

V&V Reference Report

L2 ASCDS Version : 10.9

Observation 23363 - L2 Version 1
Chandra X-Ray Center

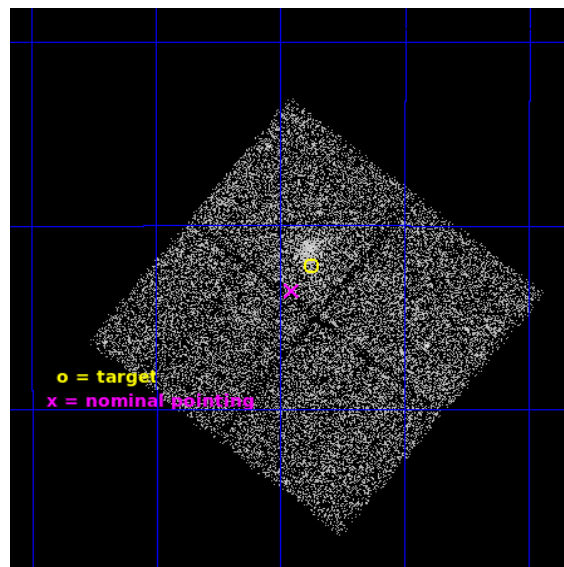
L2 Processing Date : Aug 14 2020

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.4.5	Slot 7	13
2.5	FID Slots	14
2.5.1	Slot 0	14
2.5.2	Slot 1	15
2.5.3	Slot 2	16
A	Summary	17
A.1	Status	17
A.2	Comments	17

1 Front

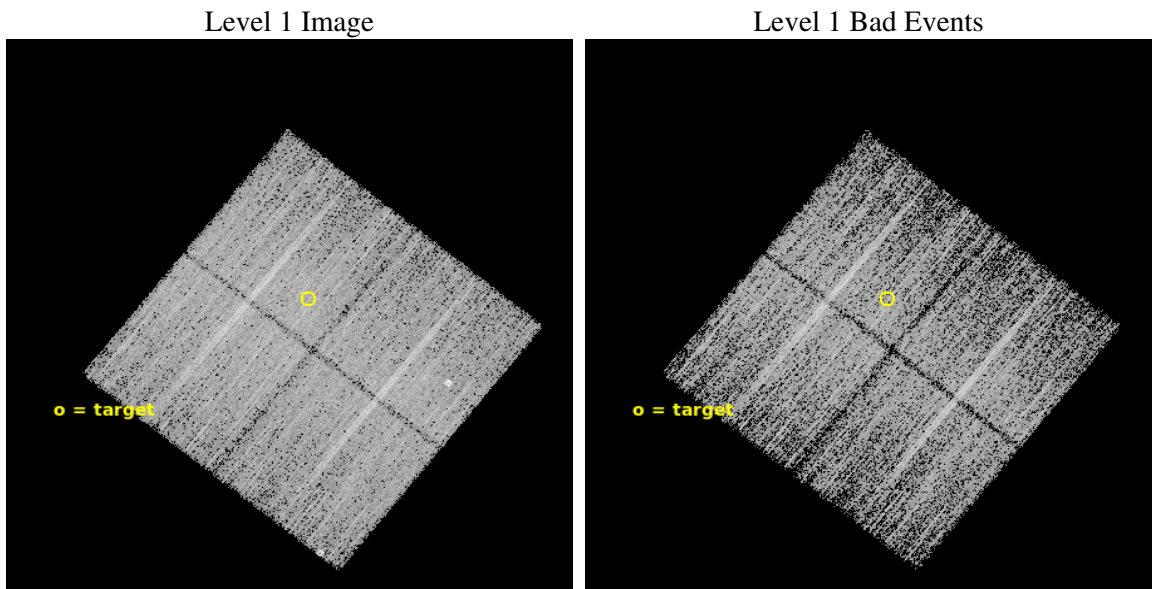
seq_num	801906	Sequence number
obs_id	23363	Observation id
title	The most X-ray luminous clusters of galaxies in the Universe	Propo
observer	Harald Ebeling	Principal investigator
object	MACSJ2020.8-3002	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	305.218994	Observer's specified target RA [deg]
dec_targ	-30.0369	Observer's specified target Dec [deg]
ra_nom	305.23843543085	Nominal RA [deg]
dec_nom	-30.059158361823	Nominal Dec [deg]
roll_nom	308.65349203202	Nominal Roll [deg]
revision	1	Processing version of data
ontime	9799.0589752197	Sum of GTIs [s]
livetime	9671.0270557462	Livetime [s]
ontime0	9802.1427983046	Sum of GTIs [s]
ontime1	9802.1838382483	Sum of GTIs [s]
ontime2	9802.2000755072	Sum of GTIs [s]
ontime3	9799.0589752197	Sum of GTIs [s]
l2events	28777	Number of level 2 events



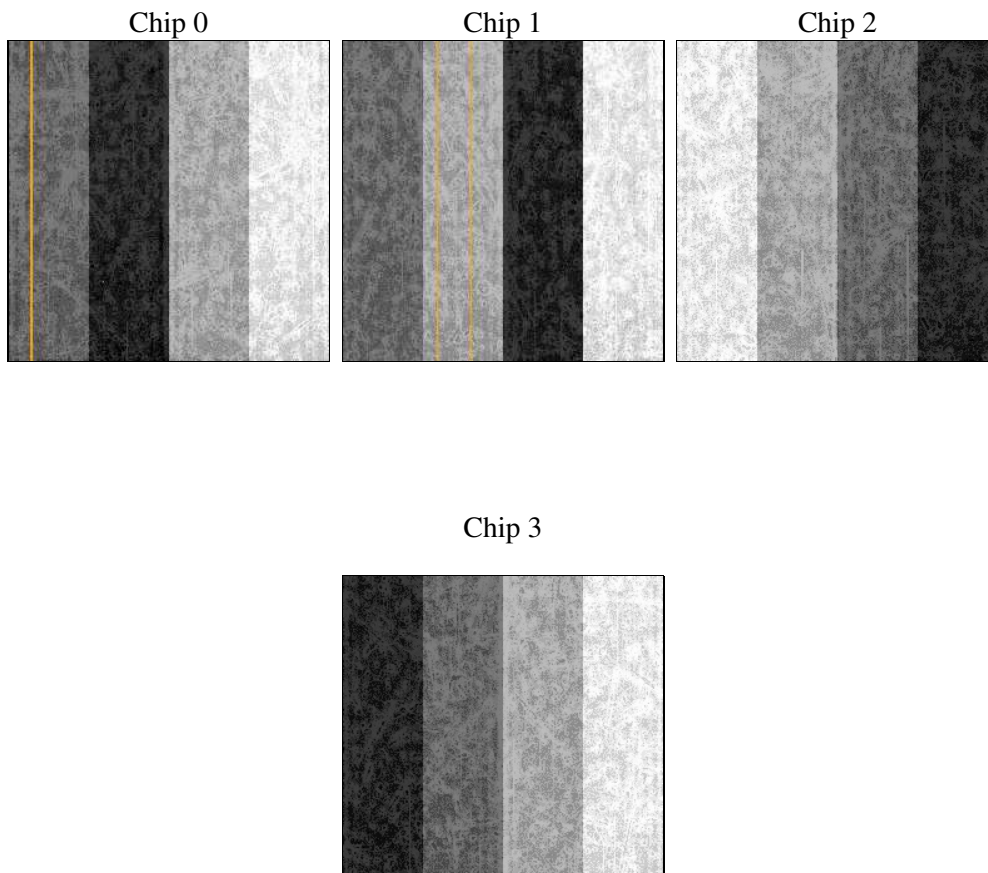
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	9725.312000	[s] Scheduled observation exposure time
ascdsver	10.9	Processing system revision	ontime	9799.0589752197	Sum of GTIs [s]
caldsver	4.9.2	 	ontime0	9802.1427983046	Sum of GTIs [s]
date	2020-08-14T12:48:44	Date and time of file creation	ontime1	9802.1838382483	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	9802.2000755072	Sum of GTIs [s]
			ontime3	9799.0589752197	Sum of GTIs [s]
			l1events	303268	Number of level 1 events

2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	70171	73865	82148	77084
rejected events	61443	64112	74158	68458
rejected %	87%	86%	90%	88%

