

V&V Reference Report

L2 ASCDS Version : 10.9.2

Observation 21135 - L2 Version 3
Chandra X-Ray Center

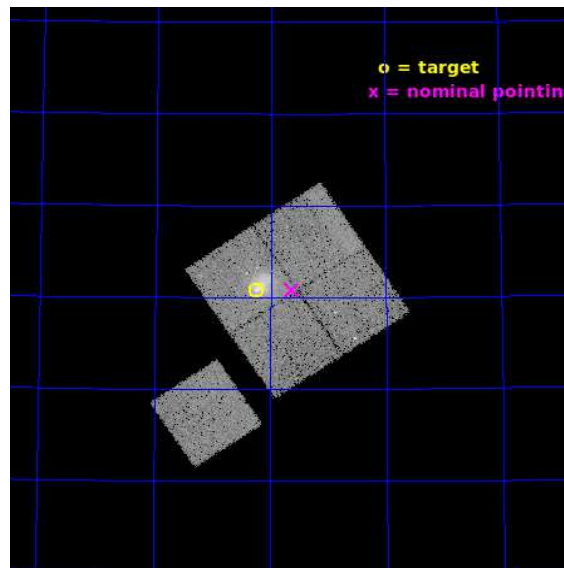
L2 Processing Date : Oct 26 2020

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 7	12
2.5	FID Slots	13
2.5.1	Slot 0	13
2.5.2	Slot 1	14
2.5.3	Slot 2	15
A	Summary	16
A.1	Status	16
A.2	Comments	16

1 Front

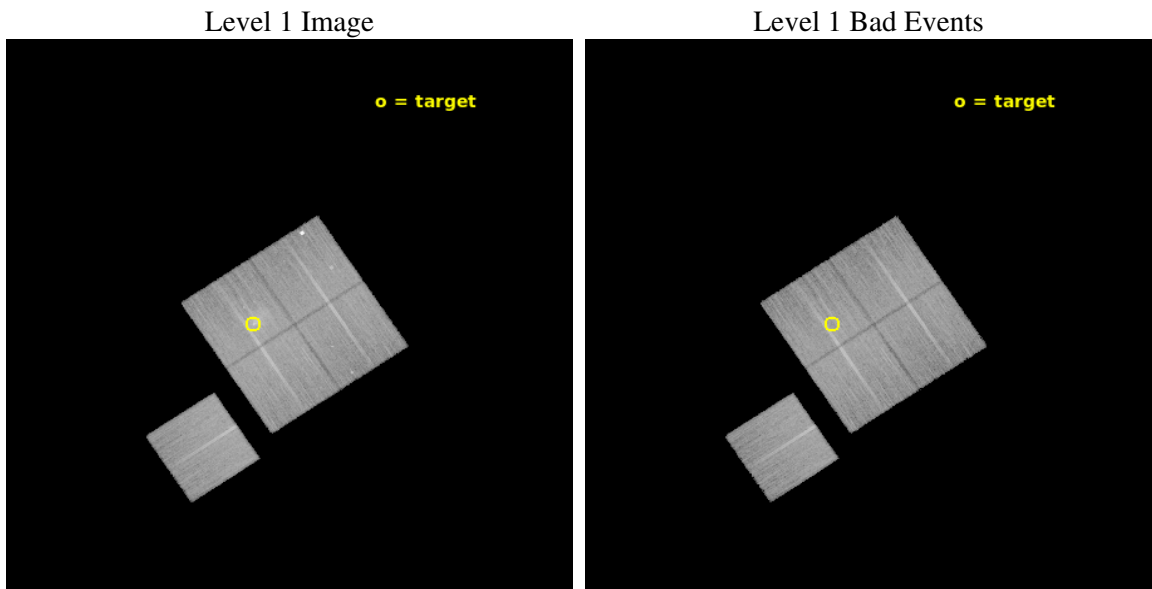
seq_num	801762	Sequence number
obs_id	21135	Observation id
title	Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146	Proposal title
observer	Helen Russell	Principal investigator
object	Abell 2146	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	239.06125	Observer's specified target RA [deg]
dec_targ	66.346917	Observer's specified target Dec [deg]
ra_nom	238.90758835086	Nominal RA [deg]
dec_nom	66.347653676447	Nominal Dec [deg]
roll_nom	236.33625020638	Nominal Roll [deg]
revision	3	Processing version of data
ontime	22062.659139633	Sum of GTIs [s]
livetime	21774.394255681	Livetime [s]
ontime0	22065.800169826	Sum of GTIs [s]
ontime1	22062.659169793	Sum of GTIs [s]
ontime2	22062.65909946	Sum of GTIs [s]
ontime3	22062.659139633	Sum of GTIs [s]
ontime6	22065.800169826	Sum of GTIs [s]
l2events	88357	Number of level 2 events



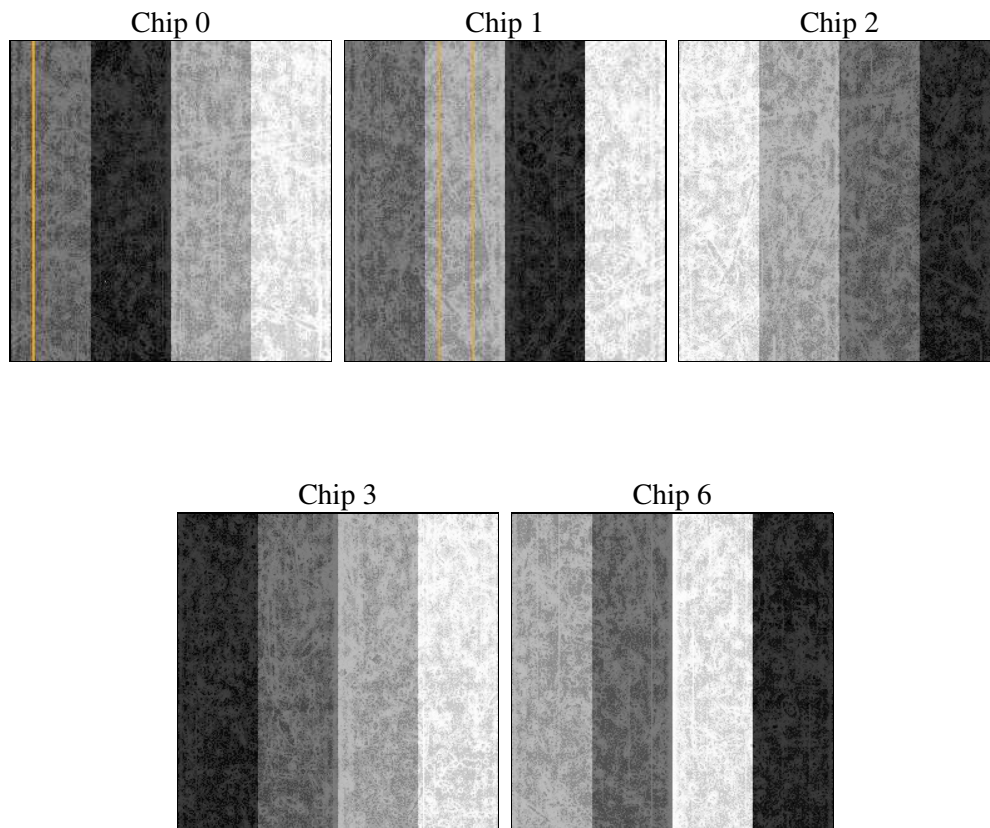
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	22000.000000	[s] Scheduled observation exposure time
ascdsver	10.9.2	Processing system revision	ontime	22062.659139633	Sum of GTIs [s]
caldbver	4.9.3	 	ontime0	22065.800169826	Sum of GTIs [s]
date	2020-10-27T01:21:32	Date and time of file creation	ontime1	22062.659169793	Sum of GTIs [s]
revision	3	Processing version of data	ontime2	22062.65909946	Sum of GTIs [s]
			ontime3	22062.659139633	Sum of GTIs [s]
			ontime6	22065.800169826	Sum of GTIs [s]
			l1events	845442	Number of level 1 events

