

V&V Reference Report

L2 ASCDS Version : 10.4.3.1

Observation 18807 - L2 Version 1
Chandra X-Ray Center

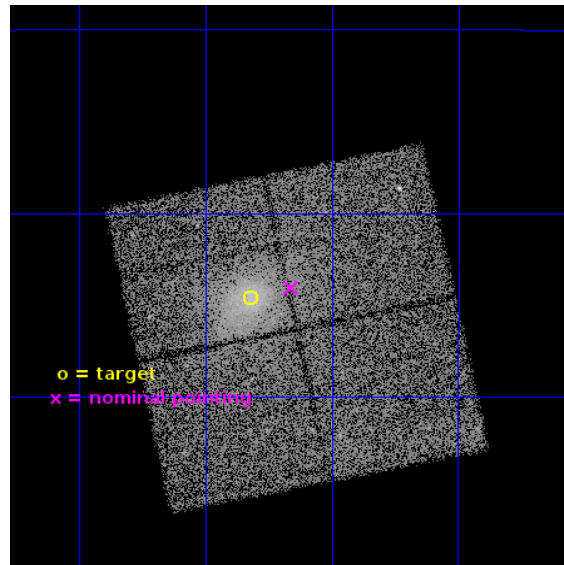
L2 Processing Date : Mar 24 2016

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

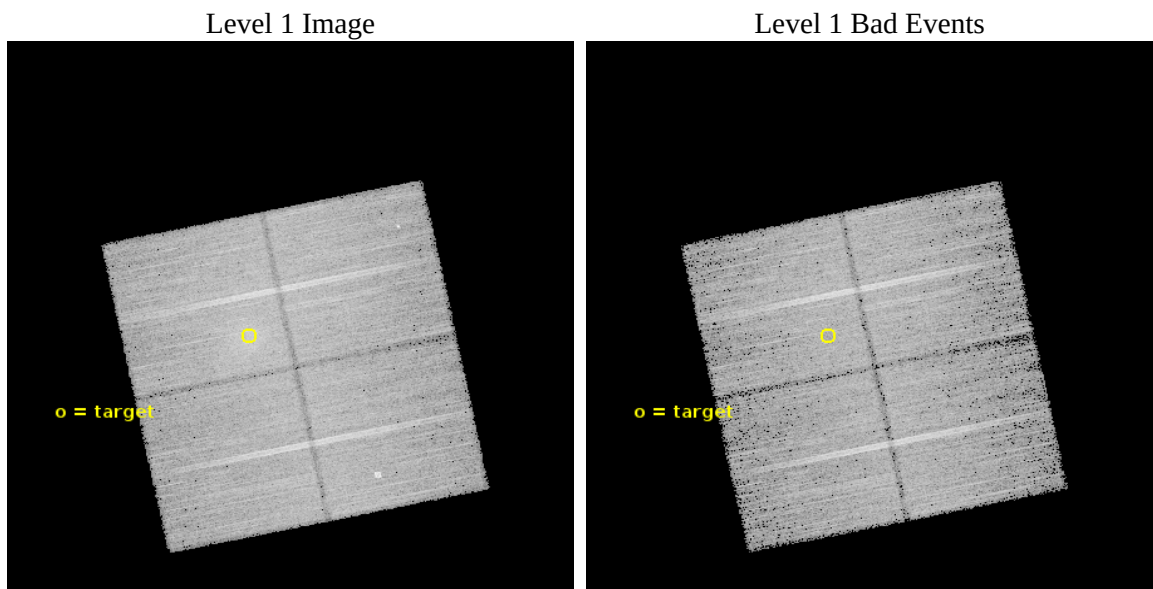
seq_num	801453	Sequence number
obs_id	18807	Observation id
title	Low mach number shocks reaccelerating particles in the Intra-cluster Medium; the unique case of PLCKG287.0 +32.9	Proposal title
observer	Dr Annalisa Bonafede	Principal investigator
object	PLCKG287+.0 +32.9	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	177.705	Observer's specified target RA [deg]
dec_targ	-28.077	Observer's specified target Dec [deg]
ra_nom	177.66489648491	Nominal RA [deg]
dec_nom	-28.06759642862	Nominal Dec [deg]
roll_nom	348.18982020213	Nominal Roll [deg]
revision	1	Processing version of data
ontime	29078.000223756	Sum of GTIs [s]
livetime	28698.07474392	Livetime [s]
ontime0	29078.000223756	Sum of GTIs [s]
ontime1	29071.71807313	Sum of GTIs [s]
ontime2	29078.000223756	Sum of GTIs [s]
ontime3	29078.000223756	Sum of GTIs [s]
l2events	79475	Number of level 2 events



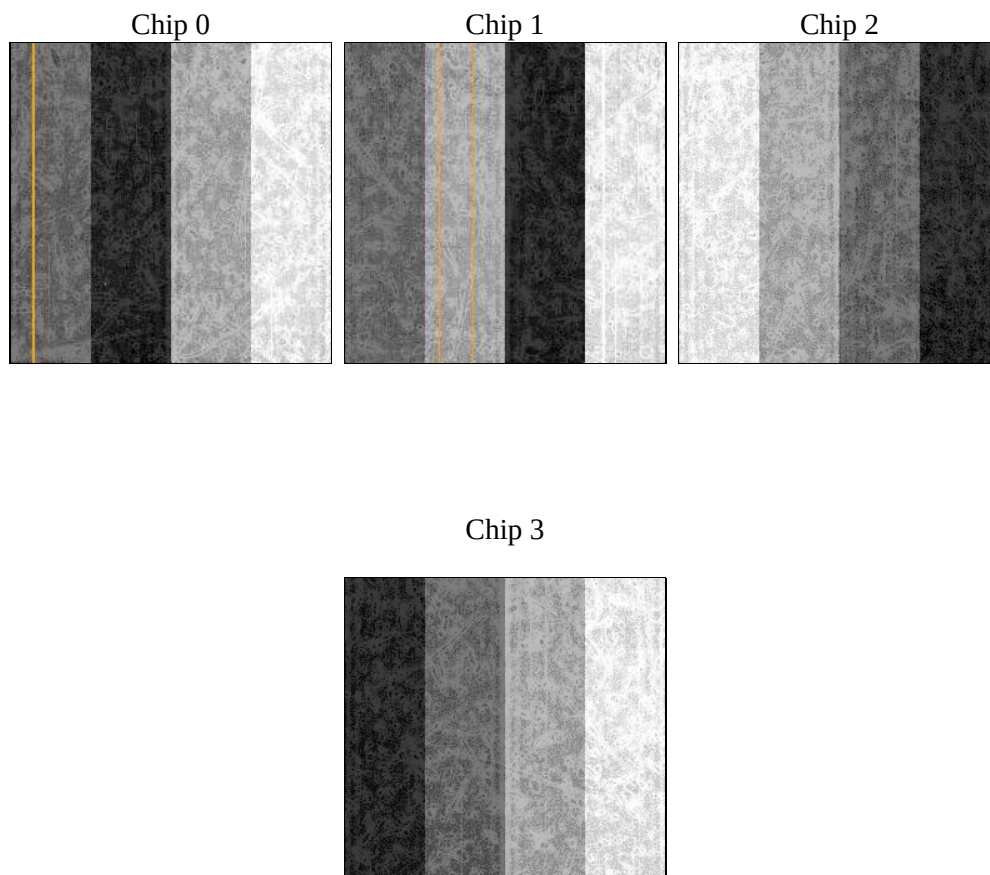
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	29000.000000	[s] Scheduled observation exposure time
ascdsver	10.4.3.1	Processing system revision	ontime	29078.000223756	Sum of GTIs [s]
caldsver	4.7.1	 	ontime0	29078.000223756	Sum of GTIs [s]
date	2016-03-24T06:21:26	Date and time of file creation	ontime1	29071.71807313	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	29078.000223756	Sum of GTIs [s]
			ontime3	29078.000223756	Sum of GTIs [s]
			l1events	715264	Number of level 1 events

