V&V Reference Report
L2 ASCDS Version : 10.5.2

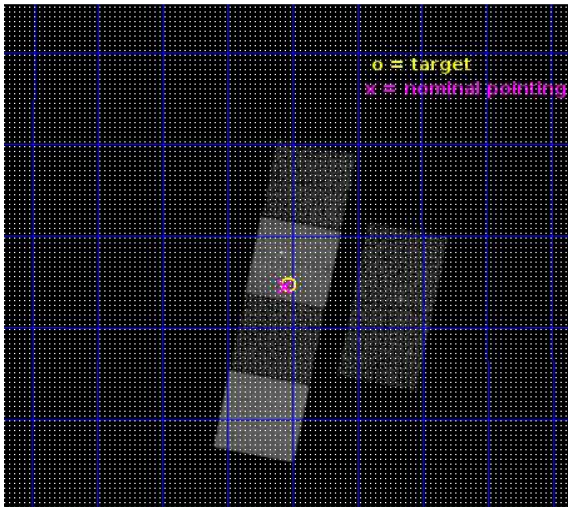
Observation 18638 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 20 2016

Contents

1 Front

seq_num	601259	Sequence number
obs_id	18638	Observation id
title	The highly variable universe in X-rays from ROSAT to Chandra in 10 ks	Proposal title
observer	Peter Predehl	Principal investigator
object	2RXSp 190226_2	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	35.633333	Observer's specified target RA [deg]
dec_targ	25.077778	Observer's specified target Dec [deg]
ra_nom	35.638415981099	Nominal RA [deg]
dec_nom	25.07492391235	Nominal Dec [deg]
roll_nom	281.15445783218	Nominal Roll [deg]
revision	2	Processing version of data
ontime	9941.1775128841	Sum of GTIs [s]
livetime	9815.2963373576	Livetime [s]
ontime2	9941.2185528278	Sum of GTIs [s]
ontime3	9937.8133025169	Sum of GTIs [s]
ontime5	9941.1364728212	Sum of GTIs [s]
ontime6	9941.0954328775	Sum of GTIs [s]
ontime7	9941.1775128841	Sum of GTIs [s]
ontime8	9941.0133528709	Sum of GTIs [s]
l2events	118390	Number of level 2 events

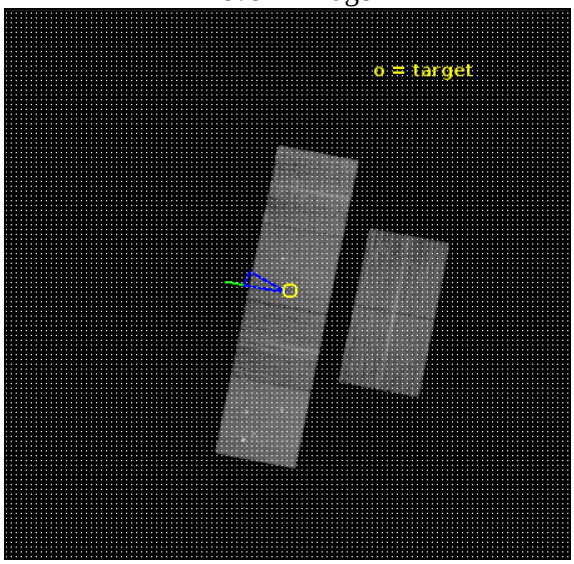


2 OBI

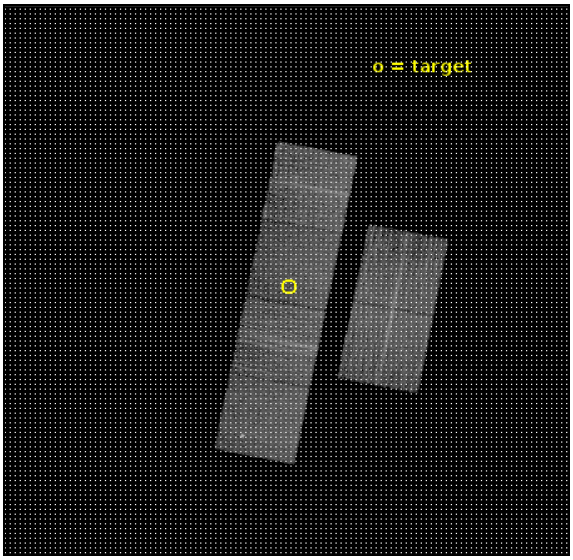
2.1 OBI

2.1.1 Images

Level 1 Image

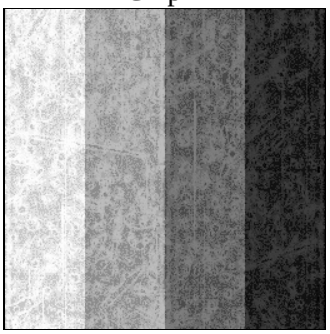


Level 1 Bad Events

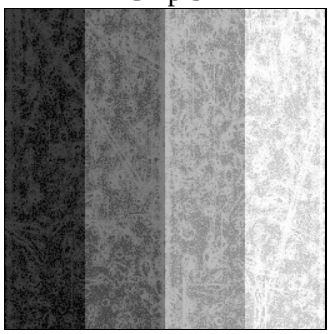


2.1.2 Bias

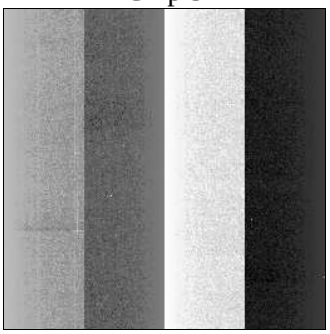
Chip 2



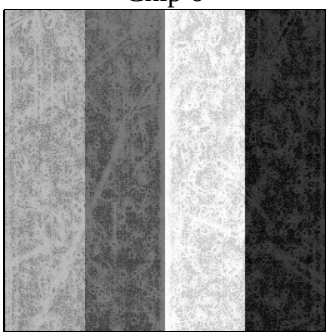
Chip 3



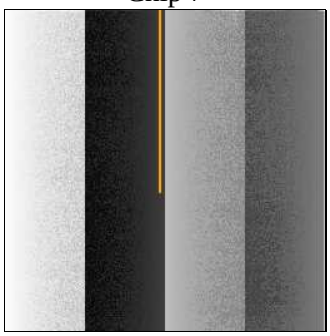
Chip 5



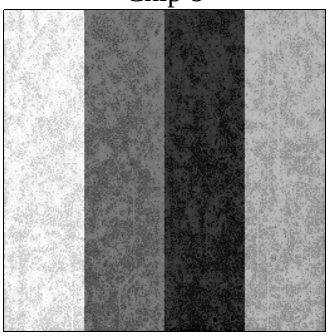
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.5.2	Processing system revision
caldbver	4.7.3	
date	2016-12-21T00:17:01	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ontime	9941.1775128841	Sum of GTIs [s]
ontime2	9941.2185528278	Sum of GTIs [s]
ontime3	9937.8133025169	Sum of GTIs [s]
ontime5	9941.1364728212	Sum of GTIs [s]
ontime6	9941.0954328775	Sum of GTIs [s]
ontime7	9941.1775128841	Sum of GTIs [s]
ontime8	9941.0133528709	Sum of GTIs [s]
l1events	508327	Number of level 1 events

2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	73497	66276	112947	70563	95490	89554
rejected events	66111	59036	57478	63067	52149	66424
rejected %	89%	89%	50%	89%	54%	74%