2.1.4 Events

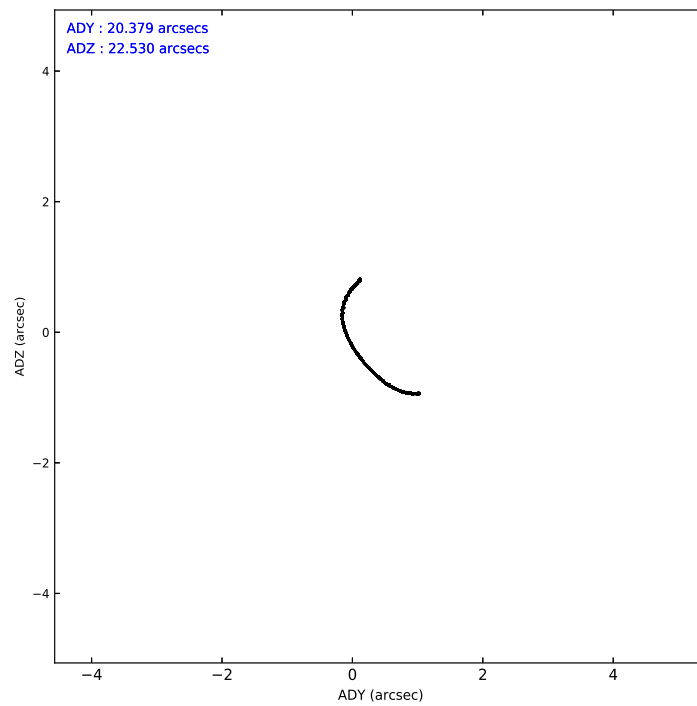
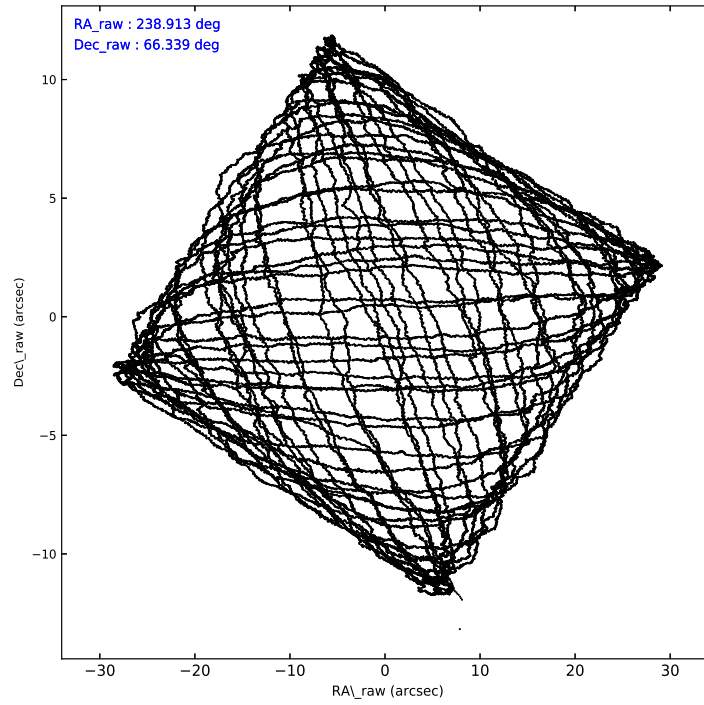
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	156100	165850	176401	175677	171414
rejected events	137381	138077	158688	147518	152840
rejected %	88%	83%	89%	83%	89%

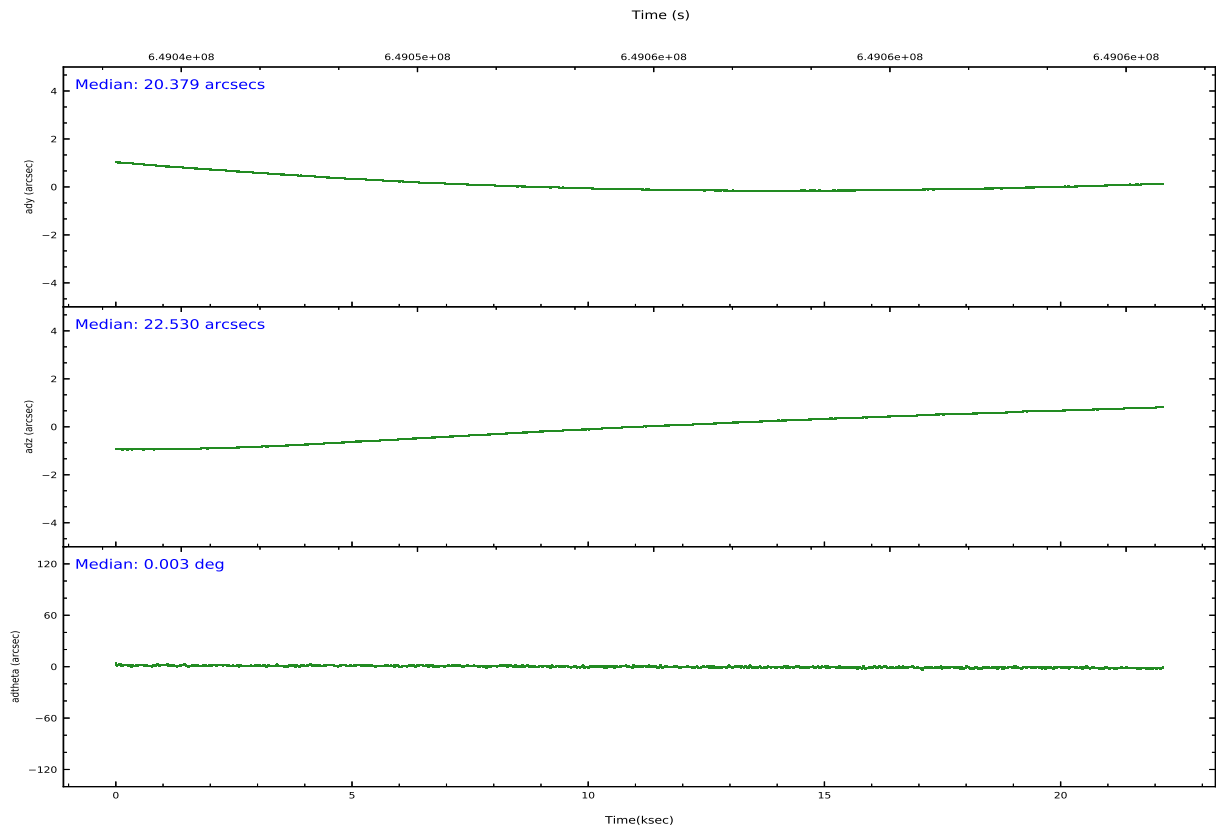
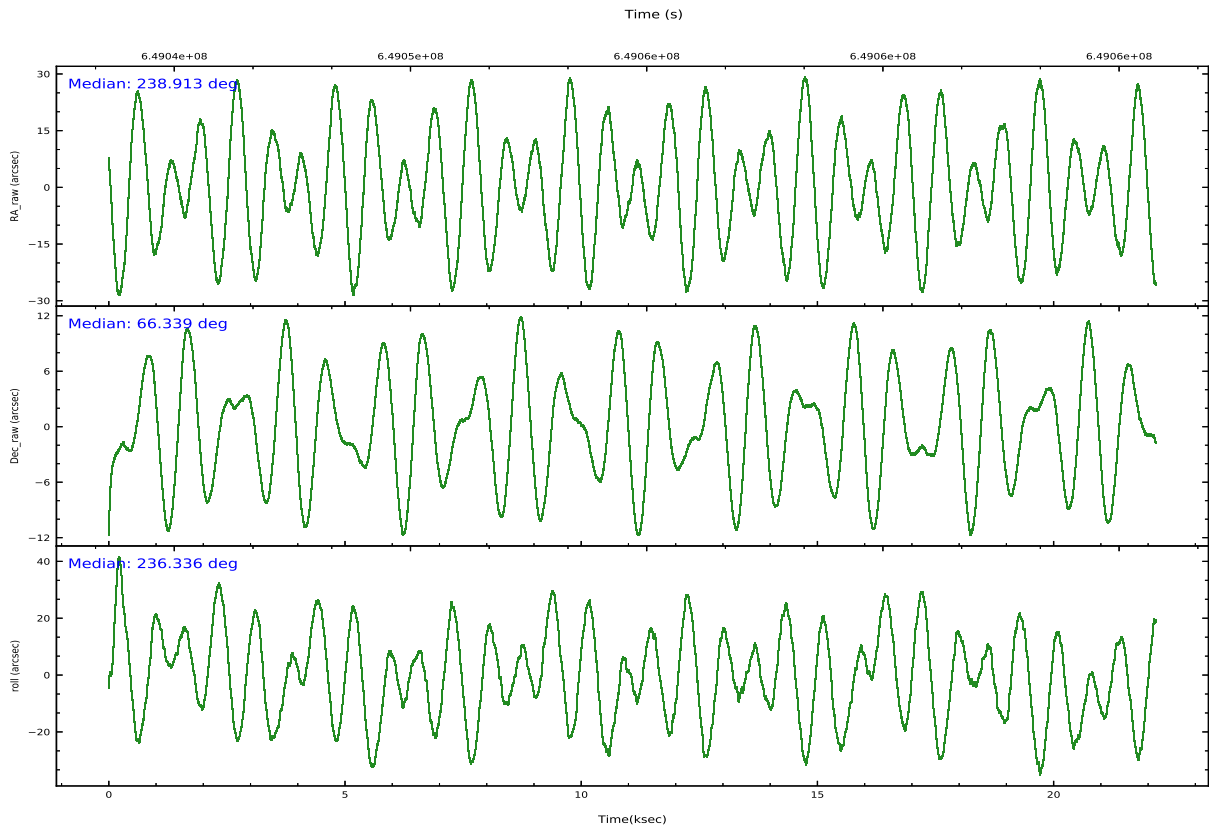
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	6573	13725	6295	14782	5770
	4%	8%	3%	8%	3%
grade 1 events	94	88	110	152	76
	0%	0%	0%	0%	0%
grade 2 events	4777	5565	4286	4946	4601
	3%	3%	2%	2%	2%
grade 3 events	1808	1912	1754	2144	1738
	1%	1%	0%	1%	1%
grade 4 events	1728	1796	1857	2184	1720
	1%	1%	1%	1%	1%
grade 5 events	6675	7143	6469	7951	7130
	4%	4%	3%	4%	4%
grade 6 events	3837	4783	3529	4110	4748
	2%	2%	2%	2%	2%
grade 7 events	130608	130838	152101	139408	145631
	83%	78%	86%	79%	84%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
Detector	ACIS-01236	ACIS-01236	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	238.917106	238.90758835086	CCD I2 on	Y	Y
[deg] Pointing Dec	66.366684	66.347653676447	CCD I3 on	Y	Y
[deg] Pointing Roll	236.132044	236.33625020638	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	Y
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	649043784.184000	649042713.2207201	CCD S5 on	N	N
Observation start date	2018-07-27T01:55:15	2018-07-27T01:38:33	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	649065784.184000	649066575.22214	On-chip summing requested	N	N
Observation end date	2018-07-27T08:01:55	2018-07-27T08:16:15	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect





