V&V Reference Report
L2 ASCDS Version : 10.3.1

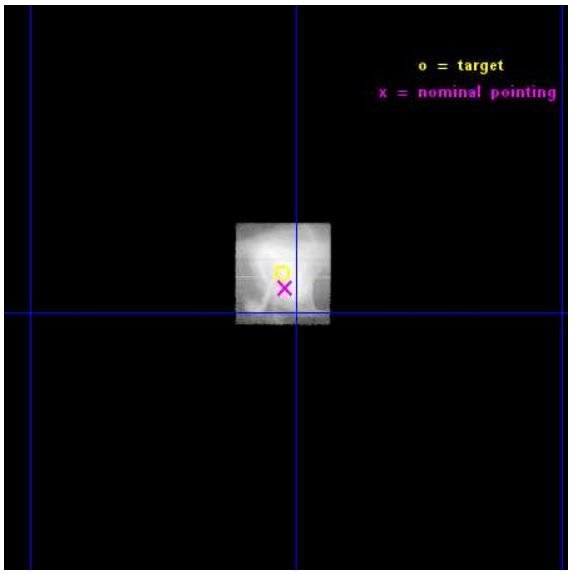
Observation 16360 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Jan 18 2015

Contents

1 Front

seq_num	502258	Sequence number
obs_id	16360	Observation id
title	Joint Chandra and HST Monitoring and Studies of the Crab Nebula	Pr
observer	Dr. Martin Weisskopf	Principal investigator
object	Crab	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.631667	Observer's specified target RA [deg]
dec_targ	22.015667	Observer's specified target Dec [deg]
ra_nom	83.629991163295	Nominal RA [deg]
dec_nom	22.010121183894	Nominal Dec [deg]
roll_nom	270.15726985445	Nominal Roll [deg]
revision	1	Processing version of data
ontime	7945.9498560429	Sum of GTIs [s]
livetime	1367.9629955657	Livetime [s]
ontime7	7945.9498560429	Sum of GTIs [s]
l2events	3488070	Number of level 2 events

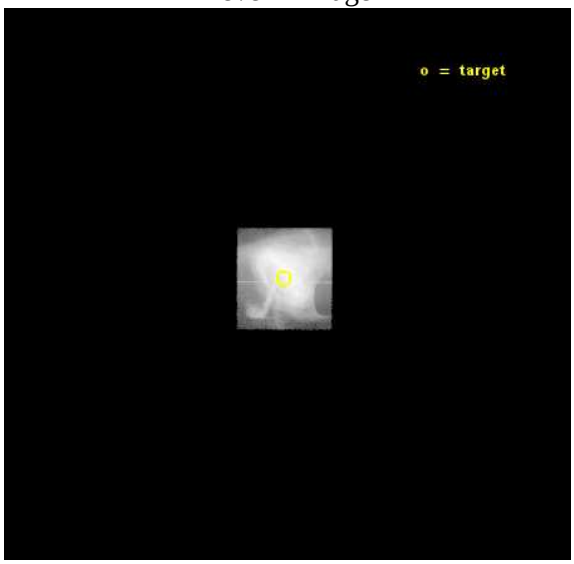


2 OBI

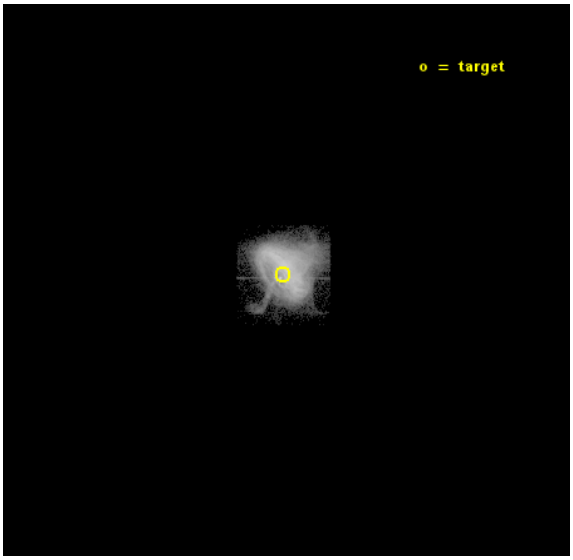
2.1 OBI

2.1.1 Images

Level 1 Image



Level 1 Bad Events



2.1.2 Parameters

obi_num	0	Obi number
ascdsver	10.3.1	Processing system revision
caldbver	4.6.5	
date	2015-01-19T00:20:42	Date and time of file creation
revision	1	Processing version of data

sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ontime	7945.9498560429	Sum of GTIs [s]
ontime7	7945.9498560429	Sum of GTIs [s]
l1events	3885555	Number of level 1 events

2.1.3 Events

	ccd 7
level 1 events	3885555
rejected events	347205
rejected %	8%

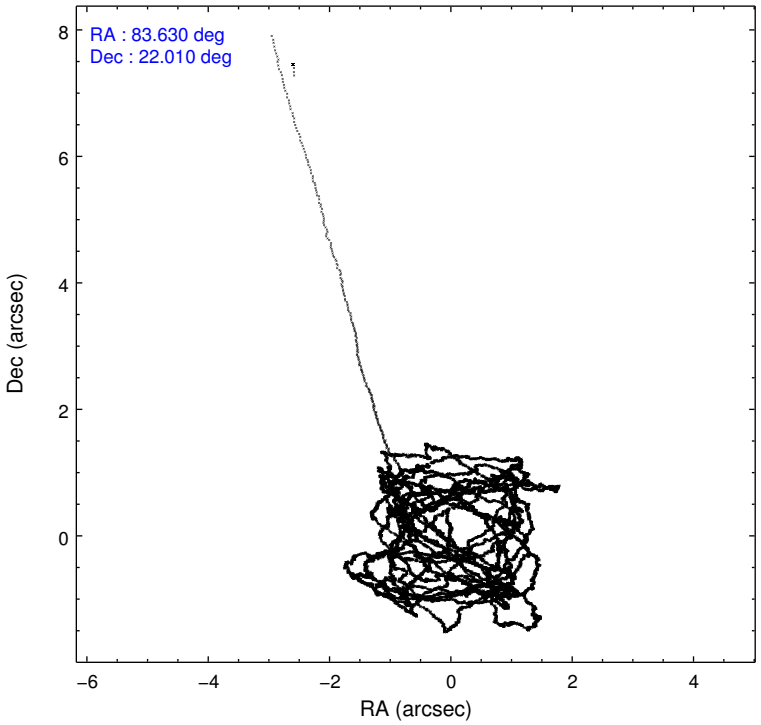
	ccd 7
grade 0 events	792685
	20%
grade 1 events	38329
	0%
grade 2 events	1023604
	26%
grade 3 events	372761
	9%
grade 4 events	363658
	9%
grade 5 events	122118
	3%
grade 6 events	986659
	25%
grade 7 events	185741
	4%

