V&V Reference Report
L2 ASCDS Version : 10.7.1

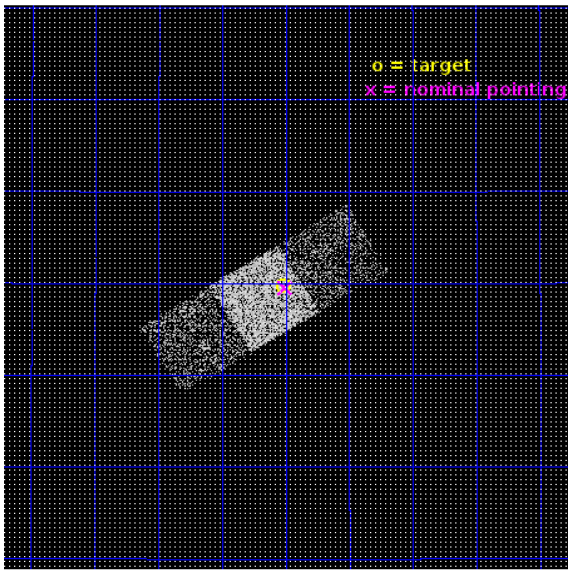
Observation 22021 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Sep 27 2019

Contents

1 Front

seq_num	703841	Sequence number
obs_id	22021	Observation id
title	Timely Assessment of the X-ray Flux of Newly Discovered Quadruply Lensed Quasars	Proposal title
observer	David Pooley	Principal investigator
object	GraL 1817+27	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	274.37875	Observer's specified target RA [deg]
dec_targ	27.494472	Observer's specified target Dec [deg]
ra_nom	274.37519111961	Nominal RA [deg]
dec_nom	27.492150010448	Nominal Dec [deg]
roll_nom	148.48595956462	Nominal Roll [deg]
revision	2	Processing version of data
ontime	1426.0000110865	Sum of GTIs [s]
livetime	1407.3682711357	Livetime [s]
ontime6	1426.0000110865	Sum of GTIs [s]
ontime7	1426.0000110865	Sum of GTIs [s]
ontime8	1413.4360501766	Sum of GTIs [s]
l2events	8292	Number of level 2 events

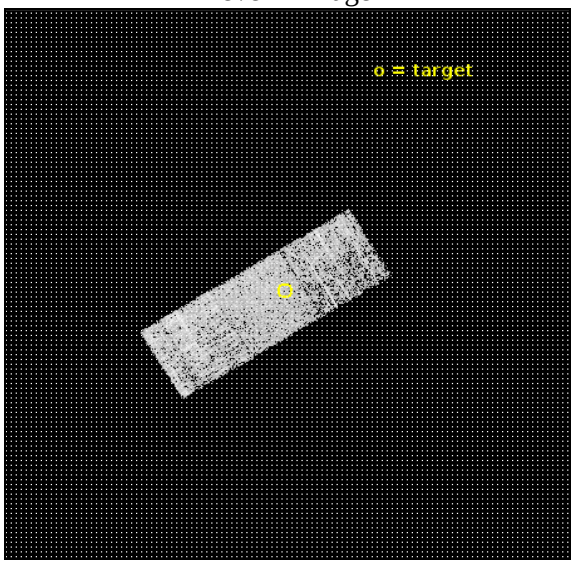


2 OBI

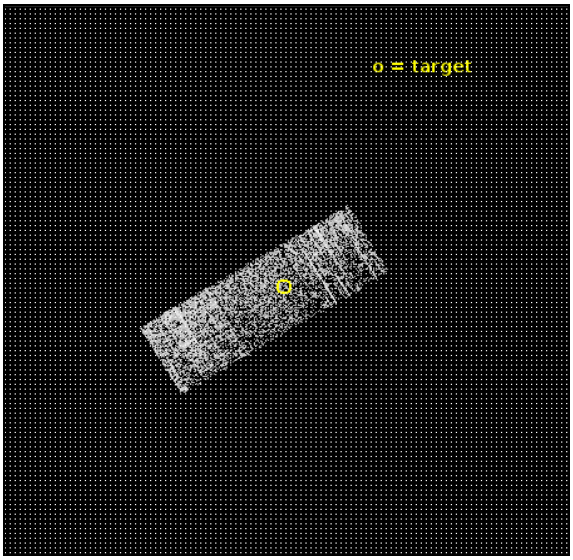
2.1 OBI

2.1.1 Images

Level 1 Image

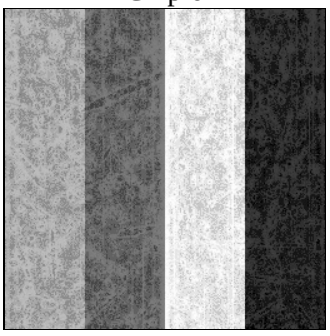


Level 1 Bad Events

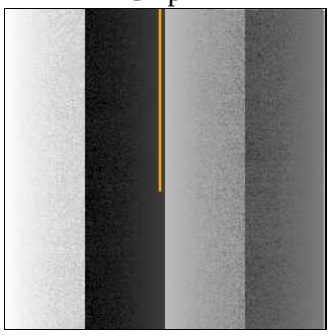


2.1.2 Bias

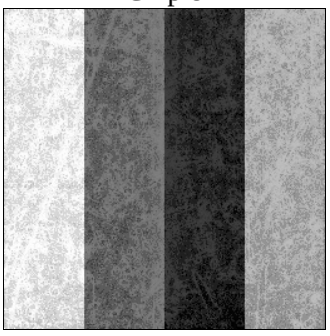
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.8	Processing system revision
caldbver	4.8.4.1	
date	2019-09-27T17:40:07	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	1500.000000	[s] Scheduled observation exposure time
ontime	1426.0000110865	Sum of GTIs [s]
ontime6	1426.0000110865	Sum of GTIs [s]
ontime7	1426.0000110865	Sum of GTIs [s]
ontime8	1413.4360501766	Sum of GTIs [s]
l1events	41240	Number of level 1 events

2.1.4 Events

	ccd 6	**ccd 7**	**ccd 8**
level 1 events	11100	13739	16401
rejected events	9826	7766	12371
rejected %	88%	56%	75%

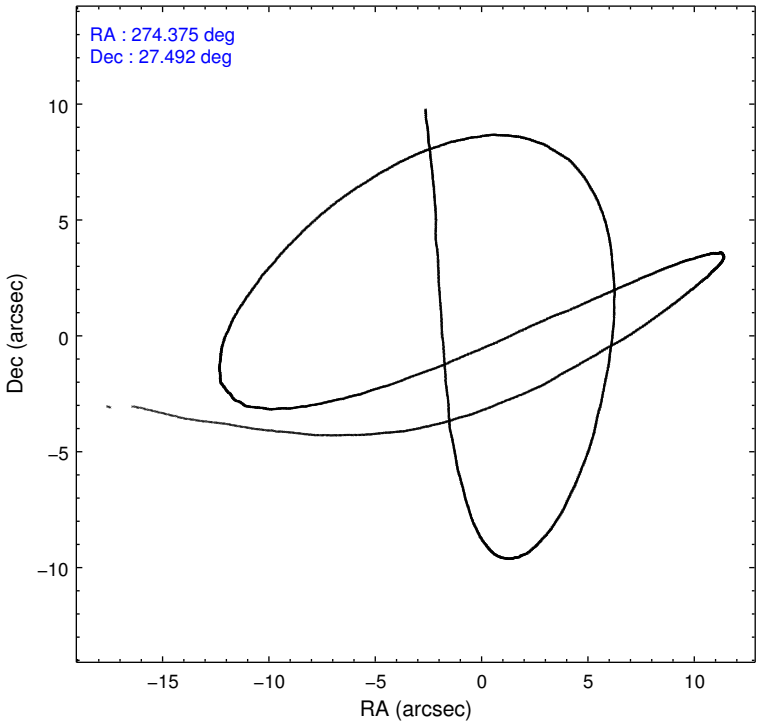
	ccd 6	**ccd 7**	**ccd 8**
grade 0 events	400	549	1123
	3%	3%	6%
grade 1 events	4	18	13
	0%	0%	0%
grade 2 events	304	1316	944
	2%	9%	5%
grade 3 events	104	470	409
	0%	3%	2%
grade 4 events	127	484	394
	1%	3%	2%
grade 5 events	537	1303	763
	4%	9%	4%
grade 6 events	342	3182	1167
	3%	23%	7%
grade 7 events	9282	6417	11588
	83%	46%	70%

