V&V Reference Report
L2 ASCDS Version : 10.9.1

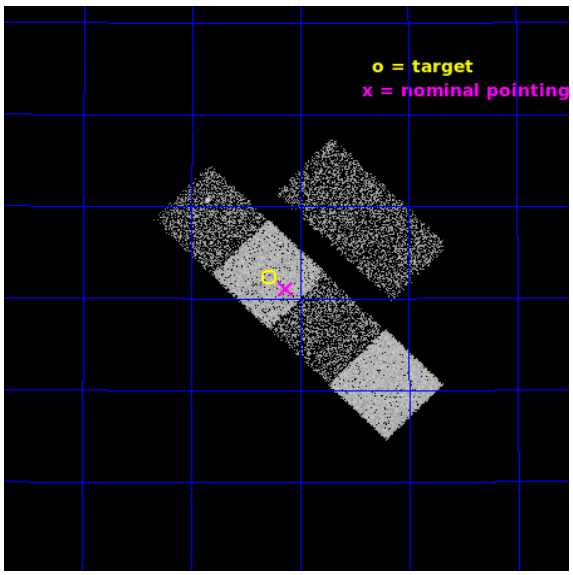
Observation 7116 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Oct 11 2020

Contents

1 Front

seq_num	600554	Sequence number
obs_id	7116	Observation id
title	A Complete Sample of ULX Host Galaxies	Proposal title
observer	Douglas Swartz	Principal investigator
object	NGC 1003	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	39.820417	Observer's specified target RA [deg]
dec_targ	40.872194	Observer's specified target Dec [deg]
ra_nom	39.782417350981	Nominal RA [deg]
dec_nom	40.851044228021	Nominal Dec [deg]
roll_nom	224.46262253416	Nominal Roll [deg]
revision	3	Processing version of data
ontime	2703.9999899268	Sum of GTIs [s]
livetime	2669.760313901	Livetime [s]
ontime2	2703.9999899268	Sum of GTIs [s]
ontime3	2703.9999899268	Sum of GTIs [s]
ontime5	2703.9999899268	Sum of GTIs [s]
ontime6	2703.9999899268	Sum of GTIs [s]
ontime7	2703.9999899268	Sum of GTIs [s]
ontime8	2700.739459157	Sum of GTIs [s]
l2events	34678	Number of level 2 events

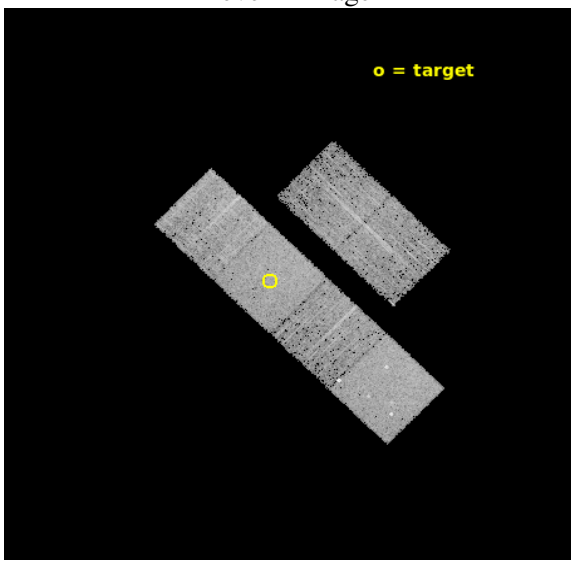


2 OBI

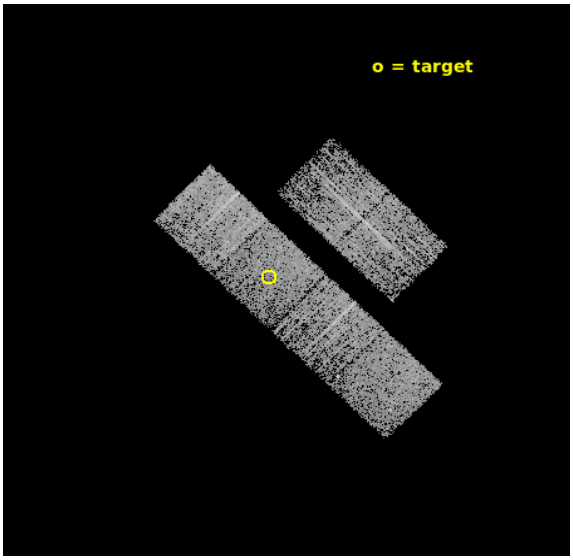
2.1 OBI

2.1.1 Images

Level 1 Image

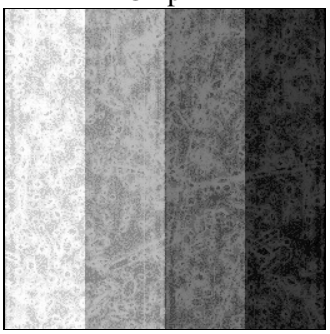


Level 1 Bad Events

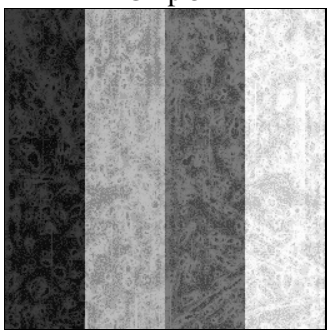


2.1.2 Bias

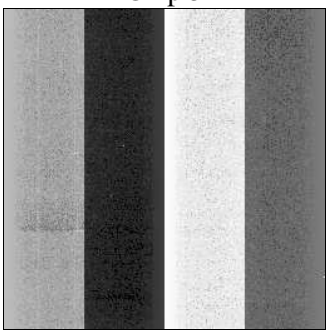
Chip 2



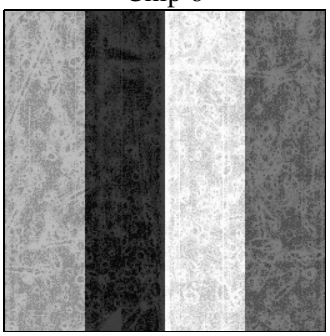
Chip 3



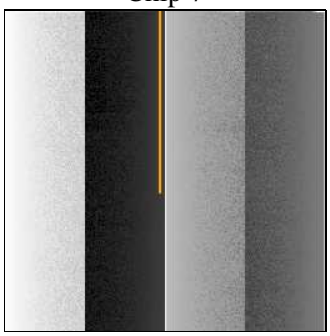
Chip 5



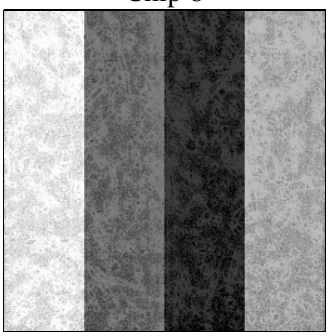
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.9.1	Processing system revision
caldbver	4.9.2	
date	2020-10-11T16:04:43	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	2950.000000	[s] Scheduled observation exposure time
ontime	2703.9999899268	Sum of GTIs [s]
ontime2	2703.9999899268	Sum of GTIs [s]
ontime3	2703.9999899268	Sum of GTIs [s]
ontime5	2703.9999899268	Sum of GTIs [s]
ontime6	2703.9999899268	Sum of GTIs [s]
ontime7	2703.9999899268	Sum of GTIs [s]
ontime8	2700.739459157	Sum of GTIs [s]
l1events	158966	Number of level 1 events

2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	22203	20887	33393	21745	29722	31016
rejected events	19586	18422	17939	19248	17480	25389
rejected %	88%	88%	53%	88%	58%	81%

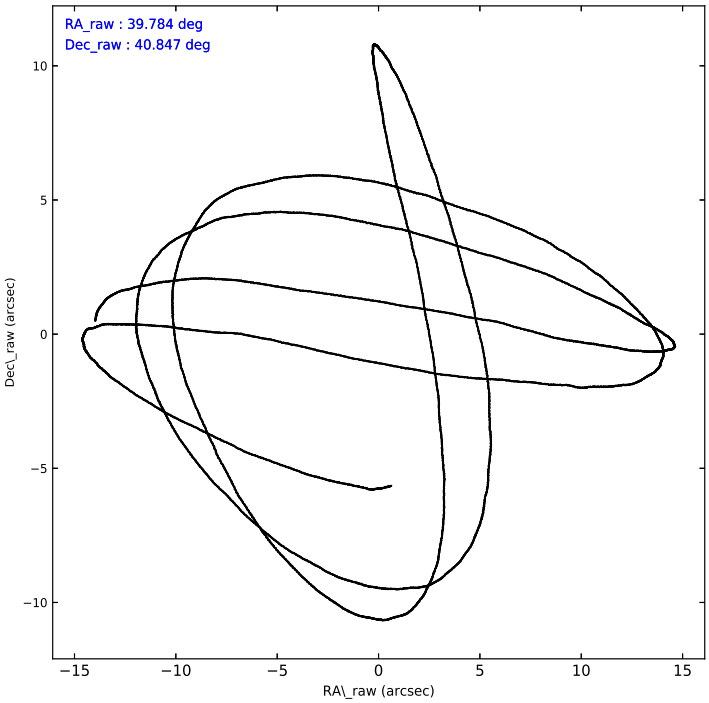
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	1145	1060	1671	1006	1059	1764
	5%	5%	5%	4%	3%	5%
grade 1 events	14	9	99	10	31	33
	0%	0%	0%	0%	0%	0%
grade 2 events	533	495	4521	508	2539	1251
	2%	2%	13%	2%	8%	4%
grade 3 events	218	256	641	241	1099	582
	0%	1%	1%	1%	3%	1%
grade 4 events	238	229	673	231	1078	504
	1%	1%	2%	1%	3%	1%
grade 5 events	826	1010	2493	1035	2730	1272
	3%	4%	7%	4%	9%	4%
grade 6 events	494	431	7983	515	6494	1534
	2%	2%	23%	2%	21%	4%
grade 7 events	18735	17397	15312	18199	14692	24076
	84%	83%	45%	83%	49%	77%

