V&V Reference Report
L2 ASCDS Version : 10.4.2.1

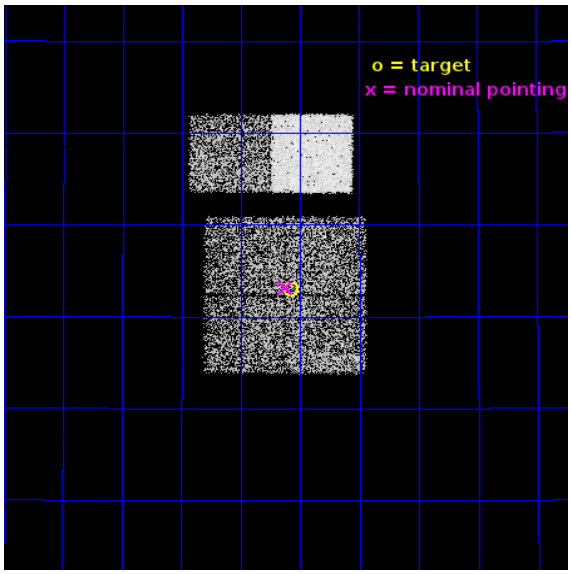
Observation 17430 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Nov 4 2015

Contents

1 Front

seq_num	901177	Sequence number
obs_id	17430	Observation id
title	A new moderate-depth contiguous layer of the Chandra Bootes field	
observer	Dr. Stephen Murray	Principal investigator
object	Bootes mod depth 2	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	217.519583	Observer's specified target RA [deg]
dec_targ	34.216111	Observer's specified target Dec [deg]
ra_nom	217.53108622775	Nominal RA [deg]
dec_nom	34.219427194166	Nominal Dec [deg]
roll_nom	0.20220001932556	Nominal Roll [deg]
revision	2	Processing version of data
ontime	6006.4000895023	Sum of GTIs [s]
livetime	5930.3434349491	Livetime [s]
ontime0	6006.4000895023	Sum of GTIs [s]
ontime1	6006.4000895023	Sum of GTIs [s]
ontime2	6006.4000895023	Sum of GTIs [s]
ontime3	6006.4000895023	Sum of GTIs [s]
ontime6	6006.4000895023	Sum of GTIs [s]
ontime7	6006.4000895023	Sum of GTIs [s]
l2events	35135	Number of level 2 events

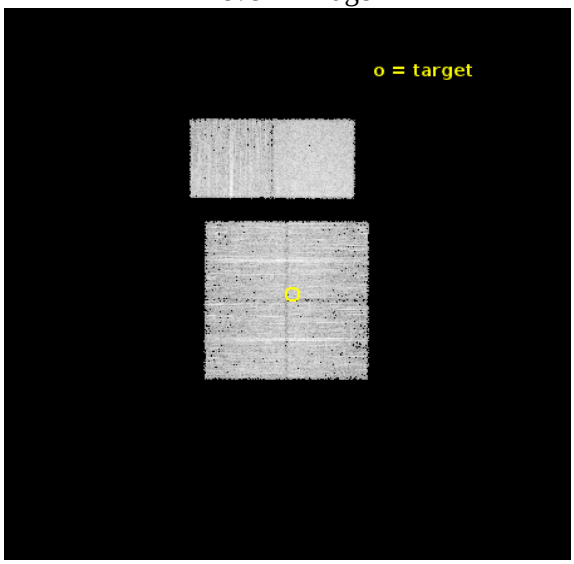


2 OBI

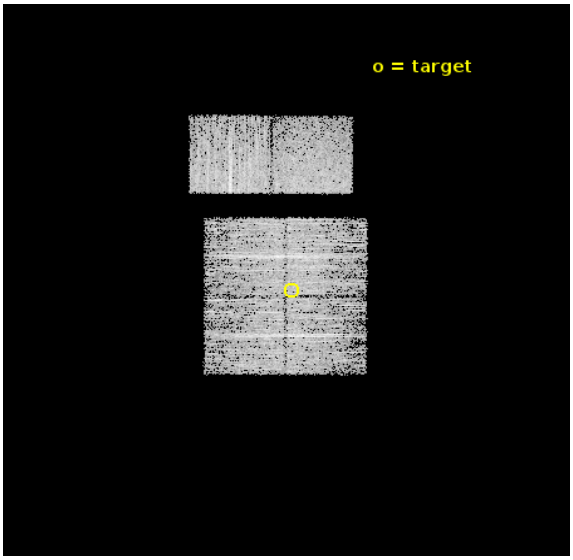
2.1 OBI

2.1.1 Images

Level 1 Image

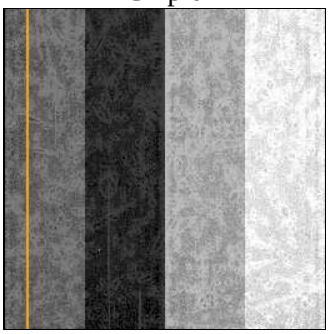


Level 1 Bad Events

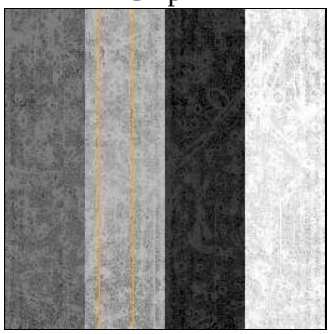


2.1.2 Bias

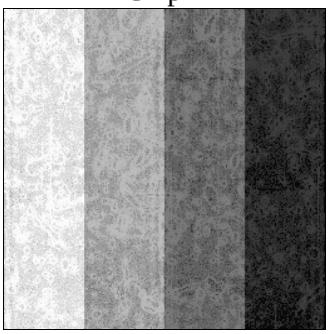
Chip 0



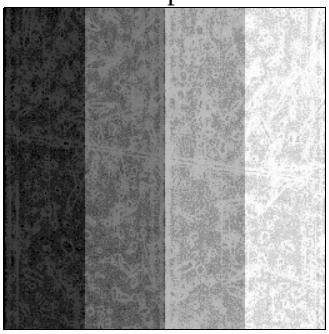
Chip 1



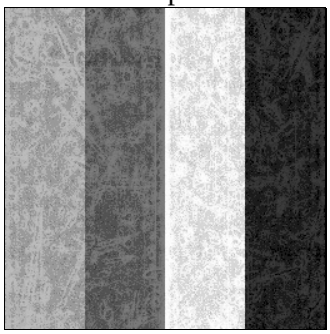
Chip 2



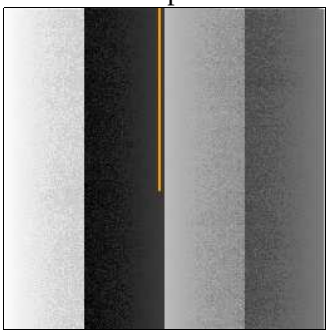
Chip 3



Chip 6



Chip 7



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.4.2.1	Processing system revision
caldbver	4.6.10a	
date	2015-11-04T23:52:11	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	6250.000000	[s] Scheduled observation exposure time
ontime	6006.4000895023	Sum of GTIs [s]
ontime0	6006.4000895023	Sum of GTIs [s]
ontime1	6006.4000895023	Sum of GTIs [s]
ontime2	6006.4000895023	Sum of GTIs [s]
ontime3	6006.4000895023	Sum of GTIs [s]
ontime6	6006.4000895023	Sum of GTIs [s]
ontime7	6006.4000895023	Sum of GTIs [s]
l1events	204645	Number of level 1 events

2.1.4 Events

	ccd 0	**ccd 1**	**ccd 2**	**ccd 3**	**ccd 6**	**ccd 7**
level 1 events	30657	30357	31614	32637	34788	44592
rejected events	26909	25991	27926	28965	30693	25371
rejected %	87%	85%	88%	88%	88%	56%