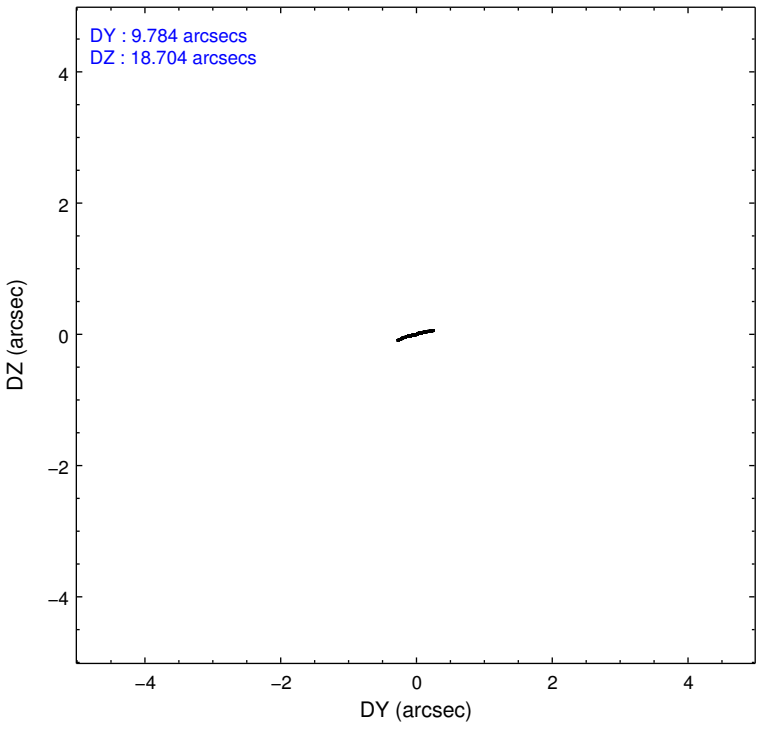
2.2 Compared Parameters

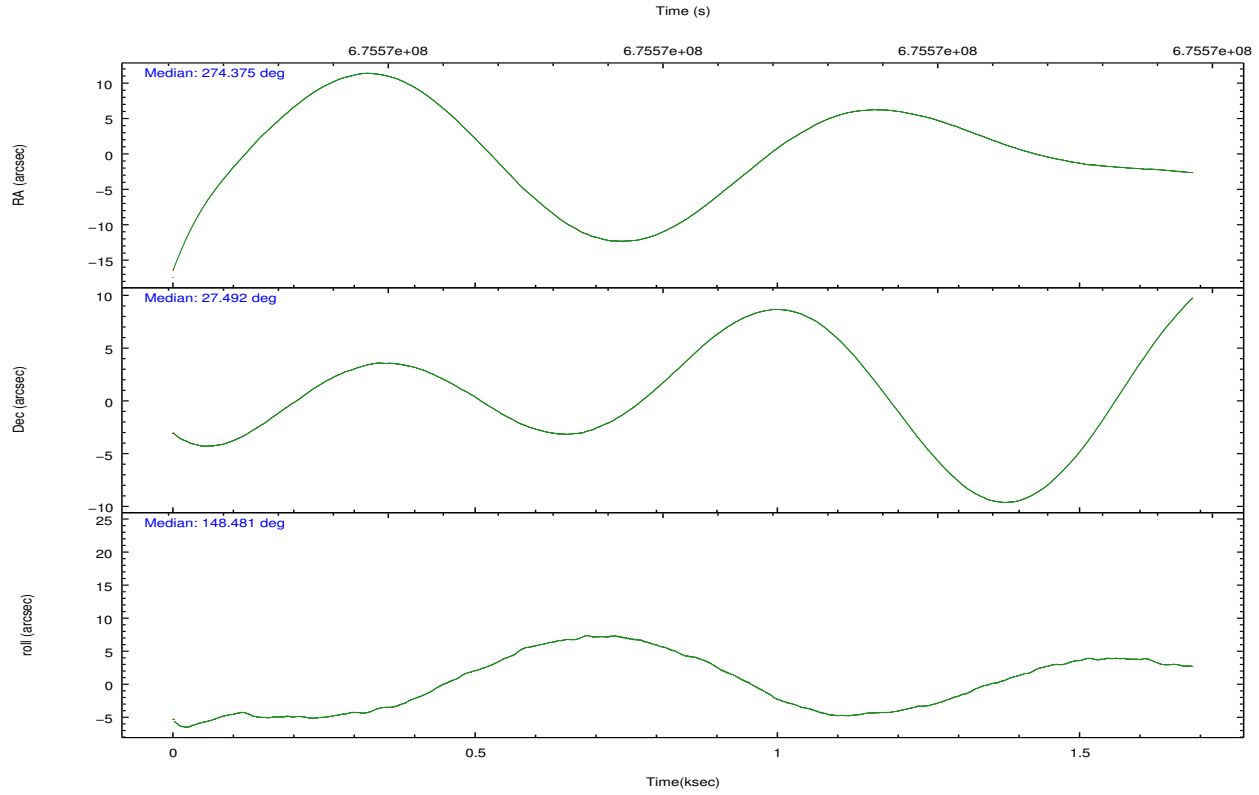
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-678	ACIS-678
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	274.405918	274.3751911196055
[deg] Pointing Dec	27.492047	27.49215001044783
[deg] Pointing Roll	148.315192	148.4859595646203
[mm] SIM 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)	675572882.184000	675571887.37027
Observation start date	2019-05-30T03:06:53	2019-05-30T02:51:27
[s] Observation end time (MET)	675574382.184000	675575139.69546
Observation end date	2019-05-30T03:31:53	2019-05-30T03:45:39
Read mode	TIMED	TIMED

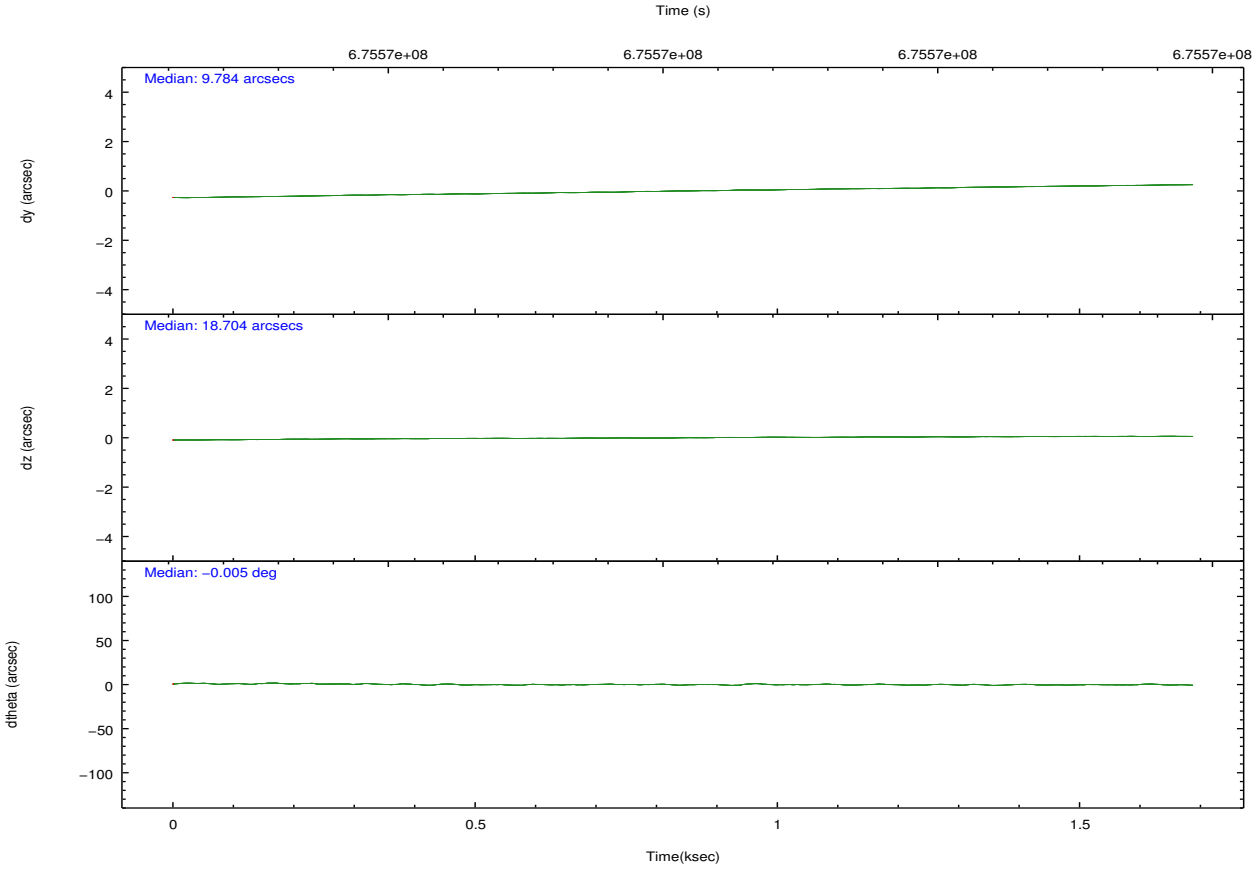
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	N	N
CCD I3 on	N	N
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O2	Y
CCD S3 on	Y	Y
CCD S4 on	O1	Y
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect


RA : 274.375 deg
Dec : 27.492 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−15
−10
−5
0
5
10


DY : 9.784 arcsecs
DZ : 18.704 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
6.7557e+08
6.7557e+08
6.7557e+08
6.7557e+08
Median: 274.375 deg
RA (arcsec)
Median: 27.492 deg
Dec (arcsec)
Median: 148.481 deg
roll (arcsec)
Time(ksec)

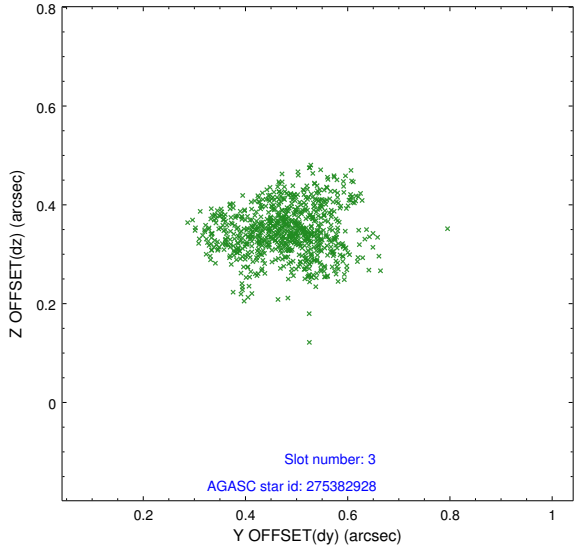

Time (s)
6.7557e+08
6.7557e+08
6.7557e+08
6.7557e+08
Median: 9.784 arcsecs
dy (arcsec)
Median: 18.704 arcsecs
dz (arcsec)
Median: −0.005 deg
dtheta (arcsec)
Time(ksec)

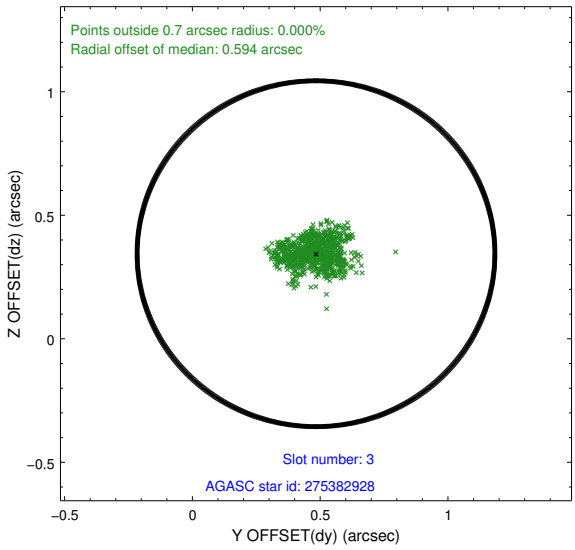
Slot Statistics

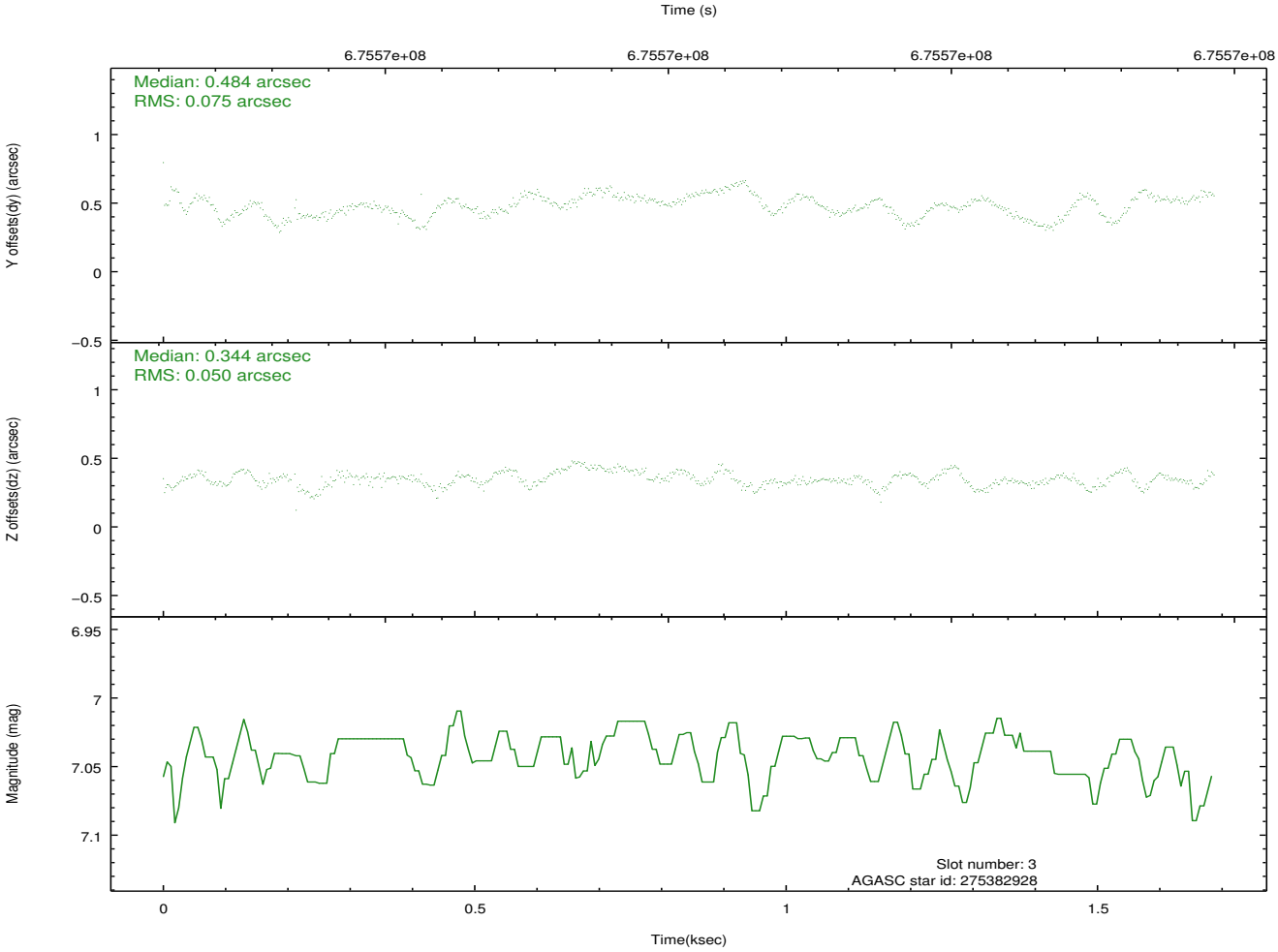
ot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.00	411	1.000	-0.260	-0.123	0.007	0.017	0.000000	0.000000	-762.84	-1740
1	FID		ACIS-S-4	7.12	412	1.000	0.607	0.158	0.006	0.013	0.000000	0.000000	2149.50	164
2	FID		ACIS-S-5	7.10	412	1.000	-0.379	-0.027	0.007	0.015	0.000000	0.000000	-1810.81	162
3	GUIDE	used	275382928	7.04	822	1.000	0.484	0.344	0.097	0.154	275.205267	27.530296	-2092.83	-1466
4	GUIDE	used	275387920	7.70	822	1.000	0.004	0.058	0.081	0.136	274.899274	27.495599	-1333.56	-842
5	GUIDE	used	275390392	8.21	824	1.000	0.181	0.353	0.104	0.152	274.929122	27.954861	-538.91	-2295
6	GUIDE	used	275396104	8.41	824	1.000	-0.341	-0.640	0.103	0.167	274.186458	27.095713	-150.99	1580
7	GUIDE	used	275793776	6.94	823	1.000	-0.315	-0.117	0.109	0.183	274.063771	28.175304	2217.91	-1522

