V&V Reference Report
L2 ASCDS Version : 8.1.1

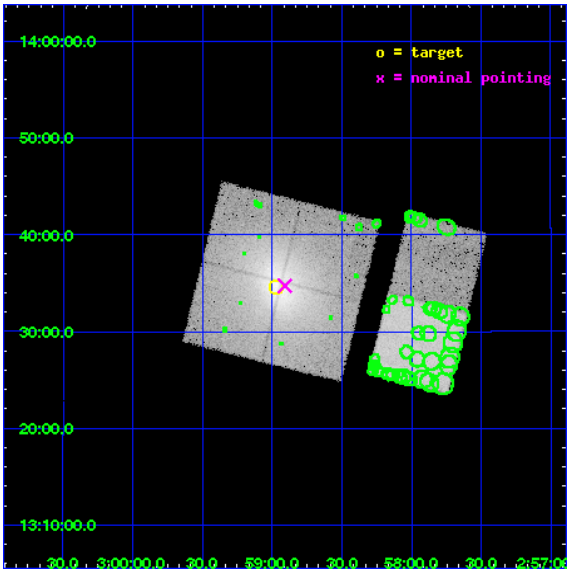
Observation 518 - L2 Version 5
Chandra X-Ray Center

L2 Processing Date : Nov 17 2009

Contents

1 Front

seq_num	800026	Sequence number
obs_id	518	Observation id
title	MASS DISTRIBUTIONS OF RELAXED CLUSTERS	Proposal title
observer	Dr Steve Murray	Principal investigator
object	A401	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	44.74292	Observer's specified target RA
dec_targ	13.5775	Observer's specified target Dec
ra_nom	44.727248993811	Nominal RA
dec_nom	13.578910094668	Nominal Dec
roll_nom	104.02305039603	Nominal Roll
revision	5	Processing version of data
ontime	18236.800016984	Sum of GTIs [s]
livetime	18005.874674287	Livetime [s]
ontime0	18236.800016984	Sum of GTIs [s]
ontime1	18236.800016984	Sum of GTIs [s]
ontime2	18236.800016984	Sum of GTIs [s]
ontime3	18233.559056774	Sum of GTIs [s]
ontime6	18236.800016984	Sum of GTIs [s]
ontime7	18236.800016984	Sum of GTIs [s]
l2events	257939	Number of level 2 events

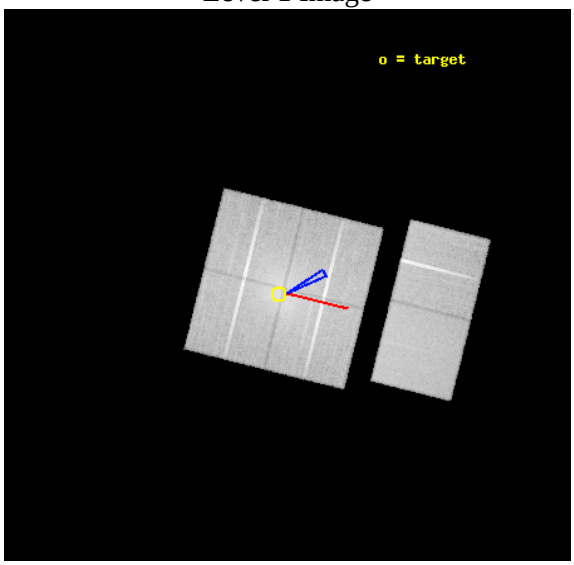


2 OBI

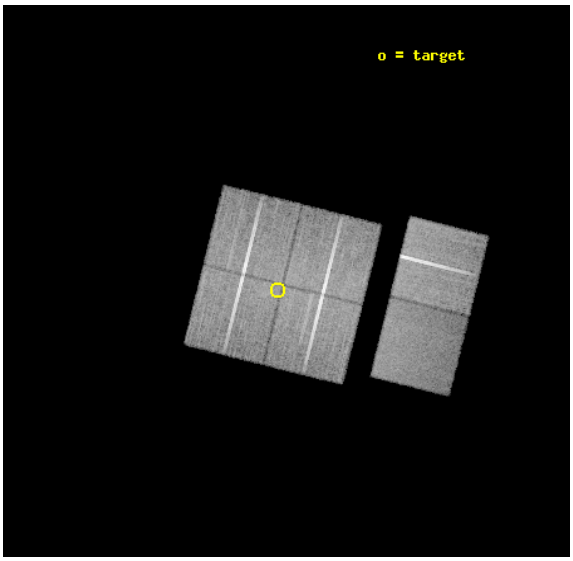
2.1 OBI

2.1.1 Images

Level 1 Image

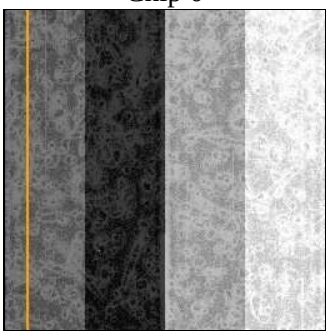


Level 1 Bad Events

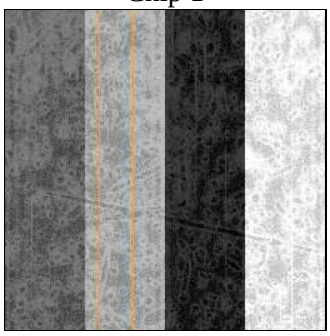


2.1.2 Bias

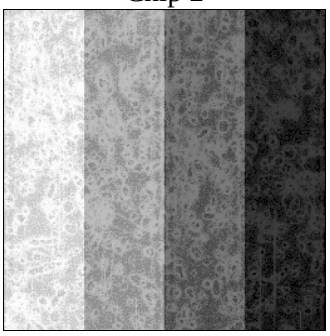
Chip 0



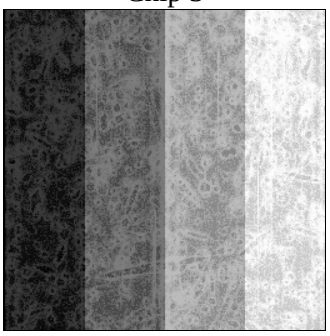
Chip 1



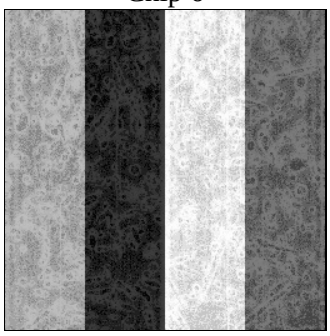
Chip 2



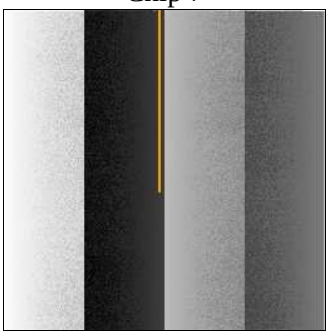
Chip 3



Chip 6



Chip 7



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	8.1.1	ASCDS version number
caldbver	4.1.4	
date	2009-11-17T10:13:59	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	19200.000000	Scheduled observation exposure time
ontime	18236.800016984	Sum of GTIs [s]
ontime0	18236.800016984	Sum of GTIs [s]
ontime1	18236.800016984	Sum of GTIs [s]
ontime2	18236.800016984	Sum of GTIs [s]
ontime3	18233.559056774	Sum of GTIs [s]
ontime6	18236.800016984	Sum of GTIs [s]
ontime7	18236.800016984	Sum of GTIs [s]
l1events	1166678	Number of level 1 events

2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	194378	198954	196353	212144	179305	185544
rejected events	151381	149615	162529	159895	162385	111665
rejected %	77%	75%	82%	75%	90%	60%

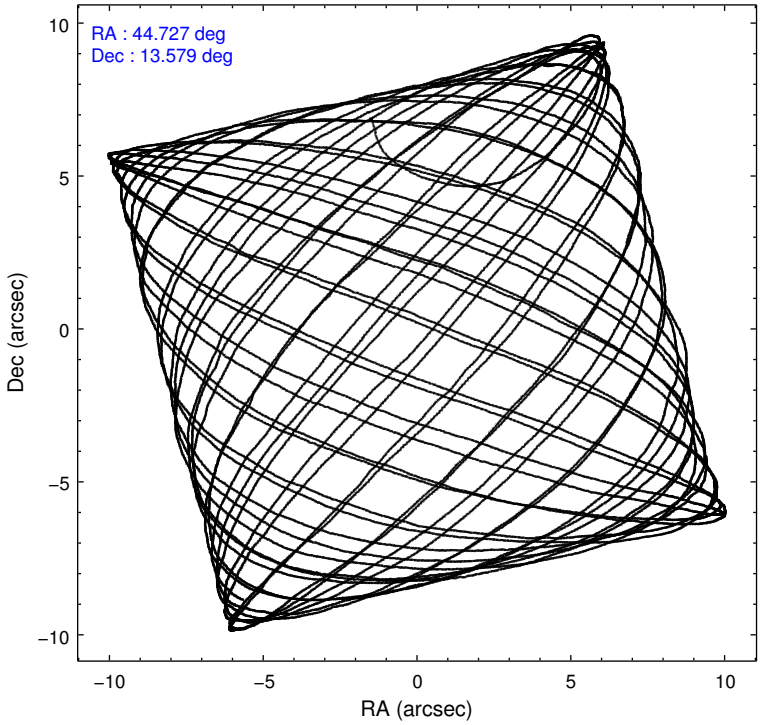
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
grade 0 events	20381	24453	13261	24602	3398	4998
	10%	12%	6%	11%	1%	2%
grade 1 events	95	81	54	83	32	123
	0%	0%	0%	0%	0%	0%
grade 2 events	14215	15094	13267	18680	6874	15838
	7%	7%	6%	8%	3%	8%
grade 3 events	1805	2199	1392	1808	1017	4598
	0%	1%	0%	0%	0%	2%
grade 4 events	1692	2048	1333	1689	1052	4042
	0%	1%	0%	0%	0%	2%
grade 5 events	3573	3706	3032	3358	3352	10847
	1%	1%	1%	1%	1%	5%
grade 6 events	4916	5557	4582	5503	4582	44424
	2%	2%	2%	2%	2%	23%
grade 7 events	147701	145816	159432	156421	158998	100674
	75%	73%	81%	73%	88%	54%