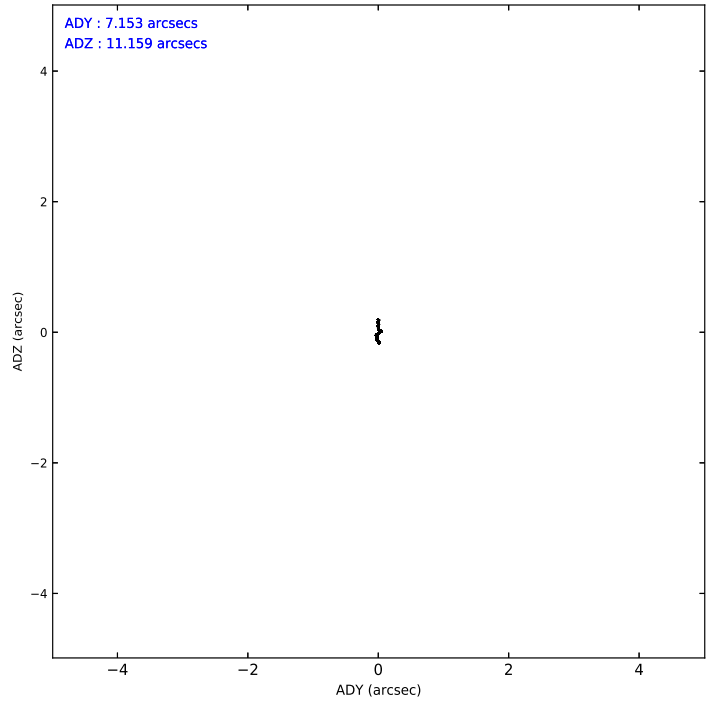
2.2 Compared Parameters

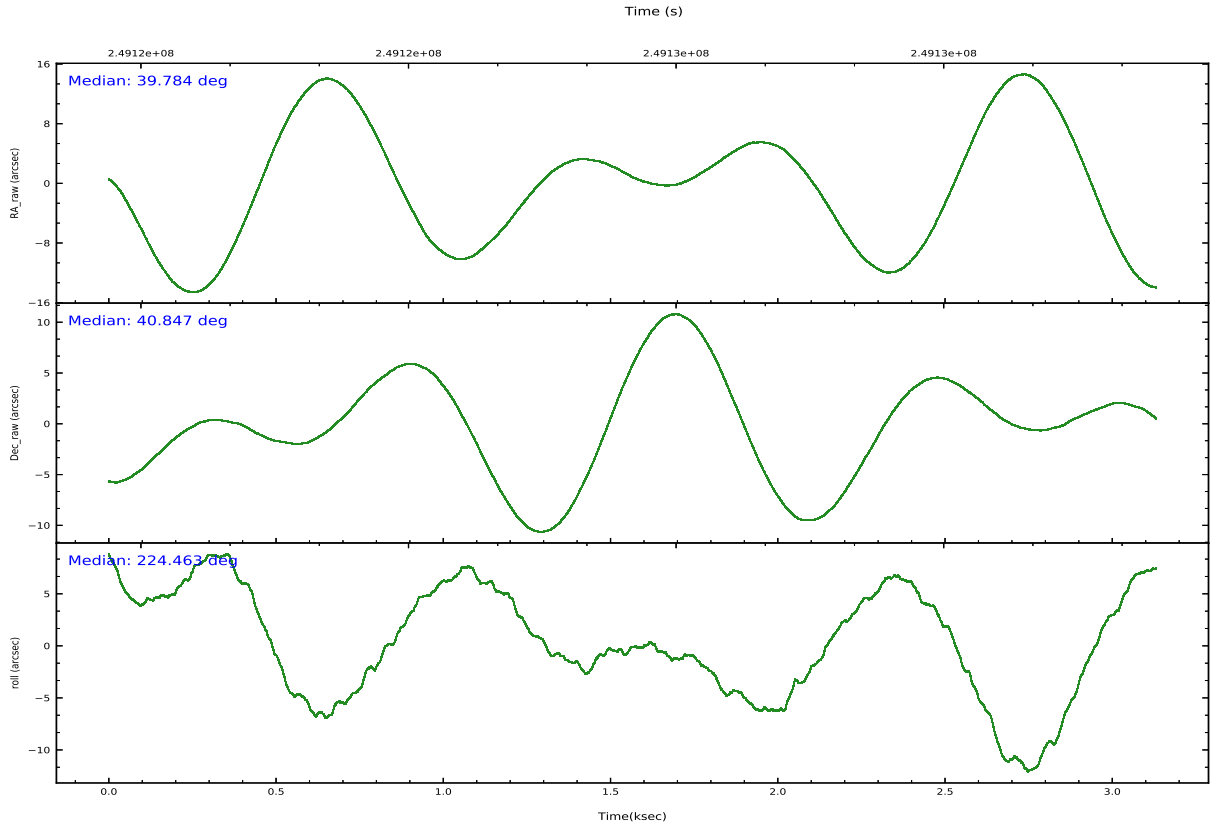
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	39.792697	39.782417350981
[deg] Pointing Dec	40.873632	40.851044228021
[deg] Pointing Roll	224.296403	224.46262253416
[mm] SIM focus 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)	249124086.184000	249123425.19908
Observation start date	2005-11-23T09:07:02	2005-11-23T08:57:05
[s] Observation end time (MET)	249127036.184000	249128342.6368
Observation end date	2005-11-23T09:56:12	2005-11-23T10:19:02
Read mode	TIMED	TIMED

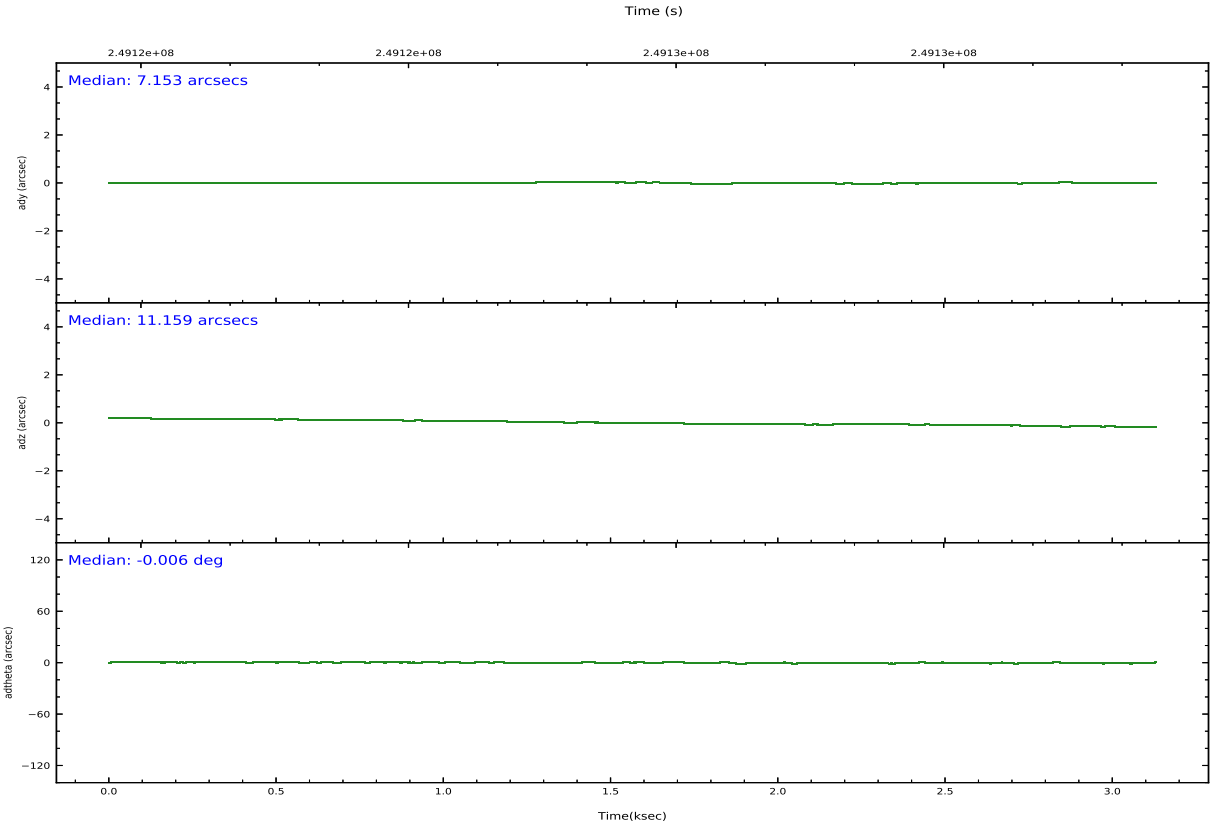
Parameter	Planned	Actual
Obspar version number	8	8
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.2

