

V&V Reference Report

L2 ASCDS Version : 10.9.2

Observation 20162 - L2 Version 2
Chandra X-Ray Center

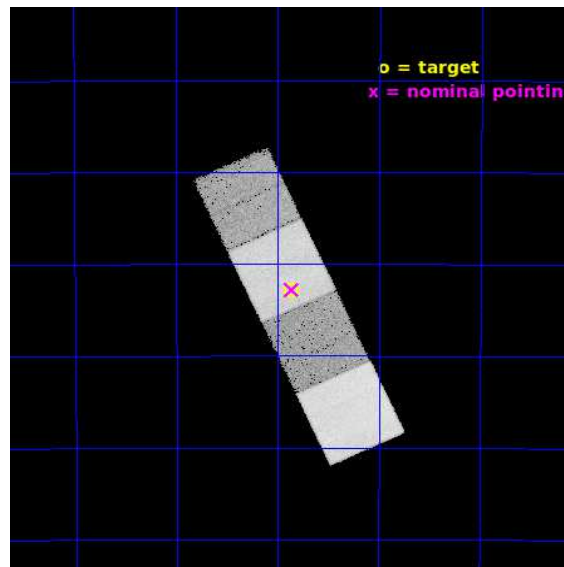
L2 Processing Date : Oct 25 2020

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1 Front

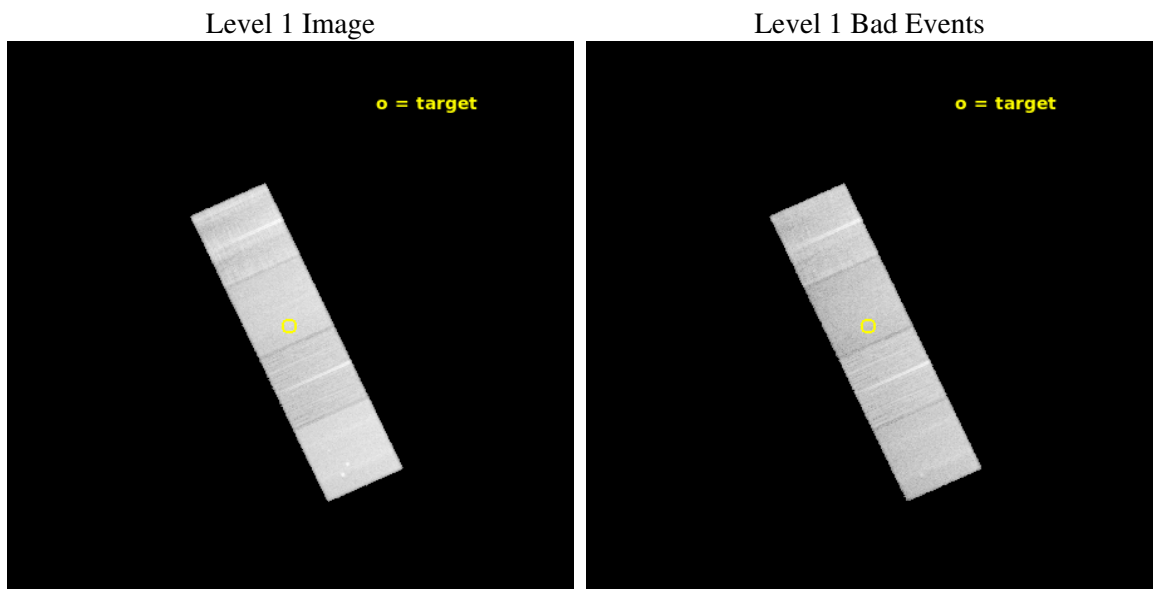
seq_num	201179	Sequence number
obs_id	20162	Observation id
title	Beyond Proxima b: Characterizing the X-ray Environments of the Next Three Nearest Potentially Habitable Exoplanets	Proposal title
observer	Edward Guinan	Principal investigator
object	Kapteyn's Star	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	77.966363	Observer's specified target RA [deg]
dec_targ	-45.047864	Observer's specified target Dec [deg]
ra_nom	77.964974930469	Nominal RA [deg]
dec_nom	-45.046667617814	Nominal Dec [deg]
roll_nom	245.15071813237	Nominal Roll [deg]
revision	2	Processing version of data
ontime	22617.600174069	Sum of GTIs [s]
livetime	22322.08457696	Livetime [s]
ontime5	22617.600174069	Sum of GTIs [s]
ontime6	22617.600174069	Sum of GTIs [s]
ontime7	22617.600174069	Sum of GTIs [s]
ontime8	22617.600174069	Sum of GTIs [s]
l2events	249905	Number of level 2 events



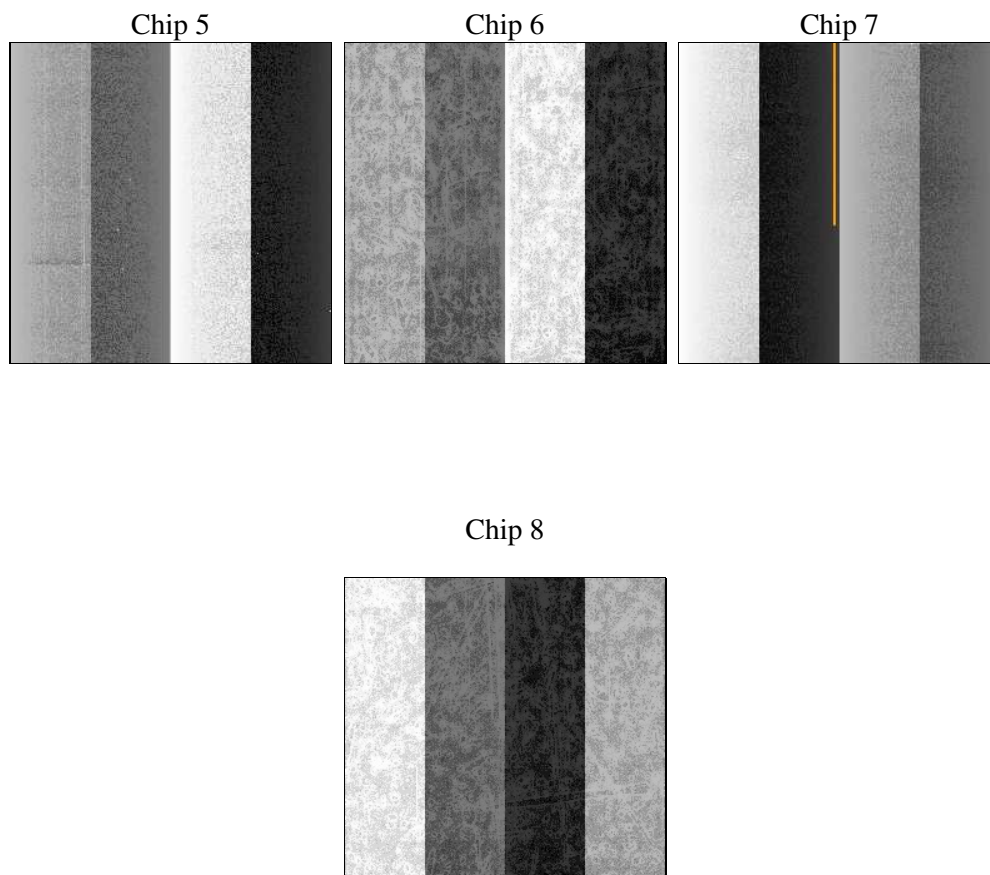
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	22600.000000	[s] Scheduled observation exposure time
ascdsver	10.9.2	Processing system revision	ontime	22617.600174069	Sum of GTIs [s]
caldbver	4.9.3	 	ontime5	22617.600174069	Sum of GTIs [s]
date	2020-10-25T12:38:19	Date and time of file creation	ontime6	22617.600174069	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	22617.600174069	Sum of GTIs [s]
			ontime8	22617.600174069	Sum of GTIs [s]
			l1events	882284	Number of level 1 events

