V&V Reference Report
L2 ASCDS Version : 10.2.1

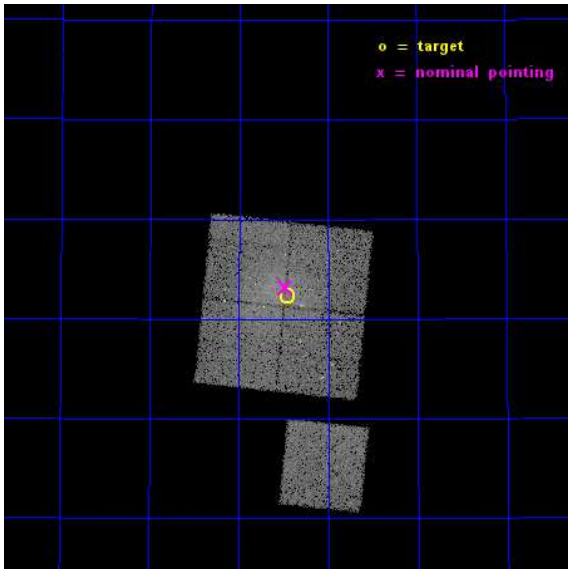
Observation 15191 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 10 2014

Contents

1 Front

seq_num	801316	Sequence number
obs_id	15191	Observation id
title	The radio relic/cluster merger connection	Proposal title
observer	Dr Stephen Murray	Principal investigator
object	A746	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	137.365833	Observer's specified target RA [deg]
dec_targ	51.538806	Observer's specified target Dec [deg]
ra_nom	137.3698559847	Nominal RA [deg]
dec_nom	51.55335847361	Nominal Dec [deg]
roll_nom	185.9674953142	Nominal Roll [deg]
revision	2	Processing version of data
ontime	26085.312556982	Sum of GTIs [s]
livetime	25744.488744697	Livetime [s]
ontime0	26082.130456746	Sum of GTIs [s]
ontime1	26085.312556982	Sum of GTIs [s]
ontime2	26085.353596985	Sum of GTIs [s]
ontime3	26085.394636989	Sum of GTIs [s]
ontime6	26085.230476975	Sum of GTIs [s]
l2events	70515	Number of level 2 events

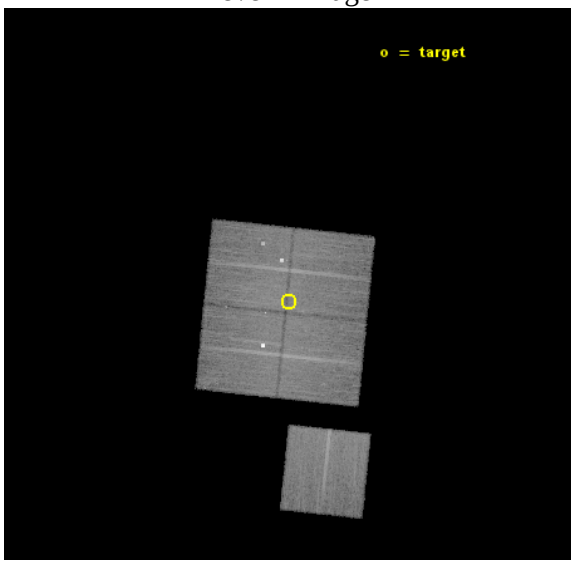


2 OBI

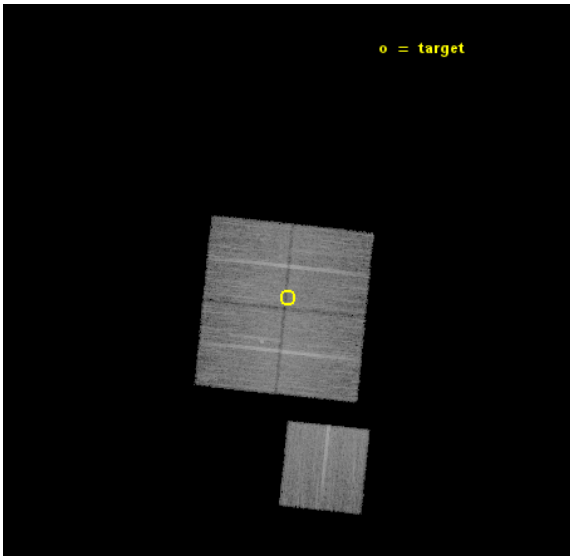
2.1 OBI

2.1.1 Images

Level 1 Image

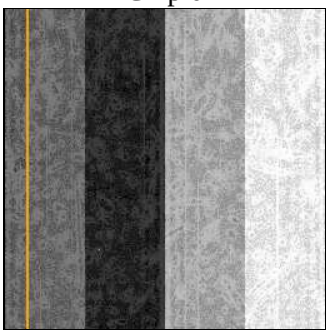


Level 1 Bad Events

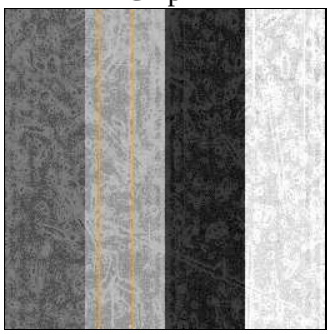


2.1.2 Bias

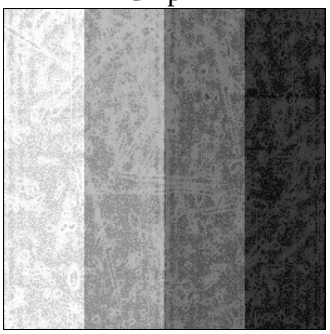
Chip 0



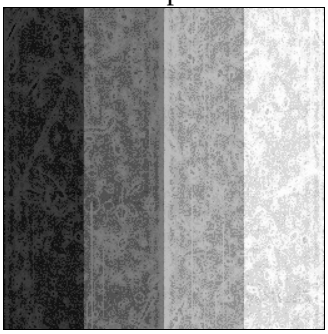
Chip 1



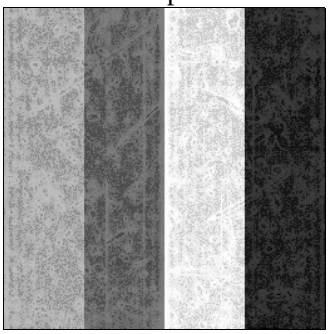
Chip 2



Chip 3



Chip 6



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.3.1	Processing system revision
caldbver	4.6.4	
date	2014-12-10T05:59:00	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	26000.000000	[s] Scheduled observation exposure time
ontime	26085.312556982	Sum of GTIs [s]
ontime0	26082.130456746	Sum of GTIs [s]
ontime1	26085.312556982	Sum of GTIs [s]
ontime2	26085.353596985	Sum of GTIs [s]
ontime3	26085.394636989	Sum of GTIs [s]
ontime6	26085.230476975	Sum of GTIs [s]
l1events	636876	Number of level 1 events

2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	116054	130435	127050	141242	122095
rejected events	99360	103470	112289	107913	107482
rejected %	85%	79%	88%	76%	88%

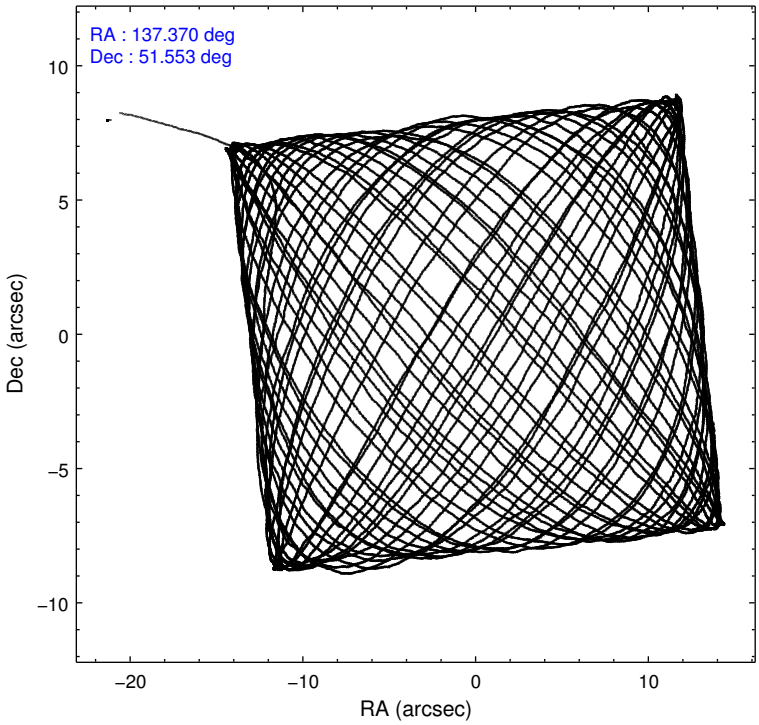
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	6751	9952	5697	23749	4814
	5%	7%	4%	16%	3%
grade 1 events	75	84	73	204	59
	0%	0%	0%	0%	0%
grade 2 events	3721	9854	3406	3387	3179
	3%	7%	2%	2%	2%
grade 3 events	1592	1697	1430	1596	1559
	1%	1%	1%	1%	1%
grade 4 events	1528	1665	1482	1474	1390
	1%	1%	1%	1%	1%
grade 5 events	5957	6304	5530	6839	6384
	5%	4%	4%	4%	5%
grade 6 events	3104	3803	2749	3128	3673
	2%	2%	2%	2%	3%
grade 7 events	93326	97076	106683	100865	101037
	80%	74%	83%	71%	82%