2.3 Aspect


RA_raw : 39.784 deg
Dec_raw : 40.847 deg
Dec_raw (arcsec)
RA_raw (arcsec)
10
5
0
−5
−10
−15
−10
−5
0
5
10
15


ADY : 7.153 arcsecs
ADZ : 11.159 arcsecs
ADZ (arcsec)
ADY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
2.4912e+08
2.4912e+08
2.4913e+08
2.4913e+08
Median: 39.784 deg
RA_raw (arcsec)
Median: 40.847 deg
Dec_raw (arcsec)
Median: 224.463 deg
roll (arcsec)
Time(ksec)

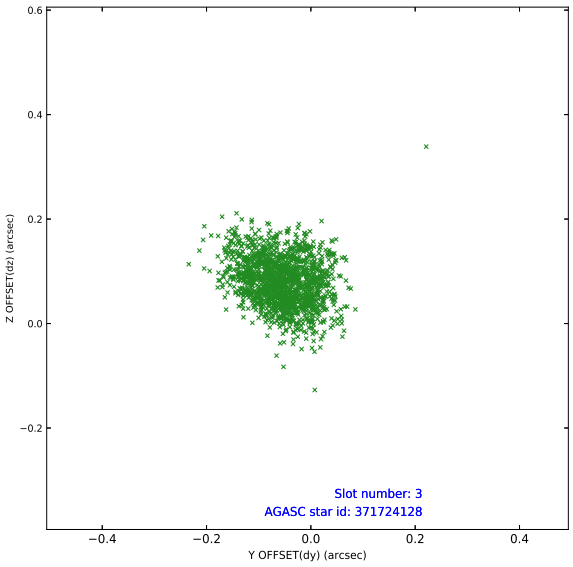

Time (s)
2.4912e+08
2.4912e+08
2.4913e+08
2.4913e+08
Median: 7.153 arcsecs
ady (arcsec)
Median: 11.159 arcsecs
adz (arcsec)
Median: -0.006 deg
adtheta (arcsec)
Time(ksec)

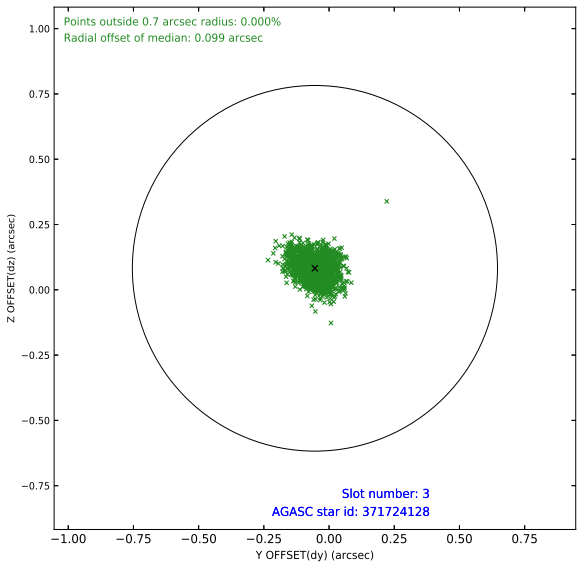
Slot Statistics

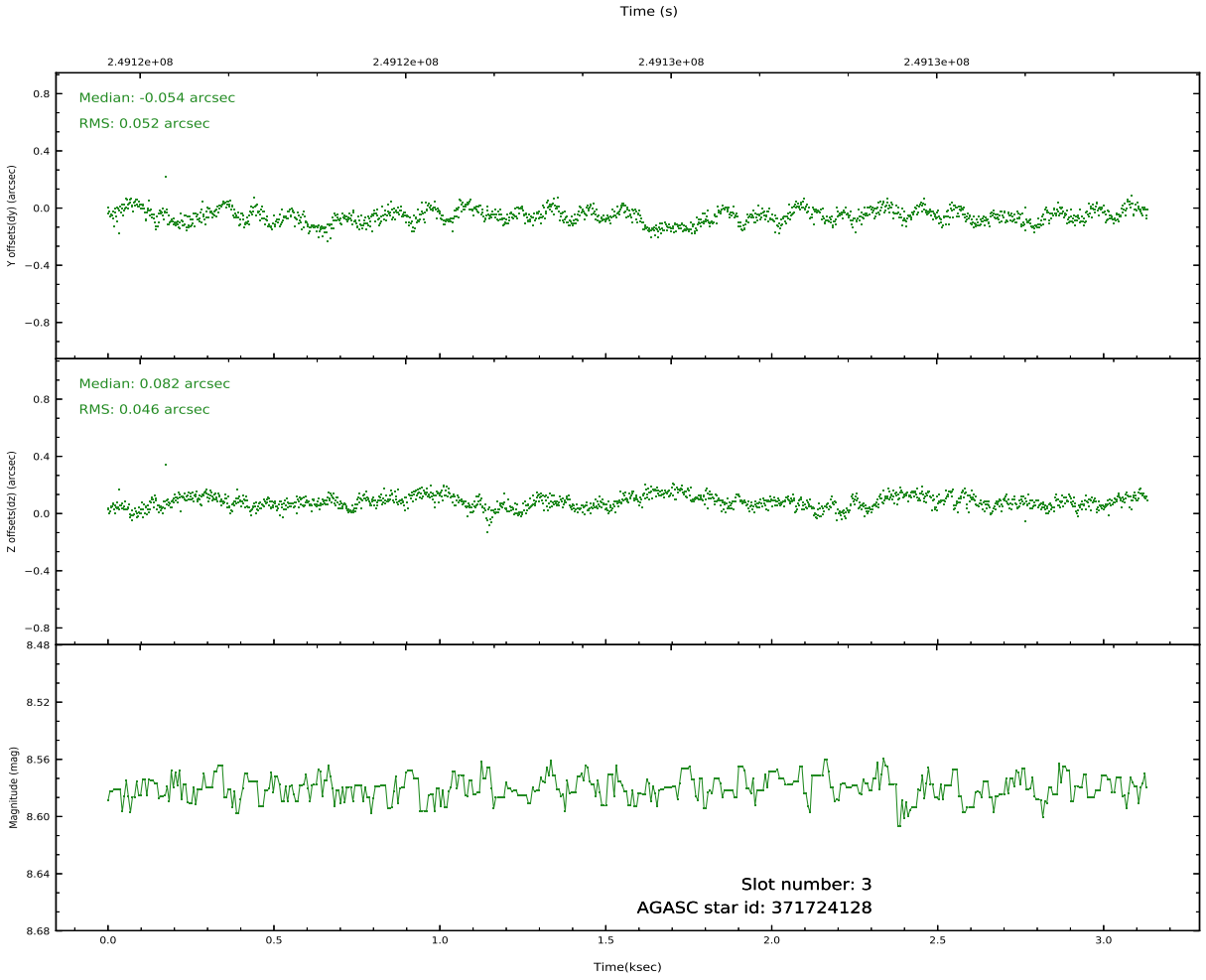
ot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.11	764	1.000	-0.081	-0.059	0.007	0.012	0.000000	0.000000	-759.93	-1732
1	FID		ACIS-S-4	7.21	764	1.000	0.152	0.055	0.006	0.011	0.000000	0.000000	2152.60	174
2	FID		ACIS-S-5	7.24	764	1.000	-0.102	0.013	0.006	0.011	0.000000	0.000000	-1810.24	169
3	GUIDE	used	371724128	8.58	1529	1.000	-0.054	0.082	0.073	0.120	38.988899	40.781344	1793.25	-1299
4	GUIDE	used	371727096	8.77	1528	1.000	0.055	-0.108	0.078	0.123	39.625634	40.473534	1334.25	710
5	GUIDE	used	371728848	9.27	1528	1.000	0.036	0.064	0.097	0.156	39.883284	40.138380	1670.97	2069
6	GUIDE	used	373434384	8.59	1529	1.000	-0.025	-0.032	0.093	0.139	40.370370	40.880782	-1145.95	1077
7	GUIDE	used	373953480	9.11	1528	1.000	-0.003	-0.000	0.077	0.124	40.139595	41.314578	-1781.75	-481