2.1.4 Events

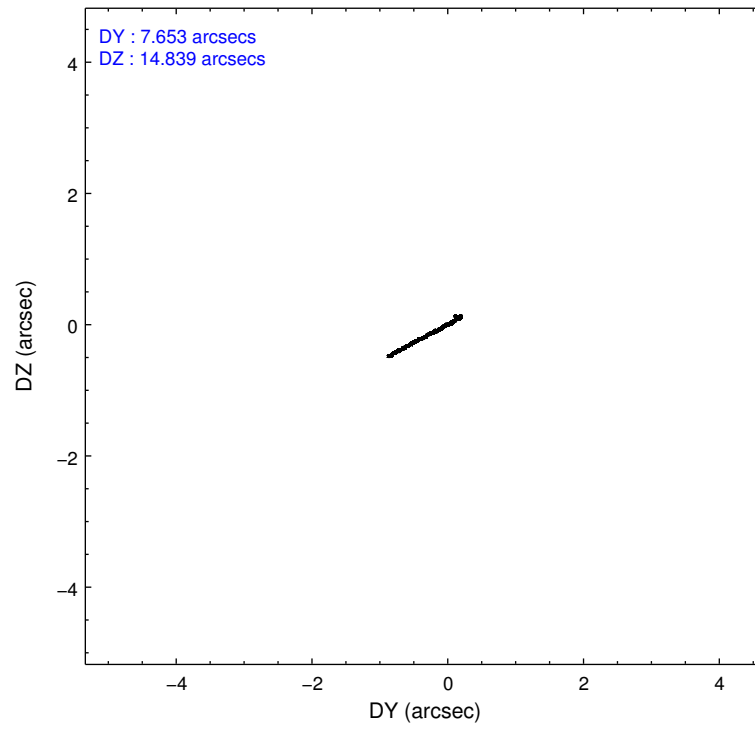
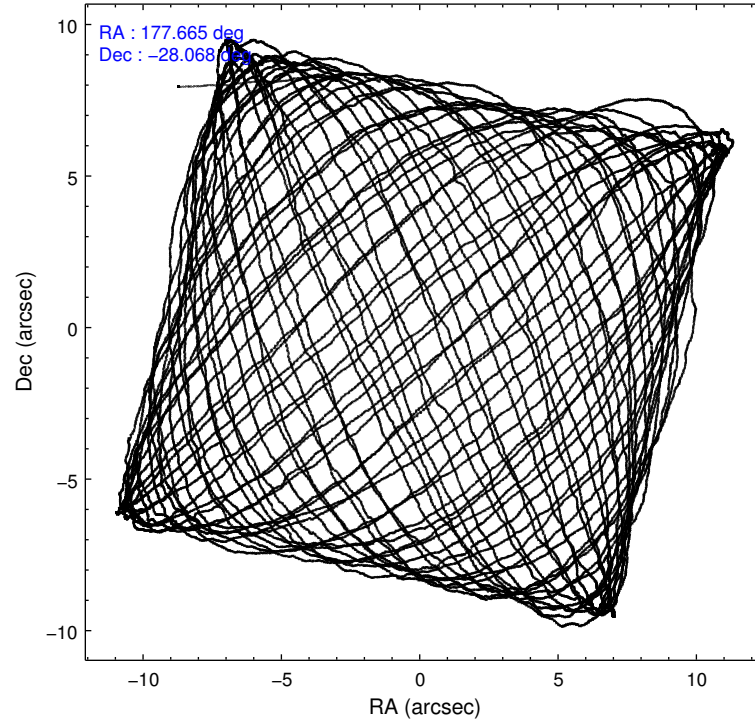
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	166333	168721	197256	182954
rejected events	145643	146710	165896	163092
rejected %	87%	86%	84%	89%

