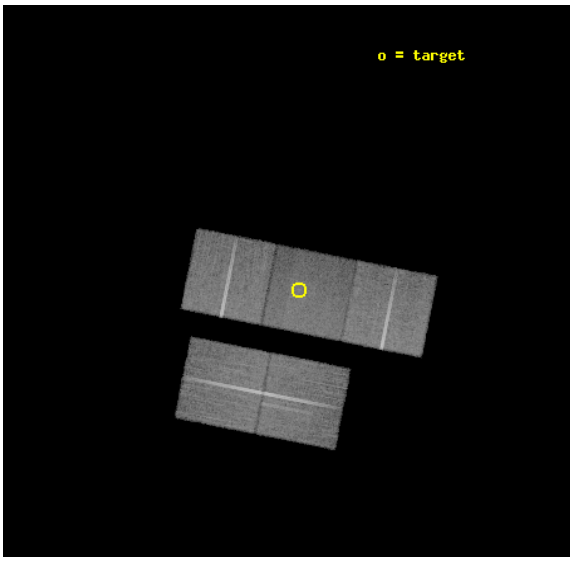
2.1 OBI

2.1.1 Images

Level 1 Image

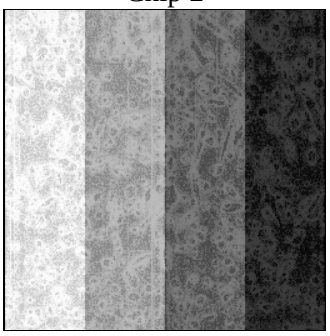


Level 1 Bad Events

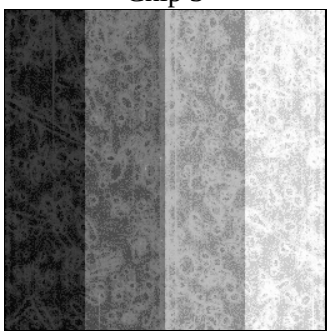


2.1.2 Bias

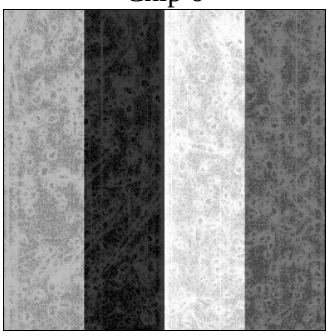
Chip 2



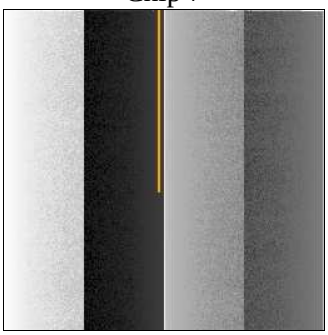
Chip 3



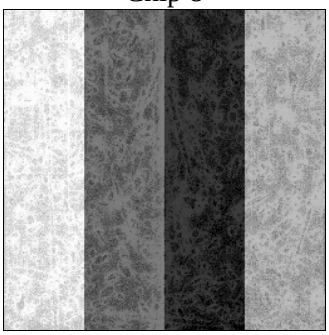
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	8.1.1	ASCDS version number
caldbver	4.1.4	
date	2009-11-25T15:25:21	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	20000.000000	Scheduled observation exposure time
ontime	19164.132786386	Sum of GTIs [s]
ontime2	19164.091746382	Sum of GTIs [s]
ontime3	19164.009666383	Sum of GTIs [s]
ontime6	19160.809716247	Sum of GTIs [s]
ontime7	19164.132786386	Sum of GTIs [s]
ontime8	19163.968626387	Sum of GTIs [s]
l1events	1352894	Number of level 1 events

2.1.4 Events

	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	181747	178924	205509	567862	218852
rejected events	160572	154644	157512	118662	167589
rejected %	88%	86%	76%	20%	76%

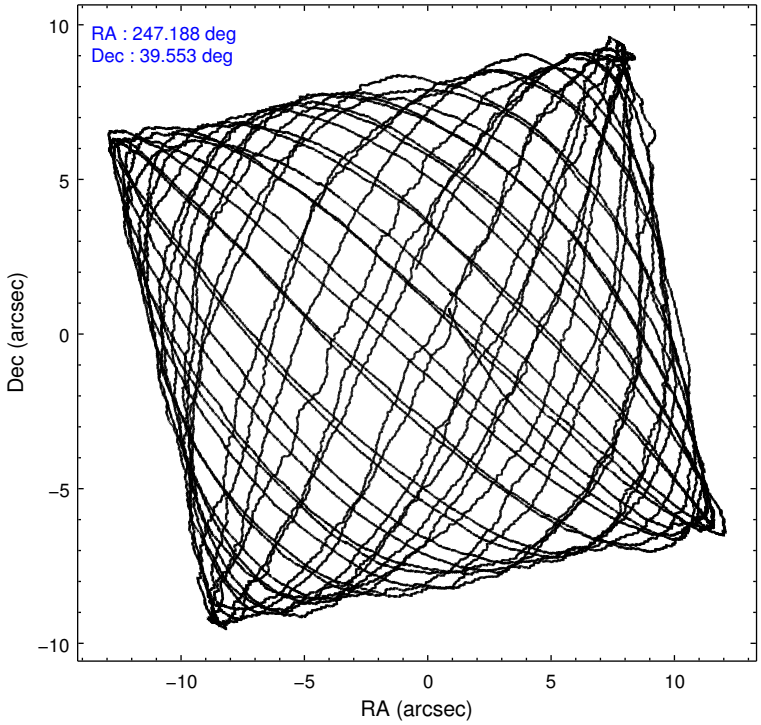
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	6671	8221	24106	123083	18684
	3%	4%	11%	21%	8%
grade 1 events	40	48	80	201	109
	0%	0%	0%	0%	0%
grade 2 events	8321	9345	15028	114860	15343
	4%	5%	7%	20%	7%
grade 3 events	1097	1151	1646	46969	3572
	0%	0%	0%	8%	1%
grade 4 events	1074	1092	1679	44543	3377
	0%	0%	0%	7%	1%
grade 5 events	2981	3158	3515	13713	4847
	1%	1%	1%	2%	2%
grade 6 events	4017	4479	5553	119889	10322
	2%	2%	2%	21%	4%
grade 7 events	157546	151430	153902	104604	162598
	86%	84%	74%	18%	74%