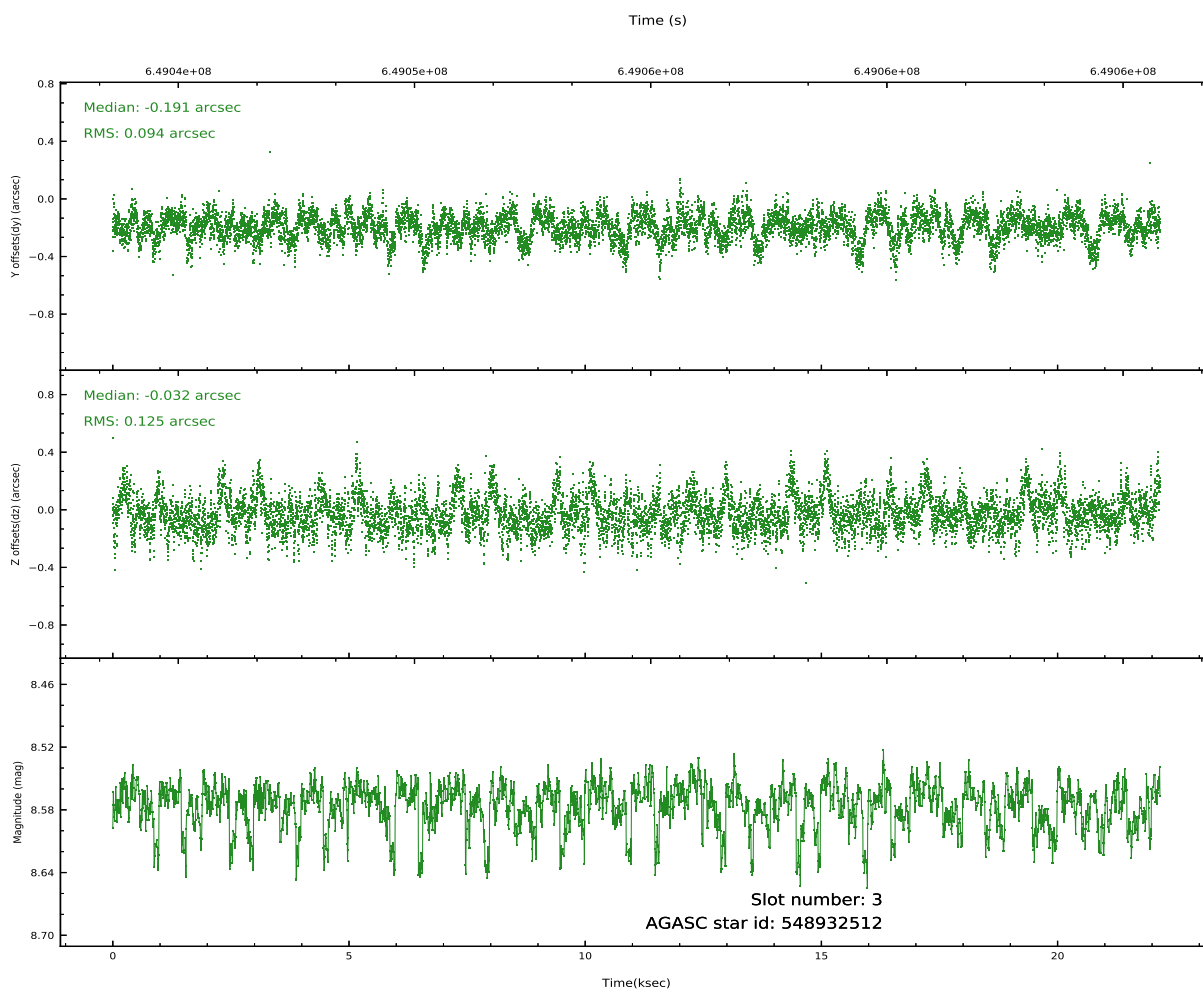
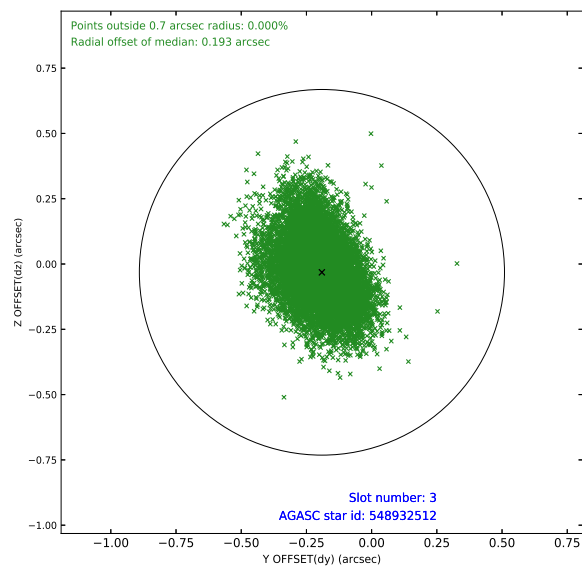
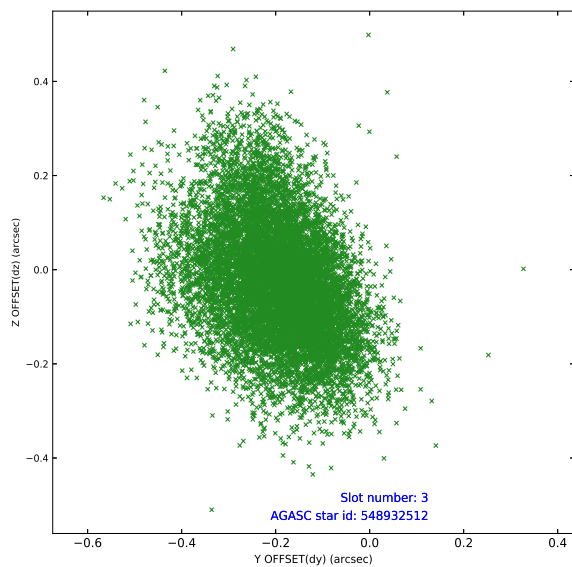
Slot Statistics

pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.24	5408	1.000	0.166	-0.118	0.046	0.062	0.000000	0.000000	918.89	-846
1	FID		ACIS-I-4	7.18	5406	1.000	0.084	0.027	0.023	0.035	0.000000	0.000000	2139.09	1053
2	FID		ACIS-I-5	7.22	5408	1.000	-0.349	0.163	0.031	0.044	0.000000	0.000000	-1829.27	1051
3	GUIDE	used	548932512	8.57	10804	1.000	-0.191	-0.032	0.162	0.278	239.727627	66.054972	264.90	1604
4	GUIDE	used	548933960	8.45	10812	1.000	0.009	-0.244	0.144	0.233	237.671184	66.428675	800.88	-1622
5	GUIDE	used	548937184	9.85	10781	1.000	0.207	0.133	0.304	0.480	238.771821	66.565432	-477.89	-571
6	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
7	GUIDE	used	549850840	9.30	10792	1.000	-0.037	0.132	0.187	0.317	241.038865	66.468628	-2046.85	2299

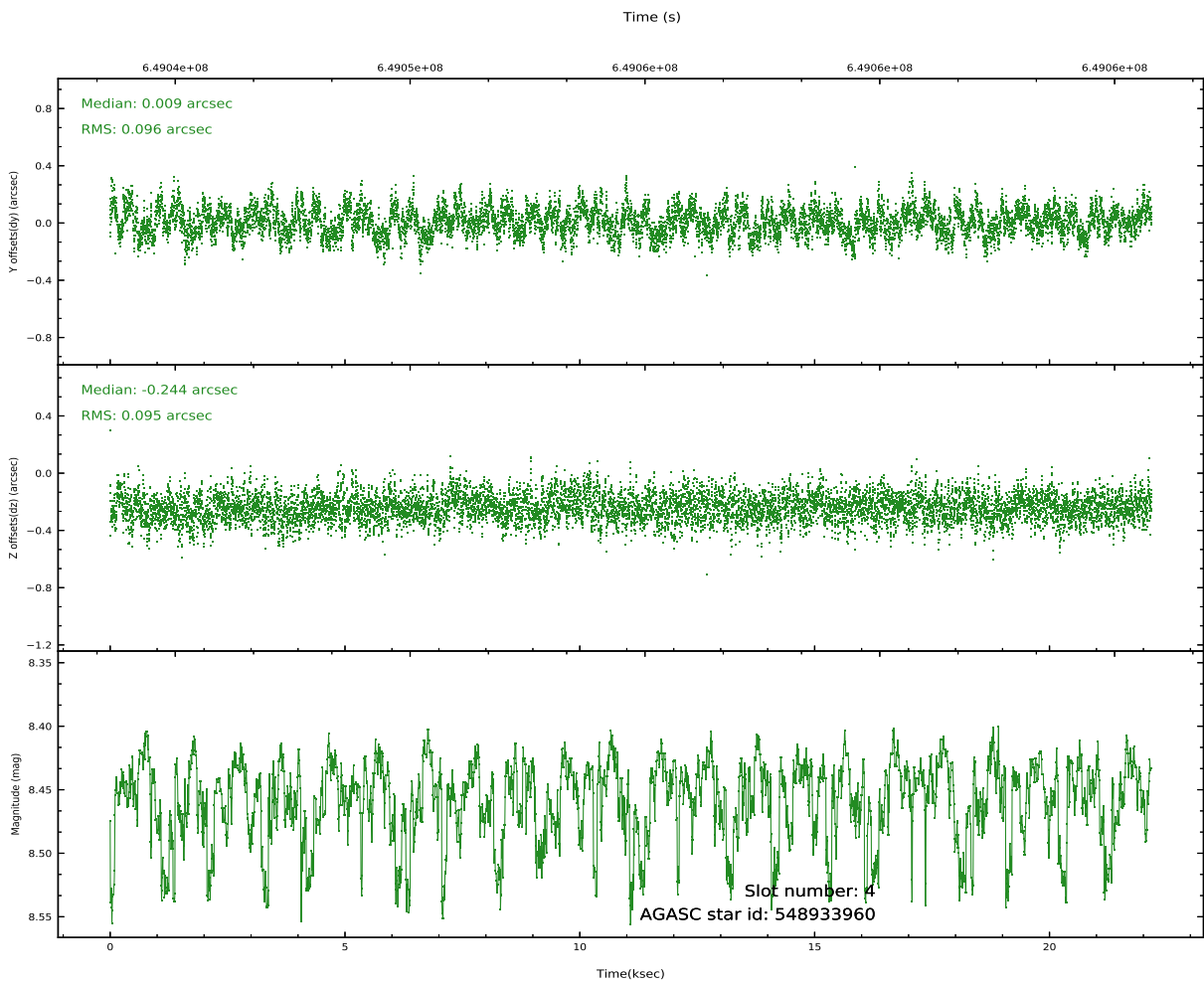
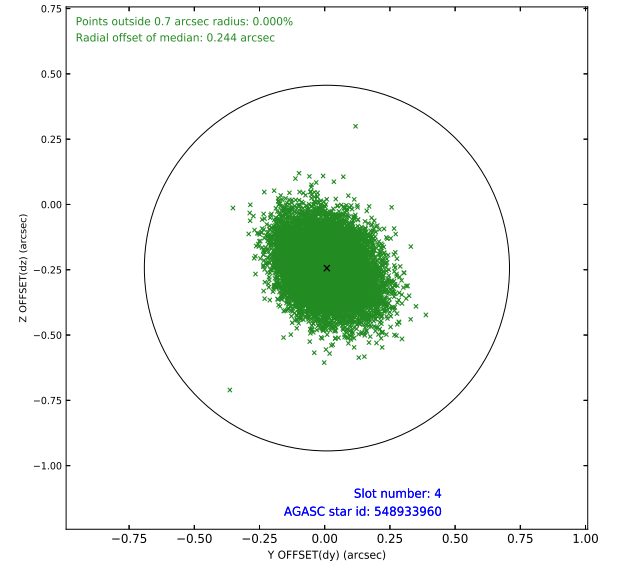
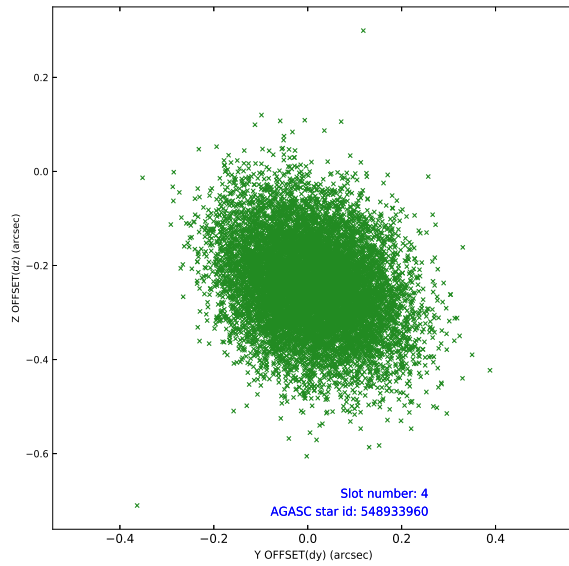
∞

