V&V Reference Report
L2 ASCDS Version : 10.1.1

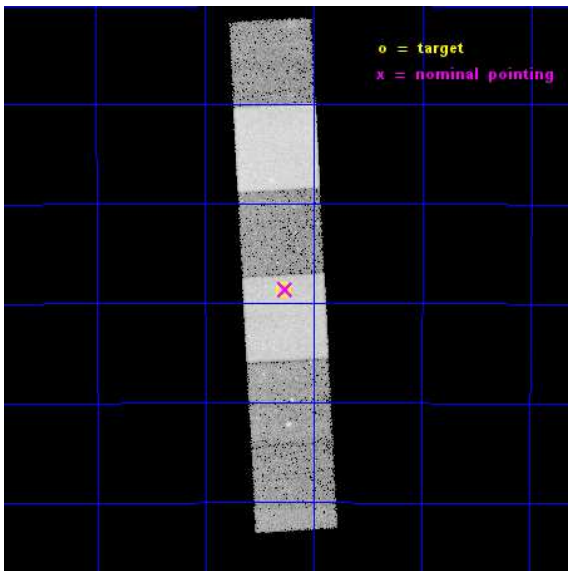
Observation 15720 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 8 2014

Contents

1 Front

seq_num	200933	Sequence number
obs_id	15720	Observation id
title	Do exoplanets spin up their host stars?	Proposal title
observer	Dr. Katja Poppenhaeger	Principal investigator
object	HD 109749	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	189.318333	Observer's specified target RA [deg]
dec_targ	-40.812111	Observer's specified target Dec [deg]
ra_nom	189.31508846303	Nominal RA [deg]
dec_nom	-40.810342946523	Nominal Dec [deg]
roll_nom	86.876358703376	Nominal Roll [deg]
revision	2	Processing version of data
ontime	27961.599895895	Sum of GTIs [s]
livetime	27607.533281559	Livetime [s]
ontime4	27961.599895895	Sum of GTIs [s]
ontime5	27961.599895895	Sum of GTIs [s]
ontime6	27961.599895895	Sum of GTIs [s]
ontime7	27961.599895895	Sum of GTIs [s]
ontime8	27961.599895895	Sum of GTIs [s]
ontime9	27961.599895895	Sum of GTIs [s]
l2events	232410	Number of level 2 events

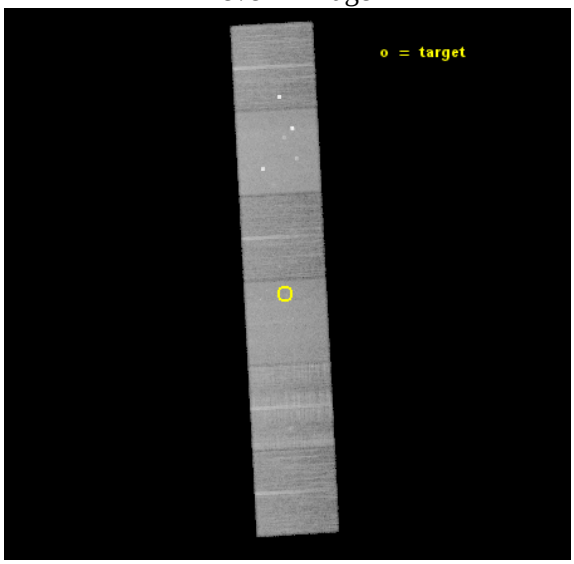


2 OBI

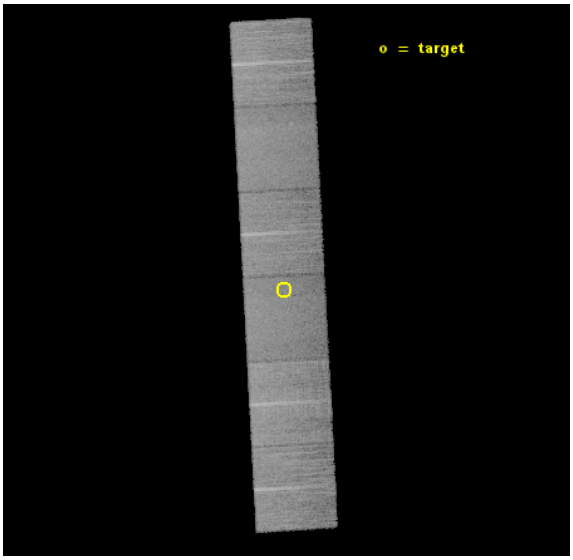
2.1 OBI

2.1.1 Images

Level 1 Image

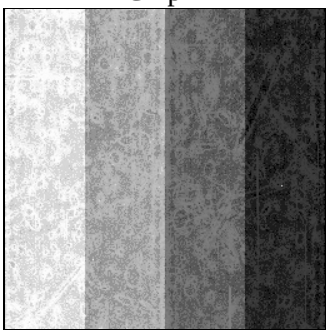


Level 1 Bad Events

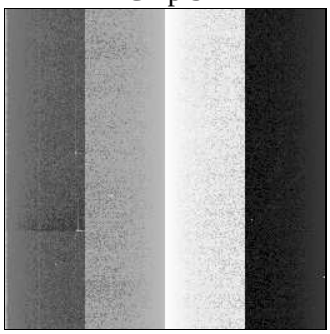


2.1.2 Bias

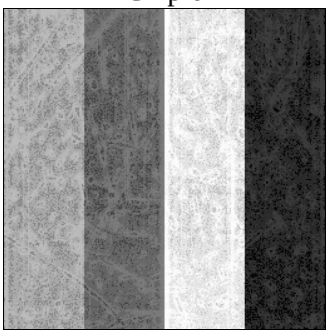
Chip 4



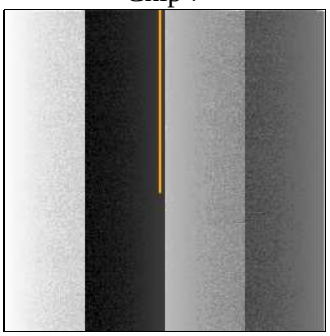
Chip 5



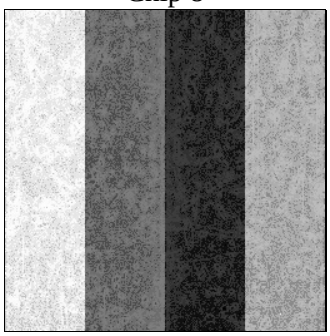
Chip 6



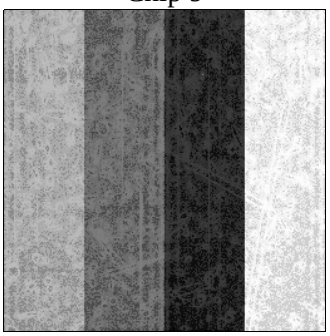
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	1	Obi number
ascdsver	10.3.1	Processing system revision
caldbver	4.6.4	
date	2014-12-08T07:36:51	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	28000.000000	[s] Scheduled observation exposure time
ontime	27961.599895895	Sum of GTIs [s]
ontime4	27961.599895895	Sum of GTIs [s]
ontime5	27961.599895895	Sum of GTIs [s]
ontime6	27961.599895895	Sum of GTIs [s]
ontime7	27961.599895895	Sum of GTIs [s]
ontime8	27961.599895895	Sum of GTIs [s]
ontime9	27961.599895895	Sum of GTIs [s]
l1events	991502	Number of level 1 events

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	152787	223210	129476	176377	180131	129521
rejected events	127948	110298	113740	99403	131218	112758
rejected %	83%	49%	87%	56%	72%	87%