2.1.4 Events

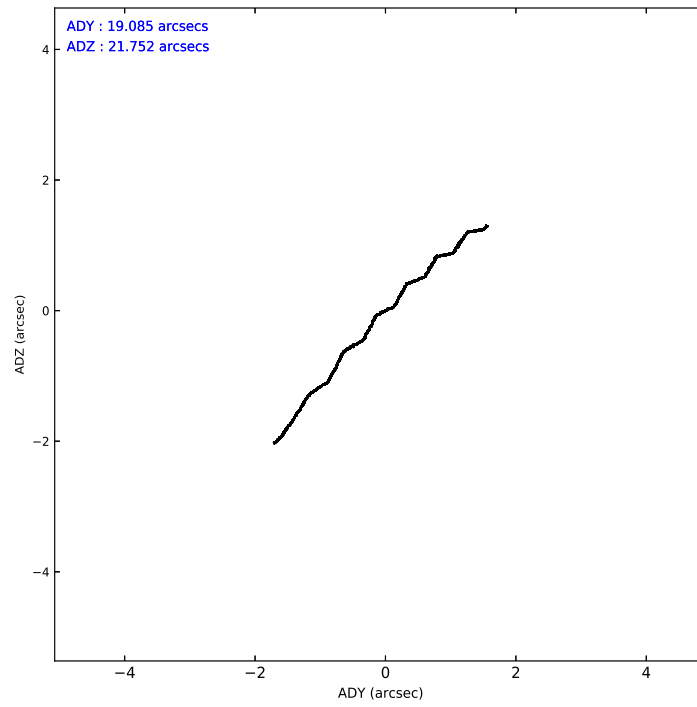
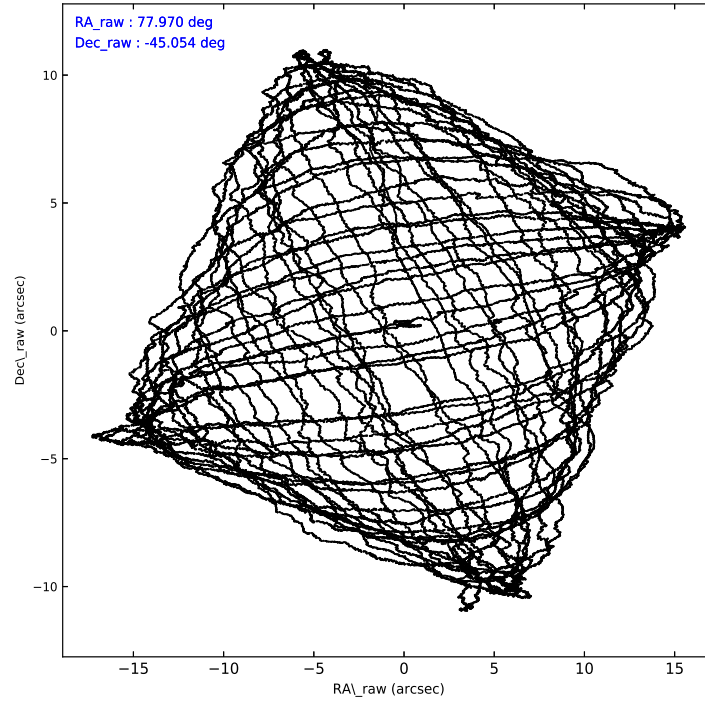
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	265361	173772	214998	228153
rejected events	138954	154531	121021	166918
rejected %	52%	88%	56%	73%

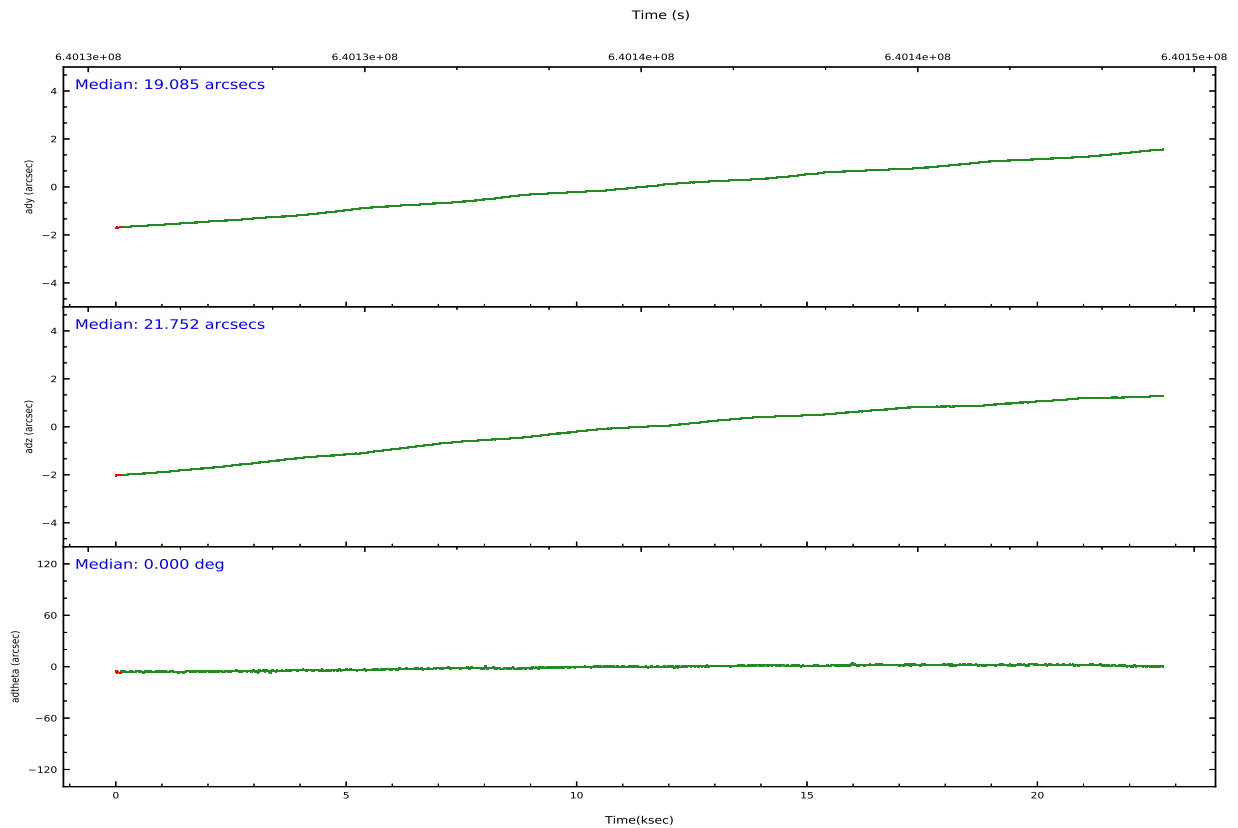
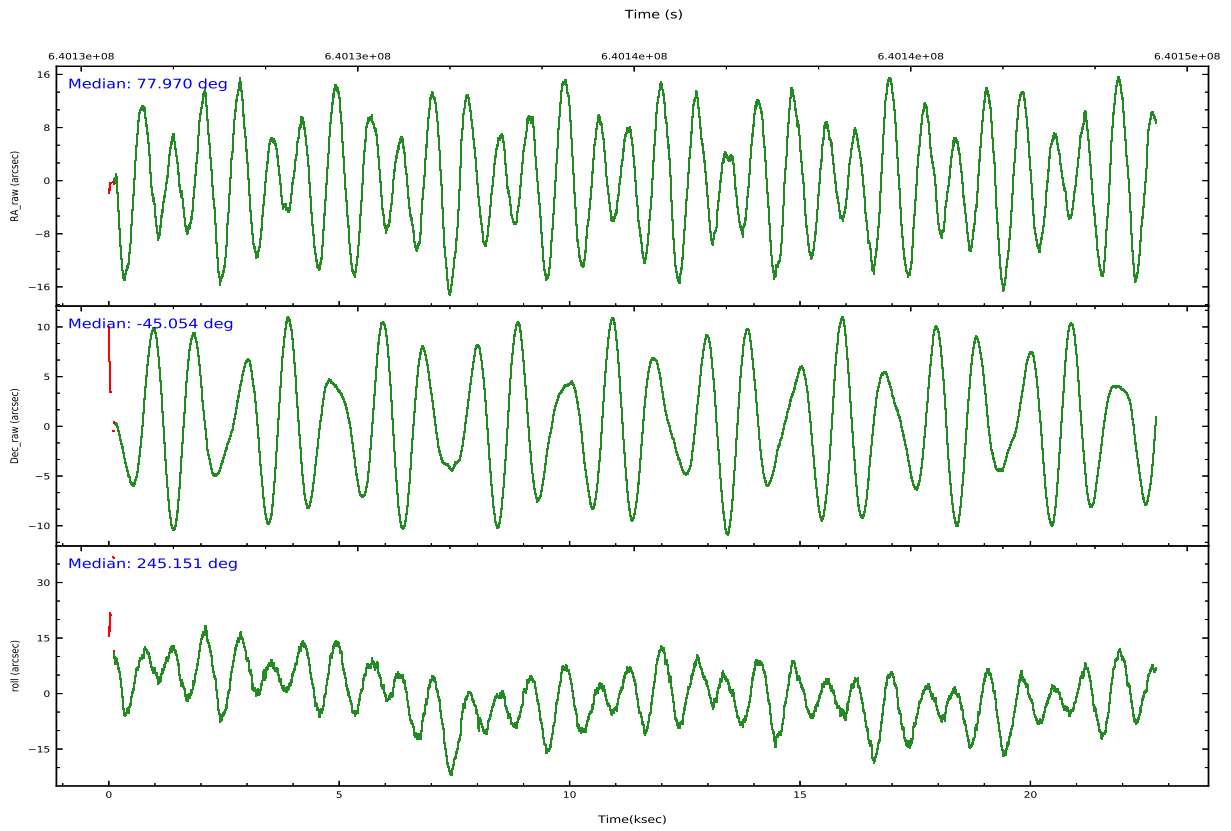
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	7652	6224	8209	17873
	2%	3%	3%	7%
grade 1 events	792	61	266	168
	0%	0%	0%	0%
grade 2 events	40091	4694	19951	15100
	15%	2%	9%	6%
grade 3 events	3876	1916	7574	6158
	1%	1%	3%	2%
grade 4 events	3751	1814	7612	5785
	1%	1%	3%	2%
grade 5 events	18245	7692	21427	12013
	6%	4%	9%	5%
grade 6 events	71341	4638	50846	16434
	26%	2%	23%	7%
grade 7 events	119613	146733	99113	154622
	45%	84%	46%	67%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	77.965721	77.964974930469	Subarray requested	NONE	NONE
[deg] Pointing Dec	-45.026972	-45.046667617814	Alternating exposures requested	N	N
[deg] Pointing Roll	244.999546	245.15071813237	[s] Primary exposure time	0.000000	3.1
[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)	640126726.184000	640125265.48078			
Observation start date	2018-04-14T20:57:37	2018-04-14T20:34:25			
[s] Observation end time (MET)	640149326.184000	640150357.48226			
Observation end date	2018-04-15T03:14:17	2018-04-15T03:32:37			
Read mode	TIMED	TIMED			