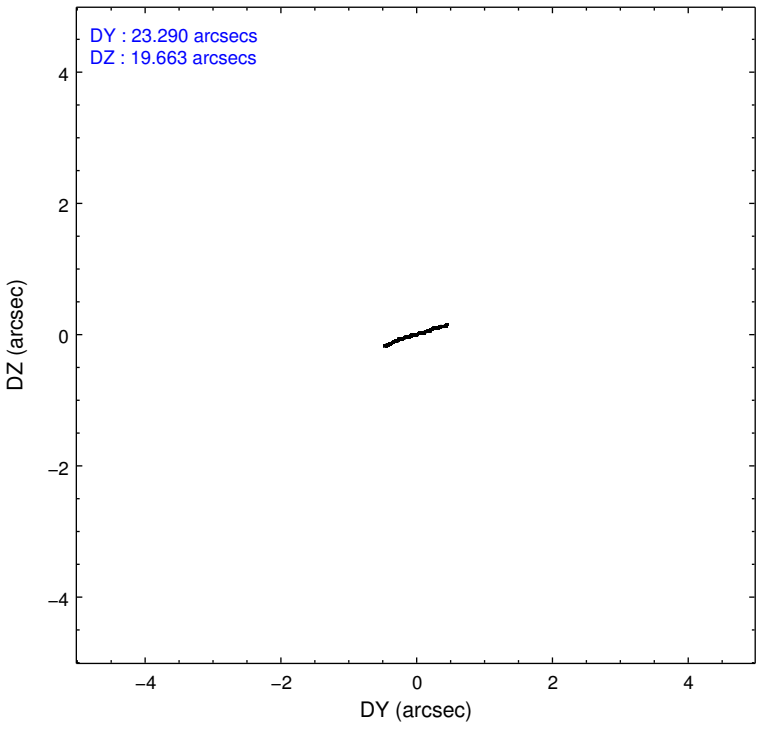
2.2 Compared Parameters

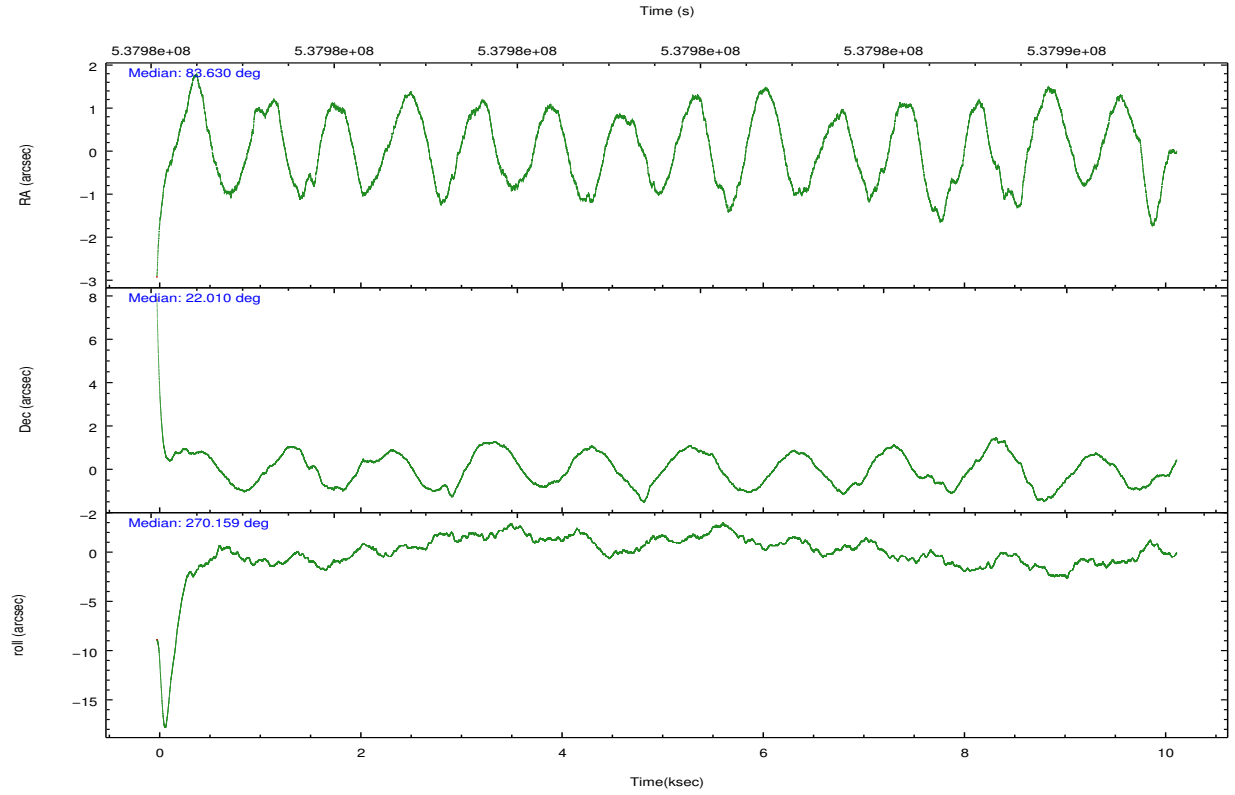
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-7	ACIS-7
Grating	NONE	NONE
Data mode	GRADED	GRADED
Observation mode	POINTING	POINTING
[deg] Pointing RA	83.614769	83.62999116329463
[deg] Pointing Dec	22.033664	22.01012118389379
[deg] Pointing Roll	270.006343	270.15726985445
[s] Window start time (MET)	537667267.184000	537667267.184000
[s] Window stop time (MET)	539481667.184000	539481667.184000
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-193.832523	-193.8411381737682
[mm] SIM translation stage offset	3.7	3.708615590760388
[s] Observation start time (MET)	537976687.184000	537974903.29913
Observation start date	2015-01-18T13:57:00	2015-01-18T13:28:23
[s] Observation end time (MET)	537986687.184000	537988020.22486
Observation end date	2015-01-18T16:43:40	2015-01-18T17:07:00
Read mode	TIMED	TIMED

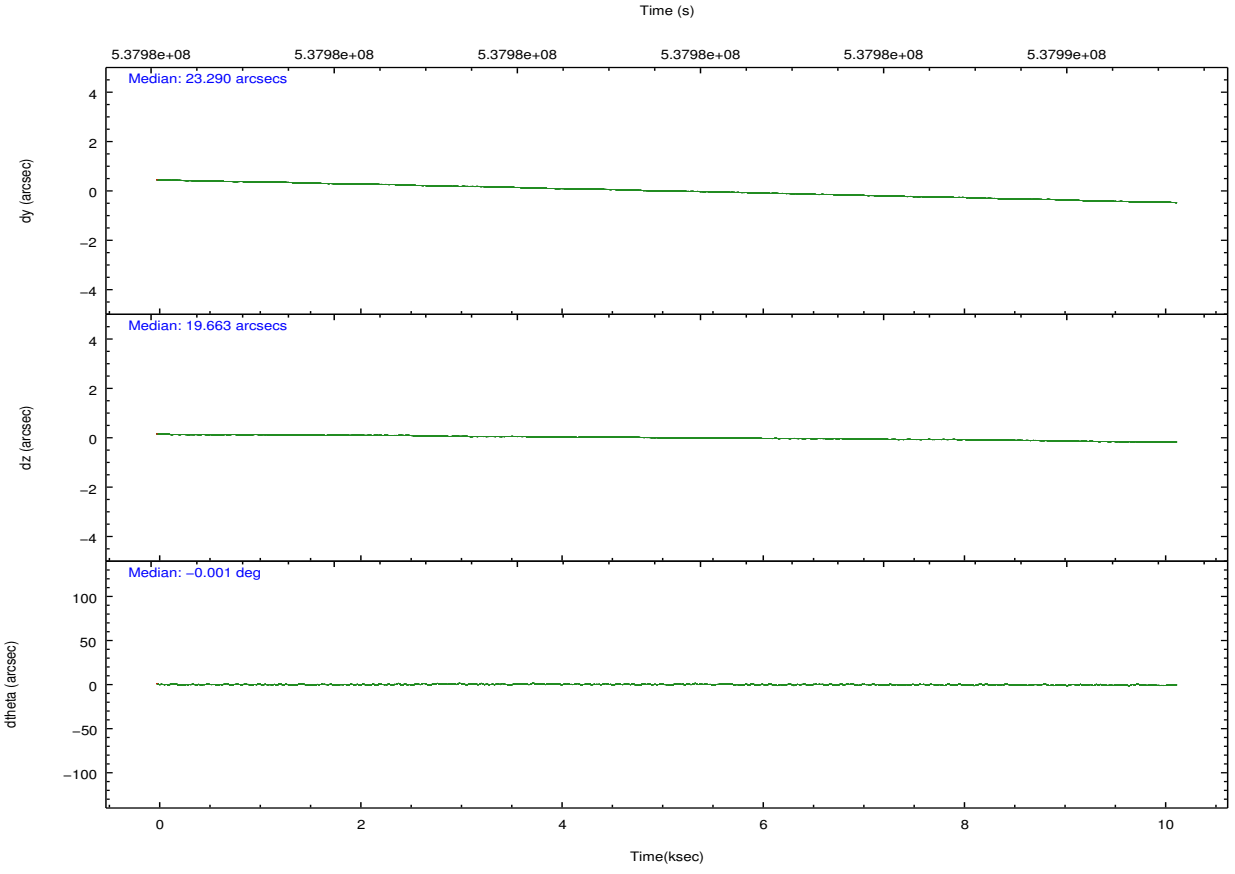
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	485	485
Subarray row count	300	300
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	0.2

2.3 Aspect


RA : 83.630 deg
Dec : 22.010 deg
Dec (arcsec)
RA (arcsec)
8
6
4
2
0
−6
−4
−2
0
2
4


DY : 23.290 arcsecs
DZ : 19.663 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.3798e+08
5.3798e+08
5.3798e+08
5.3798e+08
5.3798e+08
5.3799e+08
Median: 83.630 deg
RA (arcsec)
Median: 22.010 deg
Dec (arcsec)
Median: 270.159 deg
roll (arcsec)
Time(ksec)