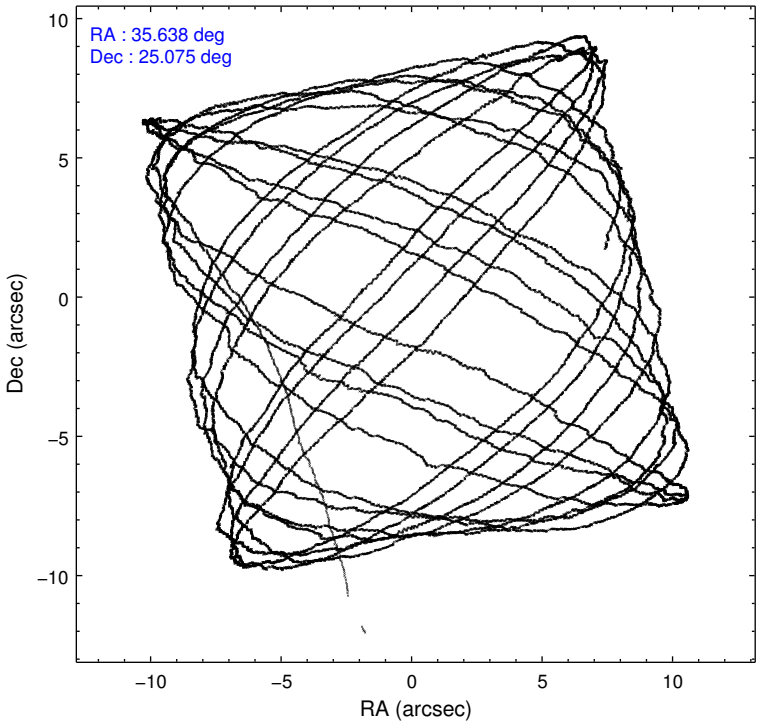
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	2609	2577	6045	2399	4221	6331
	3%	3%	5%	3%	4%	7%
grade 1 events	36	35	464	24	287	67
	0%	0%	0%	0%	0%	0%
grade 2 events	1749	1668	16628	1787	9523	5615
	2%	2%	14%	2%	9%	6%
grade 3 events	765	744	1949	701	3416	2403
	1%	1%	1%	0%	3%	2%
grade 4 events	776	745	1494	770	3422	2281
	1%	1%	1%	1%	3%	2%
grade 5 events	2782	3131	7810	3186	9116	4717
	3%	4%	6%	4%	9%	5%
grade 6 events	1490	1511	29388	1843	22783	6515
	2%	2%	26%	2%	23%	7%
grade 7 events	63290	55865	49169	59853	42722	61625
	86%	84%	43%	84%	44%	68%

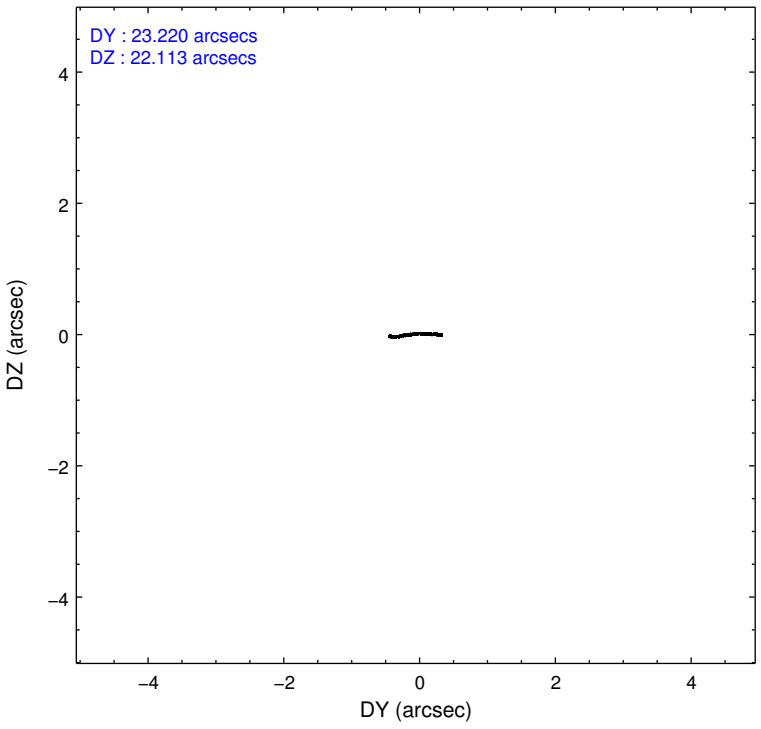
2.2 Compared Parameters

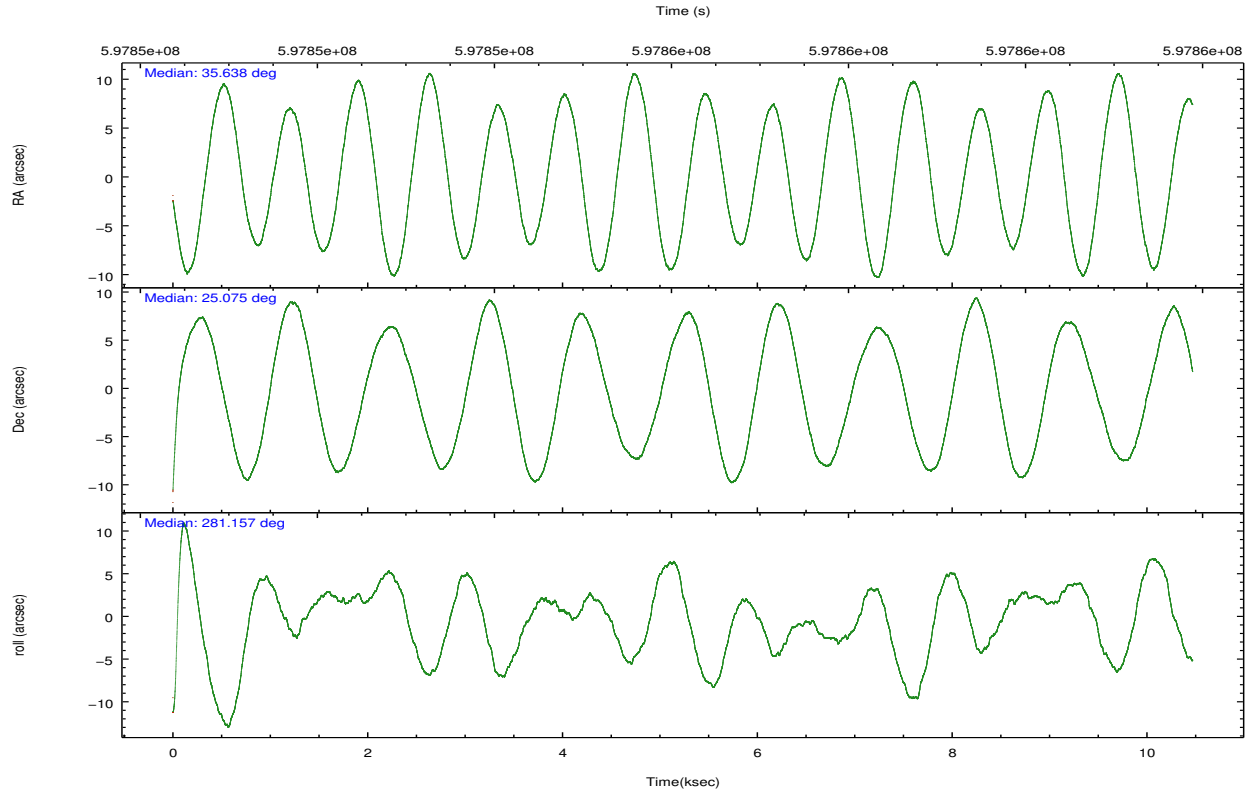
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	35.618179	35.63841598109876
[deg] Pointing Dec	25.095295	25.07492391234992
[deg] Pointing Roll	281.006430	281.1544578321772
[deg] Roll angle	290.000000	290.000000
[deg] Roll tolerance	10.000000	10.000000
Roll constraint allows 180D rotation	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	597851333.184000	597850231.17378
Observation start date	2016-12-11T13:47:45	2016-12-11T13:30:31
[s] Observation end time (MET)	597861333.184000	597862520.41199
Observation end date	2016-12-11T16:34:25	2016-12-11T16:55:20
Read mode	TIMED	TIMED