2.3 Aspect





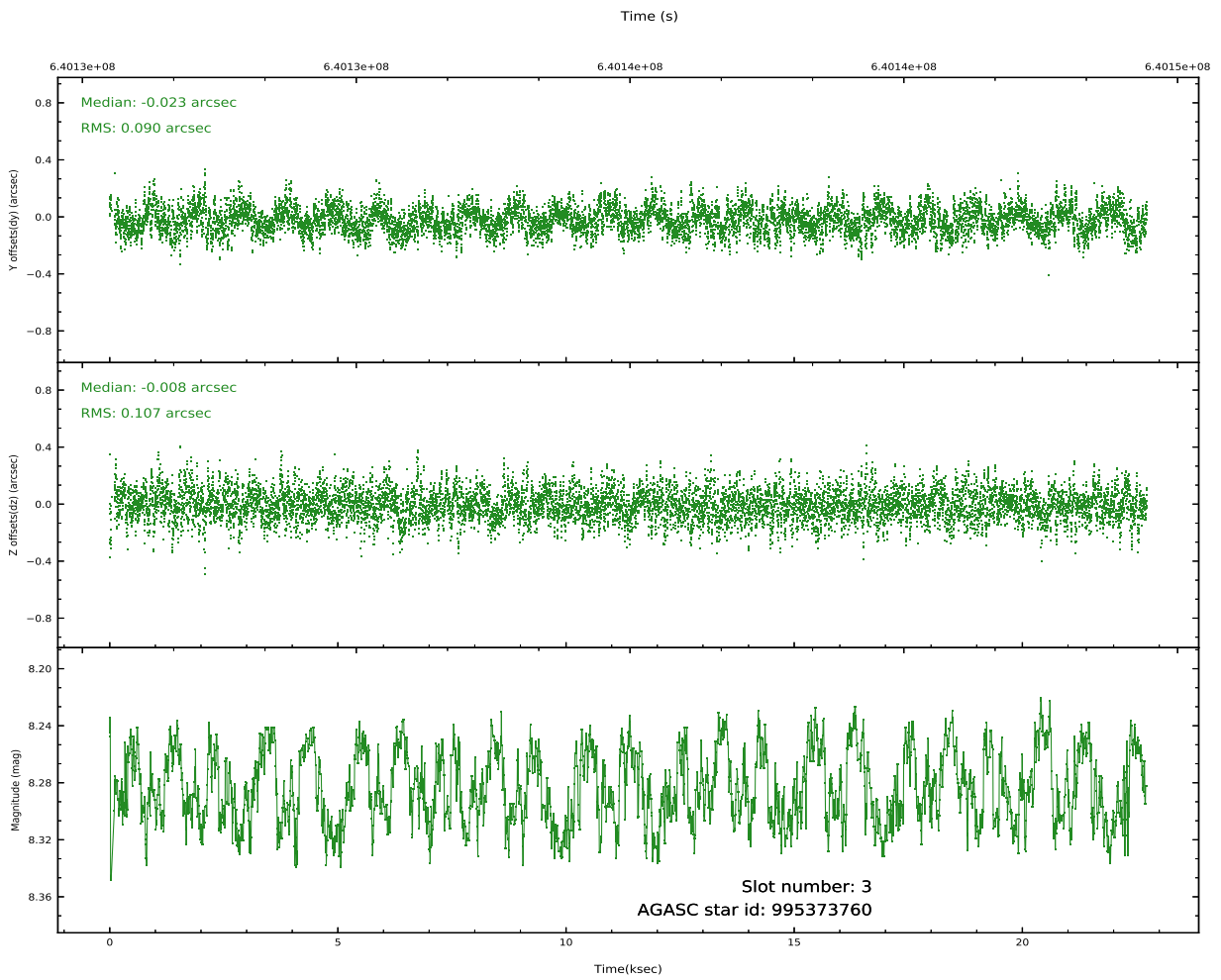
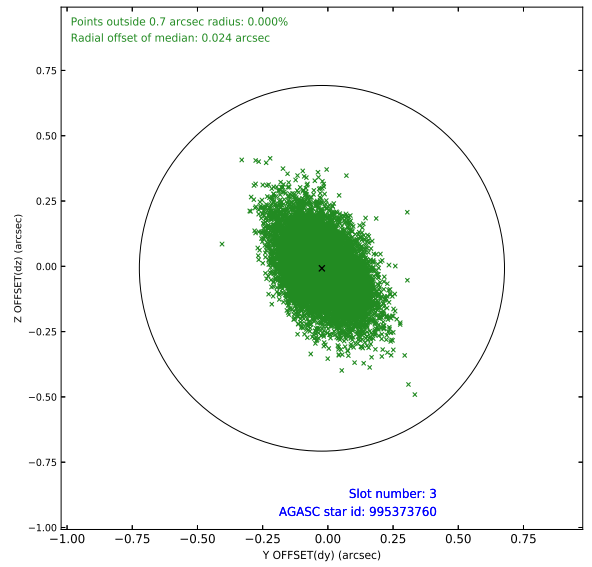
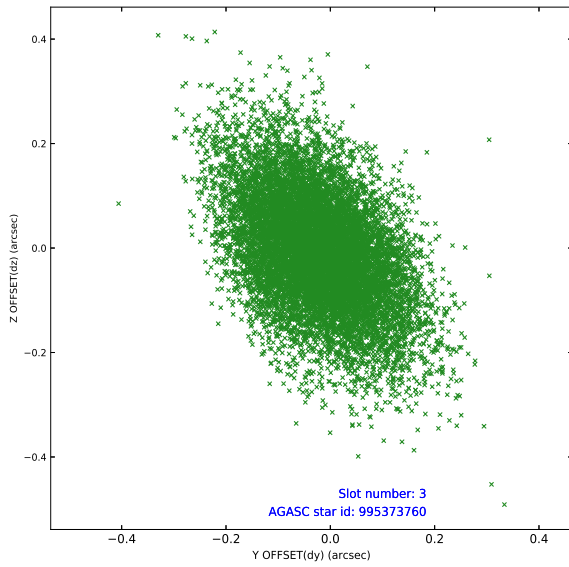
Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-S-1	7.17	5529	1.000	0.306	-0.195	0.039	0.082	0.000000	0.000000	924.05	-1739
1	FID		ACIS-S-5	7.19	5527	1.000	-0.267	0.237	0.026	0.058	0.000000	0.000000	-1825.24	159
2	FID		ACIS-S-6	7.35	5528	1.000	-0.059	-0.034	0.033	0.056	0.000000	0.000000	389.33	802
3	GUIDE	used	995373760	8.29	11054	1.000	-0.023	-0.008	0.144	0.253	77.456283	-44.874180	54.98	-1408
4	GUIDE	used	995374464	7.64	11054	1.000	-0.002	0.085	0.139	0.250	77.415722	-44.335481	-1654.50	-2334
5	GUIDE	used	1058806384	9.08	11046	1.000	-0.197	-0.169	0.173	0.301	78.307326	-45.516544	1234.23	1526
6	GUIDE	used	995371920	9.20	11048	1.000	0.225	0.090	0.161	0.287	77.837290	-44.956576	-89.90	-403
7	MONITOR	unused		0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