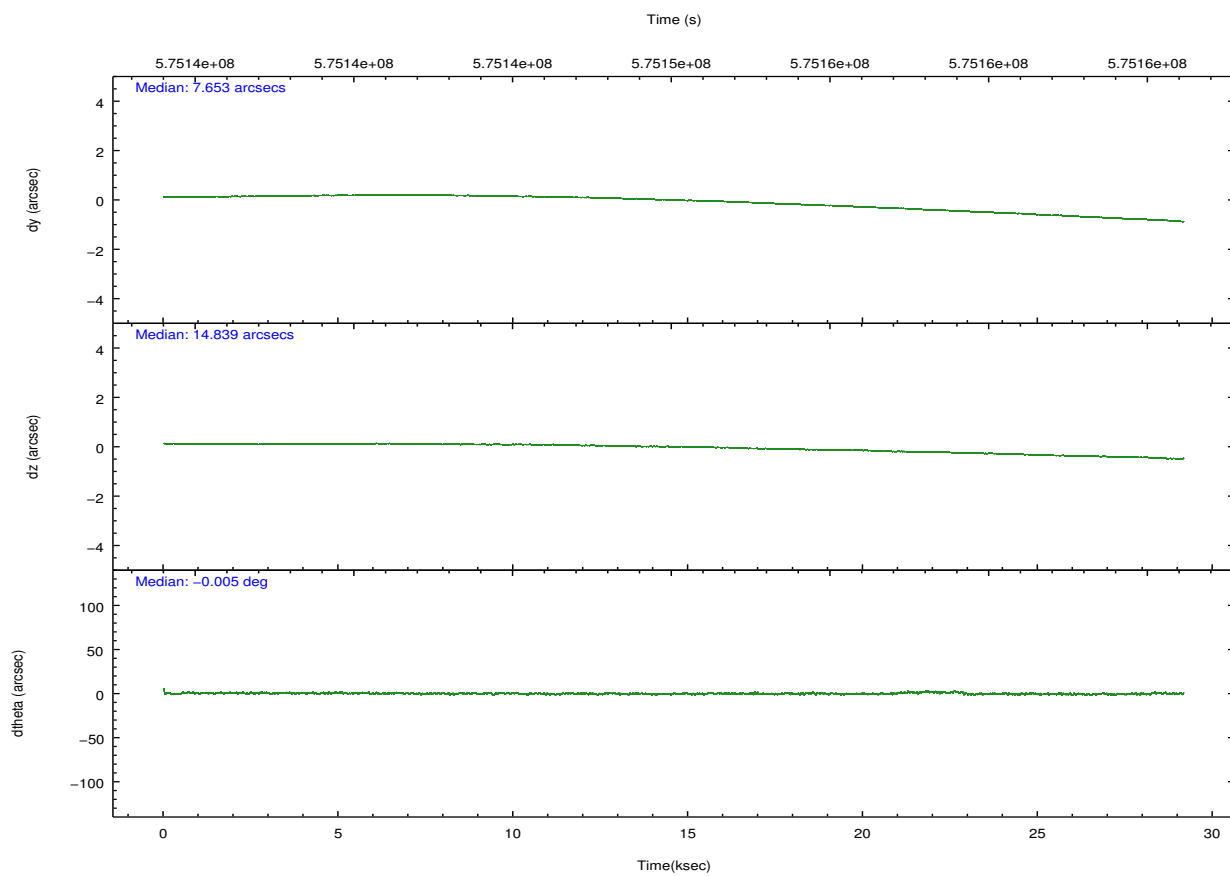
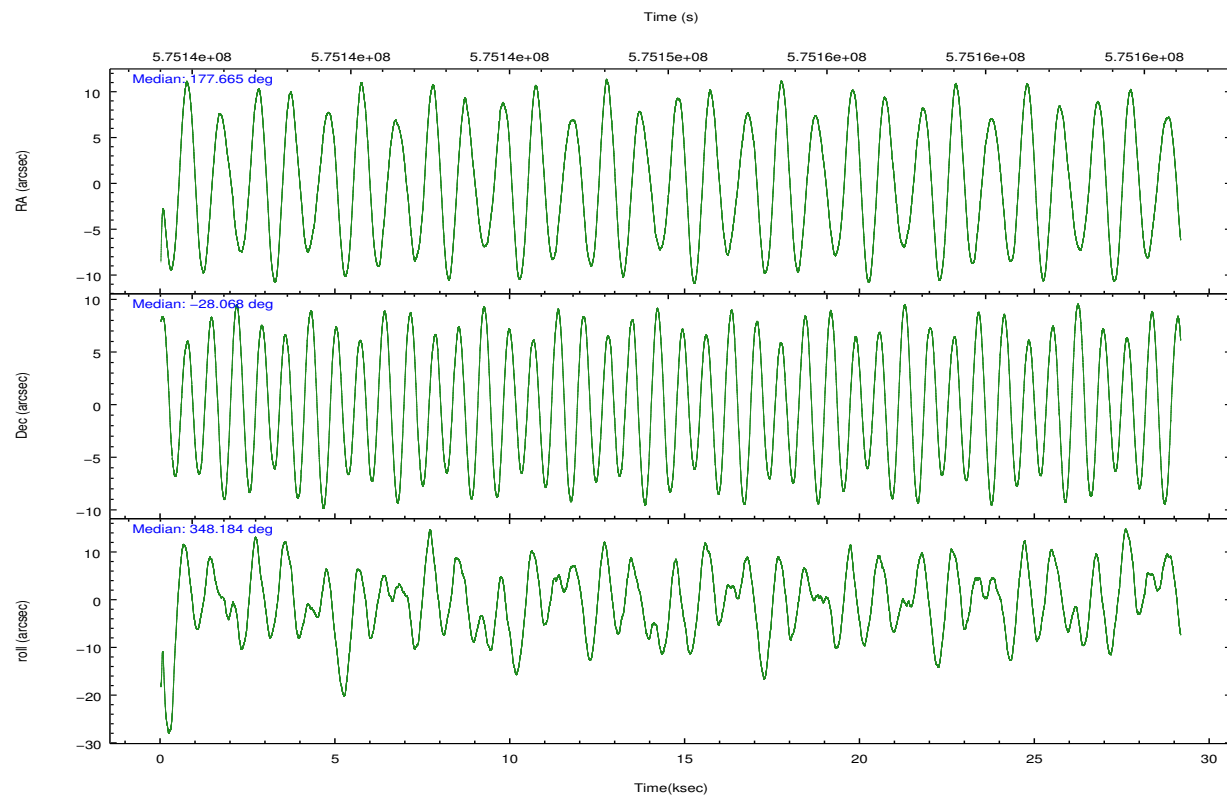
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	7675	7727	16825	7594
	4%	4%	8%	4%
grade 1 events	85	90	137	115
	0%	0%	0%	0%
grade 2 events	4788	5161	5571	4214
	2%	3%	2%	2%
grade 3 events	2045	2028	2309	1945
	1%	1%	1%	1%
grade 4 events	1954	1878	2383	1963
	1%	1%	1%	1%
grade 5 events	7202	7414	6919	8487
	4%	4%	3%	4%
grade 6 events	4231	5219	4277	4151
	2%	3%	2%	2%
grade 7 events	138353	139204	158835	154485
	83%	82%	80%	84%

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	177.635221	177.6648964849122	CCD I2 on	Y	Y
[deg] Pointing Dec	-28.076324	-28.06759642861953	CCD I3 on	Y	Y
[deg] Pointing Roll	347.967166	348.1898202021312	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	N
[mm] SIM translation stage pos	-229.092463	-229.0817814404332	CCD S3 on	N	N
[mm] SIM translation stage offset	-4.5	-4.510671562496526	CCD S4 on	N	N
[s] Observation start time (MET)	575135675.184000	575134353.09421	CCD S5 on	N	N
Observation start date	2016-03-23T15:53:27	2016-03-23T15:32:33	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	575164675.184000	575165535.64599	On-chip summing requested	N	N
Observation end date	2016-03-23T23:56:47	2016-03-24T00:12:15	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