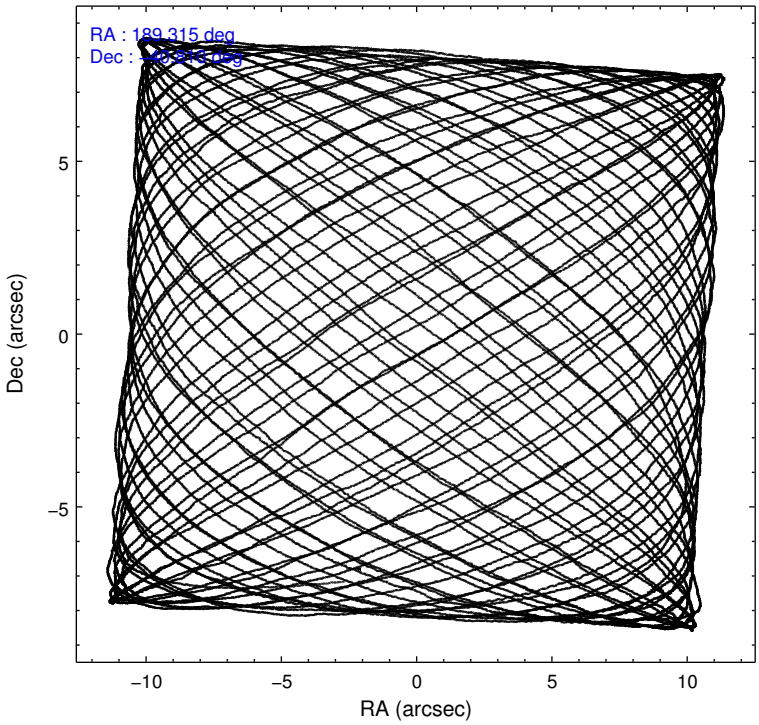
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	14274	15003	5332	6890	15240	5937
	9%	6%	4%	3%	8%	4%
grade 1 events	158	550	69	188	163	73
	0%	0%	0%	0%	0%	0%
grade 2 events	4132	34662	3601	15634	10981	3720
	2%	15%	2%	8%	6%	2%
grade 3 events	1739	3693	1637	6620	5267	1734
	1%	1%	1%	3%	2%	1%
grade 4 events	1678	3669	1563	6494	4952	1658
	1%	1%	1%	3%	2%	1%
grade 5 events	6980	16291	6817	18321	9757	7358
	4%	7%	5%	10%	5%	5%
grade 6 events	3020	55896	3606	41337	12475	3718
	1%	25%	2%	23%	6%	2%
grade 7 events	120806	93446	106851	80893	121296	105323
	79%	41%	82%	45%	67%	81%

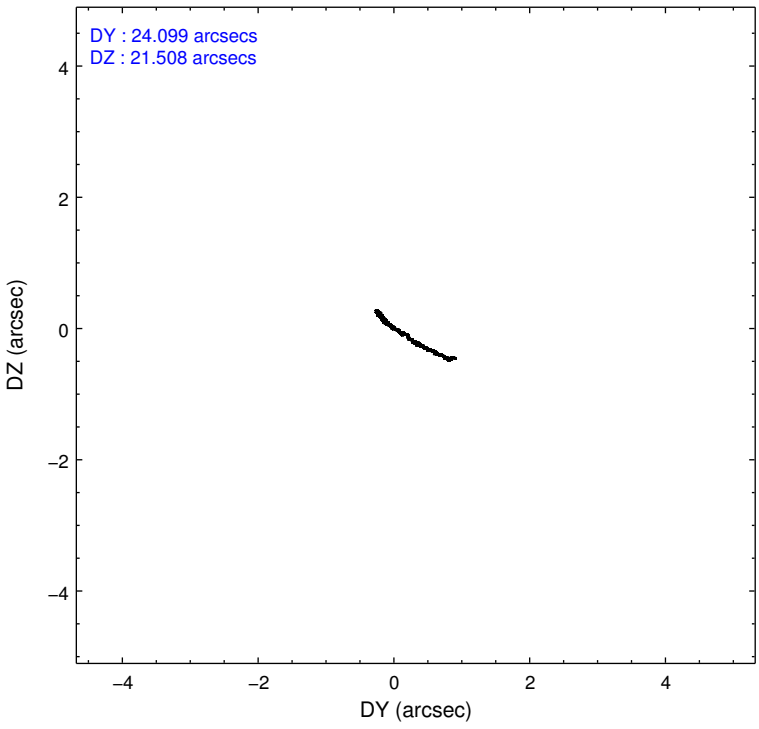
2.2 Compared Parameters

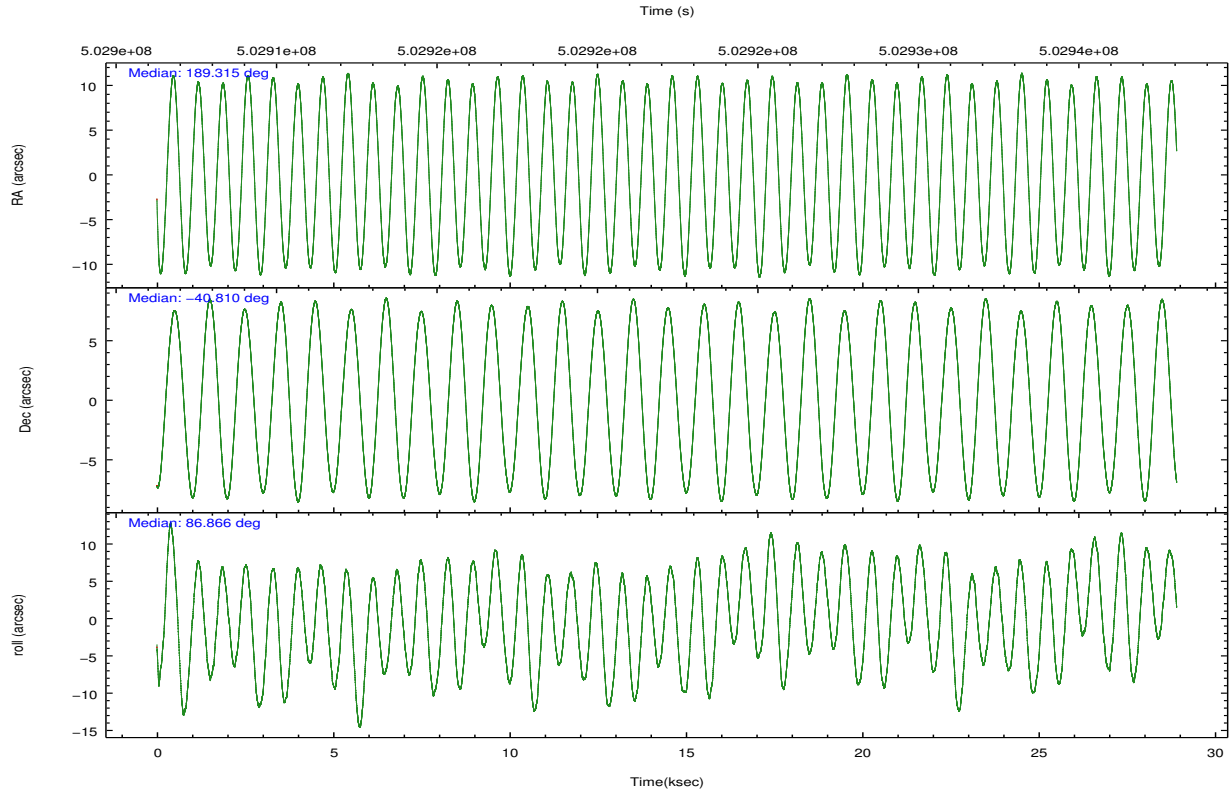
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	189.331866	189.3150884630275
[deg] Pointing Dec	-40.834562	-40.81034294652288
[deg] Pointing Roll	86.730695	86.87635870337616
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1400660498719
[mm] SIM translation stage offset	0	0.00754346686406393
[s] Observation start time (MET)	502908610.184000	502906260.65836
Observation start date	2013-12-08T16:49:03	2013-12-08T16:11:00
[s] Observation end time (MET)	502936610.184000	502937571.33508
Observation end date	2013-12-09T00:35:43	2013-12-09T00:52:51
Read mode	TIMED	TIMED