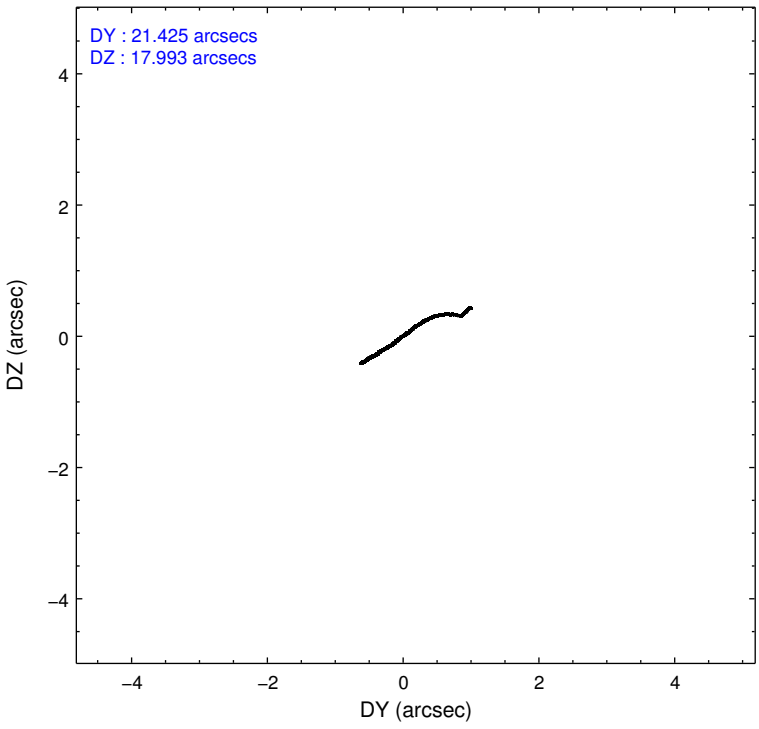
2.2 Compared Parameters

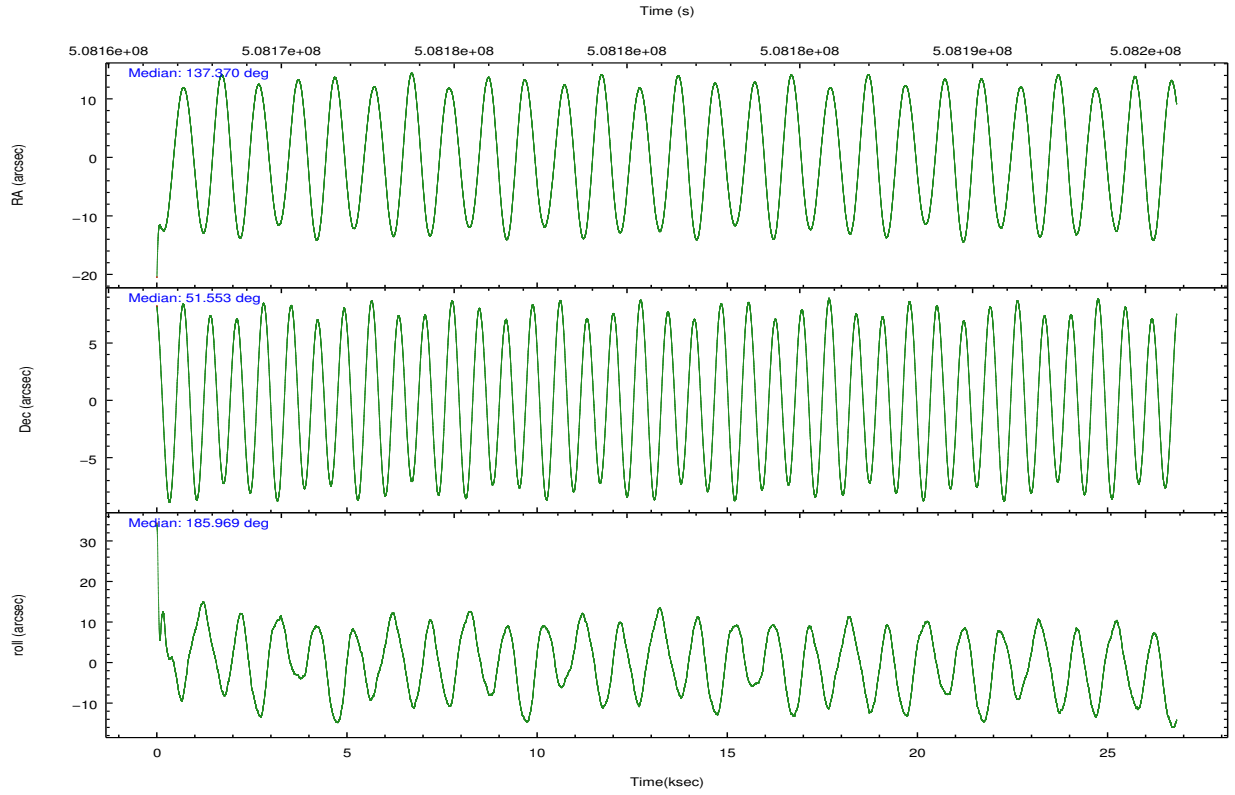
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-01236	ACIS-01236
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	137.405568	137.3698559846951
[deg] Pointing Dec	51.569598	51.55335847360985
[deg] Pointing Roll	185.730821	185.9674953142026
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-241.344463	-241.351640112046
[mm] SIM translation stage offset	7.752	7.759187109116283
[s] Observation start time (MET)	508168561.184000	508166283.68484
Observation start date	2014-02-07T13:54:54	2014-02-07T13:18:03
[s] Observation end time (MET)	508194561.184000	508195456.72394
Observation end date	2014-02-07T21:08:14	2014-02-07T21:24:16
Read mode	TIMED	TIMED

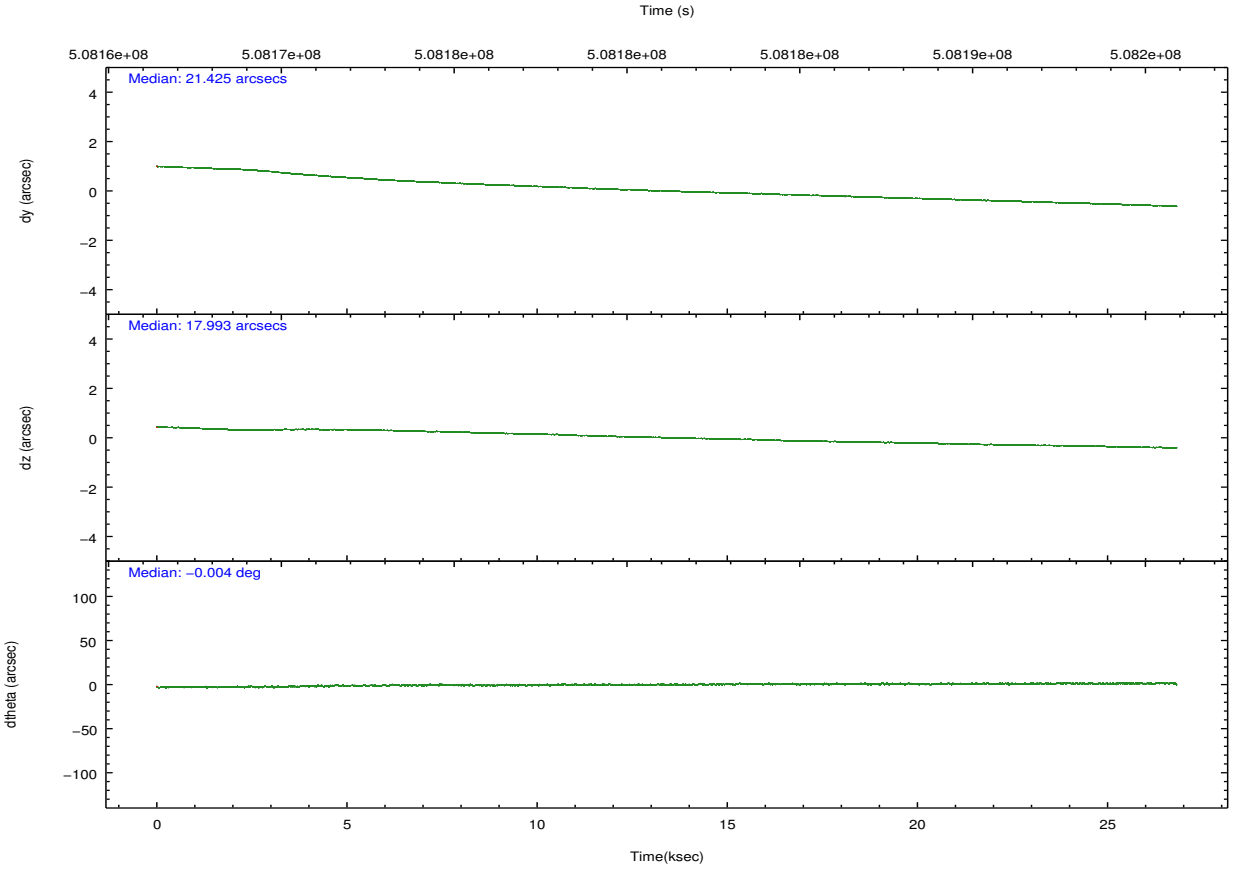
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	Y	Y
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O1	Y
CCD S3 on	N	N
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect