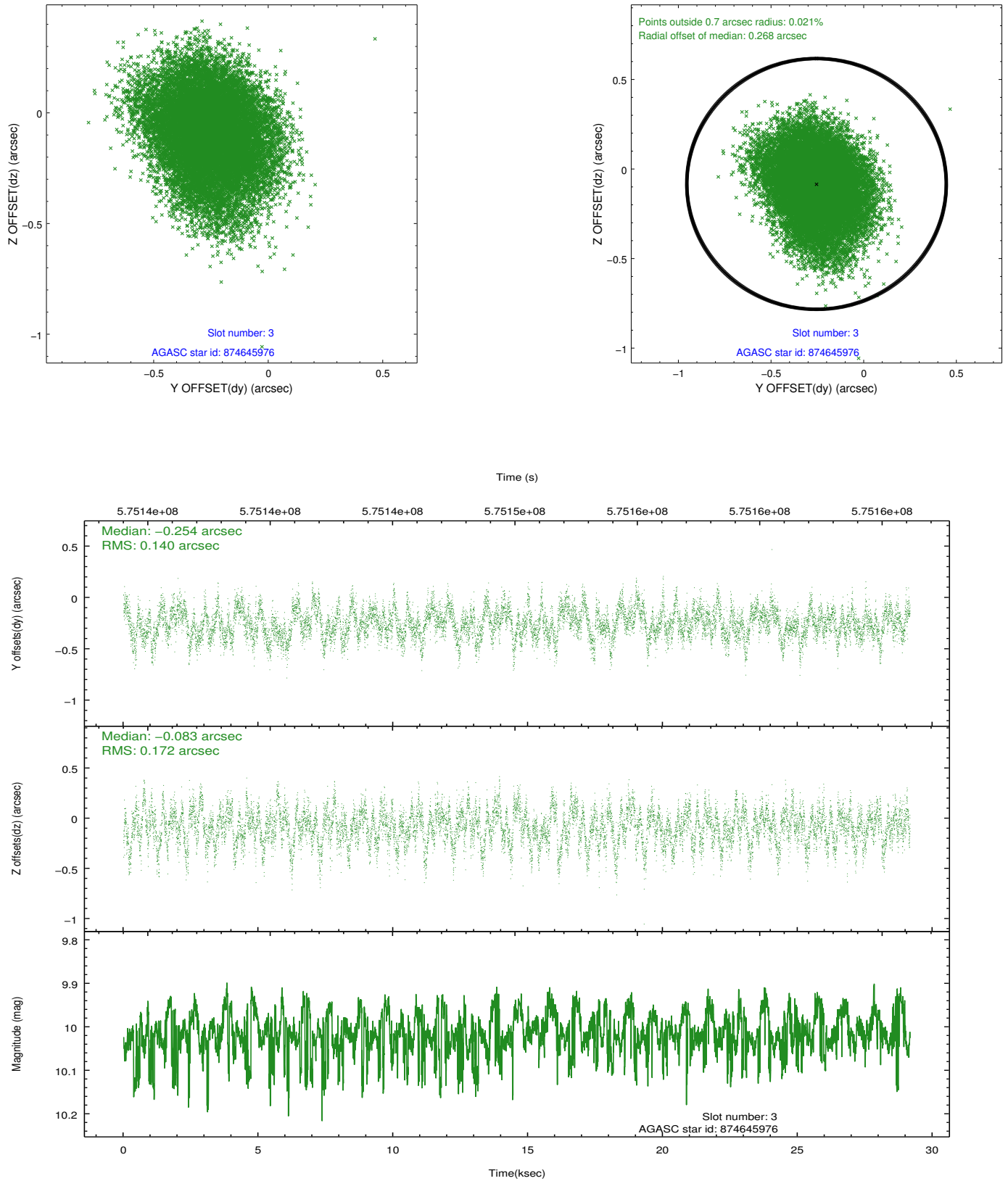


Slot Statistics

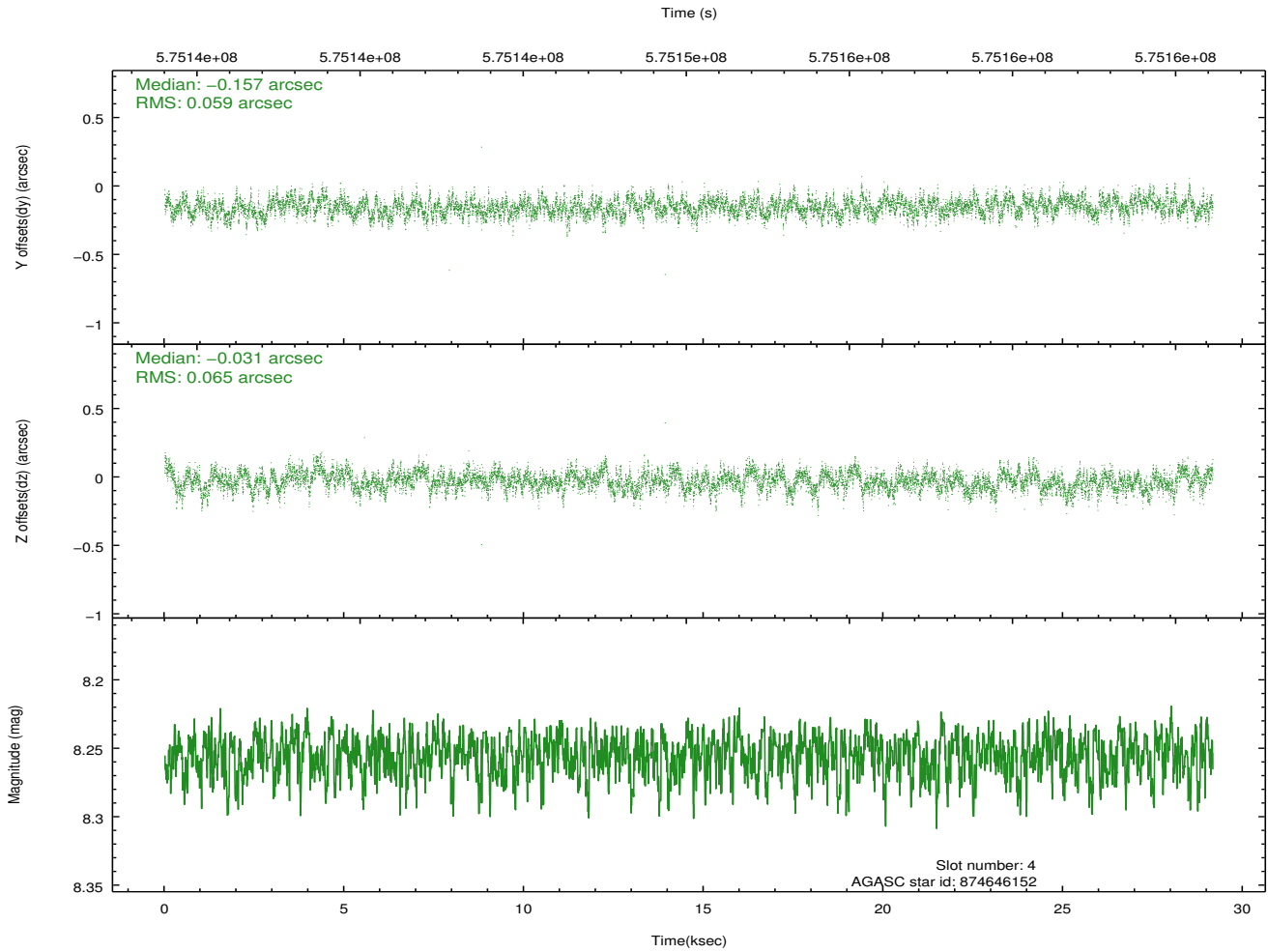
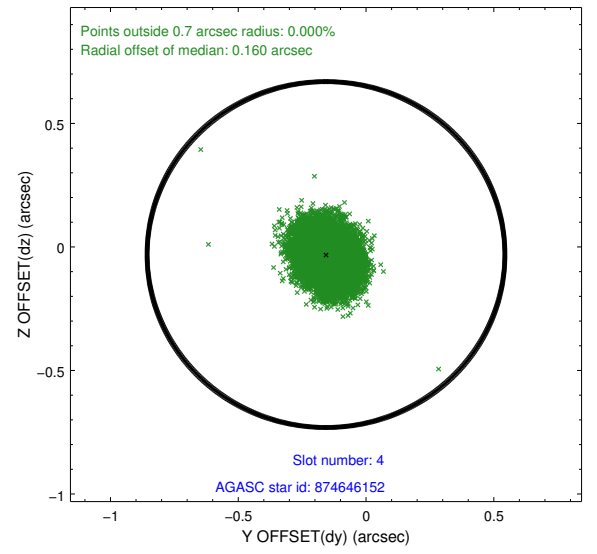
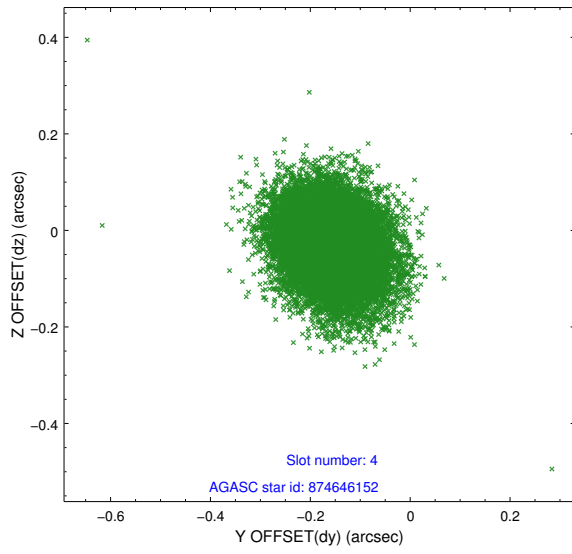
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.26	7113	0.035	-0.133	0.015	0.032	0.000000	0.000000	932.15	-931.02
1	FID		ACIS-I-4	7.18	7112	0.240	0.100	0.018	0.040	0.000000	0.000000	2152.08	969.60
2	FID		ACIS-I-5	7.25	7112	-0.372	0.104	0.014	0.028	0.000000	0.000000	-1816.25	966.79
3	GUIDE	used	874645976	10.02	14175	-0.254	-0.083	0.238	0.379	177.801709	-27.618431	175.51	1722.65
4	GUIDE	used	874646152	8.25	14216	-0.157	-0.031	0.093	0.150	177.238074	-27.509803	-1664.89	1728.18
5	GUIDE	used	875172336	9.05	14147	-0.096	0.386	0.133	0.205	176.990458	-28.388548	-1761.41	-1530.12
6	GUIDE	used	875301144	9.00	14216	0.222	-0.148	0.130	0.210	178.305115	-28.400581	2319.24	-705.68
7	GUIDE	used	875303792	9.99	14205	0.285	-0.116	0.227	0.351	178.163628	-28.681539	2088.29	-1786.66