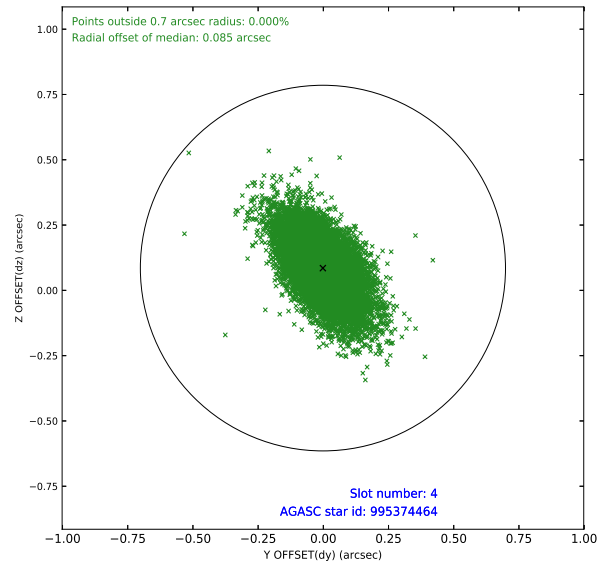
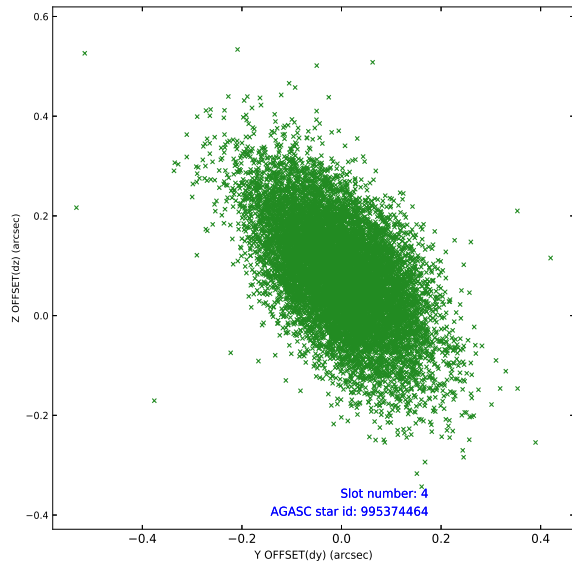
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2.4 Star Slots