RA : 137.370 deg
Dec : 51.553 deg
10
5
0
−5
−10
Dec (arcsec)
−20
−10
0
10
RA (arcsec)


DY : 21.425 arcsecs
DZ : 17.993 arcsecs
4
2
0
−2
−4
DZ (arcsec)
−4
−2
0
2
4
DY (arcsec)


Time (s)
5.0816e+08
5.0817e+08
5.0818e+08
5.0818e+08
5.0818e+08
5.0819e+08
5.082e+08
Median: 137.370 deg
RA (arcsec)
Median: 51.553 deg
Dec (arcsec)
Median: 185.969 deg
roll (arcsec)
Time(ksec)

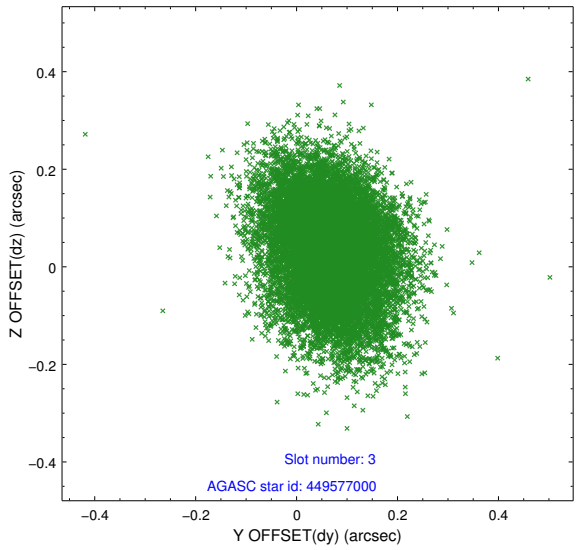

Time (s)
5.0816e+08
5.0817e+08
5.0818e+08
5.0818e+08
5.0818e+08
5.0819e+08
5.082e+08
Median: 21.425 arcsecs
dy (arcsec)
Median: 17.993 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

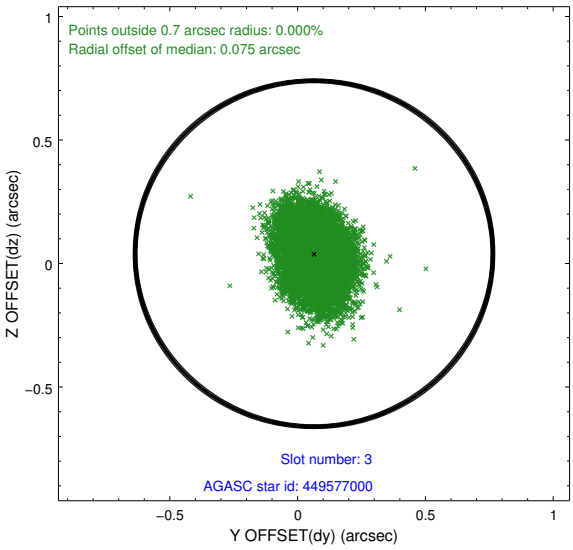
Slot Statistics

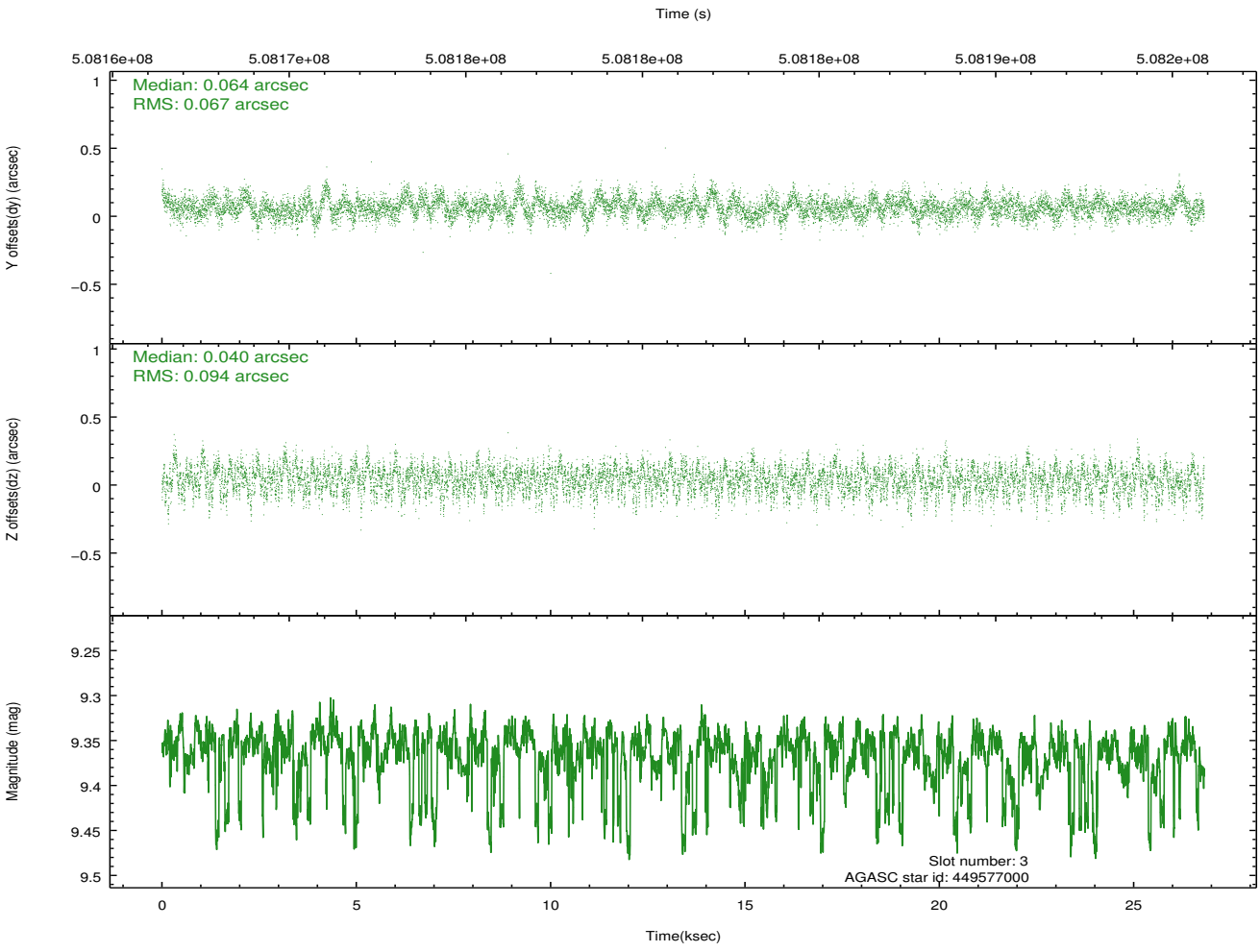
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.21	6541	-0.011	0.092	0.020	0.030	0.000000	0.000000	917.95	-682.06
1	FID		ACIS-I-5	7.16	6541	-0.205	0.012	0.007	0.012	0.000000	0.000000	-1830.37	1215.22
2	FID		ACIS-I-6	7.14	6541	0.124	-0.032	0.018	0.027	0.000000	0.000000	383.42	1859.87
3	GUIDE	used	449577000	9.36	13068	0.064	0.040	0.122	0.201	137.786748	51.305874	-758.72	1028.47
4	GUIDE	used	449579152	8.75	13072	0.112	-0.021	0.092	0.146	137.519862	51.431286	-205.20	521.31
5	GUIDE	used	449580392	9.23	13069	-0.171	-0.104	0.122	0.191	136.586076	50.962265	2066.02	1979.86
6	GUIDE	used	449580944	9.49	13065	0.072	-0.039	0.132	0.208	136.730333	51.335063	1595.06	681.77
7	GUIDE	used	449584768	7.13	13078	-0.083	0.120	0.085	0.126	136.806399	51.629931	1310.30	-354.87