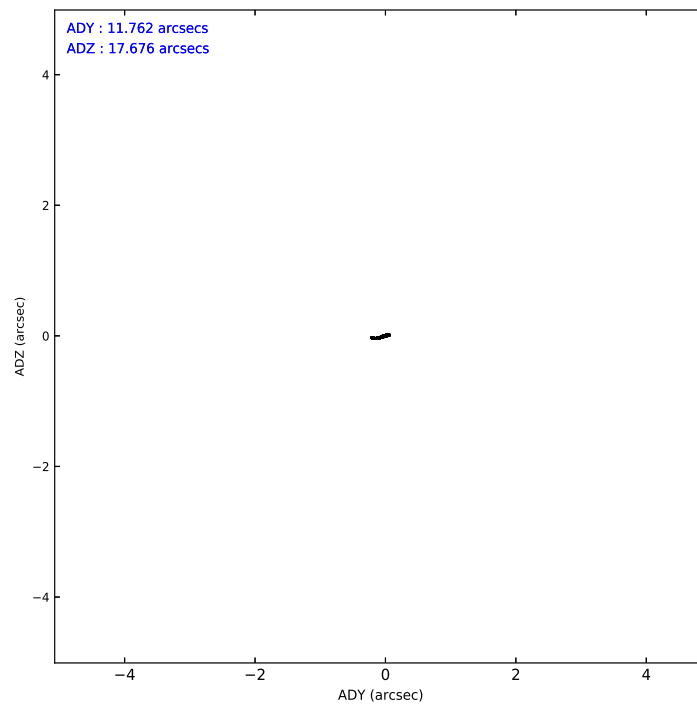
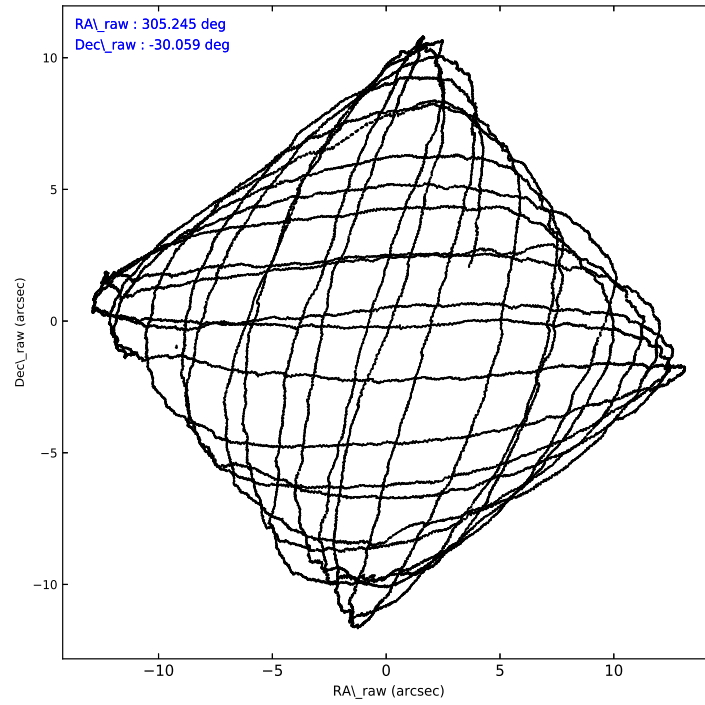
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	3029	3301	2762	3328
	4%	4%	3%	4%
grade 1 events	37	45	50	35
	0%	0%	0%	0%
grade 2 events	2194	2459	1947	1909
	3%	3%	2%	2%
grade 3 events	787	781	729	799
	1%	1%	0%	1%
grade 4 events	705	772	820	741
	1%	1%	0%	0%
grade 5 events	2955	3005	2918	3482
	4%	4%	3%	4%
grade 6 events	2016	2441	1734	1852
	2%	3%	2%	2%
grade 7 events	58448	61061	71188	64938
	83%	82%	86%	84%

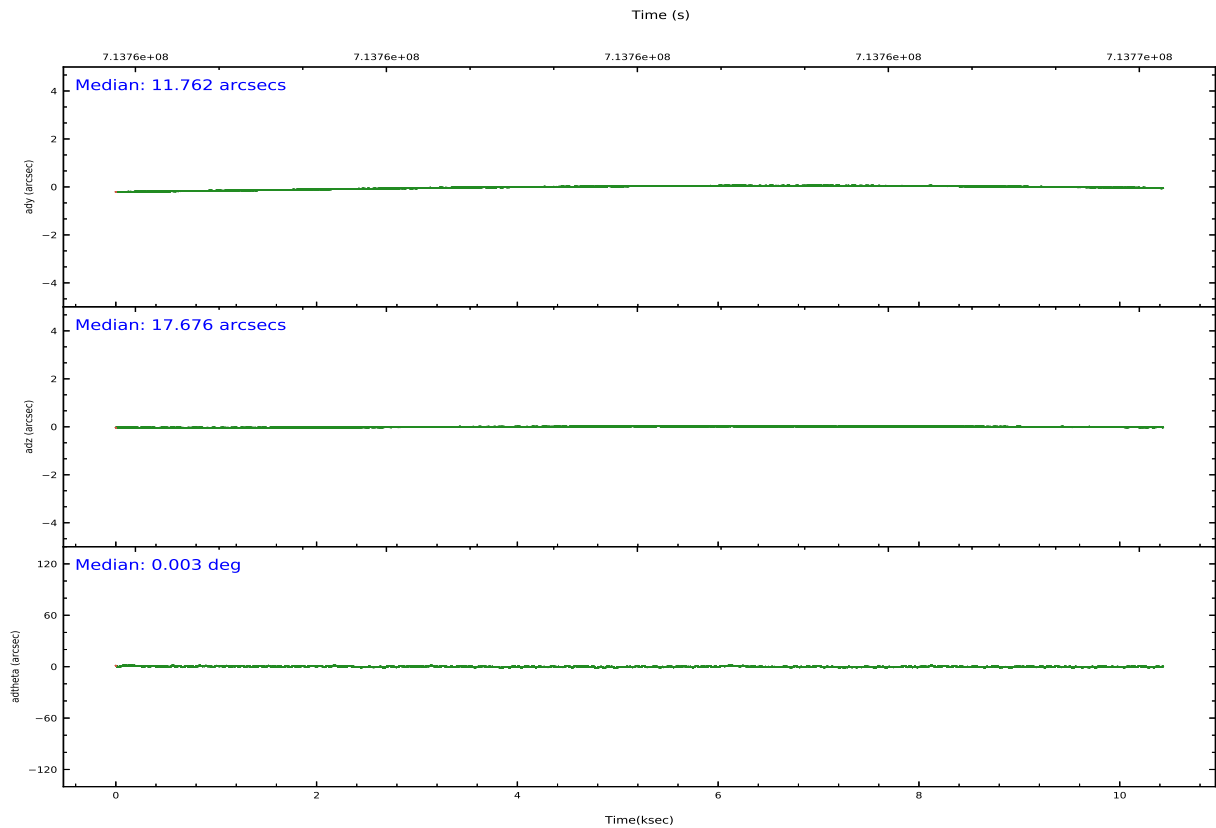
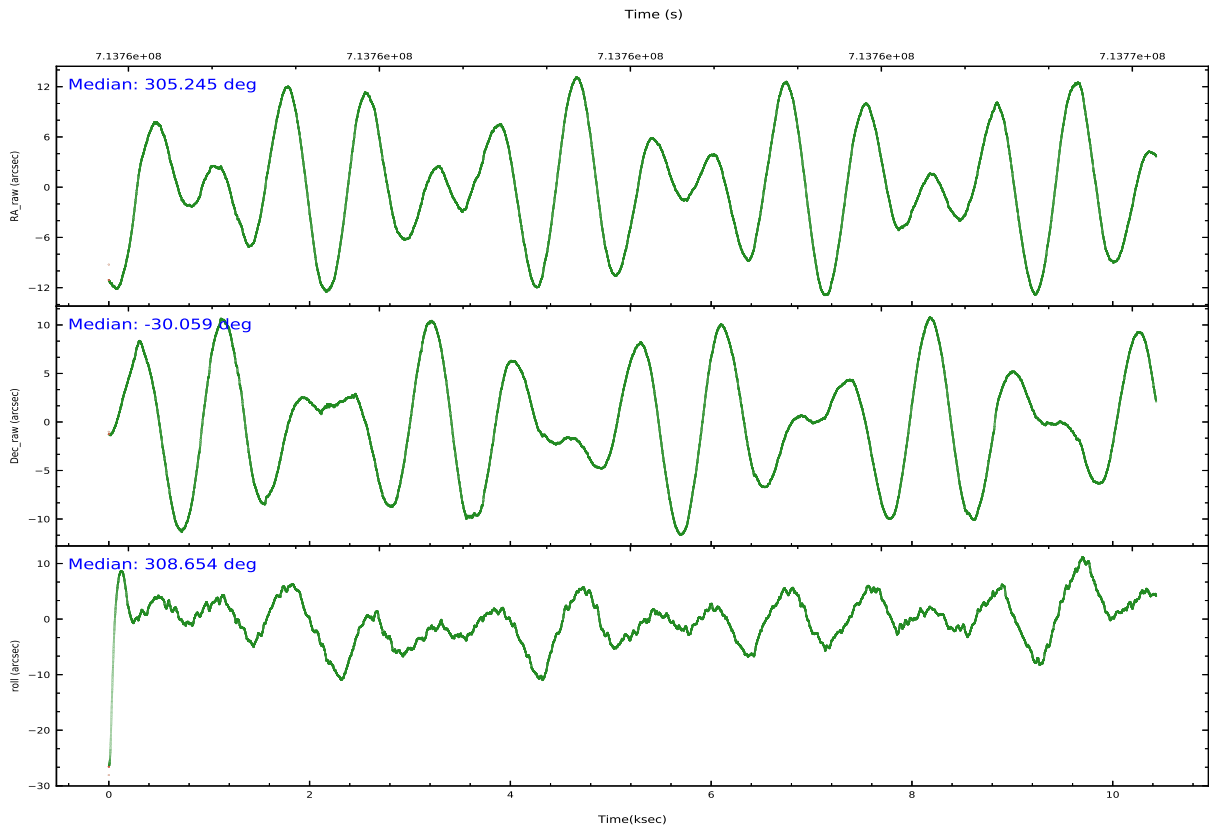
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-0123	ACIS-0123
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	305.215718	305.23843543085
[deg] Pointing Dec	-30.048798	-30.059158361823
[deg] Pointing Roll	308.426771	308.65349203202
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-229.442463	-229.4438428438578
[mm] SIM translation stage offset	-4.15	-4.148610159071865
[s] Observation start time (MET)	713758012.184000	713756873.52689
Observation start date	2020-08-14T02:05:43	2020-08-14T01:47:53
[s] Observation end time (MET)	713767737.184000	713768031.1650701
Observation end date	2020-08-14T04:47:48	2020-08-14T04:53:51
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	3.1