2.4 Star Slots

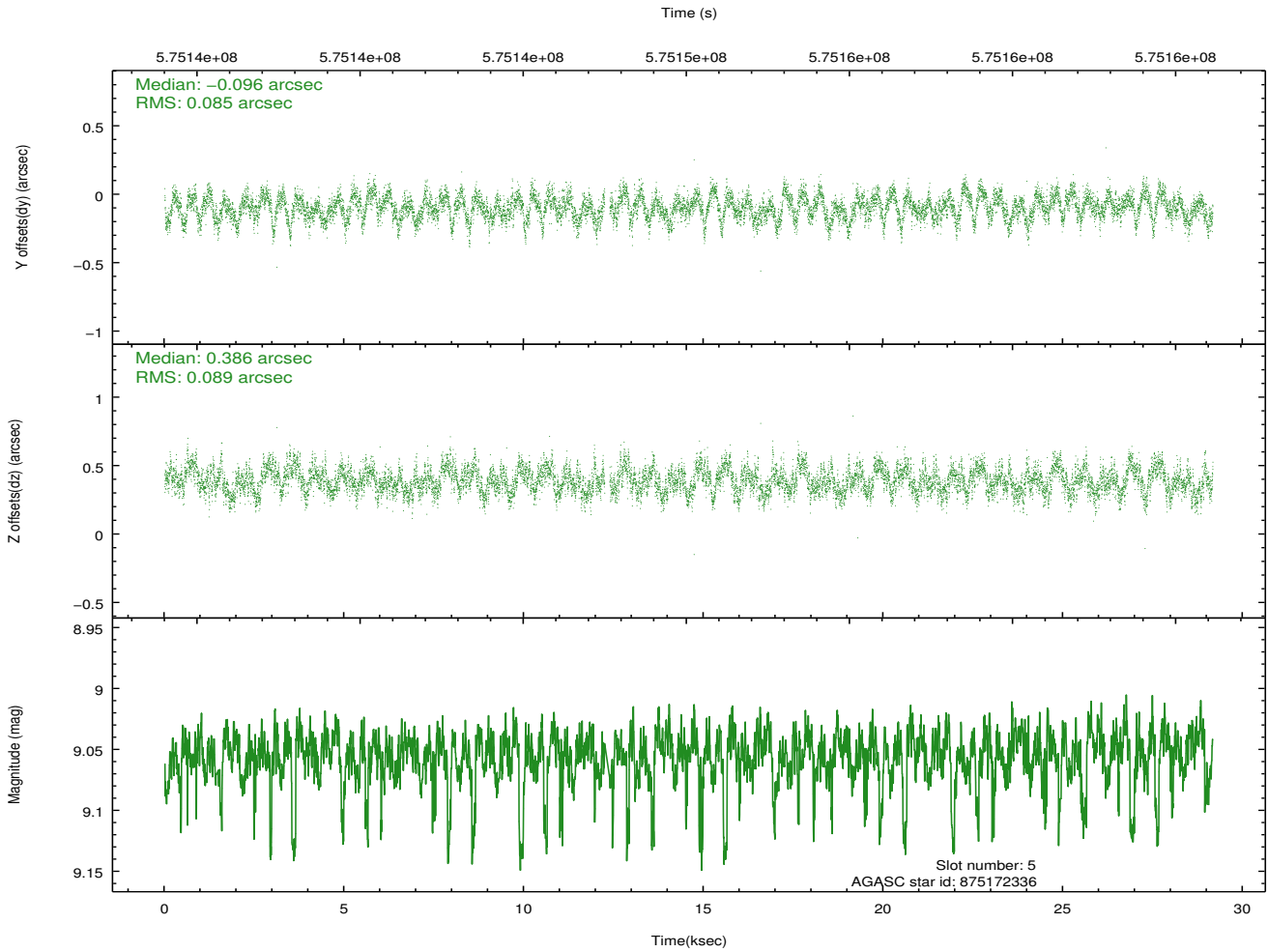
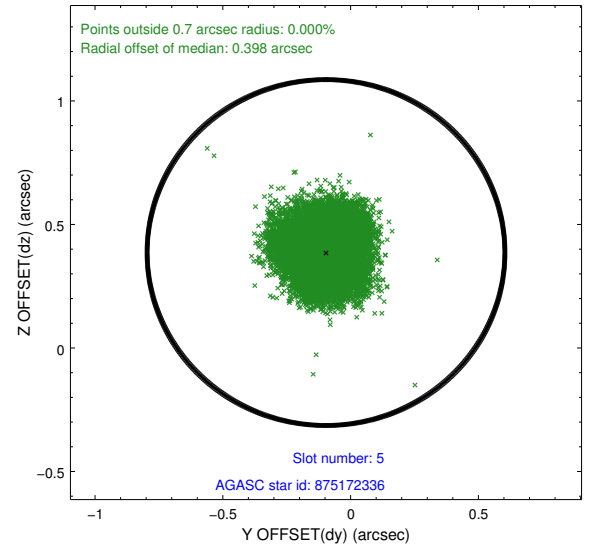
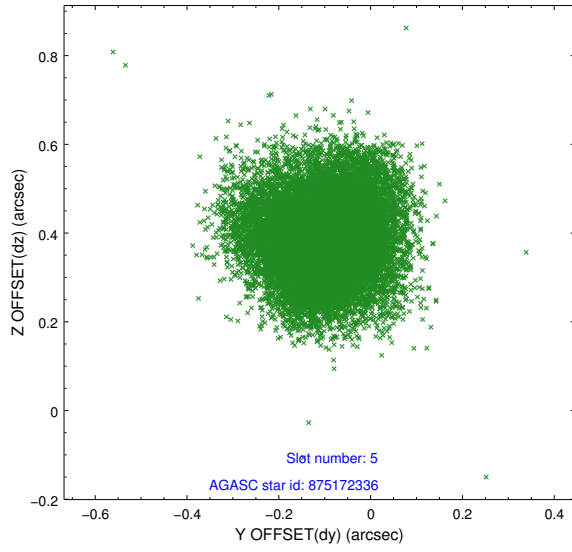
2.4.1 Slot 3