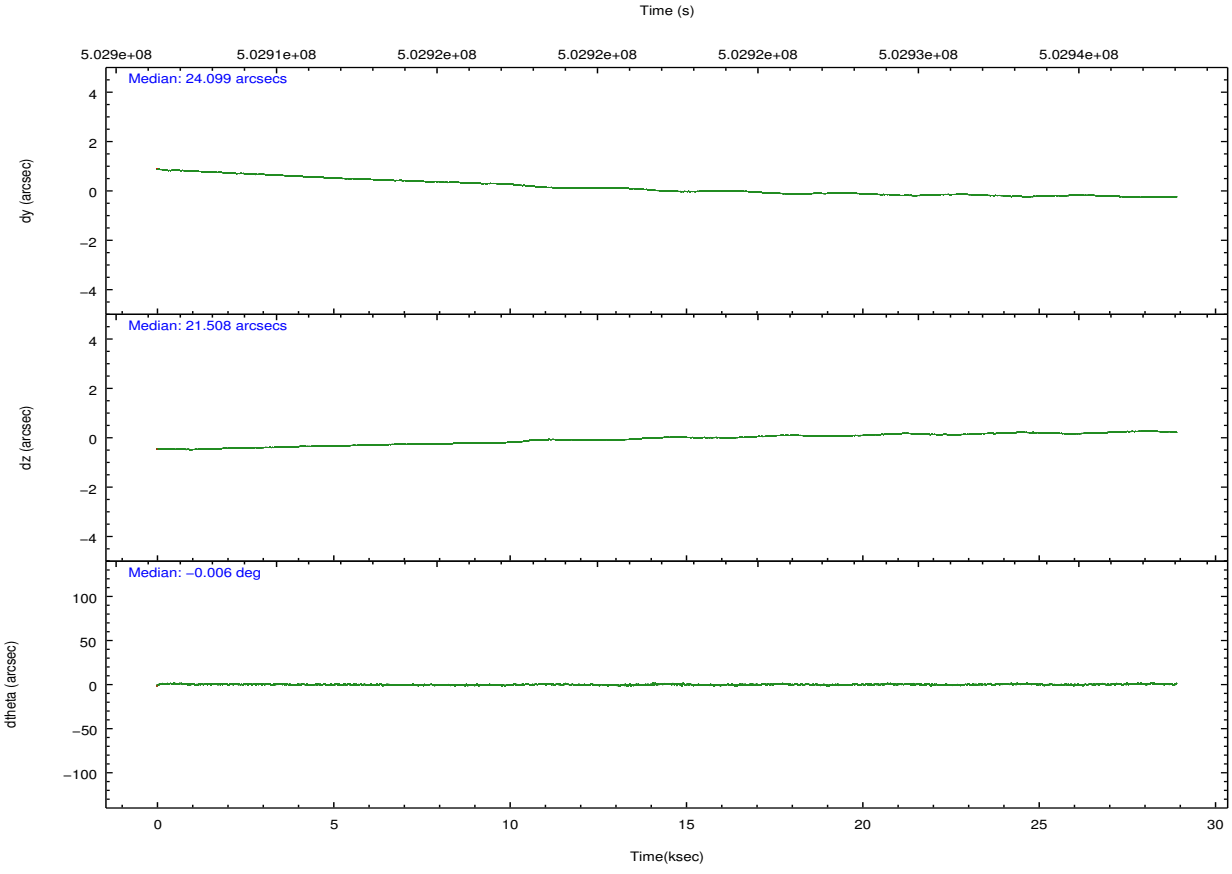
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	N	N
CCD I3 on	N	N
CCD S0 on	O1	Y
CCD S1 on	O3	Y
CCD S2 on	O5	Y
CCD S3 on	Y	Y
CCD S4 on	O4	Y
CCD S5 on	O2	Y
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 189.315 deg
Dec : -40.3478 deg
Dec (arcsec)
RA (arcsec)
−10
−5
0
5
10
−5
0
5


DY : 24.099 arcsecs
DZ : 21.508 arcsecs
DZ (arcsec)
DY (arcsec)
−4
−2
0
2
4
−4
−2
0
2
4


Time (s)
5.029e+08
5.0291e+08
5.0292e+08
5.0292e+08
5.0292e+08
5.0293e+08
5.0294e+08
Median: 189.315 deg
RA (arcsec)
Median: −40.810 deg
Dec (arcsec)
Median: 86.866 deg
roll (arcsec)
Time(ksec)

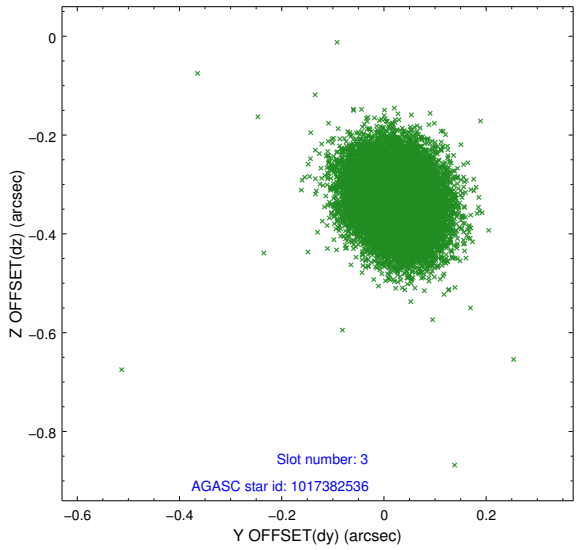

Time (s)
5.029e+08
5.0291e+08
5.0292e+08
5.0292e+08
5.0292e+08
5.0293e+08
5.0294e+08
Median: 24.099 arcsecs
dy (arcsec)
Median: 21.508 arcsecs
dz (arcsec)
Median: −0.006 deg
dtheta (arcsec)
Time(ksec)

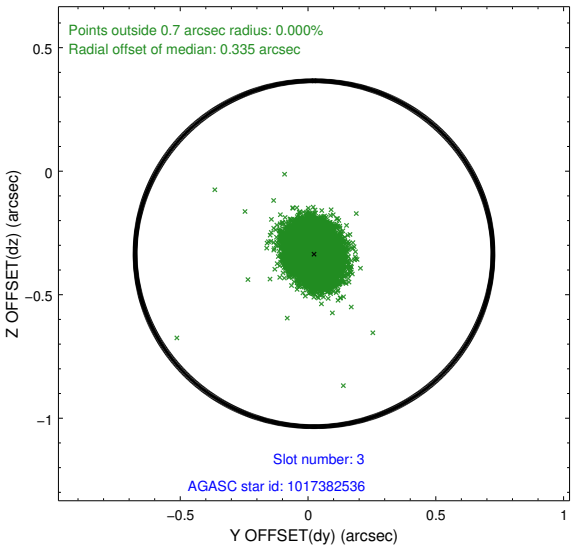
Slot Statistics

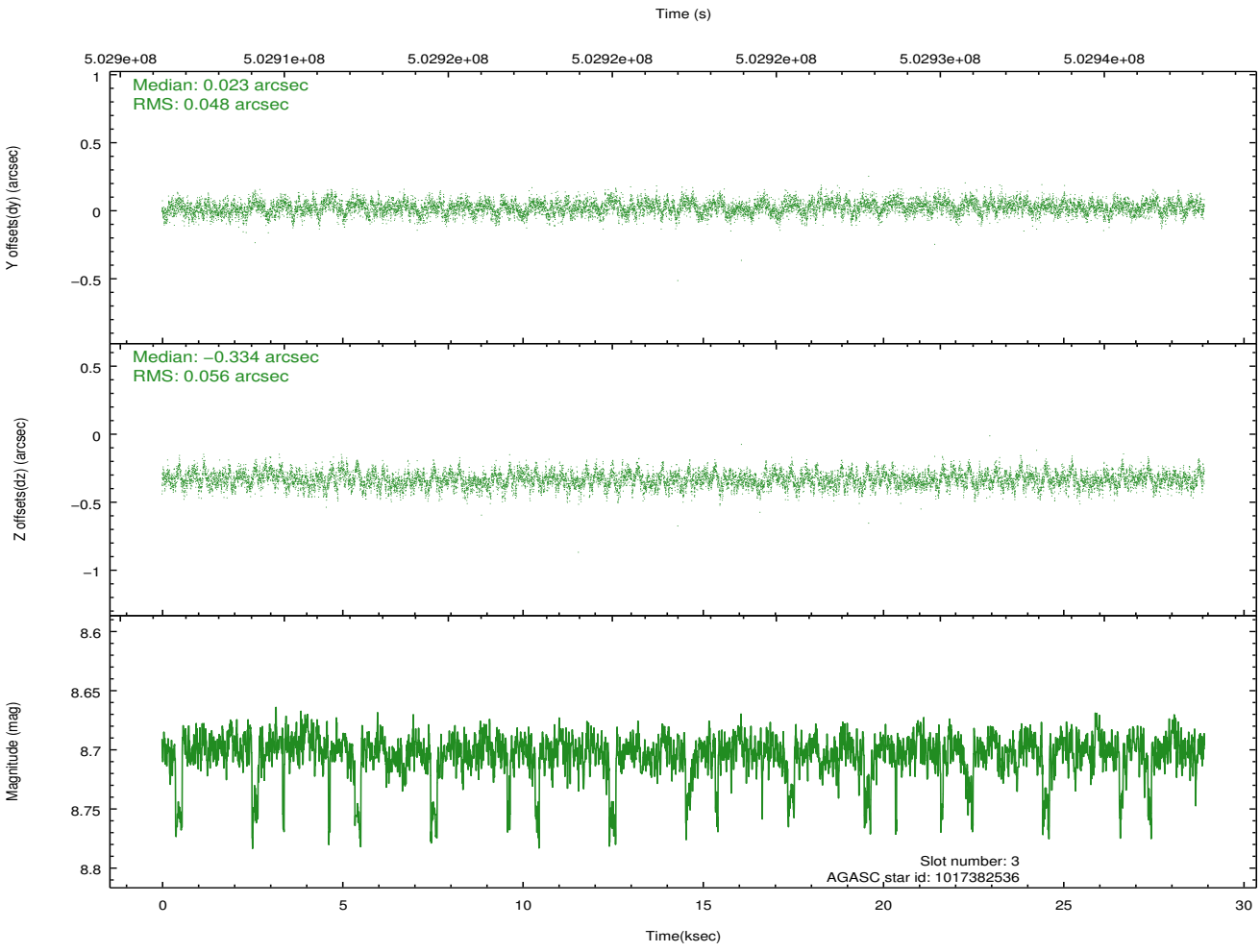
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	6.98	7053	0.192	-0.072	0.007	0.012	0.000000	0.000000	918.79	-1738.69
1	FID		ACIS-S-2	6.91	7053	-0.115	0.029	0.013	0.020	0.000000	0.000000	-777.38	-1743.24
2	FID		ACIS-S-5	7.02	7052	-0.102	0.051	0.016	0.027	0.000000	0.000000	-1830.71	158.87
3	GUIDE	used	1017382536	8.70	14095	0.023	-0.334	0.079	0.128	188.702953	-41.234604	-1540.26	1620.25
4	GUIDE	used	1017392480	9.78	14089	-0.178	0.043	0.181	0.282	188.884153	-40.854018	-142.75	1213.15
5	GUIDE	used	1017395696	8.22	14105	-0.129	-0.580	0.083	0.130	188.557203	-40.828568	-108.49	2107.73
6	GUIDE	used	1017906016	9.72	14098	0.201	0.478	0.123	0.205	189.459956	-41.452008	-2199.12	-471.58
7	GUIDE	used	1019097680	8.97	14096	0.069	0.395	0.159	0.249	190.205134	-41.046886	-639.12	-2410.89