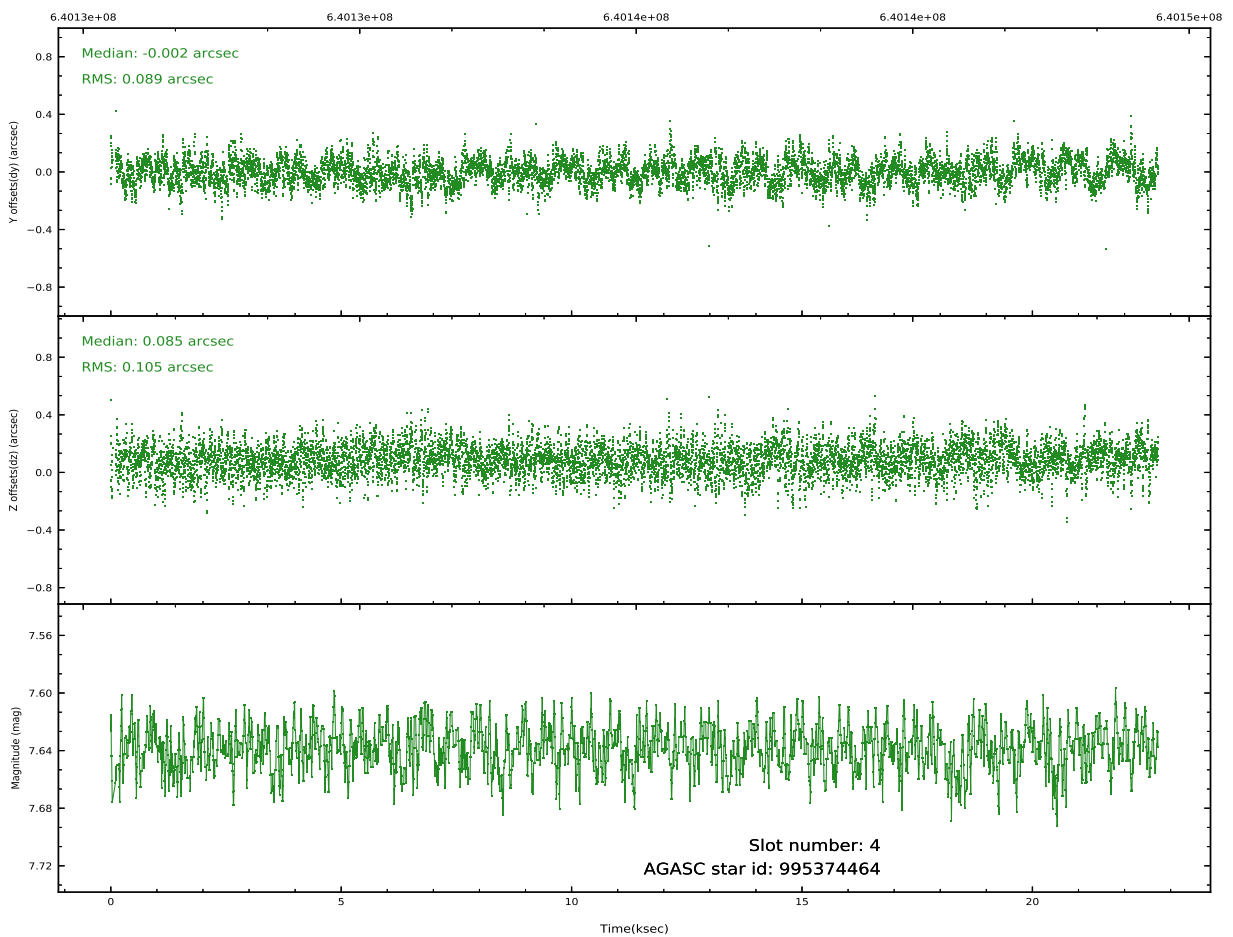
2.4.1 Slot 3



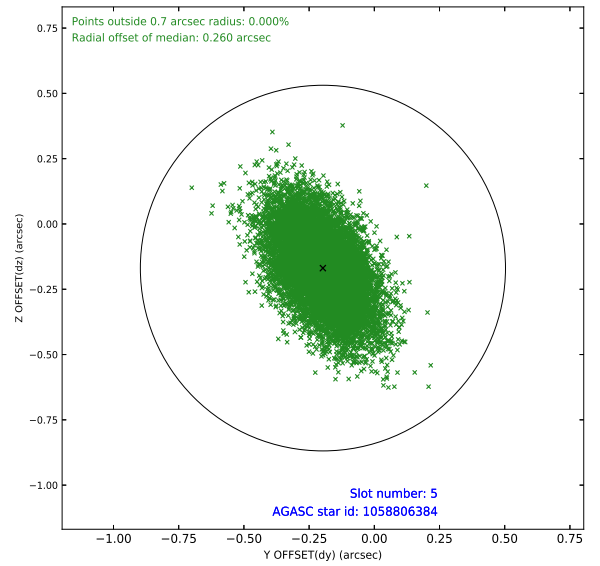
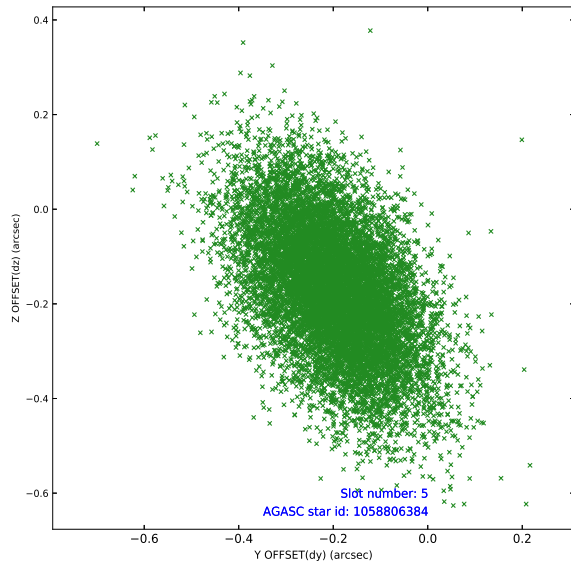
2.4.2 Slot 4



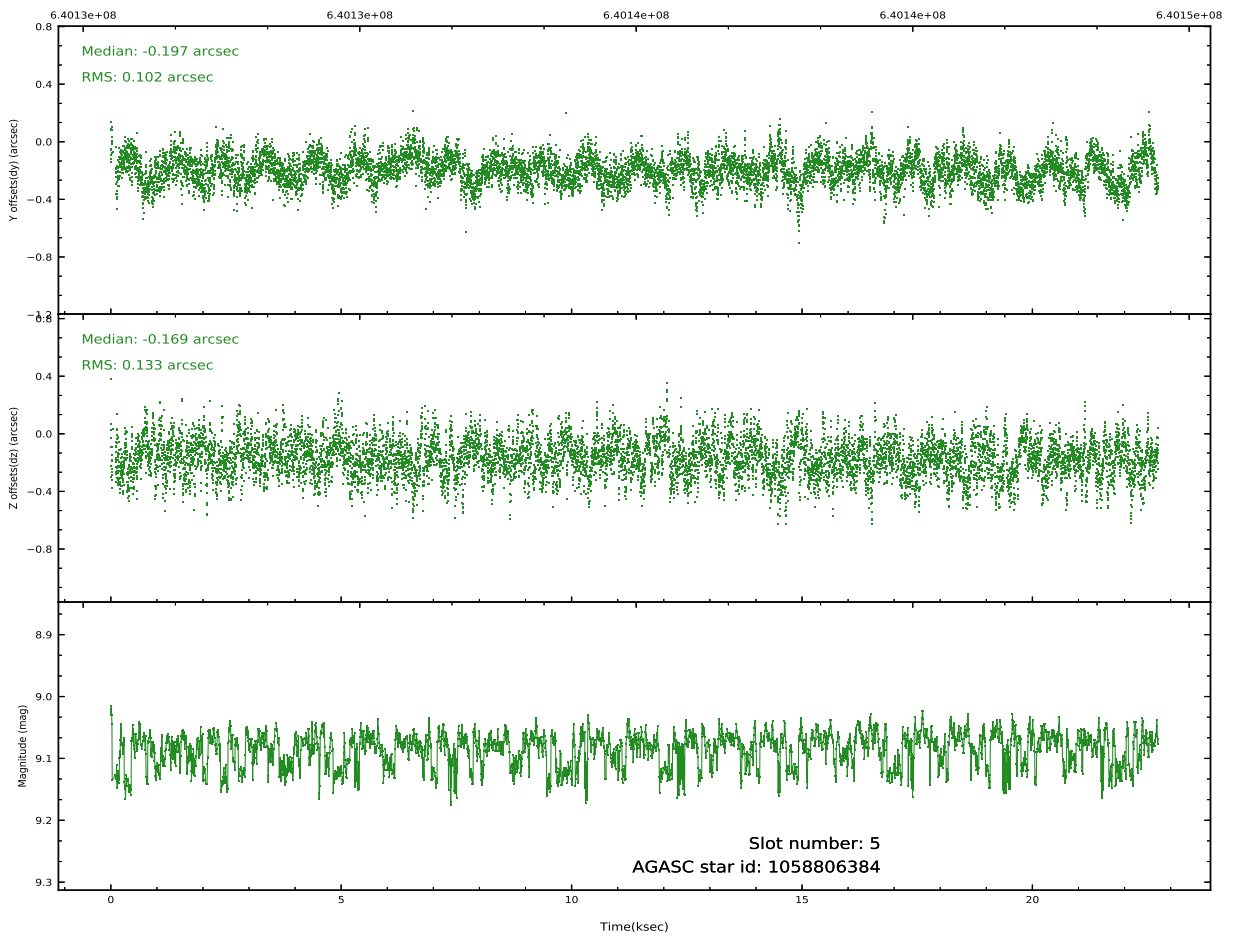
Time (s)



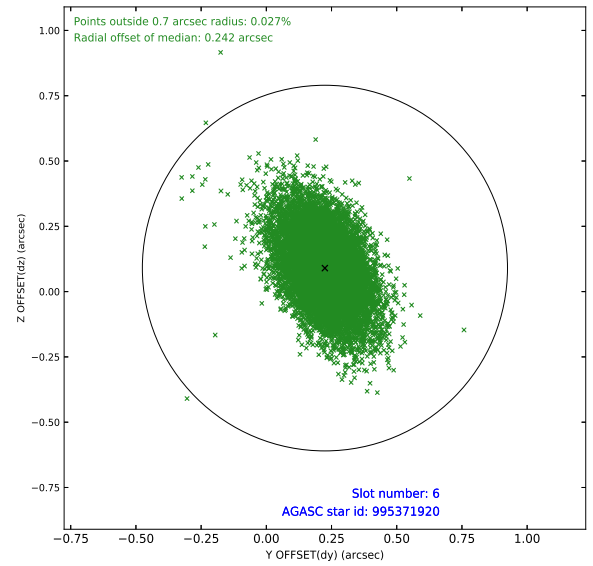
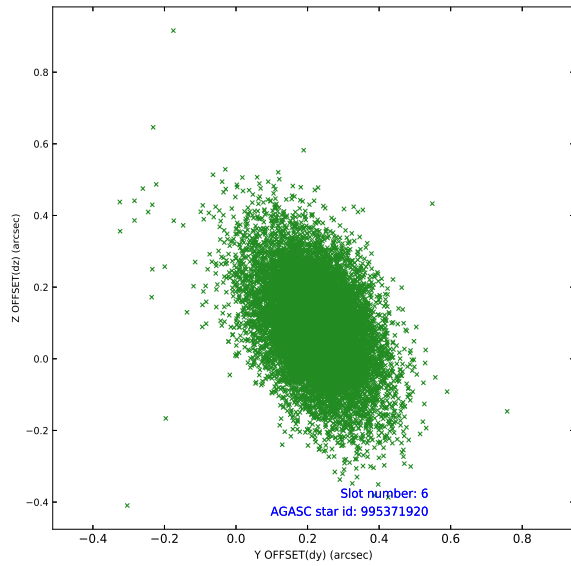
2.4.3 Slot 5