2.4 Star Slots

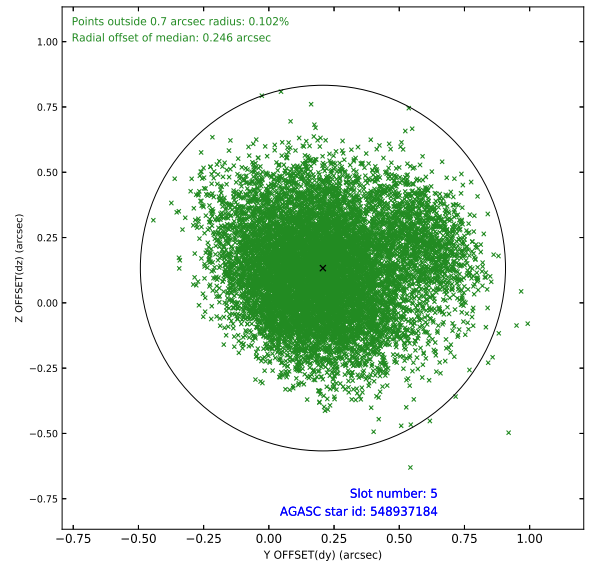
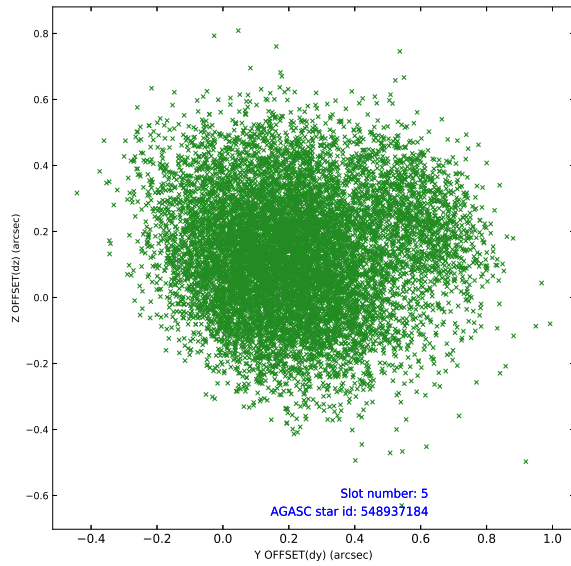
2.4.1 Slot 3