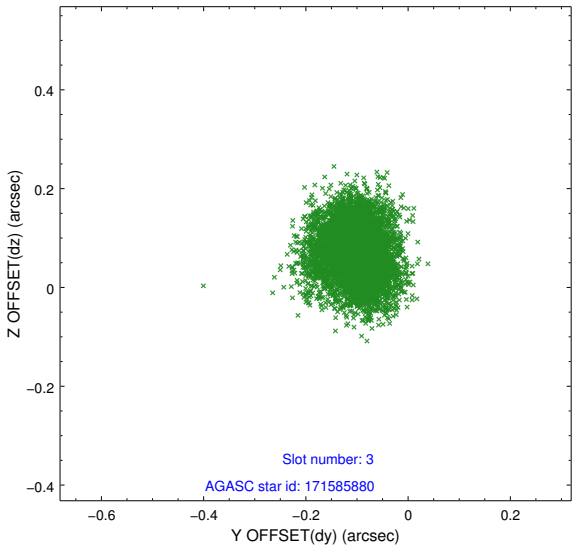

Time (s)
5.3798e+08
5.3798e+08
5.3798e+08
5.3798e+08
5.3798e+08
5.3799e+08
Median: 23.290 arcsecs
dy (arcsec)
Median: 19.663 arcsecs
dz (arcsec)
Median: −0.001 deg
dtheta (arcsec)
Time(ksec)

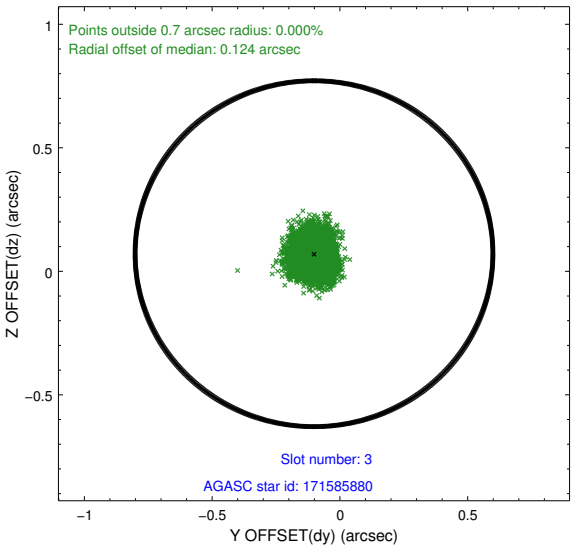
Slot Statistics

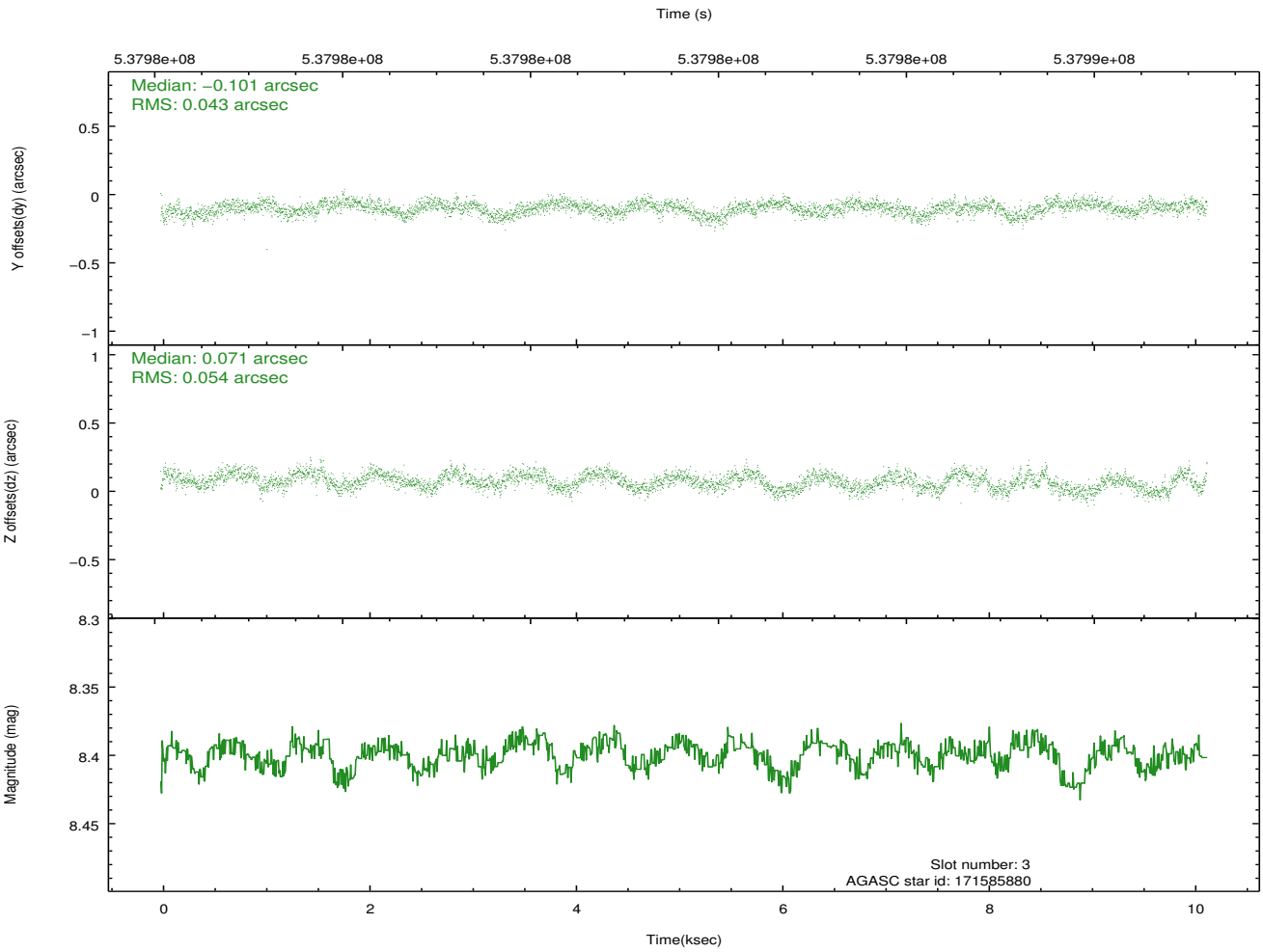
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	7.13	2473	-0.239	-0.166	0.012	0.021	0.000000	0.000000	-777.05	-1665.00
1	FID		ACIS-S-4	7.22	2473	0.277	0.123	0.013	0.020	0.000000	0.000000	2136.60	243.10
2	FID		ACIS-S-6	7.32	2473	-0.066	0.050	0.011	0.017	0.000000	0.000000	385.91	881.11
3	GUIDE	used	171585880	8.40	4946	-0.101	0.071	0.075	0.118	83.676260	22.176319	-513.23	205.65
4	GUIDE	used	171586032	9.02	4942	0.042	0.236	0.072	0.118	83.950197	22.083225	-179.12	1119.77
5	GUIDE	used	171721904	9.23	4941	-0.119	-0.146	0.100	0.161	84.272676	22.116922	-303.89	2194.82
6	GUIDE	used	243941560	8.36	4944	-0.215	0.109	0.062	0.102	83.733264	22.568598	-1925.44	395.06
7	GUIDE	used	171597832	9.16	4941	0.396	-0.271	0.086	0.144	83.183230	21.366702	2399.34	-1446.84