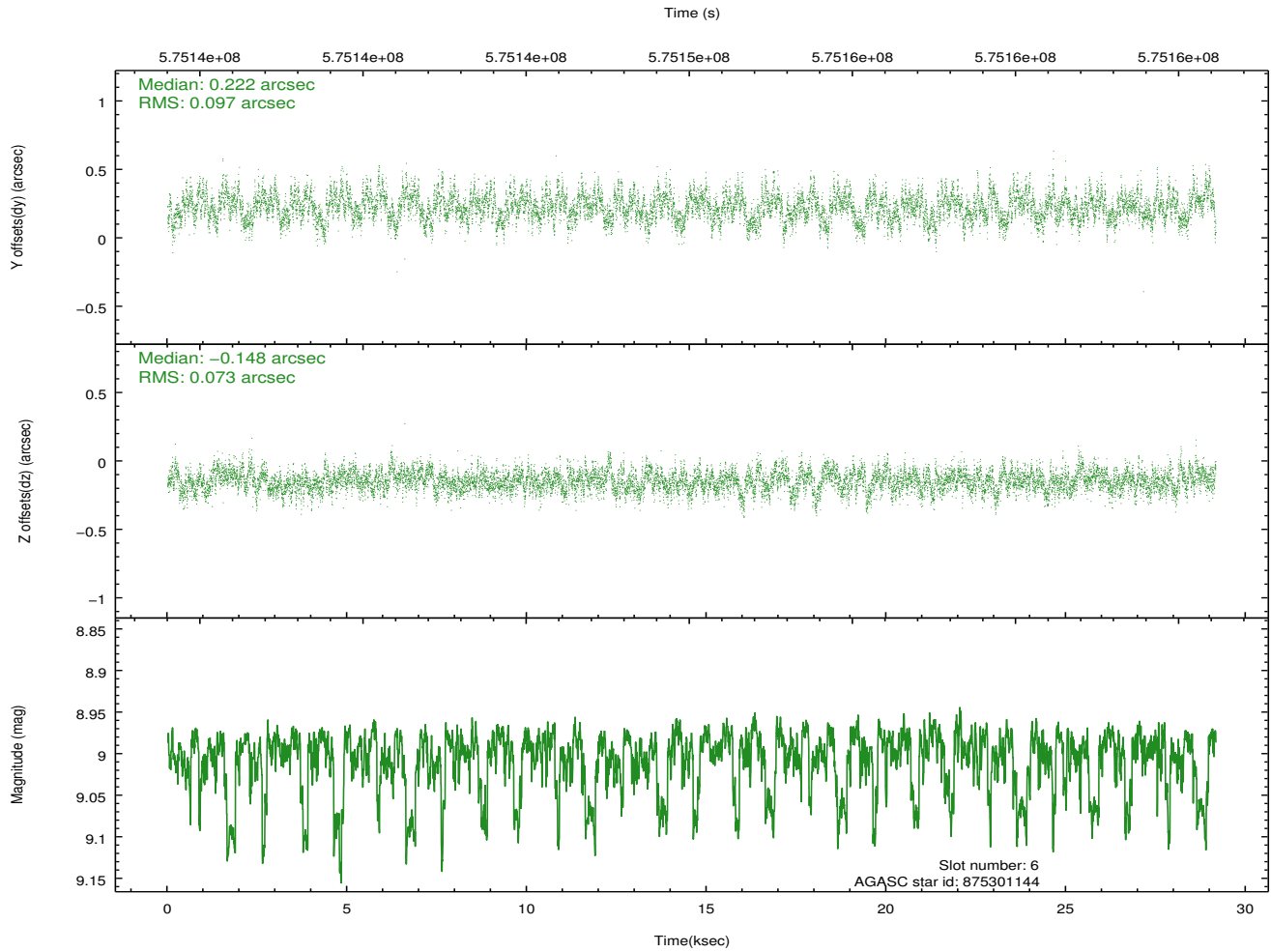
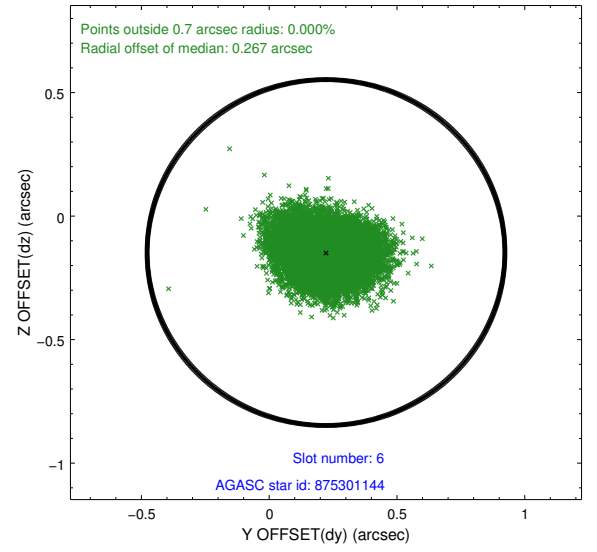
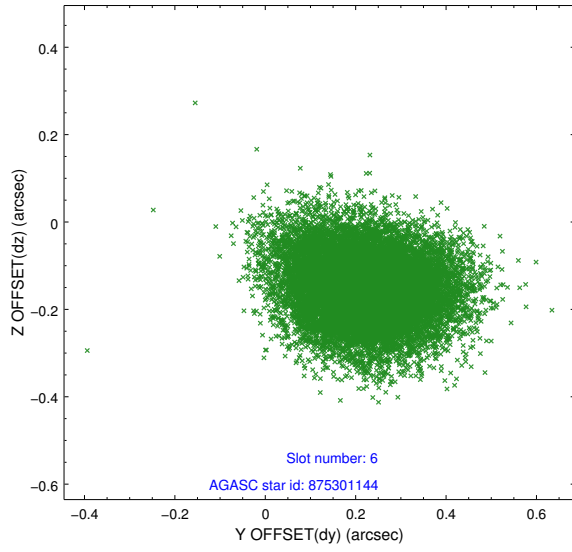
2.4.2 Slot 4