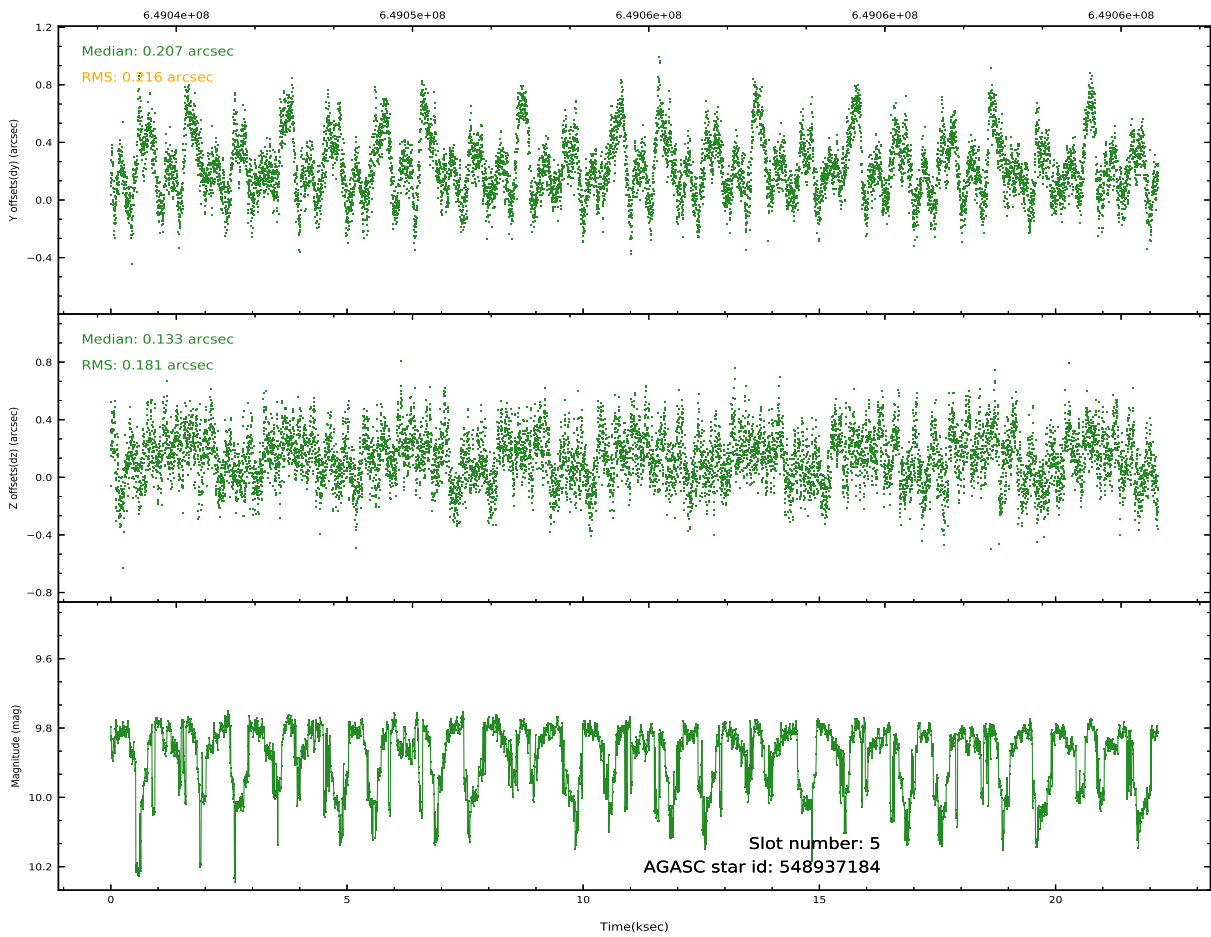
2.4.2 Slot 4



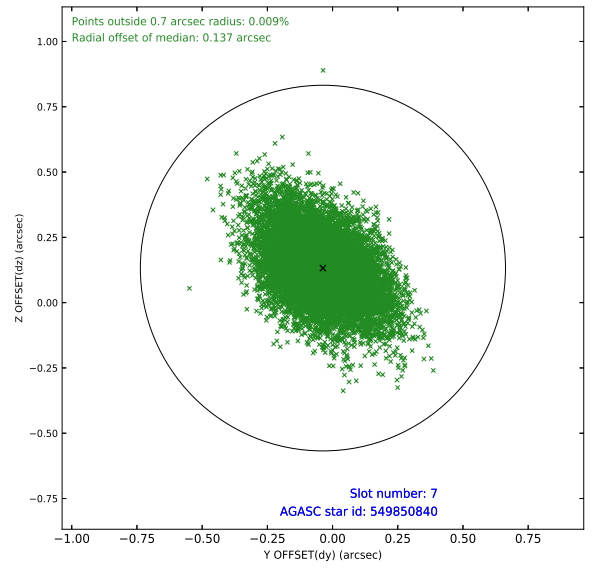
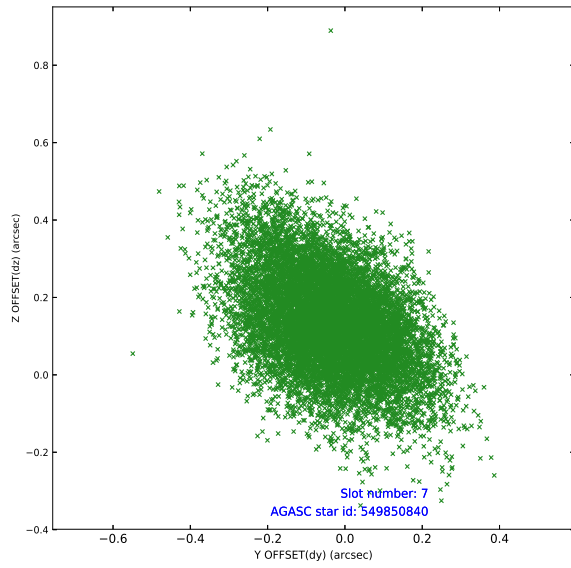
2.4.3 Slot 5



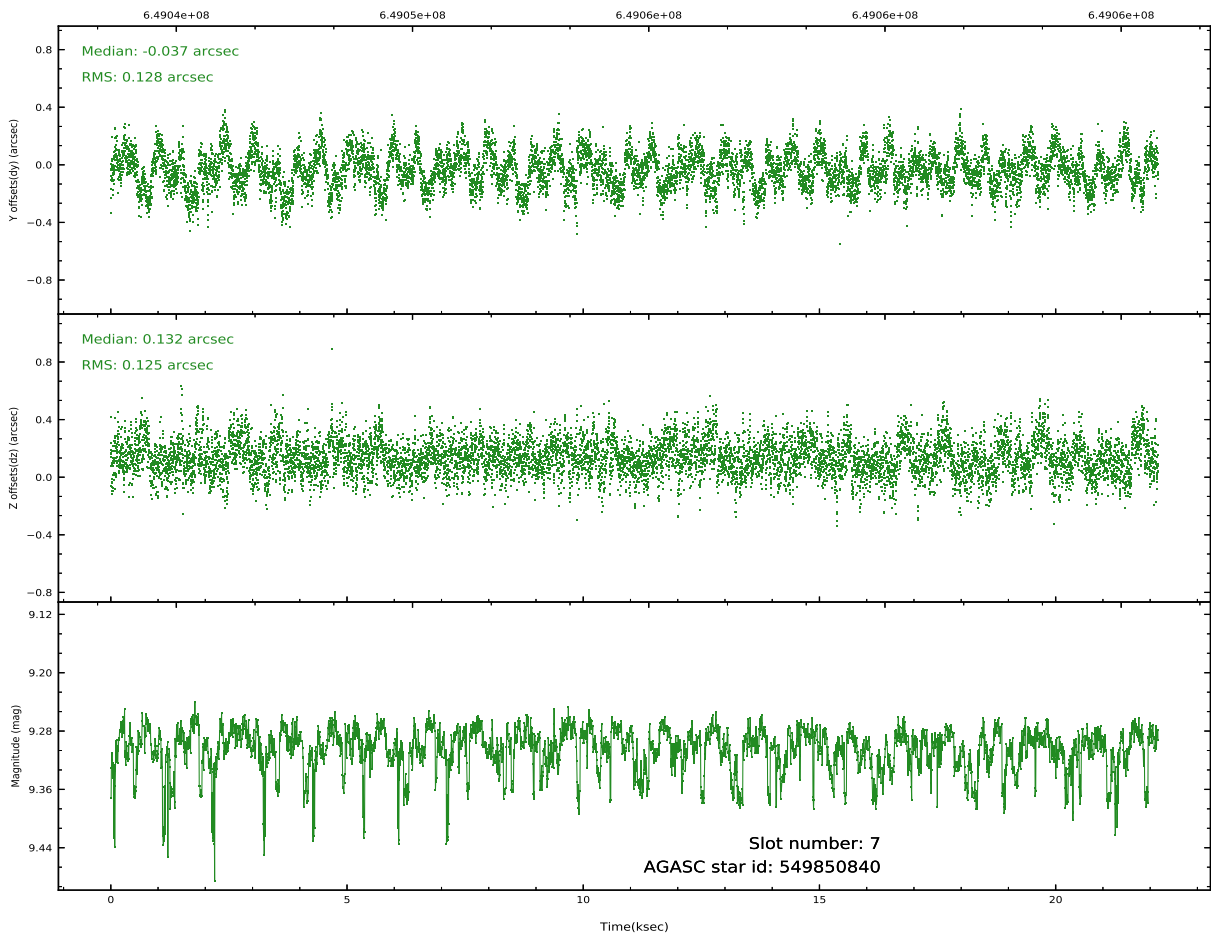
Time (s)