2.4 Star Slots

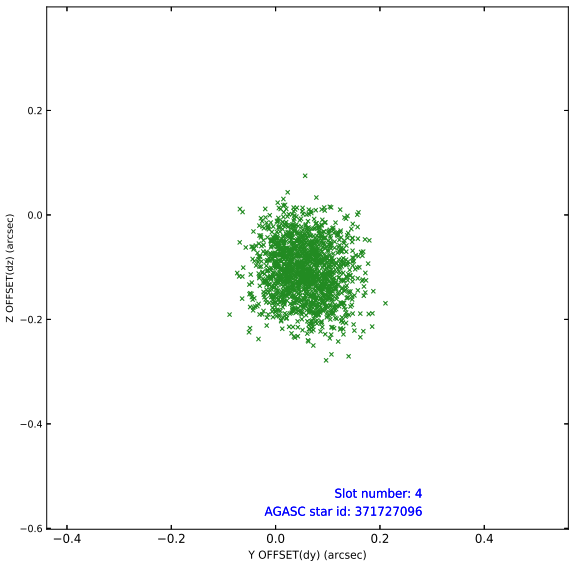
2.4.1 Slot 3

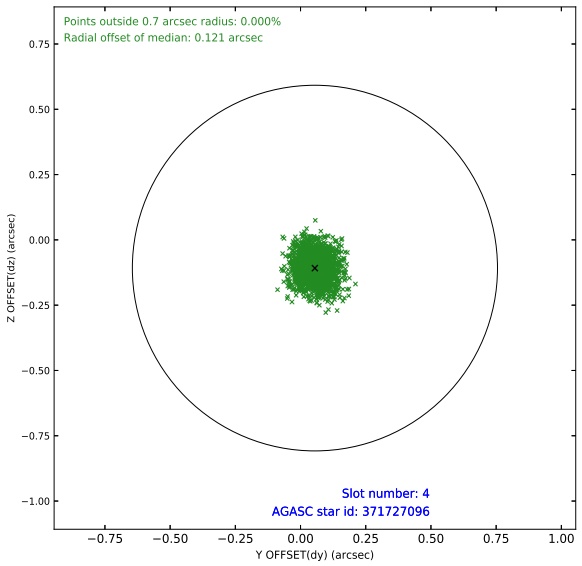


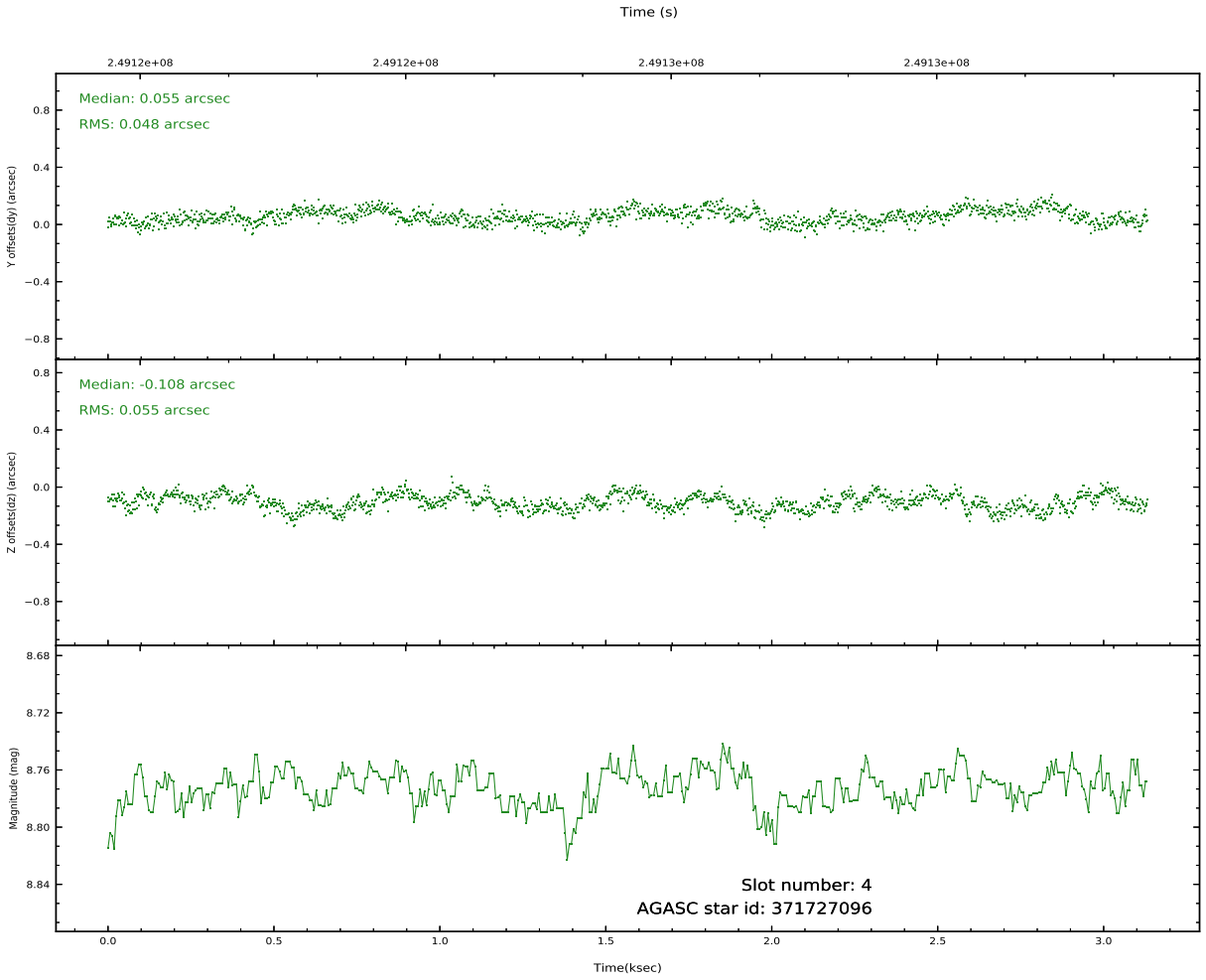




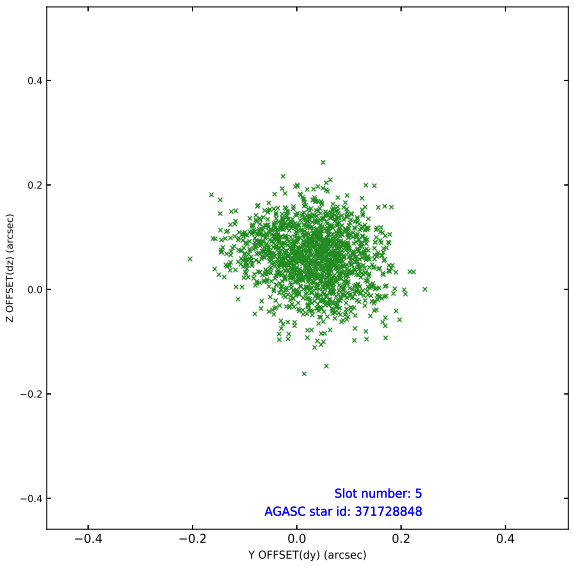
2.4.2 Slot 4

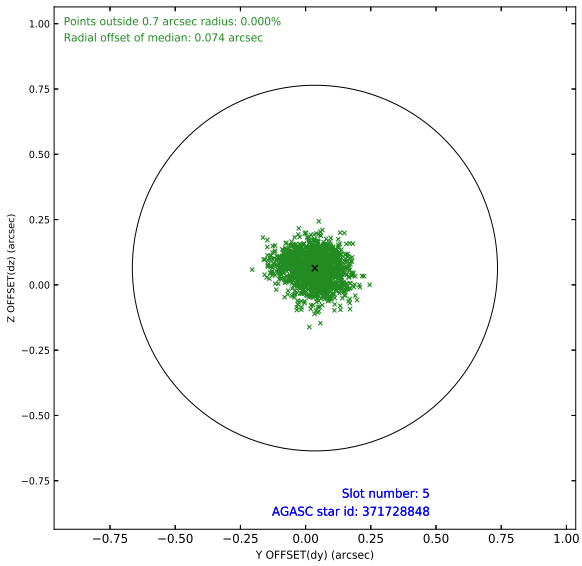

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 371727096

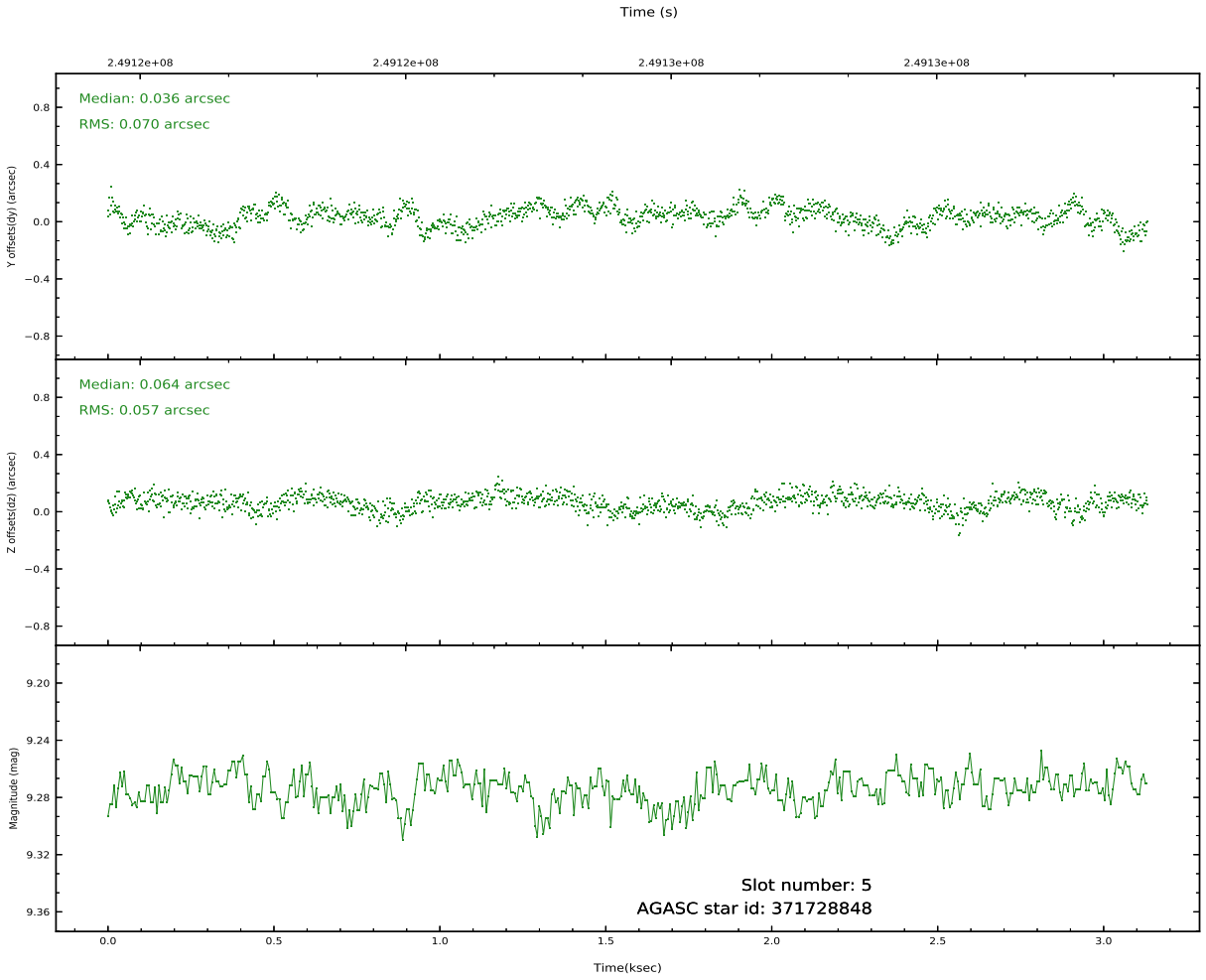

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.121 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 371727096


Time (s)
Median: 0.055 arcsec