2.4 Star Slots

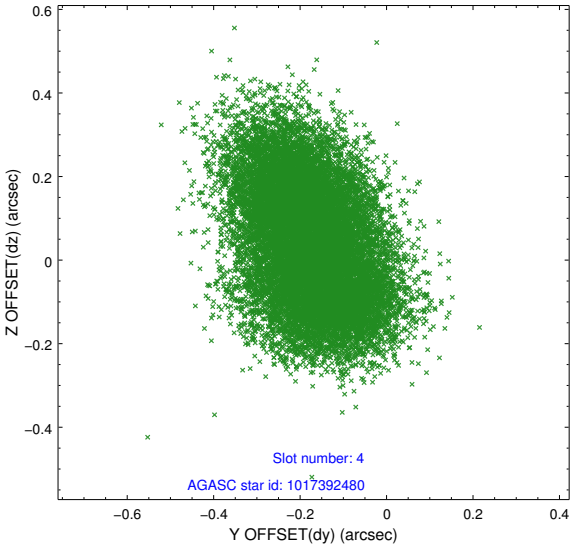
2.4.1 Slot 3

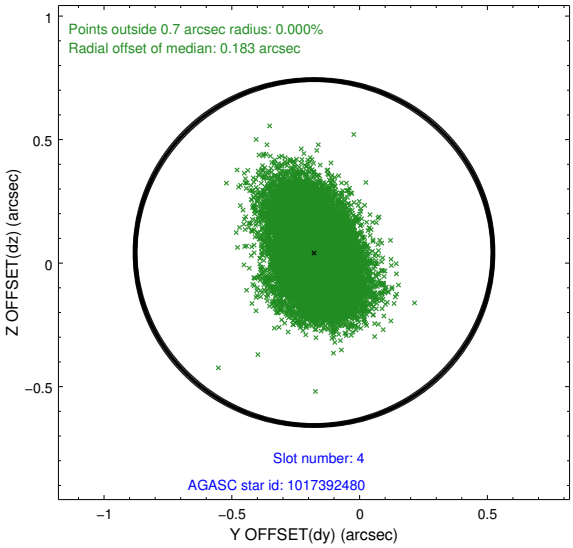


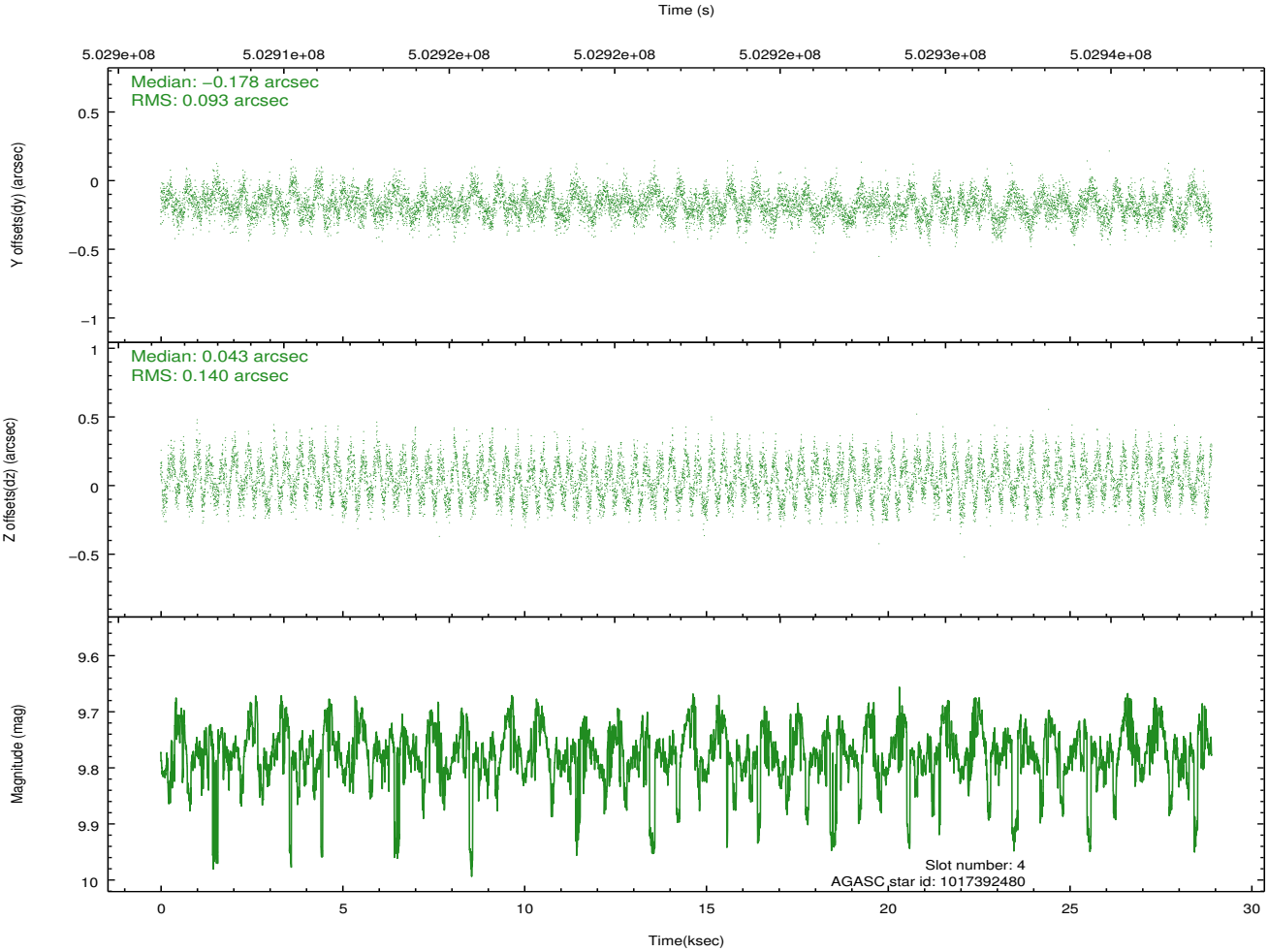




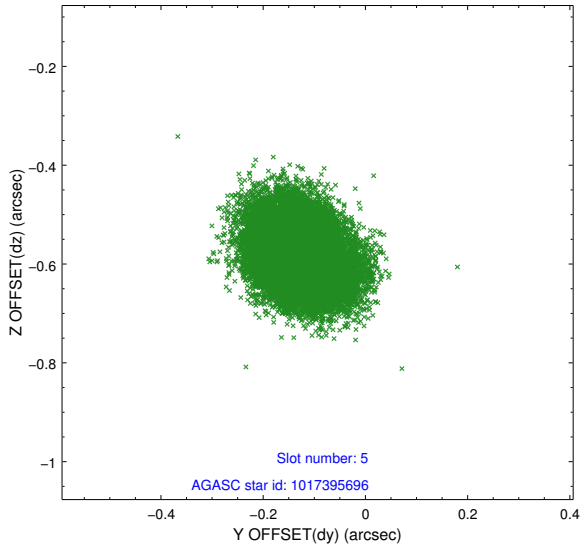
2.4.2 Slot 4

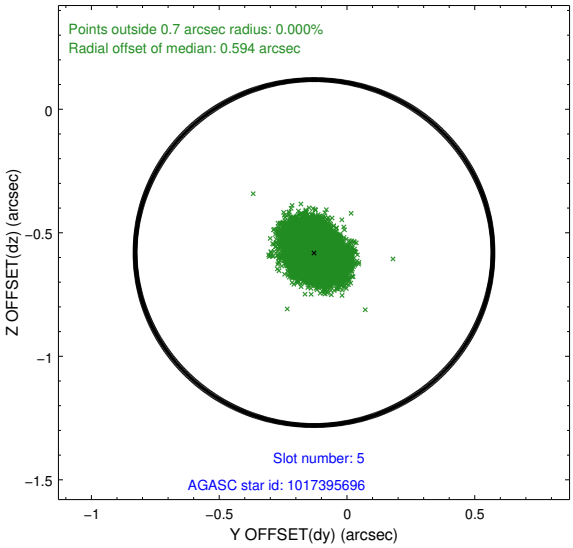

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1017392480

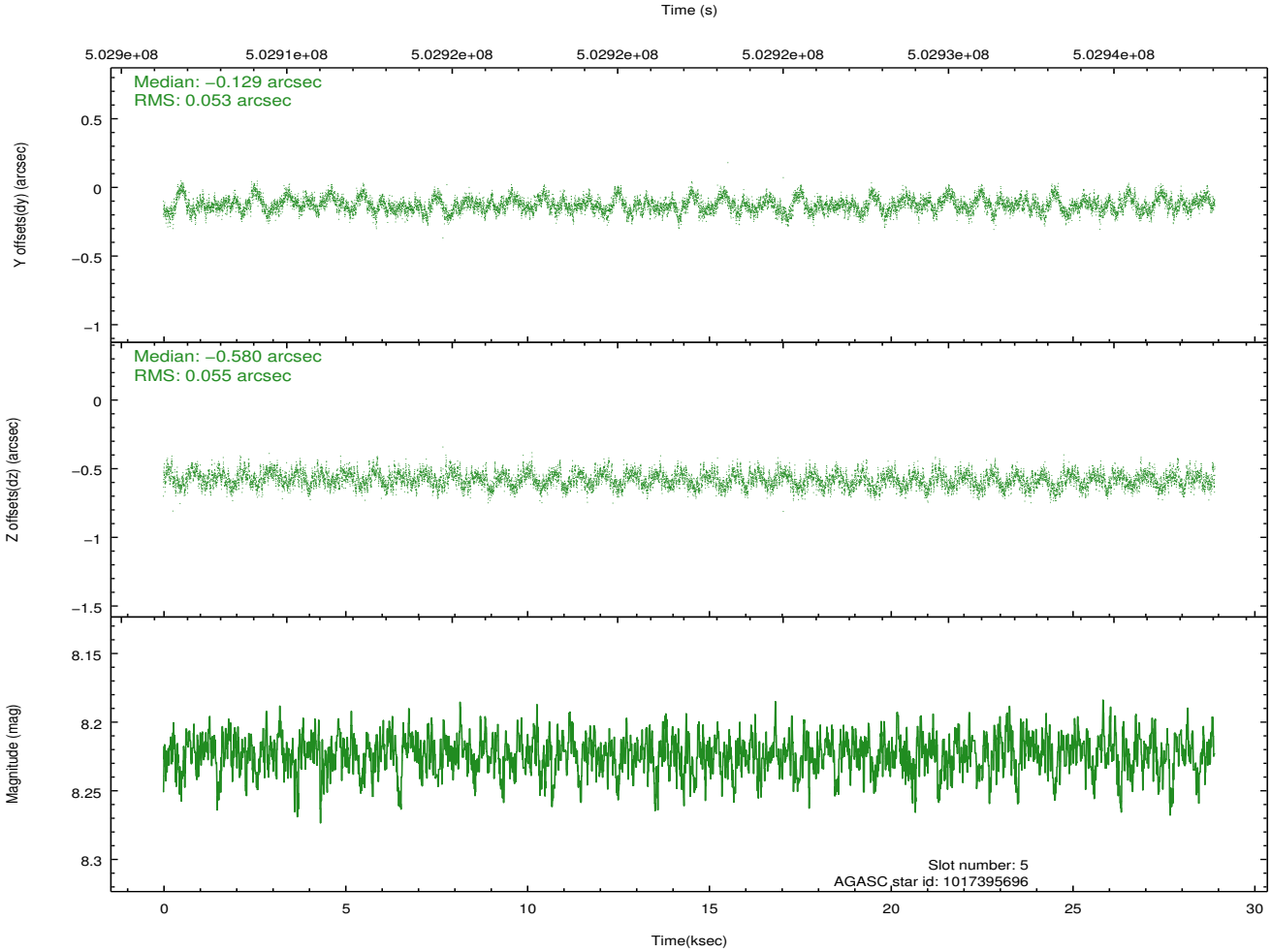

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.183 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1017392480


Time (s)
Median: −0.178 arcsec
RMS: 0.093 arcsec
Y offsets(dy) (arcsec)
Median: 0.043 arcsec
RMS: 0.140 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 1017392480
Time(ksec)

