

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 20853 - L2 Version 2
Chandra X-Ray Center

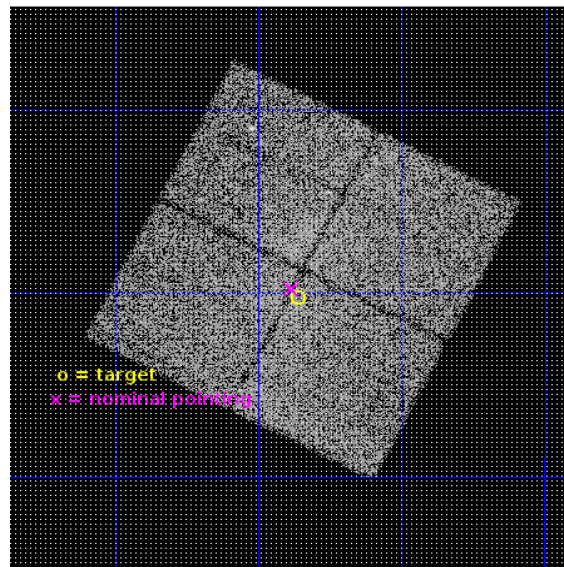
L2 Processing Date : Nov 22 2017

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

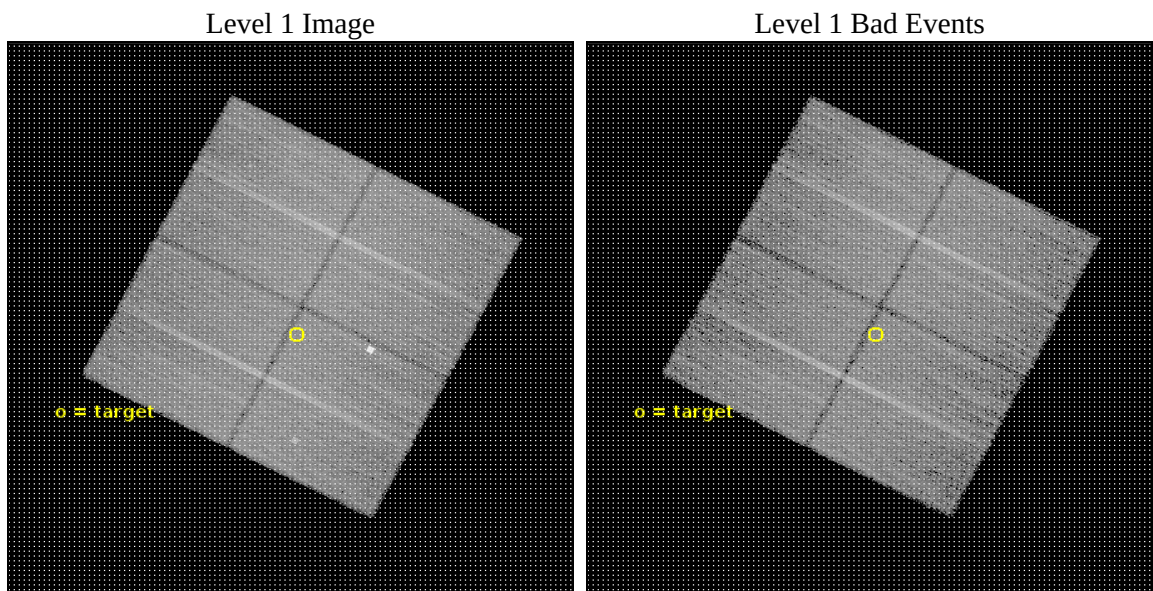
seq_num	801659	Sequence number
obs_id	20853	Observation id
title	A Violent merger in the cluster PLCKESZ G200.9-28.2: Relic formation caught in action?	Proposal title
observer	Daniel Wik	Principal investigator
object	PLCKESZ G200.9-28.2	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	72.589954	Observer's specified target RA [deg]
dec_targ	-3.004375	Observer's specified target Dec [deg]
ra_nom	72.596175122757	Nominal RA [deg]
dec_nom	-2.995815025867	Nominal Dec [deg]
roll_nom	27.209012347174	Nominal Roll [deg]
revision	2	Processing version of data
ontime	28178.918076515	Sum of GTIs [s]
livetime	27810.739766828	Livetime [s]
ontime0	28185.200216889	Sum of GTIs [s]
ontime1	28178.918076515	Sum of GTIs [s]
ontime2	28182.059156656	Sum of GTIs [s]
ontime3	28178.91802609	Sum of GTIs [s]
l2events	76108	Number of level 2 events



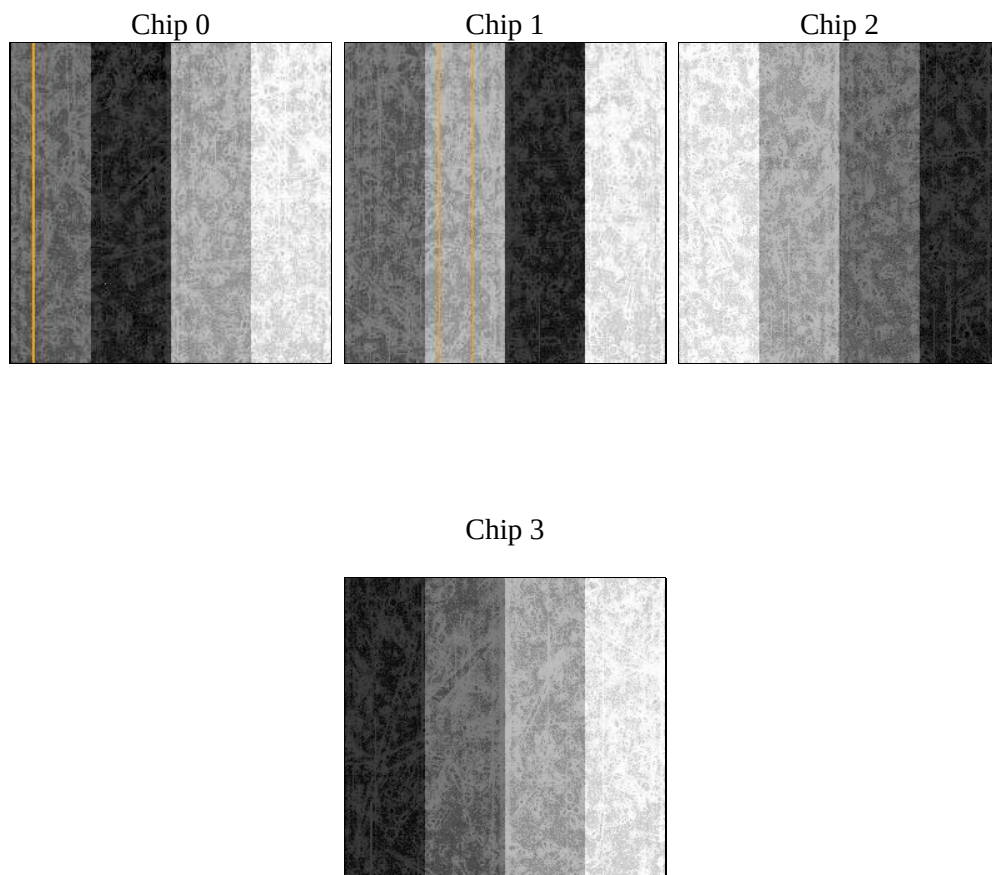
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	28108.925000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	28178.918076515	Sum of GTIs [s]
caldsver	4.7.6	 	ontime0	28185.200216889	Sum of GTIs [s]
date	2017-11-22T17:33:26	Date and time of file creation	ontime1	28178.918076515	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	28182.059156656	Sum of GTIs [s]
			ontime3	28178.91802609	Sum of GTIs [s]
			l1events	822752	Number of level 1 events