2.3 Aspect





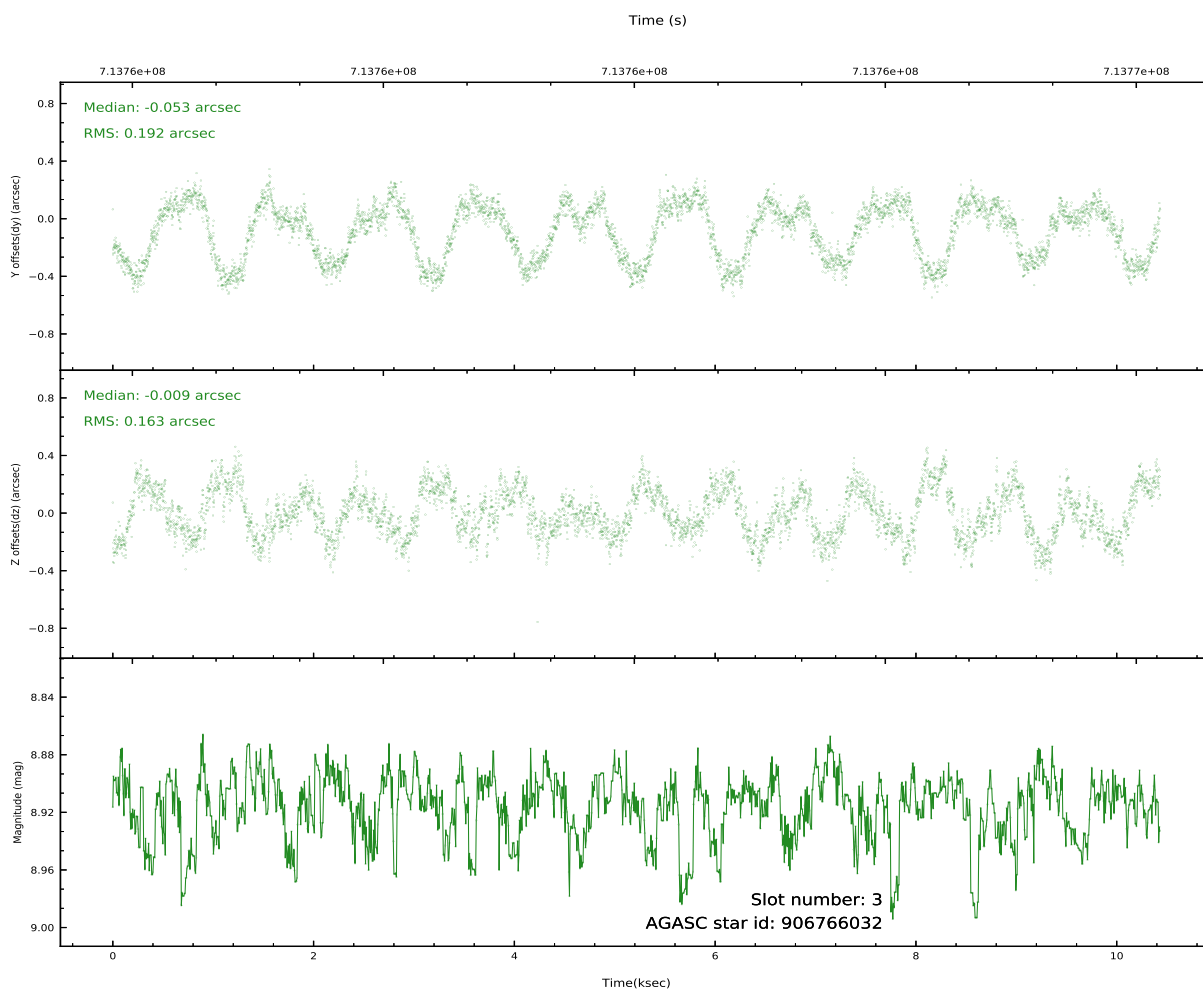
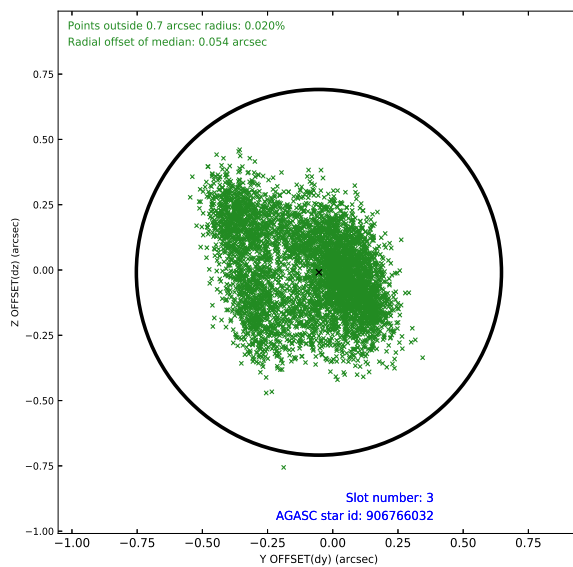
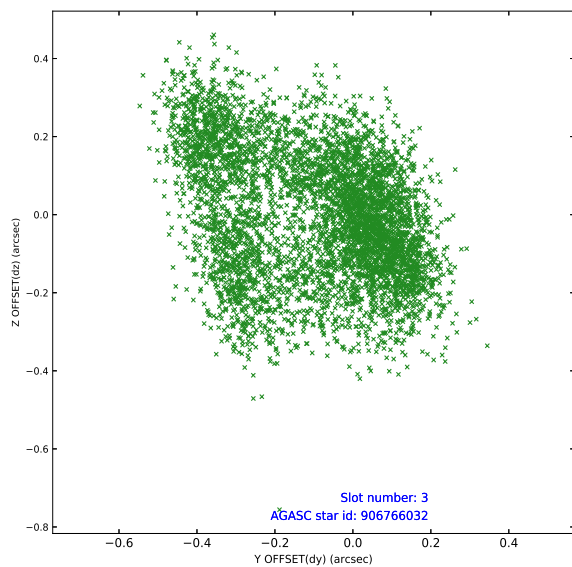
Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.28	2544	1.000	0.345	-0.209	0.009	0.016	0.000000	0.000000	927.99	-926
1	FID		ACIS-I-5	7.26	2545	1.000	-0.387	0.296	0.010	0.016	0.000000	0.000000	-1820.40	971
2	FID		ACIS-I-6	7.30	2545	1.000	-0.049	-0.016	0.009	0.014	0.000000	0.000000	392.82	1615
3	GUIDE	used	906766032	8.91	5084	1.000	-0.053	-0.009	0.276	0.425	305.028809	-29.683749	-1391.85	358
4	GUIDE	used	906769760	8.09	5084	1.000	-0.186	-0.025	0.140	0.239	304.848091	-29.623930	-1911.66	48
5	GUIDE	used	975444432	8.25	5087	1.000	0.125	0.055	0.127	0.203	304.829718	-30.209539	-290.87	-1301
6	GUIDE	used	975450856	8.96	5064	1.000	0.092	0.047	0.152	0.255	305.478399	-30.379751	1441.67	-102
7	GUIDE	used	977154120	8.74	5083	1.000	0.081	-0.075	0.159	0.246	306.178291	-30.255141	2453.29	1875