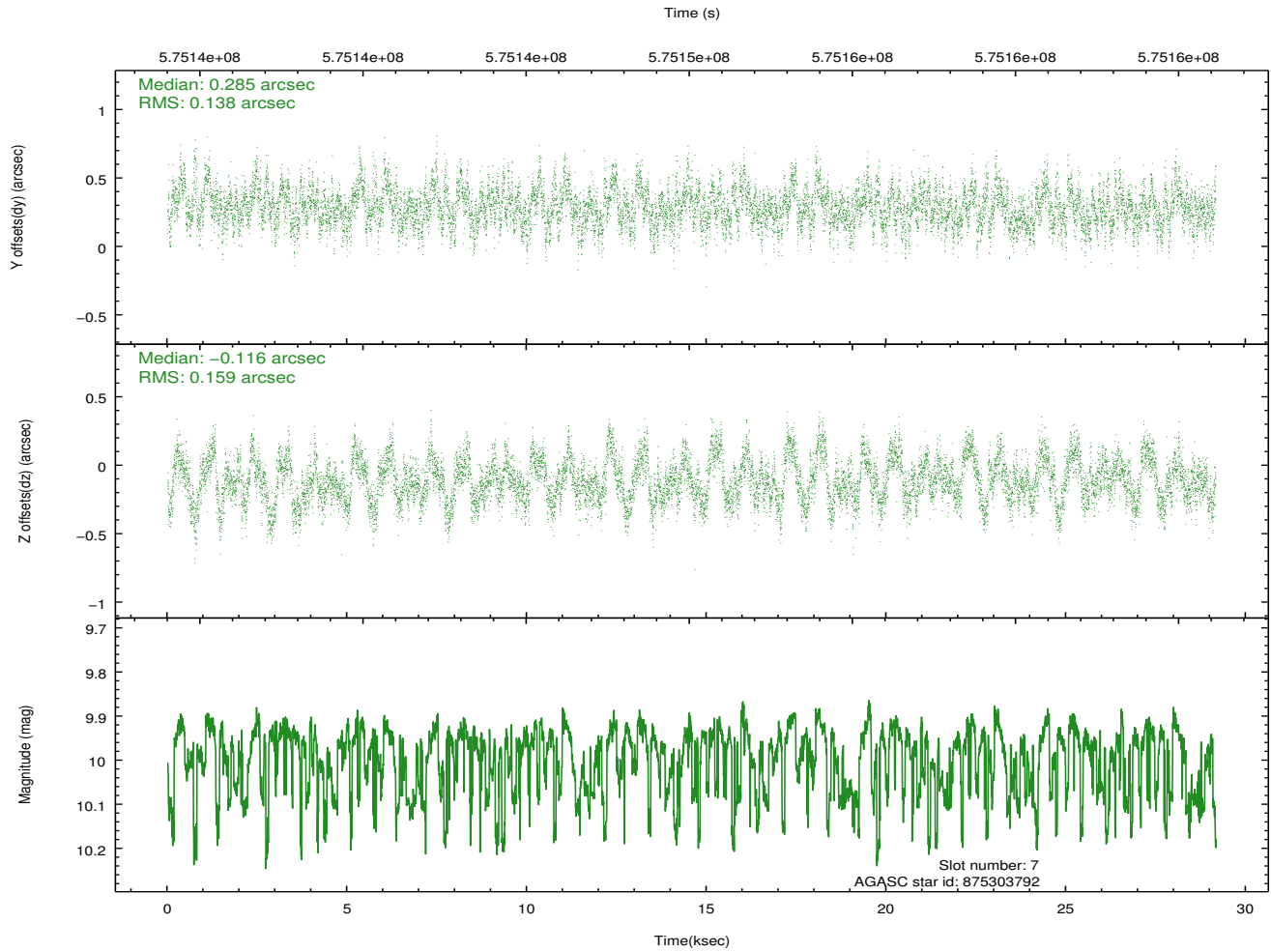
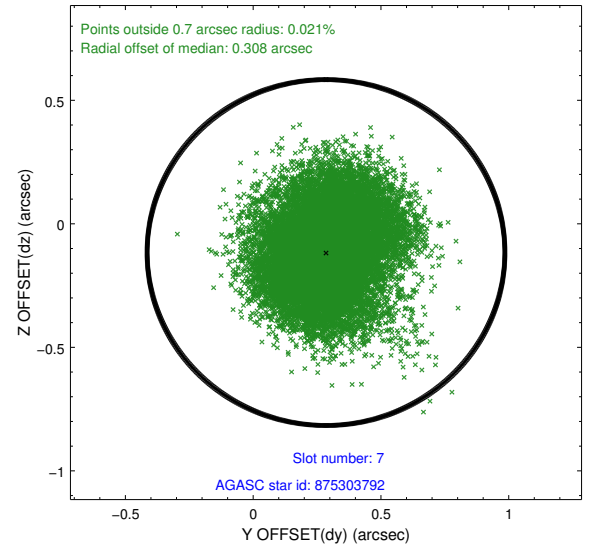
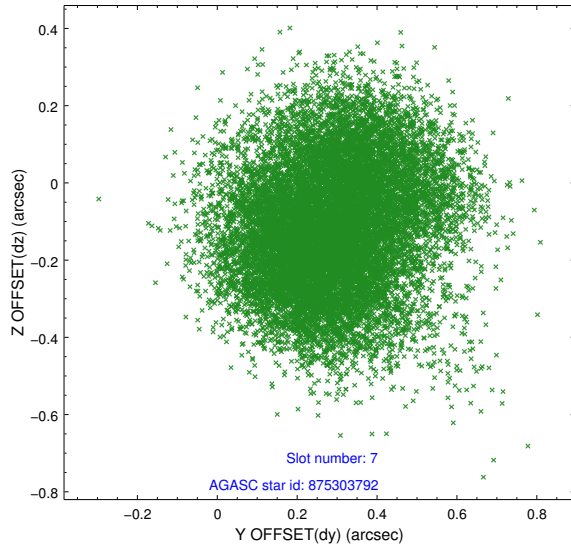
2.4.3 Slot 5