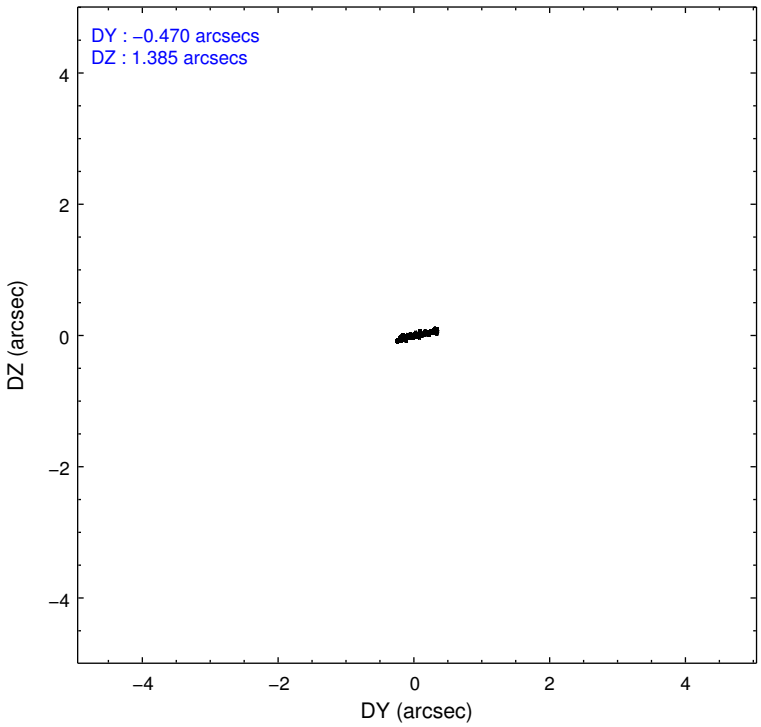
2.2 Compared Parameters

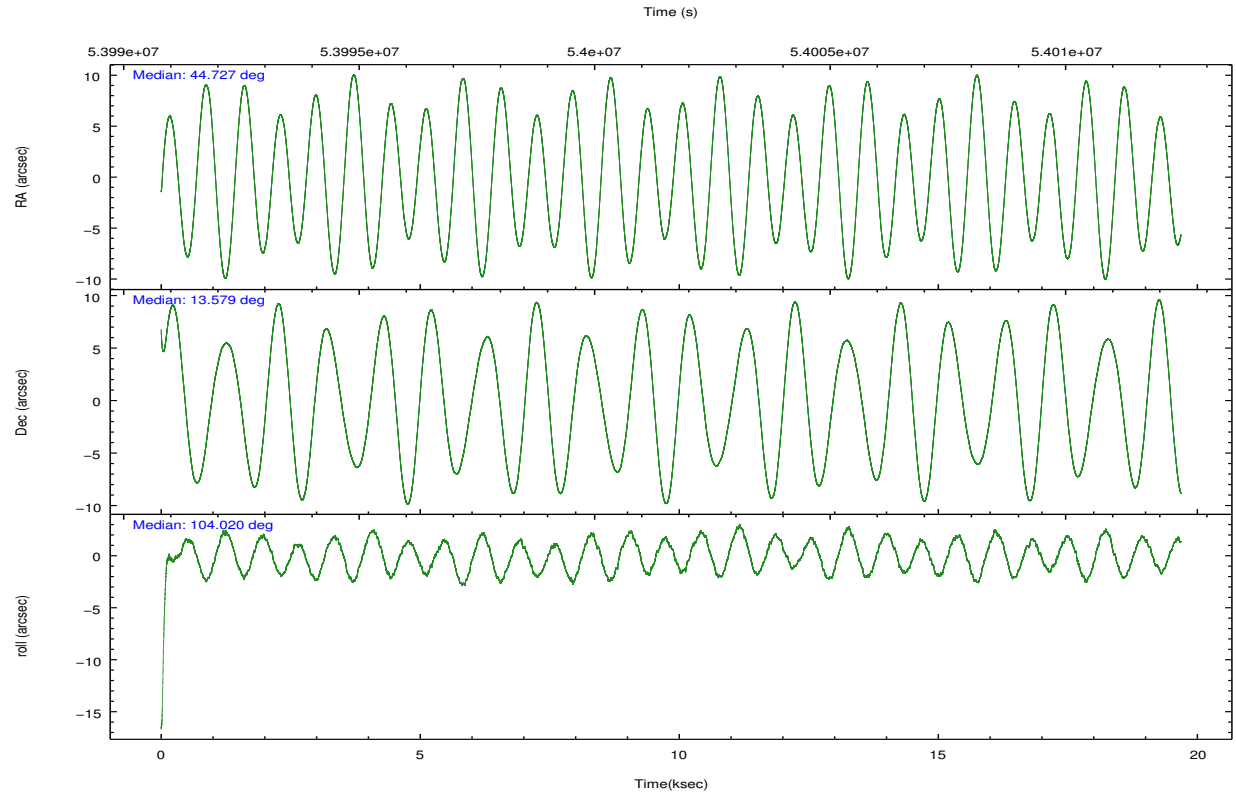
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-012367	ACIS-012367
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	44.746672	44.72724899381075
Pointing Dec	13.558488	13.57891009466834
Pointing Roll	103.809820	104.0230503960293
Roll angle	62.000000	62.000000
Roll tolerance	5.000000	5.000000
Roll constraint allows 180D rotation	N	N
SIM focus pos (mm)	-0.780908	-0.7809083437167272
SIM defocus (mm)	0.00144	0.001439871863259334
SIM translation stage pos (mm)	-233.592463	-233.5874344608287
SIM translation stage offset (mm)	0	-0.005018542100998502
Observation start time	53992264.184000	53991326.289741
Observation start date	1999-09-17T21:50:00	1999-09-17T21:35:26
Observation end time	54011464.184000	54011867.802978
Observation end date	1999-09-18T03:10:00	1999-09-18T03:17:47
Read mode	TIMED	TIMED