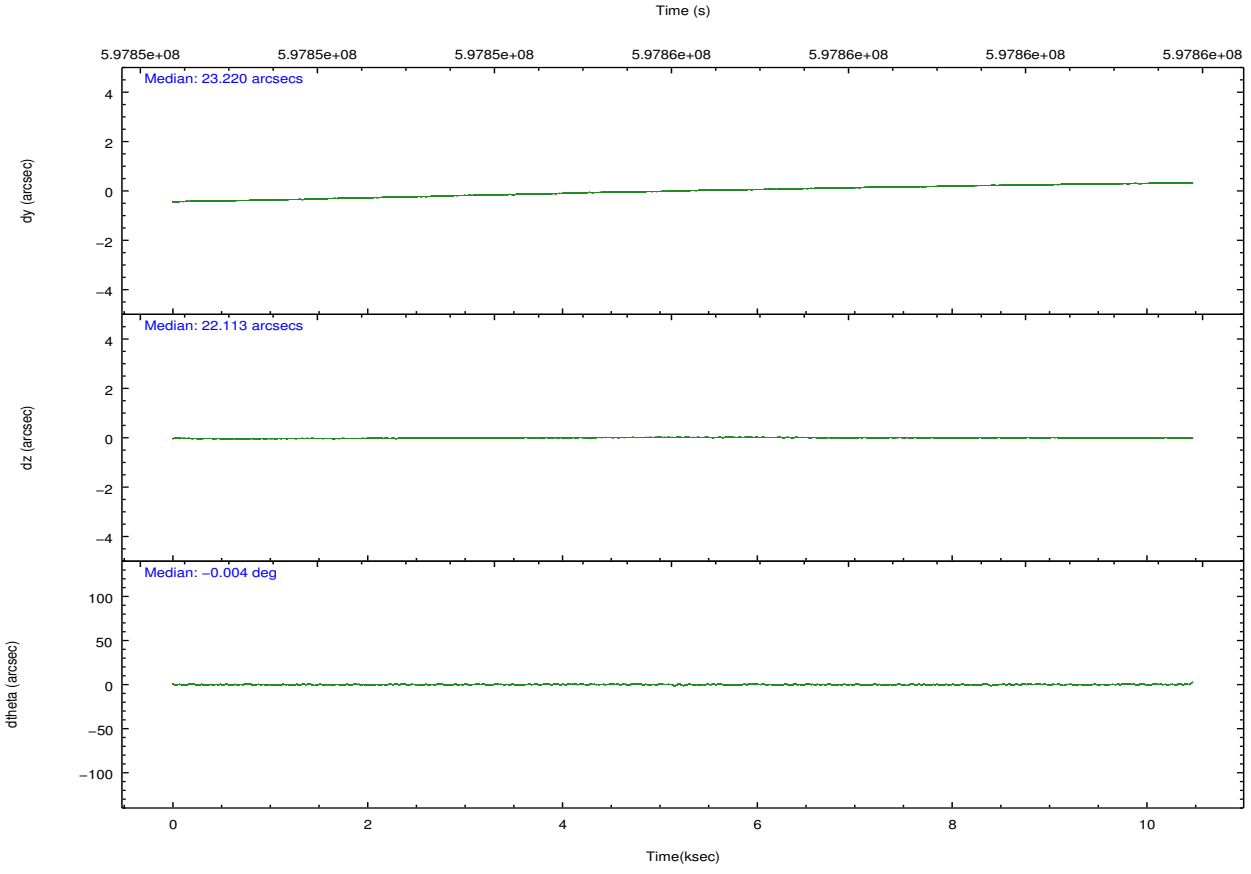
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O2	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	O1	Y
CCD S2 on	Y	Y
CCD S3 on	Y	Y
CCD S4 on	Y	Y
CCD S5 on	N	N
Number of optional ACIS chips dropped	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 : 35.638 deg
Dec : 25.075 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 23.220 arcsecs
DZ : 22.113 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.9785e+08
5.9785e+08
5.9785e+08
5.9786e+08
5.9786e+08
5.9786e+08
5.9786e+08
Median: 35.638 deg
RA (arcsec)
Median: 25.075 deg
Dec (arcsec)
Median: 281.157 deg
roll (arcsec)
Time(ksec)

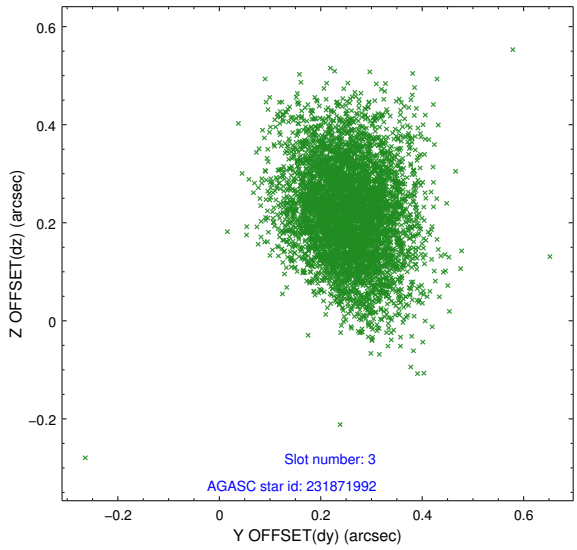

Time (s)
5.9785e+08
5.9785e+08
5.9785e+08
5.9786e+08
5.9786e+08
5.9786e+08
5.9786e+08
Median: 23.220 arcsecs
dy (arcsec)
Median: 22.113 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