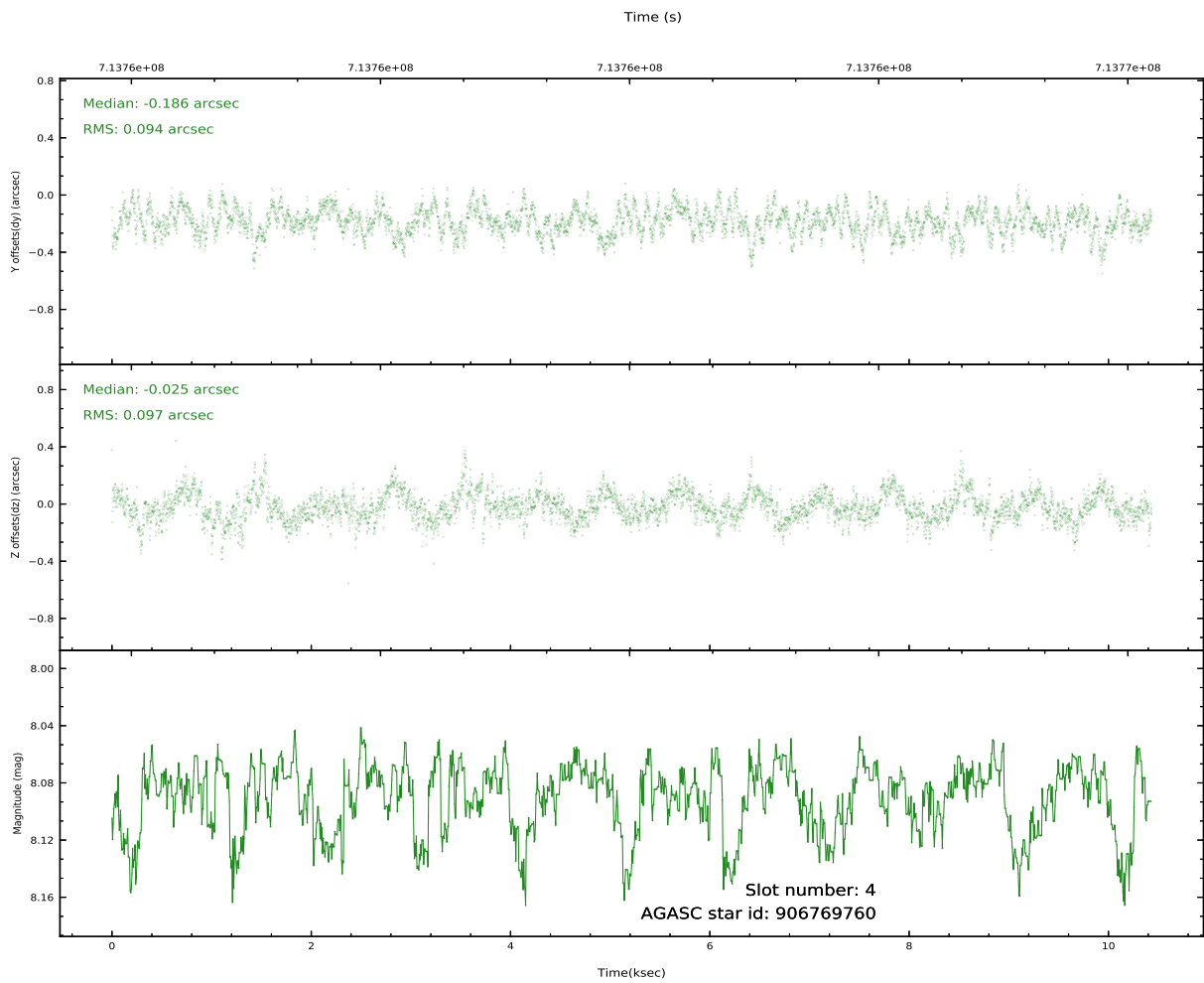
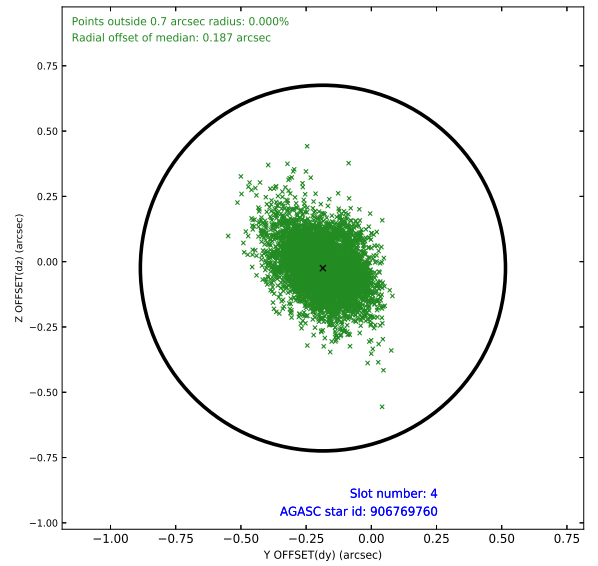
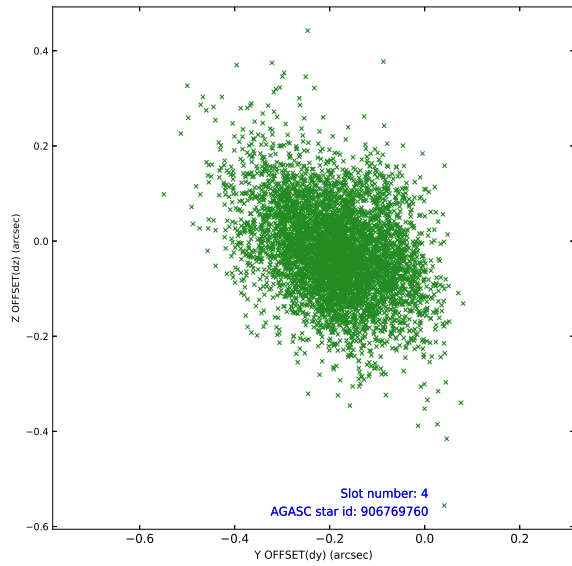
∞

2.4 Star Slots

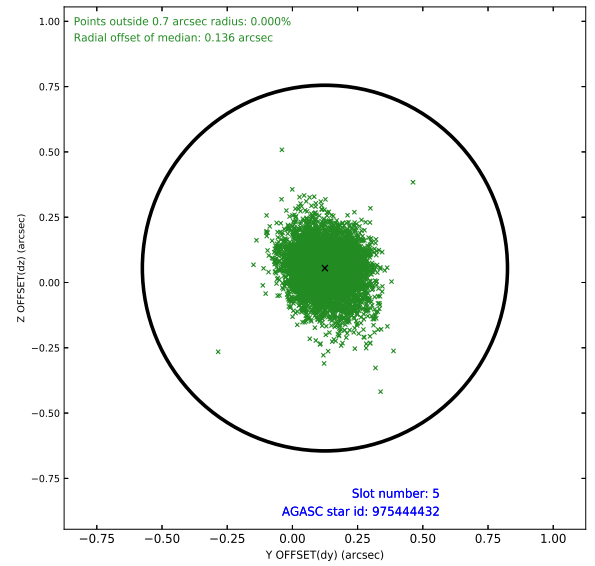
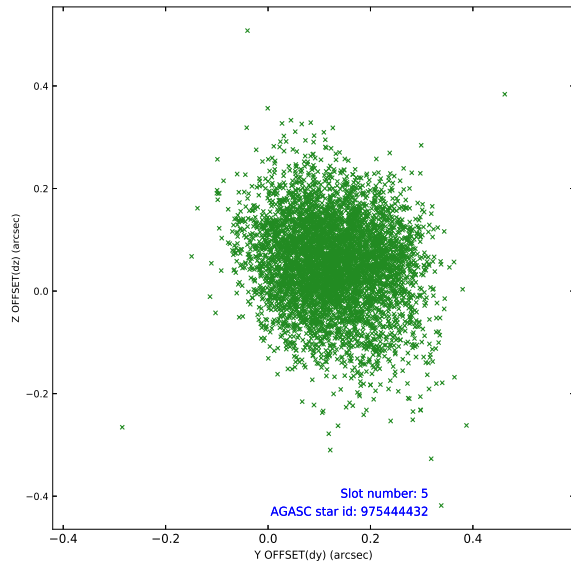
2.4.1 Slot 3