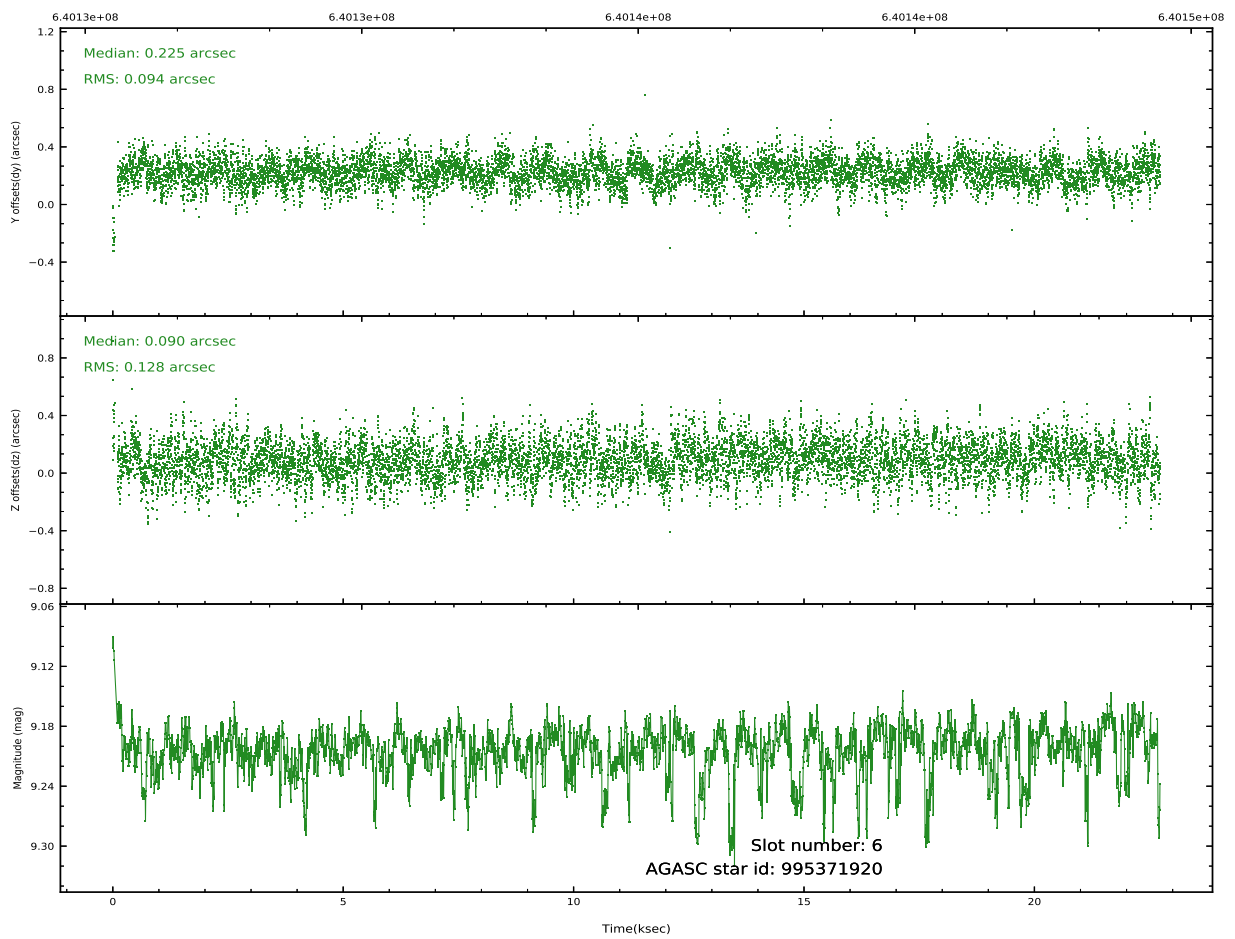
Time (s)



2.4.4 Slot 6

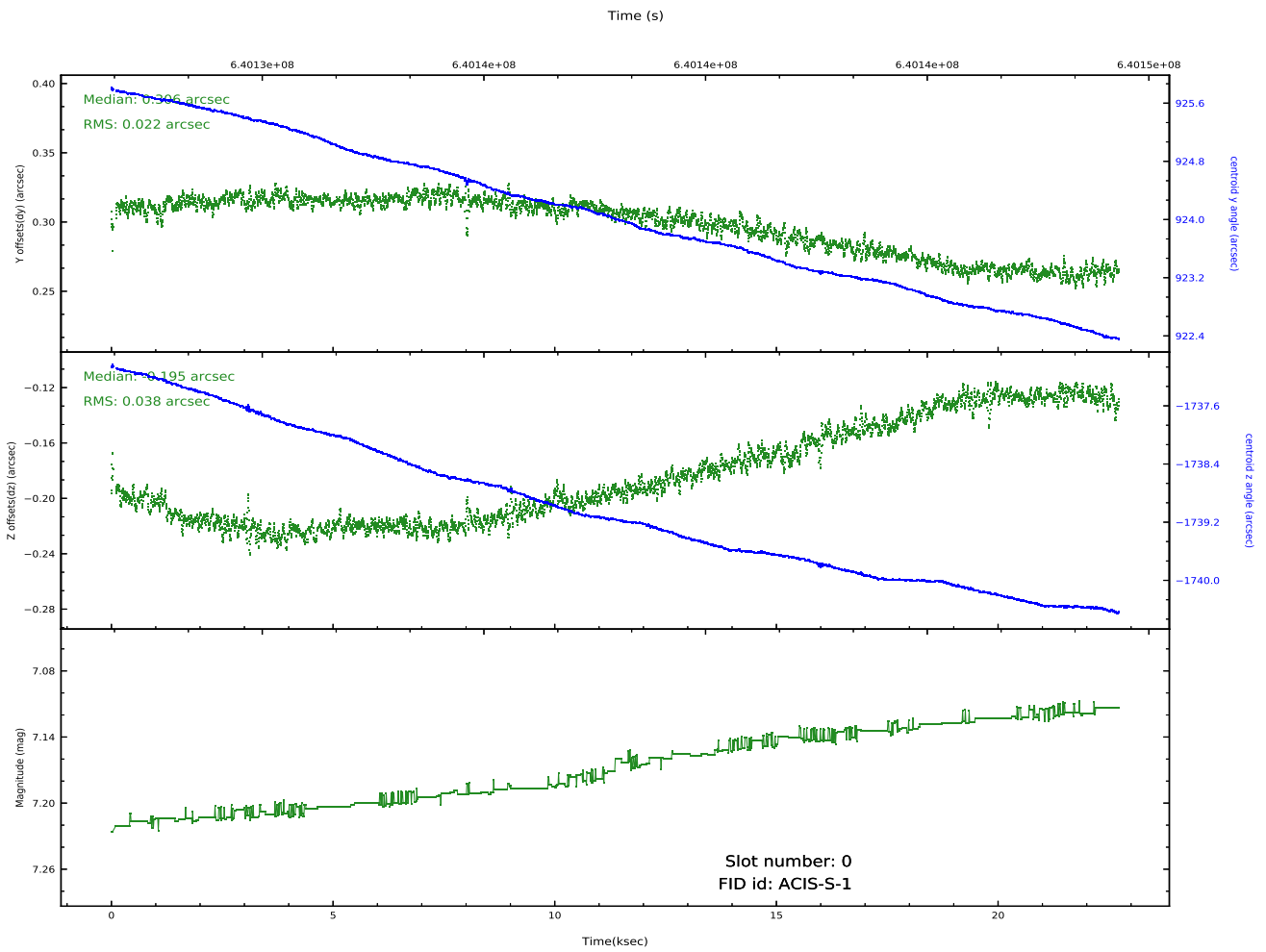
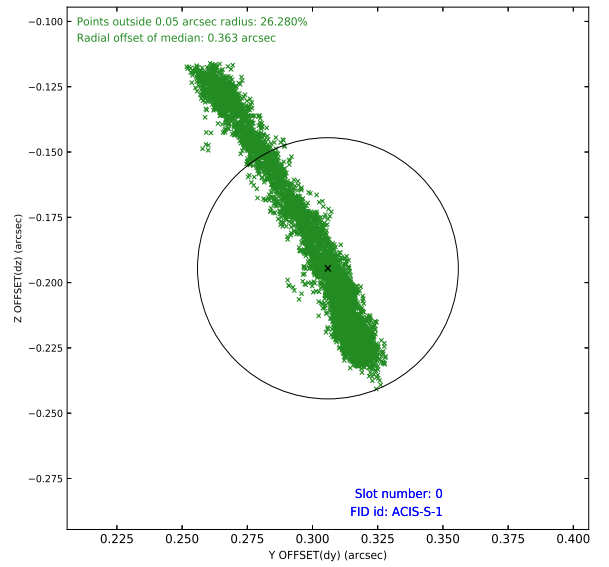
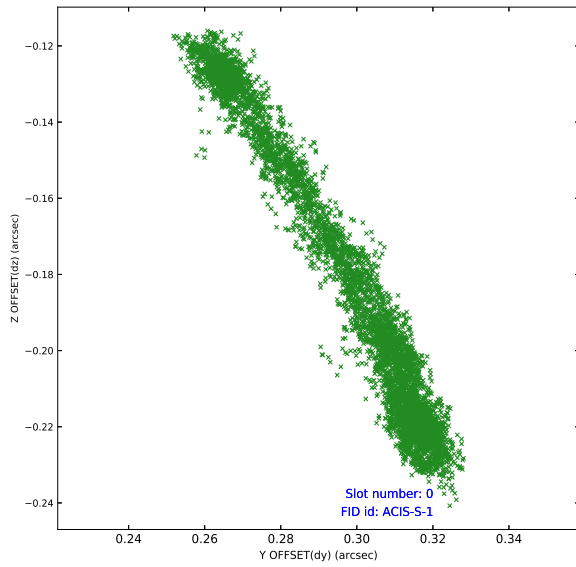