2.4 Star Slots

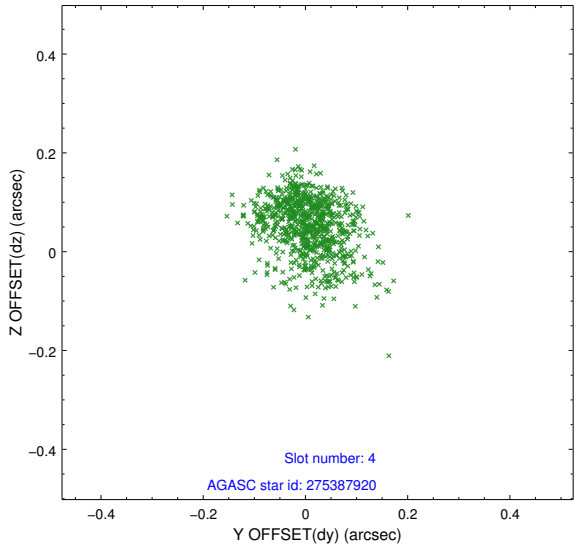
2.4.1 Slot 3

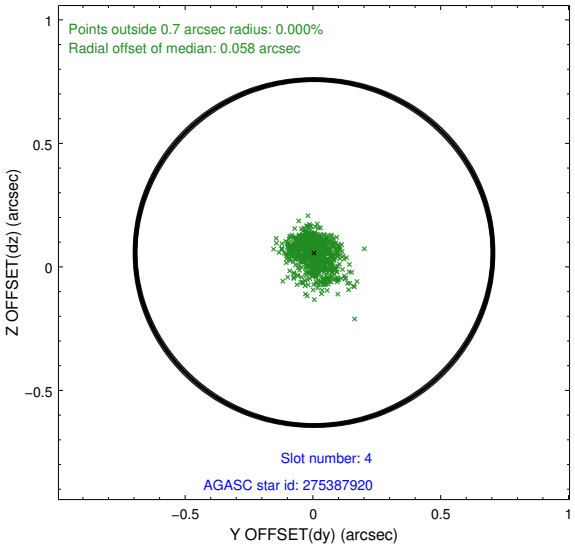


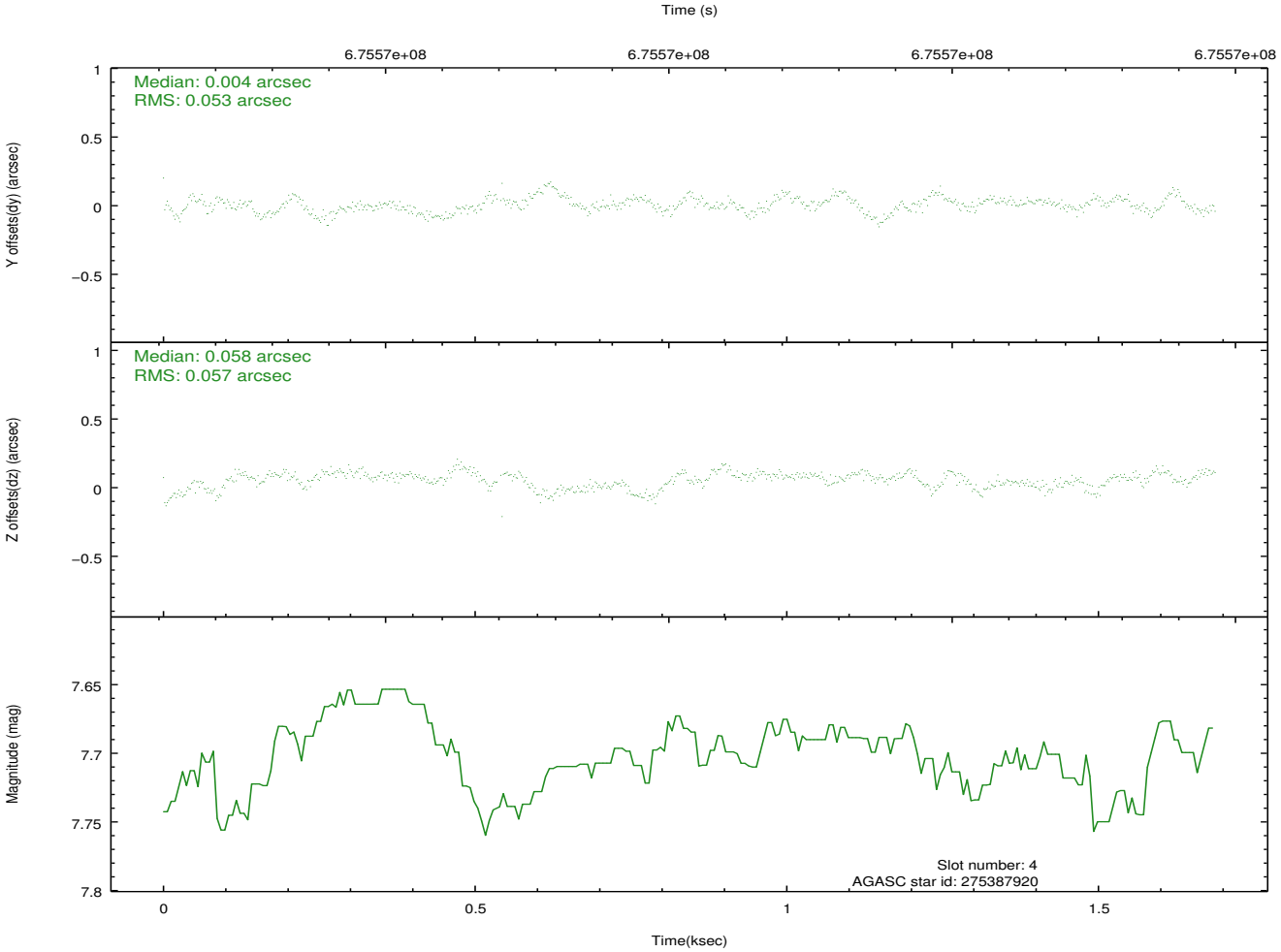




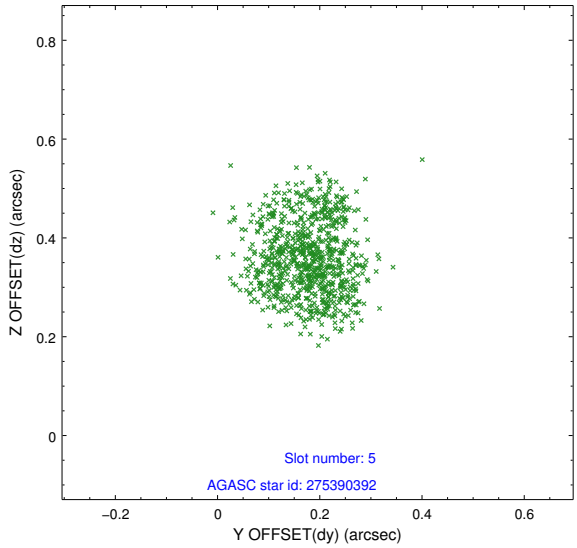
2.4.2 Slot 4

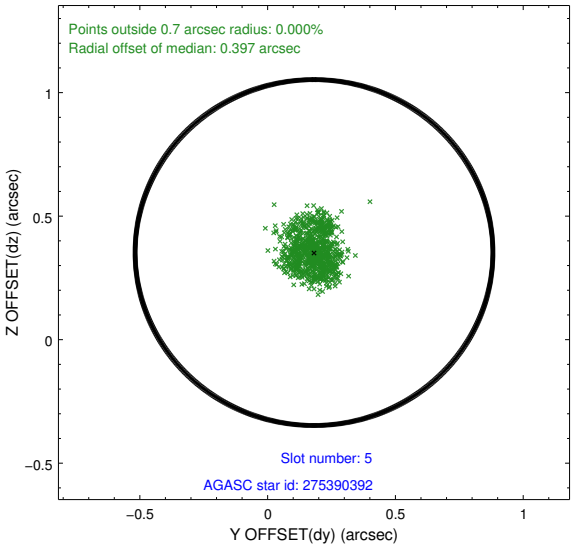

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 275387920

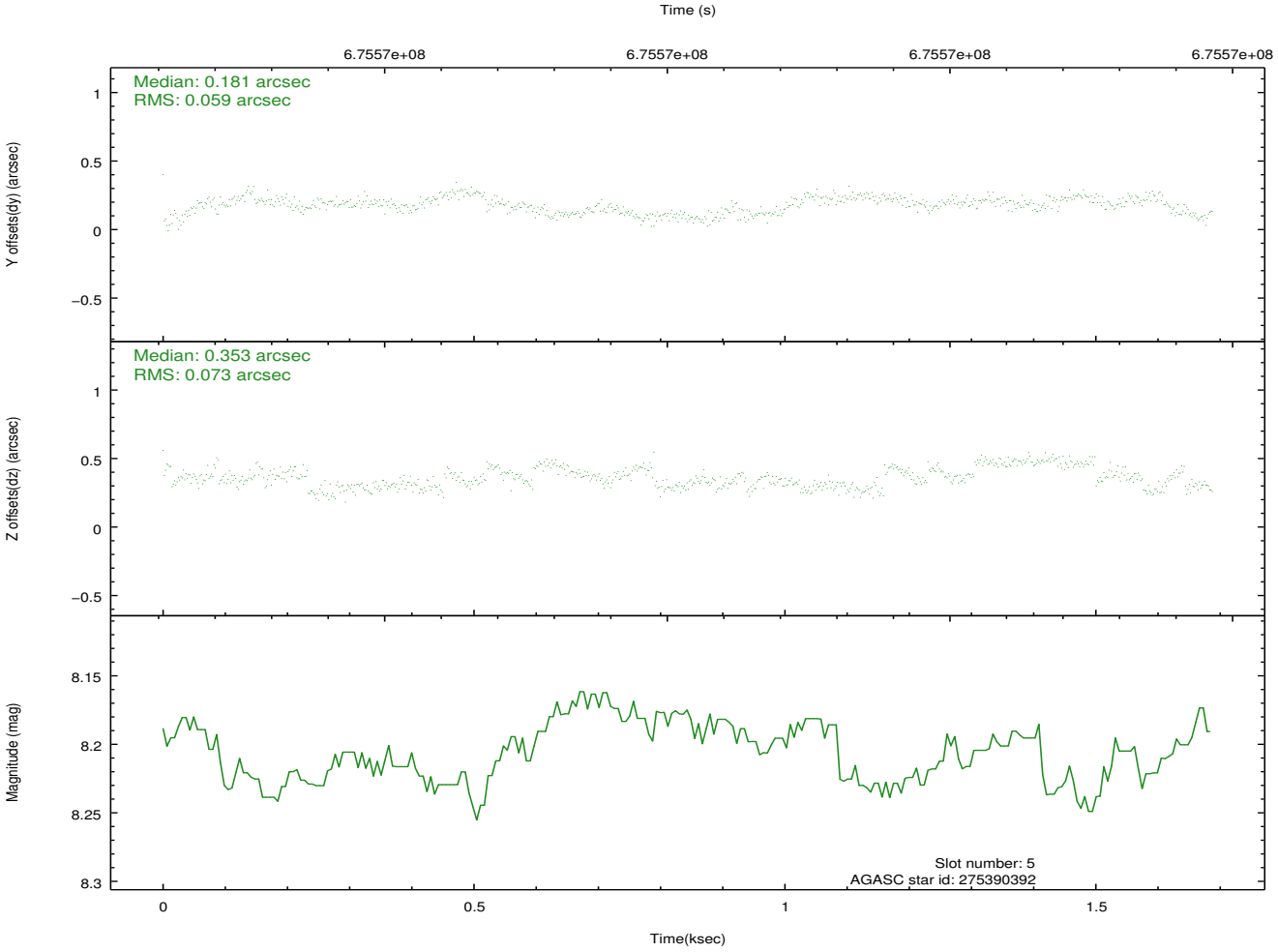

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.058 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 275387920


Time (s)