RMS: 0.048 arcsec
Y offsets(dy) (arcsec)
Median: -0.108 arcsec
RMS: 0.055 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 371727096
Time(ksec)

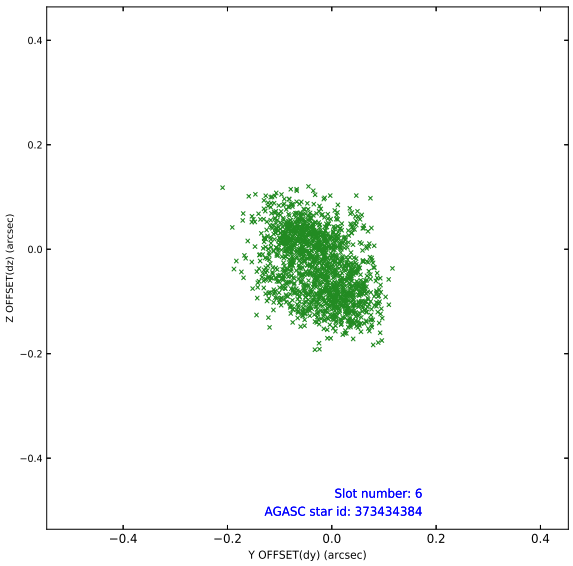
2.4.3 Slot 5

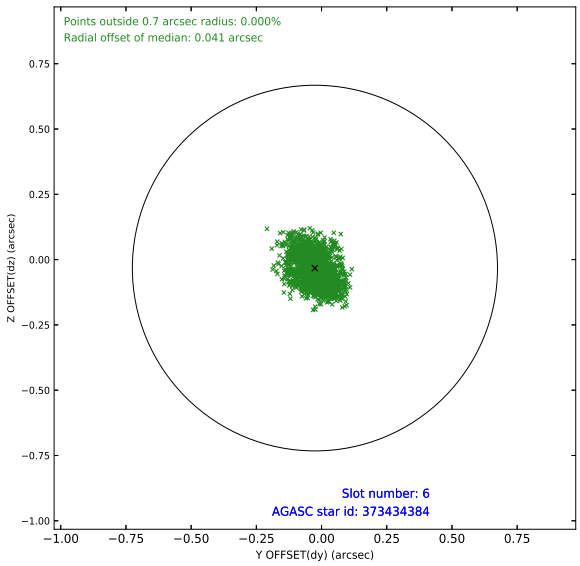

Slot number: 5
AGASC star id: 371728848
Y OFFSET(dy) (arcsec)
Z OFFSET(dz) (arcsec)

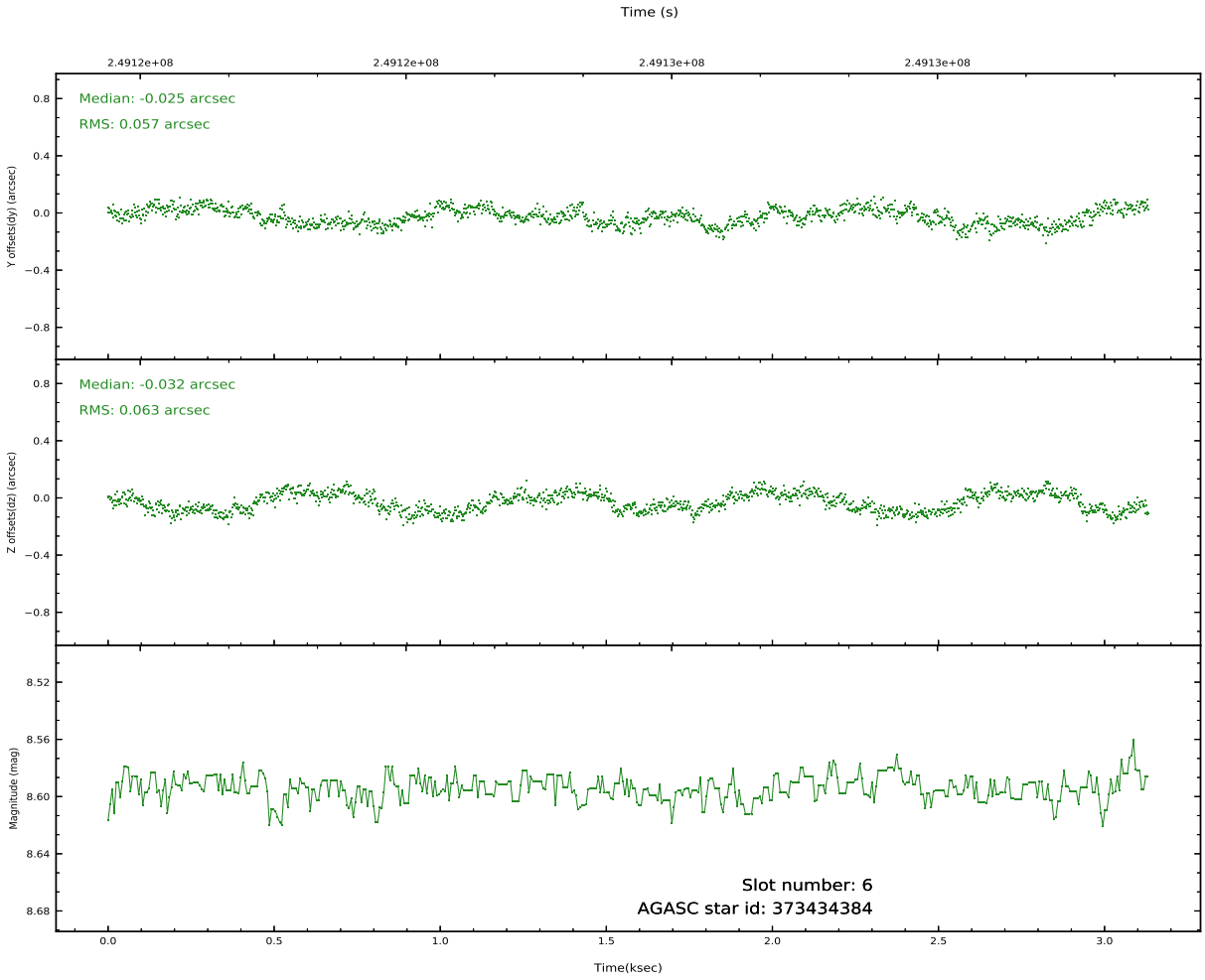

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.074 arcsec
Slot number: 5
AGASC star id: 371728848
Y OFFSET(dy) (arcsec)
Z OFFSET(dz) (arcsec)