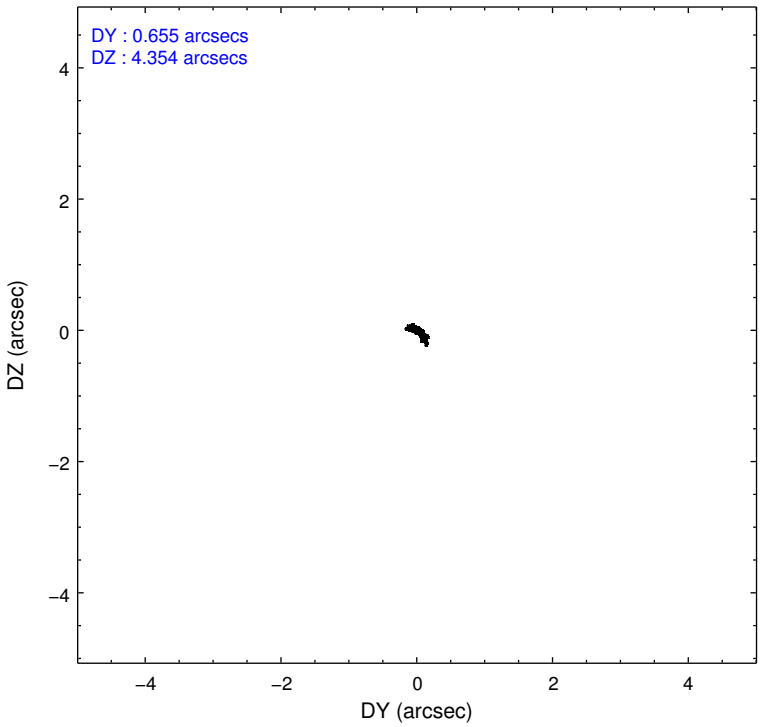
2.2 Compared Parameters

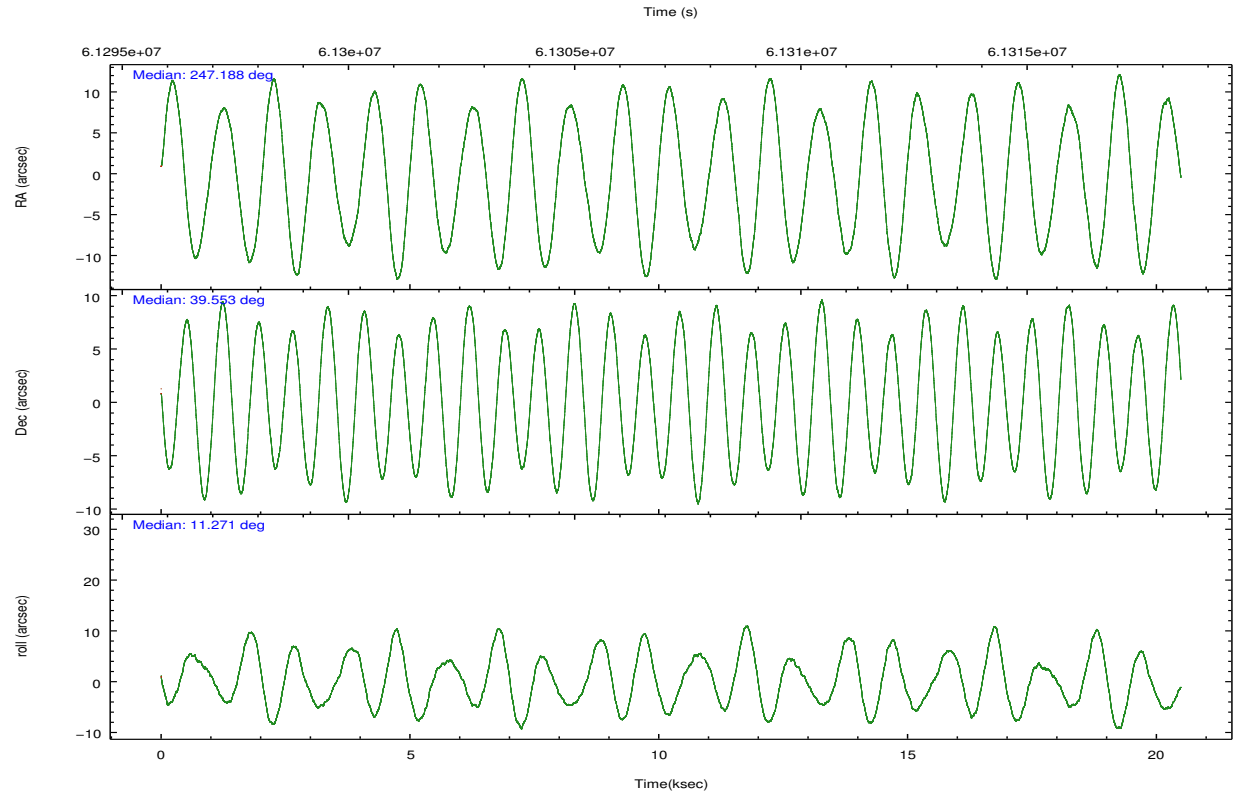
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-23678	ACIS-23678
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	247.160951	247.1878884668955
Pointing Dec	39.534949	39.55307914228131
Pointing Roll	11.140355	11.27982565024724
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-190.132523	-190.145094680475
SIM translation stage offset (mm)	0	0.01257209746719923
Observation start time	61297377.184000	61296457.996076
Observation start date	1999-12-11T11:01:53	1999-12-11T10:47:37
Observation end time	61317377.184000	61318113.68436
Observation end date	1999-12-11T16:35:13	1999-12-11T16:48:33
Read mode	TIMED	TIMED

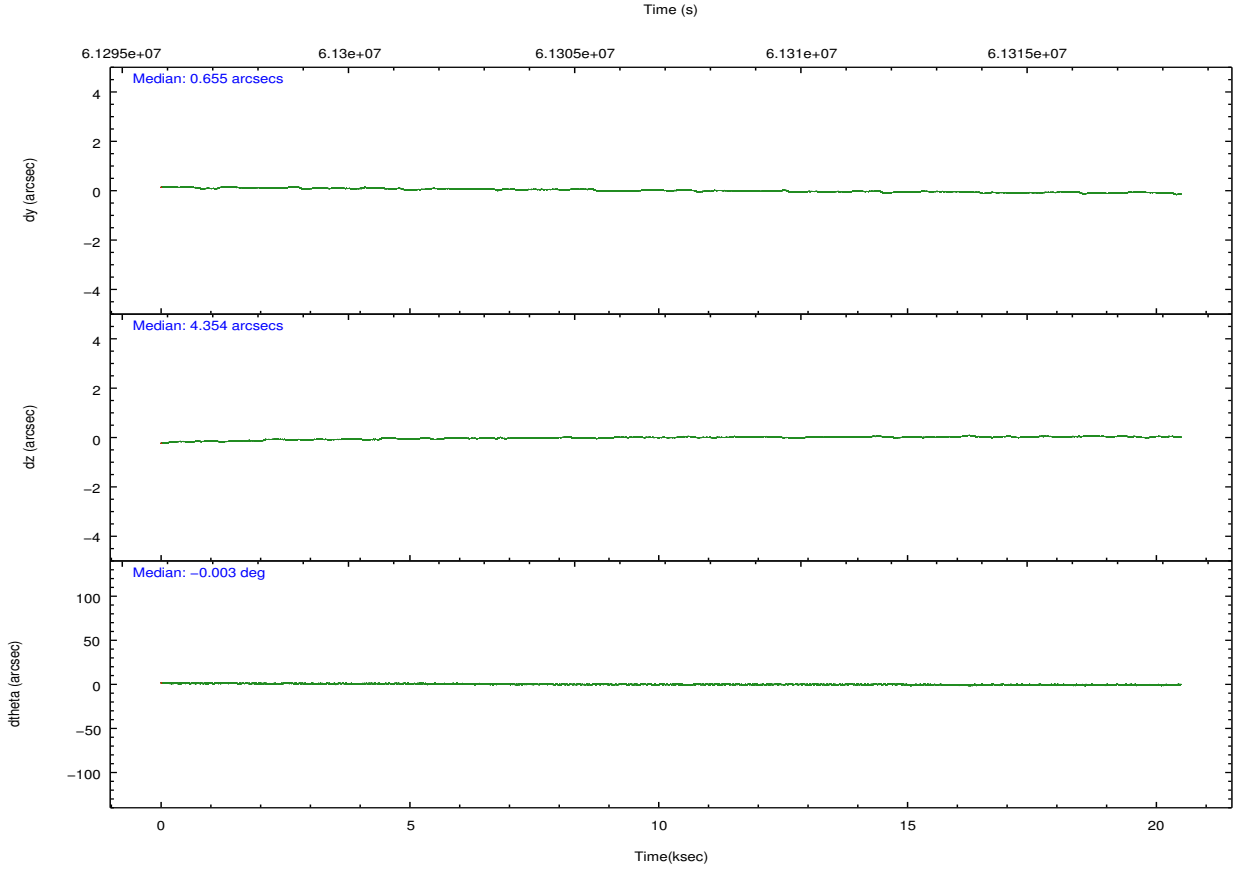
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 247.188 deg
Dec : 39.553 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 0.655 arcsecs
DZ : 4.354 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
6.1295e+07
6.13e+07
6.1305e+07
6.131e+07
6.1315e+07
Median: 247.188 deg
RA (arcsec)
Median: 39.553 deg
Dec (arcsec)
Median: 11.271 deg
roll (arcsec)
Time(ksec)

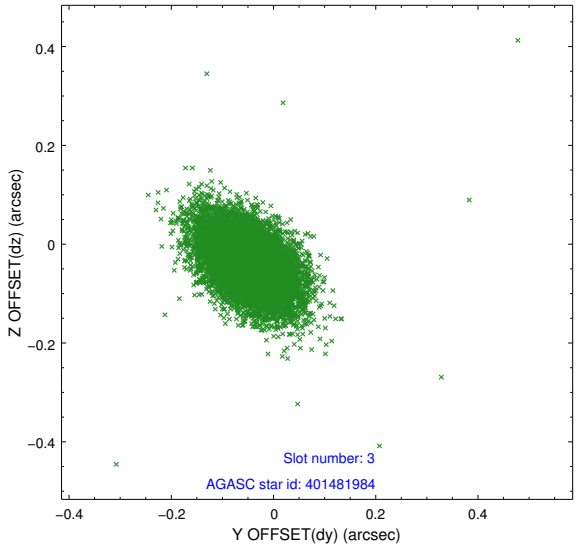

Time (s)
6.1295e+07
6.13e+07
6.1305e+07
6.131e+07
6.1315e+07
Median: 0.655 arcsecs
dy (arcsec)
Median: 4.354 arcsecs
dz (arcsec)
Median: −0.003 deg
dtheta (arcsec)
Time(ksec)