2.4.4 Slot 7

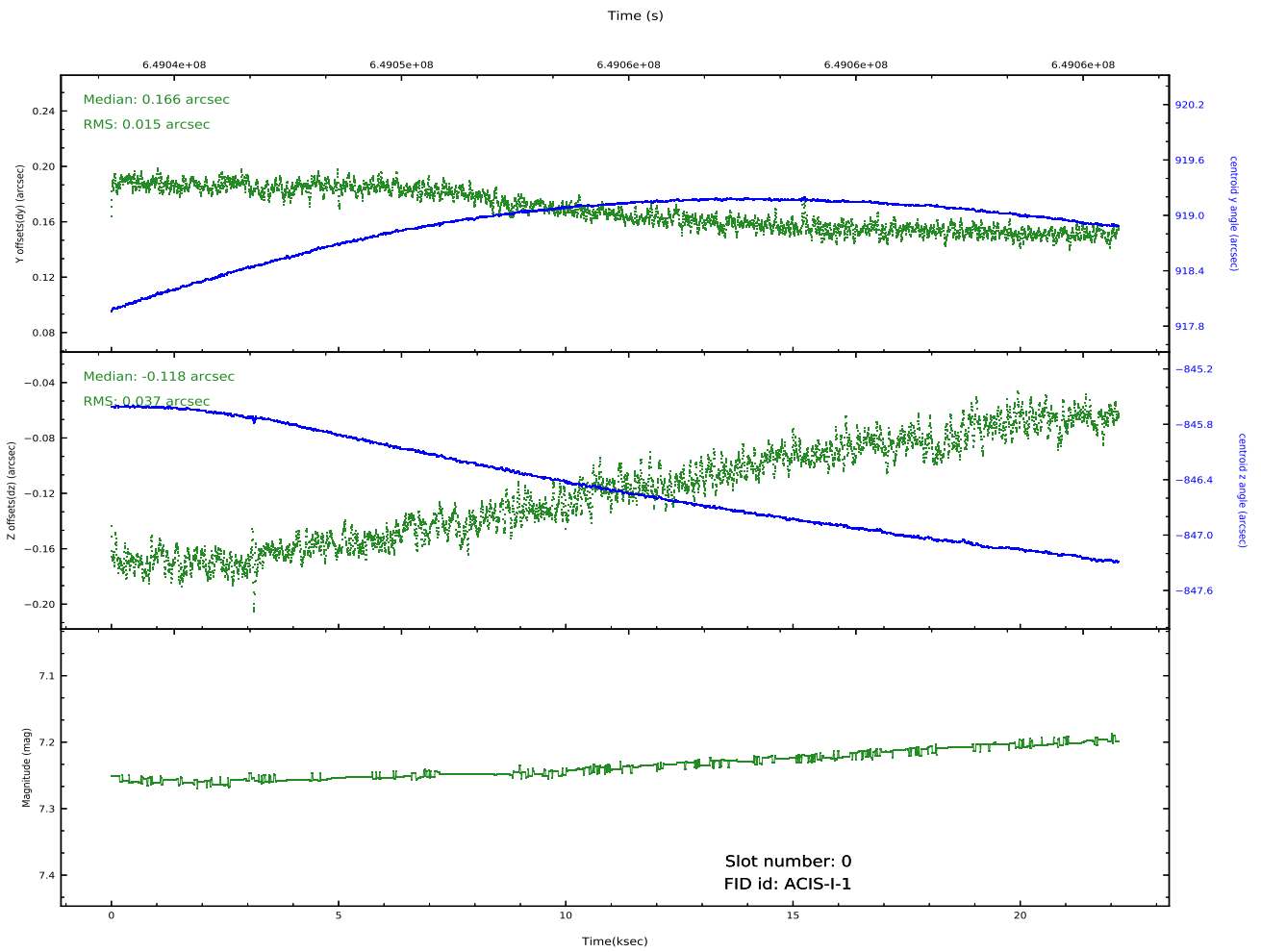
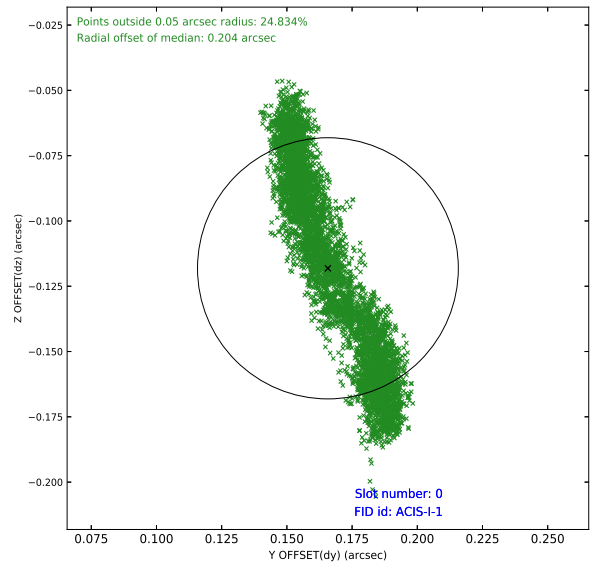
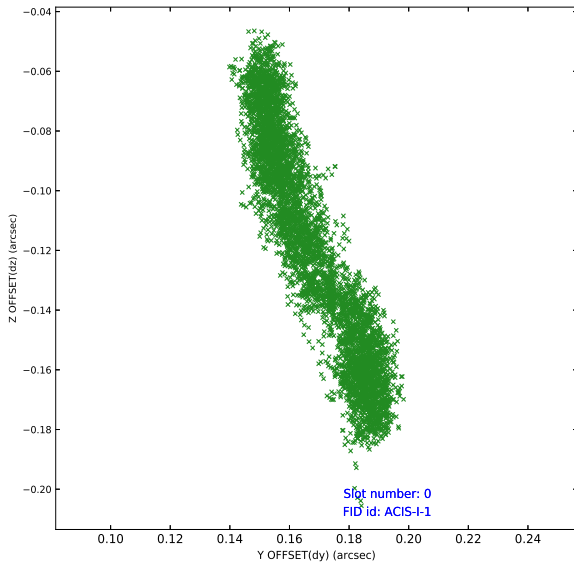


Time (s)

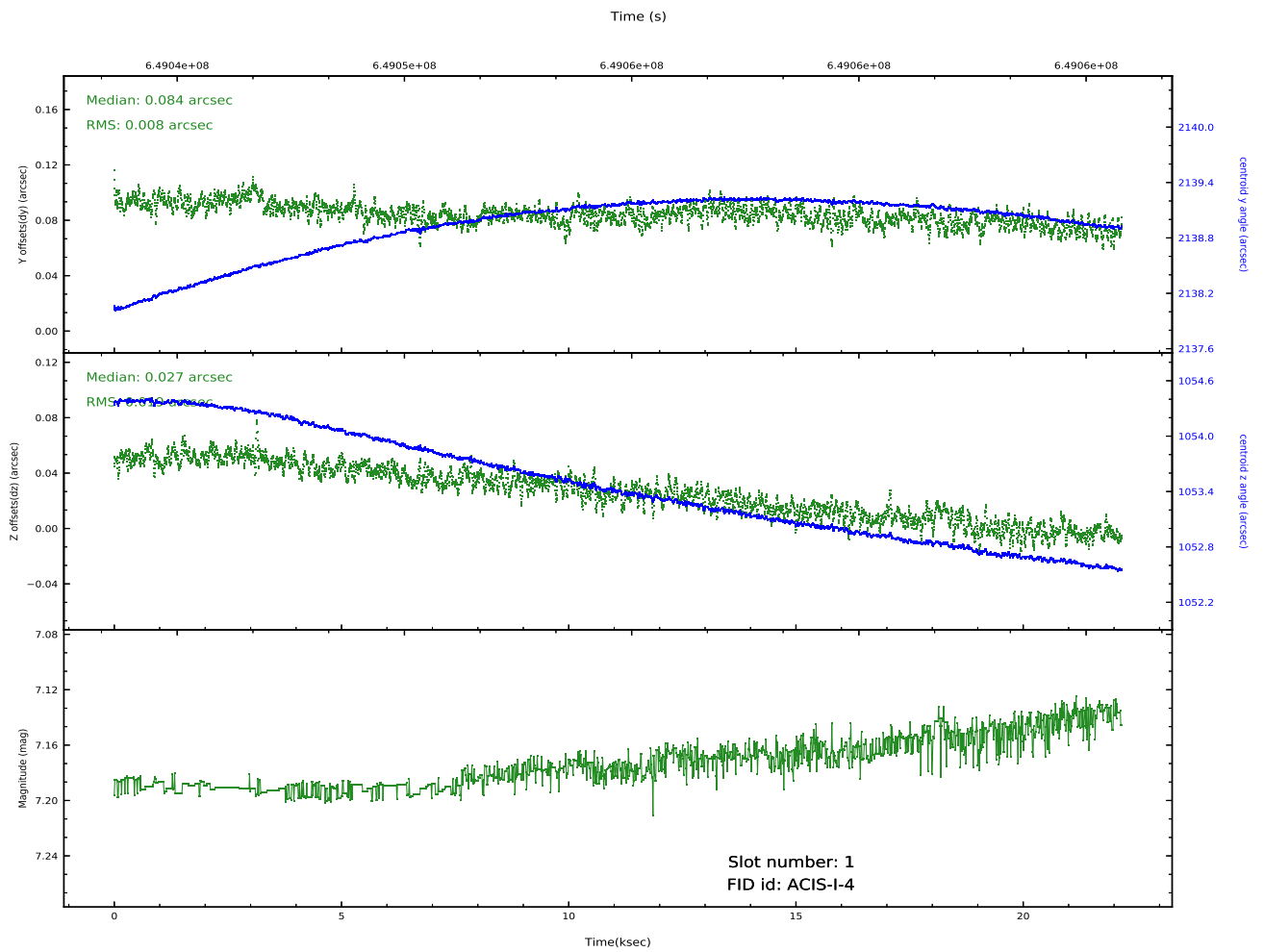
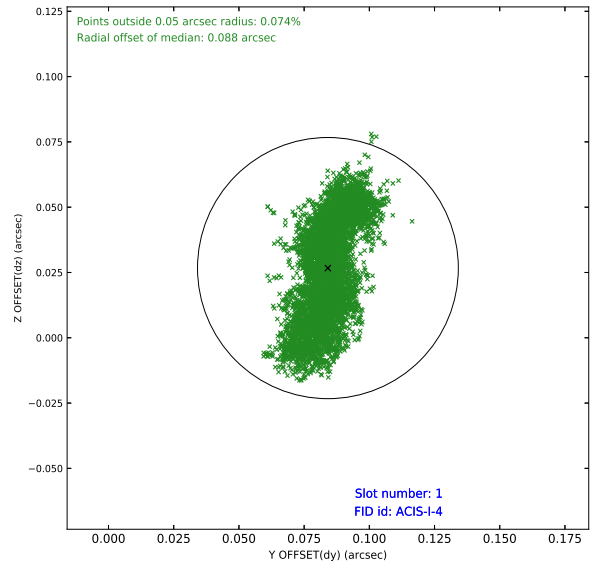
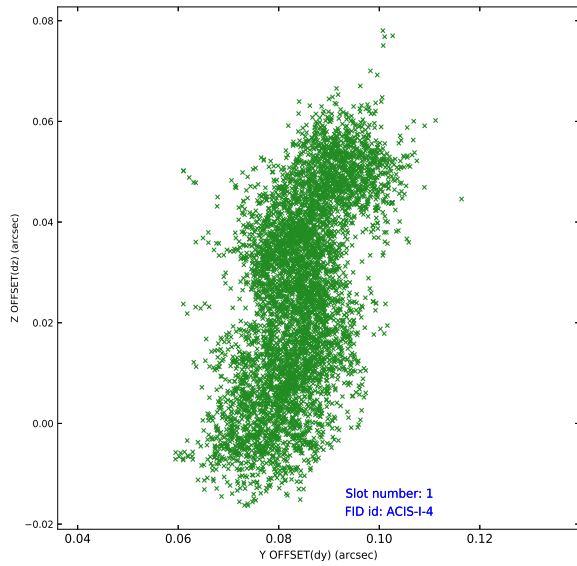