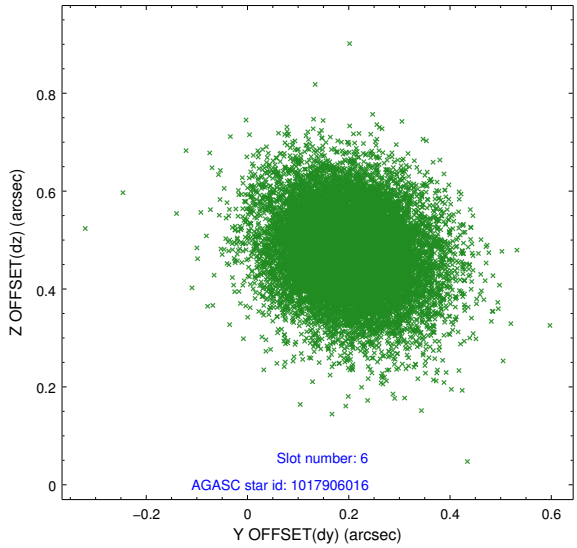
2.4.3 Slot 5

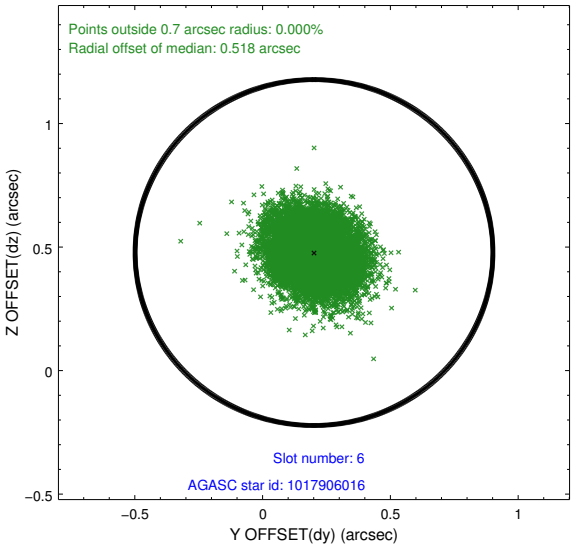

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1017395696

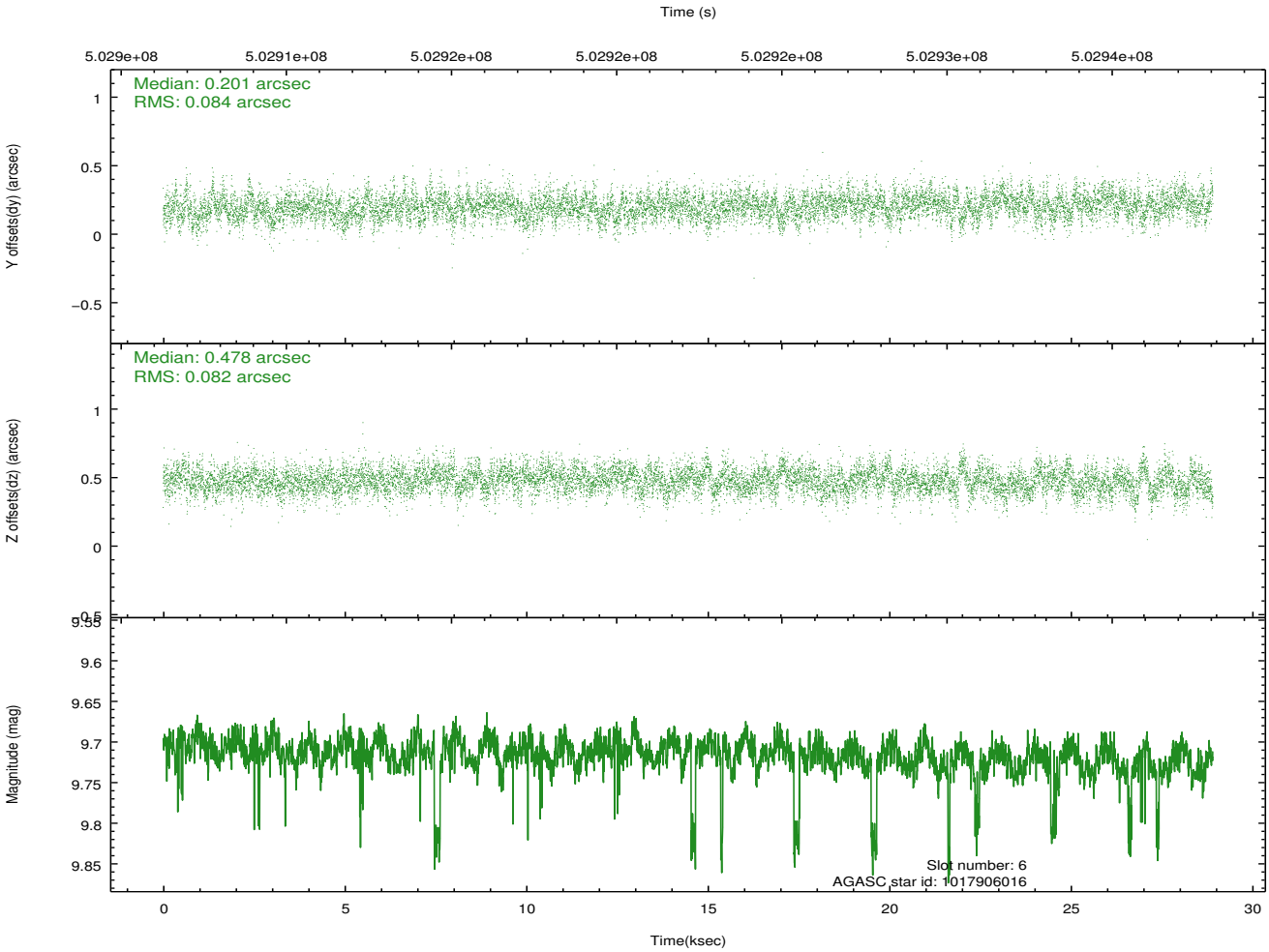

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.594 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1017395696


Time (s)
Median: −0.129 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: −0.580 arcsec
RMS: 0.055 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 1017395696
Time(ksec)

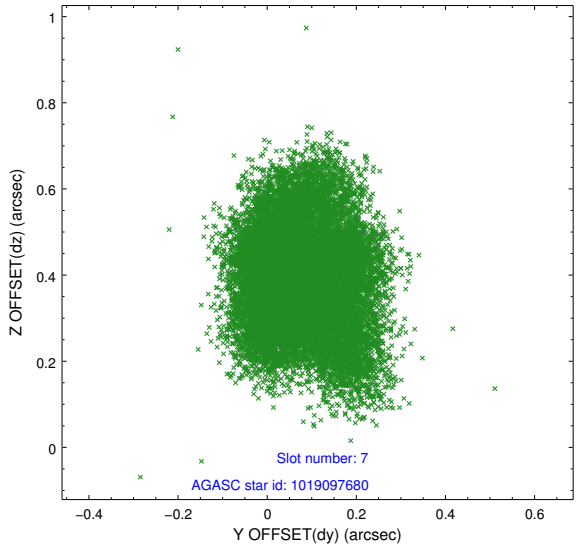
2.4.4 Slot 6

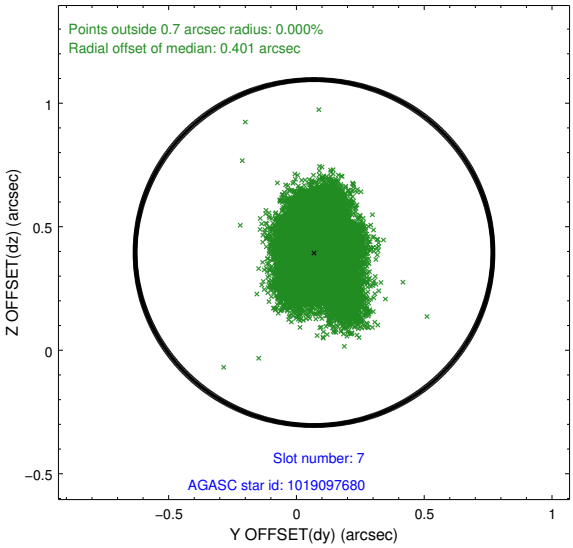

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1017906016

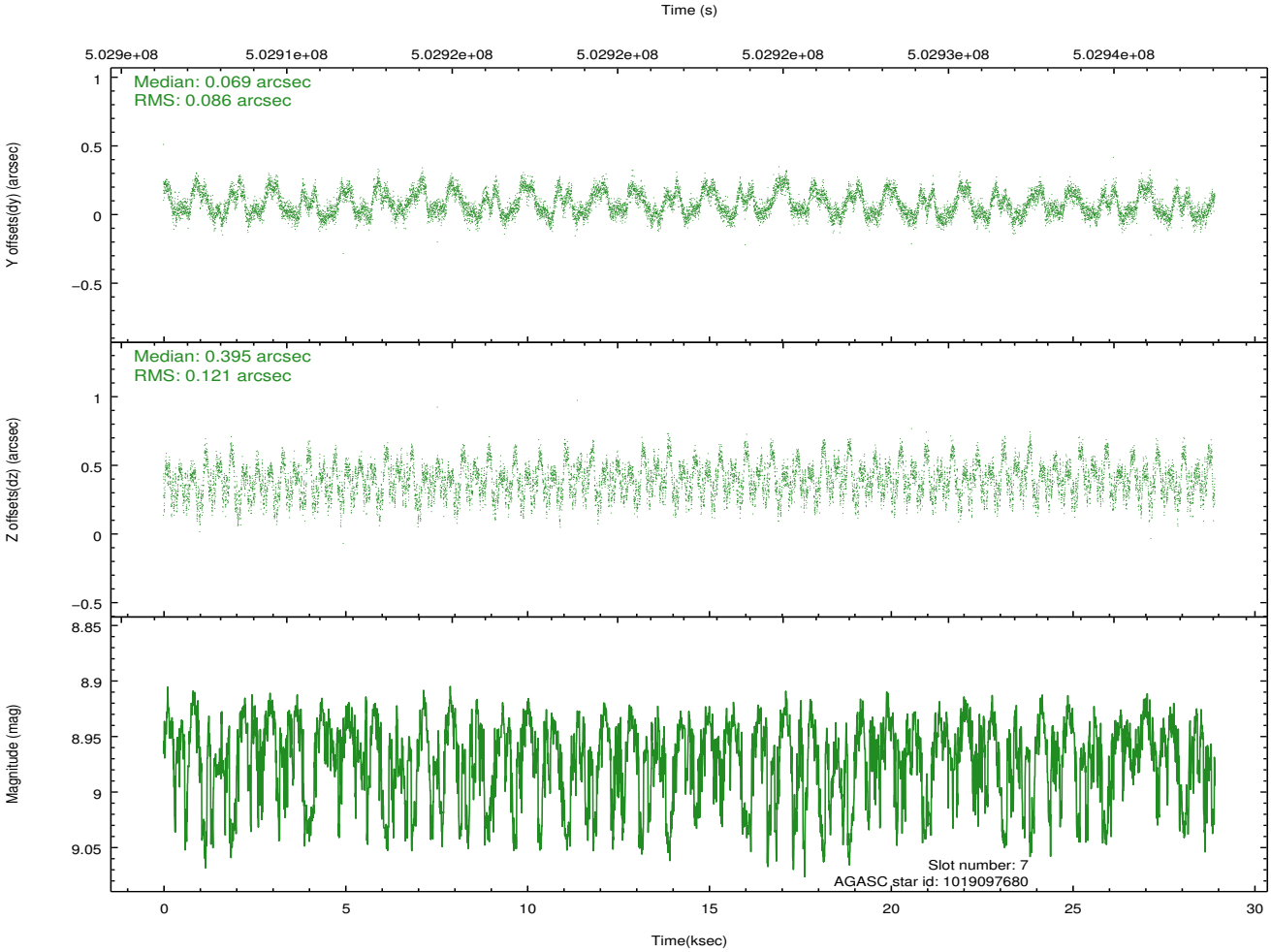

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.518 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1017906016


Time (s)
Median: 0.201 arcsec
RMS: 0.084 arcsec
Y offsets(dy) (arcsec)
Median: 0.478 arcsec
RMS: 0.082 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 1017906016
Time(ksec)