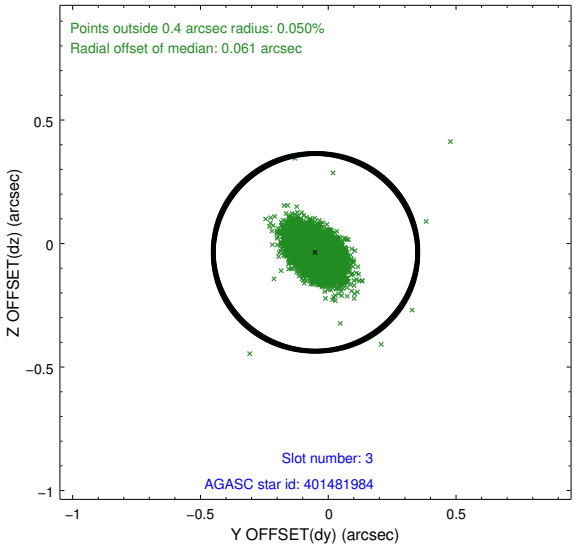
Slot Statistics

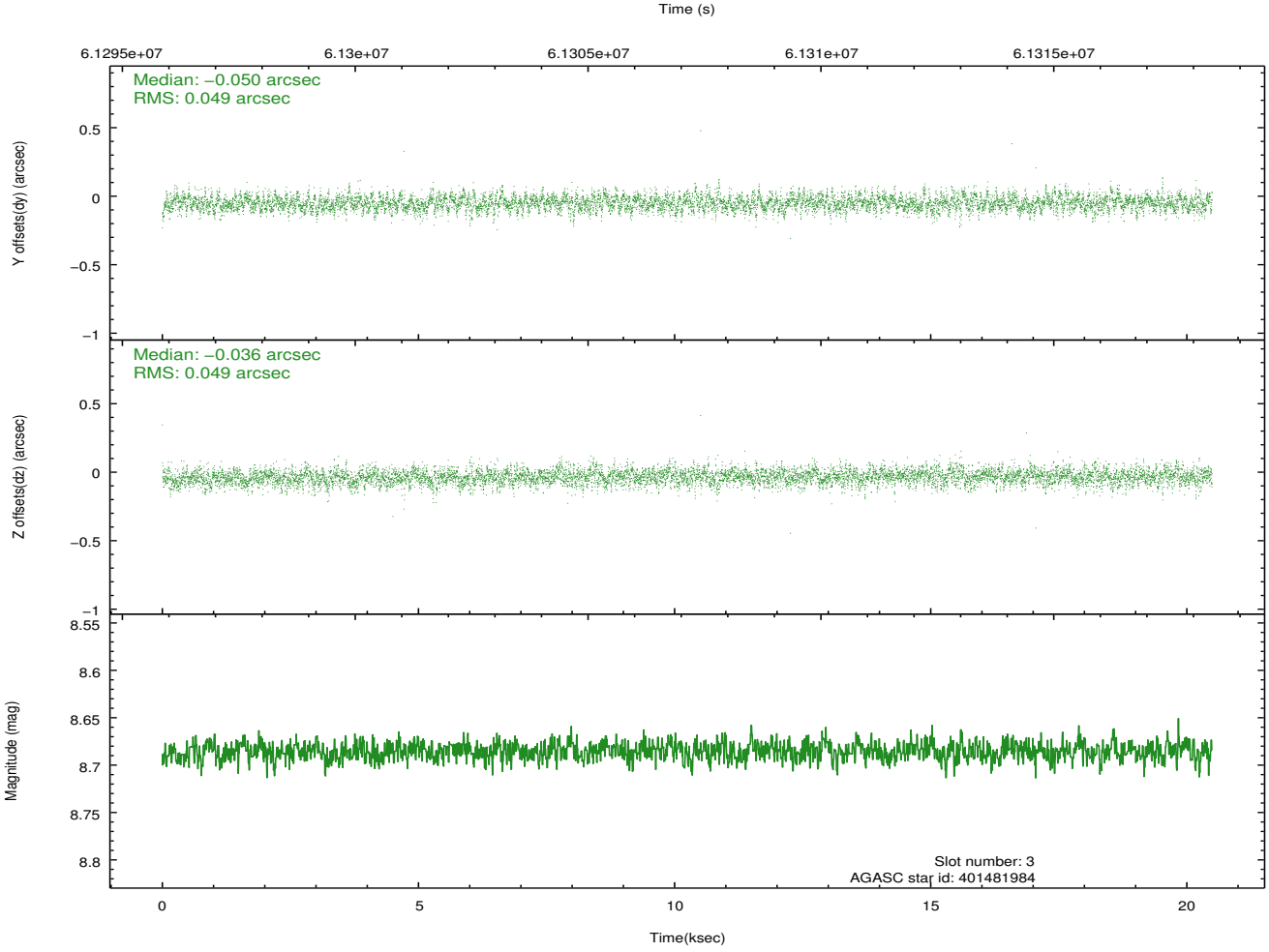
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	9997	-0.018	-0.022	0.012	0.021	0.000000	0.000000	-753.30	-1725.33
1	FID	ACIS-S-4	7.21	9996	0.041	0.015	0.015	0.038	0.000000	0.000000	2160.06	183.11
2	FID	ACIS-S-5	7.24	9997	-0.052	0.016	0.012	0.022	0.000000	0.000000	-1806.12	176.89
3	GUIDE	401481984	8.69	9996	-0.050	-0.036	0.070	0.123	247.136950	39.776672	103.69	866.62
4	GUIDE	401481936	8.97	9990	0.039	0.040	0.080	0.140	246.810048	39.888706	-703.88	1438.69
5	GUIDE	401476712	9.64	9982	-0.055	0.020	0.103	0.173	247.950954	39.205436	1935.94	-1579.82
6	GUIDE	401483160	9.72	9990	-0.004	0.060	0.100	0.172	247.172429	38.956724	-369.29	-2048.75
7	GUIDE	401345296	9.71	9985	0.070	-0.085	0.107	0.176	246.414533	39.580805	-1997.59	569.98