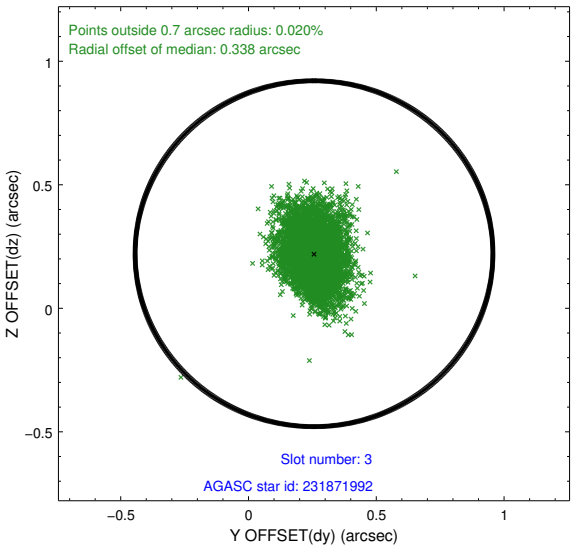
Slot Statistics

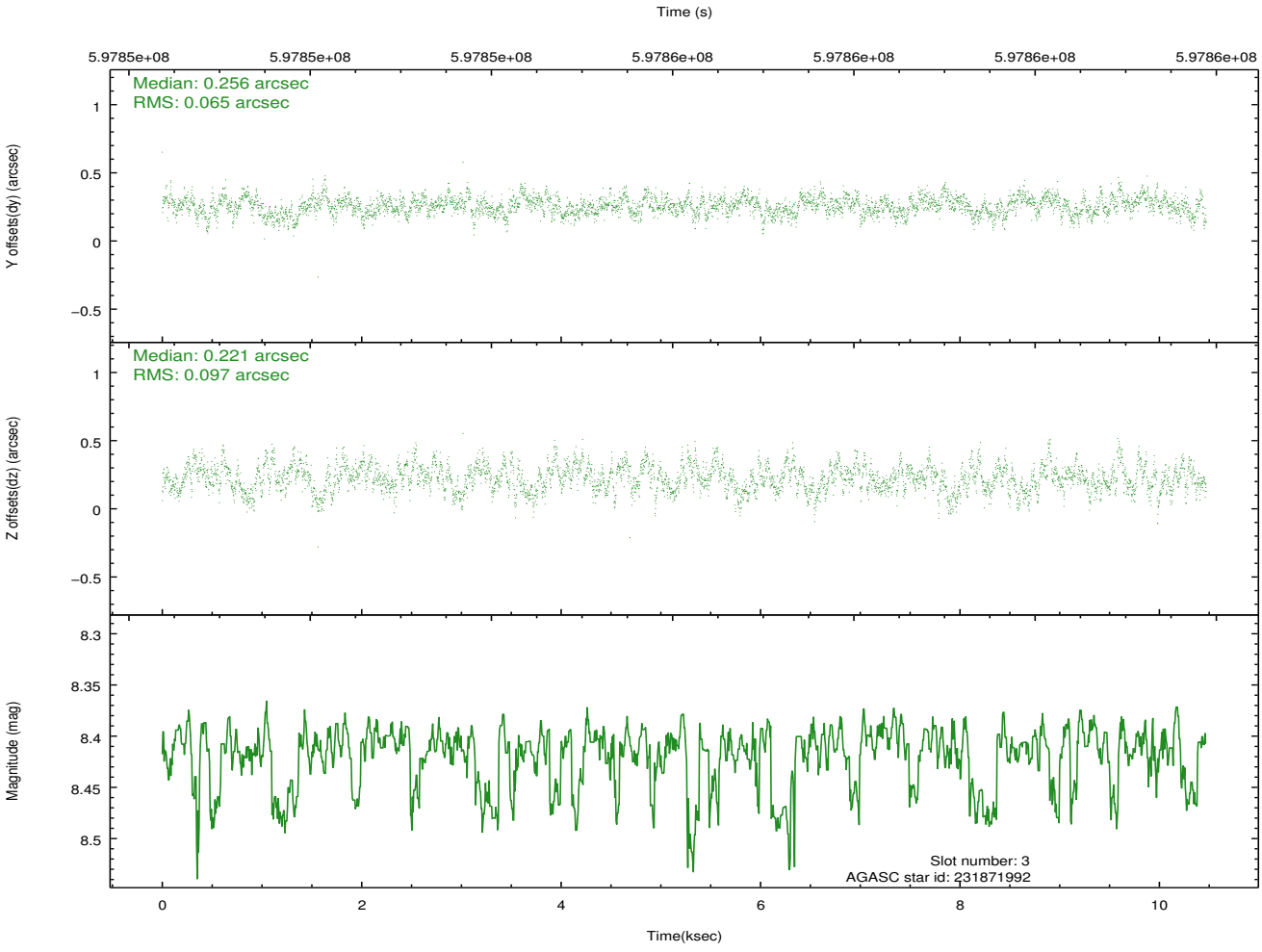
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	7.12	2553	-0.226	-0.159	0.011	0.017	0.000000	0.000000	-776.60	-1743.79
1	FID		ACIS-S-4	7.22	2554	0.529	0.152	0.011	0.018	0.000000	0.000000	2137.18	164.50
2	FID		ACIS-S-5	7.23	2552	-0.334	0.016	0.008	0.013	0.000000	0.000000	-1828.93	158.58
3	GUIDE	used	231871992	8.41	5107	0.256	0.221	0.121	0.207	34.895610	25.512524	-1927.69	-2015.81
4	GUIDE	used	231873576	9.46	5103	0.235	0.284	0.167	0.271	35.135636	25.478905	-1656.85	-1274.76
5	GUIDE	used	231999832	9.08	5102	-0.013	-0.263	0.170	0.270	35.756725	24.675127	1572.08	156.35
6	GUIDE	used	232005936	9.22	5097	-0.442	-0.242	0.195	0.334	36.039421	25.012050	555.34	1292.34
7	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00