2.4.5 Slot 7

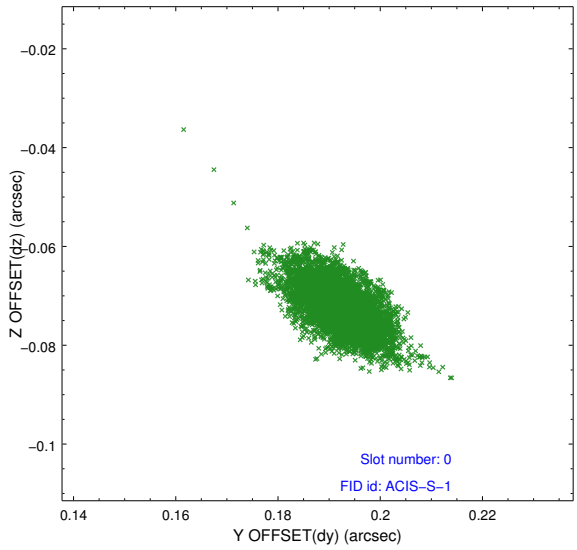

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1019097680

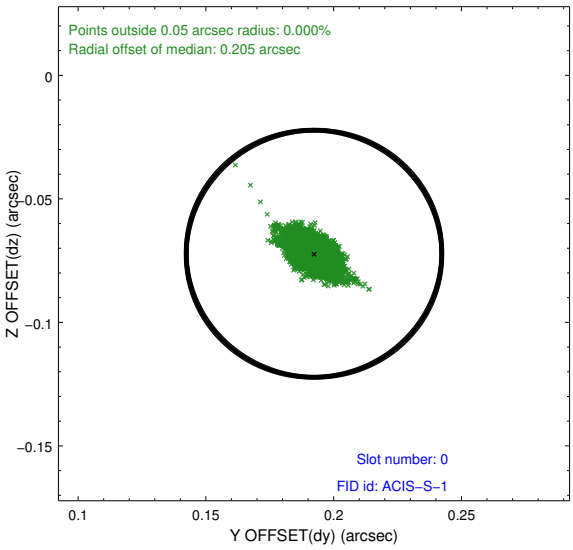

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.401 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1019097680

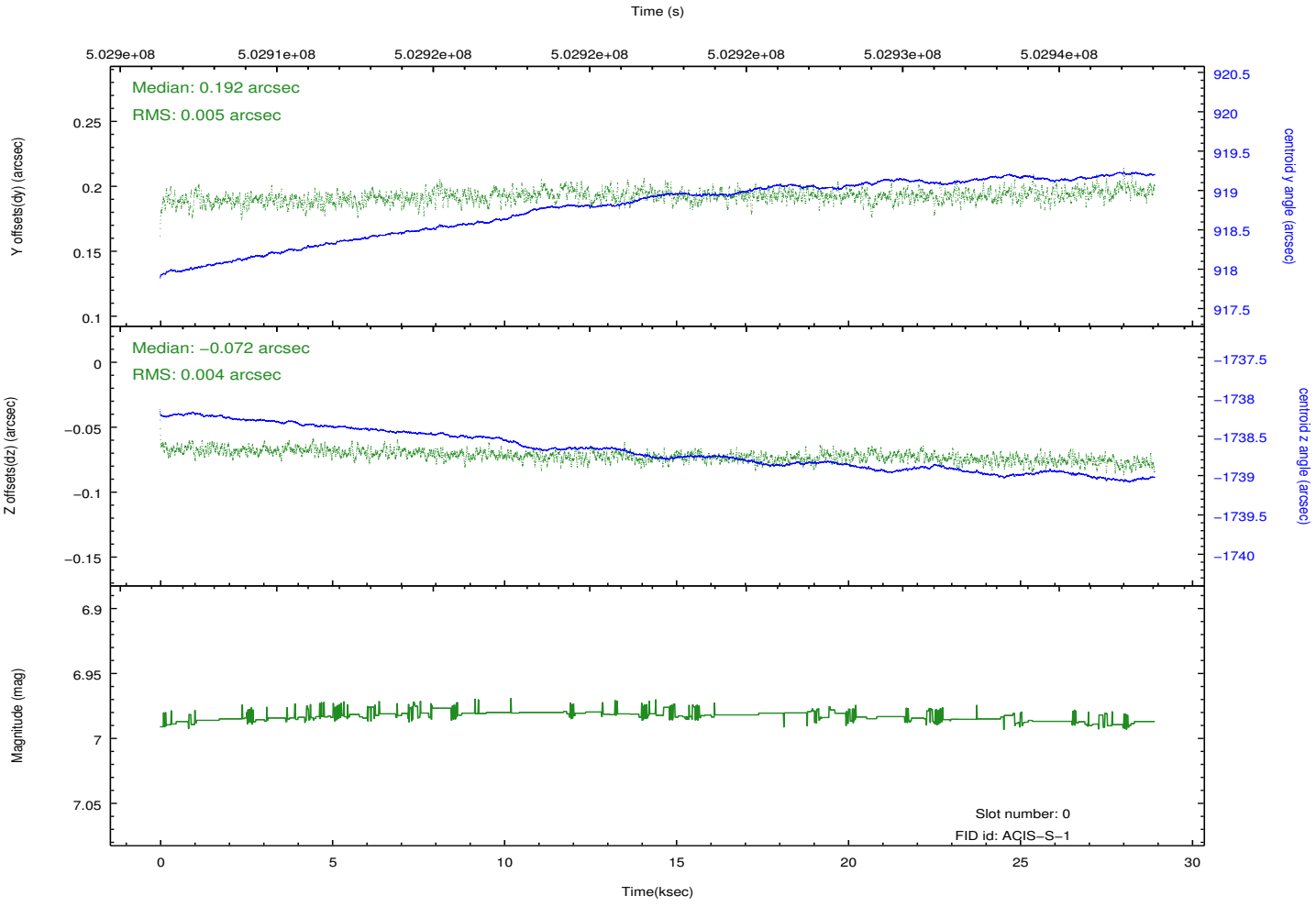

Time (s)
Median: 0.069 arcsec
RMS: 0.086 arcsec
Y offsets(dy) (arcsec)
Median: 0.395 arcsec
RMS: 0.121 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 1019097680
Time(ksec)