Time (s)
2.4912e+08
2.4912e+08
2.4913e+08
2.4913e+08
Median: 0.036 arcsec
RMS: 0.070 arcsec
Y offsets(dy) (arcsec)
Median: 0.064 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 371728848
Time(ksec)

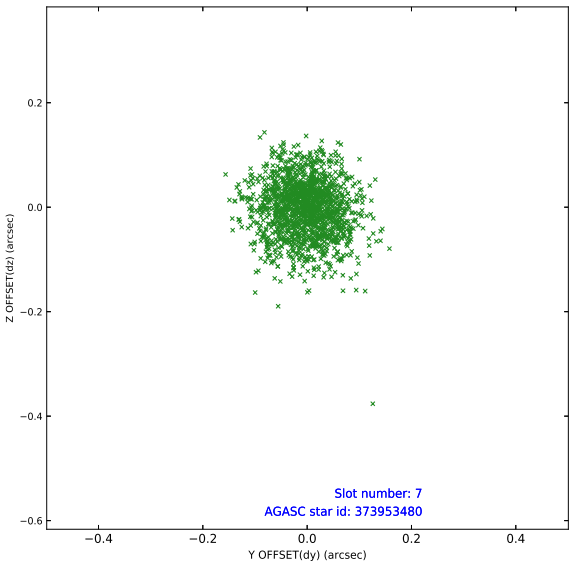
2.4.4 Slot 6

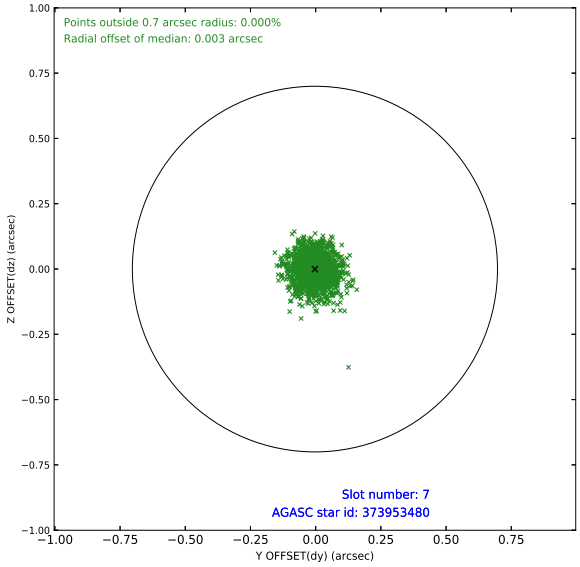

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 373434384

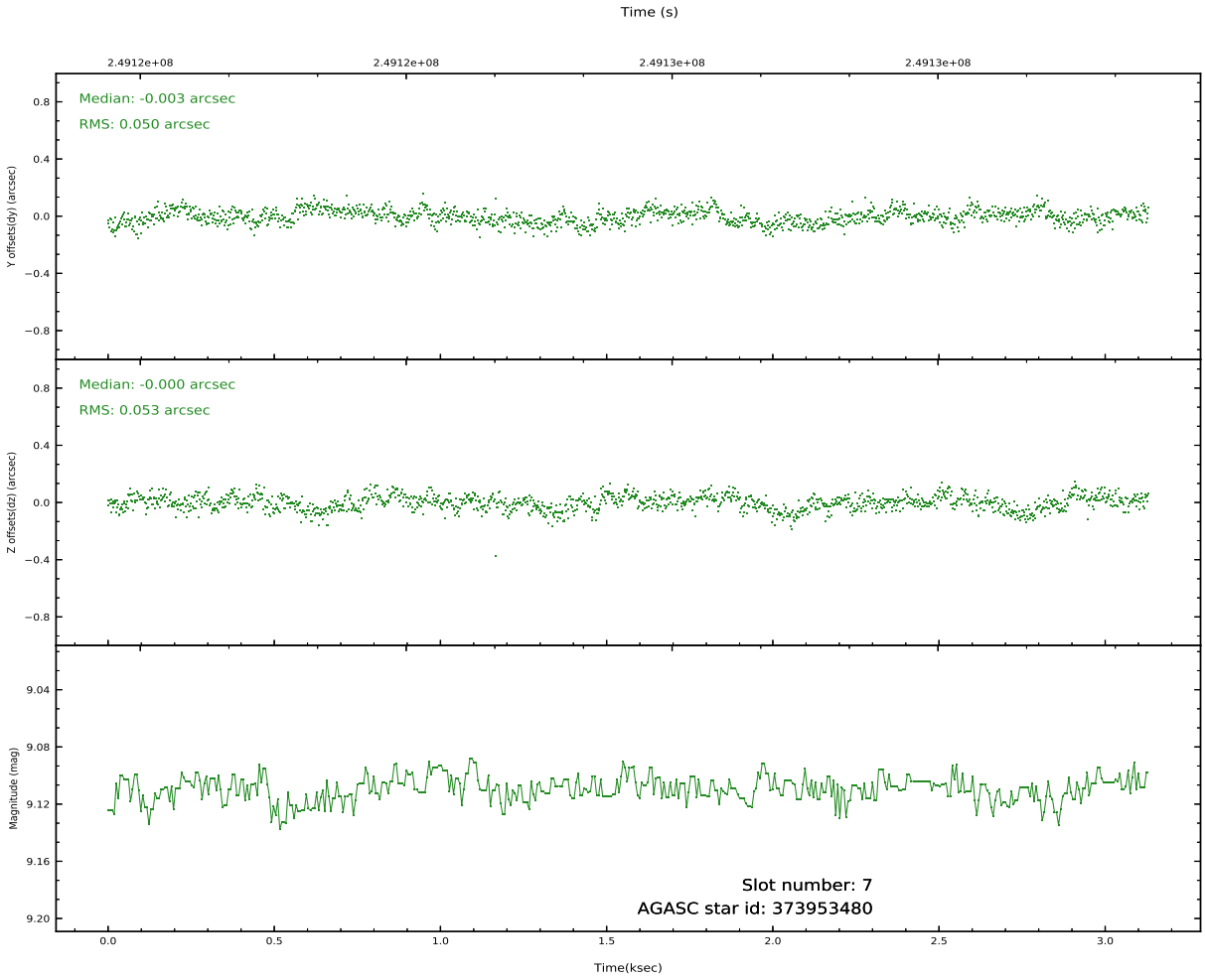

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.041 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 373434384


Time (s)
2.4912e+08
2.4912e+08
2.4913e+08
2.4913e+08
Median: -0.025 arcsec
RMS: 0.057 arcsec
Y offsets(dy) (arcsec)
Median: -0.032 arcsec
RMS: 0.063 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 373434384
Time(ksec)

2.4.5 Slot 7

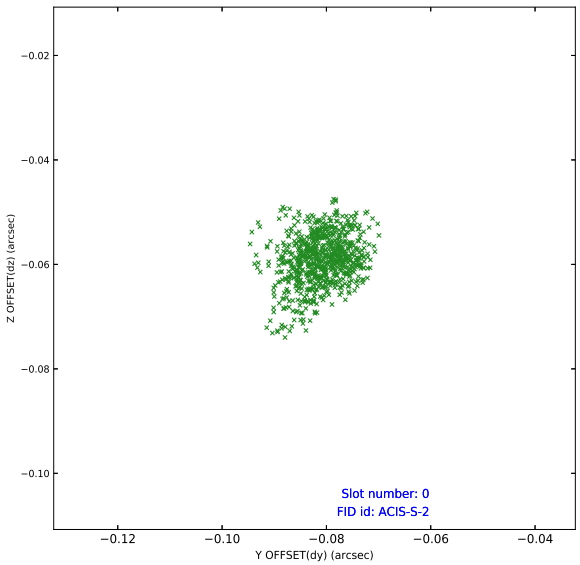

Slot number: 7
AGASC star id: 373953480
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