2.4 Star Slots

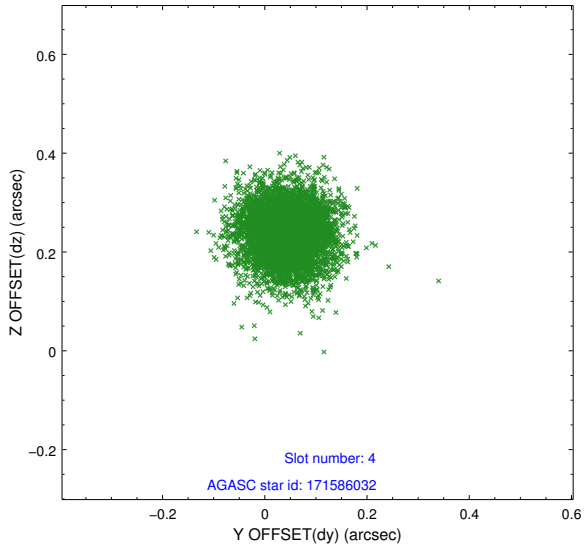
2.4.1 Slot 3

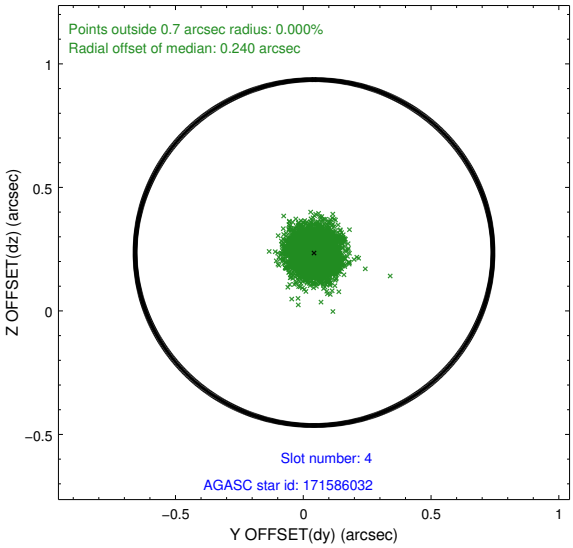


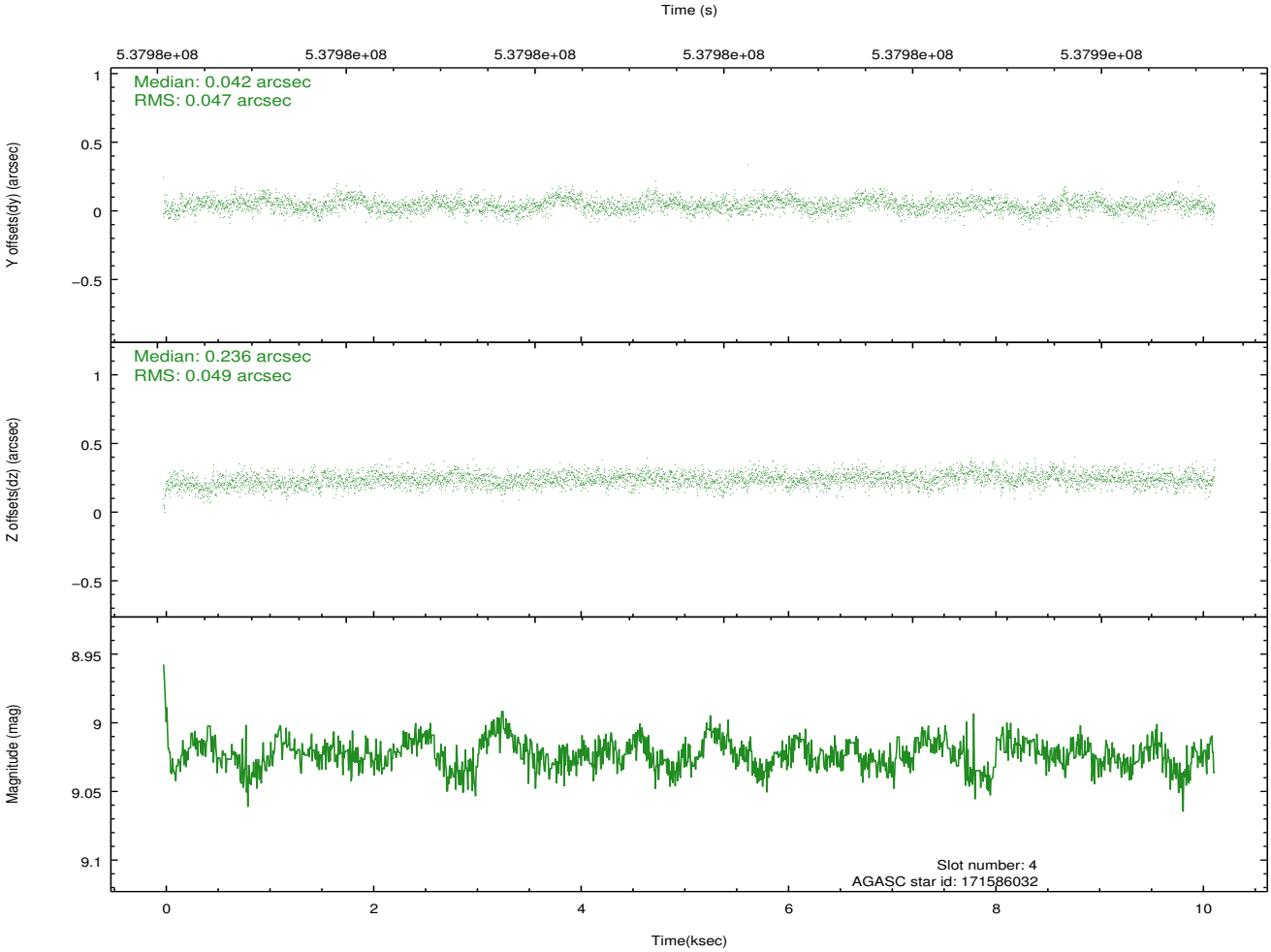




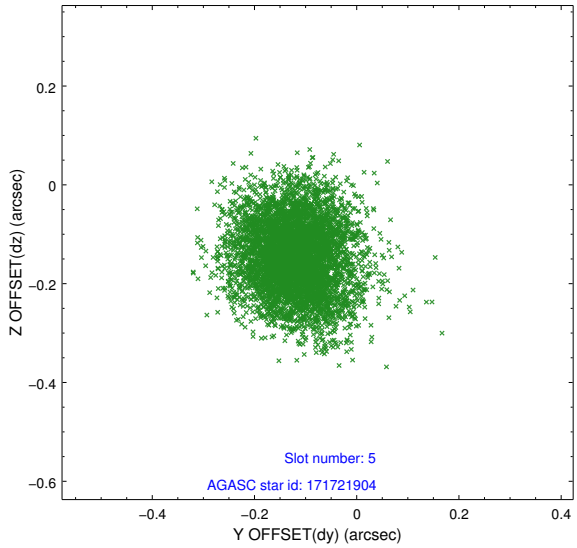
2.4.2 Slot 4

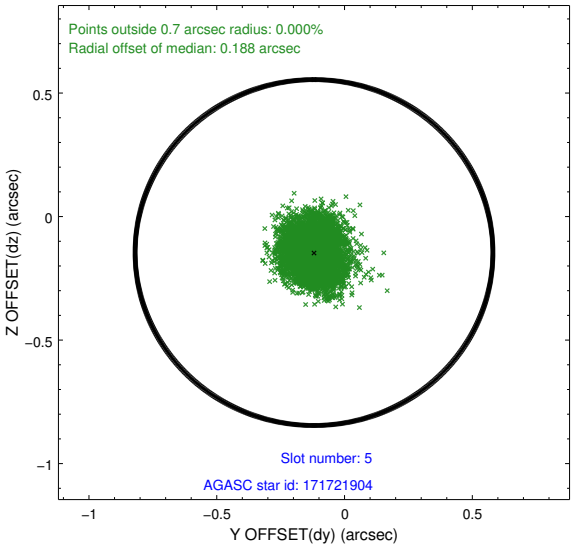

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032

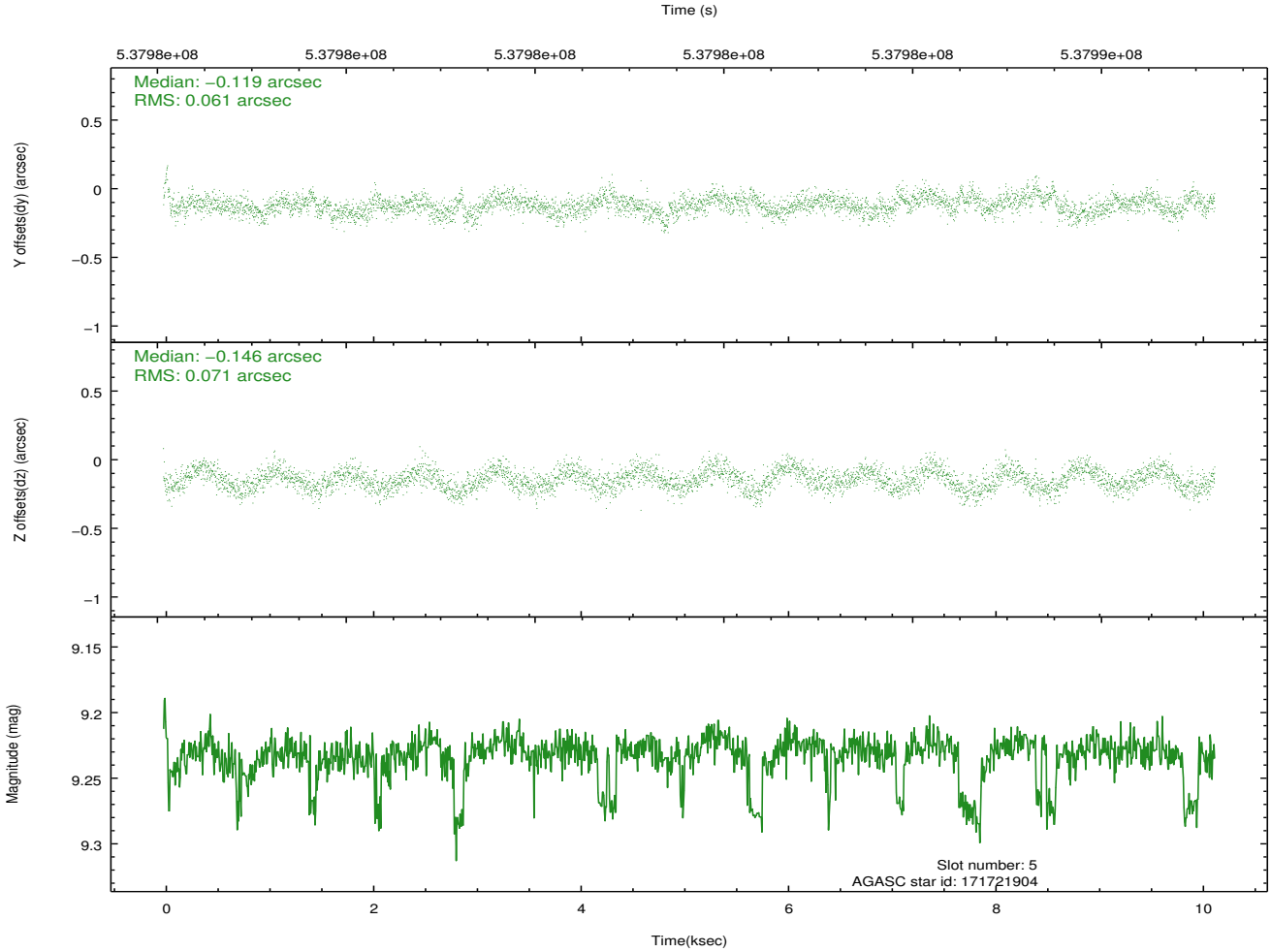

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.240 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032


Time (s)
5.3798e+08