2.4 Star Slots

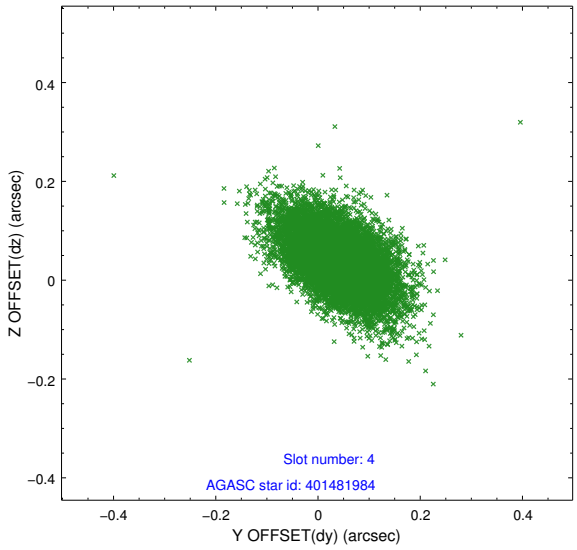
2.4.1 Slot 3

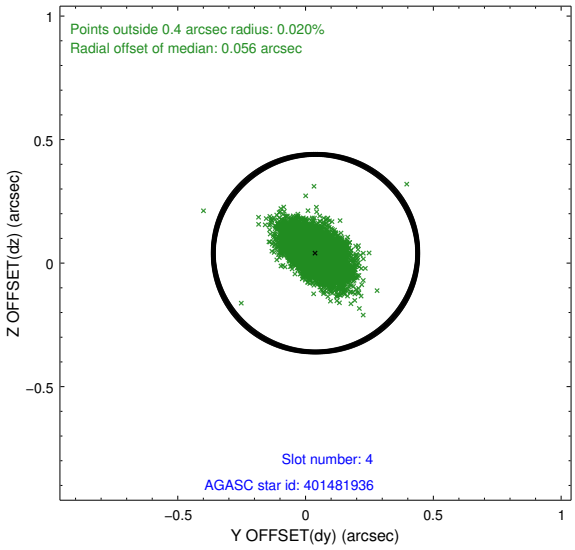


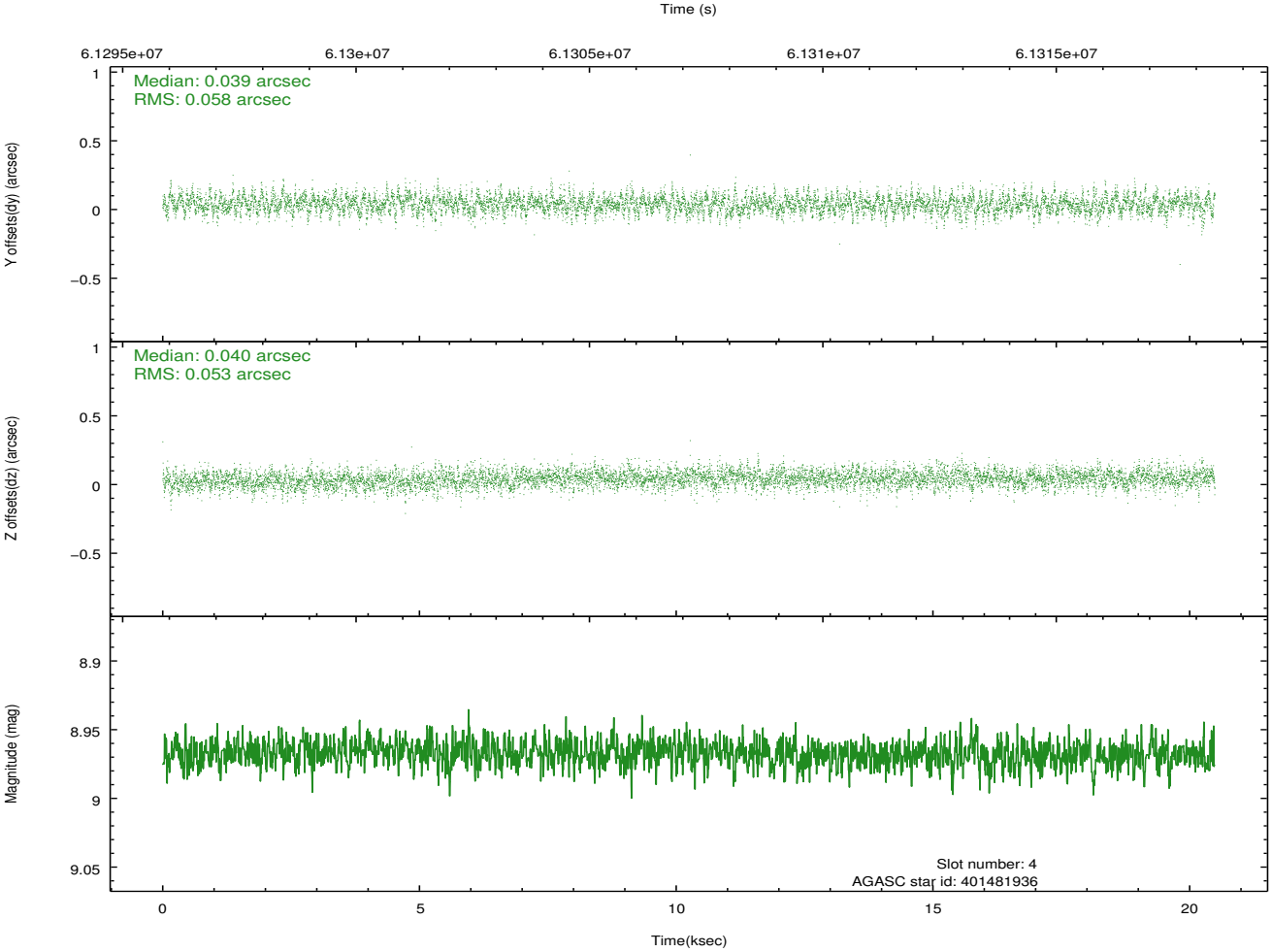




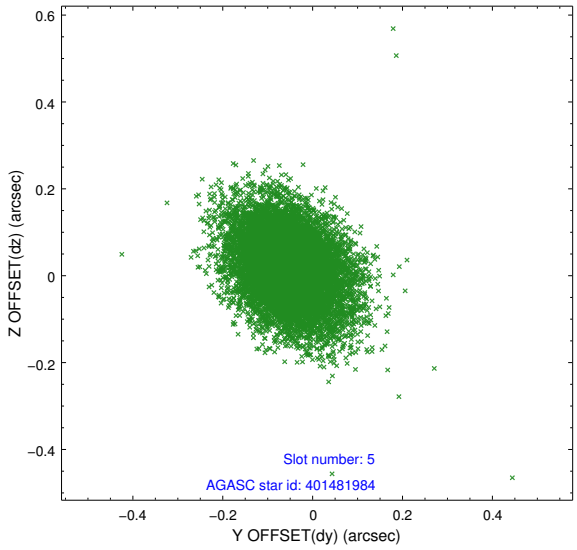
2.4.2 Slot 4

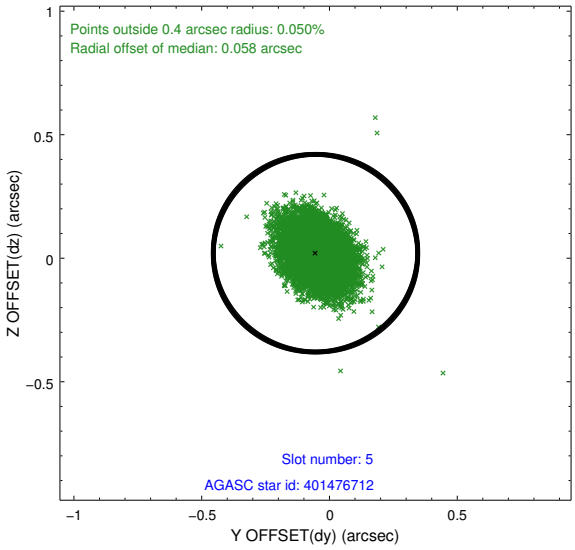

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 401481984

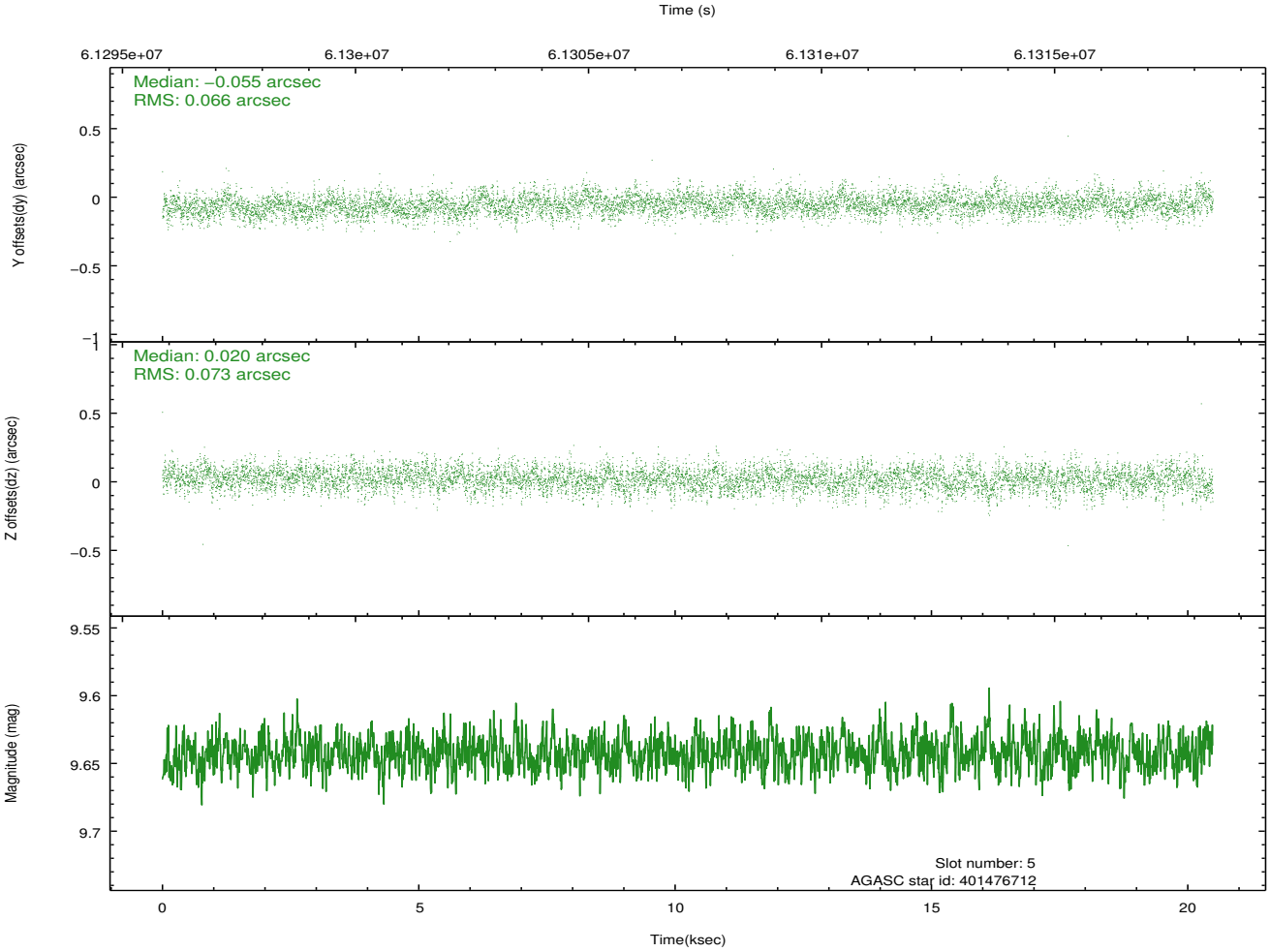

Points outside 0.4 arcsec radius: 0.020%
Radial offset of median: 0.056 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 401481936