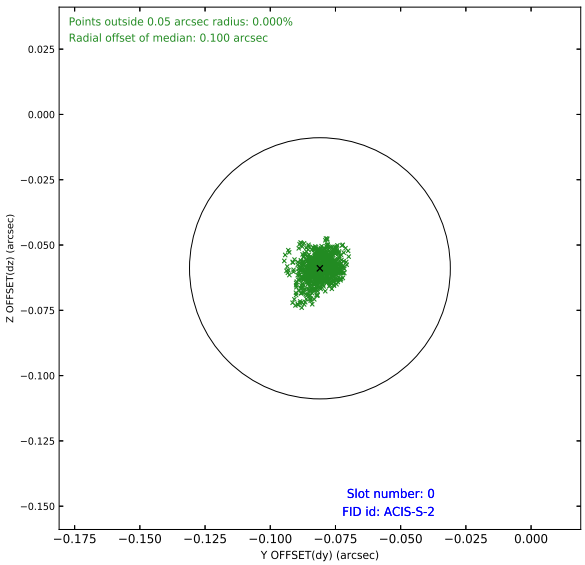

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.003 arcsec
Slot number: 7
AGASC star id: 373953480
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

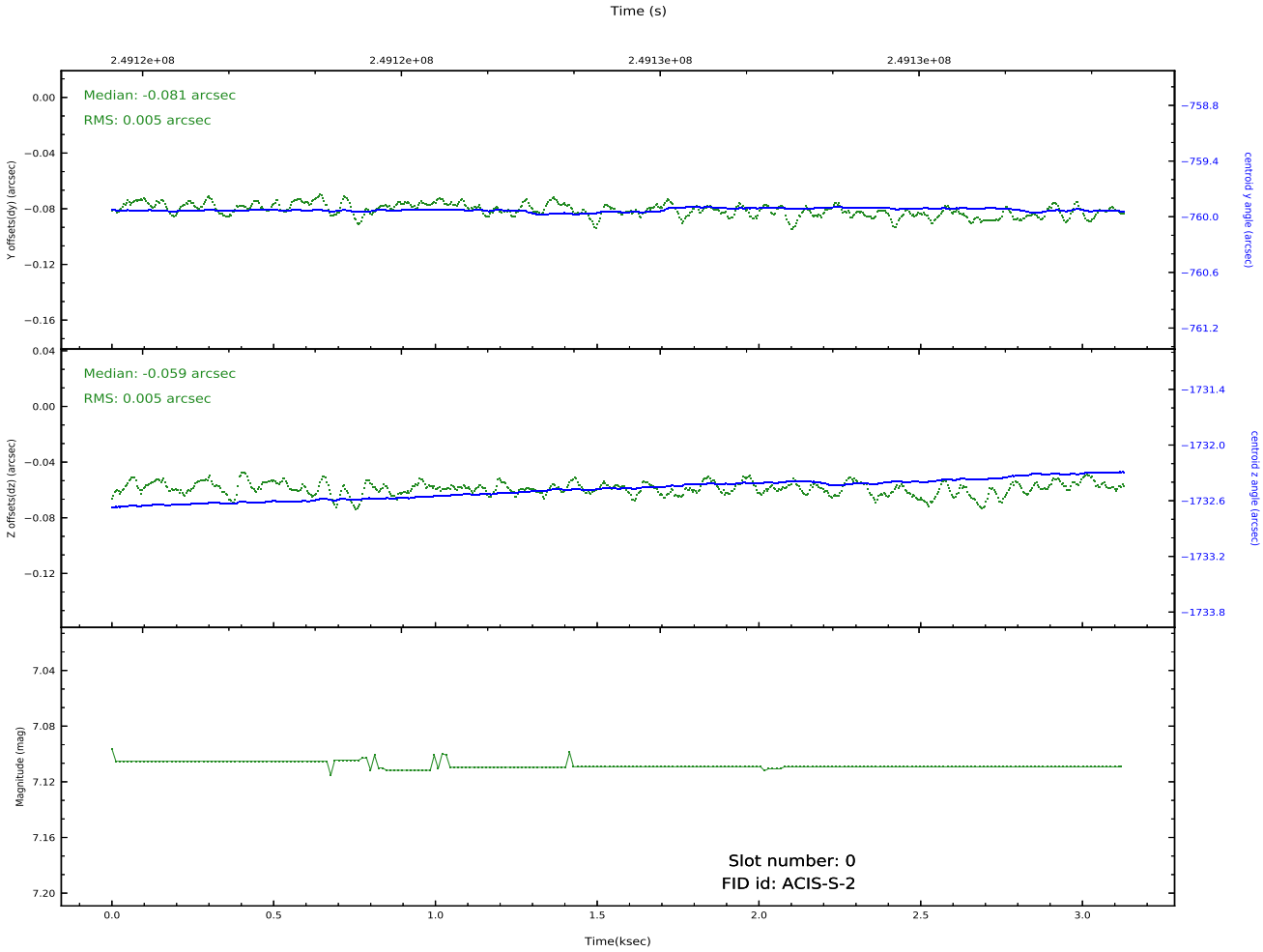

Time (s)
2.4912e+08
2.4912e+08
2.4913e+08
2.4913e+08
Median: -0.003 arcsec
RMS: 0.050 arcsec
Y offsets(dy) (arcsec)
Median: -0.000 arcsec
RMS: 0.053 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 373953480
Time(ksec)