2.4 Star Slots

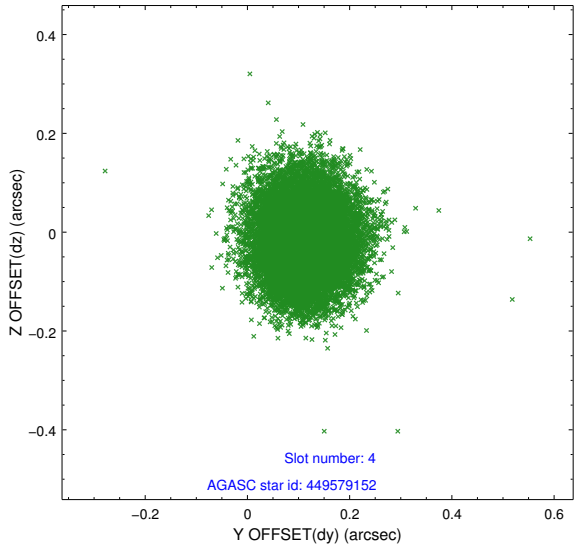
2.4.1 Slot 3

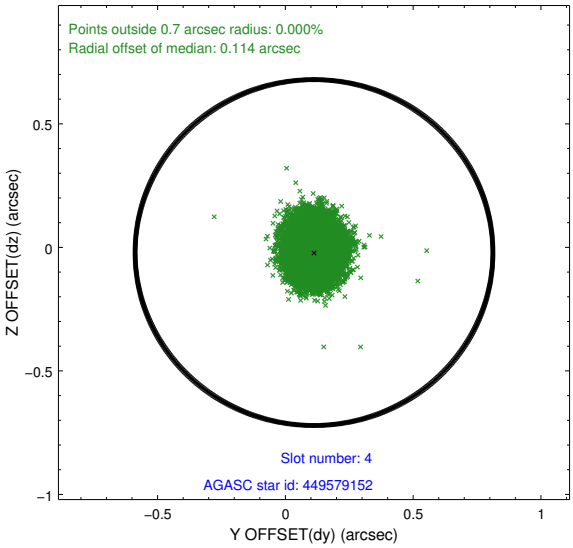


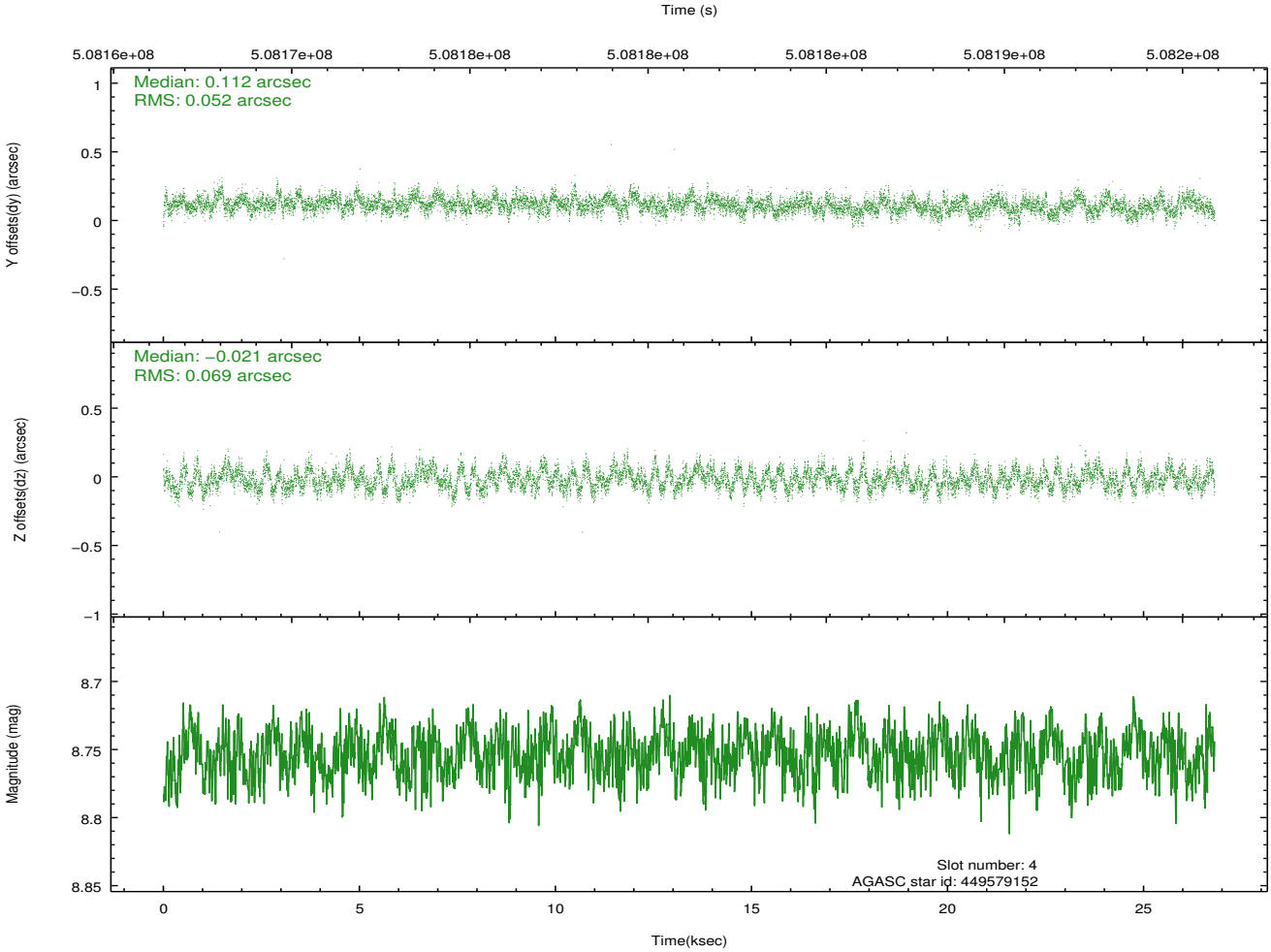




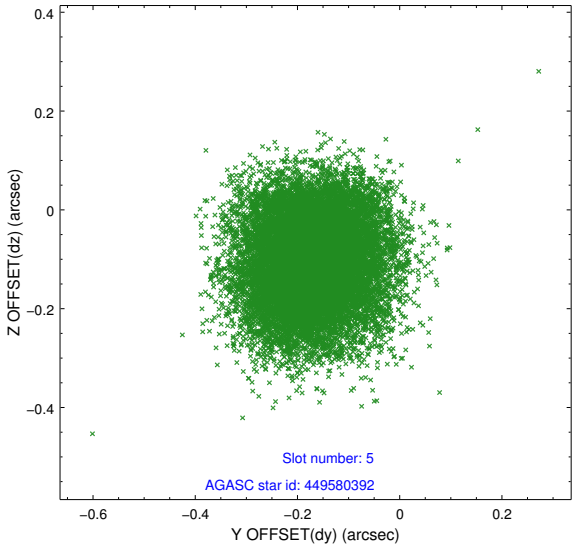
2.4.2 Slot 4

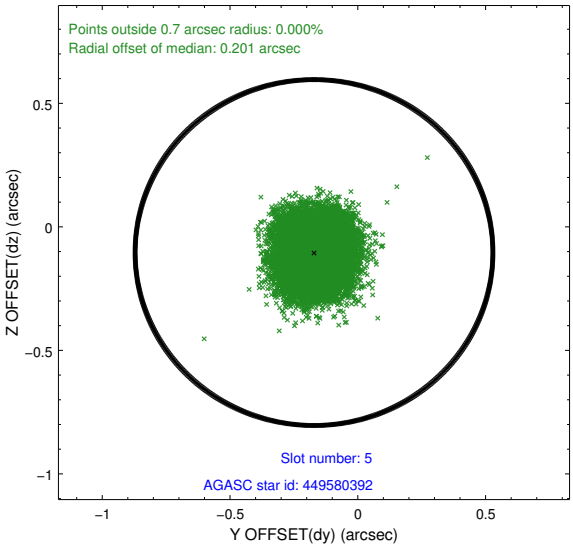

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 449579152

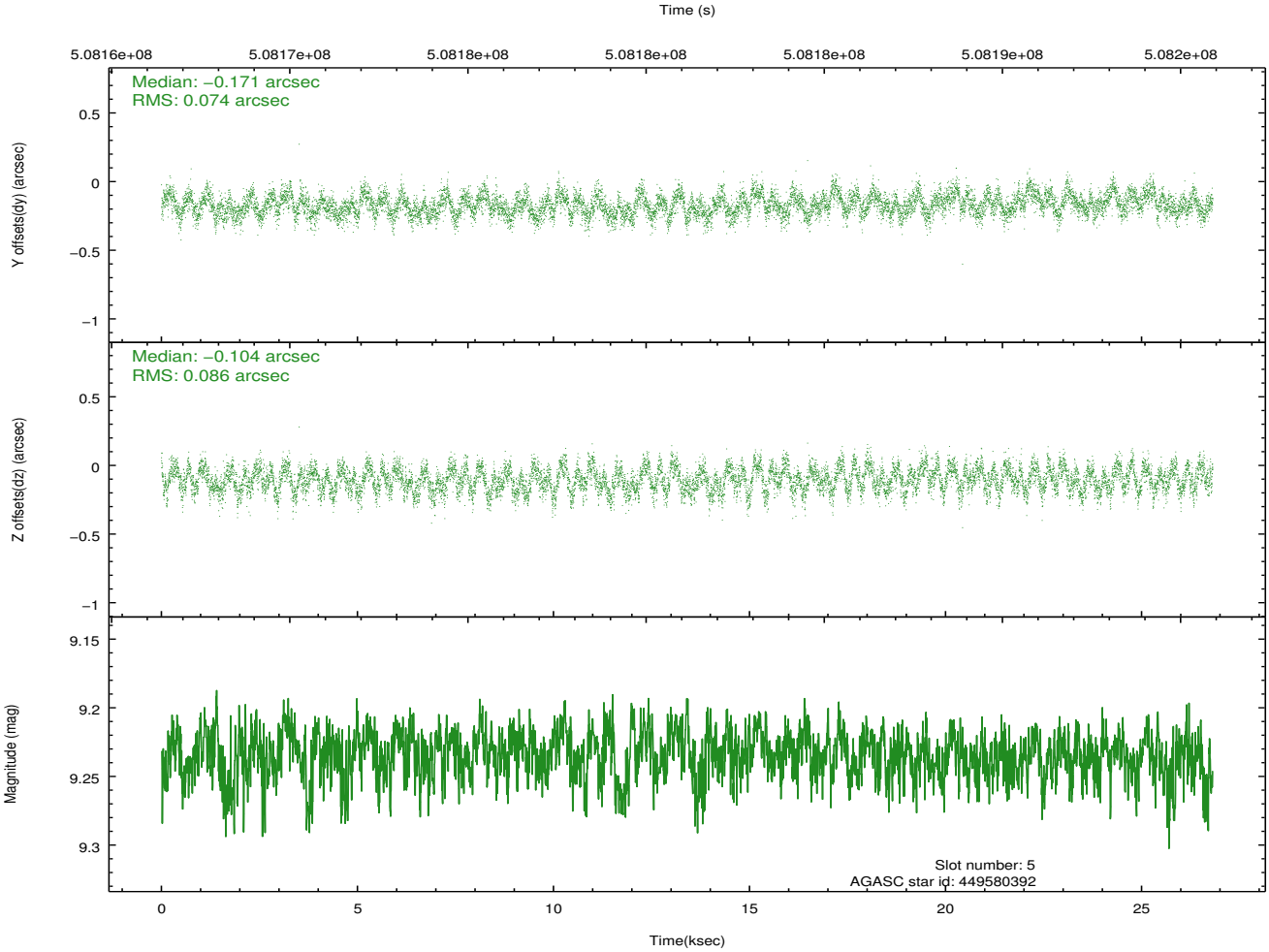

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.114 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 449579152


Time (s)
Median: 0.112 arcsec
RMS: 0.052 arcsec
Y offsets(dy) (arcsec)
Median: −0.021 arcsec
RMS: 0.069 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 449579152
Time(ksec)