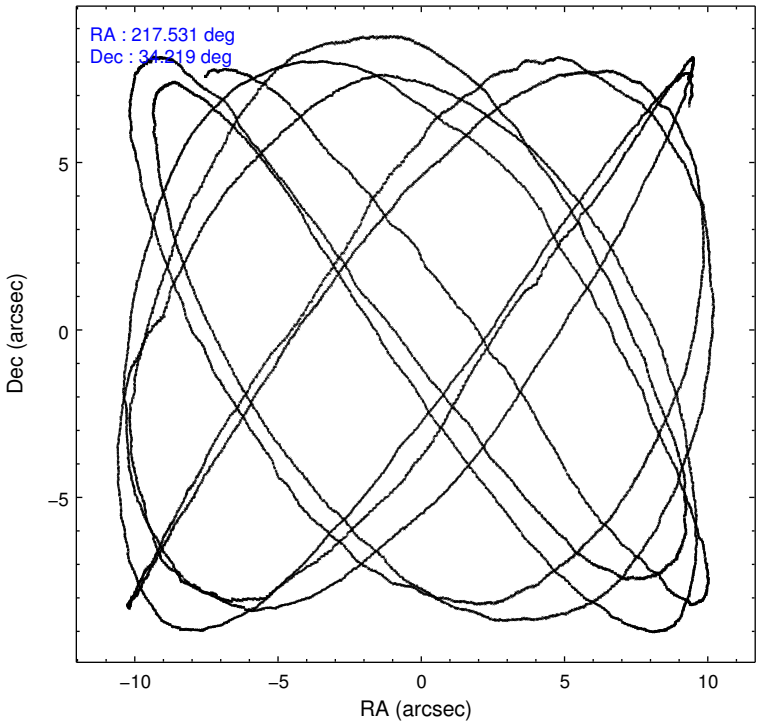
	ccd 0	**ccd 1**	**ccd 2**	**ccd 3**	**ccd 6**	**ccd 7**
grade 0 events	1257	1550	1320	1326	1366	1636
	4%	5%	4%	4%	3%	3%
grade 1 events	13	18	18	16	23	69
	0%	0%	0%	0%	0%	0%
grade 2 events	999	1035	926	784	1000	4149
	3%	3%	2%	2%	2%	9%
grade 3 events	398	372	358	407	431	1518
	1%	1%	1%	1%	1%	3%
grade 4 events	343	435	387	399	361	1545
	1%	1%	1%	1%	1%	3%
grade 5 events	1487	1547	1429	1616	1724	4563
	4%	5%	4%	4%	4%	10%
grade 6 events	753	976	699	757	938	10382
	2%	3%	2%	2%	2%	23%
grade 7 events	25407	24424	26477	27332	28945	20730
	82%	80%	83%	83%	83%	46%

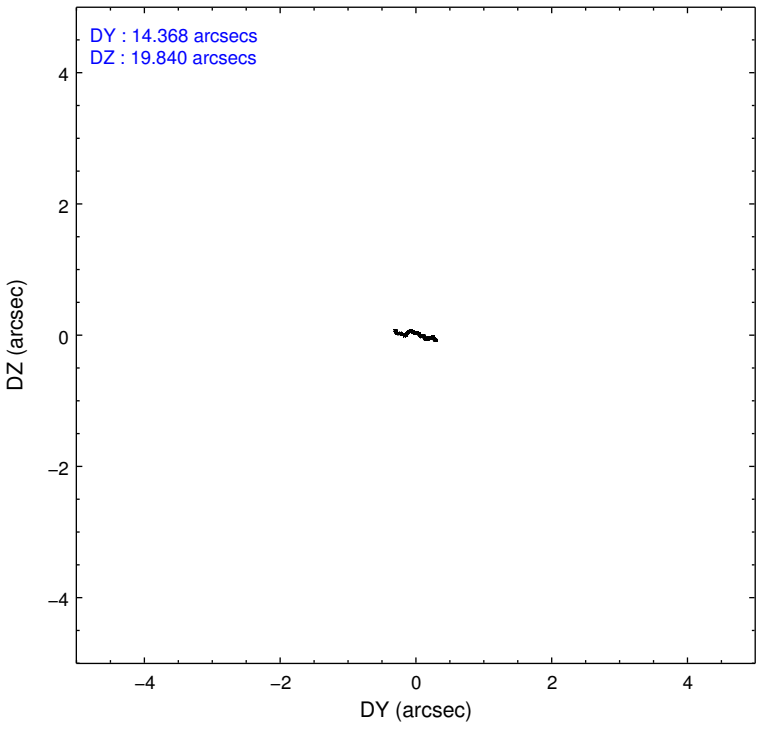
2.2 Compared Parameters

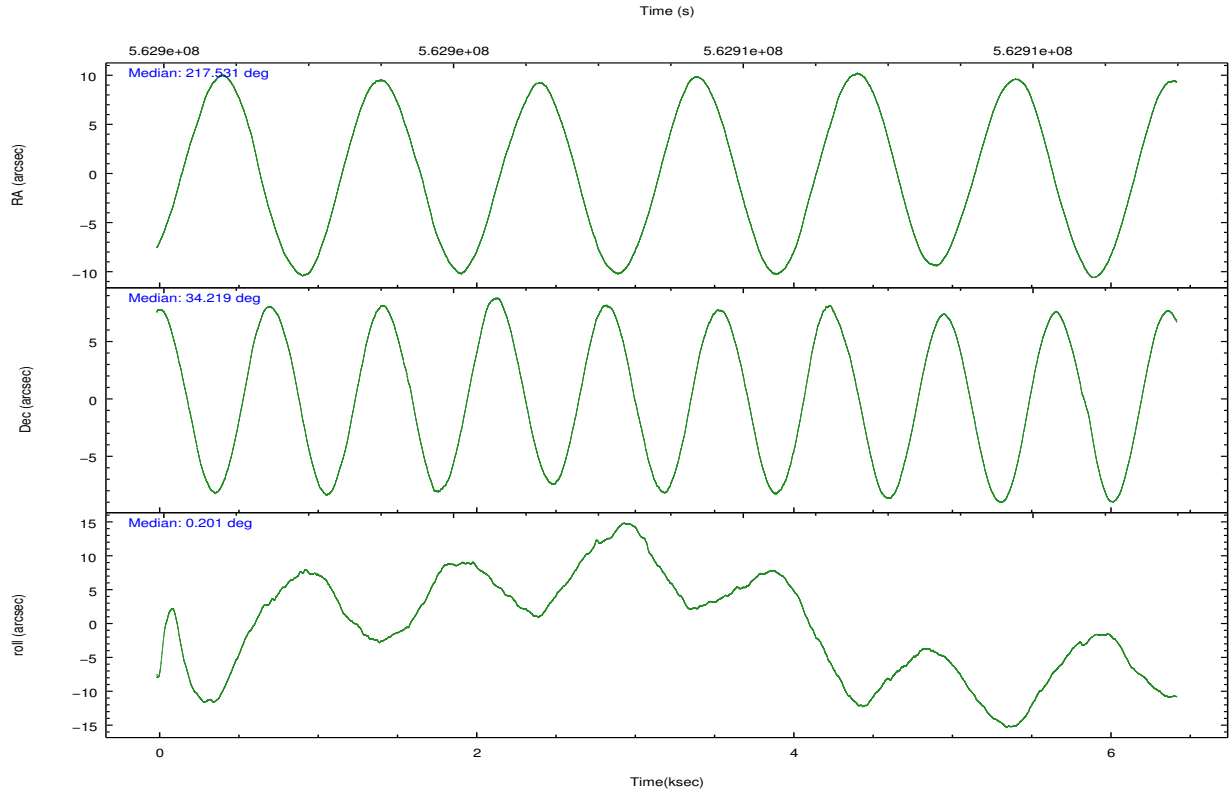
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-012367	ACIS-012367
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	217.502256	217.5310862277549
[deg] Pointing Dec	34.205450	34.21942719416604
[deg] Pointing Roll	0.009742	0.2022000193255645
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-233.592463	-233.5874344608287
[mm] SIM translation stage offset	0	-0.005018542100998502
[s] Observation start time (MET)	562902436.184000	562902060.37631
Observation start date	2015-11-03T01:46:08	2015-11-03T01:41:00
[s] Observation end time (MET)	562908686.184000	562908916.0892
Observation end date	2015-11-03T03:30:18	2015-11-03T03:35:16
Read mode	TIMED	TIMED