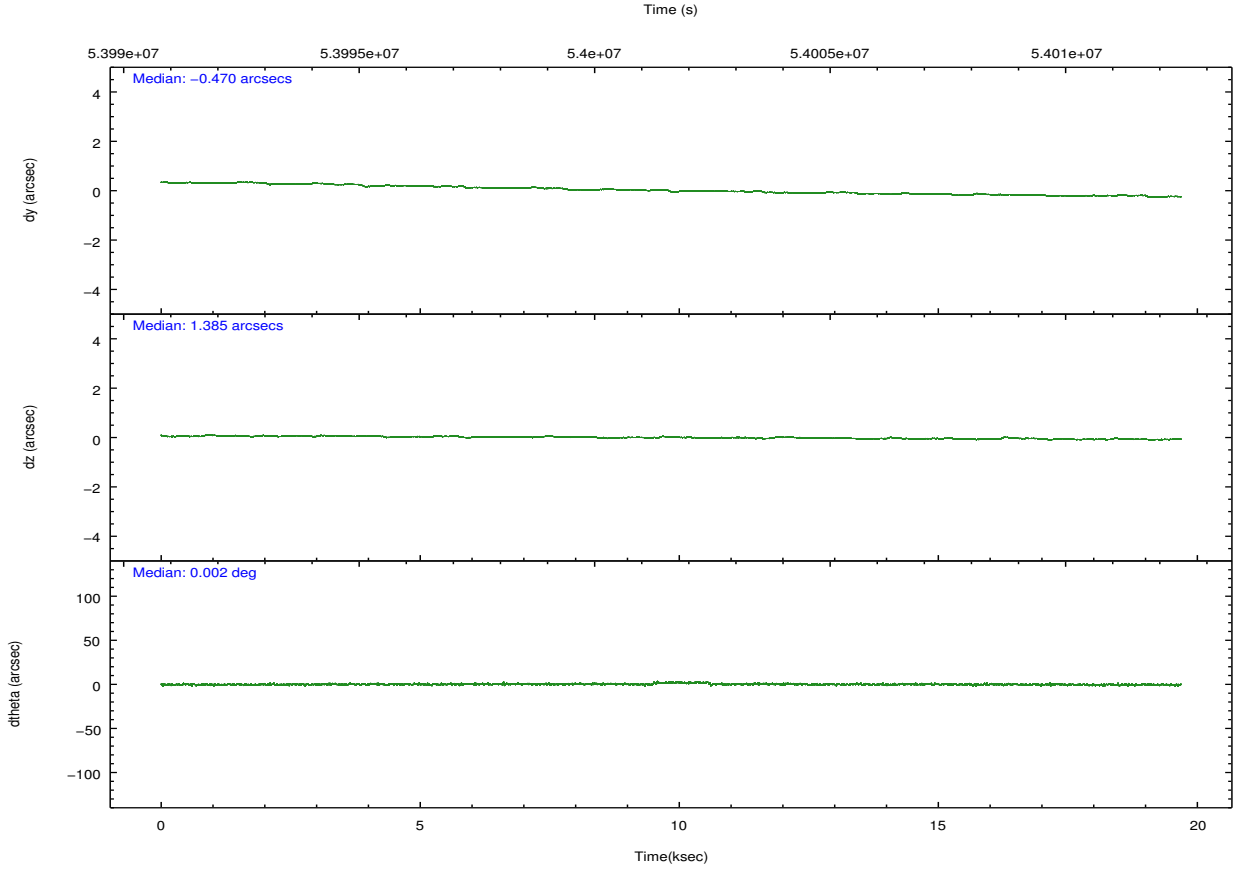
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 44.727 deg
Dec : 13.579 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : −0.470 arcsecs
DZ : 1.385 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.399e+07
5.3995e+07
5.4e+07
5.4005e+07
5.401e+07
Median: 44.727 deg
RA (arcsec)
Median: 13.579 deg
Dec (arcsec)
Median: 104.020 deg
roll (arcsec)
Time(ksec)

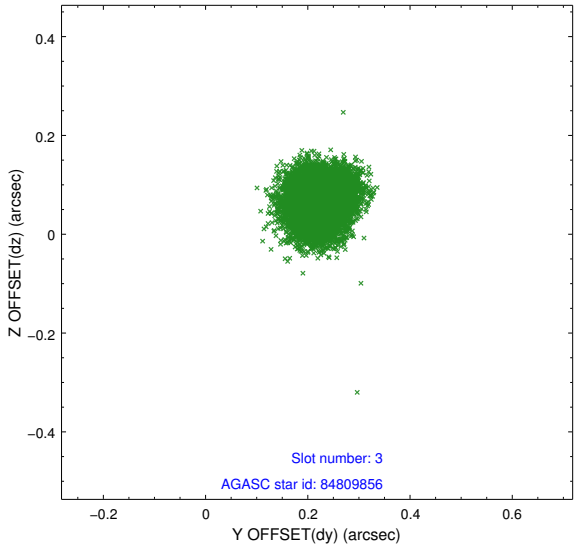

Time (s)
5.399e+07
5.3995e+07
5.4e+07
5.4005e+07
5.401e+07
Median: −0.470 arcsecs
dy (arcsec)
Median: 1.385 arcsecs
dz (arcsec)
Median: 0.002 deg
dtheta (arcsec)
Time(ksec)

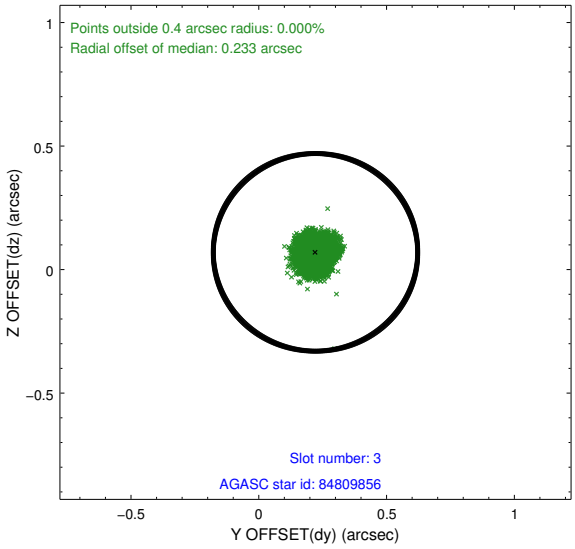
Slot Statistics

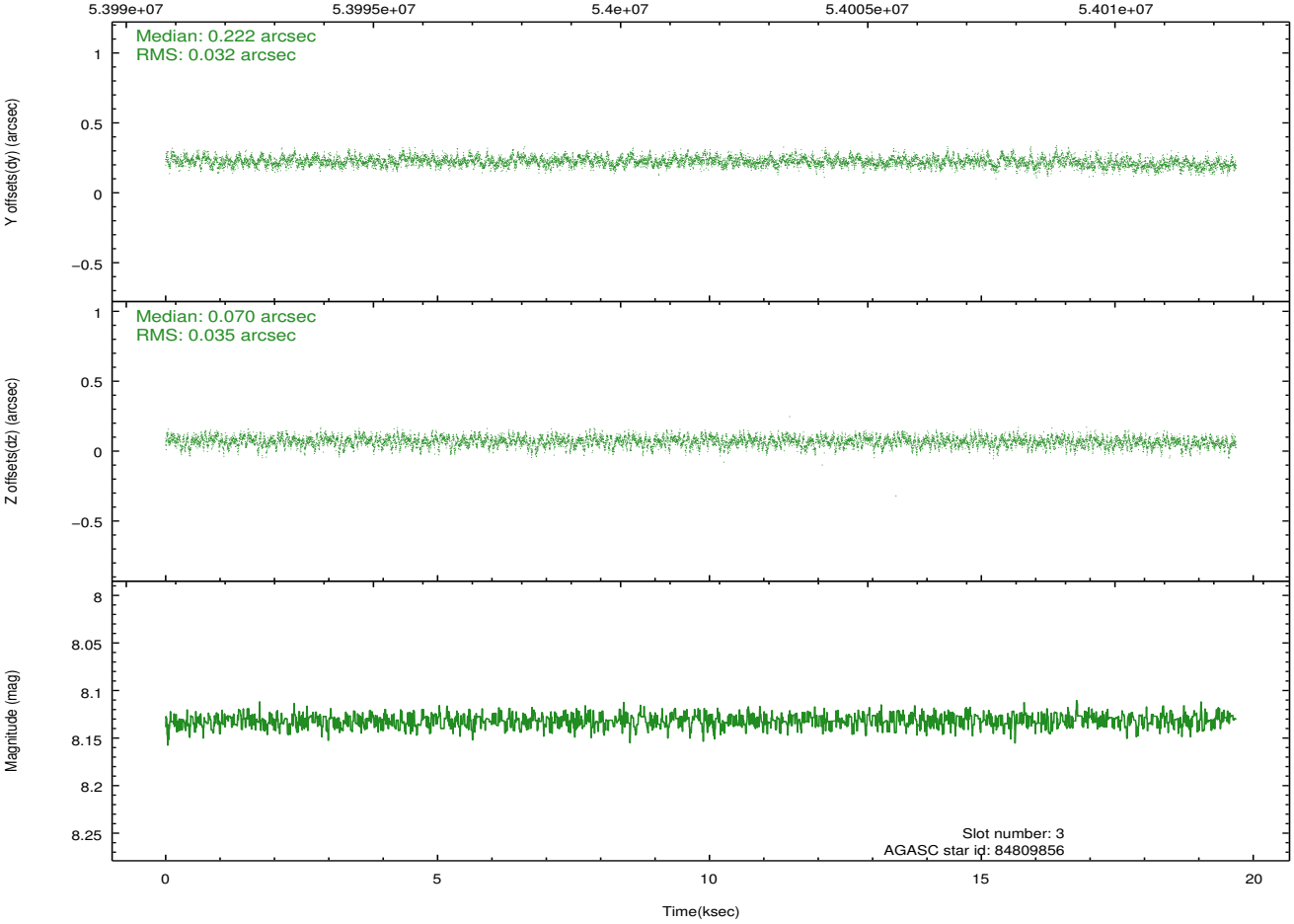
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-I-2	7.20	9603	-0.037	0.040	0.010	0.020	0.000000	0.000000	-753.93	-830.90
1	FID	ACIS-I-4	7.22	9603	0.091	0.019	0.009	0.032	0.000000	0.000000	2160.37	1075.05
2	FID	ACIS-I-5	7.23	9603	-0.156	0.010	0.011	0.022	0.000000	0.000000	-1807.73	1073.18
3	GUIDE	84809856	8.13	9598	0.222	0.070	0.050	0.082	45.191960	12.984820	-2376.23	-1023.78
4	GUIDE	84809112	8.98	9598	-0.158	-0.150	0.070	0.116	44.049948	13.913016	1824.00	2059.28
5	GUIDE	84808032	8.89	9596	-0.050	0.119	0.060	0.097	44.912435	14.042740	1555.64	-977.33
6	GUIDE	84805784	9.33	9600	0.100	0.175	0.072	0.118	45.469378	13.038236	-2419.39	-2014.78
7	GUIDE	84809056	9.72	9594	-0.110	-0.211	0.092	0.145	44.081425	13.762602	1271.96	2083.05