Time (s)
Median: 0.039 arcsec
RMS: 0.058 arcsec
Y offsets(dy) (arcsec)
Median: 0.040 arcsec
RMS: 0.053 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 401481936
Time(ksec)

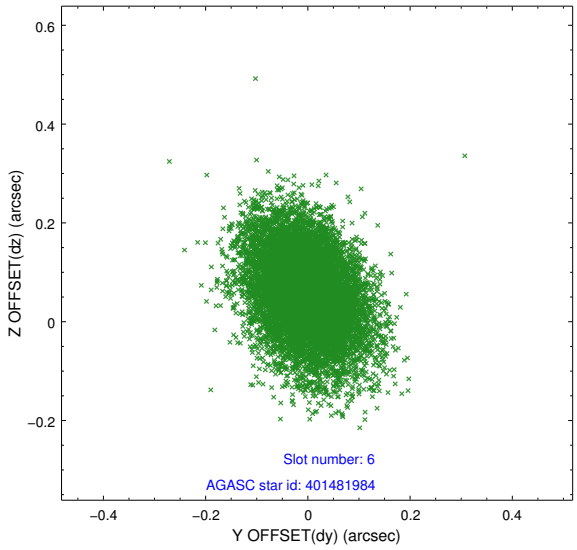
2.4.3 Slot 5

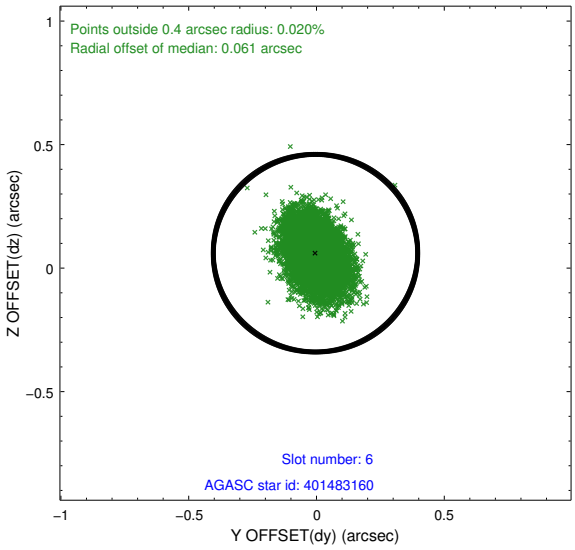

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 401481984

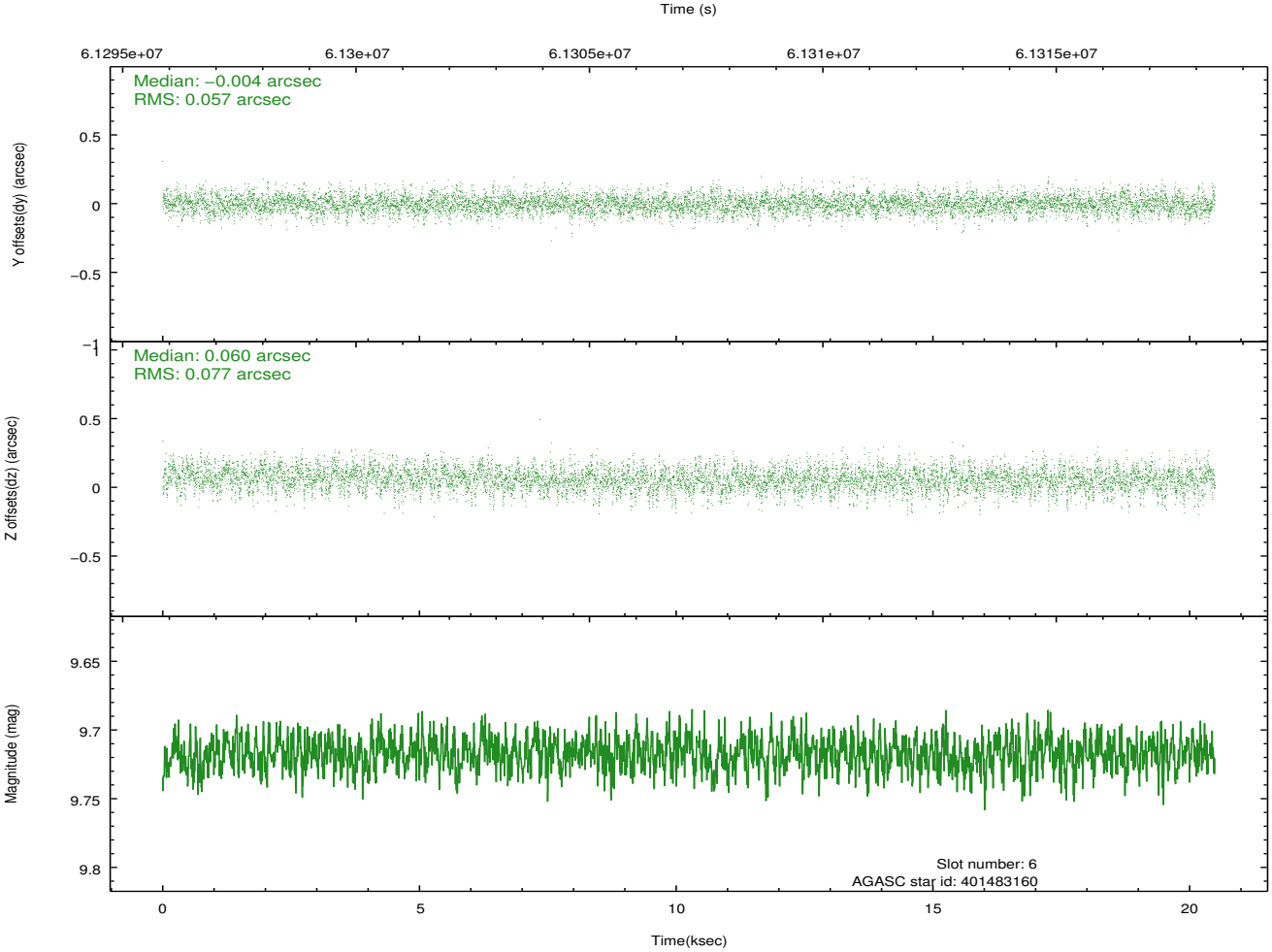

Points outside 0.4 arcsec radius: 0.050%
Radial offset of median: 0.058 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 401476712


Time (s)
Median: −0.055 arcsec
RMS: 0.066 arcsec
Y offsets(dy) (arcsec)
Median: 0.020 arcsec
RMS: 0.073 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 401476712
Time(ksec)