5.3799e+08
Median: 0.042 arcsec
RMS: 0.047 arcsec
Y offsets(dy) (arcsec)
Median: 0.236 arcsec
RMS: 0.049 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 171586032
Time(ksec)

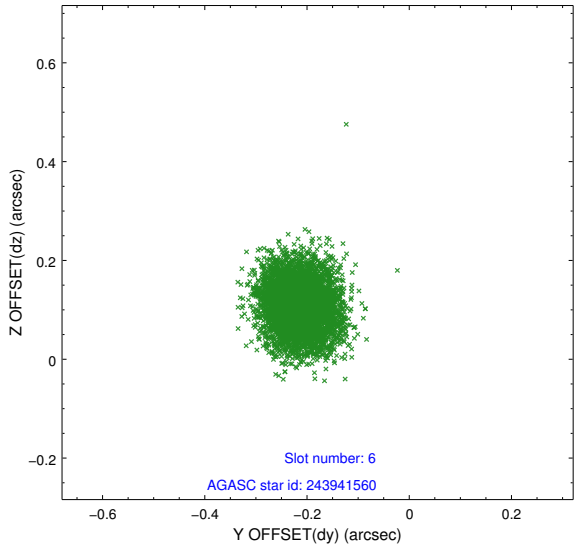
2.4.3 Slot 5

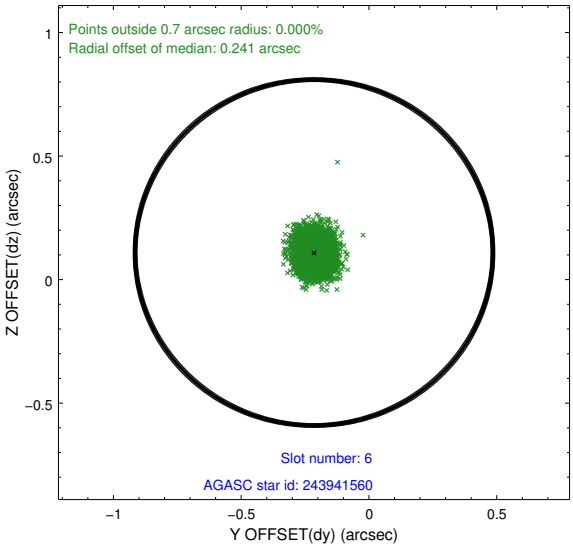

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904

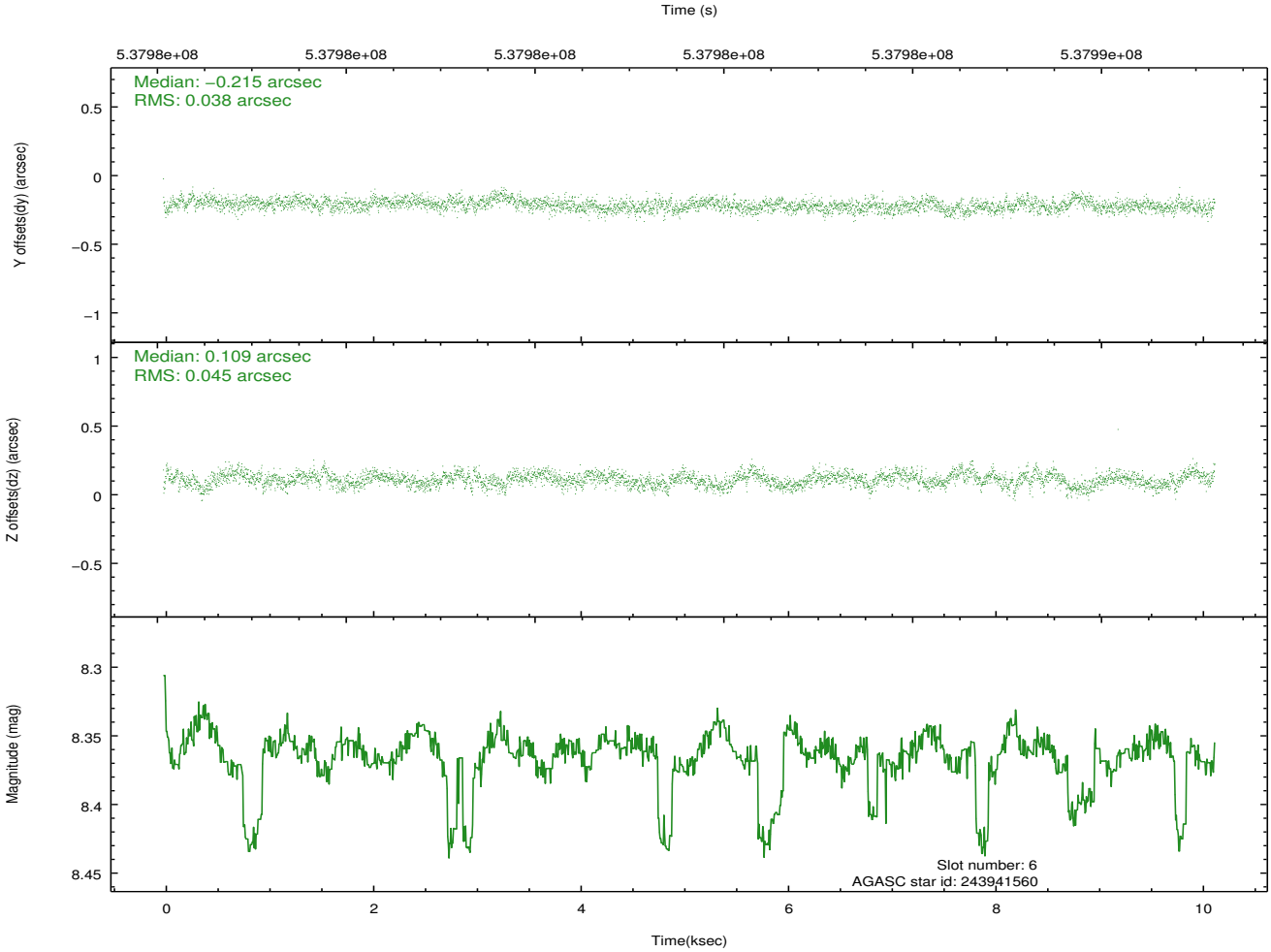

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.188 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904