2.1.4 Events

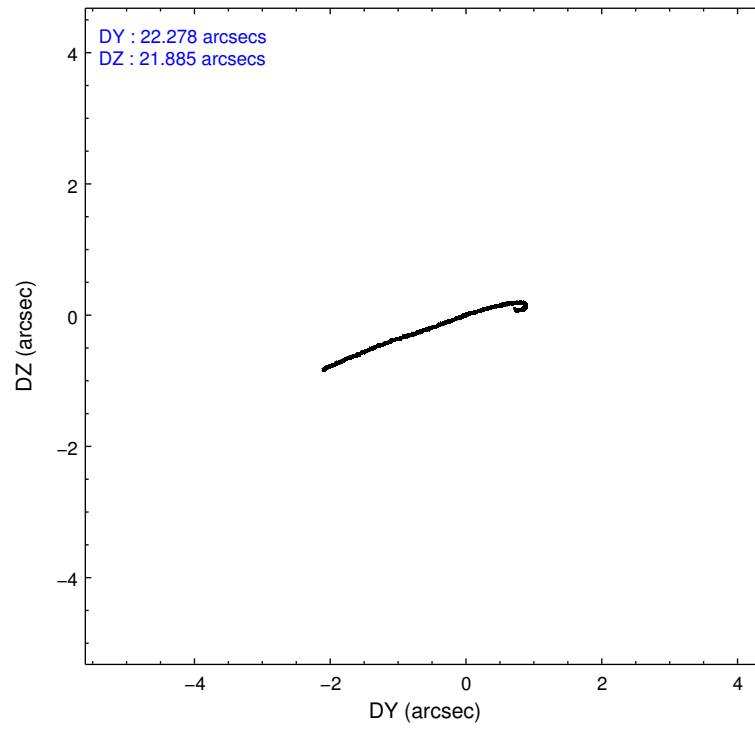
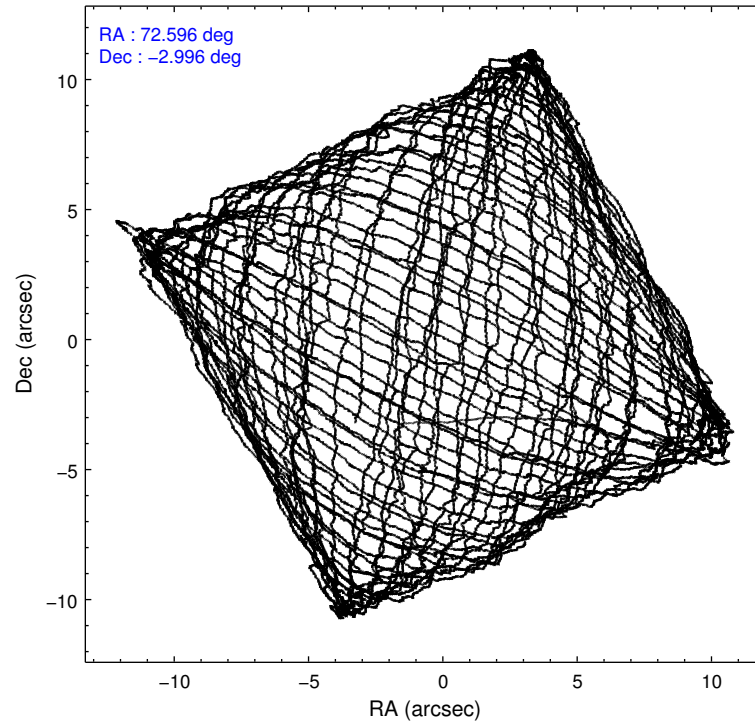
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	190603	210234	214377	207538
rejected events	167862	176580	192143	186464
rejected %	88%	83%	89%	89%

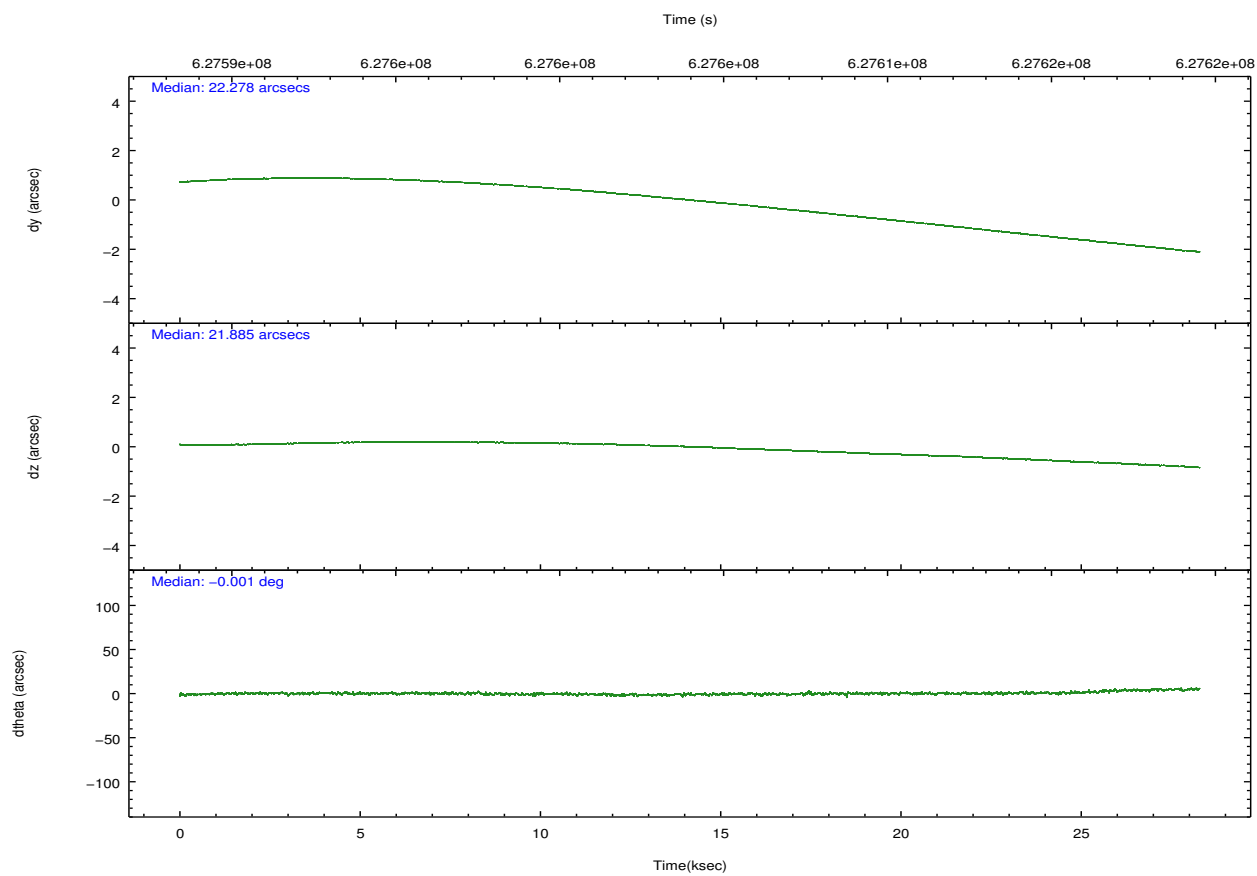
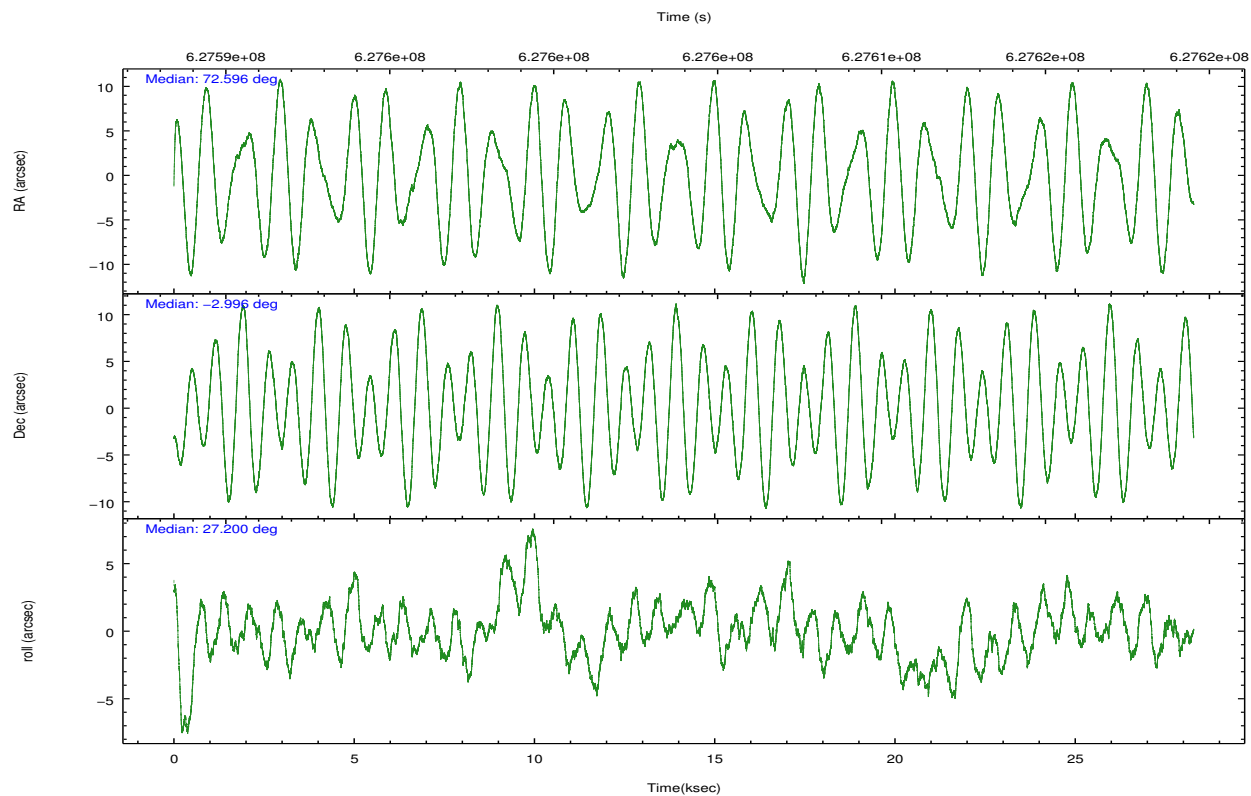
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	7933	17027	8314	7521
	4%	8%	3%	3%
grade 1 events	88	161	109	107
	0%	0%	0%	0%
grade 2 events	5673	6274	5081	4604
	2%	2%	2%	2%
grade 3 events	2239	2261	2191	2171
	1%	1%	1%	1%
grade 4 events	2117	2239	2194	2181
	1%	1%	1%	1%
grade 5 events	8241	8377	7751	9389
	4%	3%	3%	4%
grade 6 events	4788	5861	4460	4603
	2%	2%	2%	2%
grade 7 events	159524	168034	184277	176962
	83%	79%	85%	85%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-0123	ACIS-0123	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	72.581290	72.5961751227573	CCD I2 on	Y	Y
[deg] Pointing Dec	-3.019076	-2.995815025866956	CCD I3 on	Y	Y
[deg] Pointing Roll	26.999542	27.20901234717401	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	N	N
[mm] SIM translation stage pos	-239.442463	-239.4407604828604	CCD S3 on	O1	N
[mm] SIM translation stage offset	5.85	5.848307479930696	CCD S4 on	N	N
[s] Observation start time (MET)	627590006.184000	627588882.83023	CCD S5 on	N	N
Observation start date	2017-11-20T18:32:17	2017-11-20T18:14:42	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	627618115.184000	627619160.81951	On-chip summing requested	N	N
Observation end date	2017-11-21T02:20:46	2017-11-21T02:39:20	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