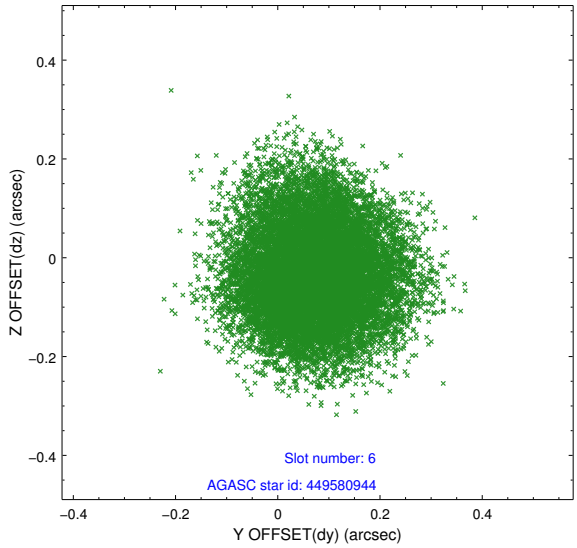
2.4.3 Slot 5

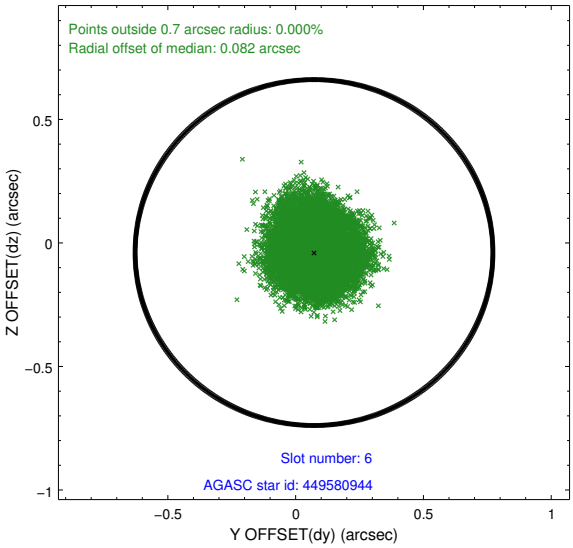

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 449580392

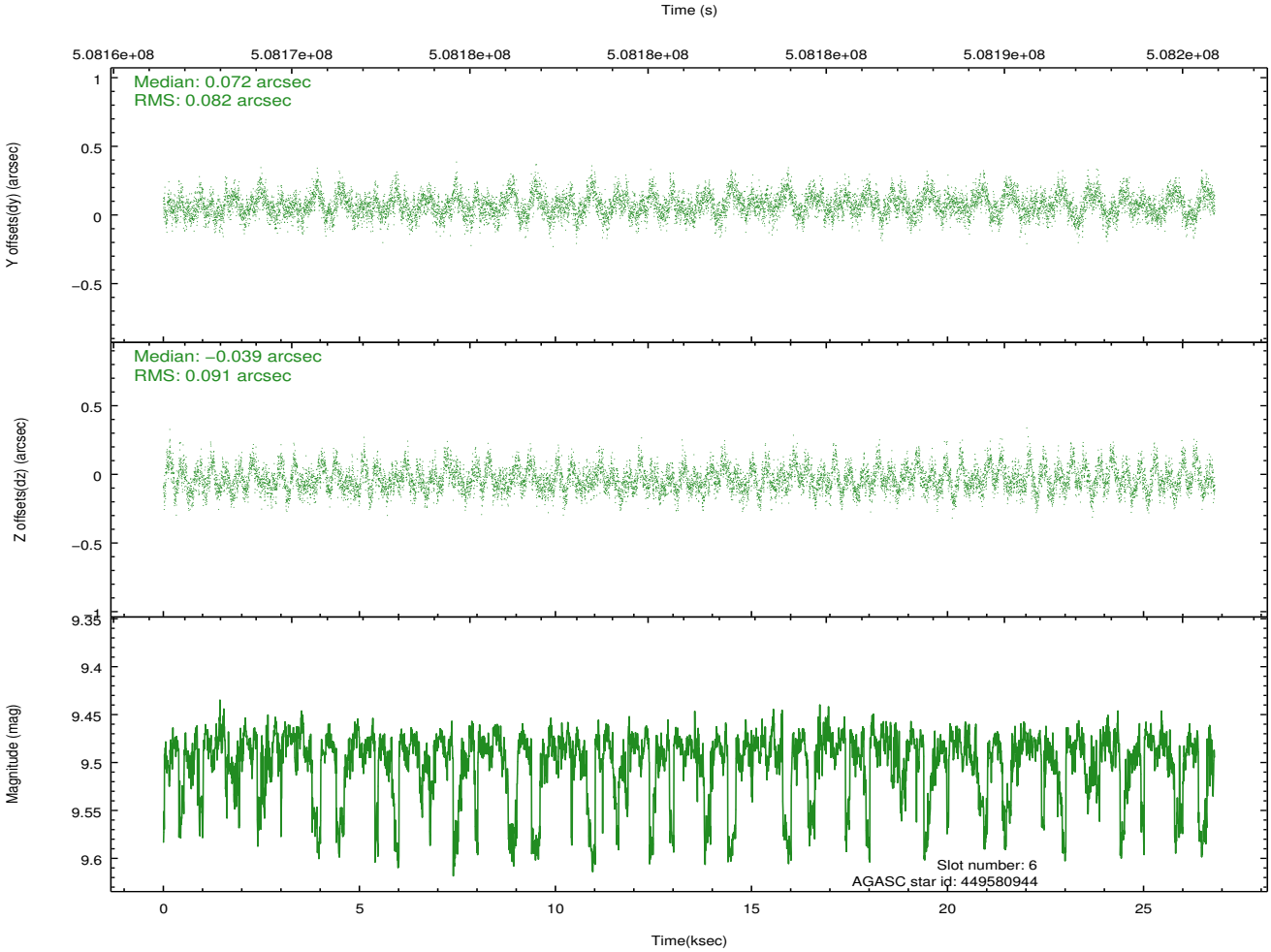

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.201 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 449580392


Time (s)
Median: −0.171 arcsec
RMS: 0.074 arcsec
Y offsets(dy) (arcsec)
Median: −0.104 arcsec
RMS: 0.086 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 449580392
Time(ksec)