Time (s)
Median: −0.119 arcsec
RMS: 0.061 arcsec
Y offsets(dy) (arcsec)
Median: −0.146 arcsec
RMS: 0.071 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 171721904
Time(ksec)

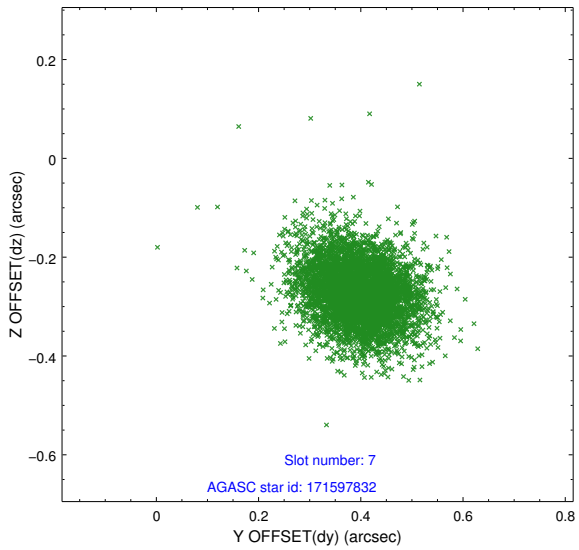
2.4.4 Slot 6

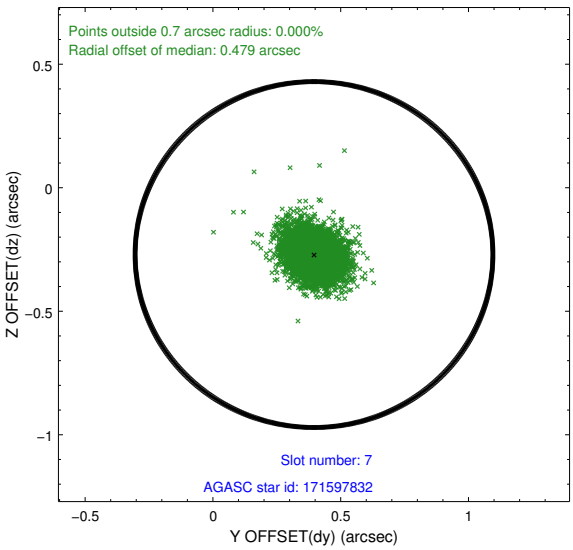

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560

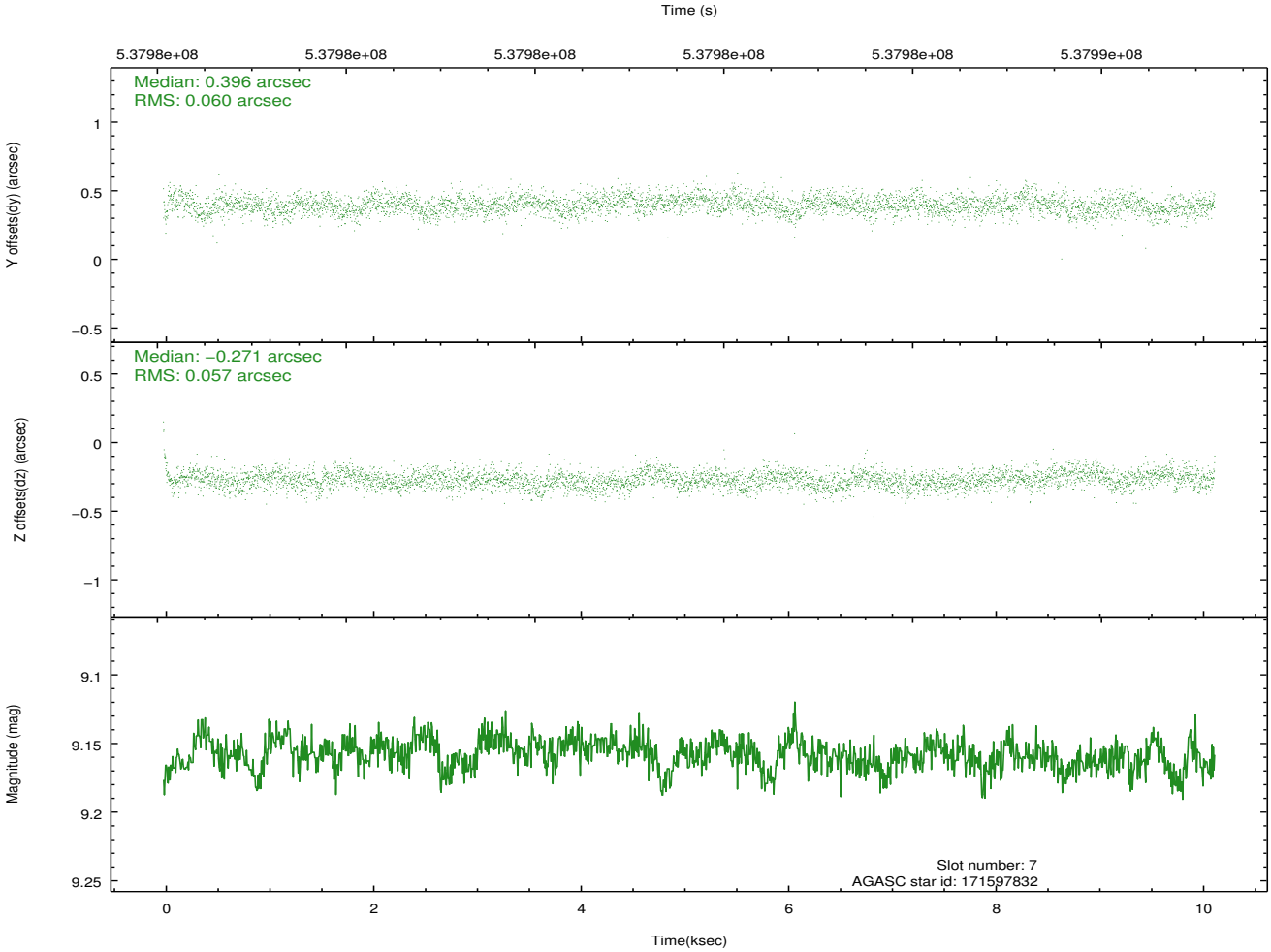

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.241 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560


Time (s)
Median: −0.215 arcsec
RMS: 0.038 arcsec
Y offsets(dy) (arcsec)
Median: 0.109 arcsec
RMS: 0.045 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 243941560
Time(ksec)

2.4.5 Slot 7

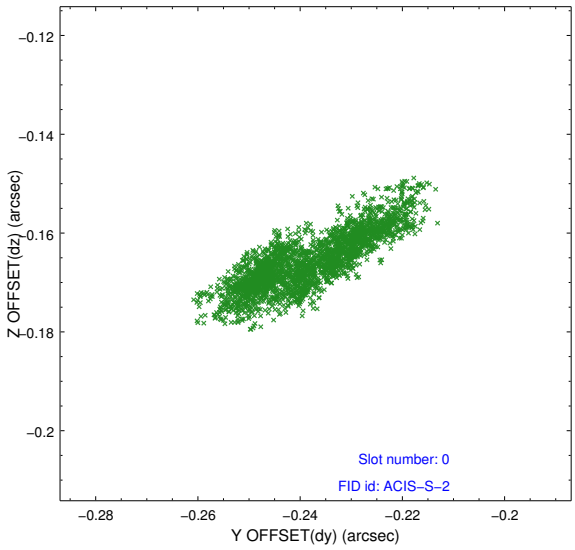

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

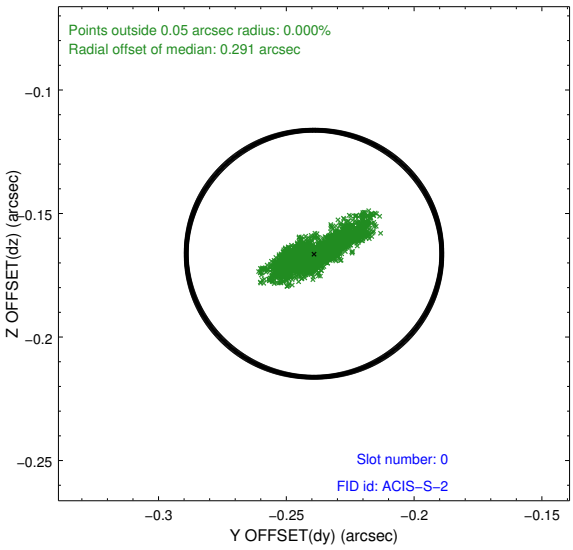

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.479 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