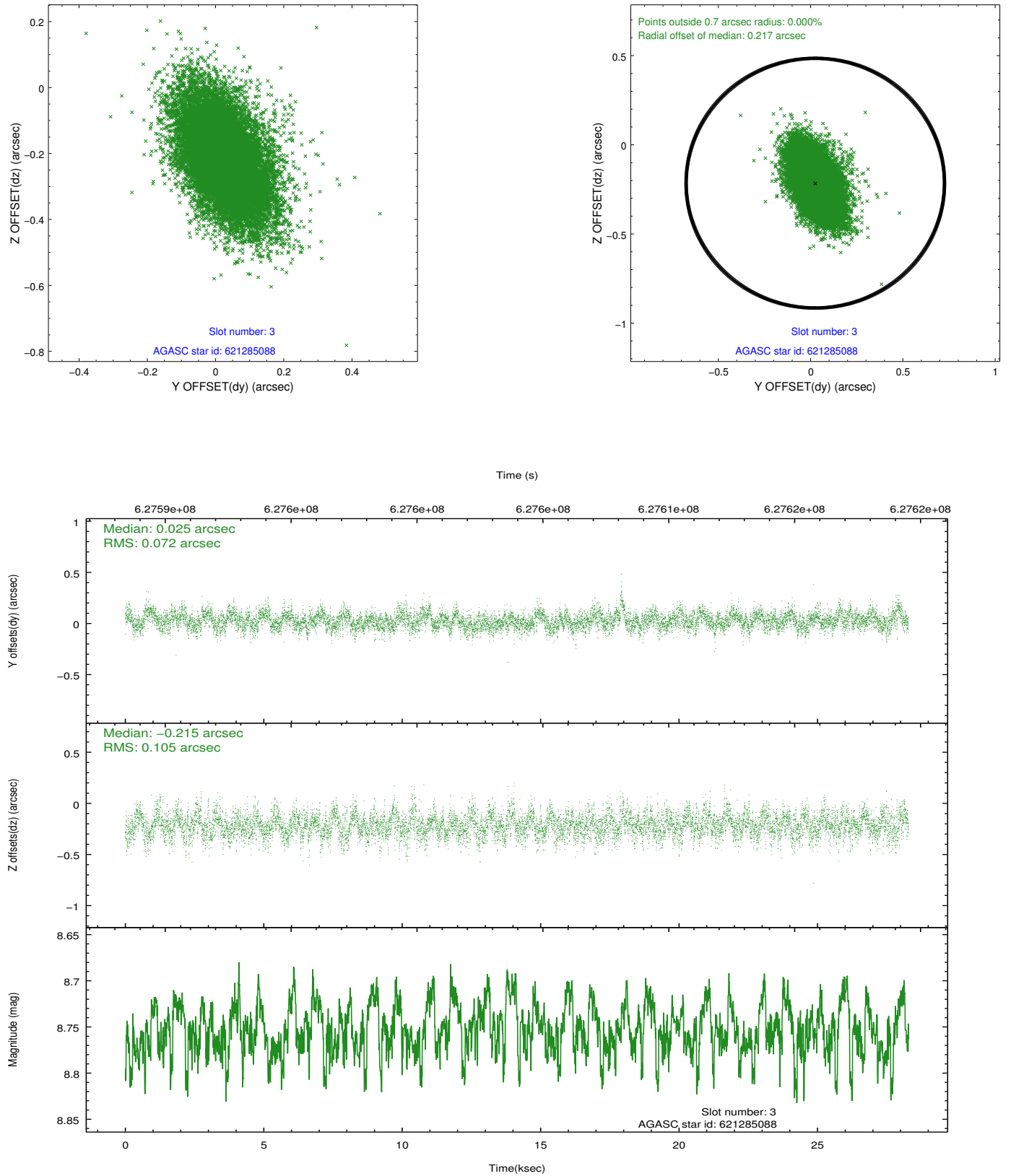


Slot Statistics

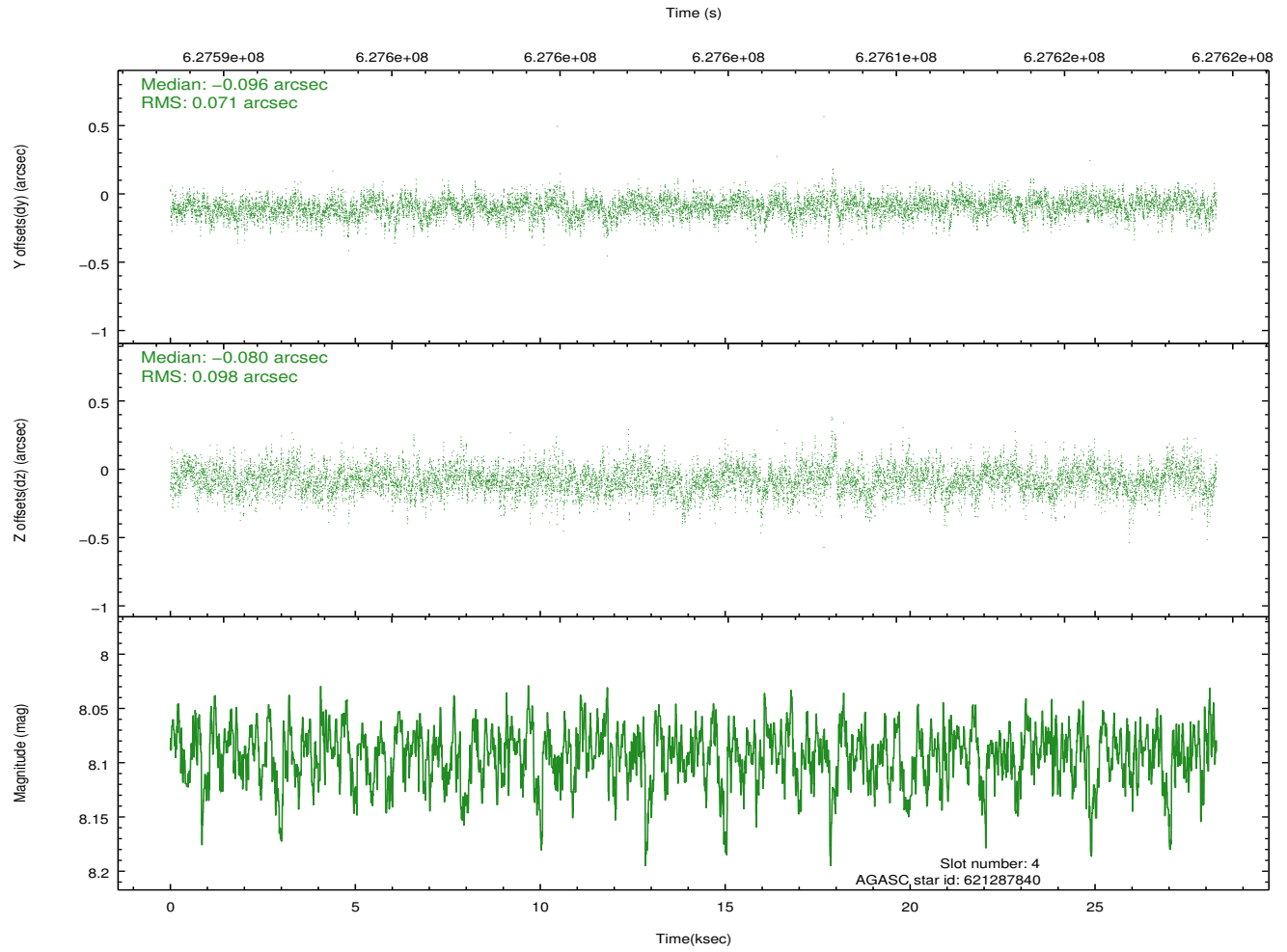
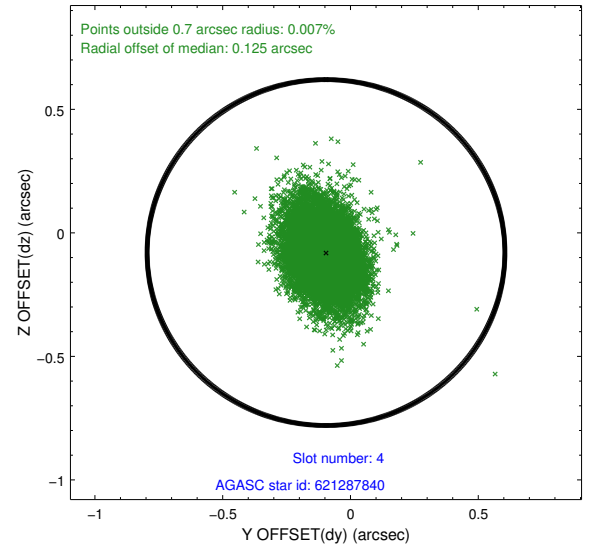
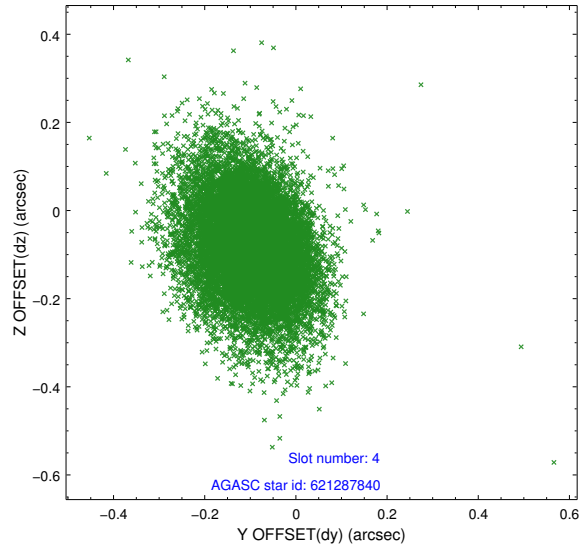
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-2	7.19	6900	-0.369	-0.211	0.018	0.040	0.000000	0.000000	-776.95	-732.62
1	FID		ACIS-I-4	7.26	6899	0.437	0.180	0.018	0.030	0.000000	0.000000	2137.94	1173.88
2	FID		ACIS-I-6	7.26	6899	-0.168	0.095	0.012	0.023	0.000000	0.000000	383.20	1816.86
3	GUIDE	used	621285088	8.75	13793	0.025	-0.215	0.131	0.232	72.185532	-2.636590	-643.41	1872.38
4	GUIDE	used	621287840	8.09	13794	-0.096	-0.080	0.124	0.216	72.904853	-2.949814	1150.01	-305.77
5	GUIDE	used	621289504	8.88	13787	-0.047	0.214	0.136	0.233	73.076403	-3.394128	973.09	-2010.75
6	GUIDE	used	621817120	8.68	13720	0.479	0.704	0.136	0.229	72.343289	-3.782403	-2008.02	-2060.19
7	GUIDE	used	621284808	8.62	13784	-0.359	-0.618	0.128	0.223	72.478666	-2.477405	556.07	1904.46