2.4 Star Slots

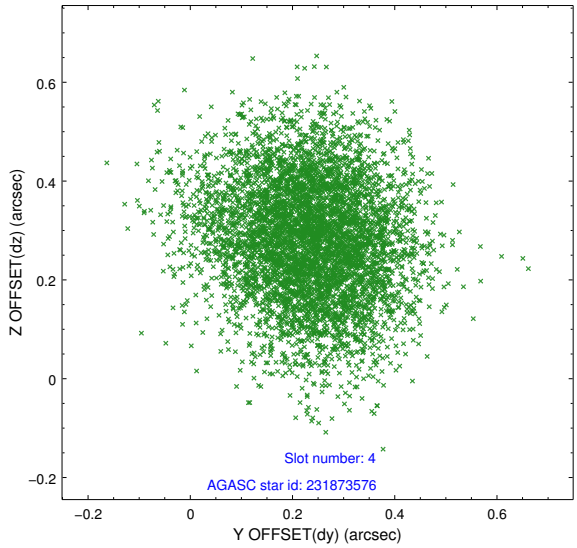
2.4.1 Slot 3

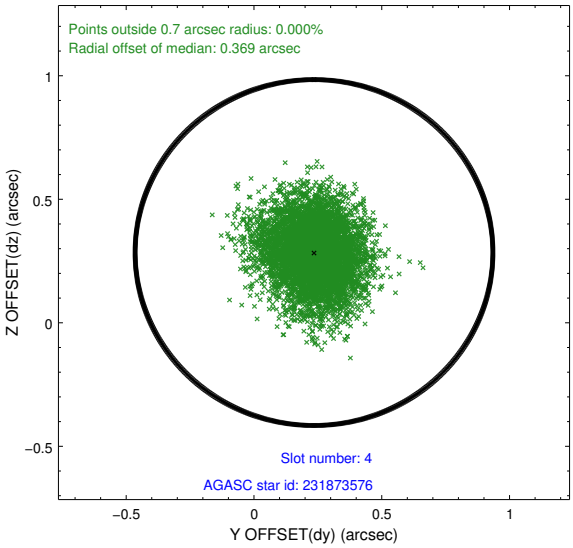


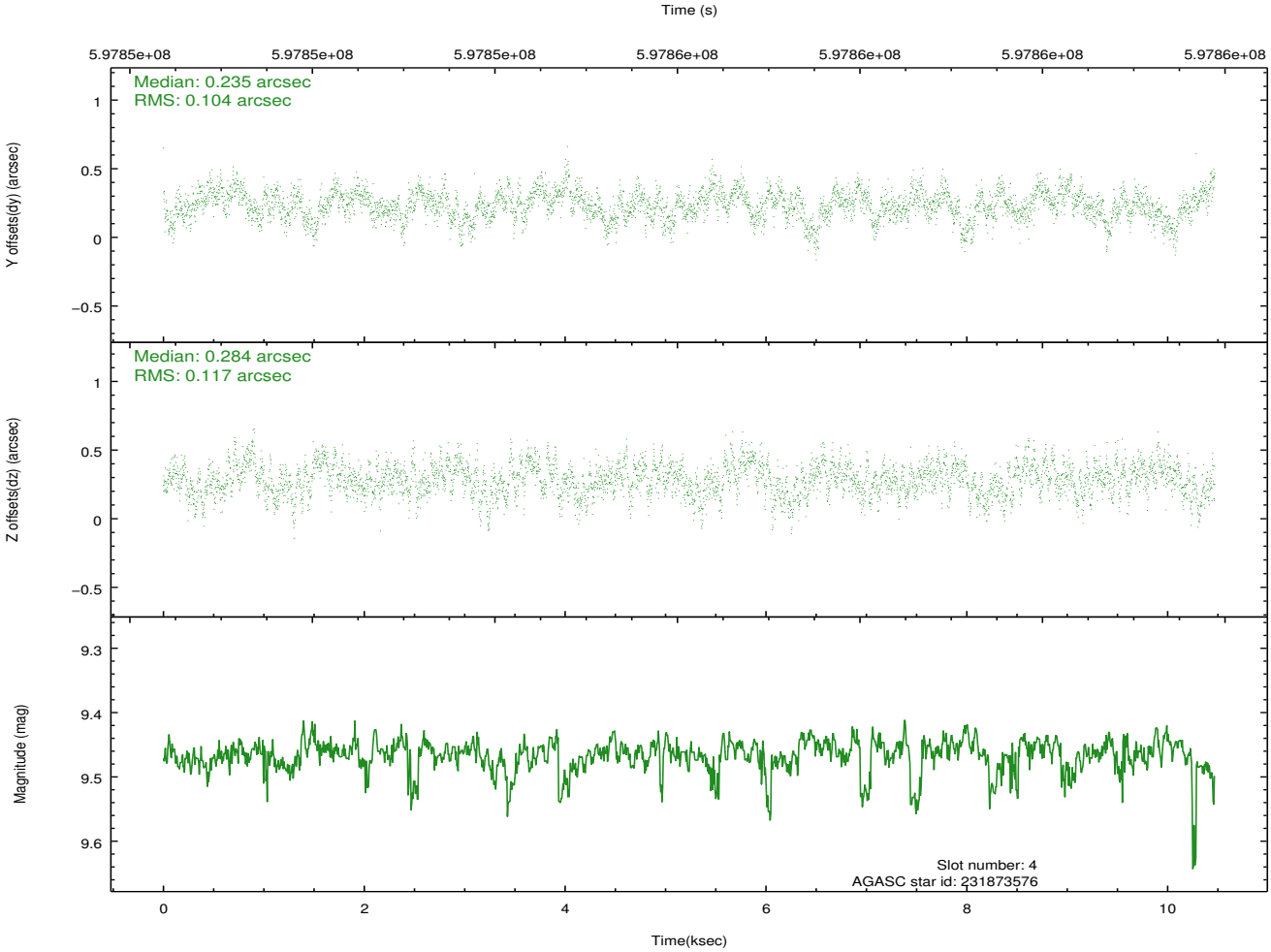




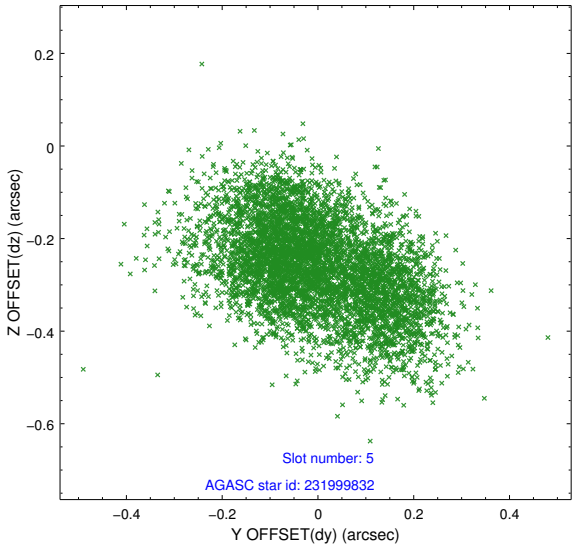
2.4.2 Slot 4

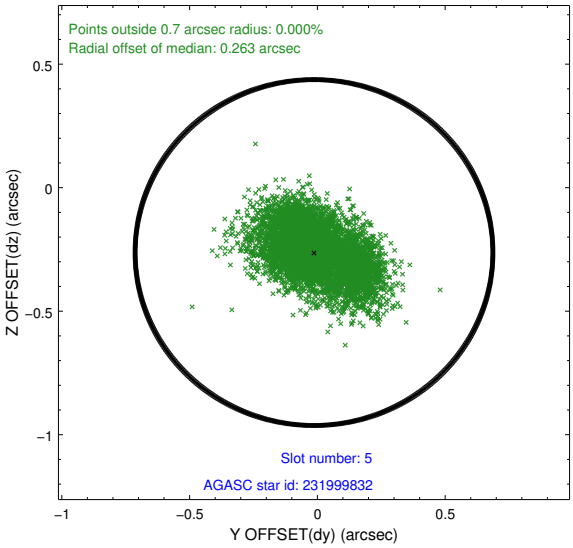

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 231873576

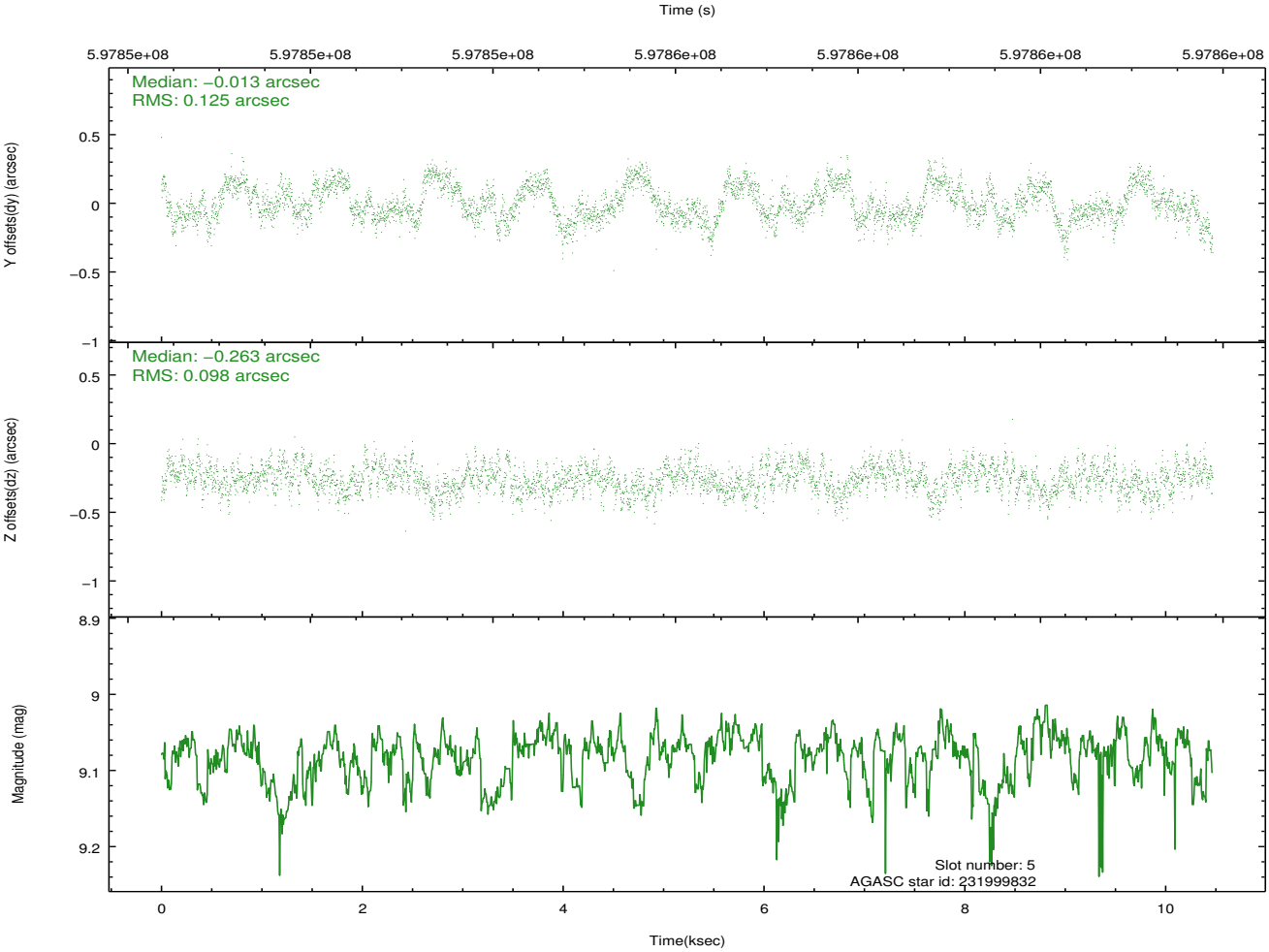

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.369 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 231873576


Time (s)
Median: 0.235 arcsec
RMS: 0.104 arcsec
Y offsets(dy) (arcsec)
Median: 0.284 arcsec
RMS: 0.117 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 231873576
Time(ksec)