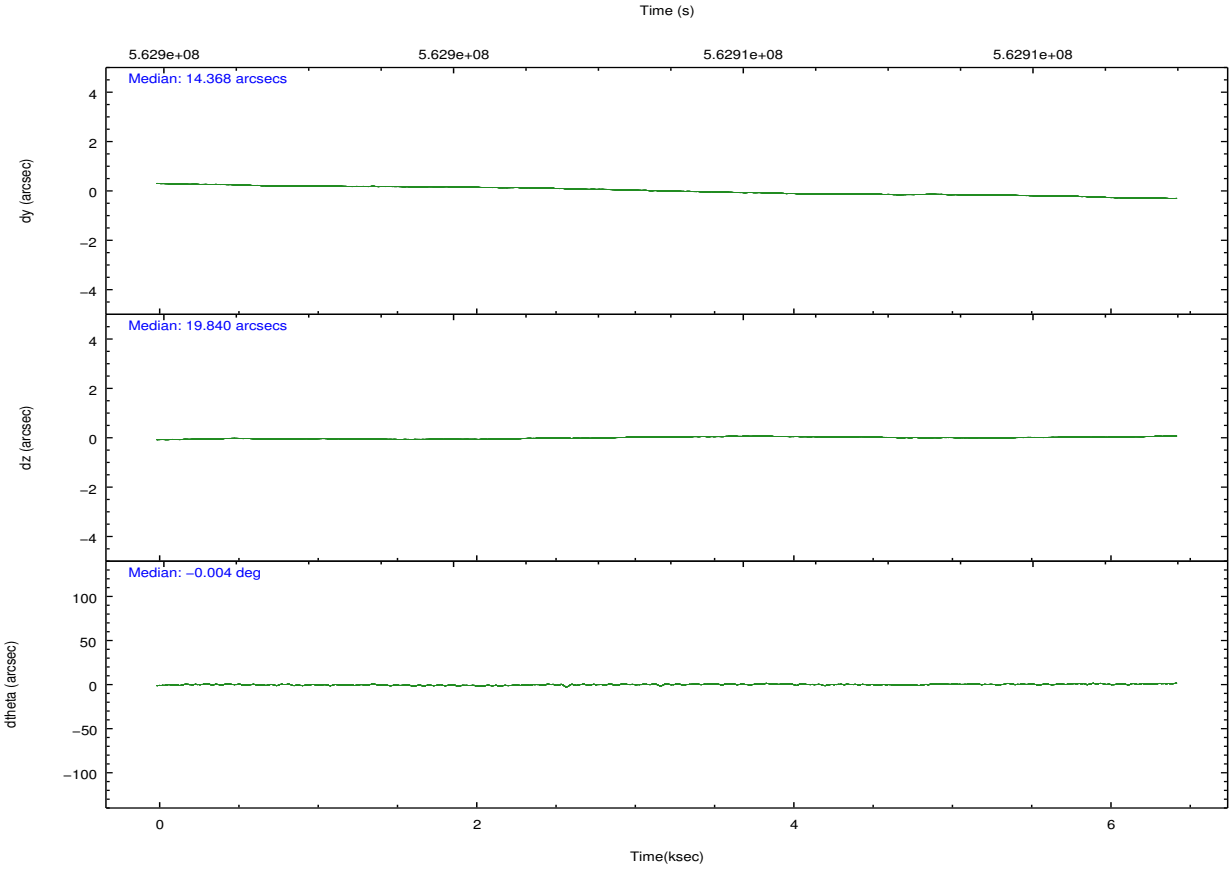
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	Y	Y
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O2	Y
CCD S3 on	O1	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	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 : 217.531 deg
Dec : 34.219 deg
Dec (arcsec)
RA (arcsec)
5
0
−5
−10
−5
0
5
10


DY : 14.368 arcsecs
DZ : 19.840 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: 217.531 deg
RA (arcsec)
Median: 34.219 deg
Dec (arcsec)
Median: 0.201 deg
roll (arcsec)
Time(ksec)

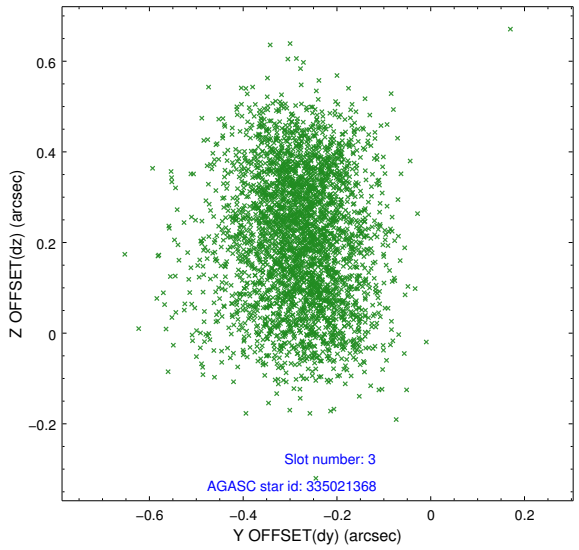

Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: 14.368 arcsecs
dy (arcsec)
Median: 19.840 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

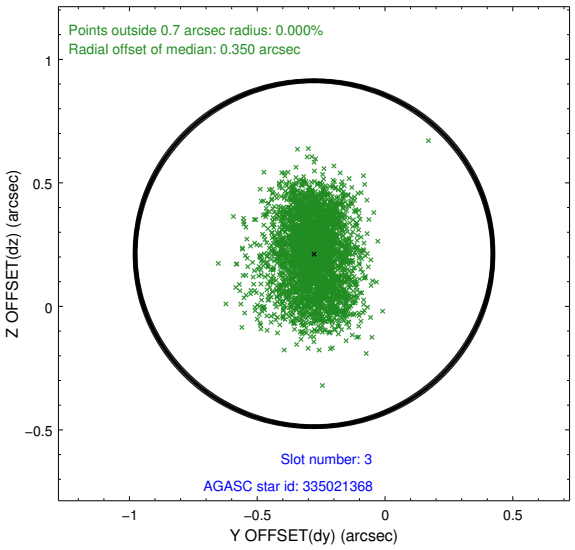
Slot Statistics

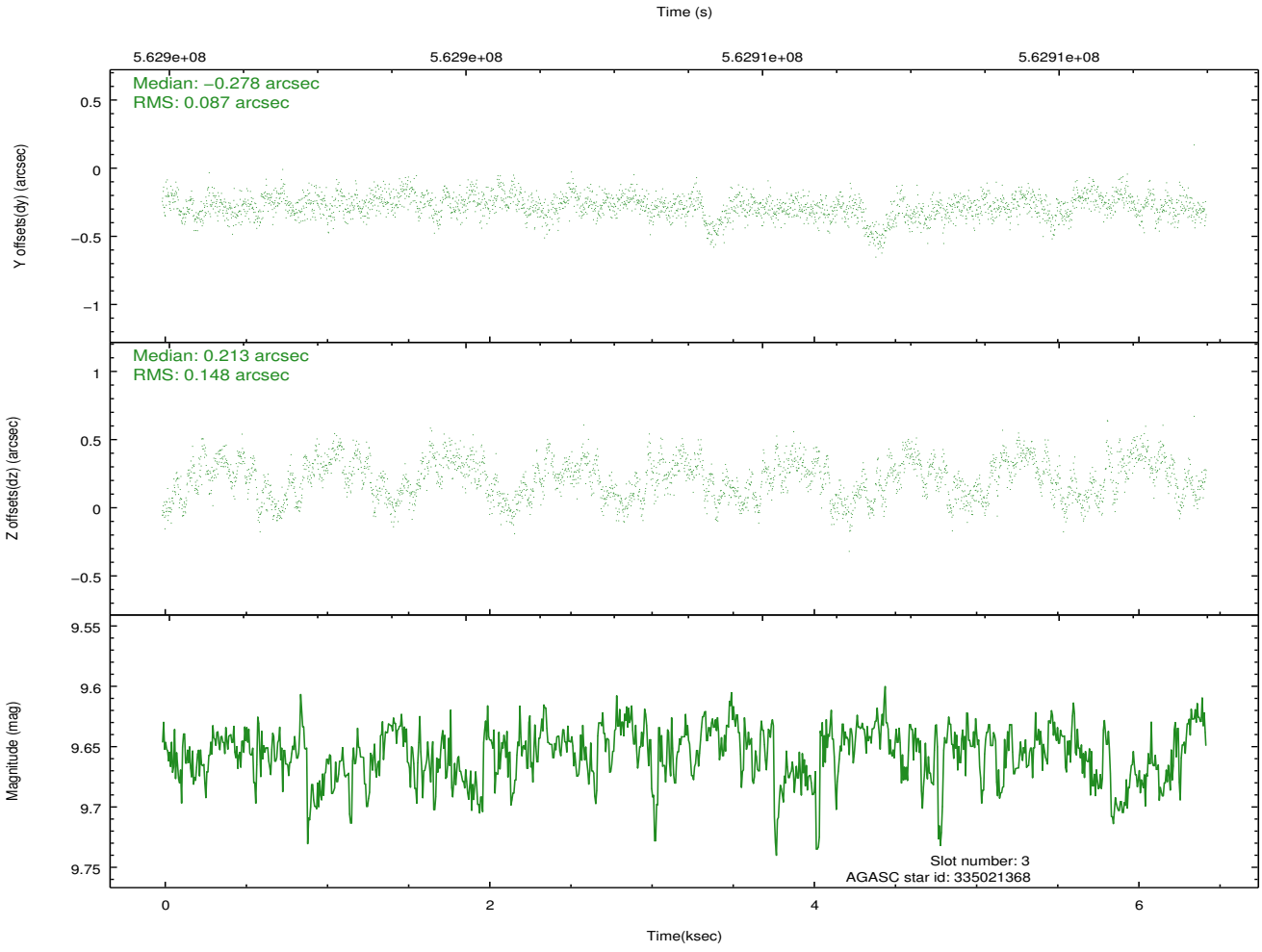
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.24	1569	0.075	-0.040	0.010	0.018	0.000000	0.000000	925.20	-843.58
1	FID		ACIS-I-5	7.25	1569	-0.329	0.043	0.008	0.013	0.000000	0.000000	-1822.87	1053.44
2	FID		ACIS-I-6	7.24	1569	0.163	0.068	0.010	0.016	0.000000	0.000000	389.76	1699.08
3	GUIDE	used	335021368	9.65	3128	-0.278	0.213	0.187	0.292	217.529643	33.934817	81.24	-973.89
4	GUIDE	used	335025848	9.68	3135	0.140	0.327	0.159	0.245	217.530531	33.778292	84.42	-1537.57
5	GUIDE	used	335028336	9.46	3136	0.334	-0.196	0.145	0.222	217.189840	34.665629	-924.63	1657.70
6	GUIDE	used	335028696	9.17	3139	-0.265	0.117	0.116	0.186	217.260519	33.844112	-723.70	-1299.04
7	GUIDE	used	335030384	8.80	3138	0.068	-0.456	0.110	0.174	216.806407	34.722197	-2059.08	1867.02