Time (s)

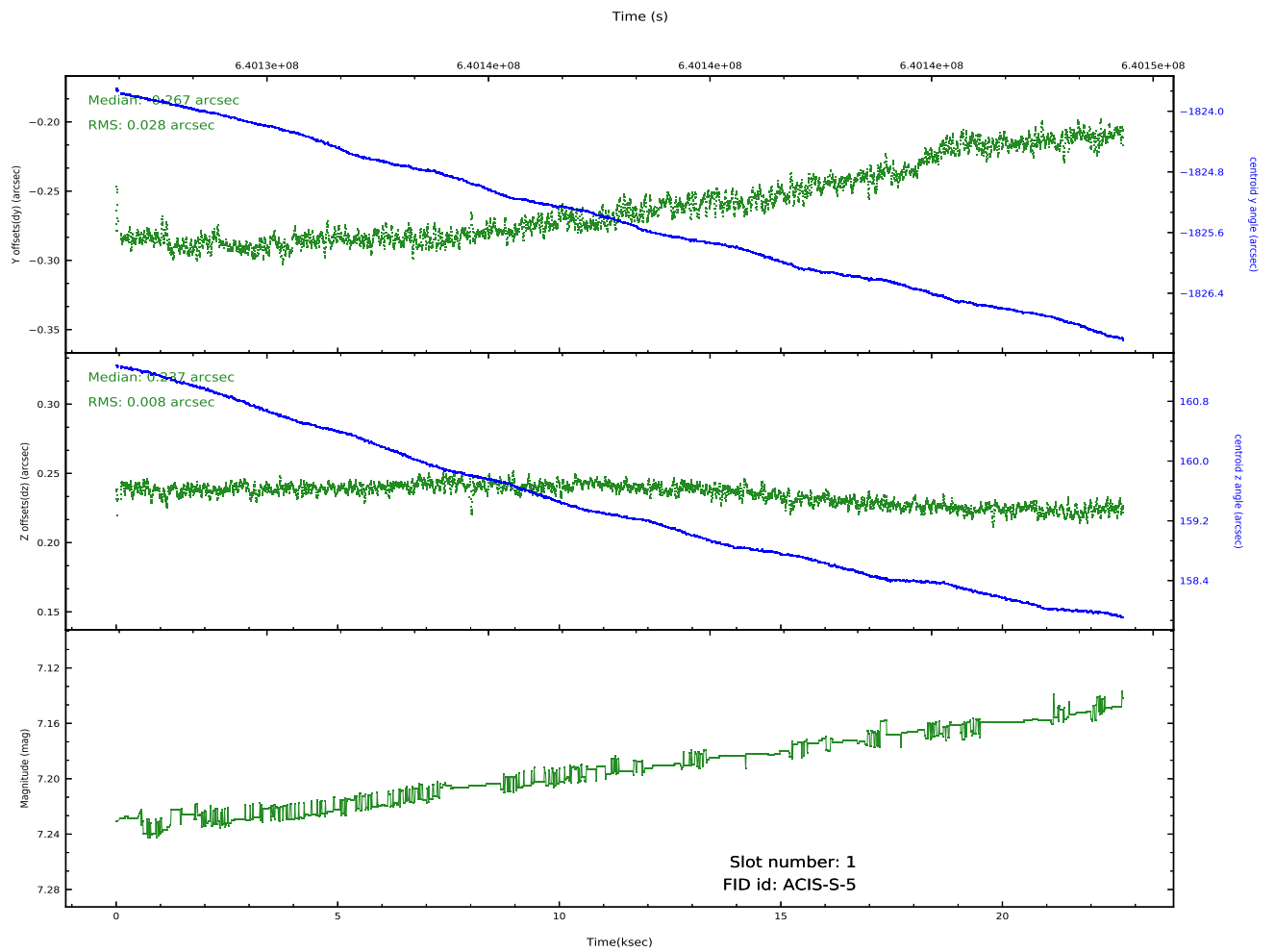
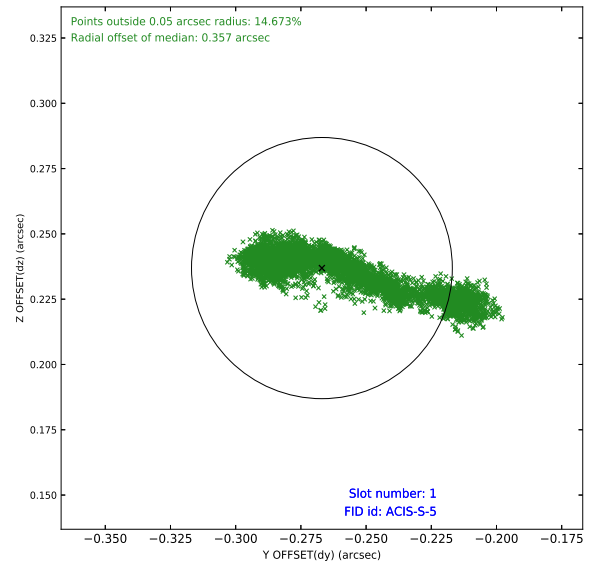
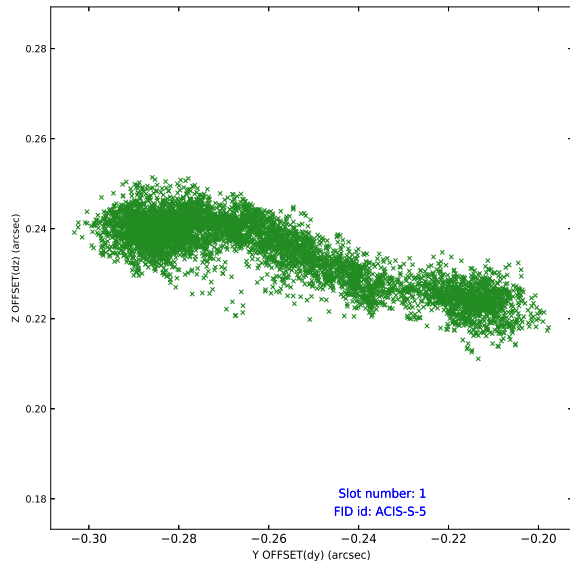