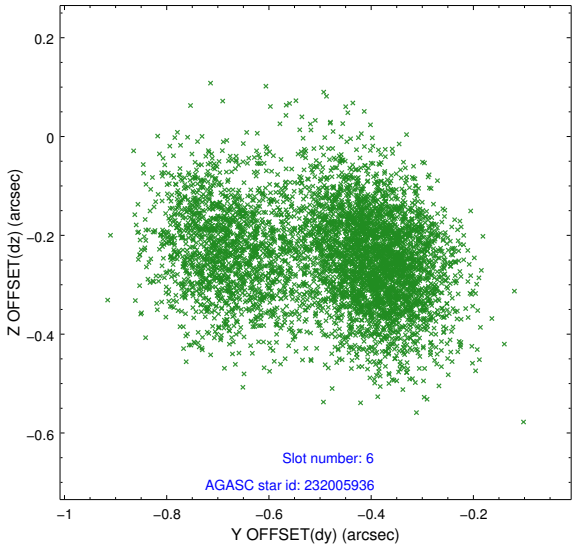
2.4.3 Slot 5

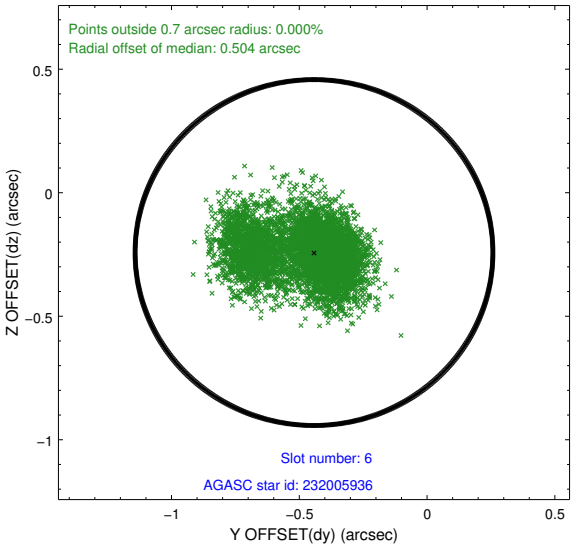

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 231999832

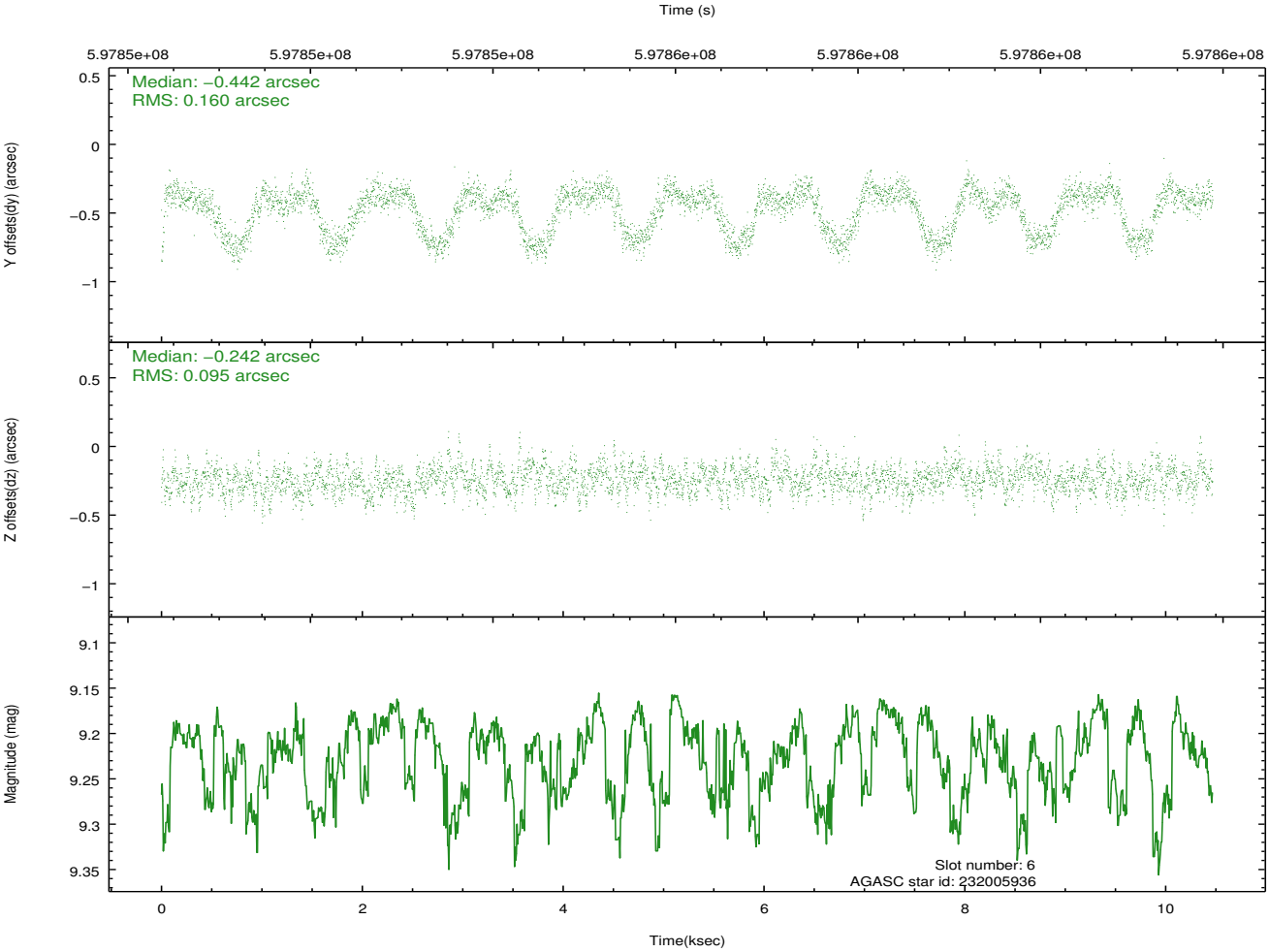

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.263 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 231999832


Time (s)
Median: −0.013 arcsec
RMS: 0.125 arcsec
Y offsets(dy) (arcsec)
Median: −0.263 arcsec
RMS: 0.098 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 231999832
Time(ksec)

2.4.4 Slot 6

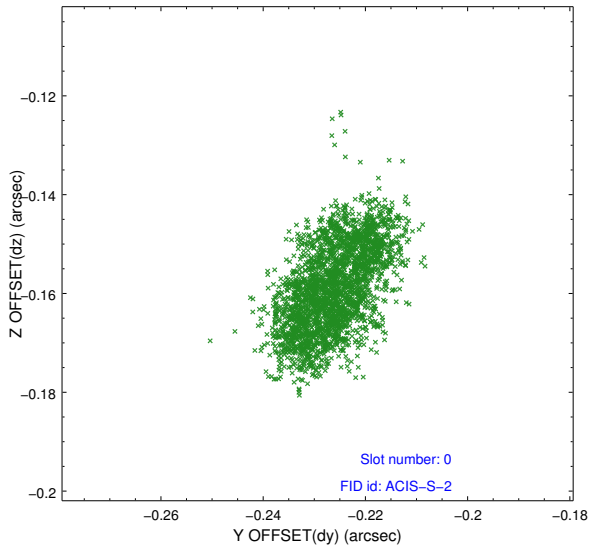

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 232005936

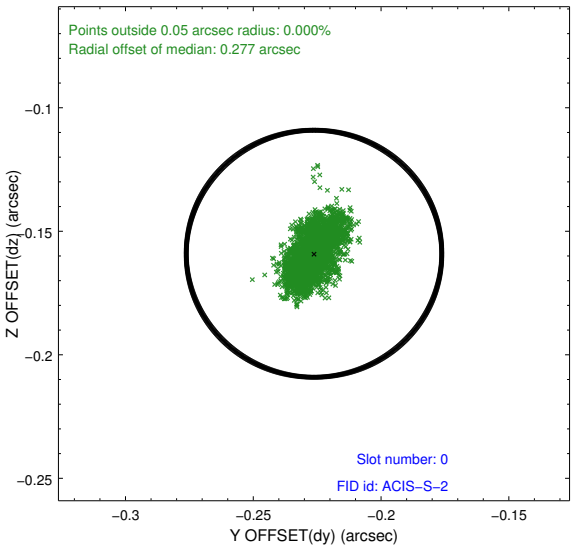

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.504 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 232005936