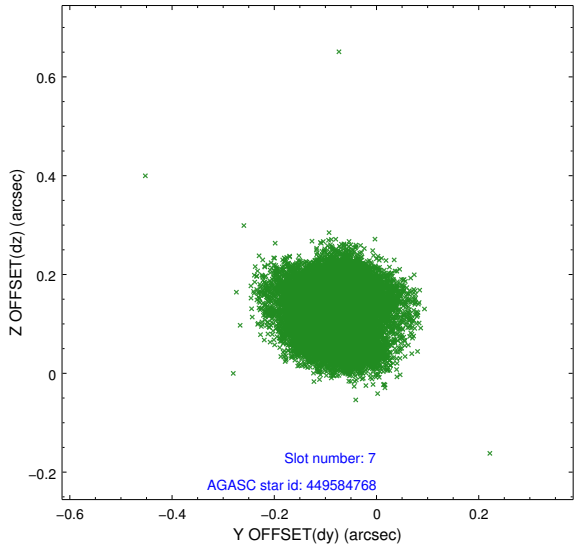
2.4.4 Slot 6

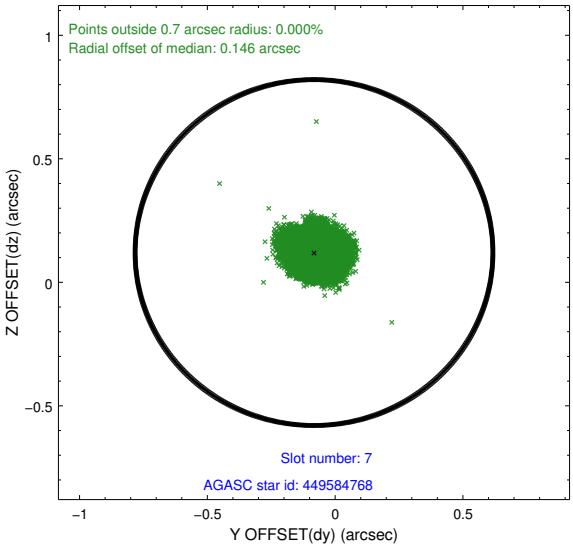

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 449580944

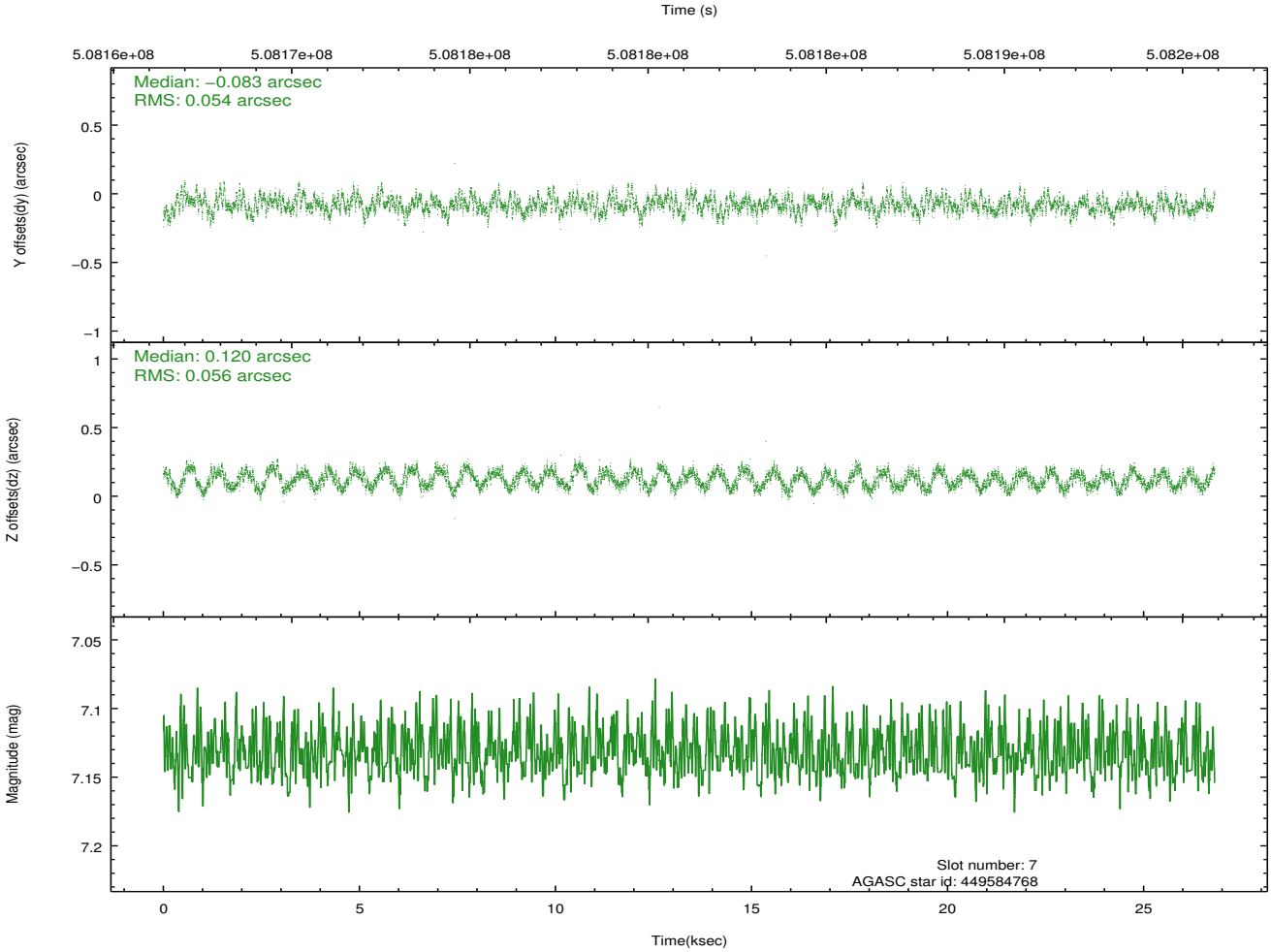

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.082 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 449580944


Time (s)
Median: 0.072 arcsec
RMS: 0.082 arcsec
Y offsets(dy) (arcsec)
Median: −0.039 arcsec
RMS: 0.091 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 449580944
Time(ksec)