2.5 FID Slots

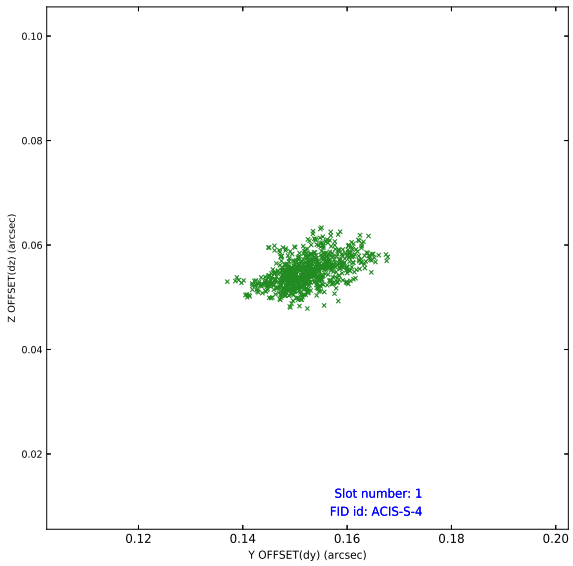
2.5.1 Slot 0

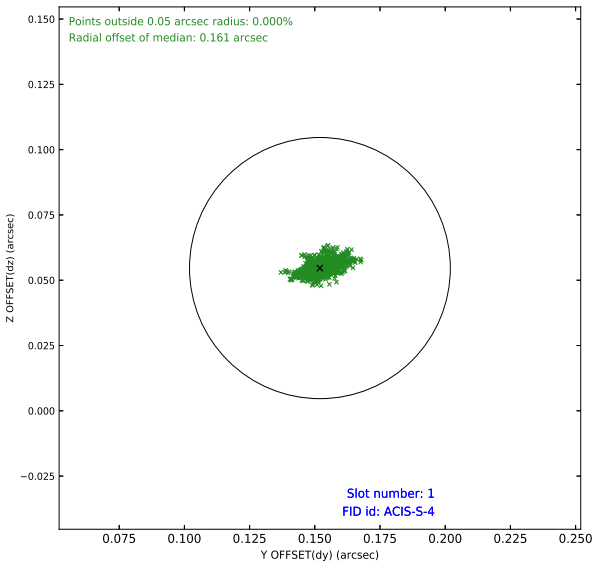


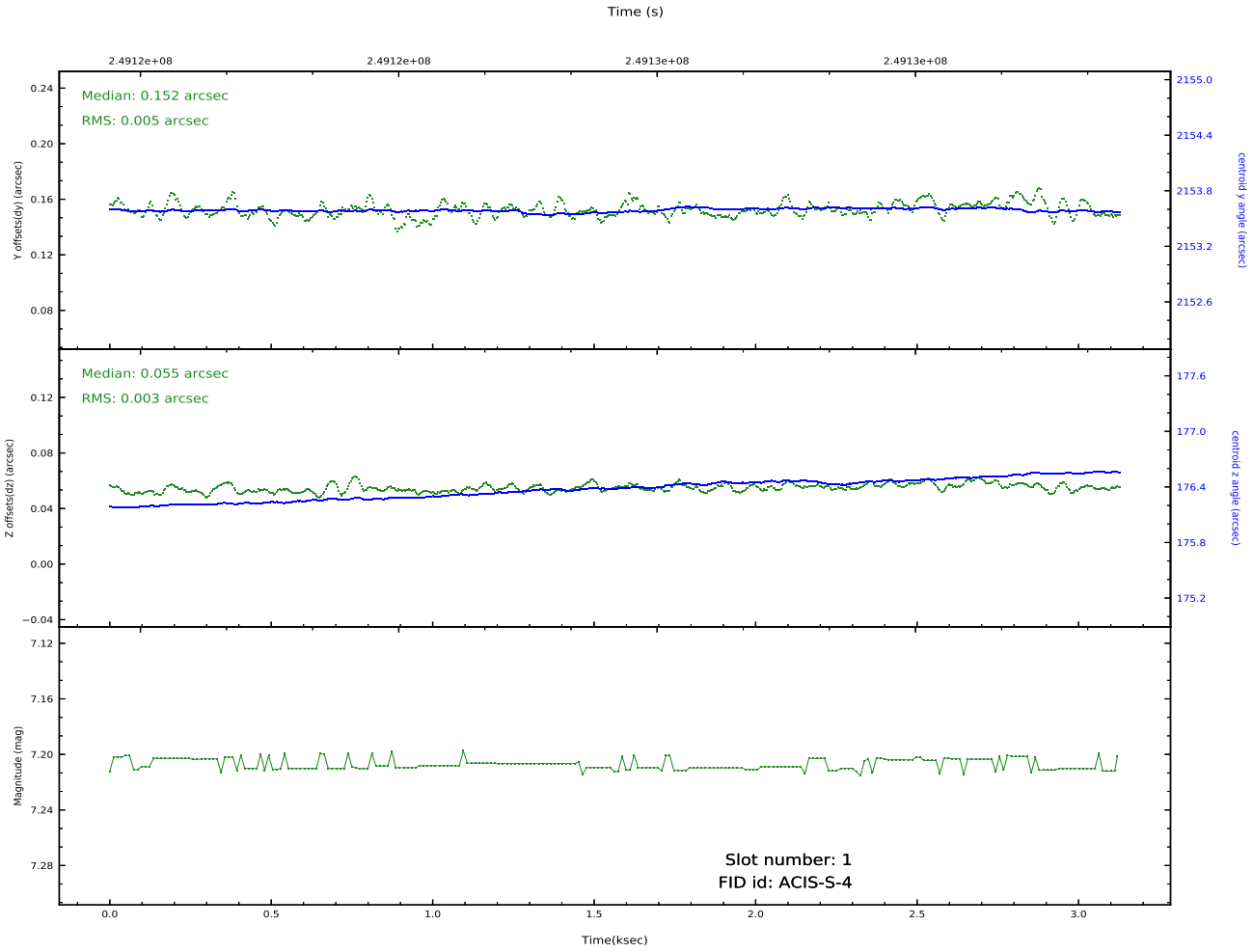




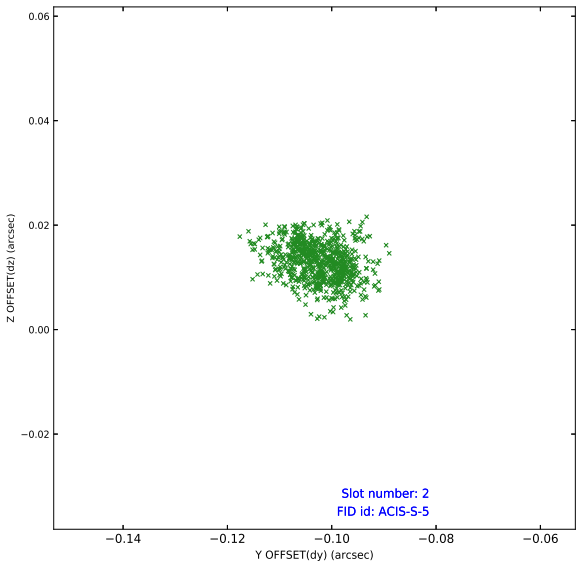
2.5.2 Slot 1

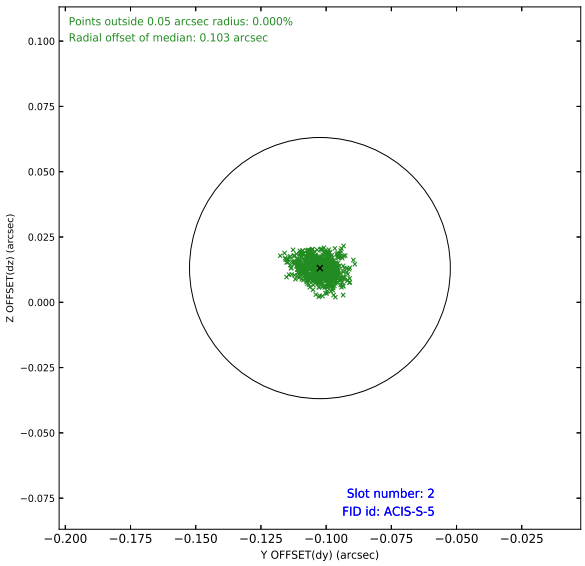

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS-S-4

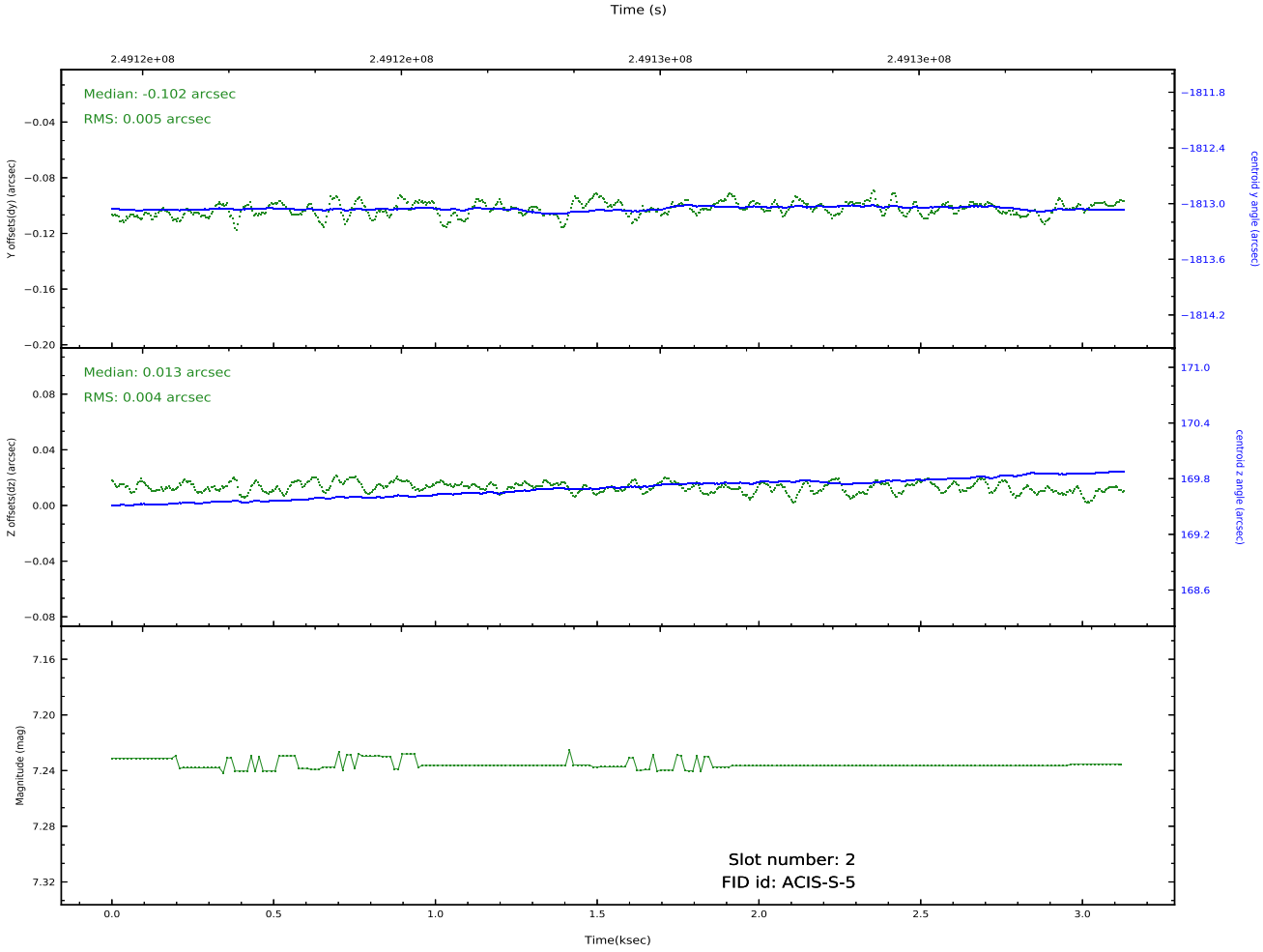

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.161 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS-S-4


Time (s)
Median: 0.152 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.055 arcsec
RMS: 0.003 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


Slot number: 2
FID id: ACIS-S-5
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.103 arcsec
Slot number: 2
FID id: ACIS-S-5
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)


Time (s)
Median: -0.102 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.013 arcsec
RMS: 0.004 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	Jen Lauer
V&V Date (YYYY-MM-DD)	2020.10.15
V&V Edition	1
V&V Disposition and Status	Repr+DD
V&V Charge Time	2.703999

A.2 Comments

```
SAP: please reprocess wiht the replacement biases for CCD_ID = 3 and 6.
========
The bias maps for CCD_ID = 3 and 6 suffer from anomalously high bias
values in an 'exacto-knife'-shaped area of the bias file. Pixels in the
event data that have been bias-corrected by one of the 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 maps for
CCD_ID = 3 and 6 will be recreated to remove this anomaly and the data
will be reprocessed.
```