2.4 Star Slots

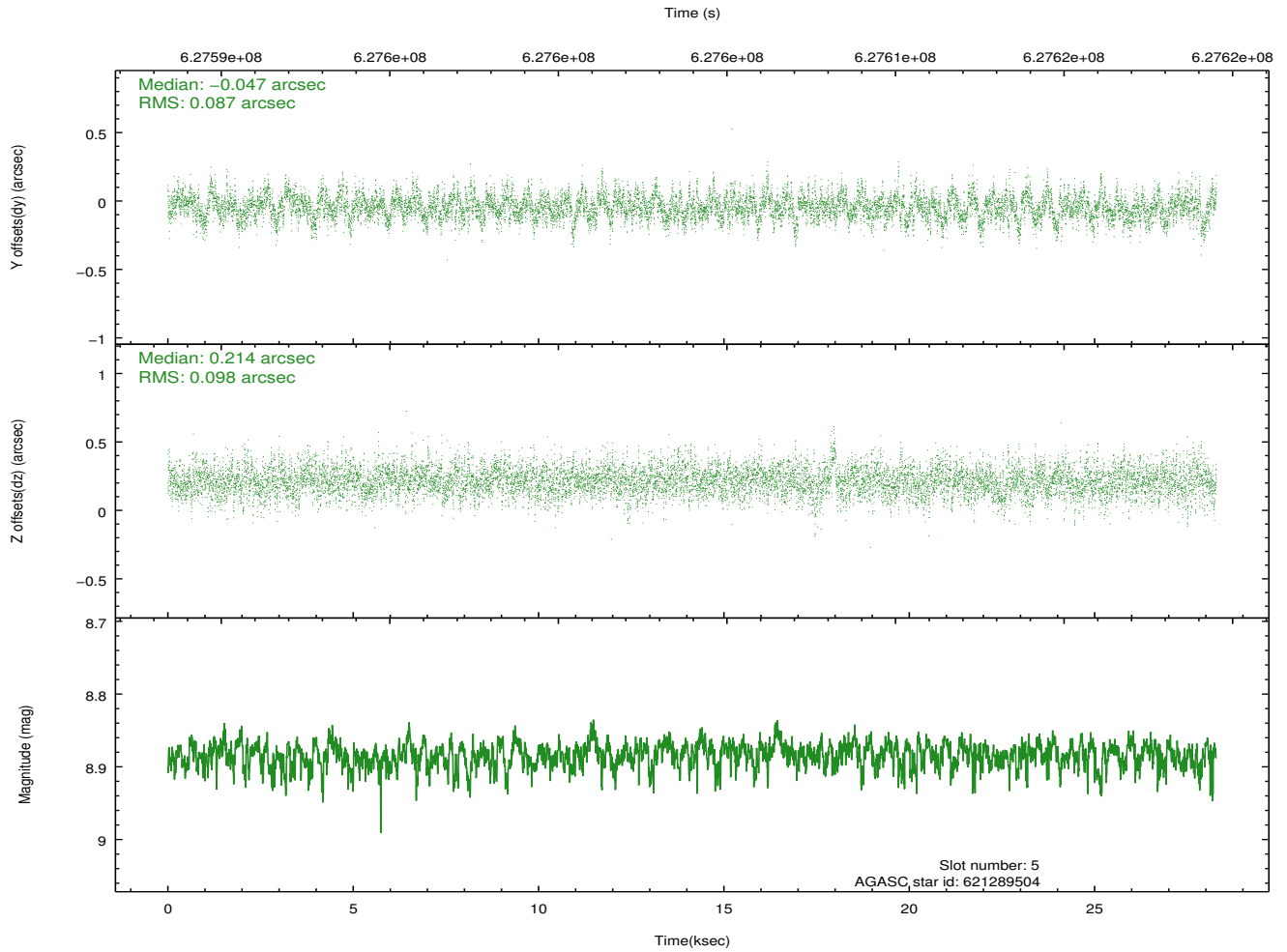
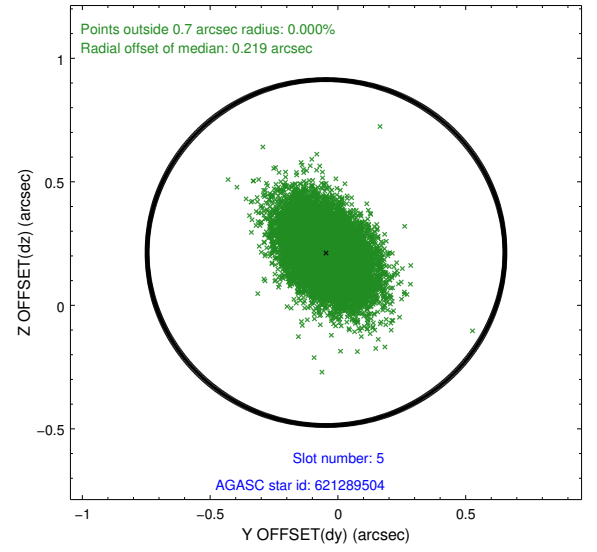
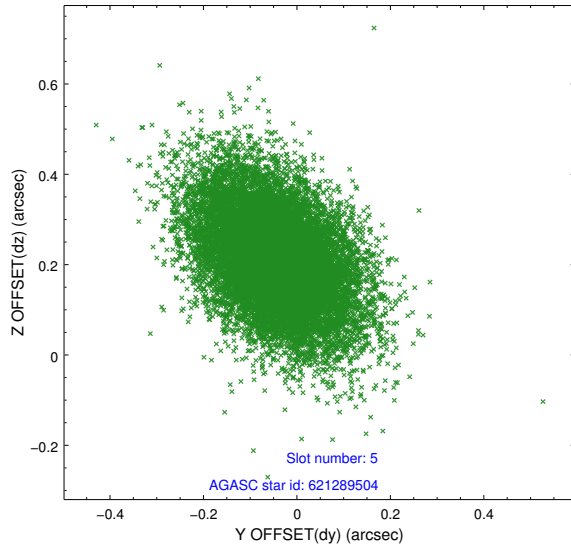
2.4.1 Slot 3