2.4 Star Slots

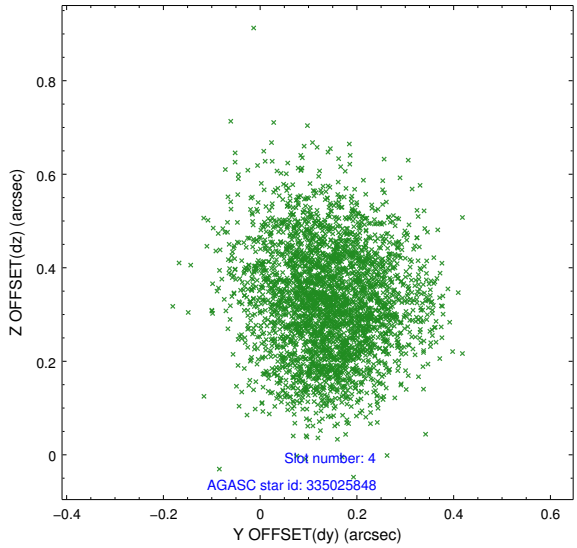
2.4.1 Slot 3

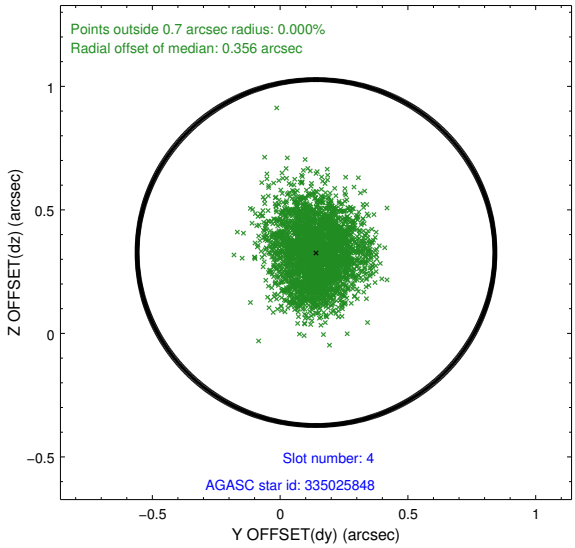


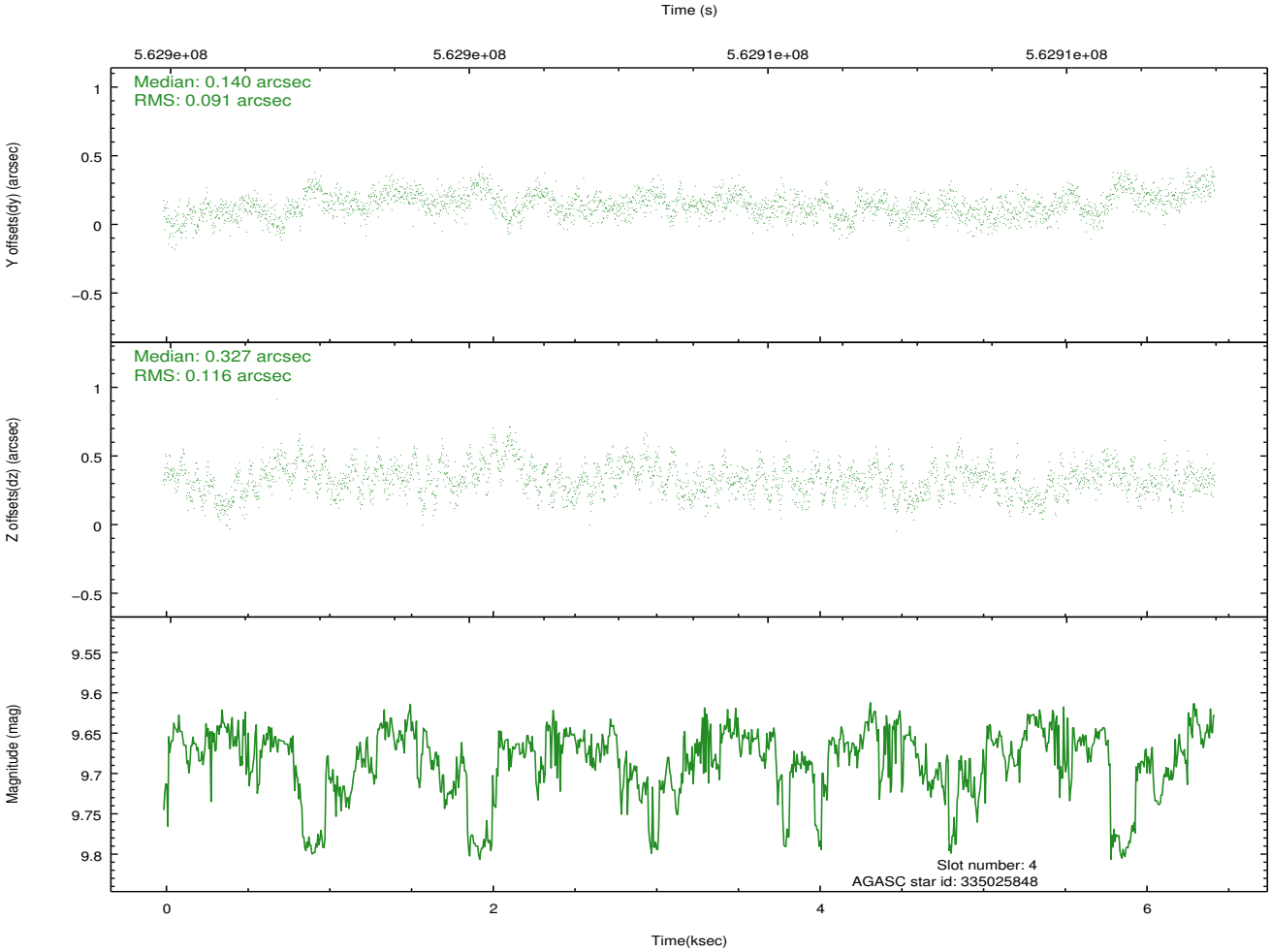




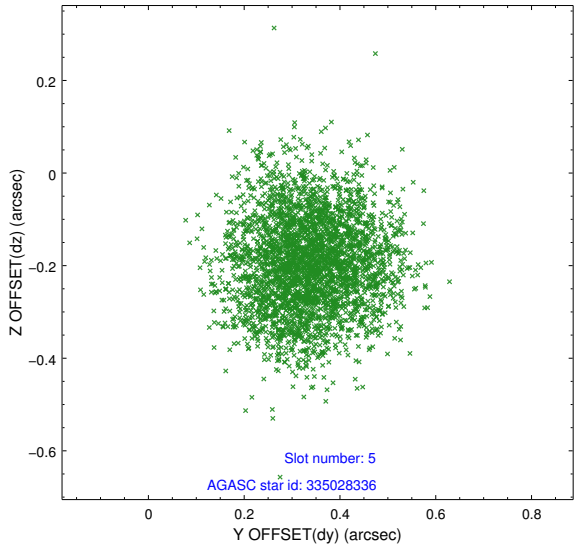
2.4.2 Slot 4

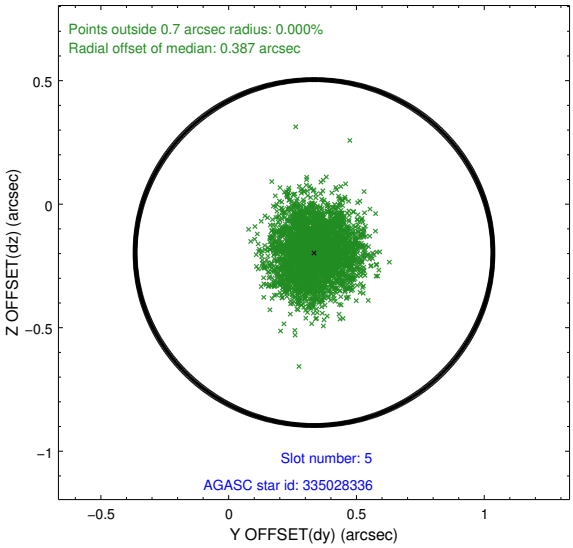

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 335025848

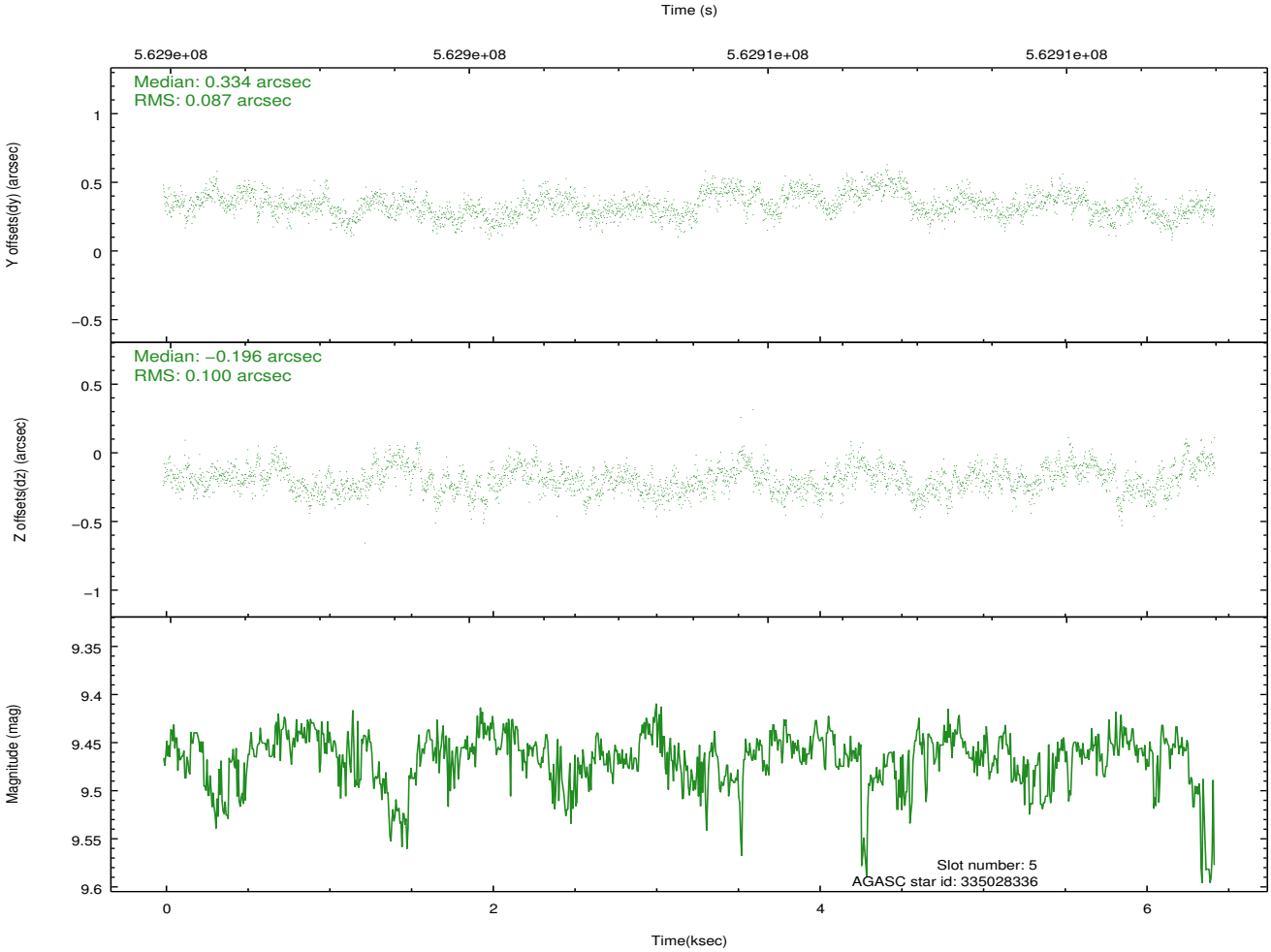

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.356 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 335025848


Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: 0.140 arcsec
RMS: 0.091 arcsec
Y offsets(dy) (arcsec)
Median: 0.327 arcsec
RMS: 0.116 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 335025848
Time(ksec)

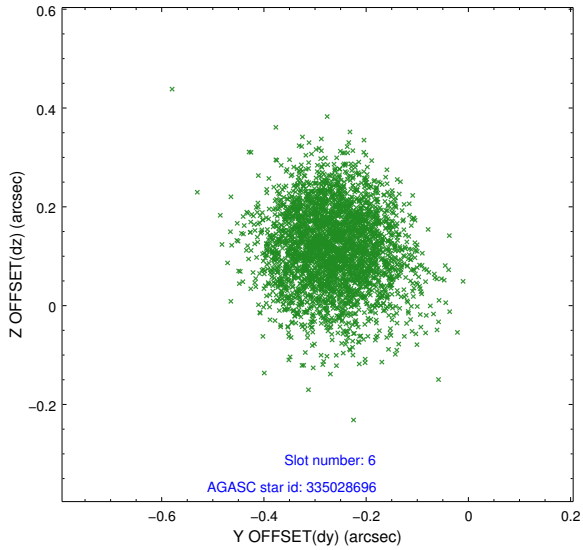
2.4.3 Slot 5

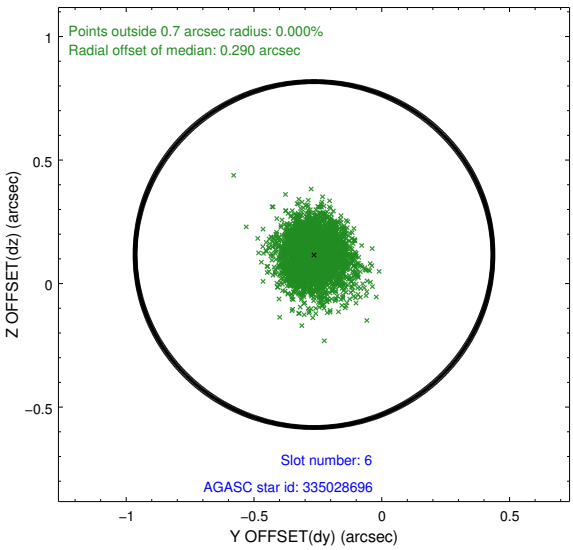

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 335028336

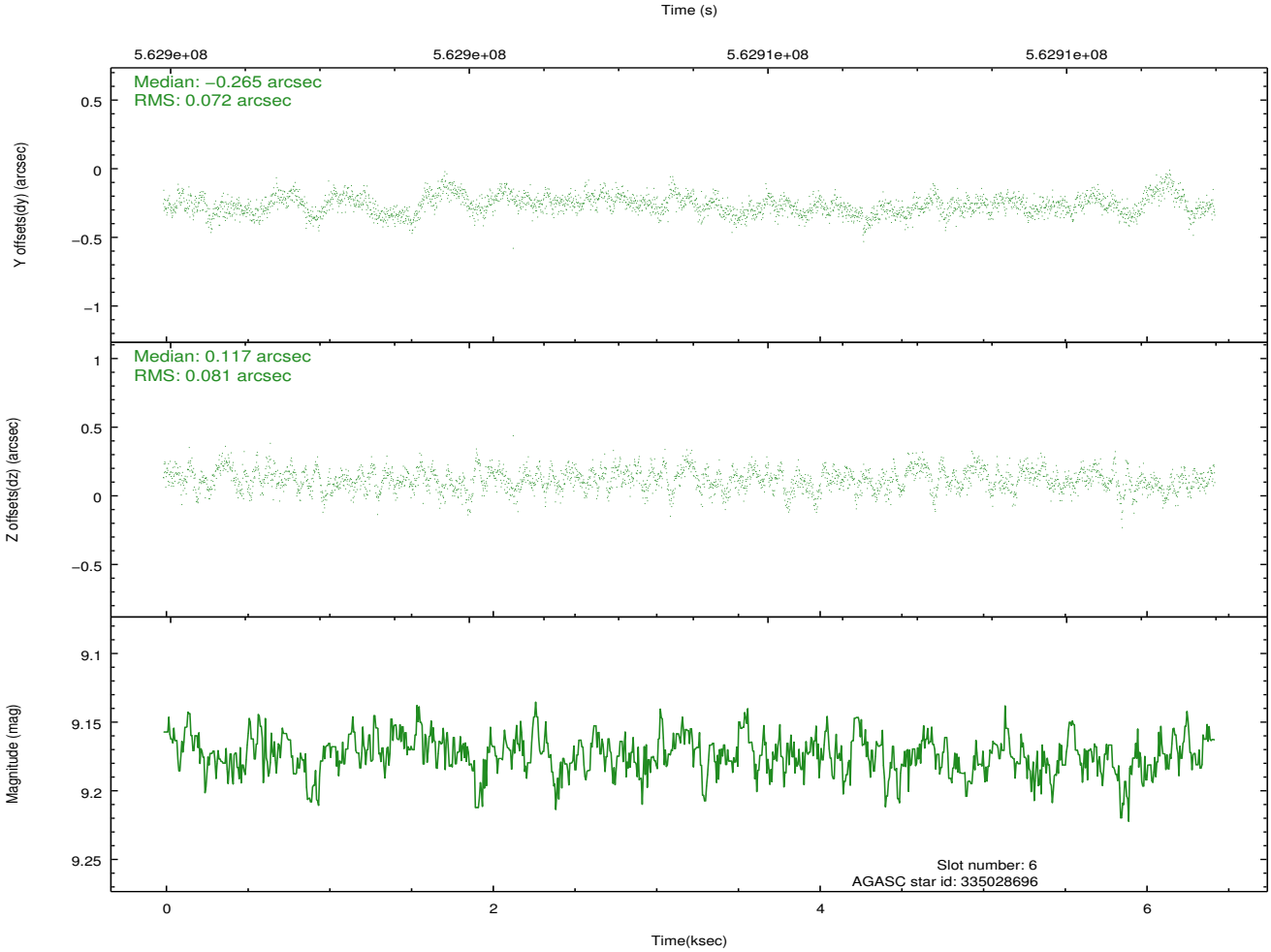

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.387 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 335028336


Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: 0.334 arcsec
RMS: 0.087 arcsec
Y offsets(dy) (arcsec)
Median: −0.196 arcsec
RMS: 0.100 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 335028336
Time(ksec)

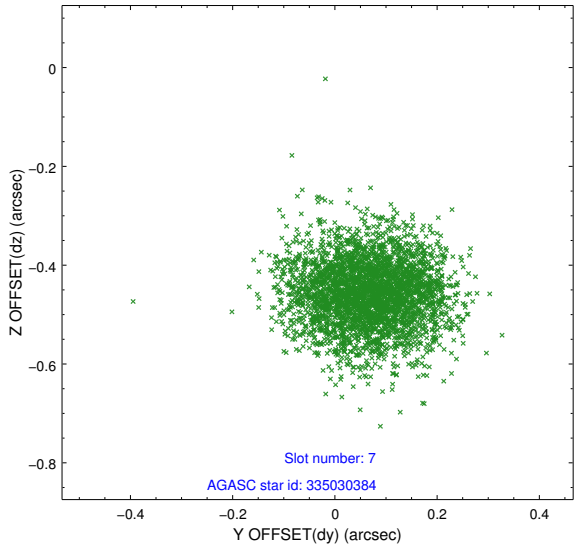
2.4.4 Slot 6

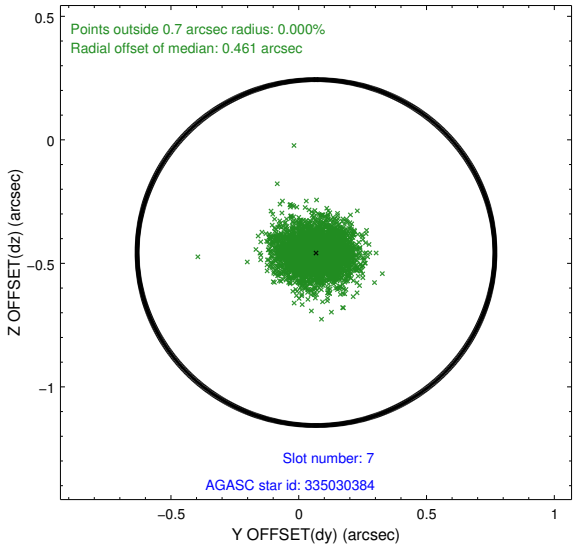

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 335028696

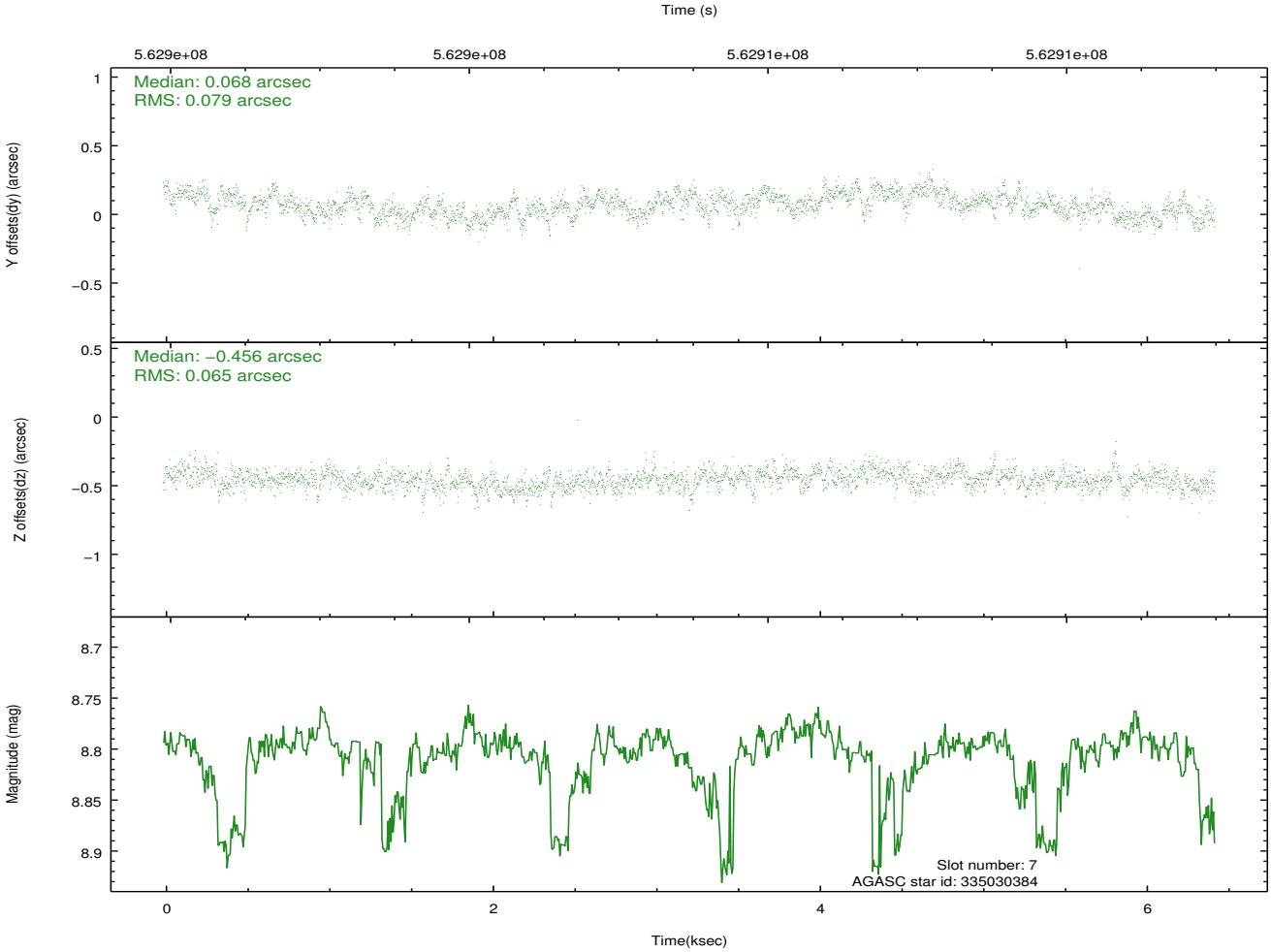

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.290 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 335028696


Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: −0.265 arcsec
RMS: 0.072 arcsec
Y offsets(dy) (arcsec)
Median: 0.117 arcsec
RMS: 0.081 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 335028696
Time(ksec)

2.4.5 Slot 7

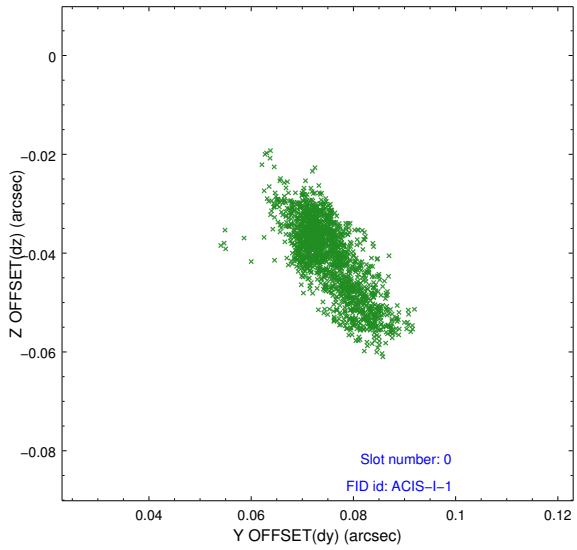

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 335030384

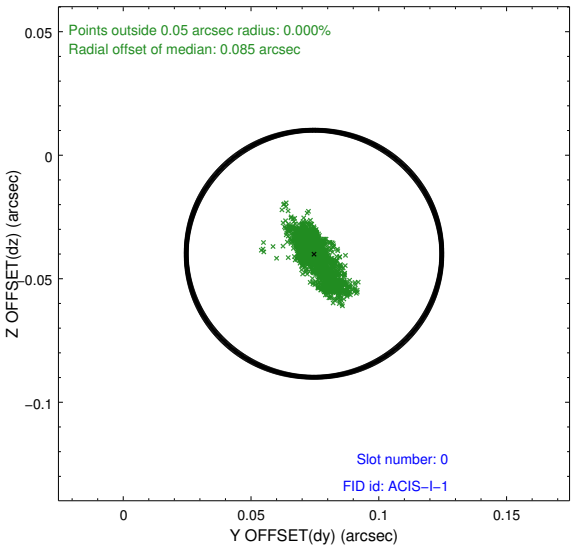

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.461 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 335030384