2.5 FID Slots

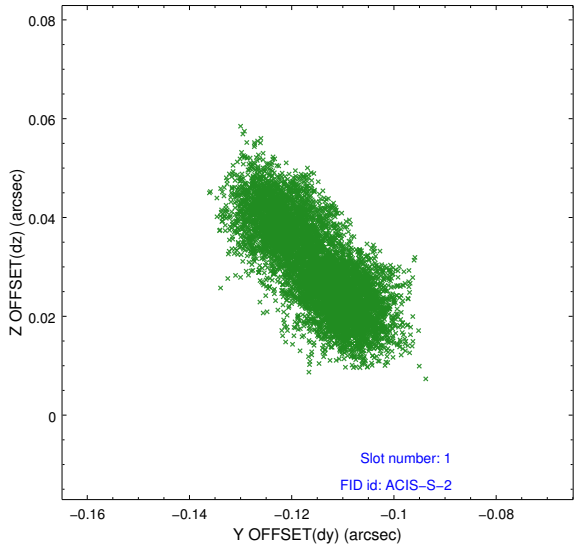
2.5.1 Slot 0

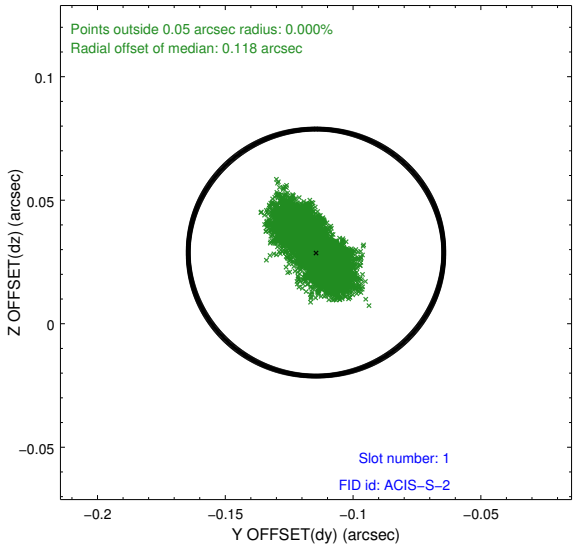


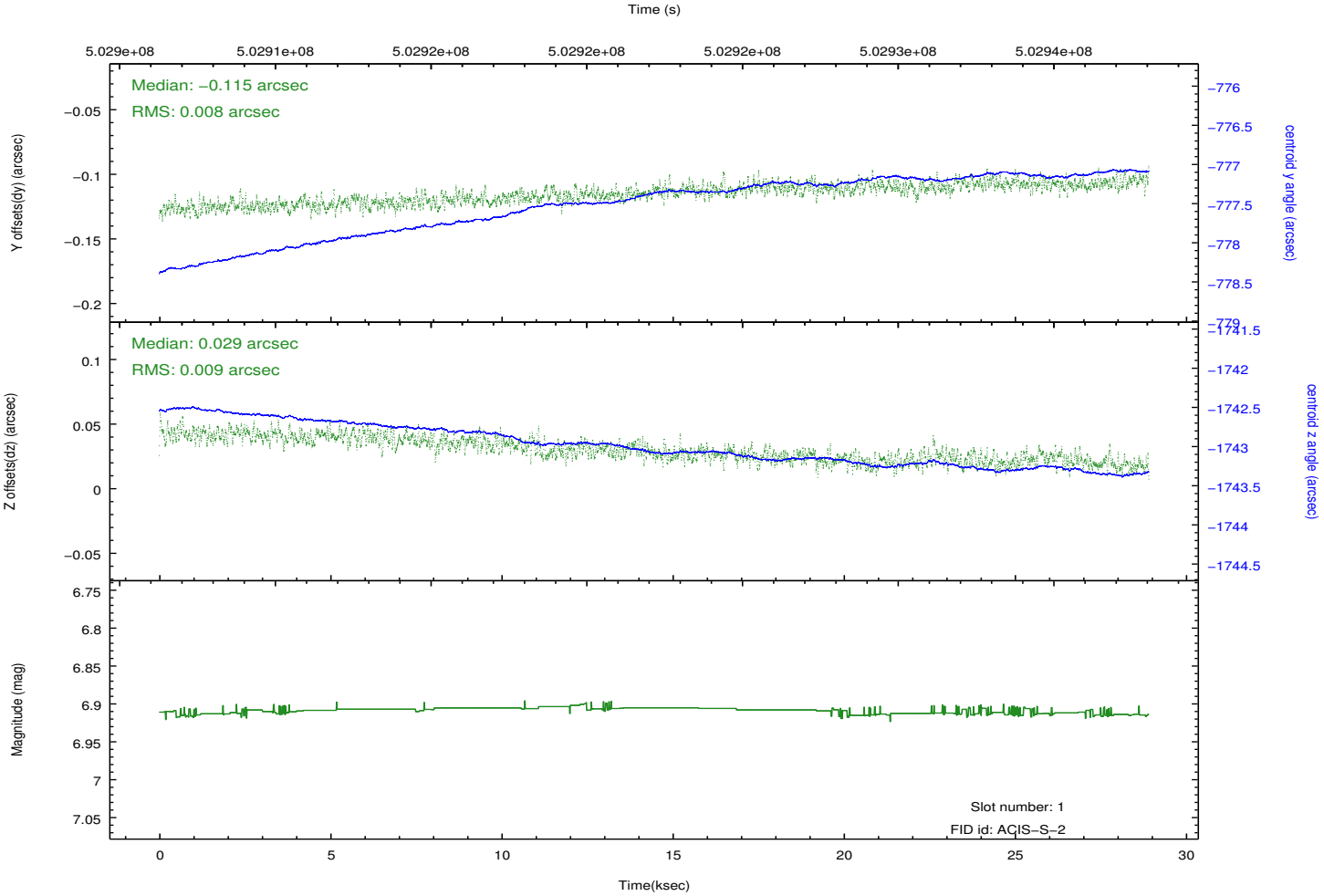




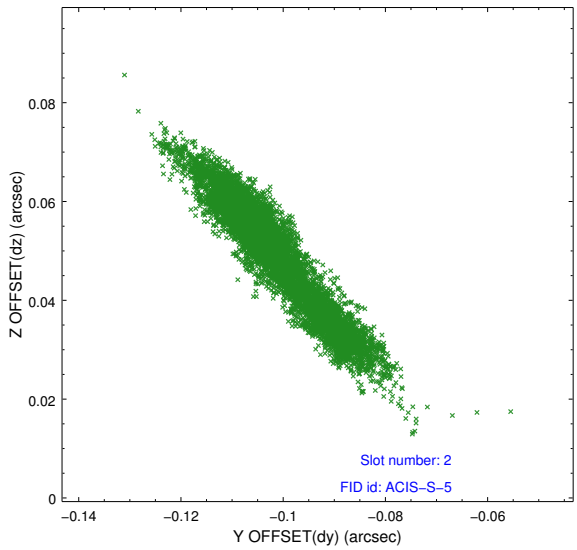
2.5.2 Slot 1

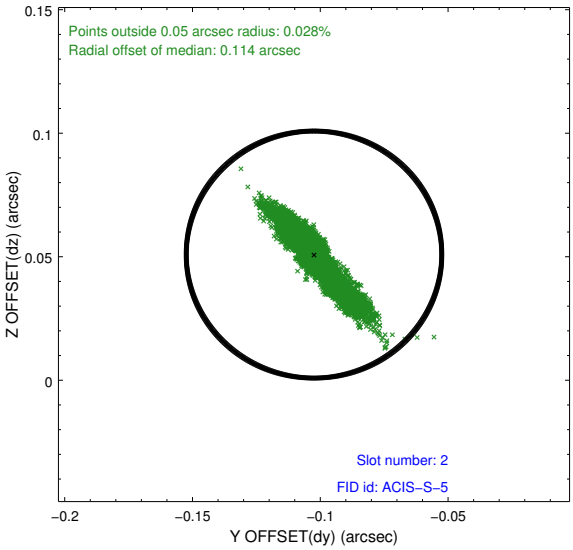

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−2

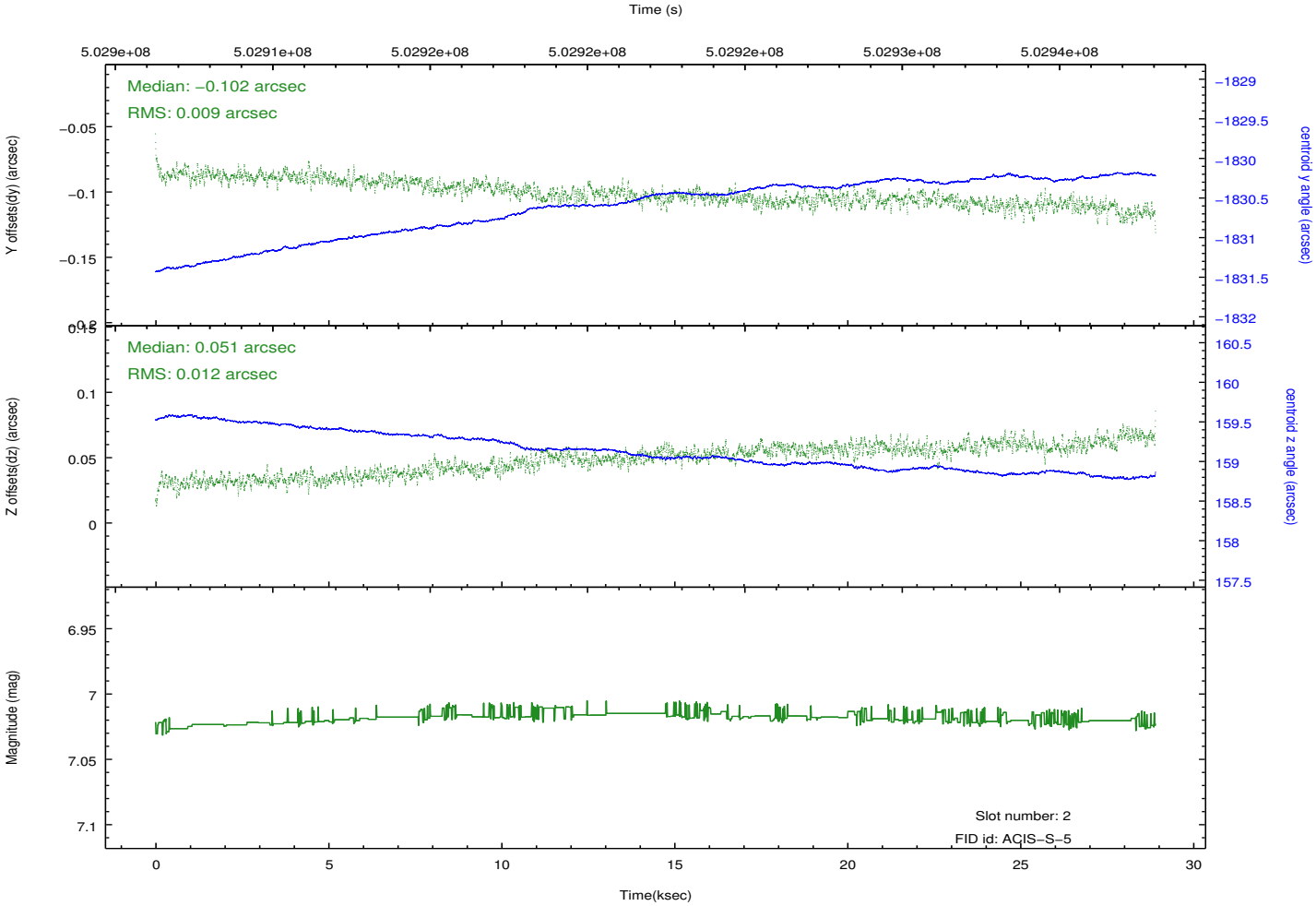

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.118 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−2


Time (s)
Median: −0.115 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.029 arcsec
RMS: 0.009 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−S−2
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: 0.028%
Radial offset of median: 0.114 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.102 arcsec
RMS: 0.009 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.051 arcsec
RMS: 0.012 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−5
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2014.12.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	27.961599895895

A.2 Comments

```
Joint proposal with XMM.
These data have been reprocessed with new aspect alignment calibration
files that correct small mean offsets (up to 0.4 arcsecs) and improve
overall astrometric accuracy. The new calibration was determined using
data from the time period being reprocessed and was performed using
cross-correlation of X-ray sources with radio and optical counterparts.
```