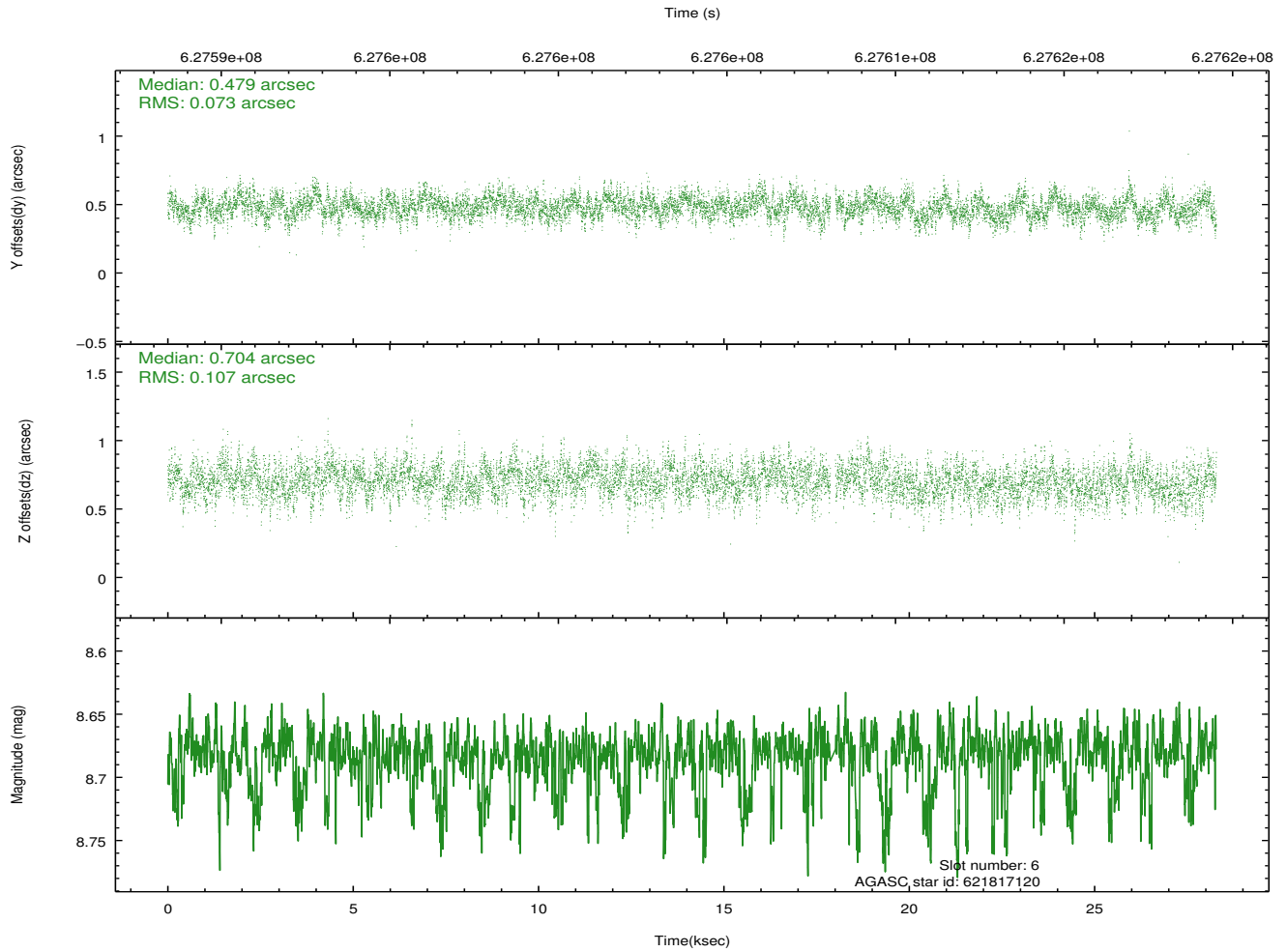
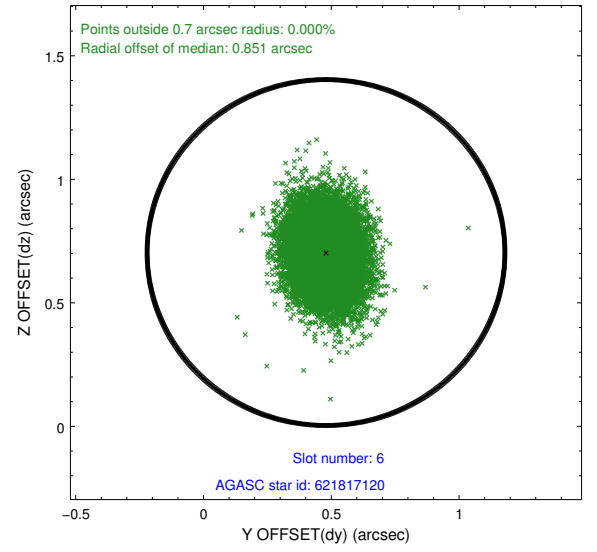
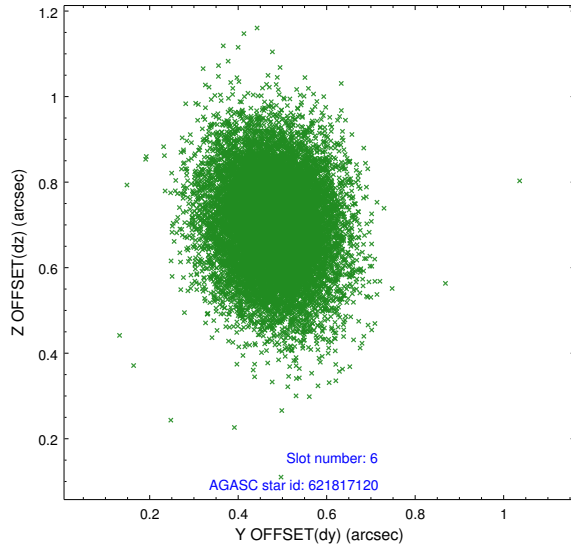
2.4.2 Slot 4