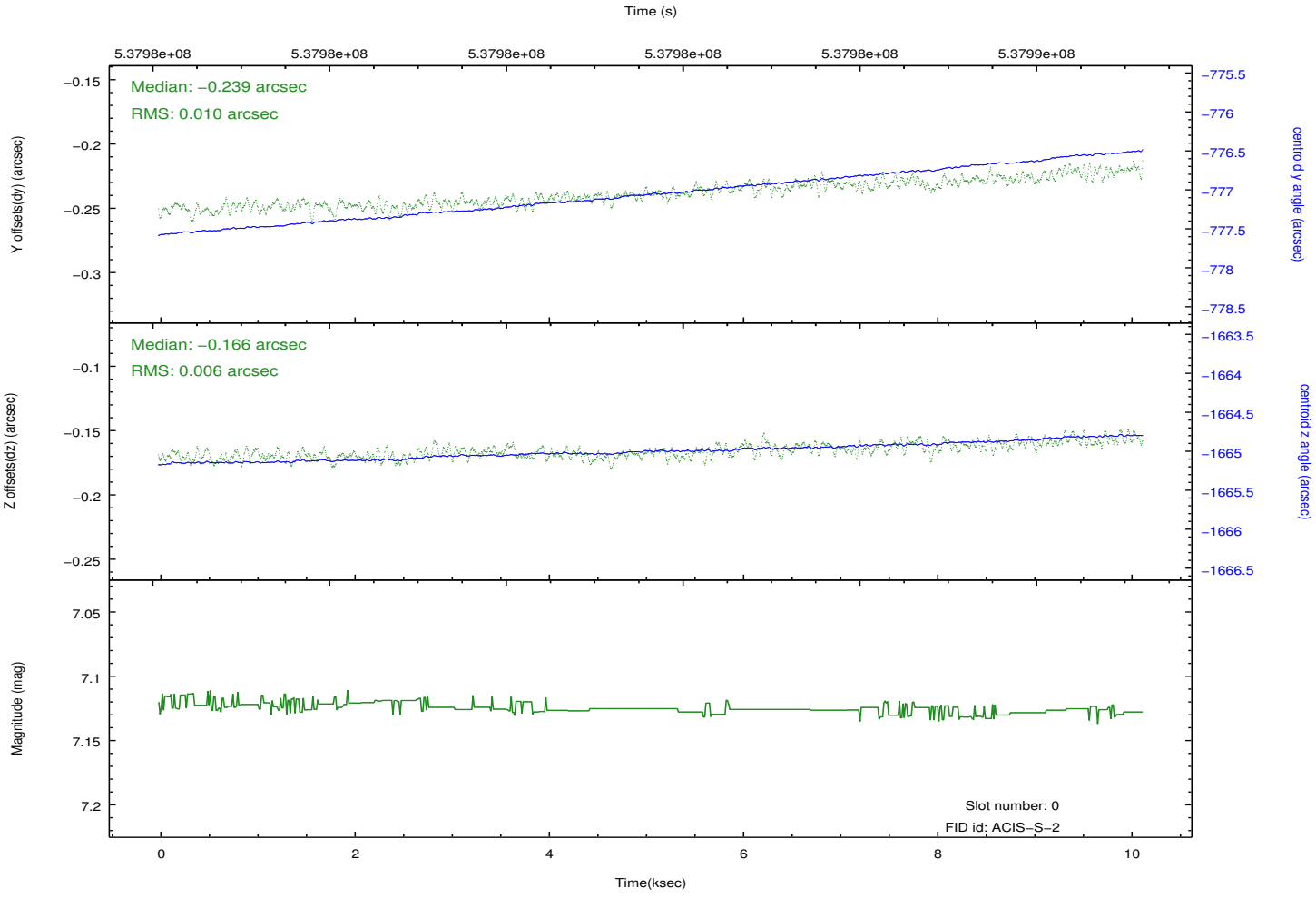

Time (s)
Median: 0.396 arcsec
RMS: 0.060 arcsec
Y offsets(dy) (arcsec)
Median: −0.271 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 171597832
Time(ksec)