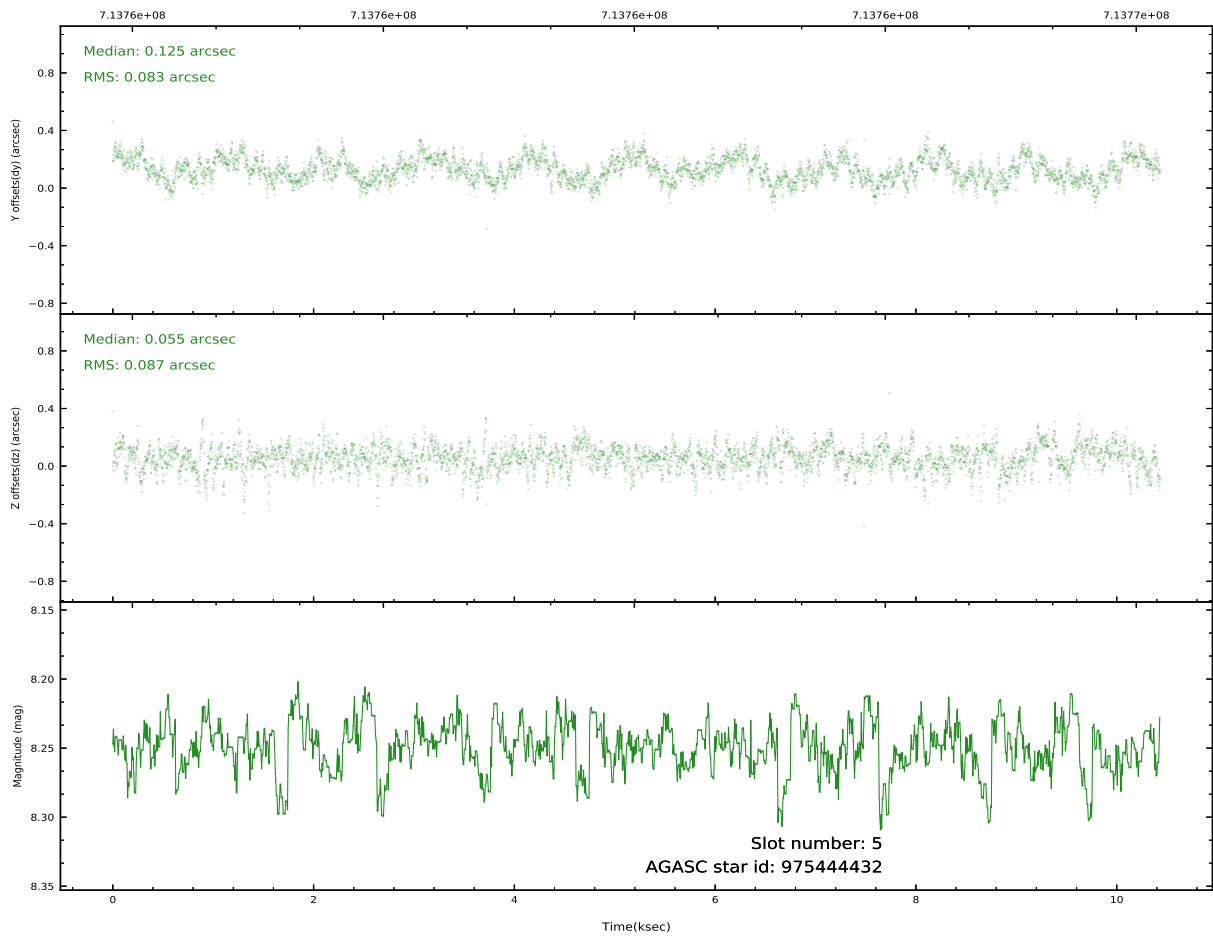
2.4.2 Slot 4



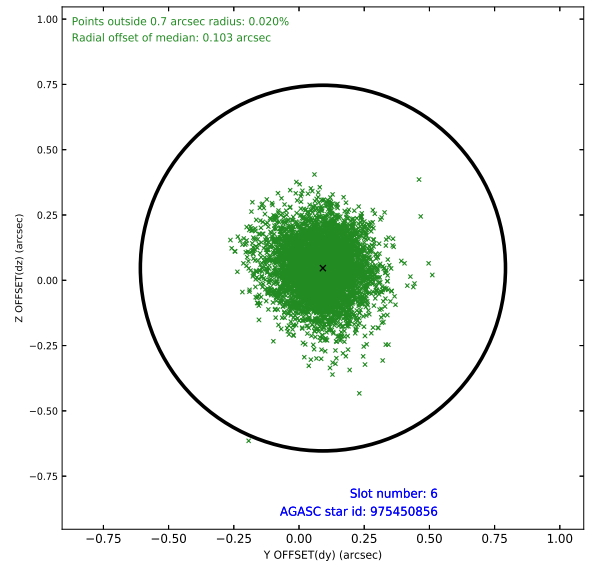
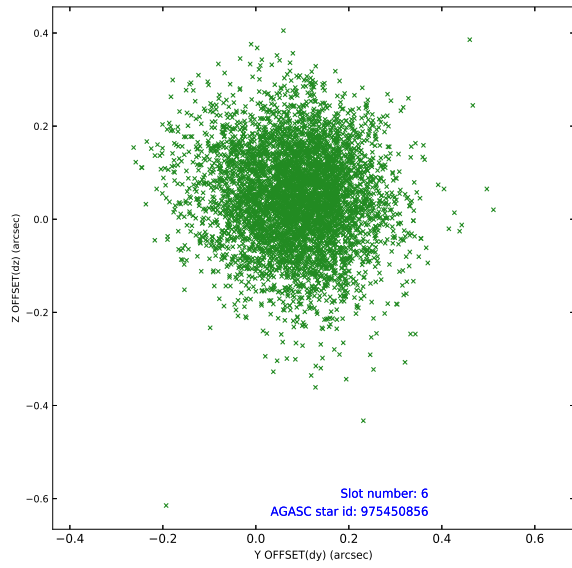
2.4.3 Slot 5



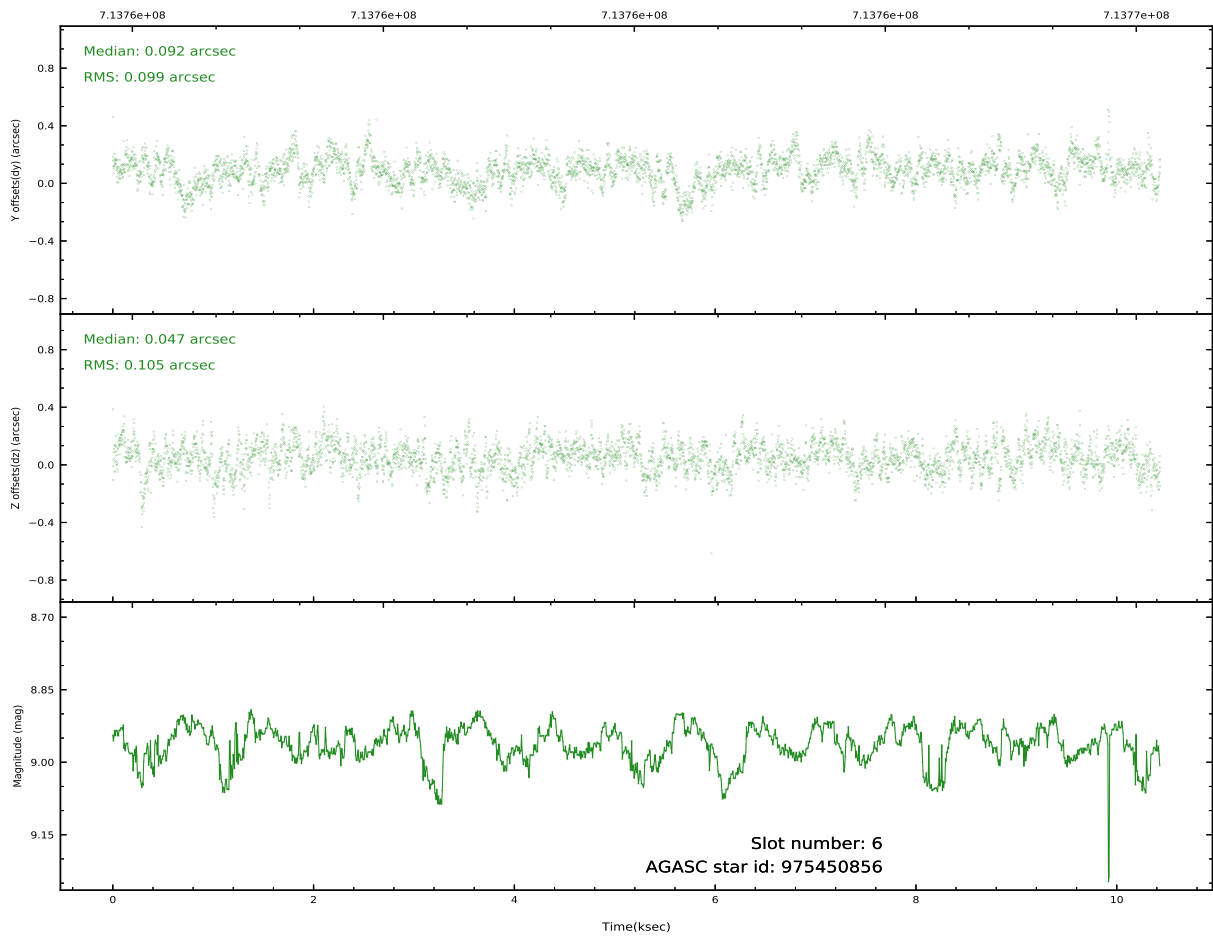
Time (s)