6.7557e+08
Median: 0.004 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: 0.058 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 275387920
Time(ksec)

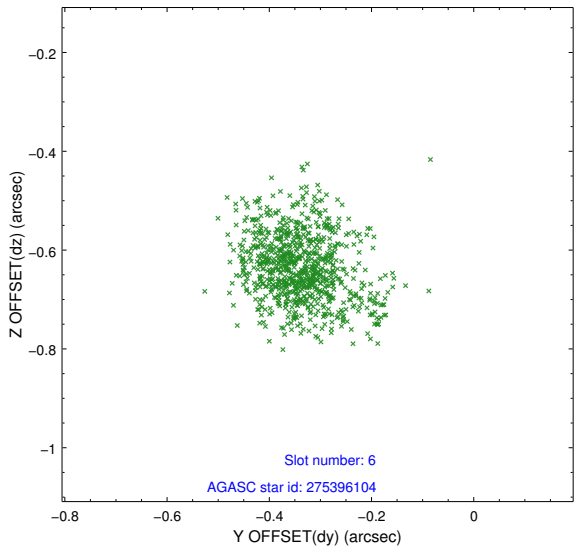
2.4.3 Slot 5

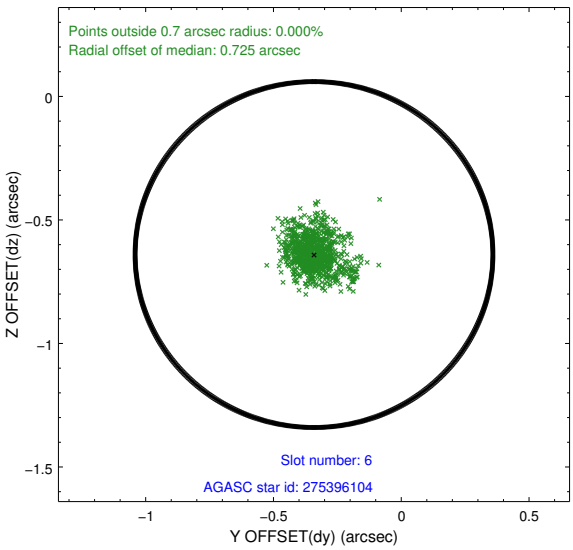

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 275390392

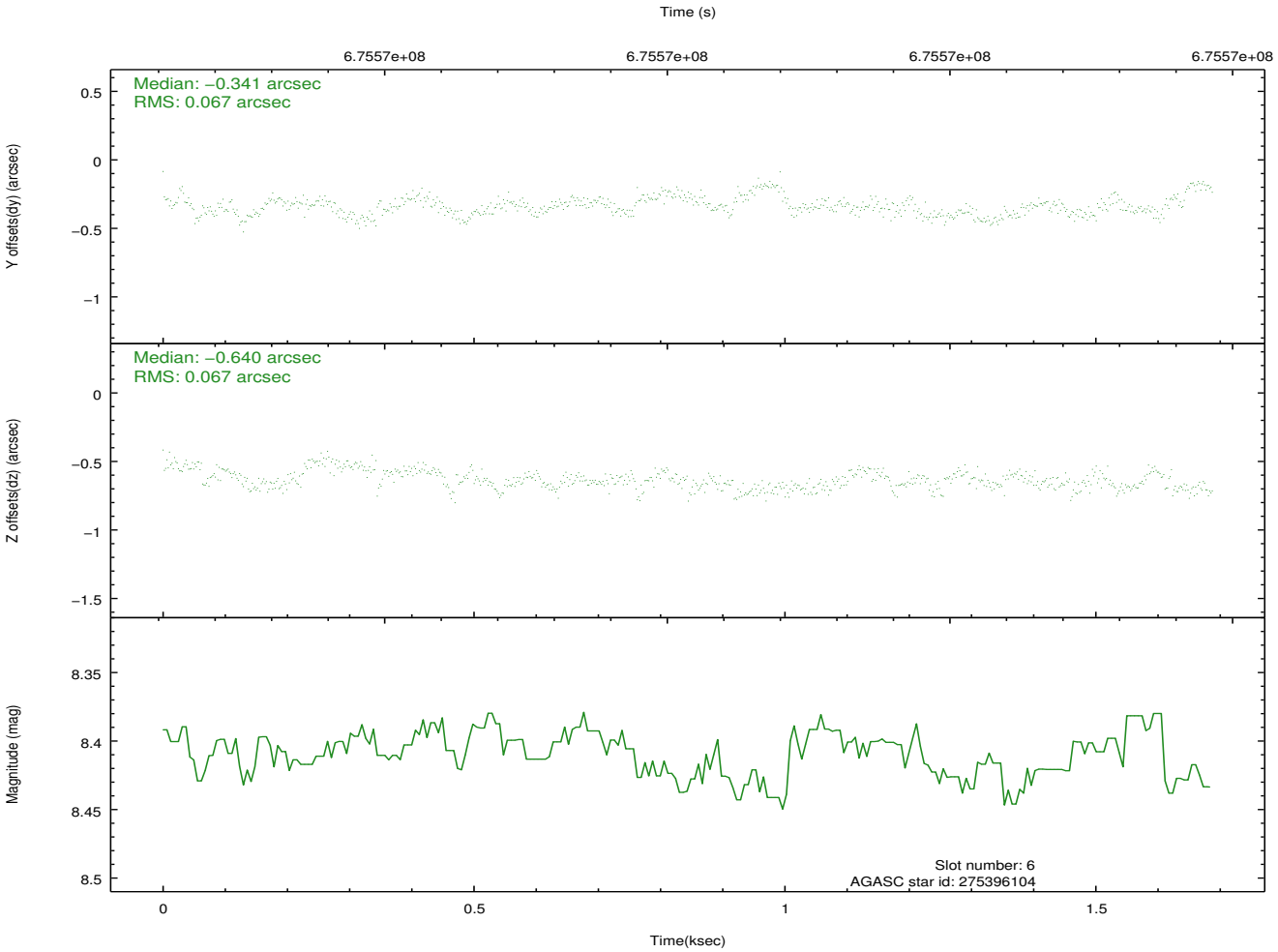

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.397 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 275390392