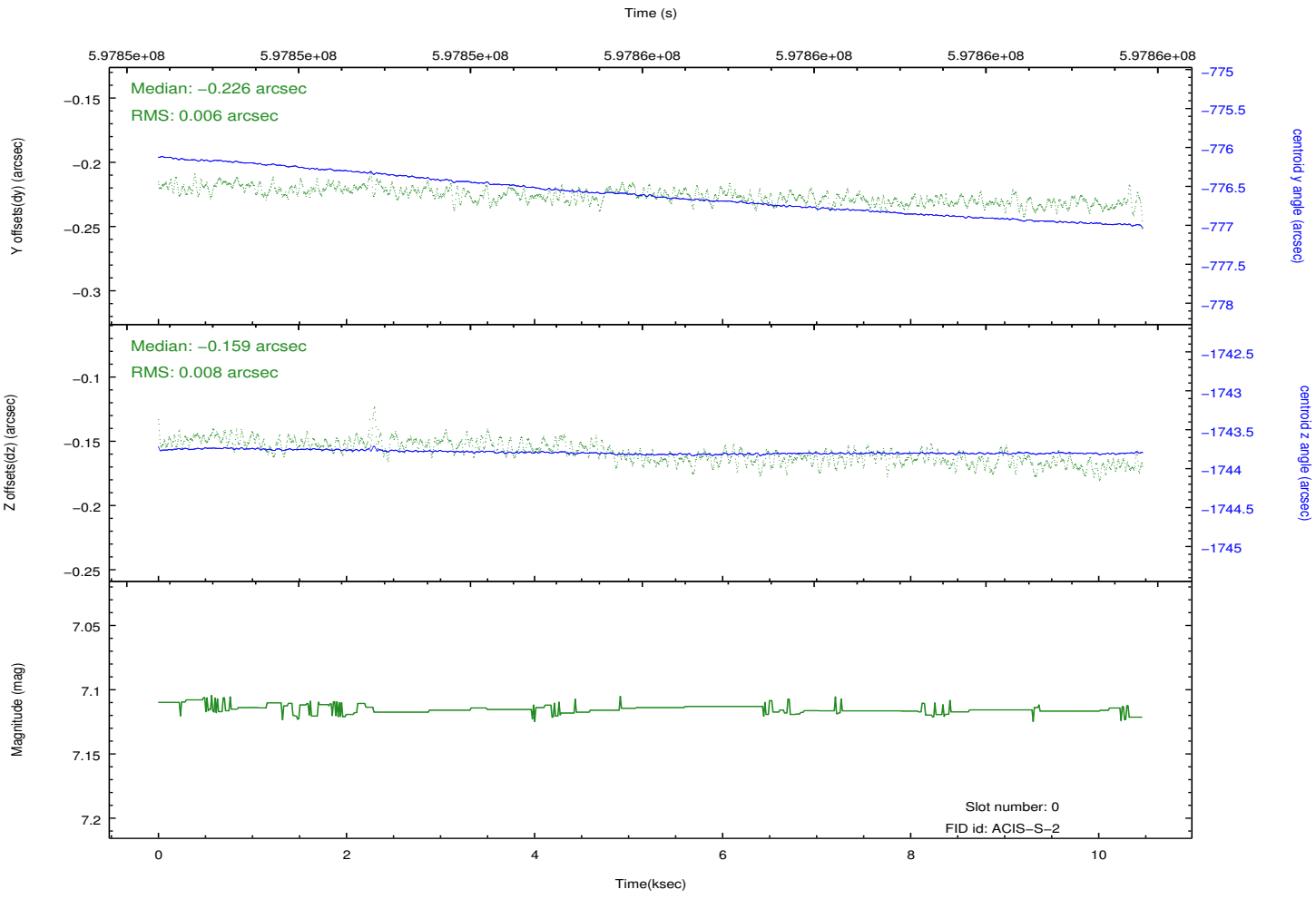

Time (s)
Median: −0.442 arcsec
RMS: 0.160 arcsec
Y offsets(dy) (arcsec)
Median: −0.242 arcsec
RMS: 0.095 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 232005936
Time(ksec)