2.5 FID Slots

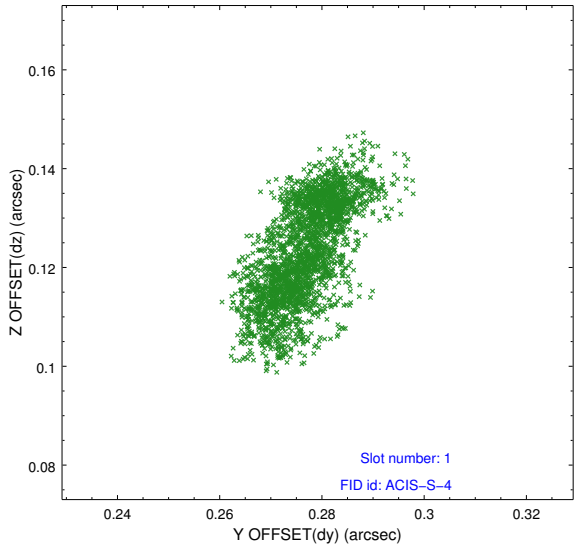
2.5.1 Slot 0

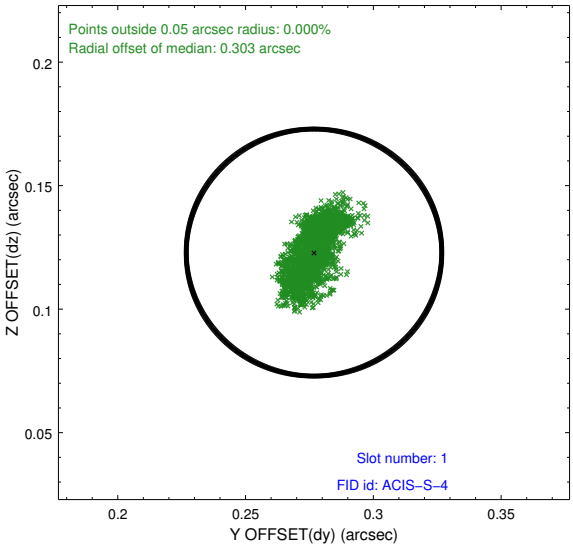


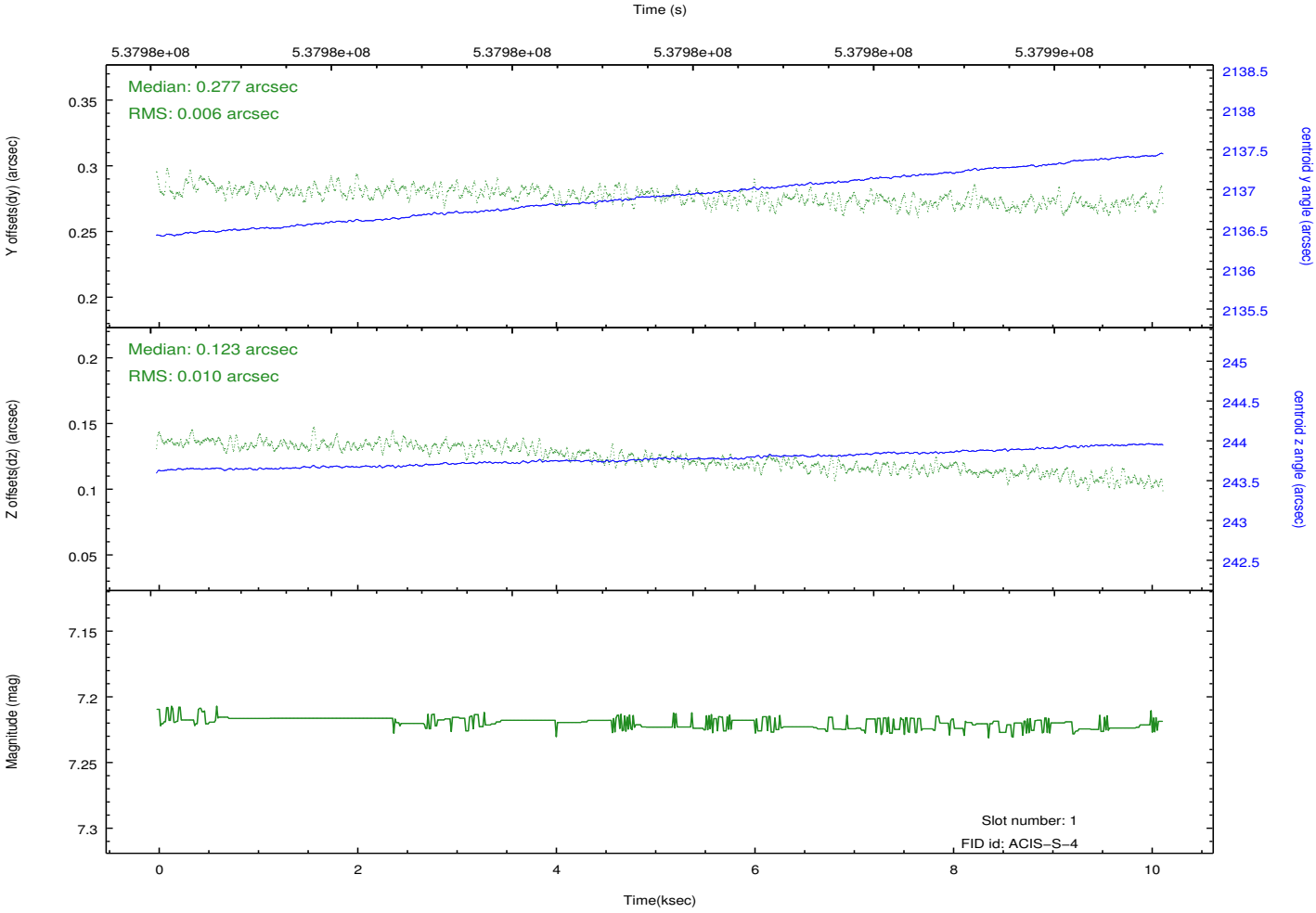




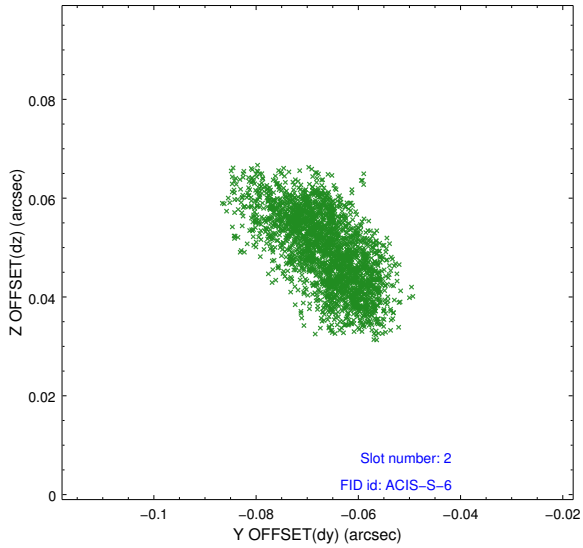
2.5.2 Slot 1

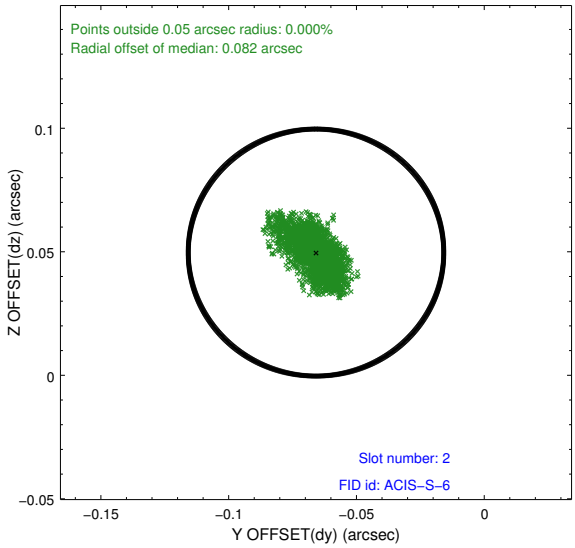

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

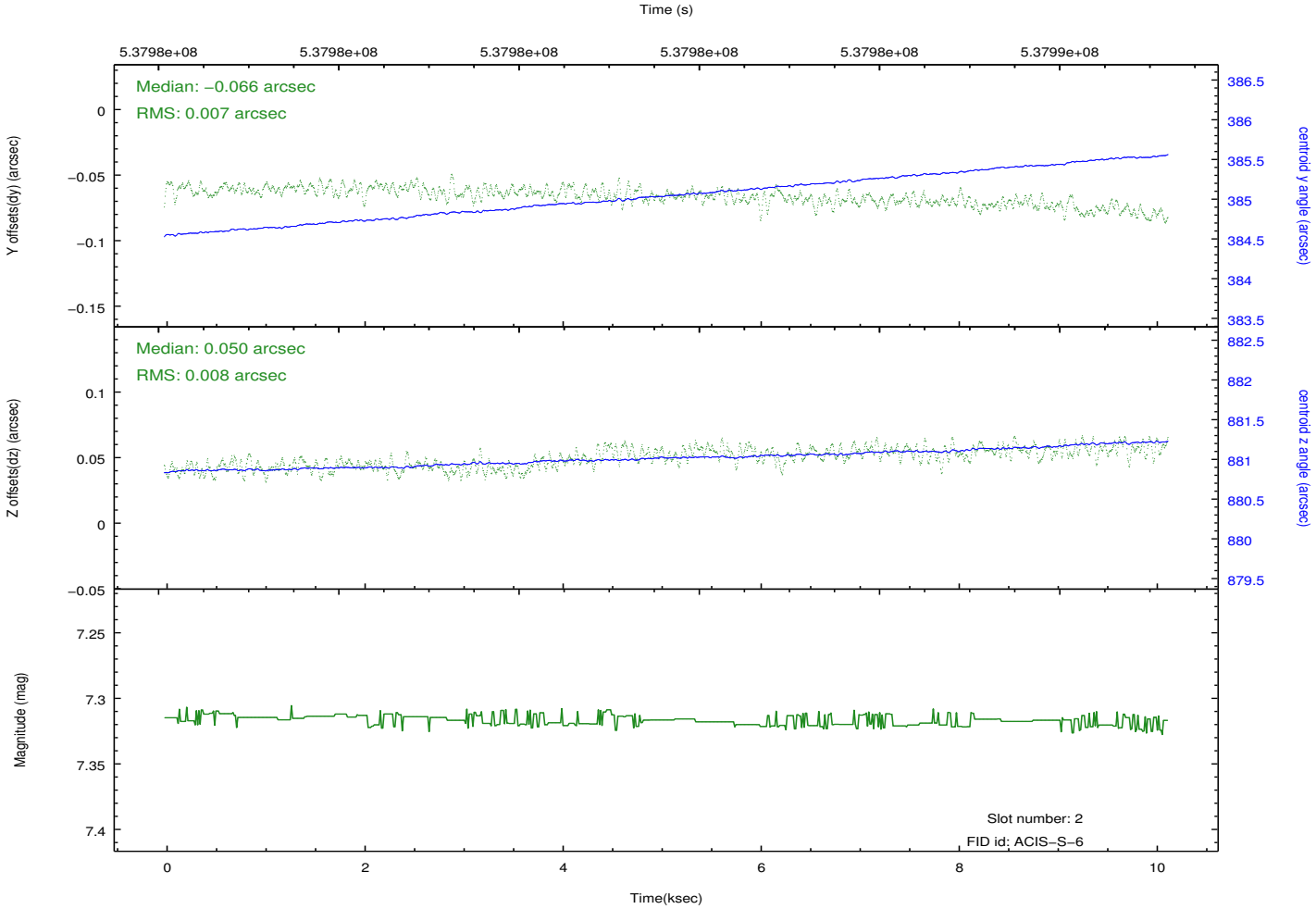

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.303 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.277 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.123 arcsec
RMS: 0.010 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−6


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.082 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−6


Time (s)
Median: −0.066 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.050 arcsec
RMS: 0.008 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−6
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2015.01.20
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10

A.2 Comments

```
Charge time is set to the scheduled time for this observation, although
the ontime is 7946, which is significantly less due to telemetry
saturation. In addition, the livetime of the detector is about 1368 s,
significantly shorter than the ONTIME of 7946 s. This is because the
frame time of 0.2 s is shorter than the minimum time that it takes to
read out the detector (about 0.9 s) in the specified configuration.
Therefore, there is a flush of 0.90588 s preceding each frame. This
flush time is dead time.
======
The observation uses non-standard dither.
======
Joint Proposal with HST. Window constraint met.
```