Time (s)
6.7557e+08
6.7557e+08
6.7557e+08
6.7557e+08
Median: 0.181 arcsec
RMS: 0.059 arcsec
Y offsets(dy) (arcsec)
Median: 0.353 arcsec
RMS: 0.073 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 275390392
Time(ksec)

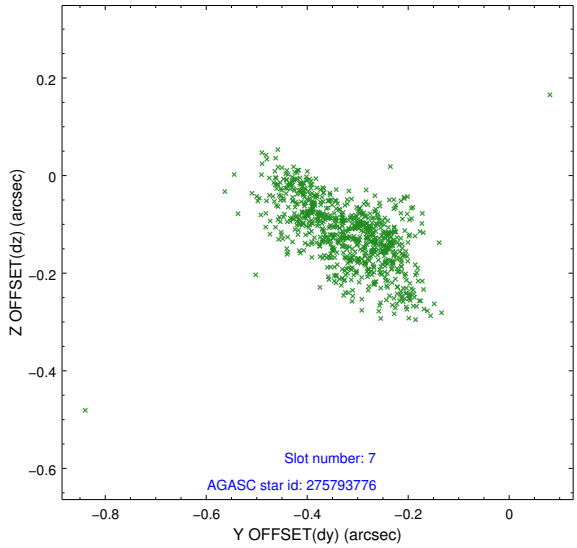
2.4.4 Slot 6

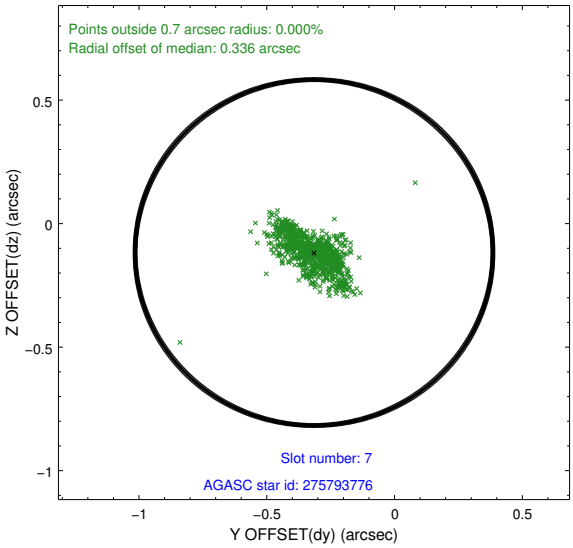

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 275396104

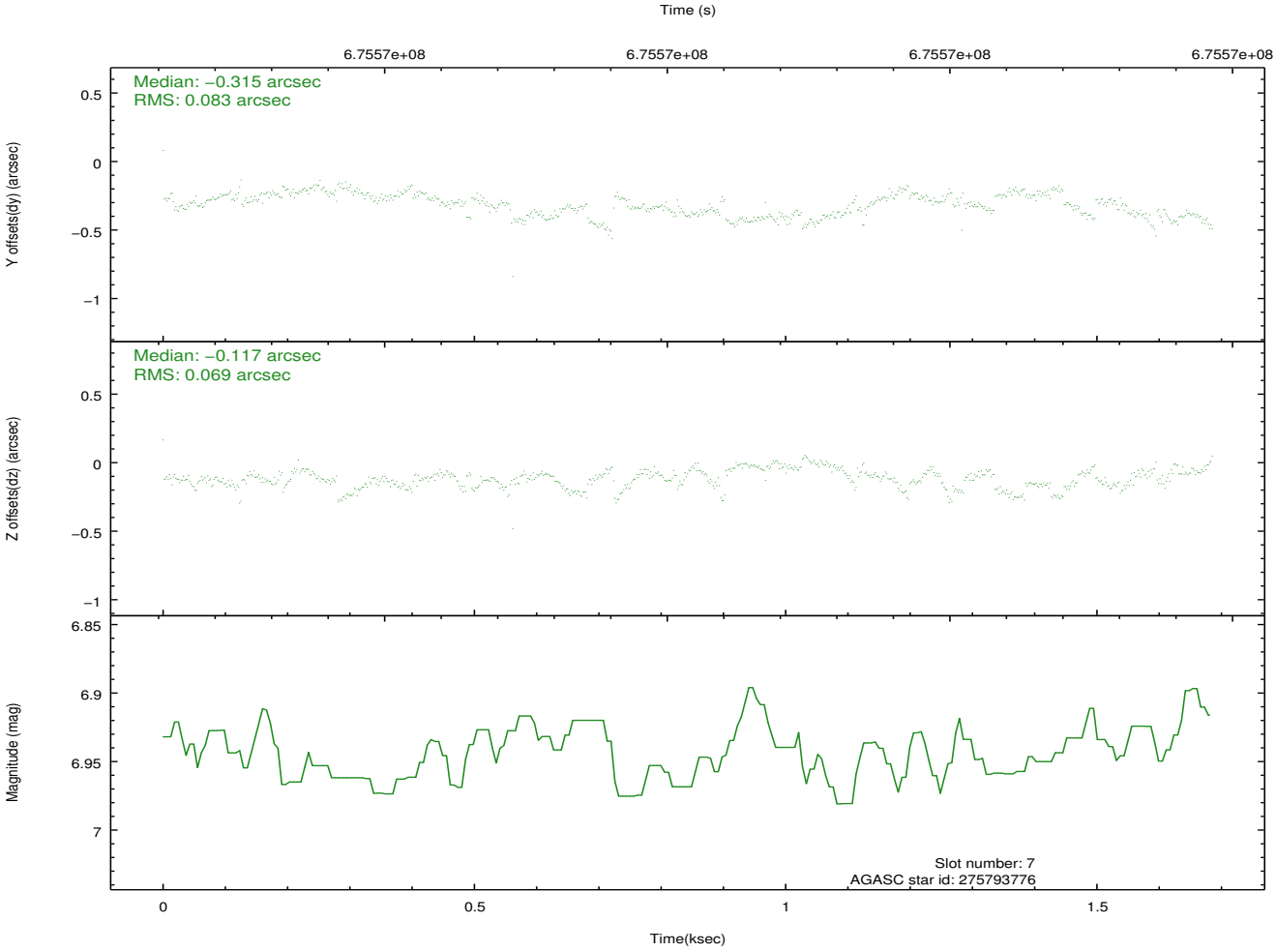

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.725 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 275396104


Time (s)
6.7557e+08
Median: −0.341 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: −0.640 arcsec
RMS: 0.067 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 275396104
Time(ksec)

2.4.5 Slot 7

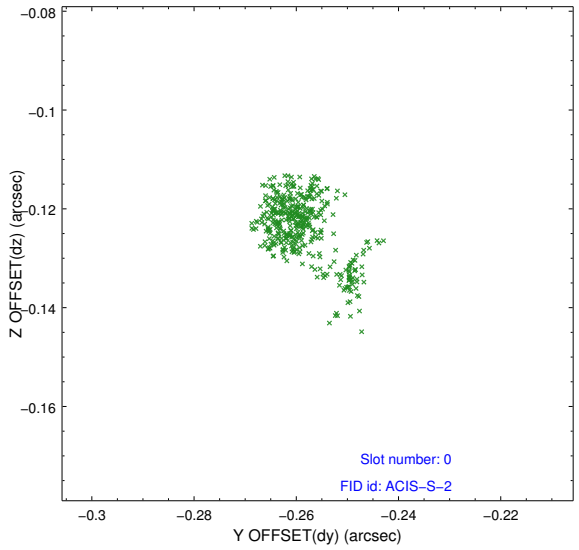

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 275793776

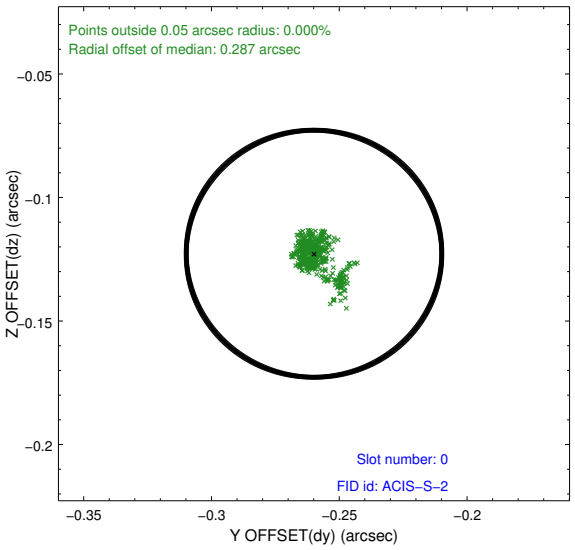

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.336 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 275793776