2.4 Star Slots

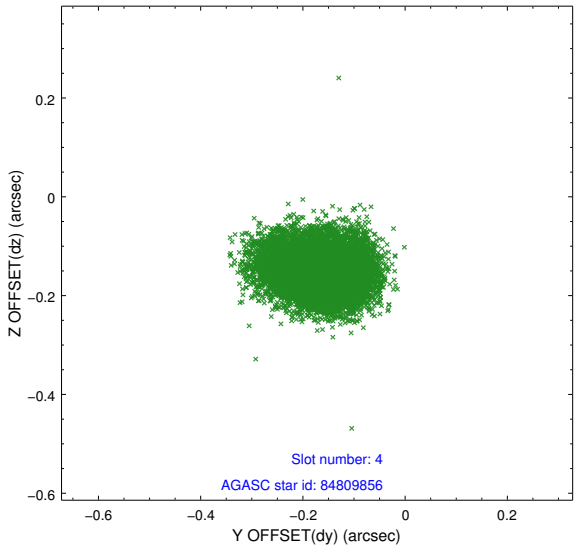
2.4.1 Slot 3

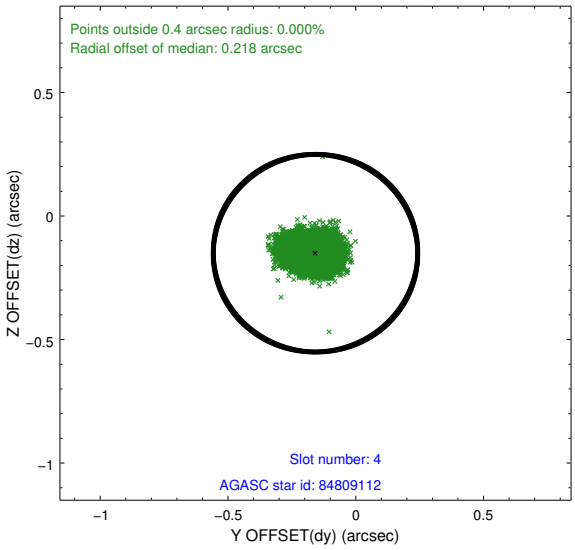


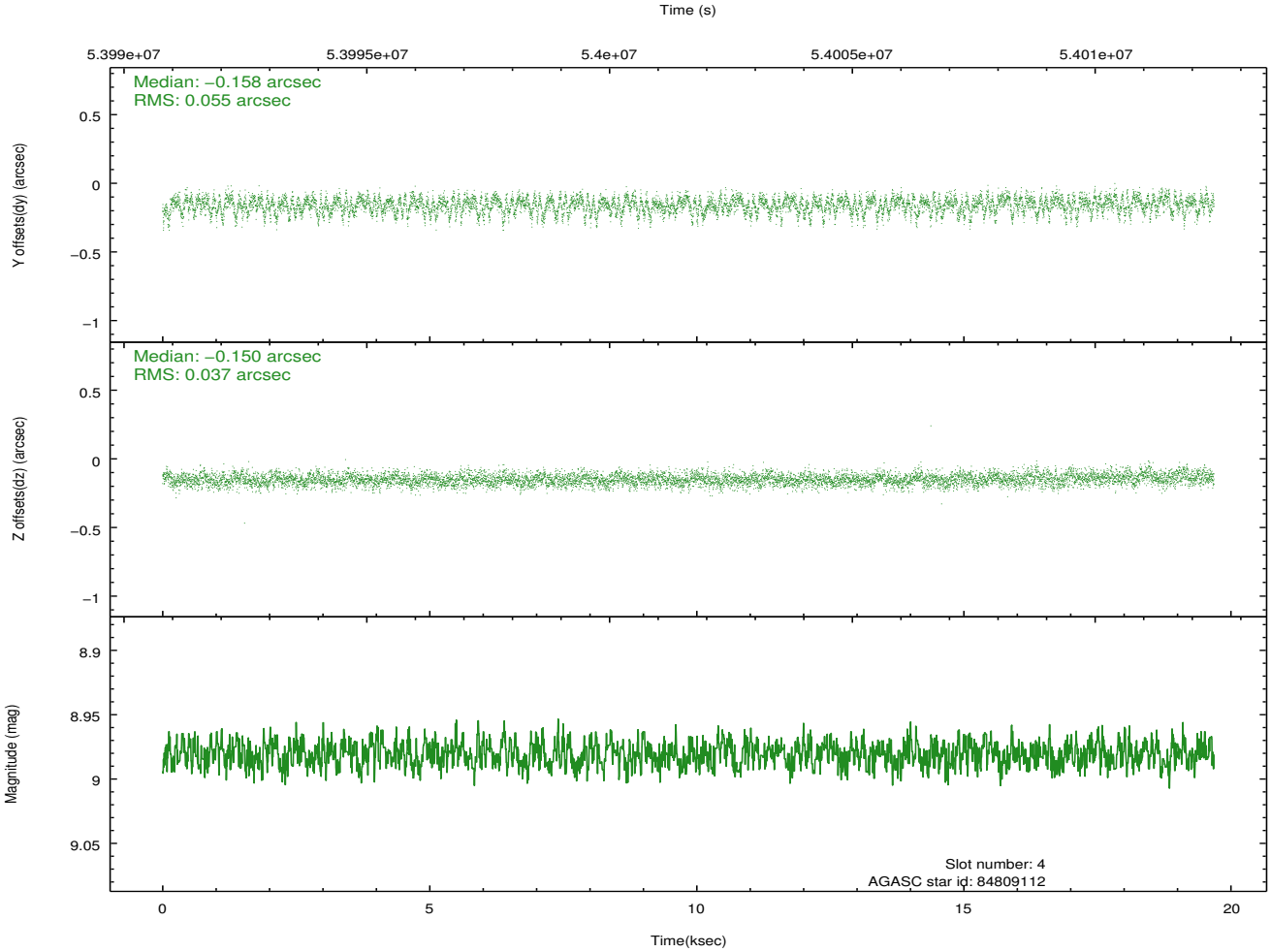




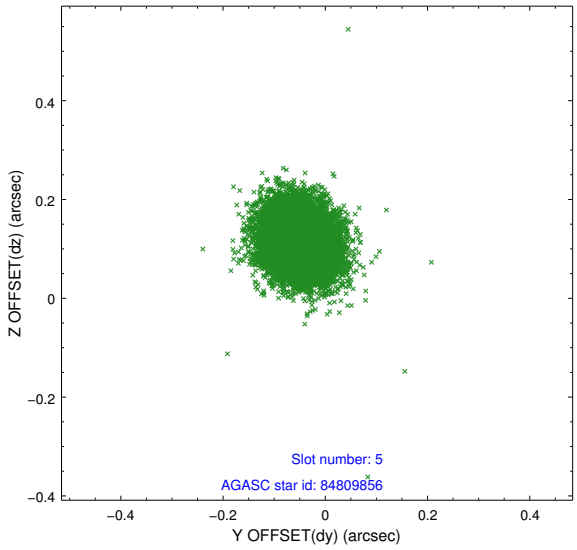
2.4.2 Slot 4

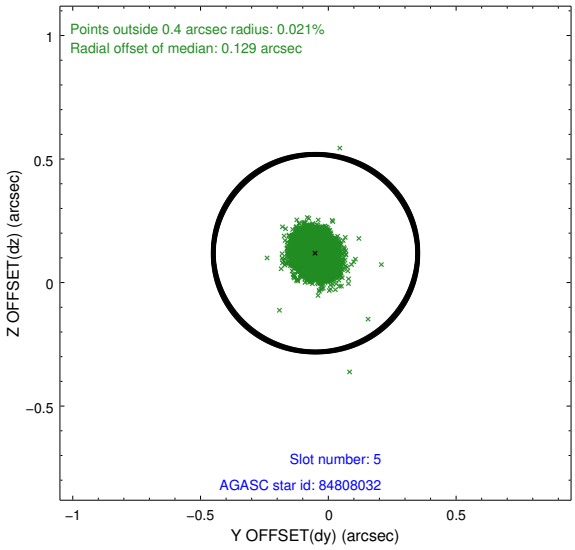

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 84809856

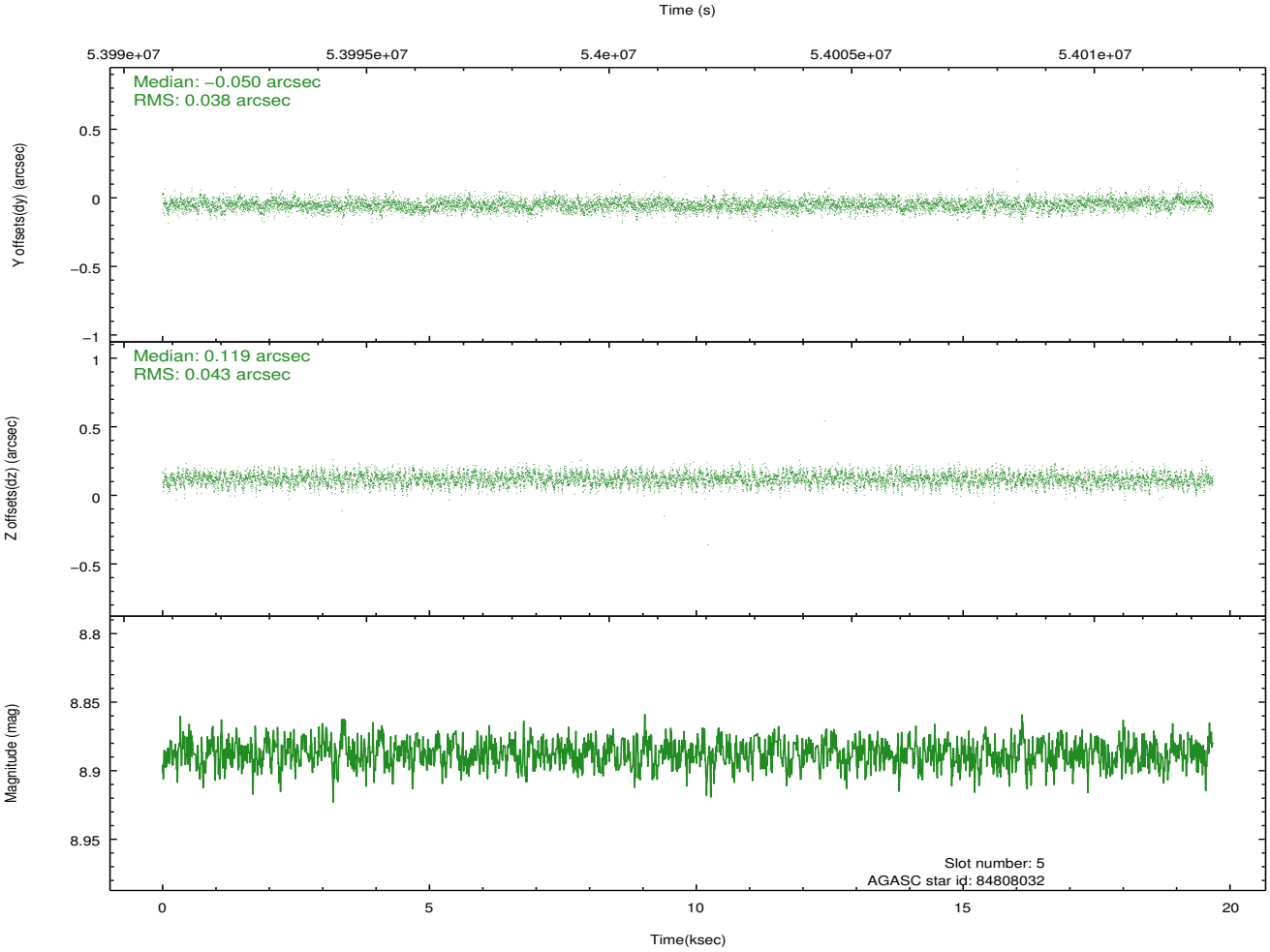

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.218 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 84809112


Time (s)