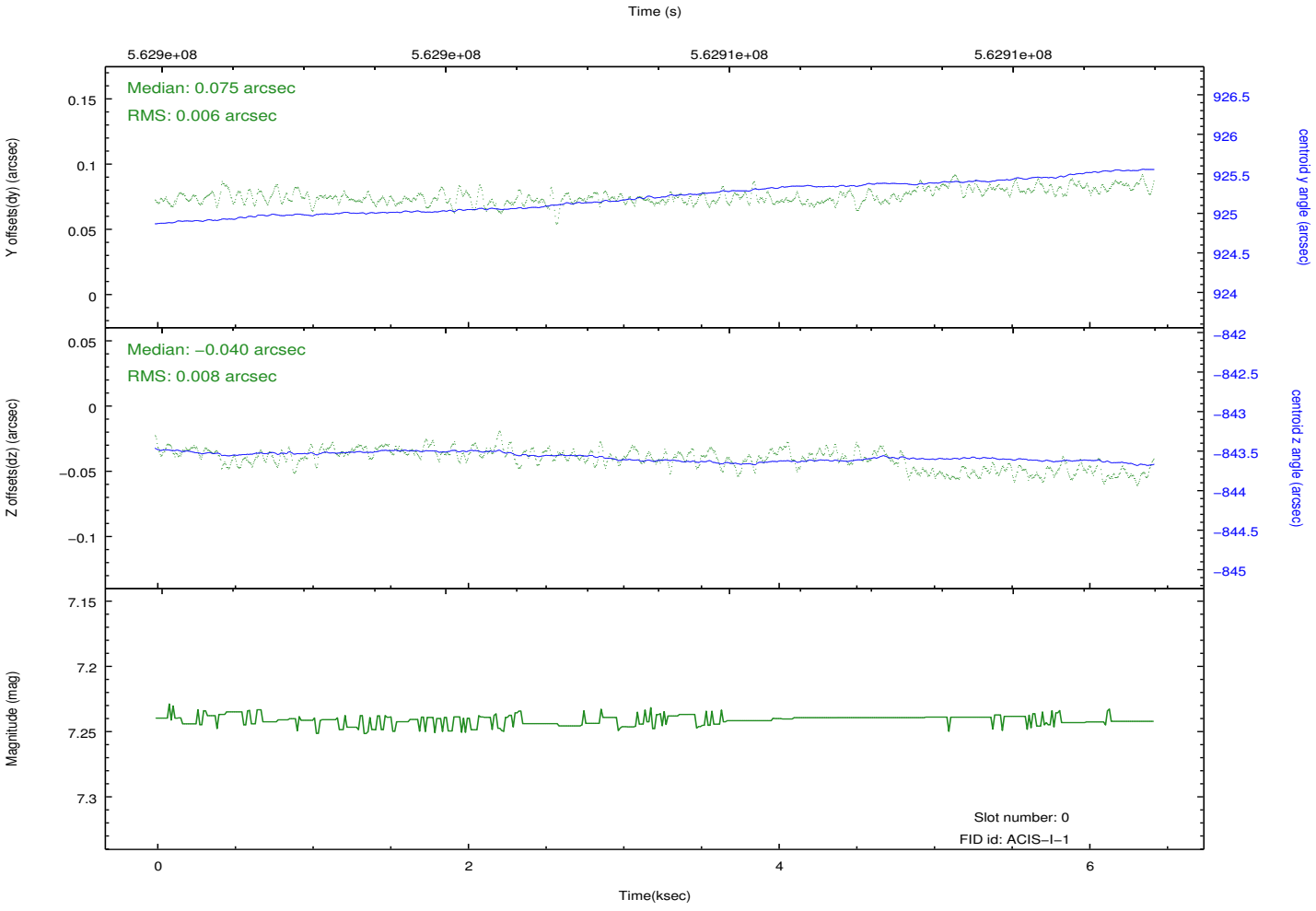

Time (s)
5.629e+08
5.629e+08
5.6291e+08
5.6291e+08
Median: 0.068 arcsec
RMS: 0.079 arcsec
Y offsets(dy) (arcsec)
Median: −0.456 arcsec
RMS: 0.065 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 335030384
Time(ksec)