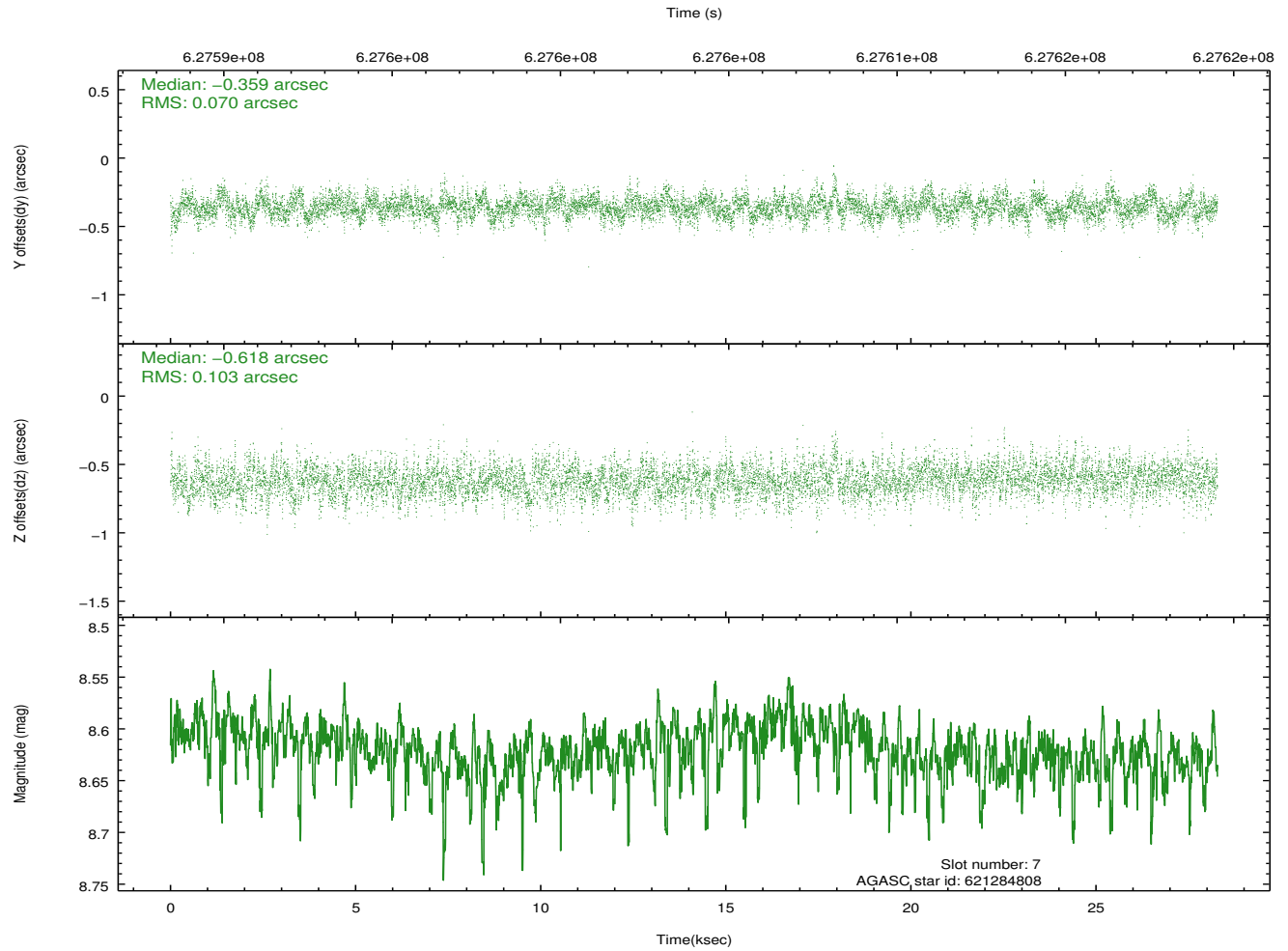
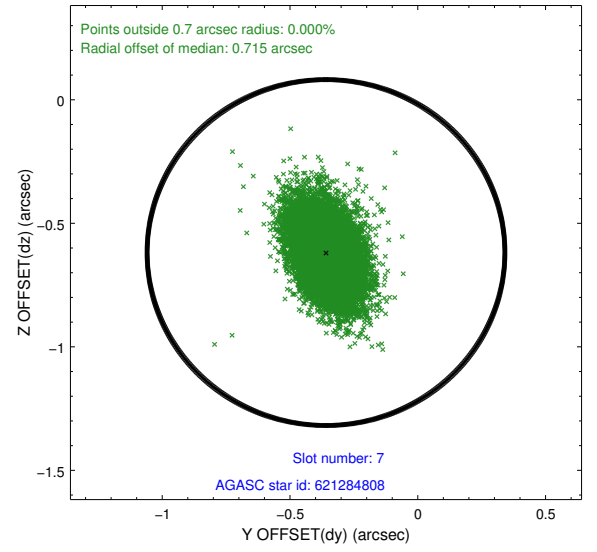
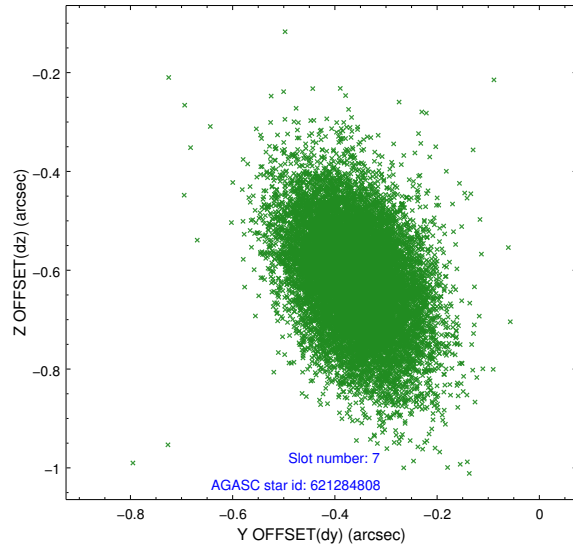
2.4.3 Slot 5