Median: −0.158 arcsec
RMS: 0.055 arcsec
Y offsets(dy) (arcsec)
Median: −0.150 arcsec
RMS: 0.037 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 84809112
Time(ksec)

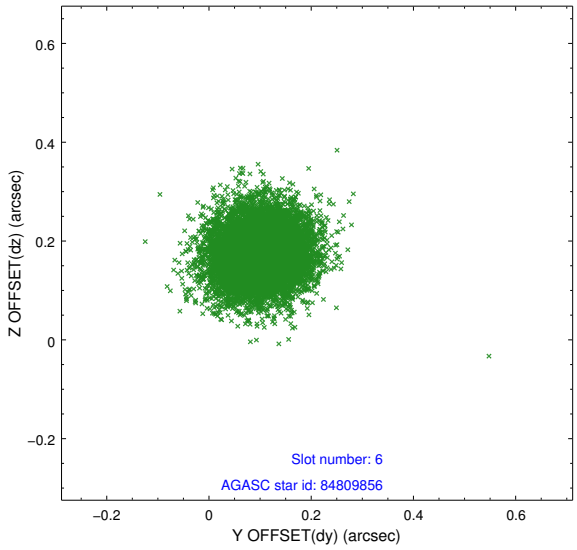
2.4.3 Slot 5

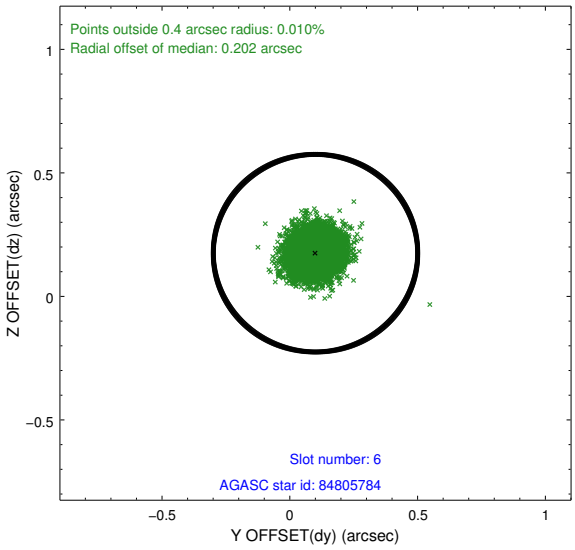

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 84809856

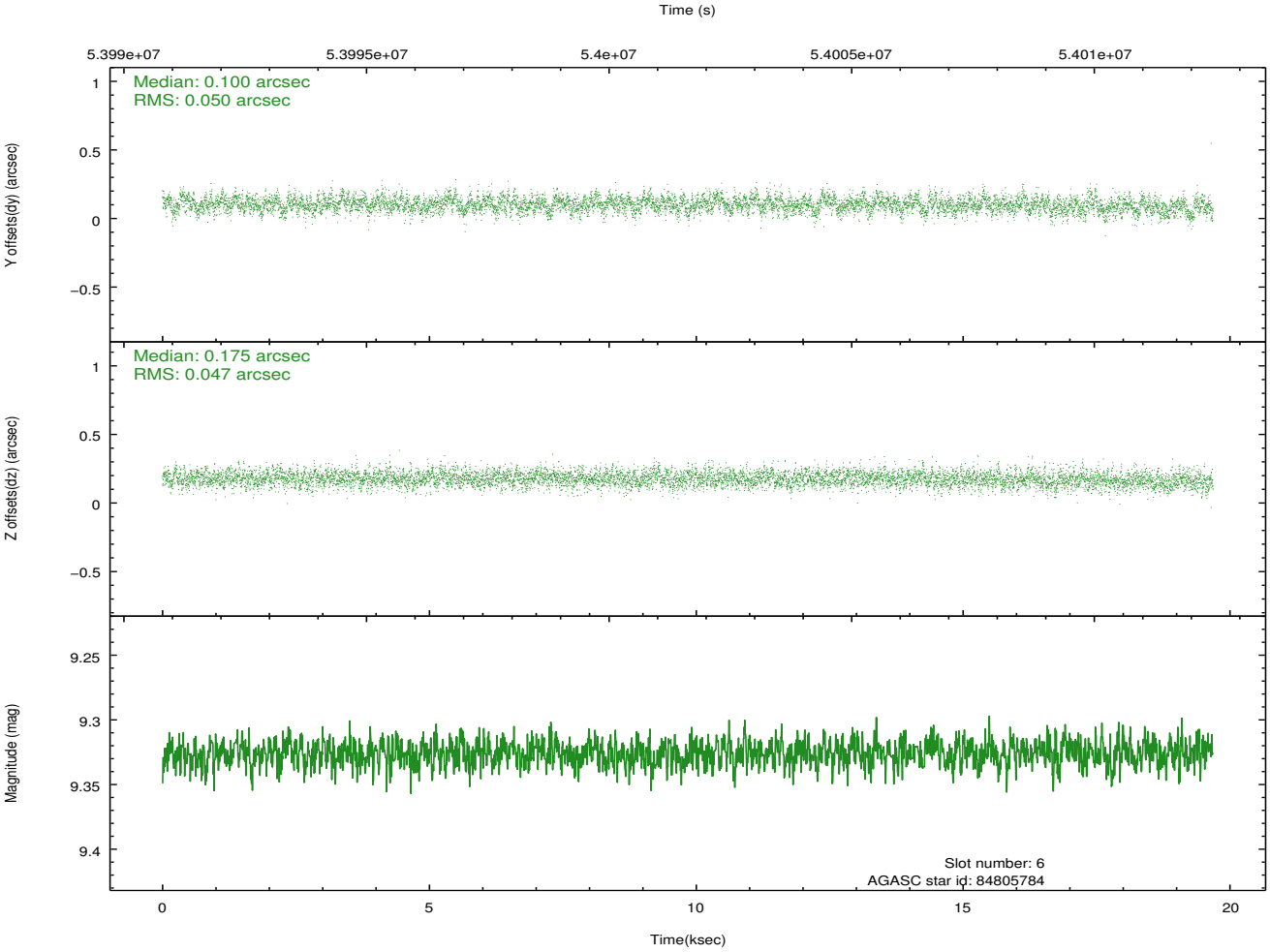

Points outside 0.4 arcsec radius: 0.021%
Radial offset of median: 0.129 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 84808032