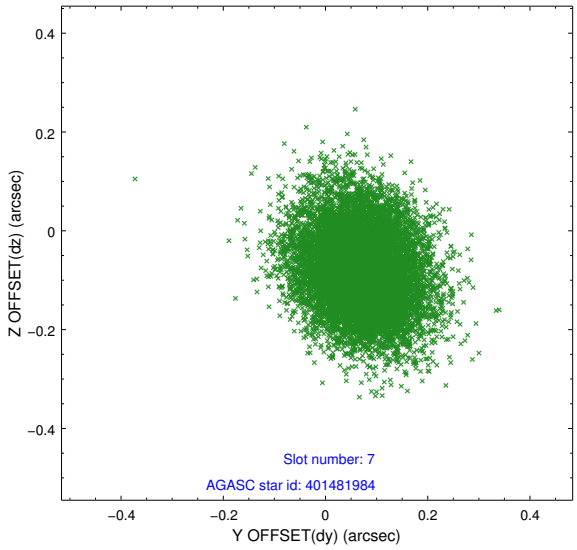
2.4.4 Slot 6

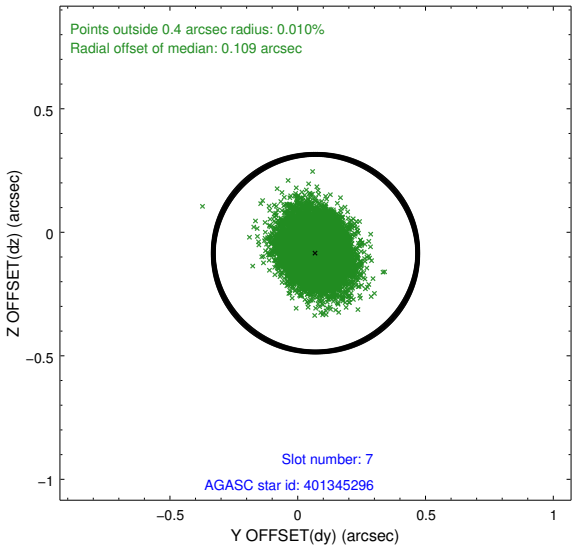

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 401481984

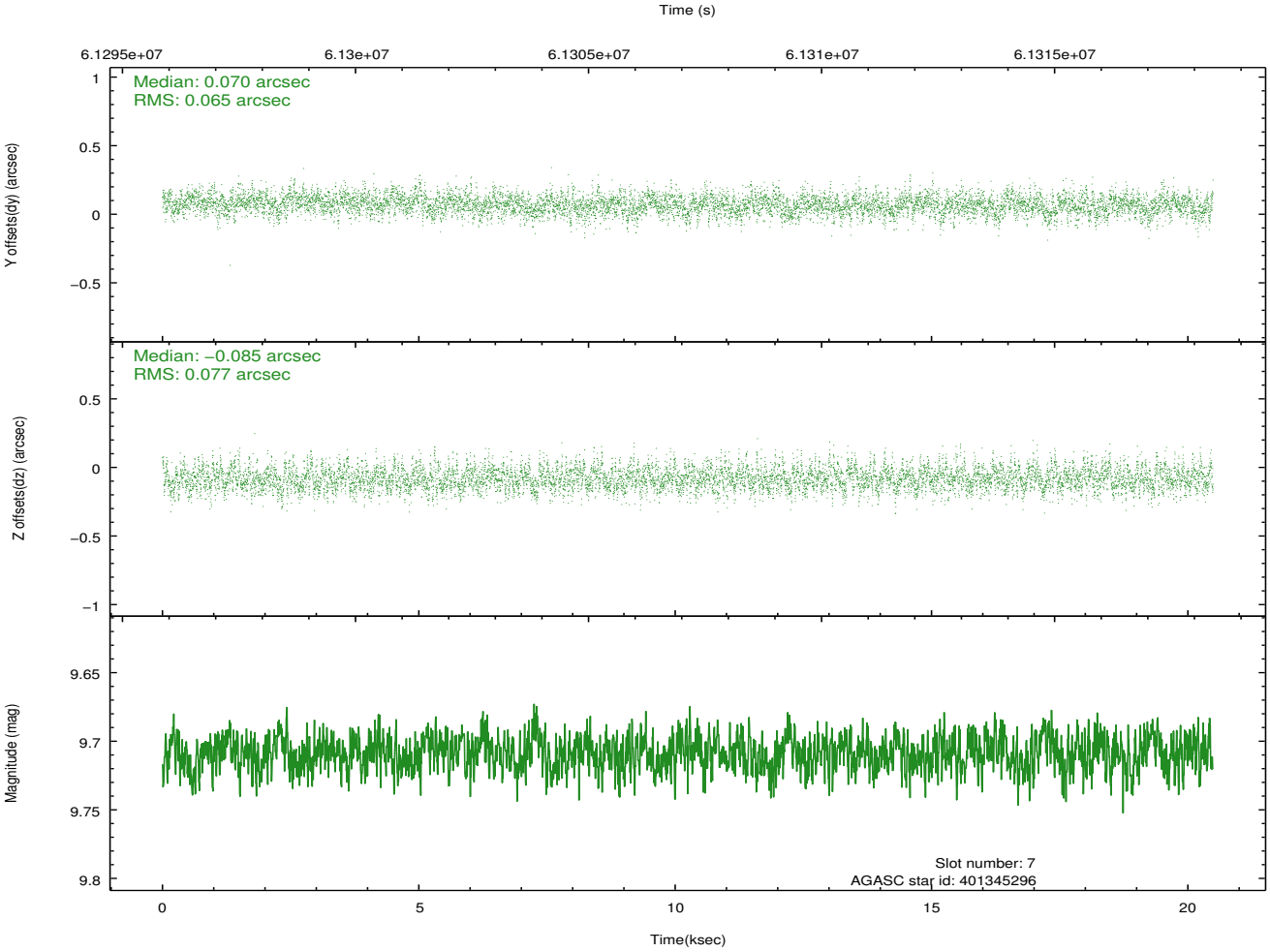

Points outside 0.4 arcsec radius: 0.020%
Radial offset of median: 0.061 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 401483160


Time (s)
Median: −0.004 arcsec
RMS: 0.057 arcsec
Y offsets(dy) (arcsec)
Median: 0.060 arcsec
RMS: 0.077 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 401483160
Time(ksec)

2.4.5 Slot 7

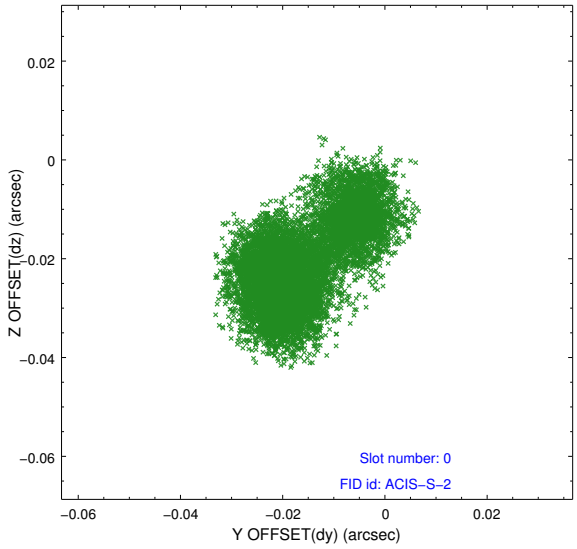

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 401481984

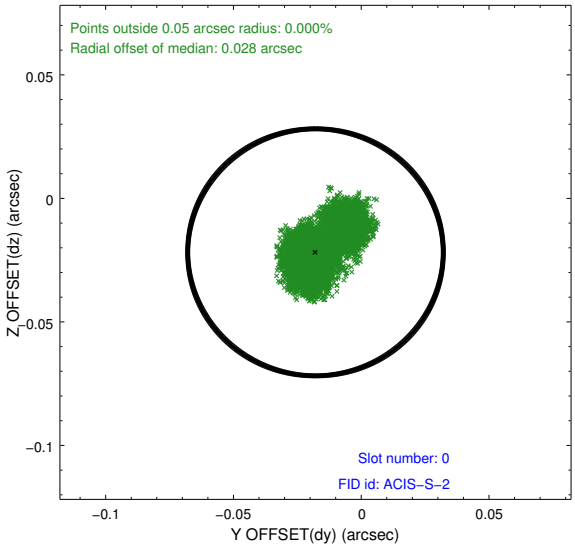

Points outside 0.4 arcsec radius: 0.010%
Radial offset of median: 0.109 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 401345296