2.4.5 Slot 7

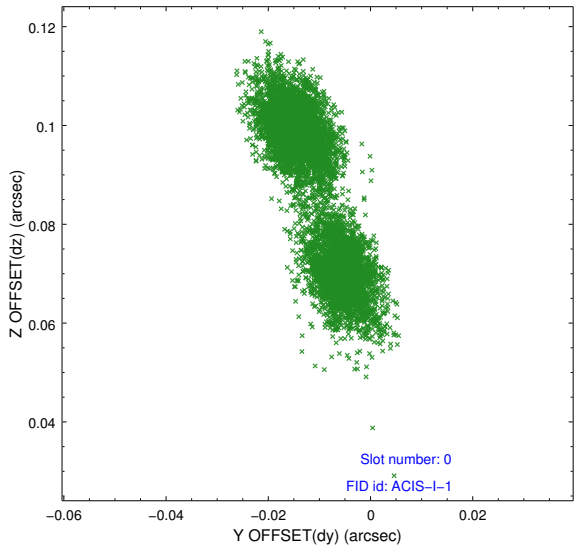

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 449584768

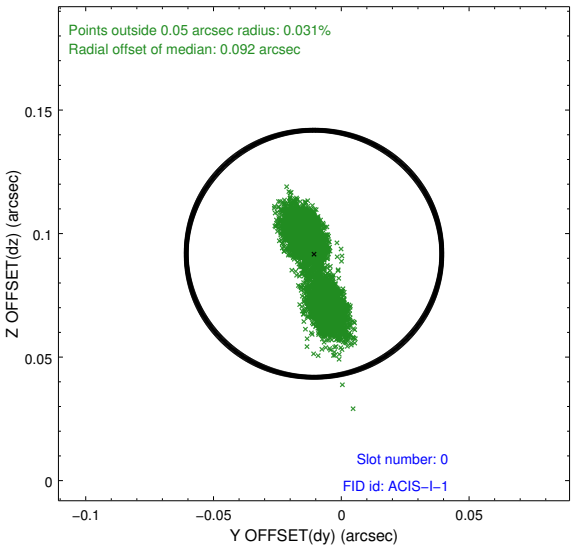

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.146 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 449584768

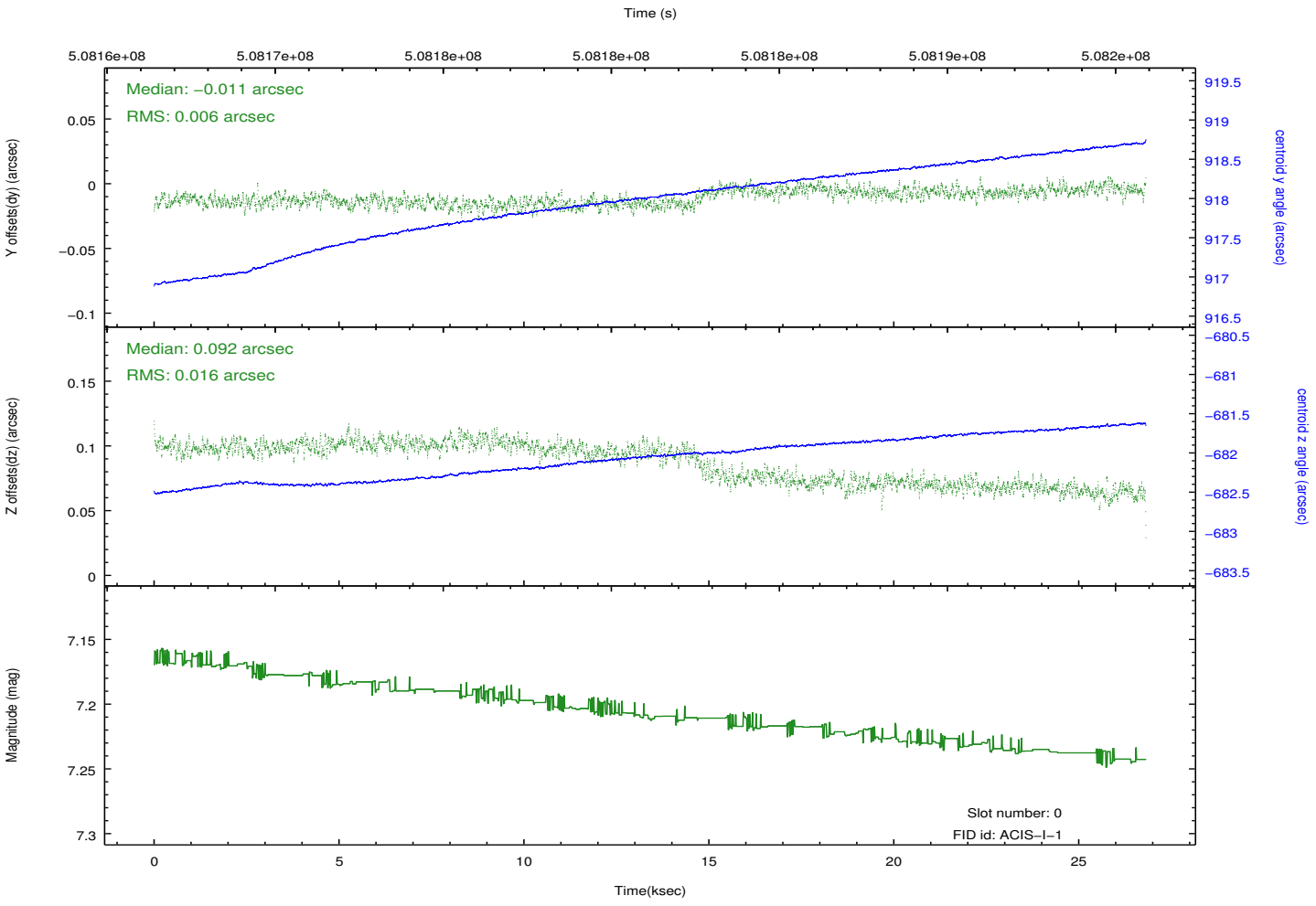

Time (s)
Median: −0.083 arcsec
RMS: 0.054 arcsec
Y offsets(dy) (arcsec)
Median: 0.120 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 449584768
Time(ksec)