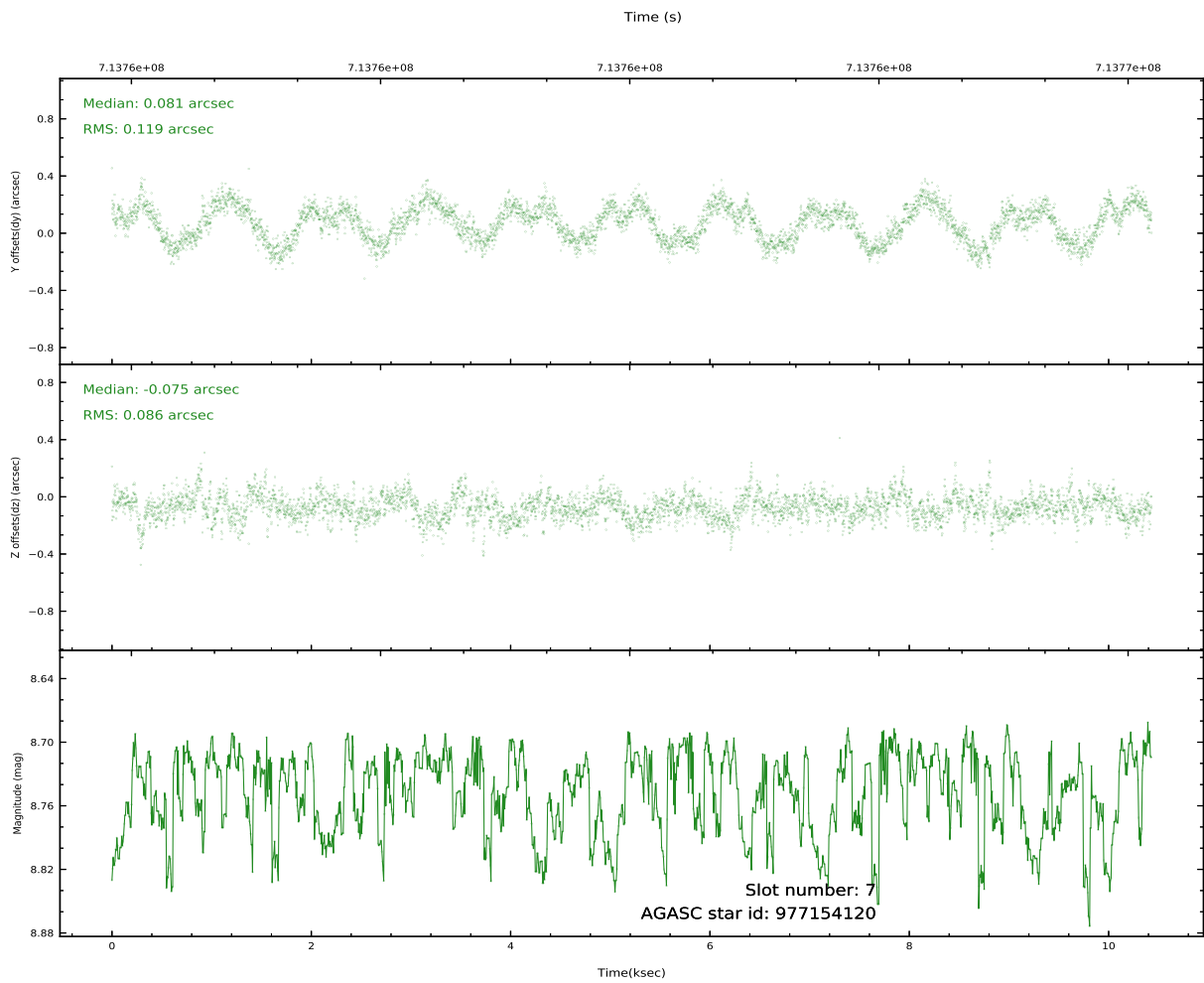
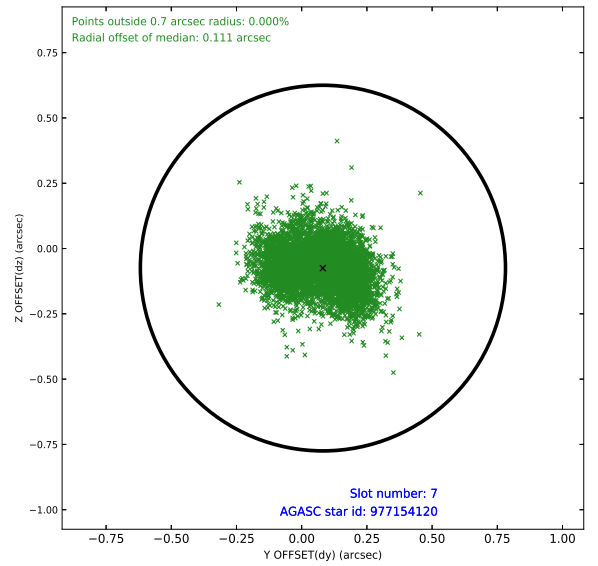
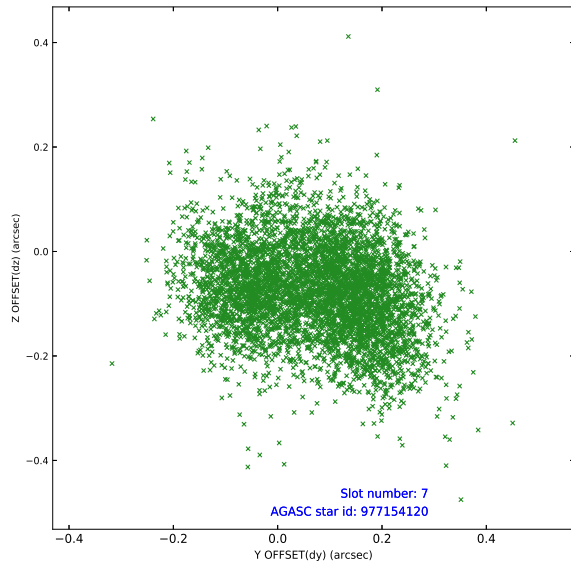
2.4.4 Slot 6



Time (s)