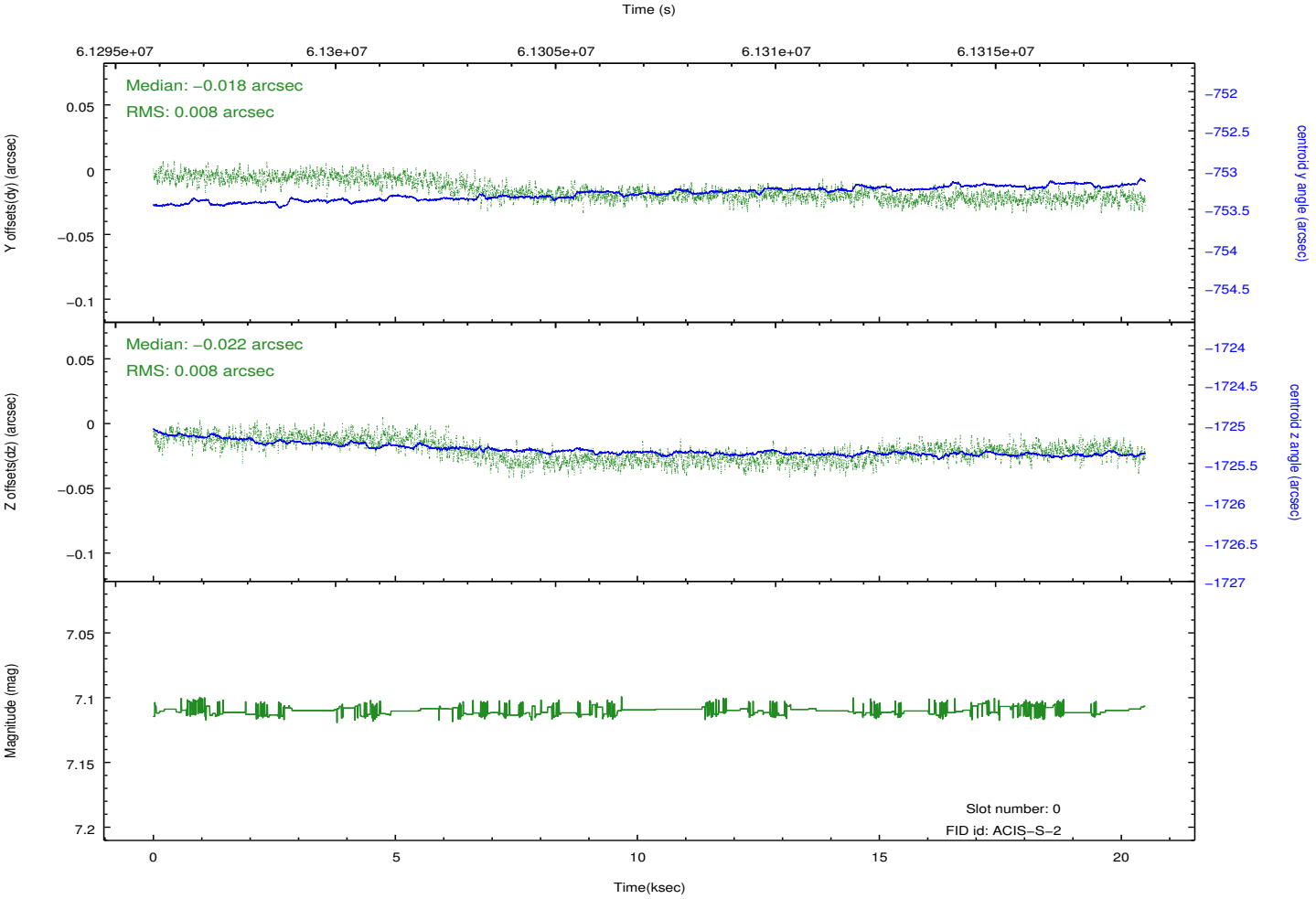

Time (s)
Median: 0.070 arcsec
RMS: 0.065 arcsec
Y offsets(dy) (arcsec)
Median: −0.085 arcsec
RMS: 0.077 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 401345296
Time(ksec)