Time (s)
Median: −0.050 arcsec
RMS: 0.038 arcsec
Y offsets(dy) (arcsec)
Median: 0.119 arcsec
RMS: 0.043 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 84808032
Time(ksec)

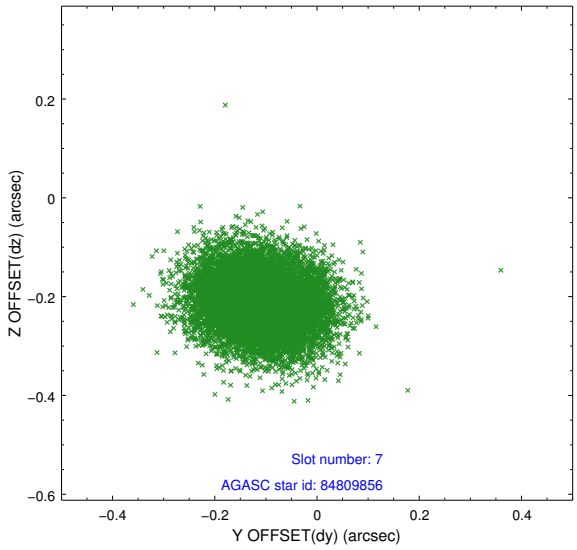
2.4.4 Slot 6

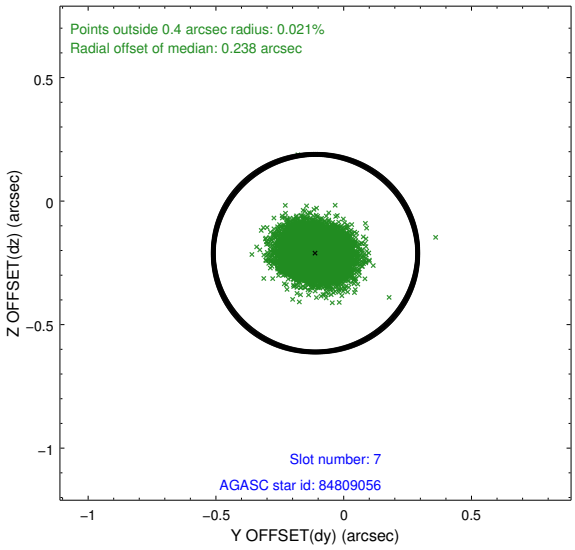

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 84809856

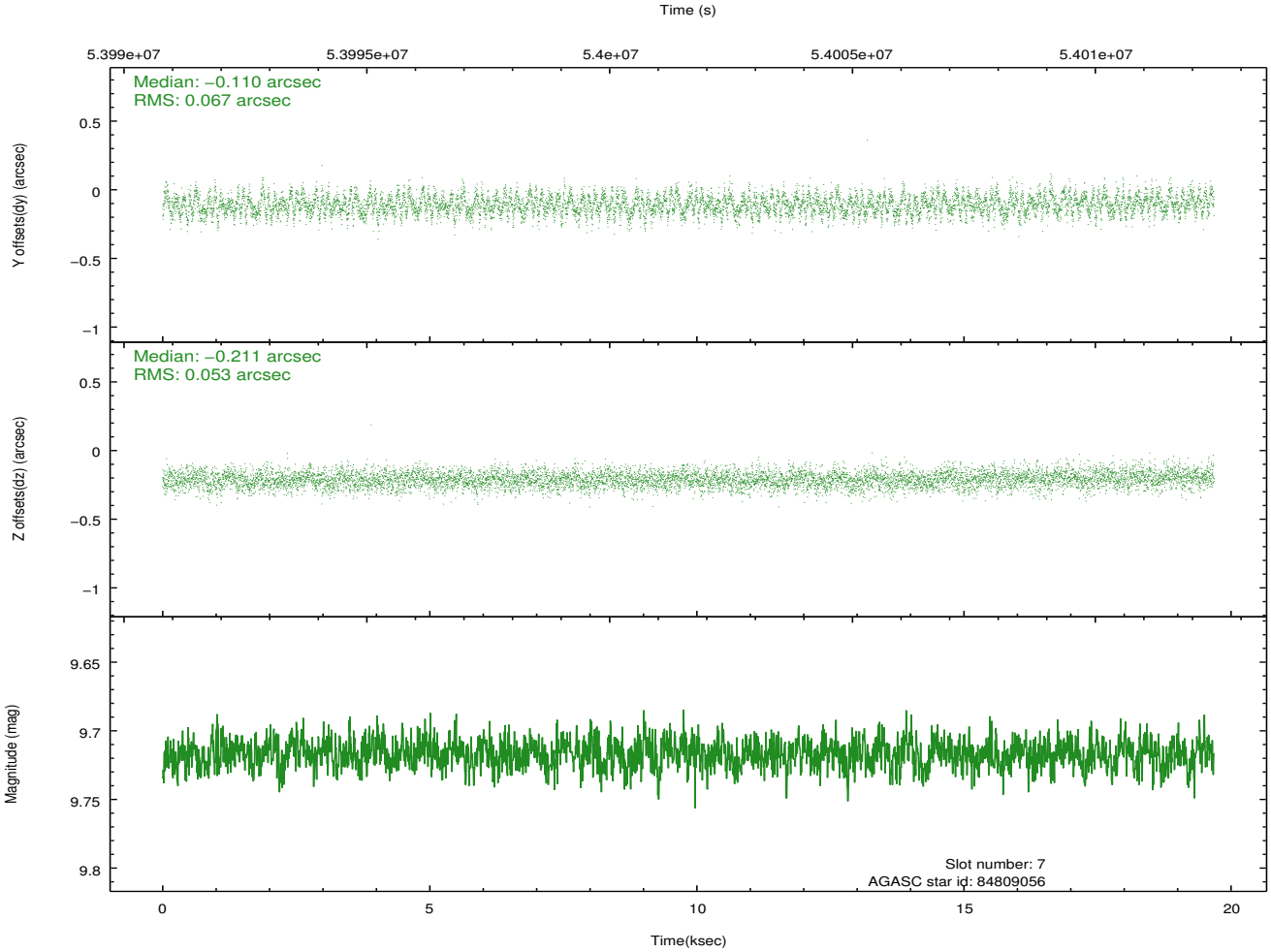

Points outside 0.4 arcsec radius: 0.010%
Radial offset of median: 0.202 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 84805784


Time (s)
Median: 0.100 arcsec
RMS: 0.050 arcsec
Y offsets(dy) (arcsec)
Median: 0.175 arcsec
RMS: 0.047 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 84805784
Time(ksec)

2.4.5 Slot 7

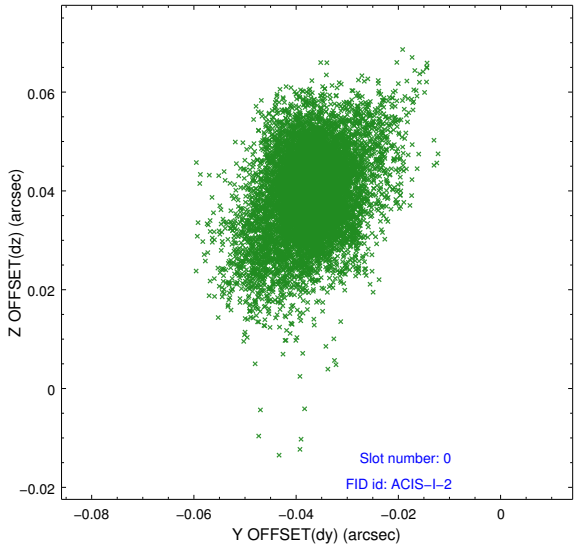

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 84809856

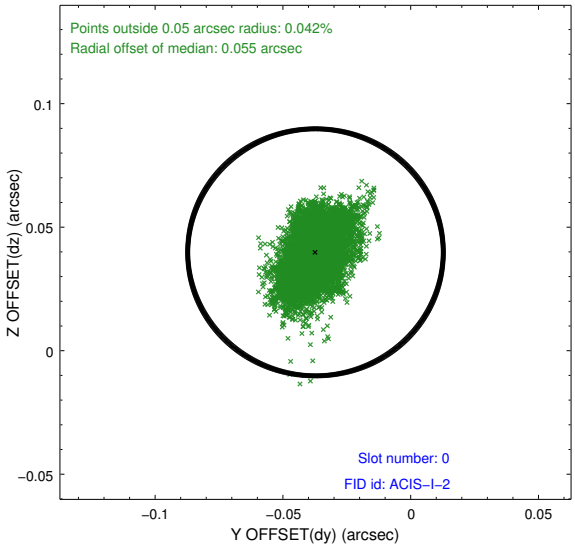

Points outside 0.4 arcsec radius: 0.021%
Radial offset of median: 0.238 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 84809056