2.4.4 Slot 6

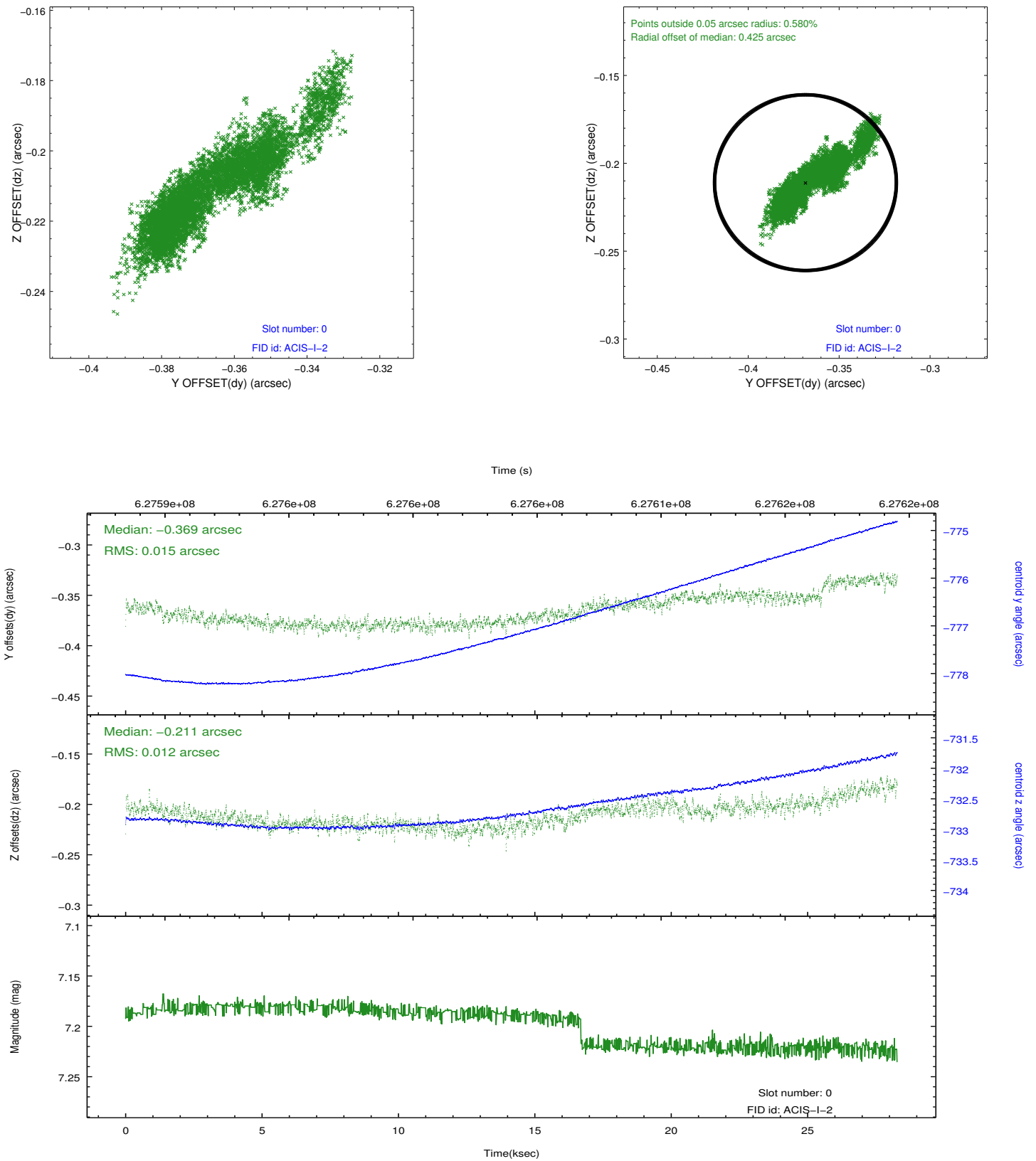


2.4.5 Slot 7

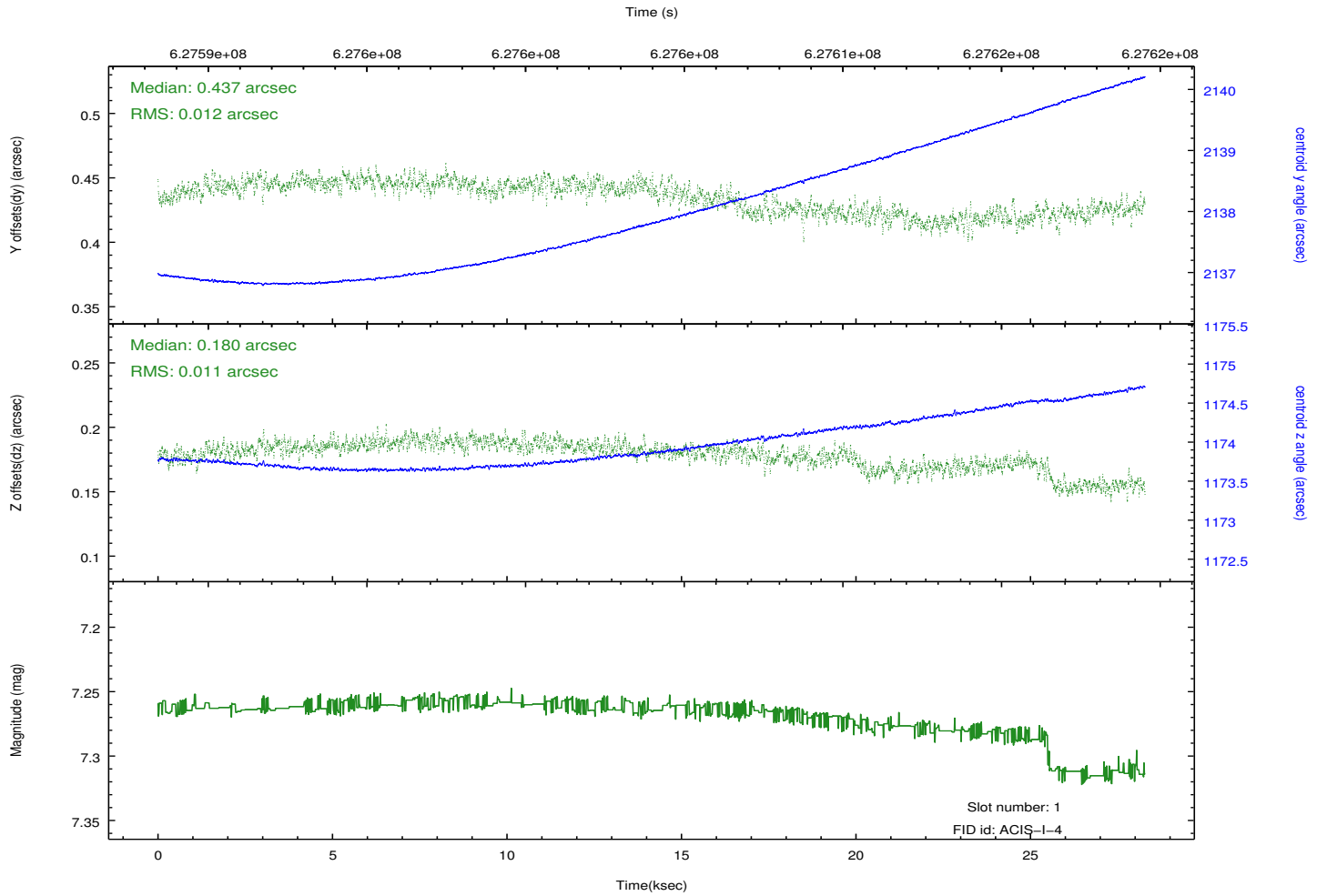
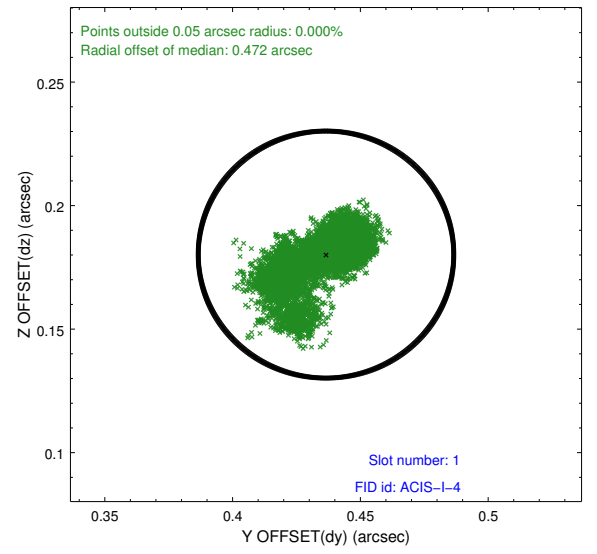
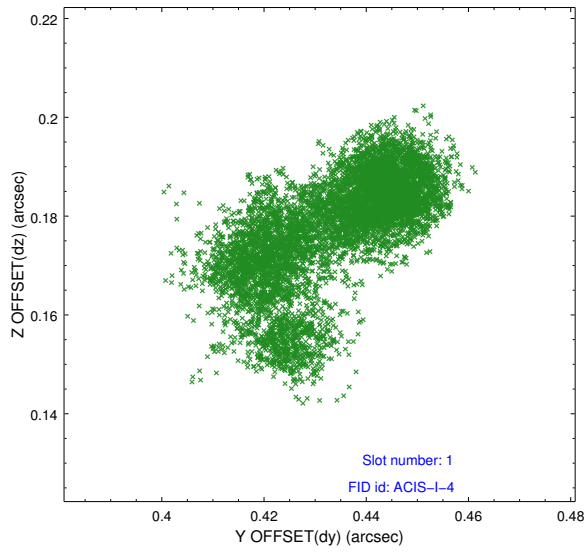


2.5 FID Slots

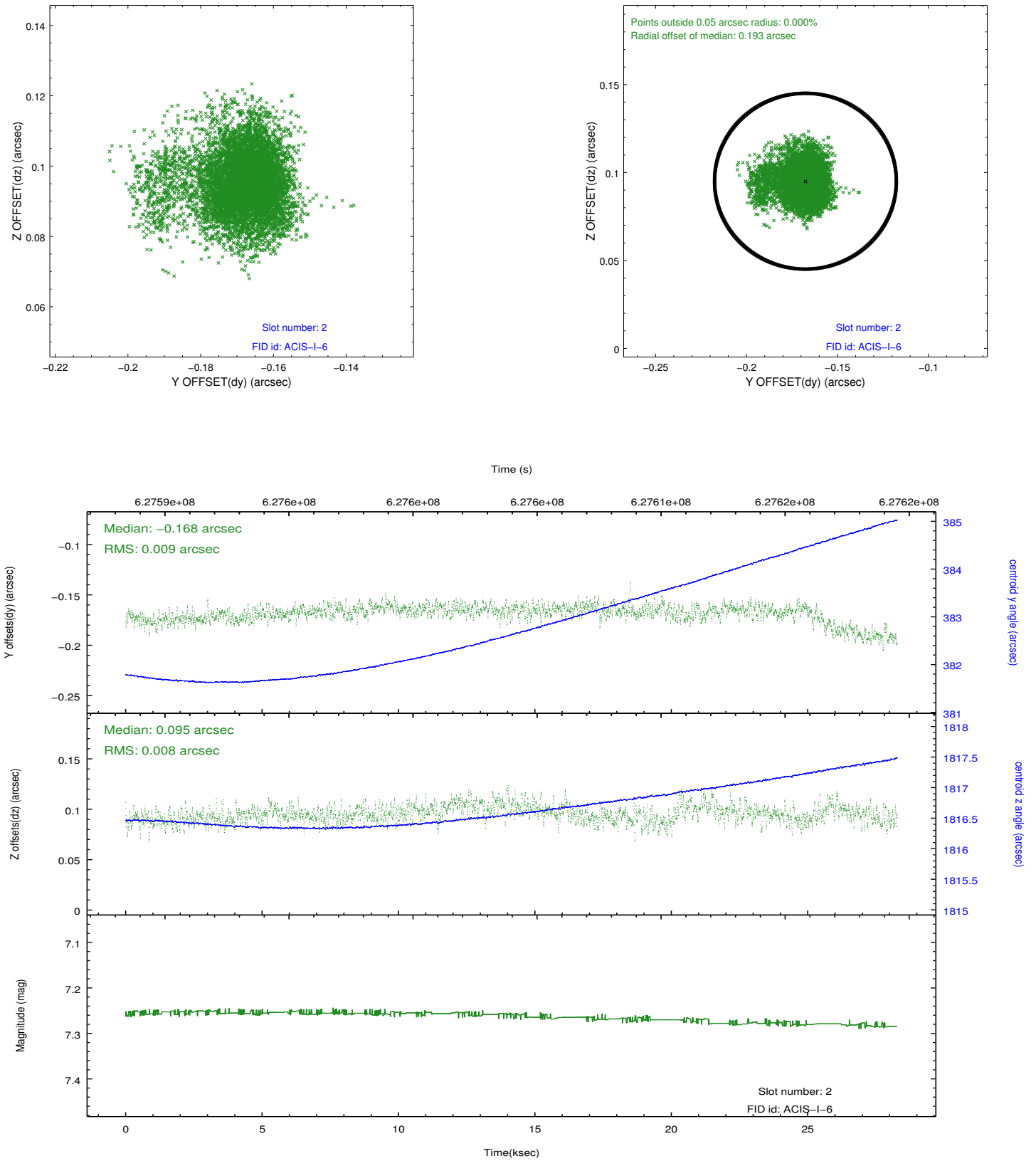
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	28.178918076515

A.2 Comments

One optional chip was dropped.

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A spatial region of the original bias map for CCD = 1 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 = 1 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:

(72.52260,-3.16235), (72.52386,-3.16477), (72.62477,-3.11296),
(72.62266,-3.11097).

==

The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

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/ACIS_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.