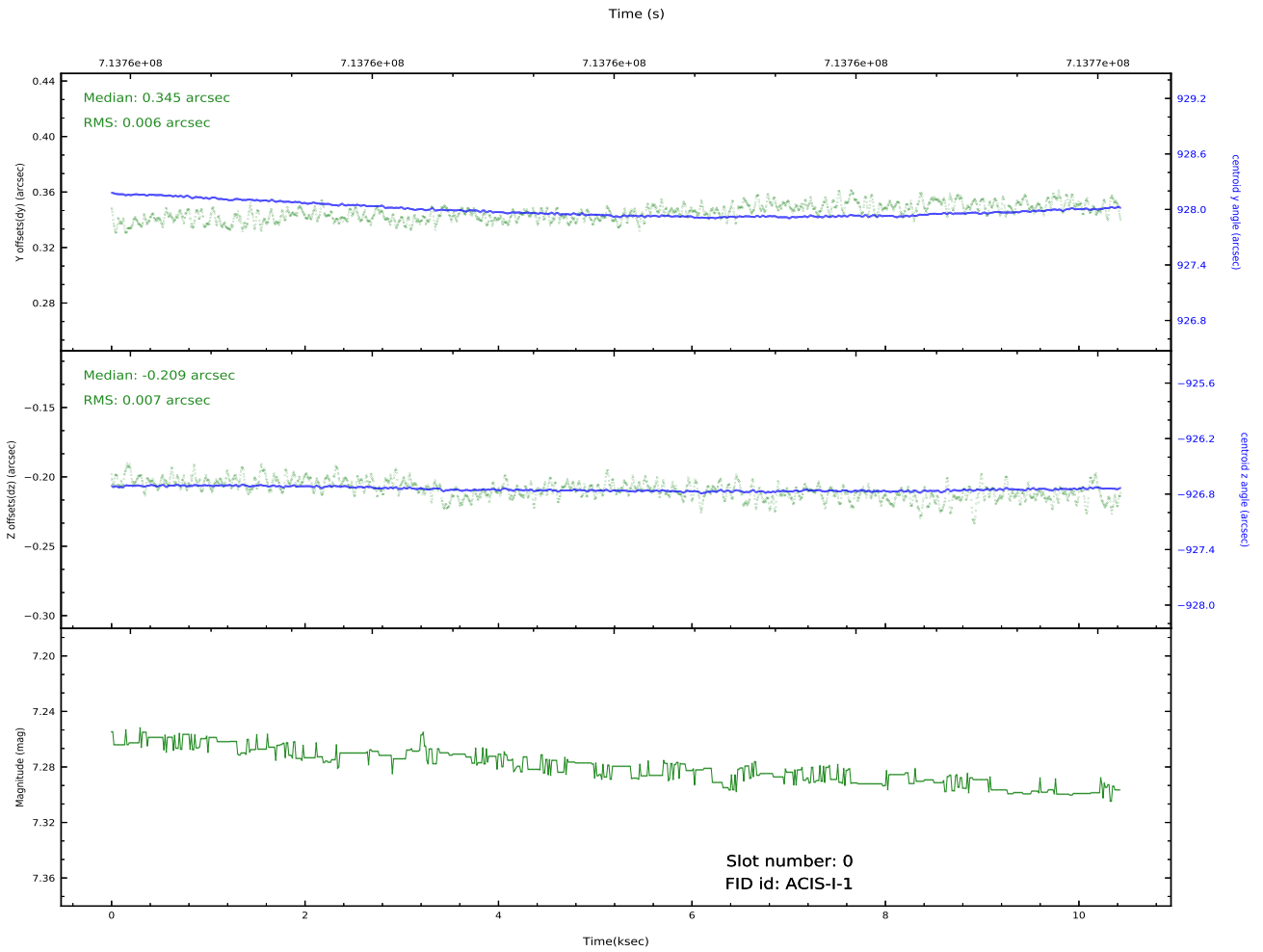
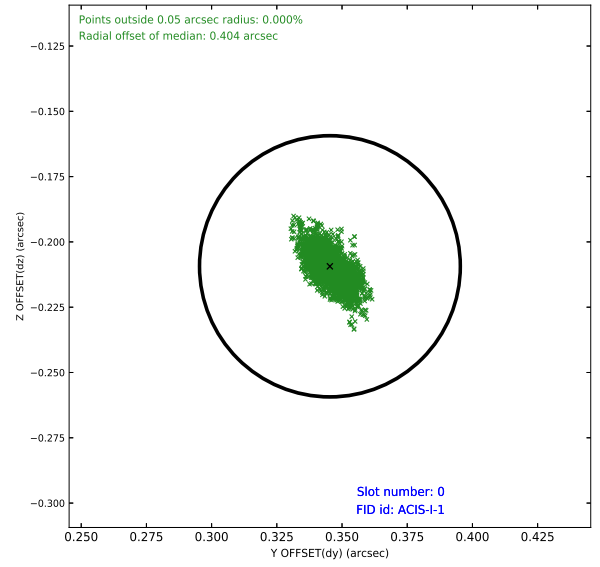
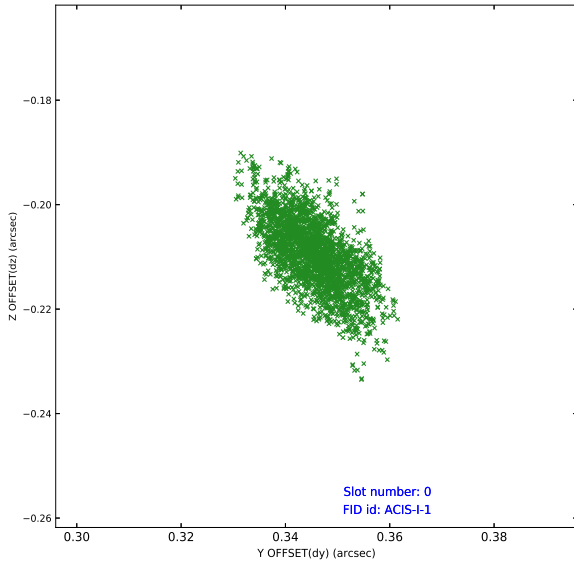


2.4.5 Slot 7

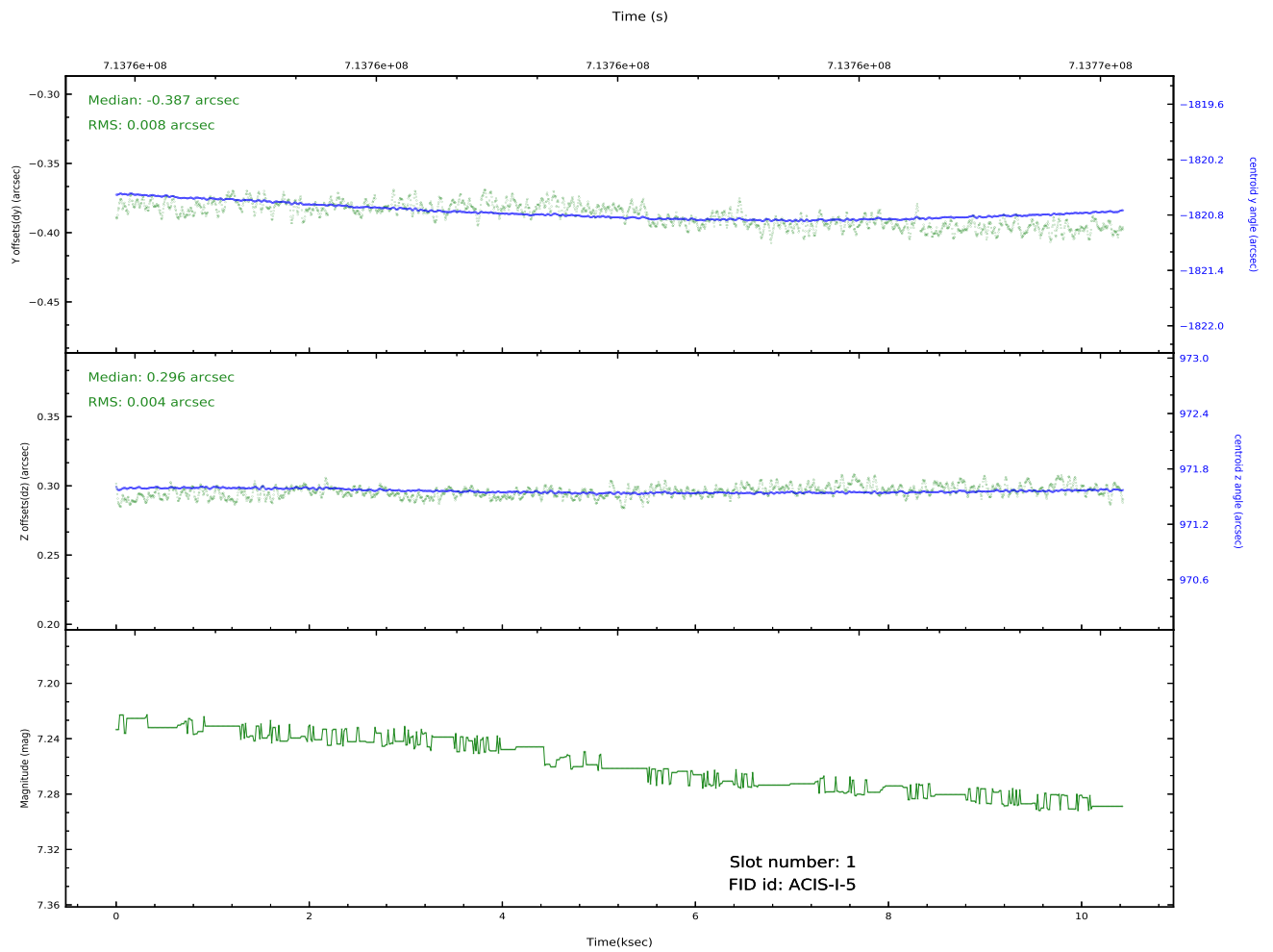
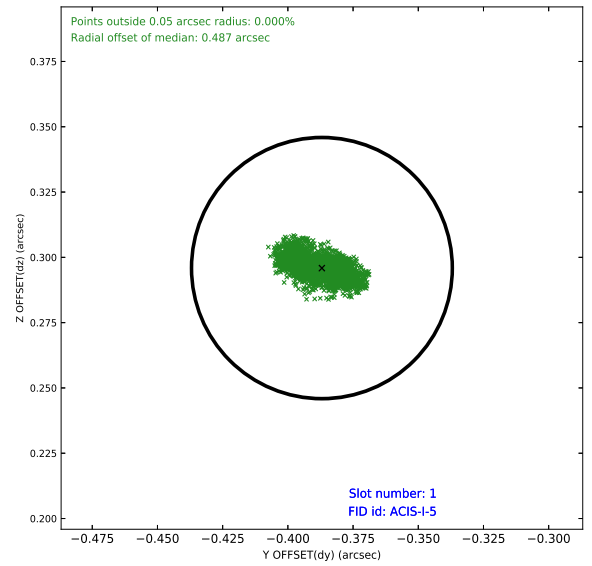
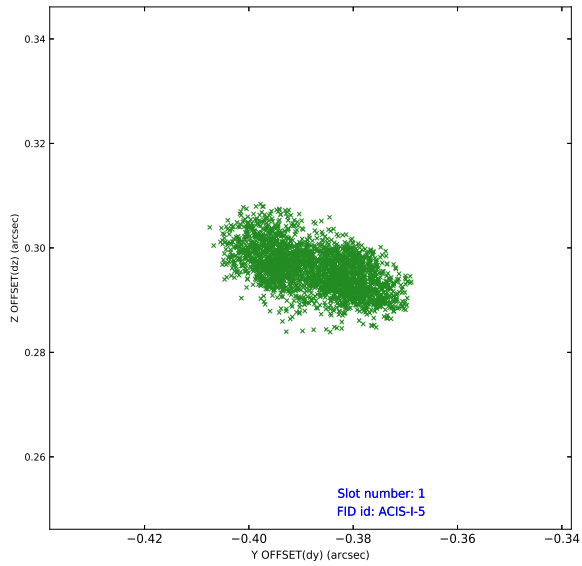