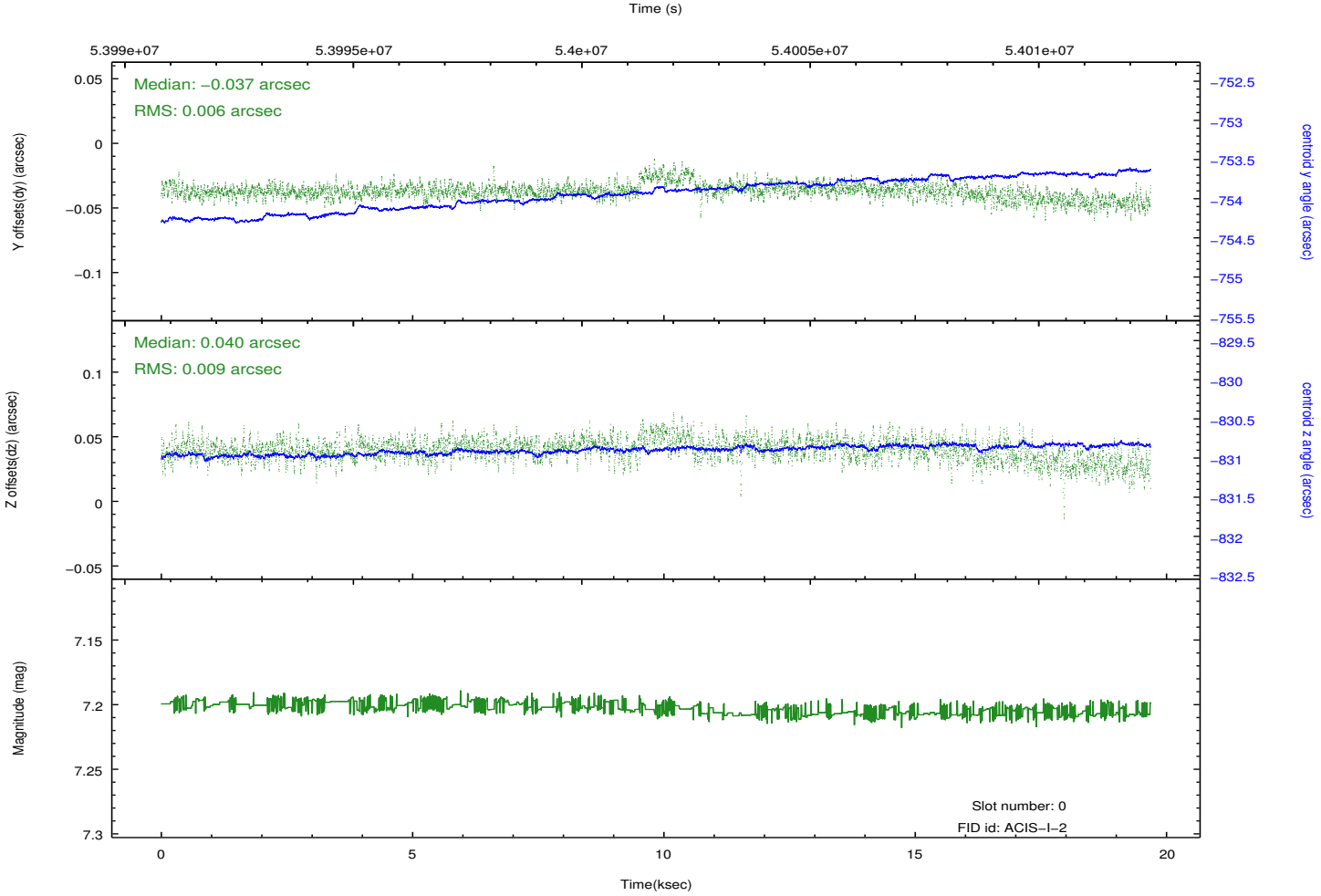

Time (s)
Median: −0.110 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: −0.211 arcsec
RMS: 0.053 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 84809056
Time(ksec)