2.5 FID Slots

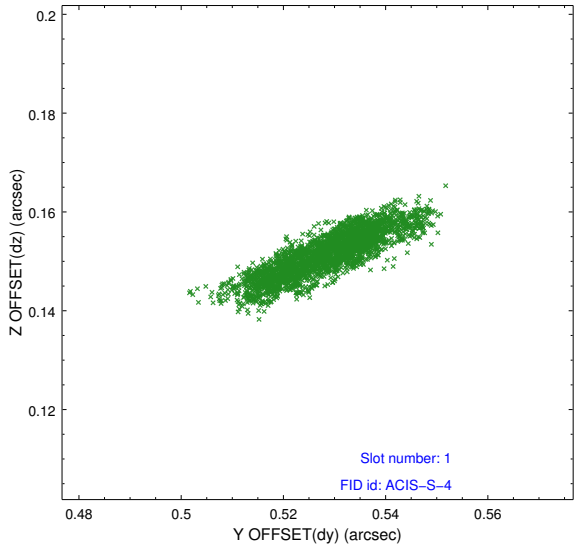
2.5.1 Slot 0

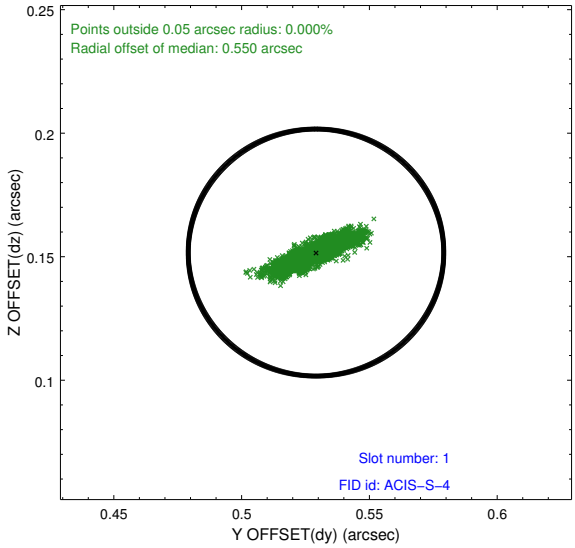


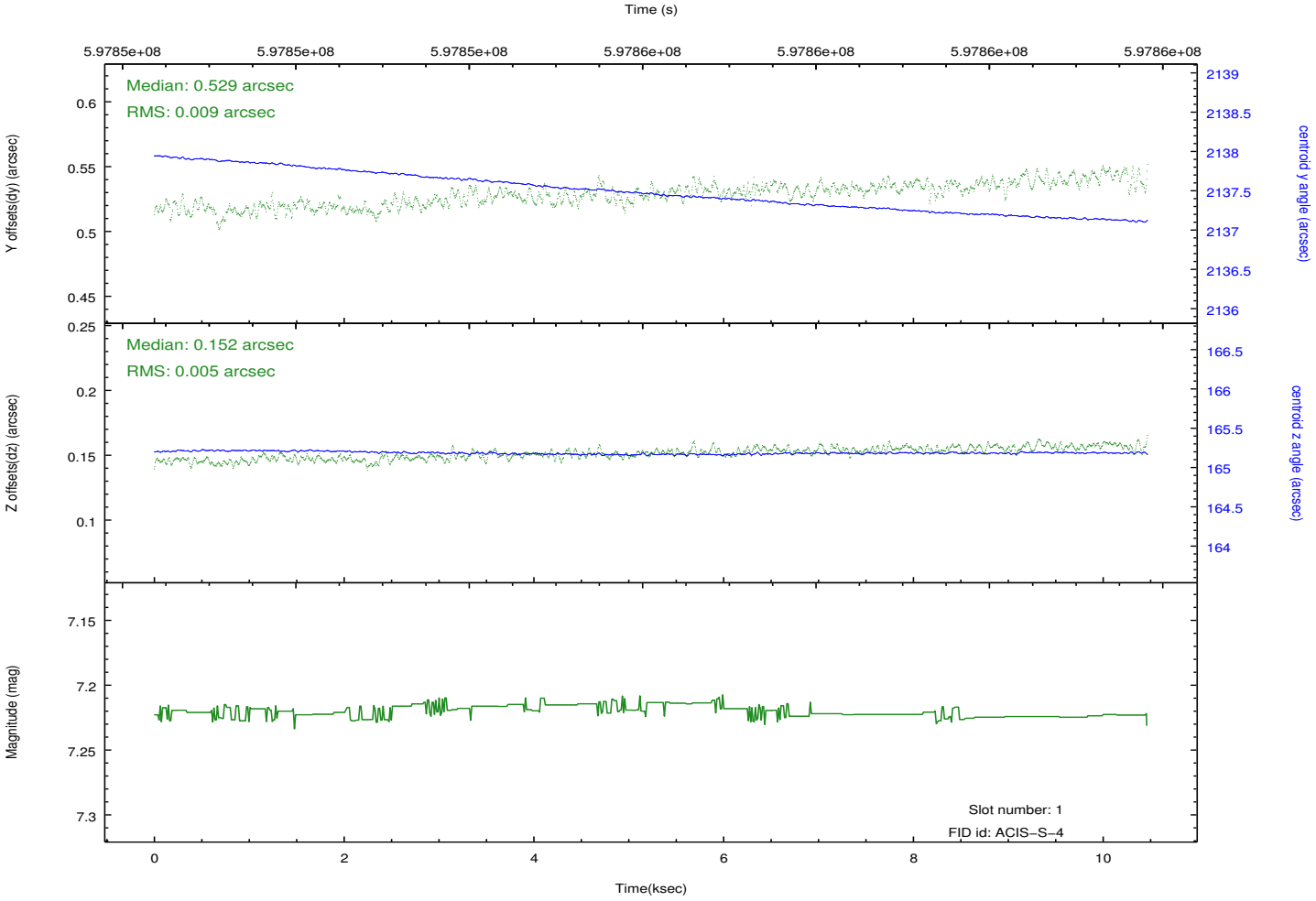




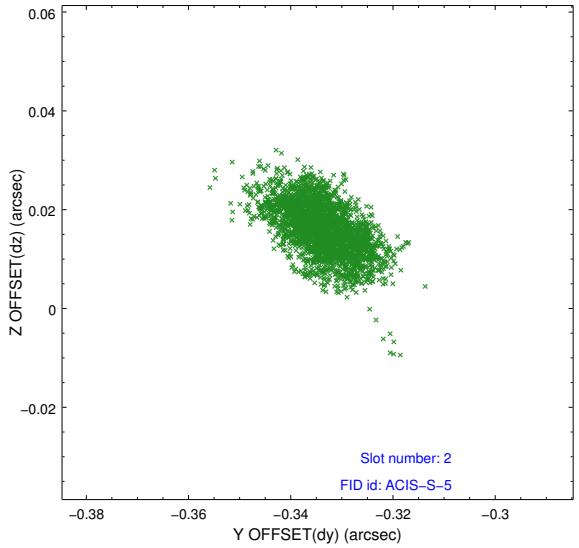
2.5.2 Slot 1

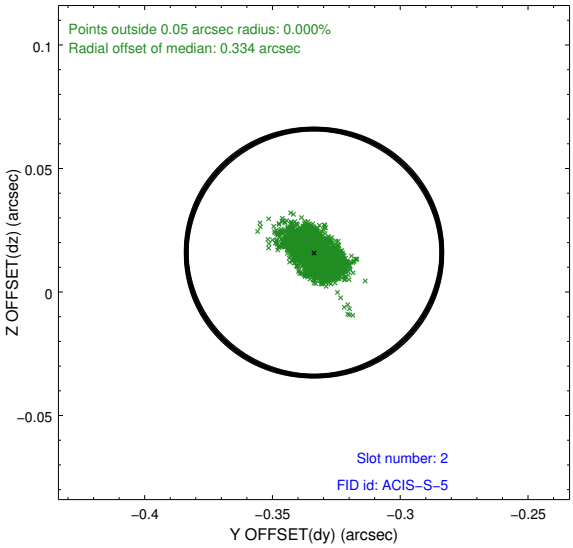

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

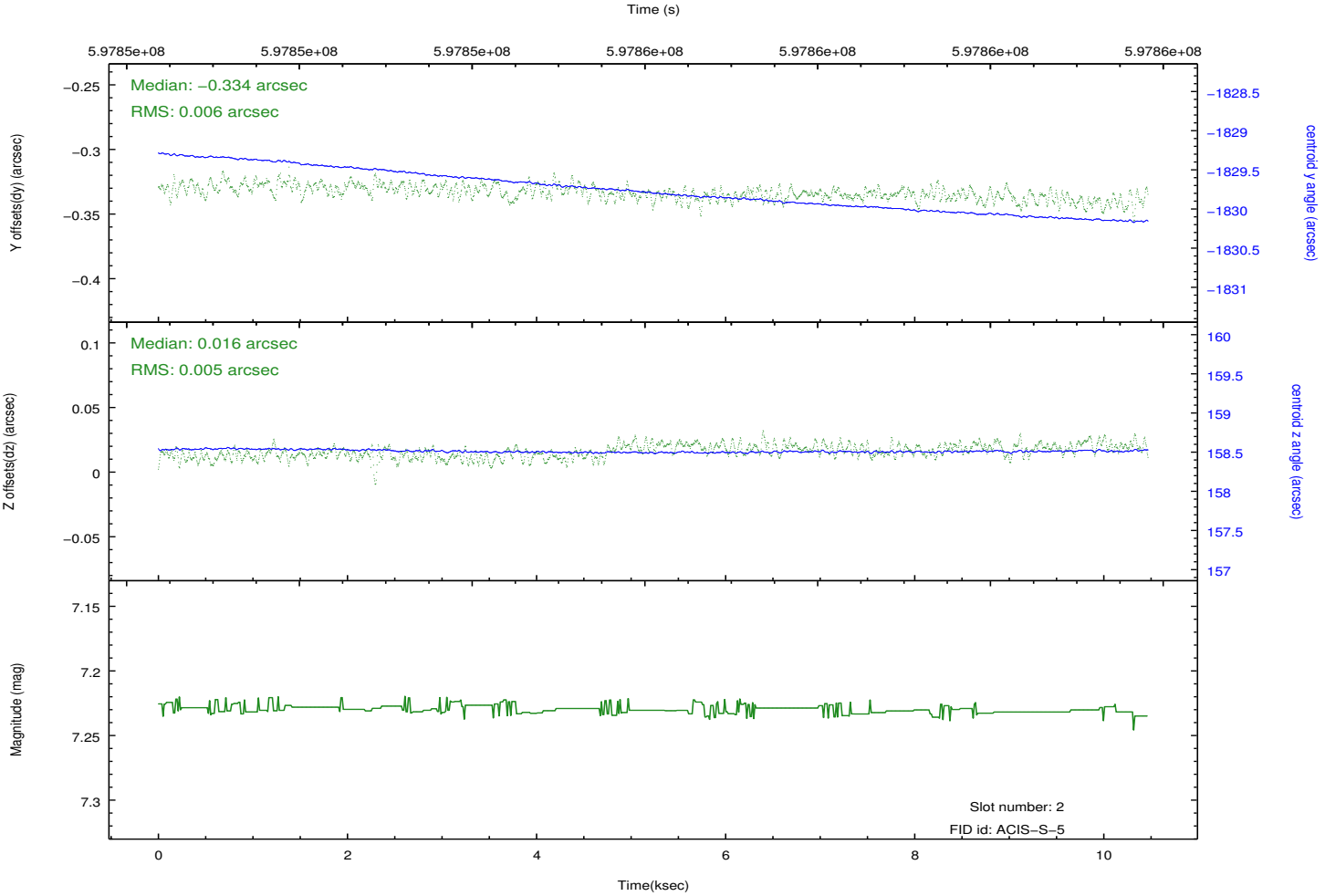

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.550 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.529 arcsec
RMS: 0.009 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.152 arcsec
RMS: 0.005 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: 0.334 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.334 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.016 arcsec
RMS: 0.005 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)	2016.12.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.9411775128841

A.2 Comments

Roll preference met.
The guide star in slot 7 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.
A spatial region of the original bias map for CCD = 2 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 = 2 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: (35.44580,24.94881), (35.44949,24.94948), (35.43029,25.03706), (35.42661,25.03639).