2.5 FID Slots

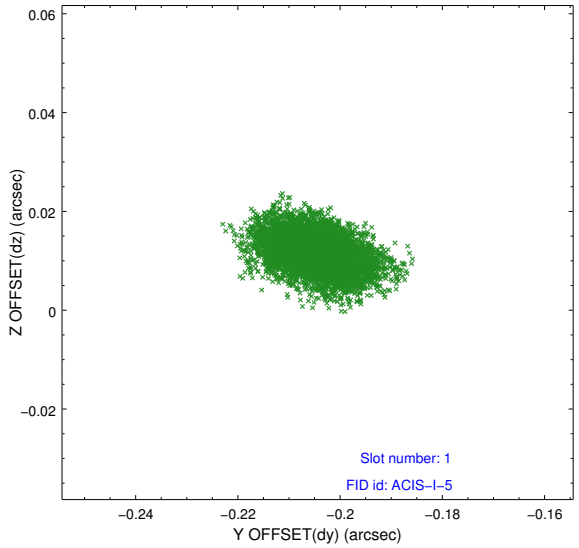
2.5.1 Slot 0

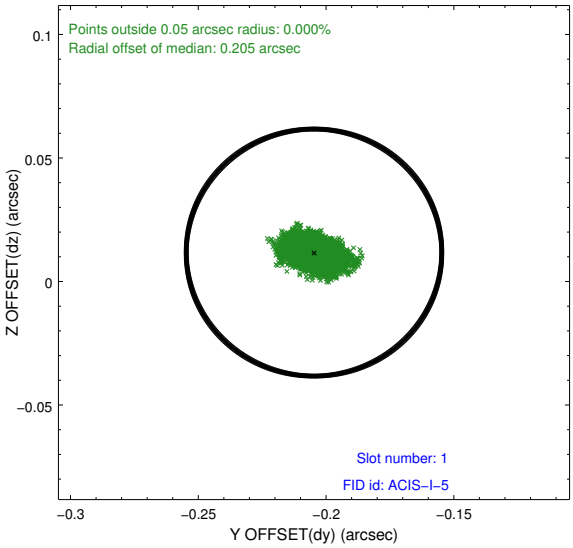


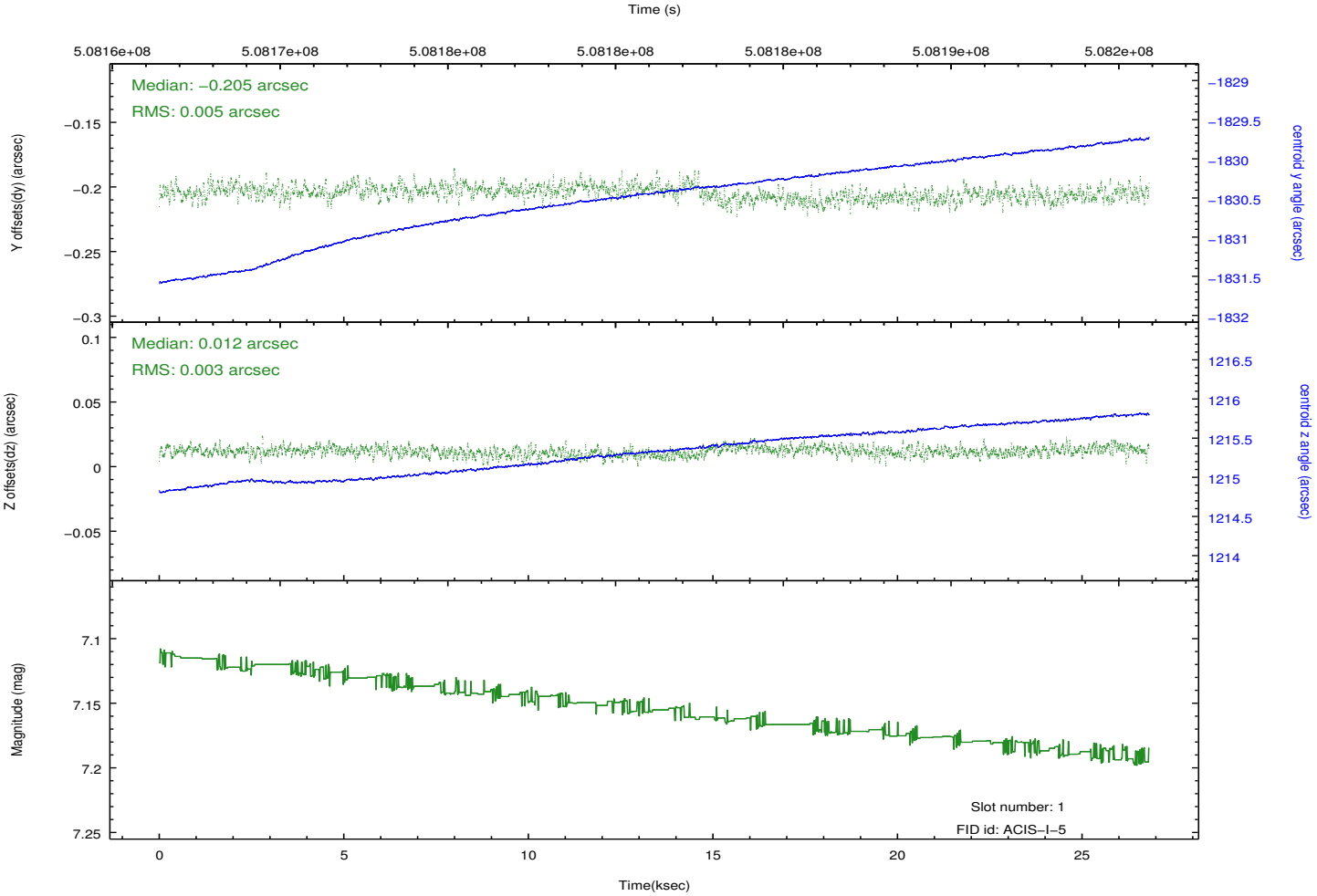




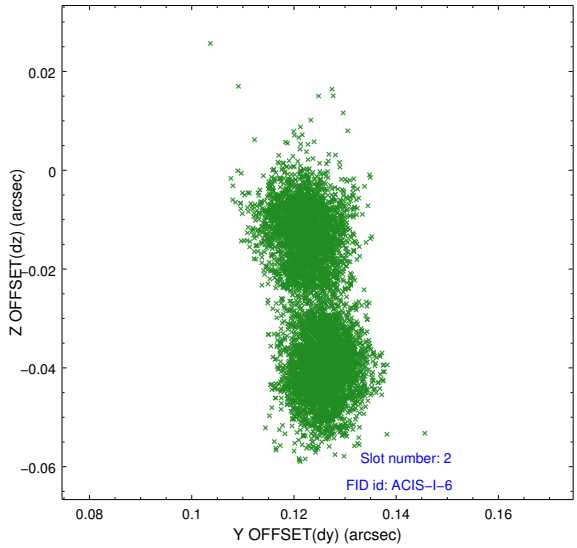
2.5.2 Slot 1

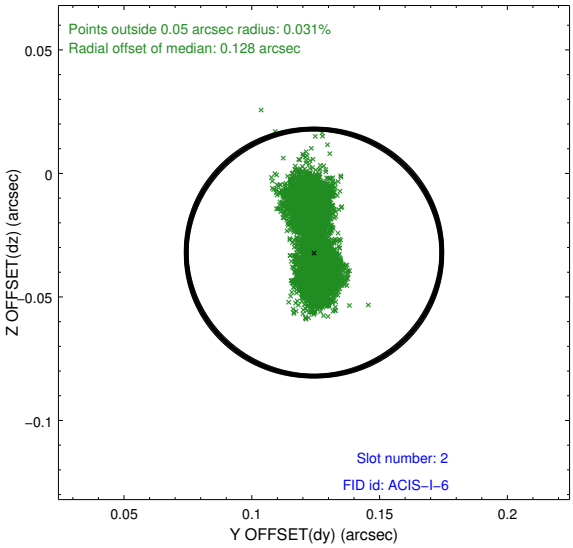

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS–I–5

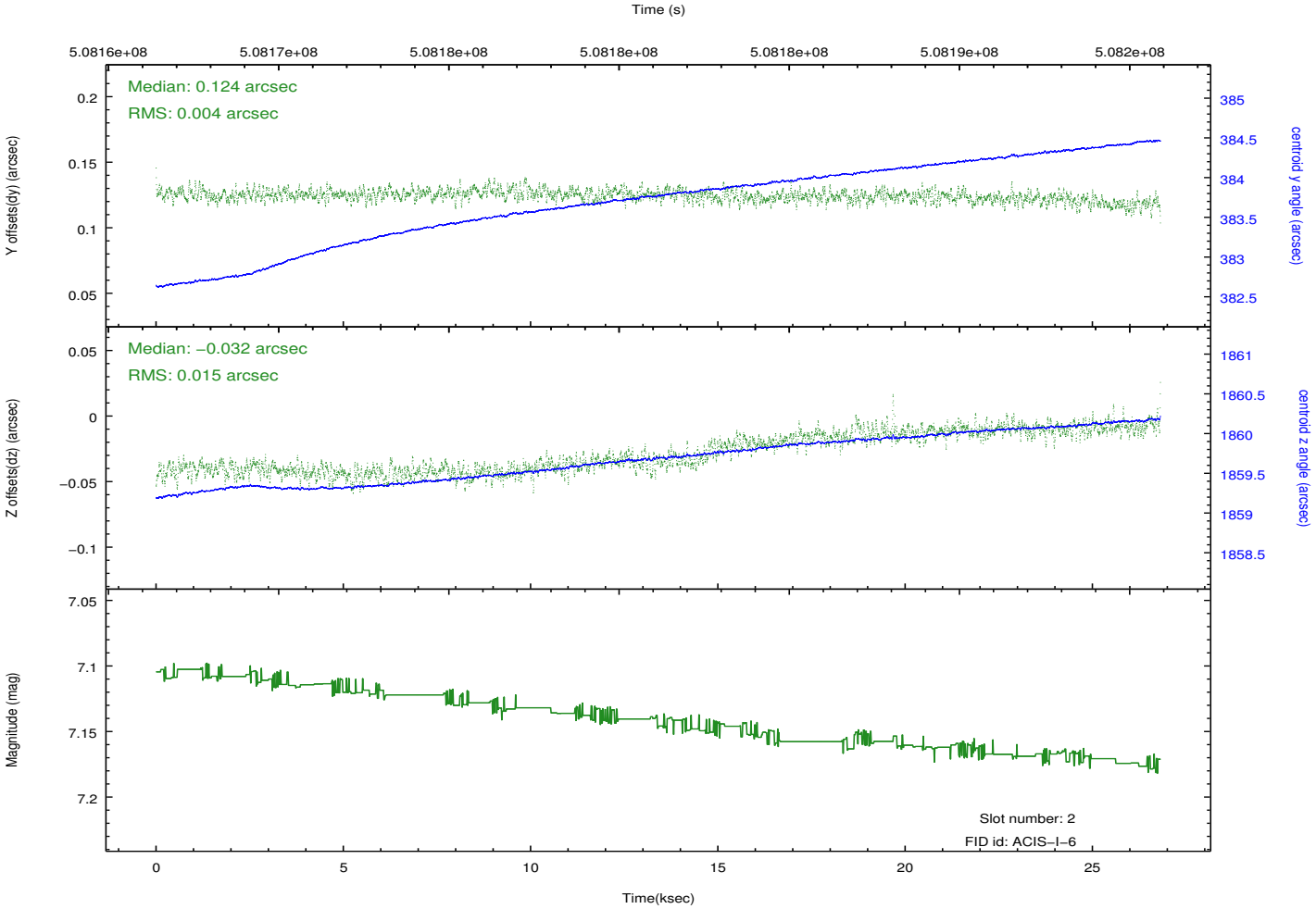

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.205 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS–I–5


Time (s)
Median: –0.205 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.012 arcsec
RMS: 0.003 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: 0.031%
Radial offset of median: 0.128 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS–I–6


Time (s)
Median: 0.124 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: –0.032 arcsec
RMS: 0.015 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)	2014.12.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	26.085312556982

A.2 Comments

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.