2.5 FID Slots

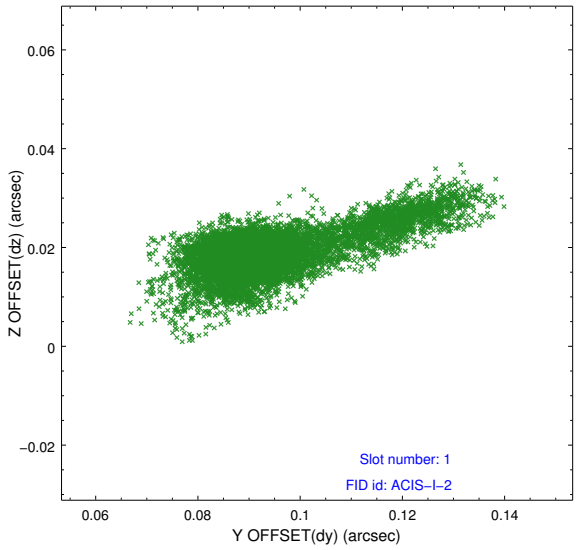
2.5.1 Slot 0

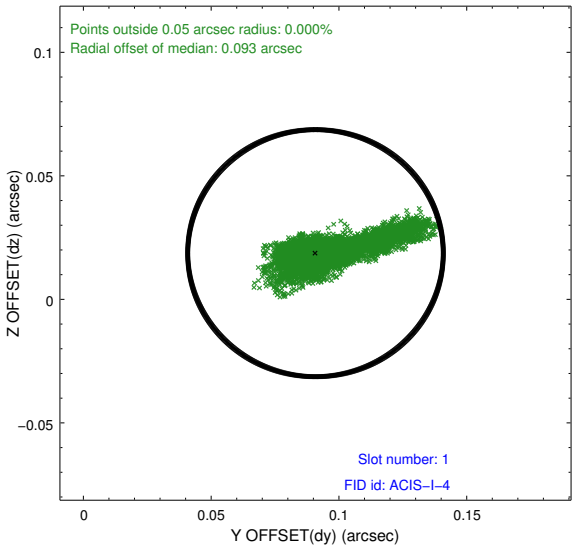


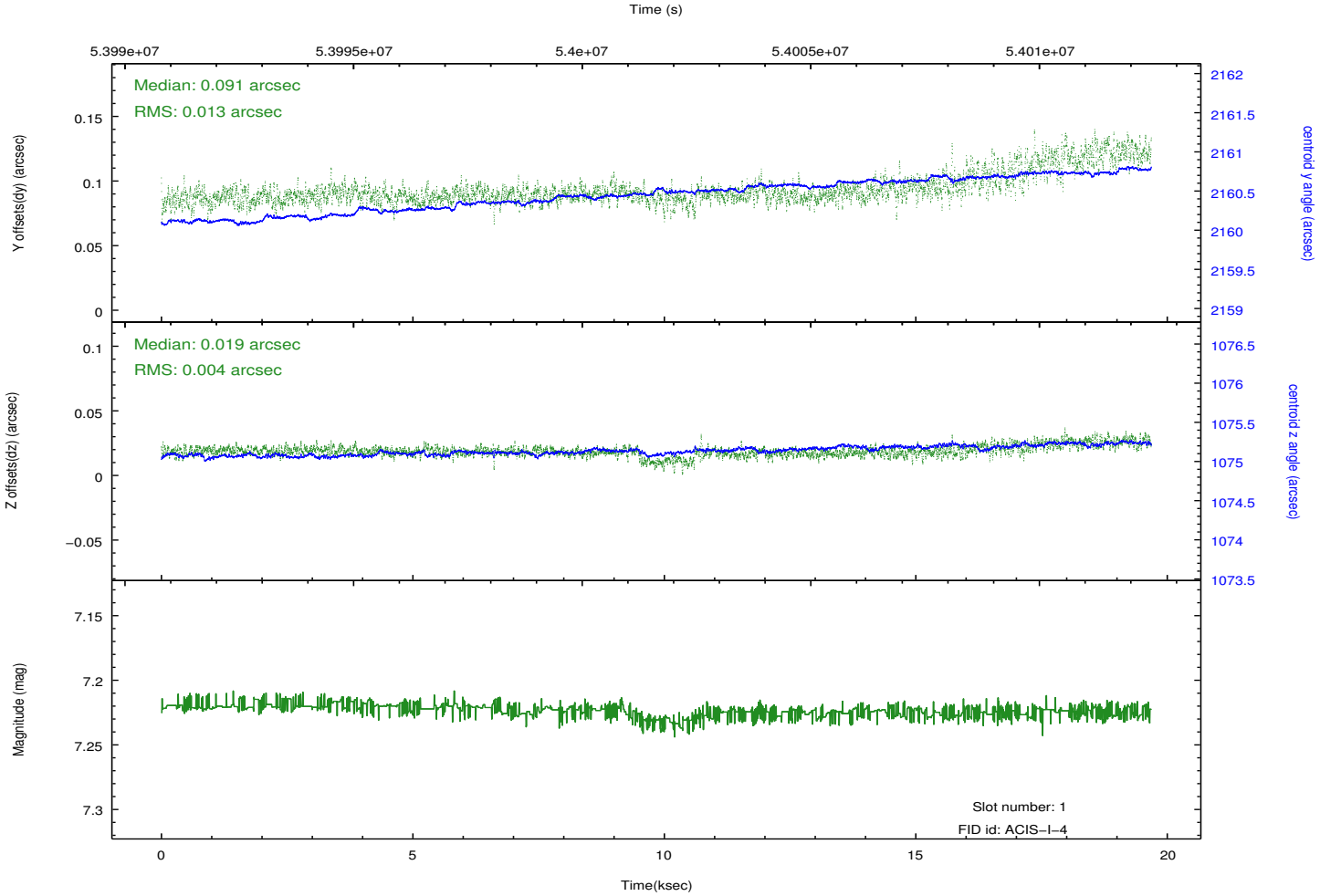




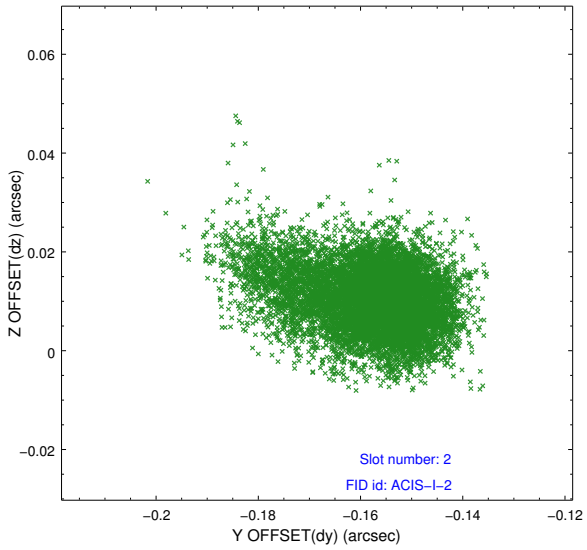
2.5.2 Slot 1

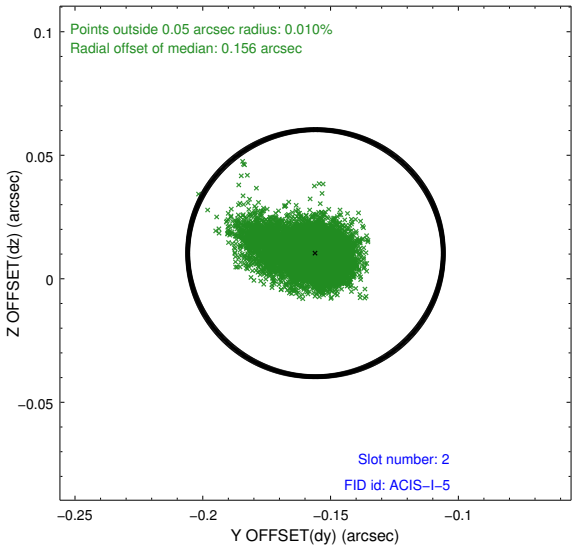

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−2

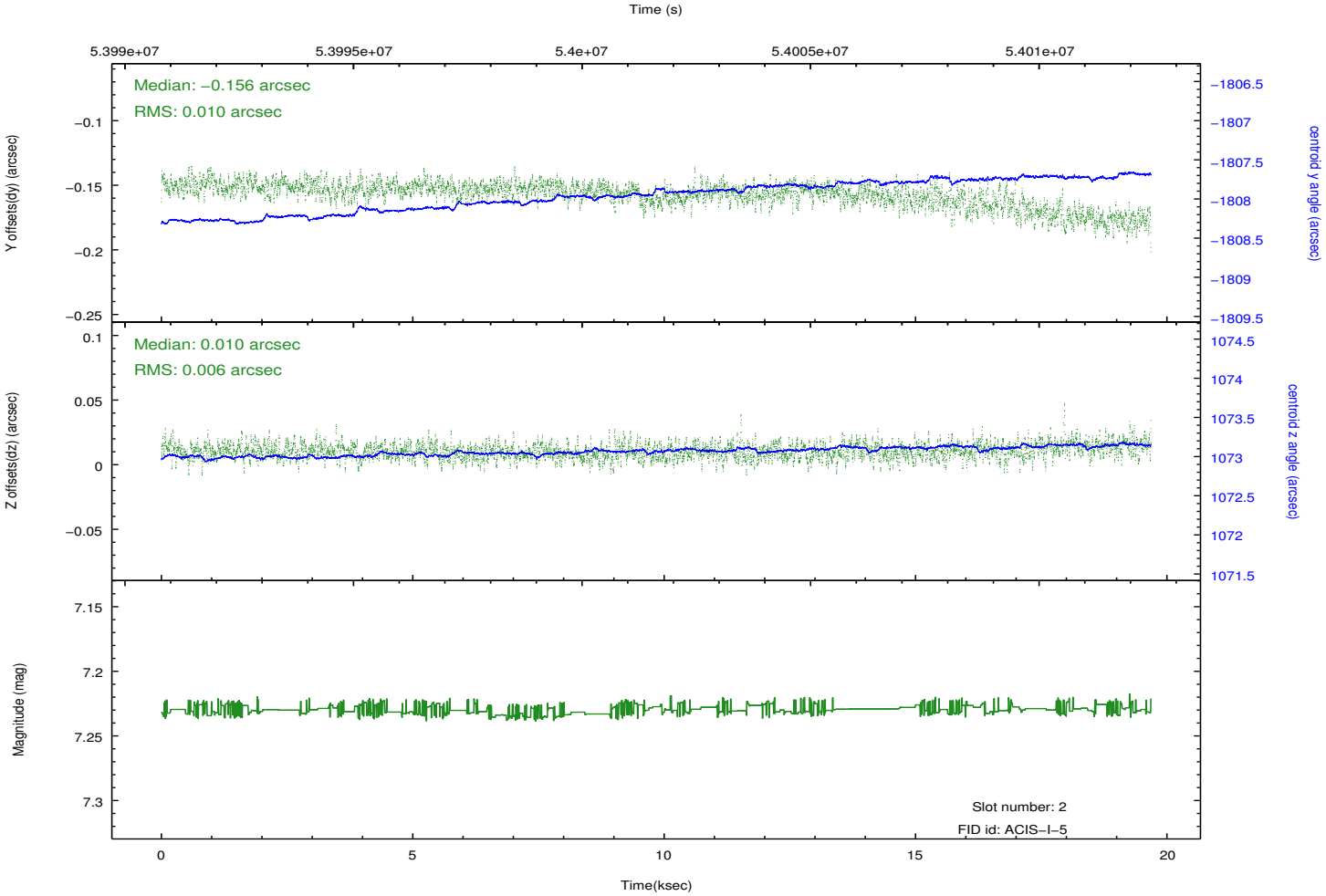

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.093 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−4


Time (s)
Median: 0.091 arcsec
RMS: 0.013 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.019 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−I−4
Time(ksec)

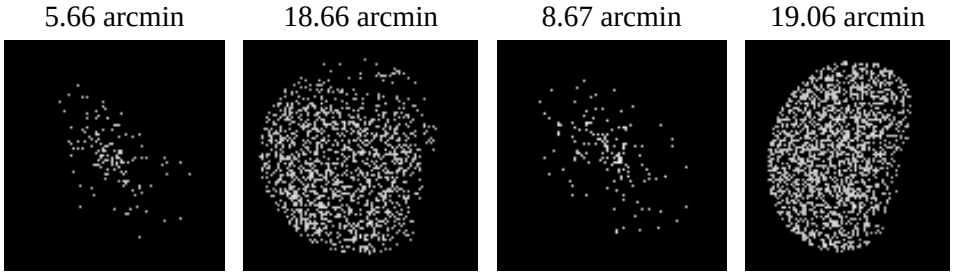
2.5.3 Slot 2


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


Points outside 0.05 arcsec radius: 0.010%
Radial offset of median: 0.156 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−I−5


Time (s)
Median: −0.156 arcsec
RMS: 0.010 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.010 arcsec
RMS: 0.006 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−I−5
Time(ksec)

3 Point Sources



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2009.11.17
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.24

A.2 Comments

```
Roll constraint not met.

Focal plane temperature is warmer than -118.7 C degrees during the
entire observation. This temperature is the upper limit of the verified
ACIS calibration for the front-illuminated chips. The focal plane
temperature is warmer than -116.7 degrees C for the entire observation.
This temperature is the upper limit of the verified ACIS calibration for
the back-illuminated chips. The ACIS spectral response calibration is
less accurate at these warmer temperatures than it is at -119.7 C. Users
whose science objectives depend on the most accurate spectral response
(ie: fitting line-rich spectra) may notice an effect. Users whose
science objectives do not depend on the most accurate spectral response
should not notice an effect.
```