2.5 FID Slots

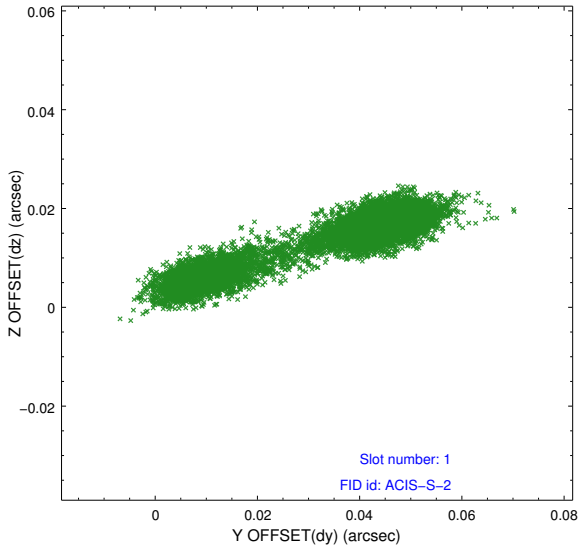
2.5.1 Slot 0

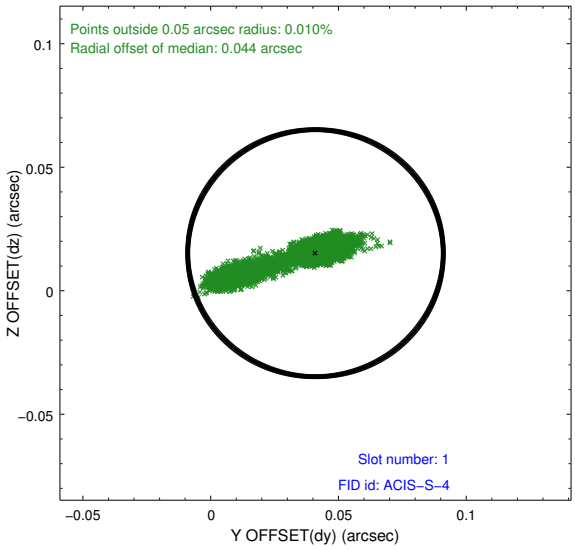


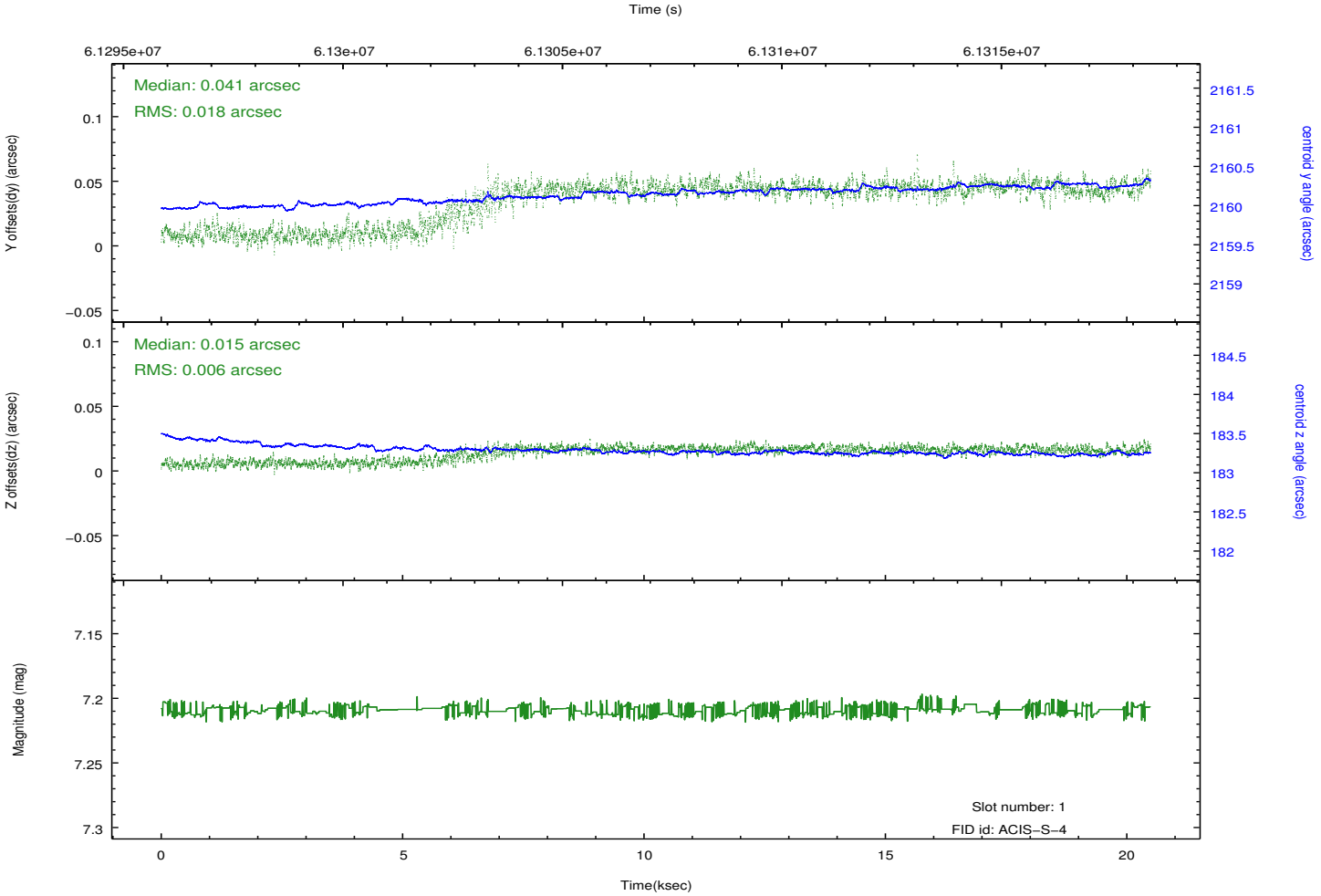




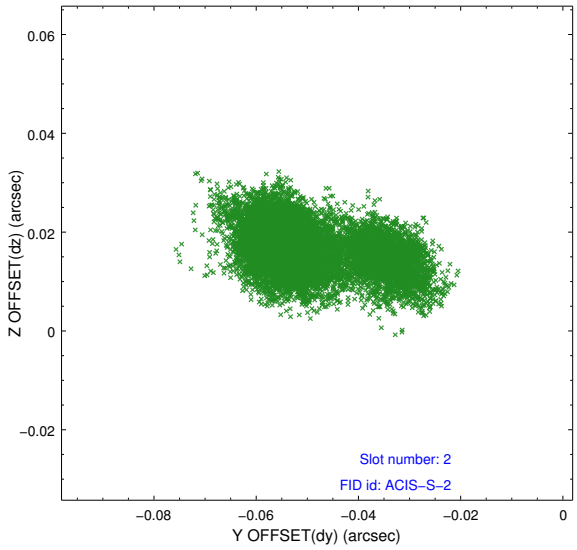
2.5.2 Slot 1

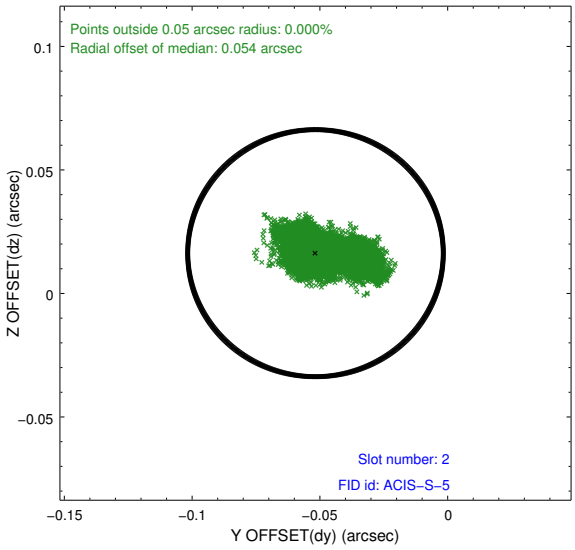

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−2

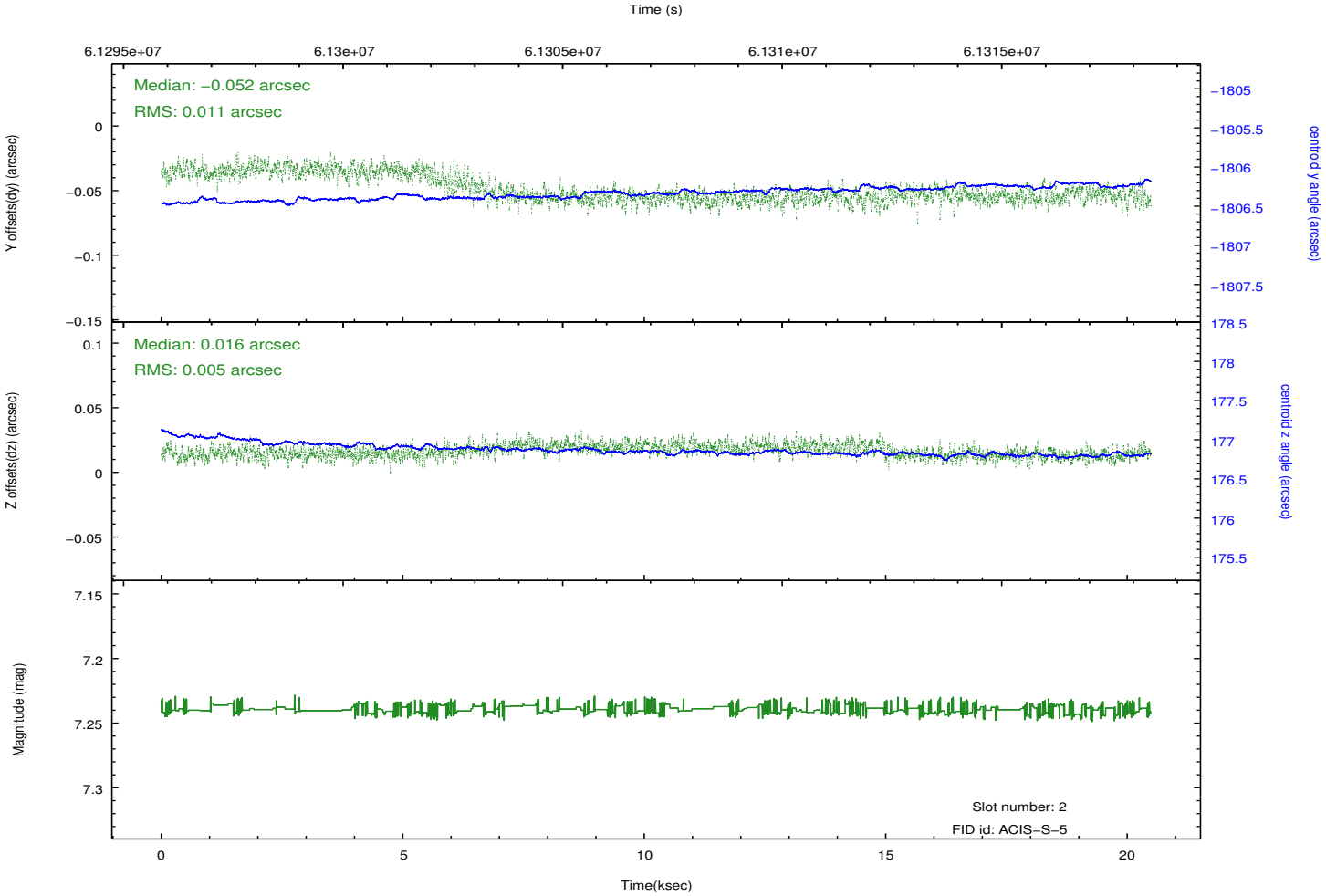

Points outside 0.05 arcsec radius: 0.010%
Radial offset of median: 0.044 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.041 arcsec
RMS: 0.018 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.015 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)

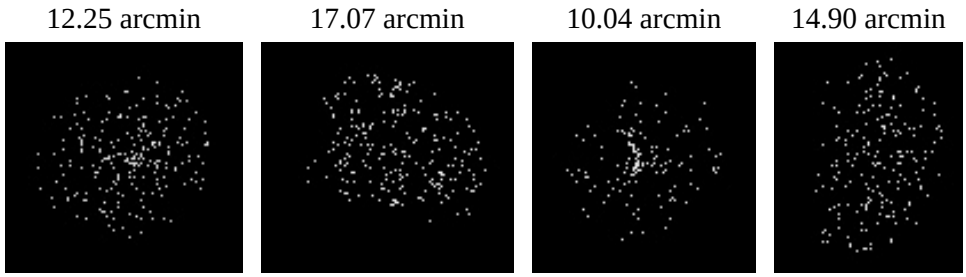
2.5.3 Slot 2


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


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.054 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.052 arcsec
RMS: 0.011 arcsec
Y offsets(dy) (arcsec)
Median: 0.016 arcsec
RMS: 0.005 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 Point Sources



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2009.12.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	19.164

A.2 Comments

```
Focal plane temperature is warmer than -118.7 C degrees during the
entire observation. This temperature is the upper limit of the verified
ACIS calibration for the front-illuminated chips. The focal plane
temperature is also warmer than -116.7 degrees C for the entire
observation. This temperature is the upper limit of the verified ACIS
calibration for the back-illuminated chips. The ACIS spectral response
calibration is less accurate at these warmer temperatures than it is at
-119.7 C. Users whose science objectives depend on the most accurate
spectral response (ie: fitting line-rich spectra) may notice an effect.
Users whose science objectives do not depend on the most accurate
spectral response should not notice an effect.
```