2.5 FID Slots

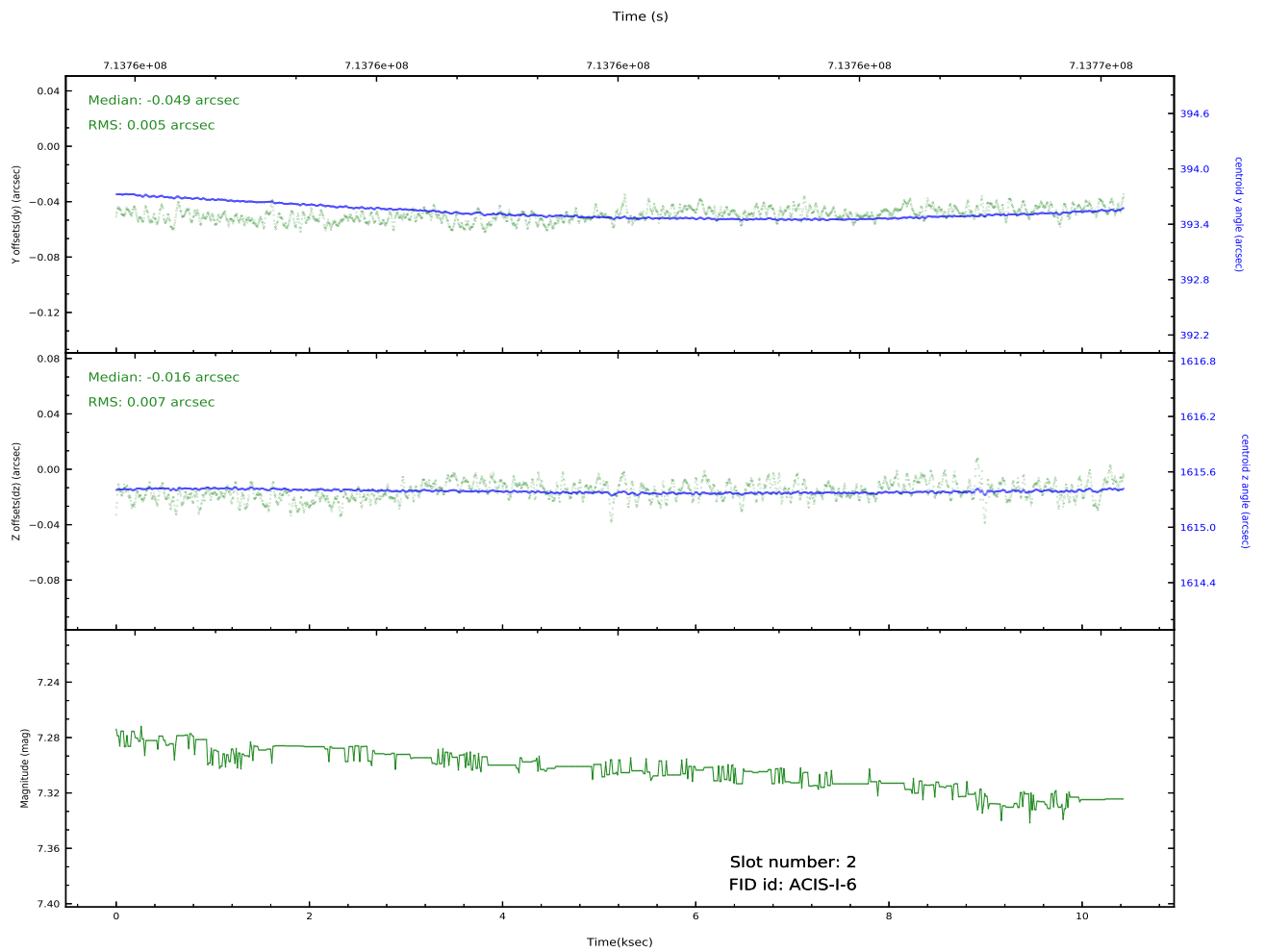
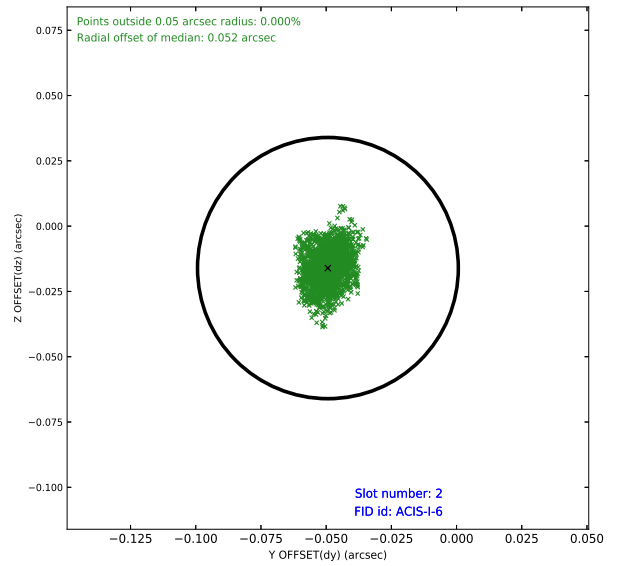
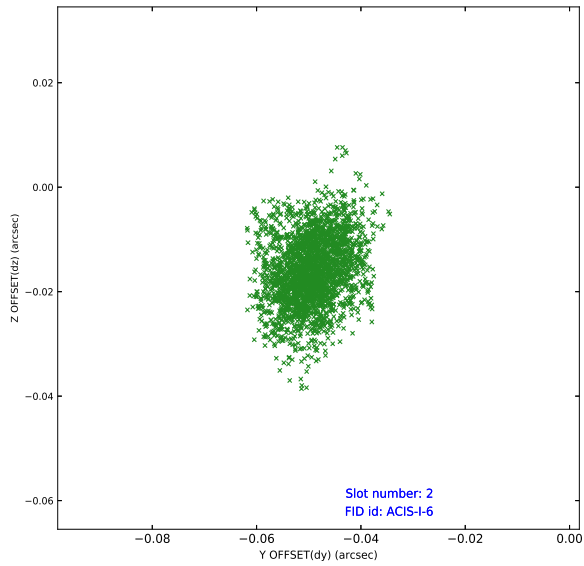
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2020.08.14
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.7990589752197

A.2 Comments

Comments for Obi 0

Comment for FP temp violation

=====

The focal plane temperature during the interval 713766599.78 - 713767728.18 (MET s) of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -112.0 C for ACIS-I).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/A_CIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
- 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
- 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
- 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
- 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.

In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.

=====