2.5 FID Slots

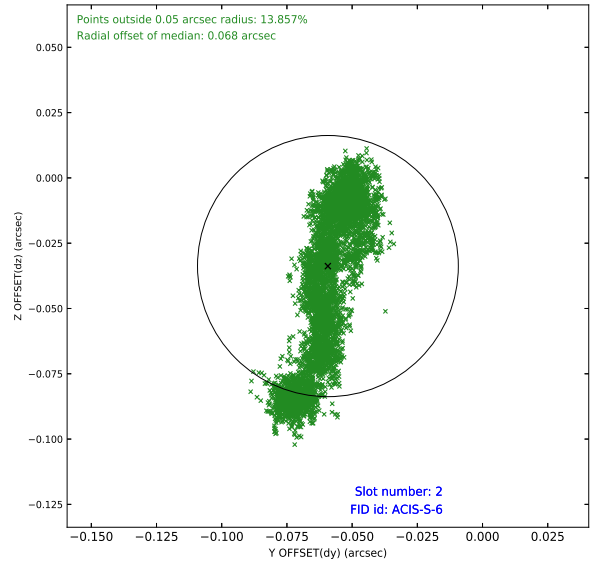
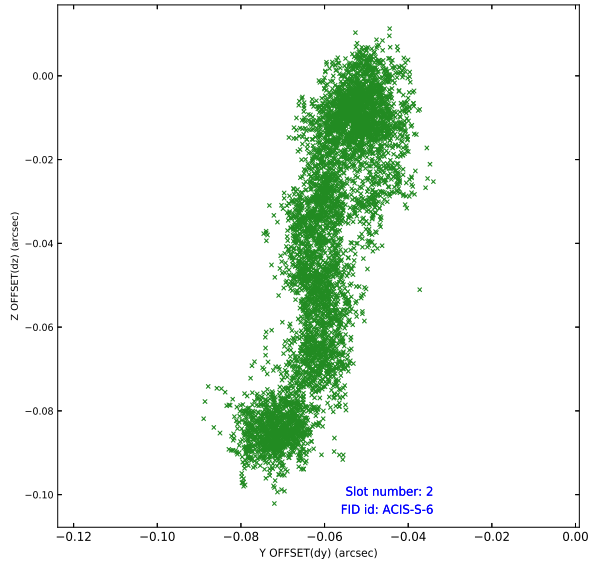
2.5.1 Slot 0



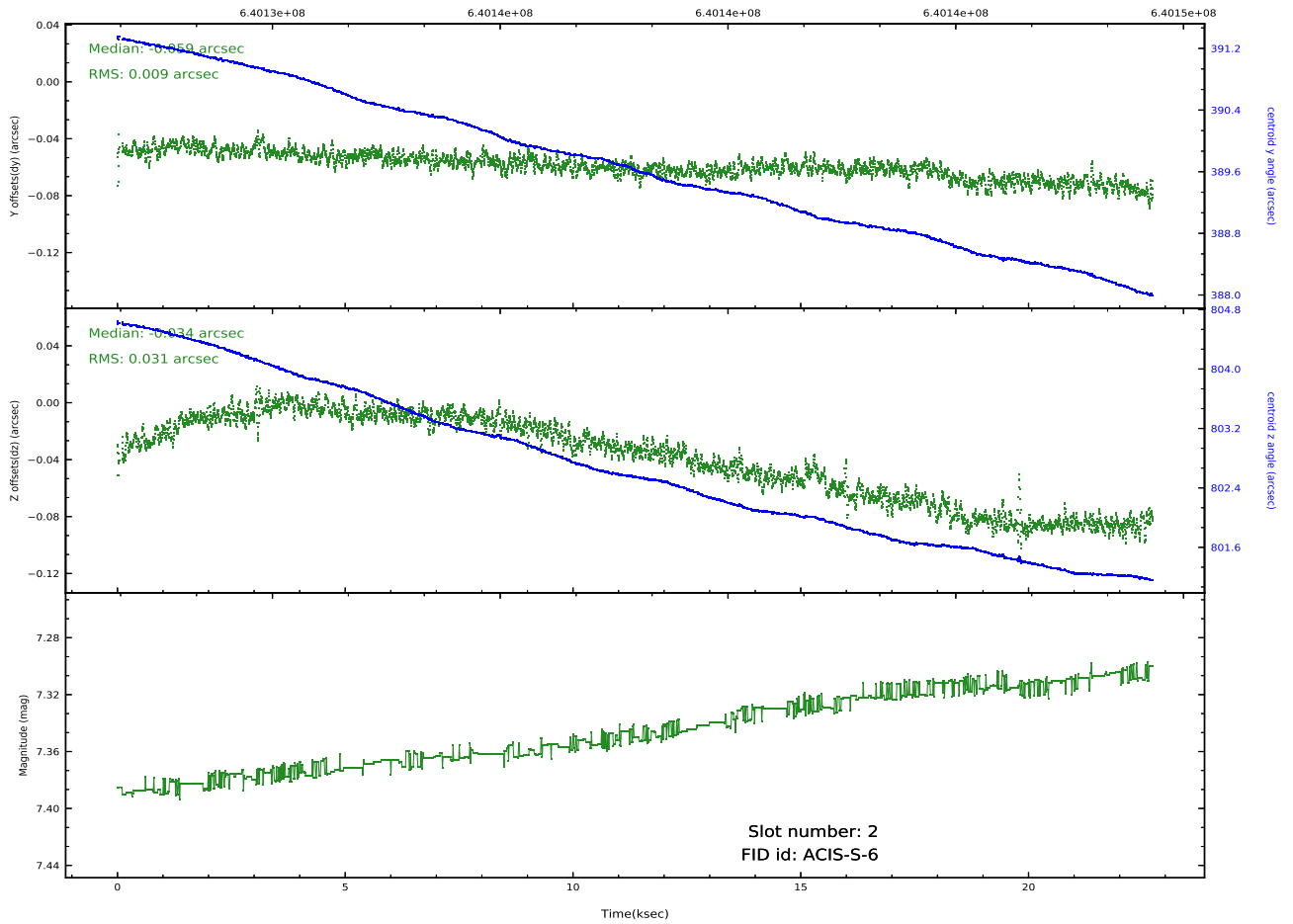
2.5.2 Slot 1



2.5.3 Slot 2



Time (s)



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2020.10.26
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	22.617600174069

A.2 Comments

The ACA has the capability to devote one or more of the eight image slots to "monitor" particular sky locations. This allows simultaneous optical photometry of one or more targets in the ACA field of view. These optical sources can be slightly fainter than the ACA guide star limit of $m_{ACA} = 10.2$ mag. The bright-end limit for monitor star photometry is $m_{ACA} = 6.2$ mag. However, since there are a fixed number of image slots, devoting a slot to photometry instead of tracking a guide star results in a degradation of the image reconstruction and celestial location accuracy (Section 5.4). Using one monitor slot represents a 15 - 25% increase in the aspect image reconstruction RMS diameter, depending on the particular guide star configuration. Two monitor slots would increase the diameter by about 50 - 60%, but this configuration is not operationally allowed under normal circumstances. The photometric accuracy which can be achieved depends primarily on the star magnitude, integration time, CCD dark current, CCD read noise, sky background, and the CCD dark current uncertainty.