2.5 FID Slots

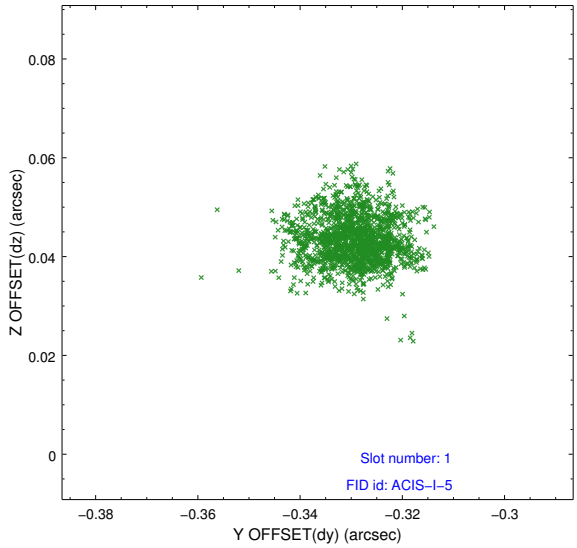
2.5.1 Slot 0

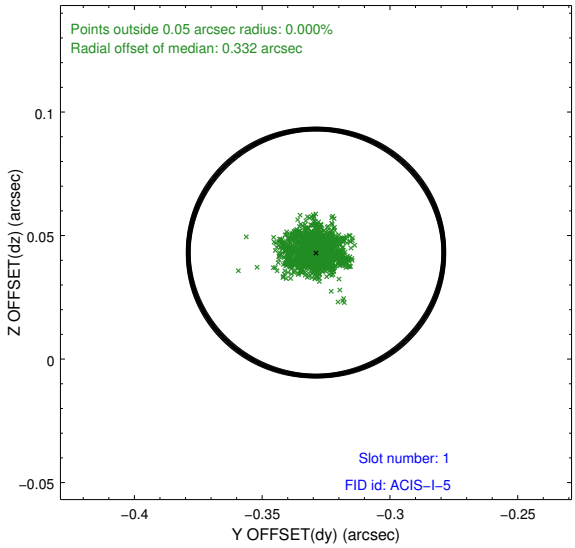


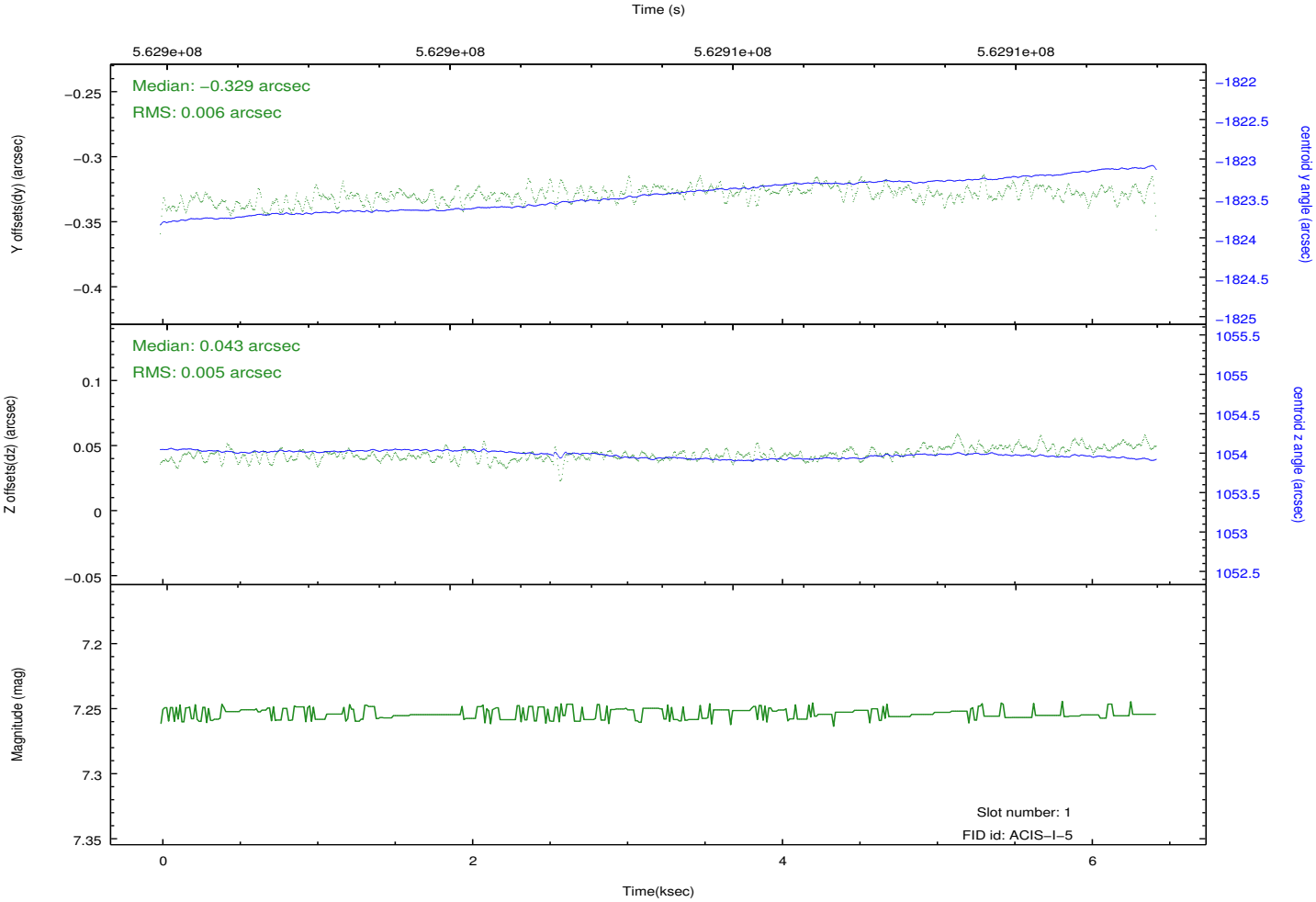




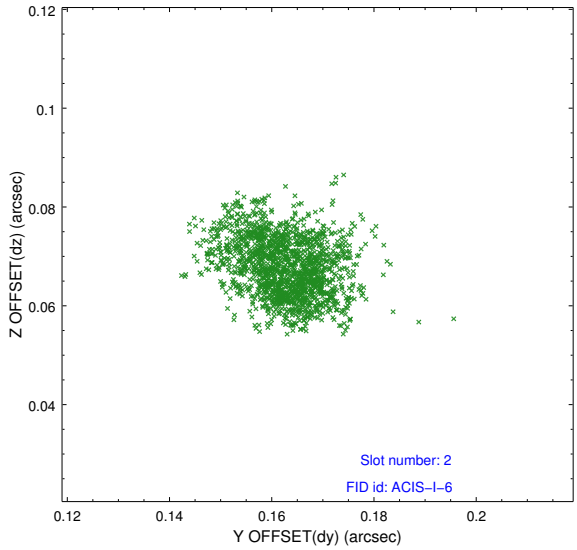
2.5.2 Slot 1

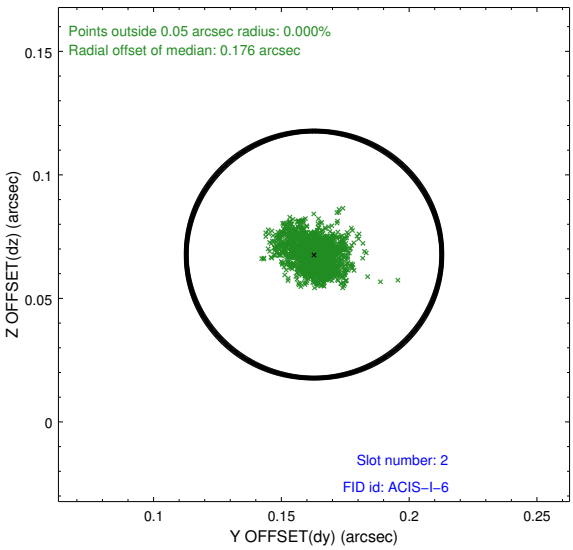

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5

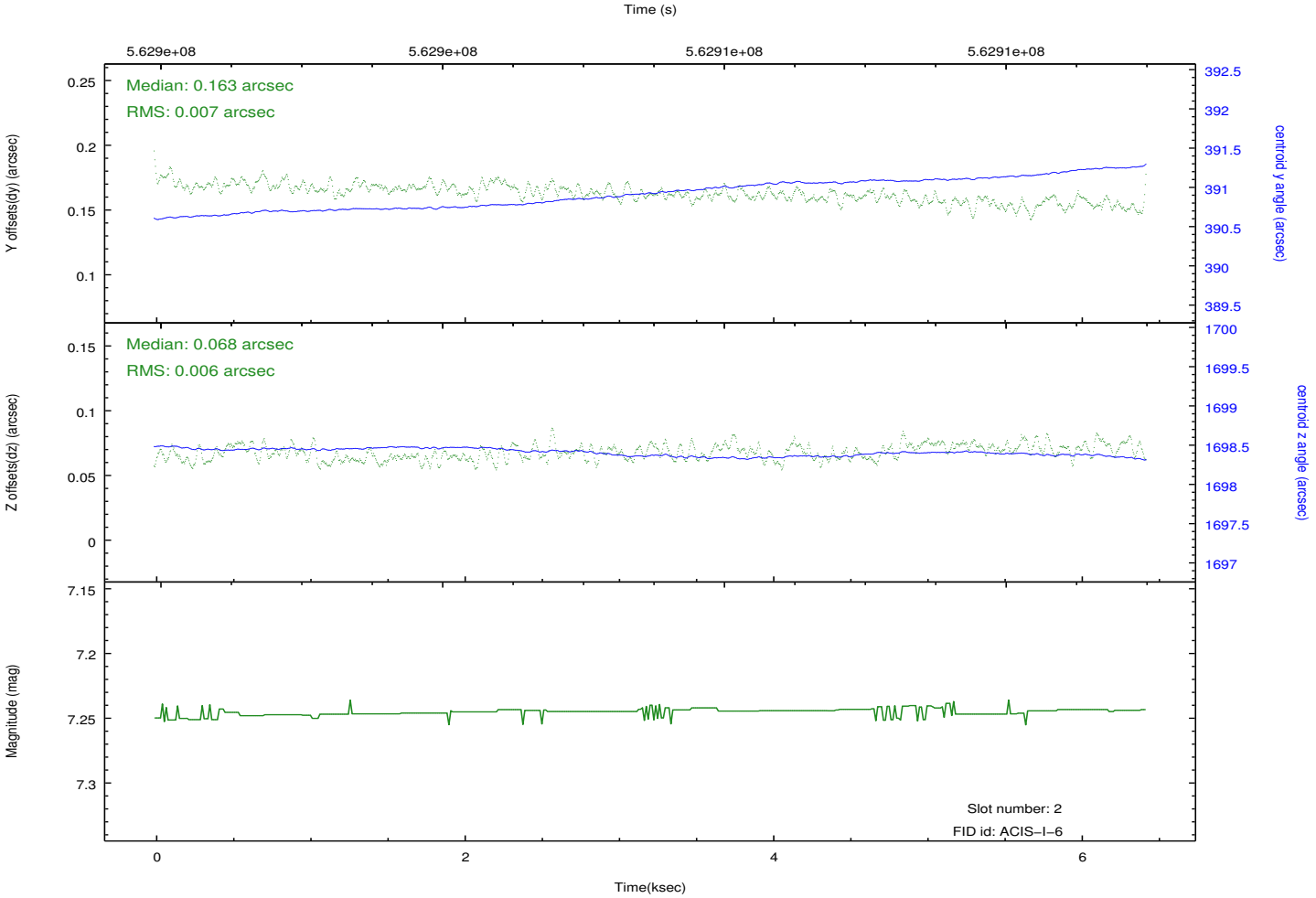

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.332 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5


Time (s)
Median: −0.329 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.043 arcsec
RMS: 0.005 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−I−5
Time(ksec)

2.5.3 Slot 2


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


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.176 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS–I–6


Time (s)
Median: 0.163 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.068 arcsec
RMS: 0.006 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS–I–6
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2015.11.05
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	6.0064000895023

A.2 Comments

A spatial region of the original bias map for CCD = 1 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 1 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation.
The pixels affected by the anomaly are bounded by sky coords:
(217.36254, 34.18346), (217.36258, 34.17924), (217.53116, 34.17986), (217.53113, 34.18408).