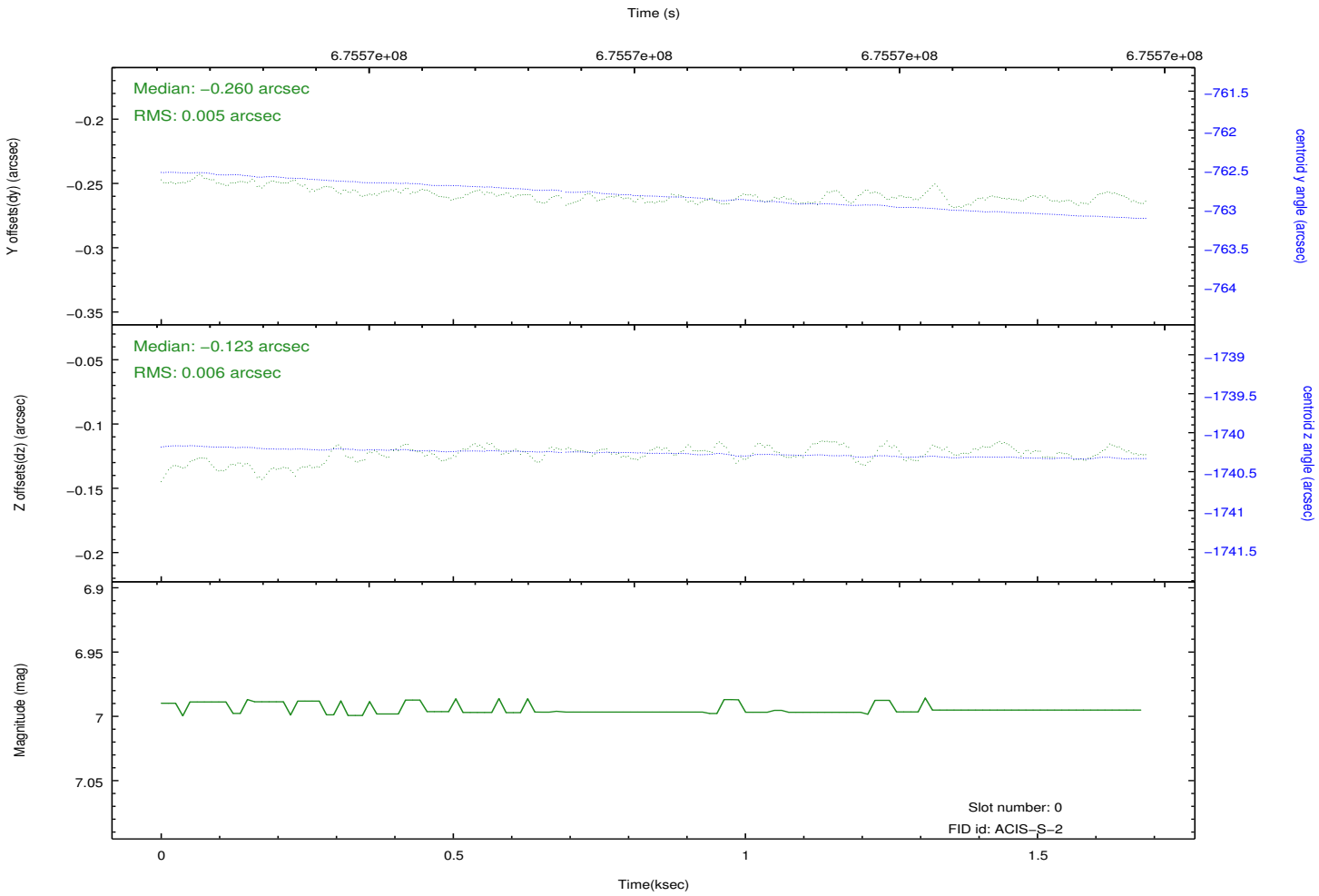

Time (s)
Median: −0.315 arcsec
RMS: 0.083 arcsec
Y offsets(dy) (arcsec)
Median: −0.117 arcsec
RMS: 0.069 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 275793776
Time(ksec)