2.5 FID Slots

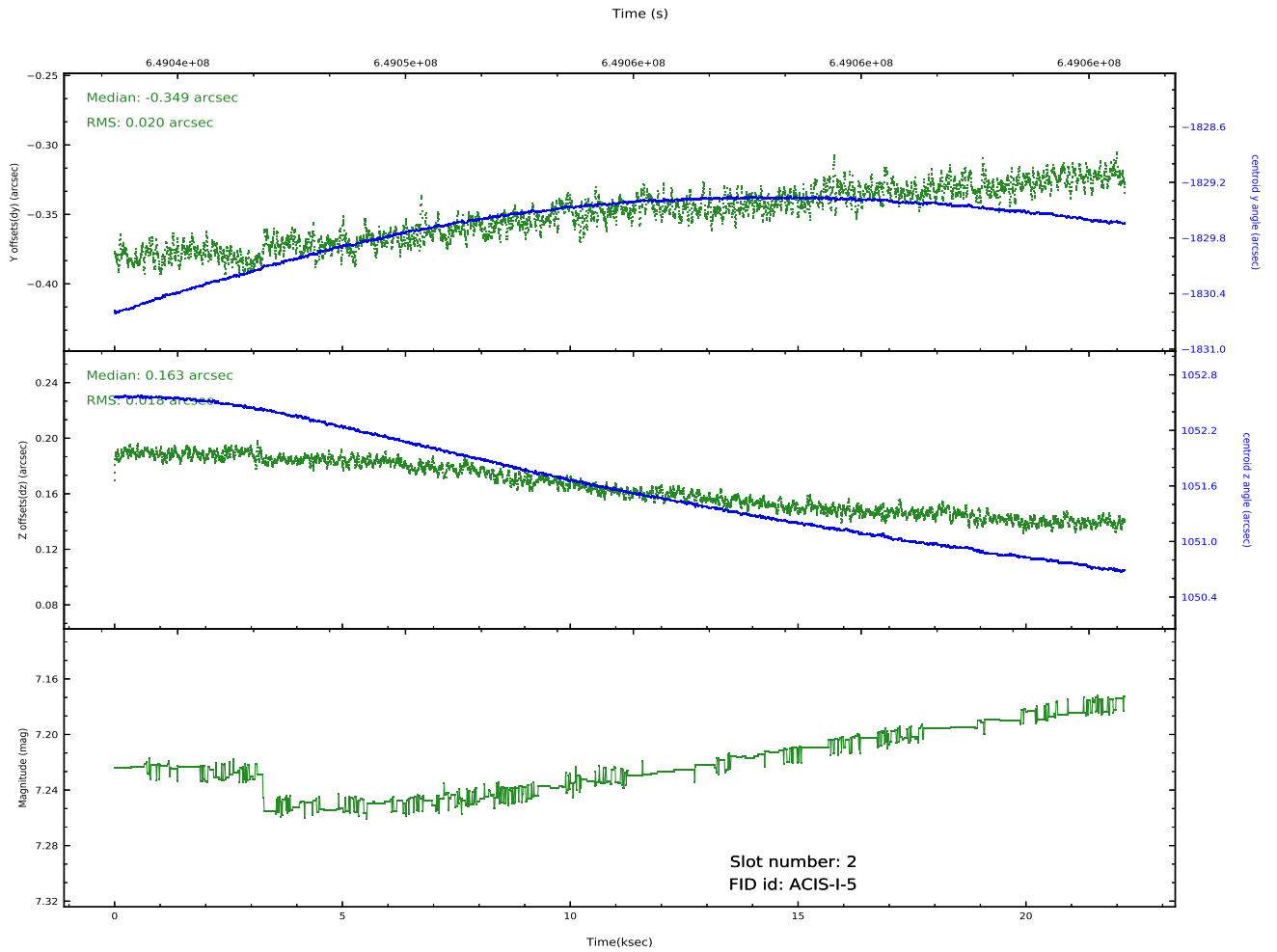
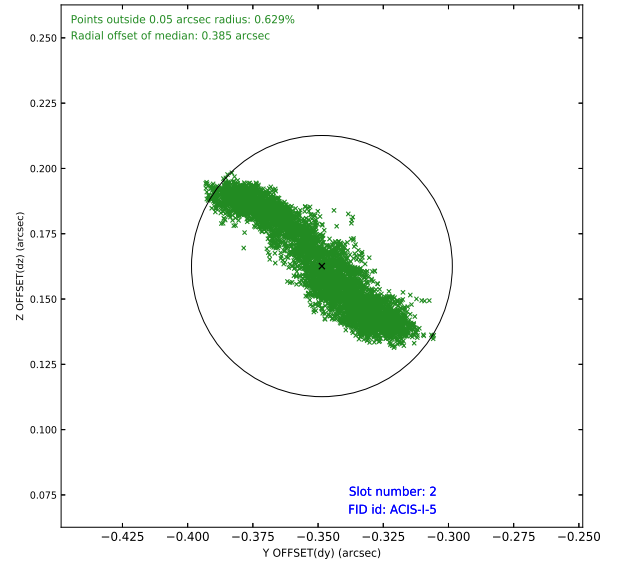
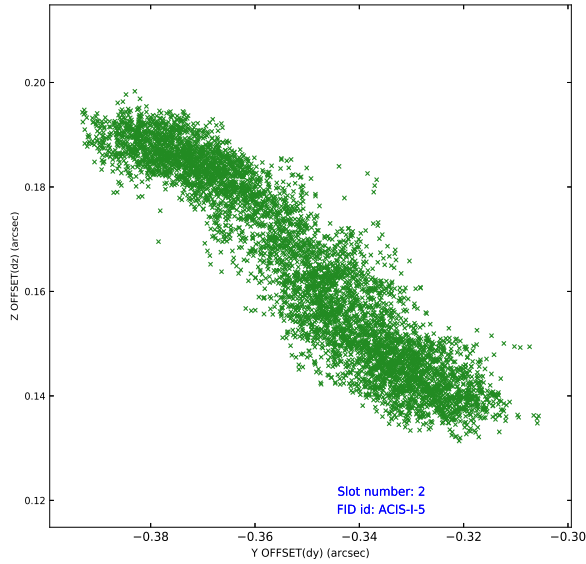
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2020.10.30
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	22.062659139633

A.2 Comments

The guide star in slot 6 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

===

A spatial region of the original bias map for CCD = 6 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original 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 map for CCD = 6 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords: (239.39449,66.06633), (239.40372,66.07187), (239.36662,66.08203), (239.35293,66.07771).