2.5 FID Slots

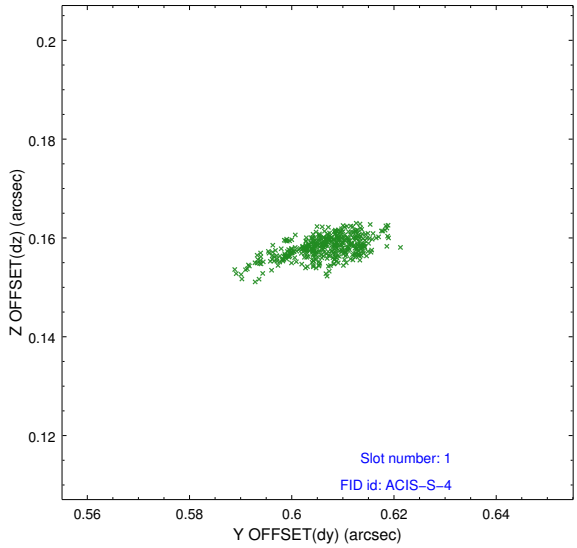
2.5.1 Slot 0

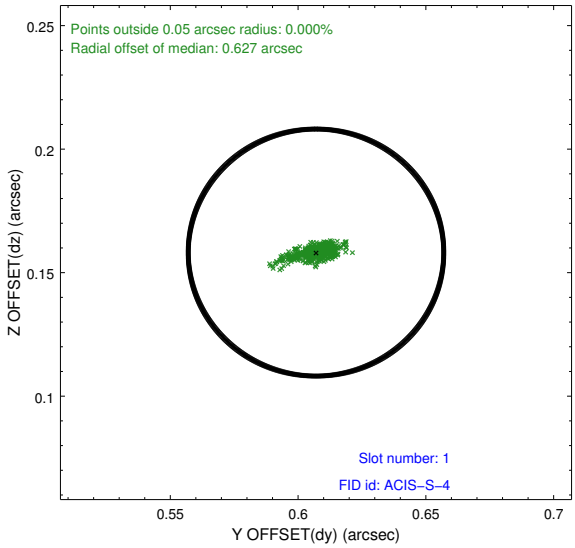


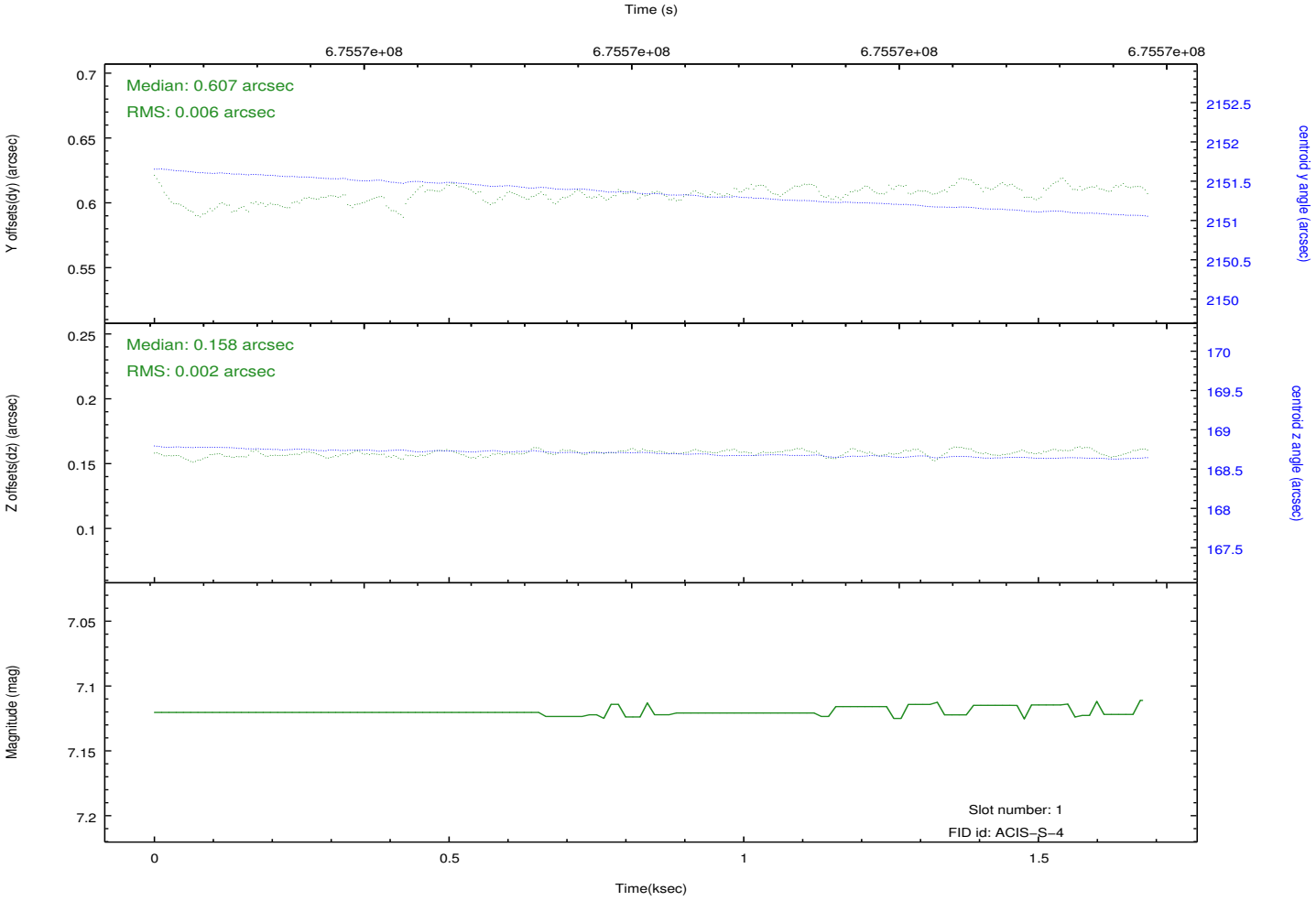




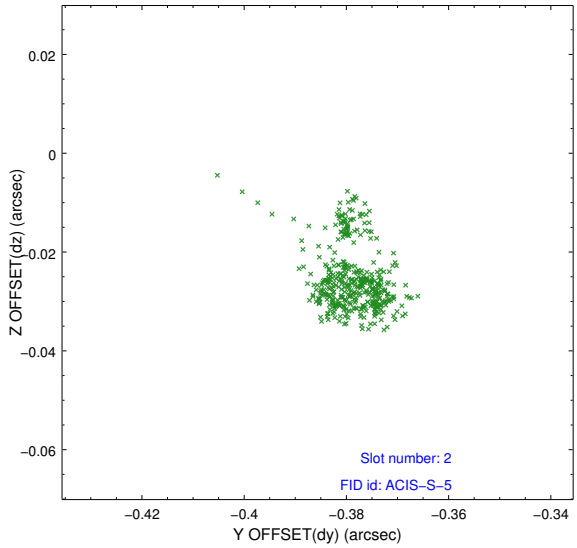
2.5.2 Slot 1

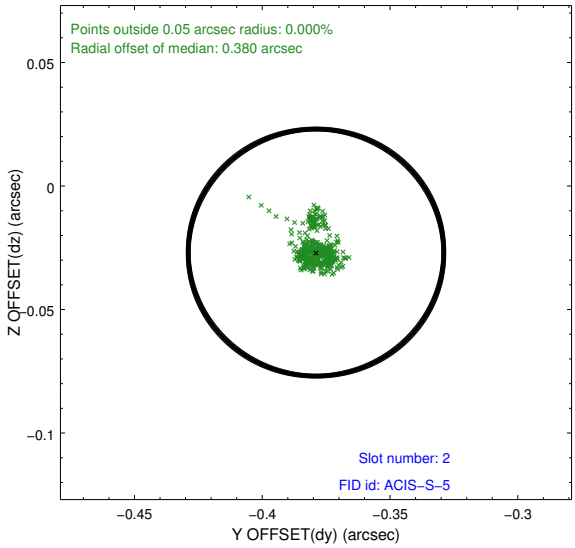

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

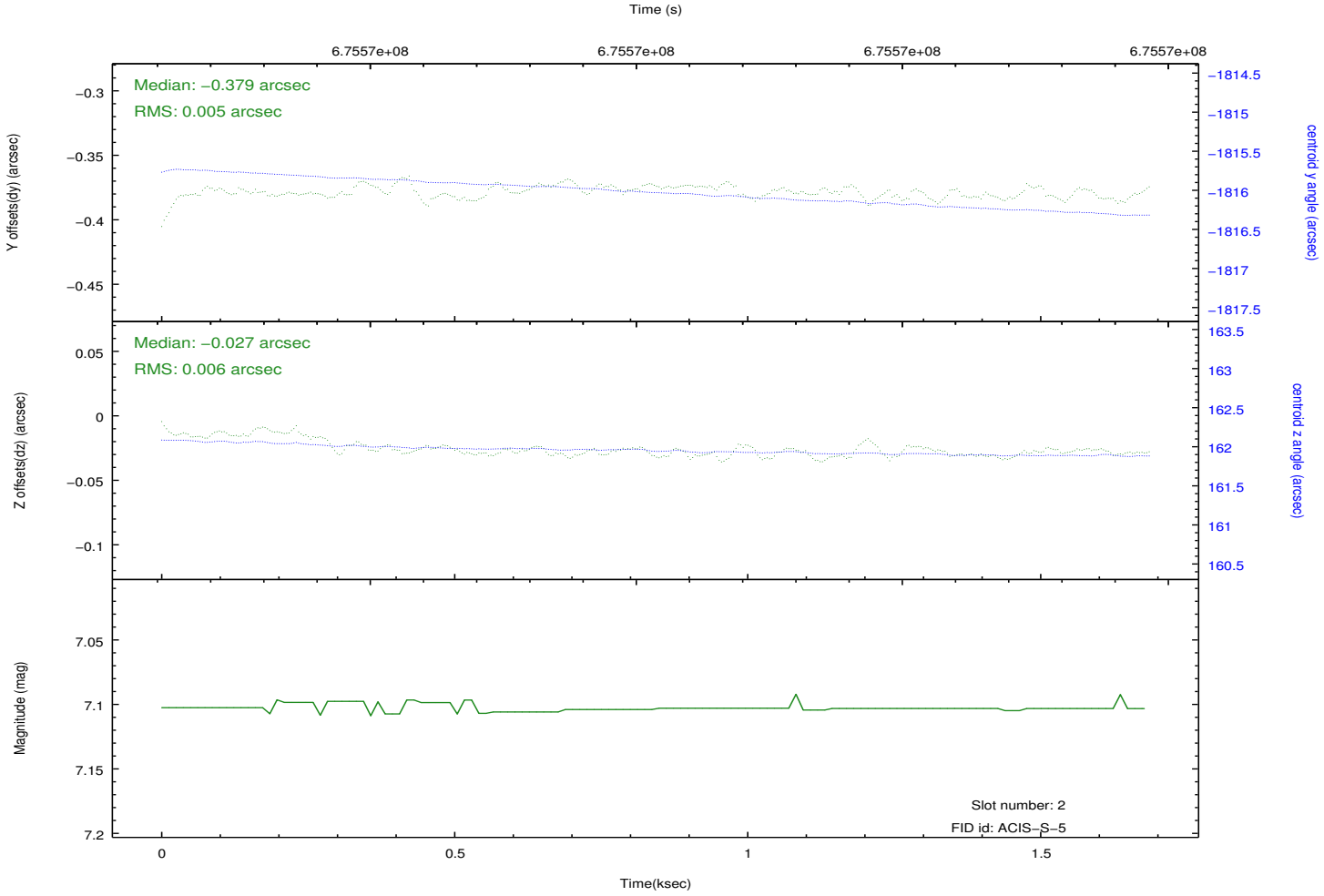

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.627 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.607 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.158 arcsec
RMS: 0.002 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: 0.380 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.379 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.027 arcsec
RMS: 0.006 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)	2019.09.28
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	1.4260000110865

A.2 Comments

ACIS T_GAIN files released in CalDB 4.8.3 (23 May 2019) and CalDB 4.8.4 (03 September 2019) have errors in the T_GAIN corrections for ACIS-I chips 0, 1, 2, and 3, and ACIS-S chip 6 (S2). All ACIS OBS_IDs including those chips, which were processed (or reprocessed) in SDP between 2019-05-24T01:06:00 and 2019-09-06T17:31:43 with CalDB 4.8.3, 4.8.3.1, or 4.8.4, were affected. The errors in the T_GAINs, which produce a 1%-2% reduction in the PHA and hence the ENERGY column values for dithered observations, result from alternating real value and zero value columns in CHIPX space across FI chips ACIS-0, 1, 2, 3, and 6. The error has been corrected in this version of the data products.