2.4.4 Slot 6

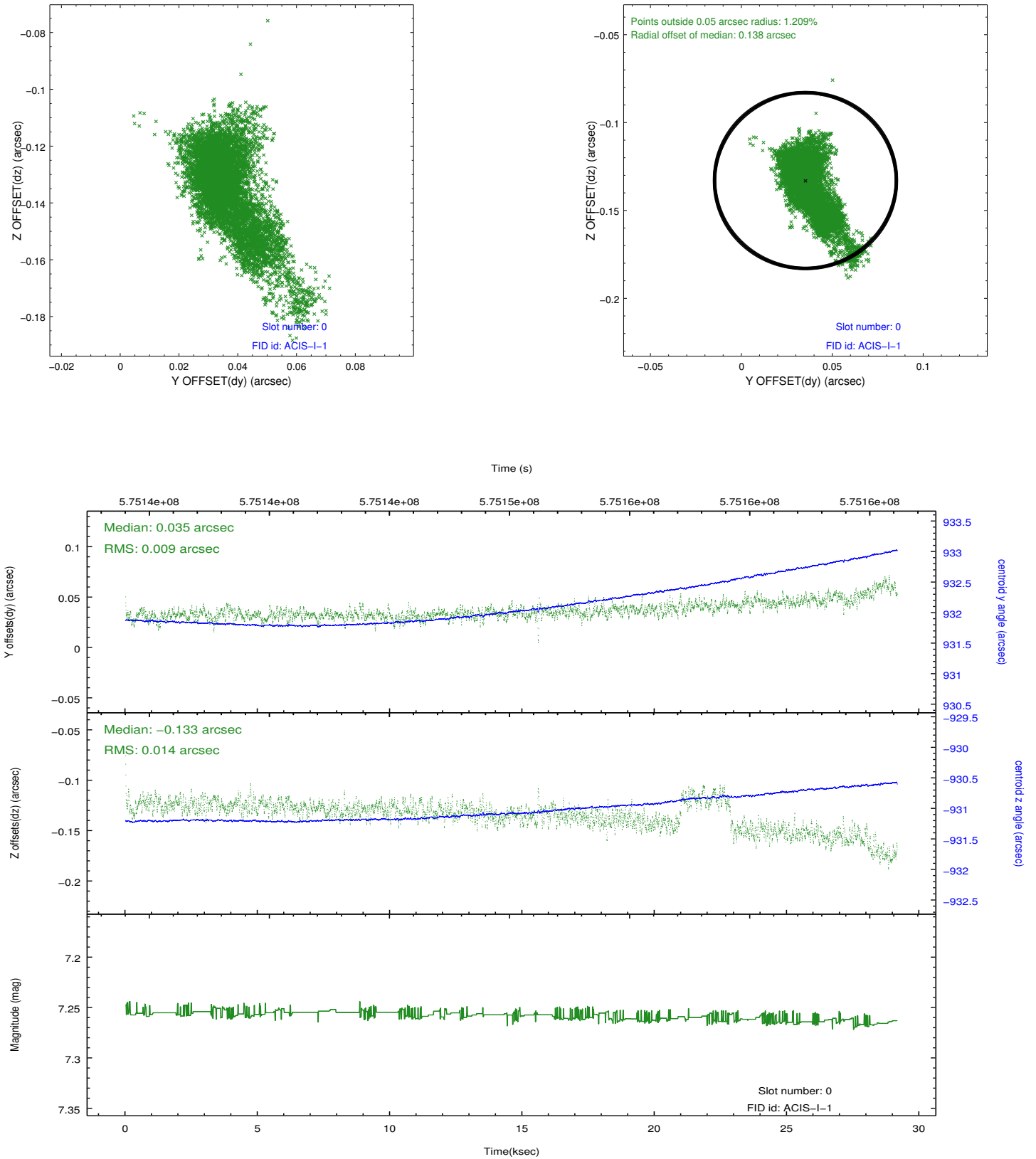


2.4.5 Slot 7

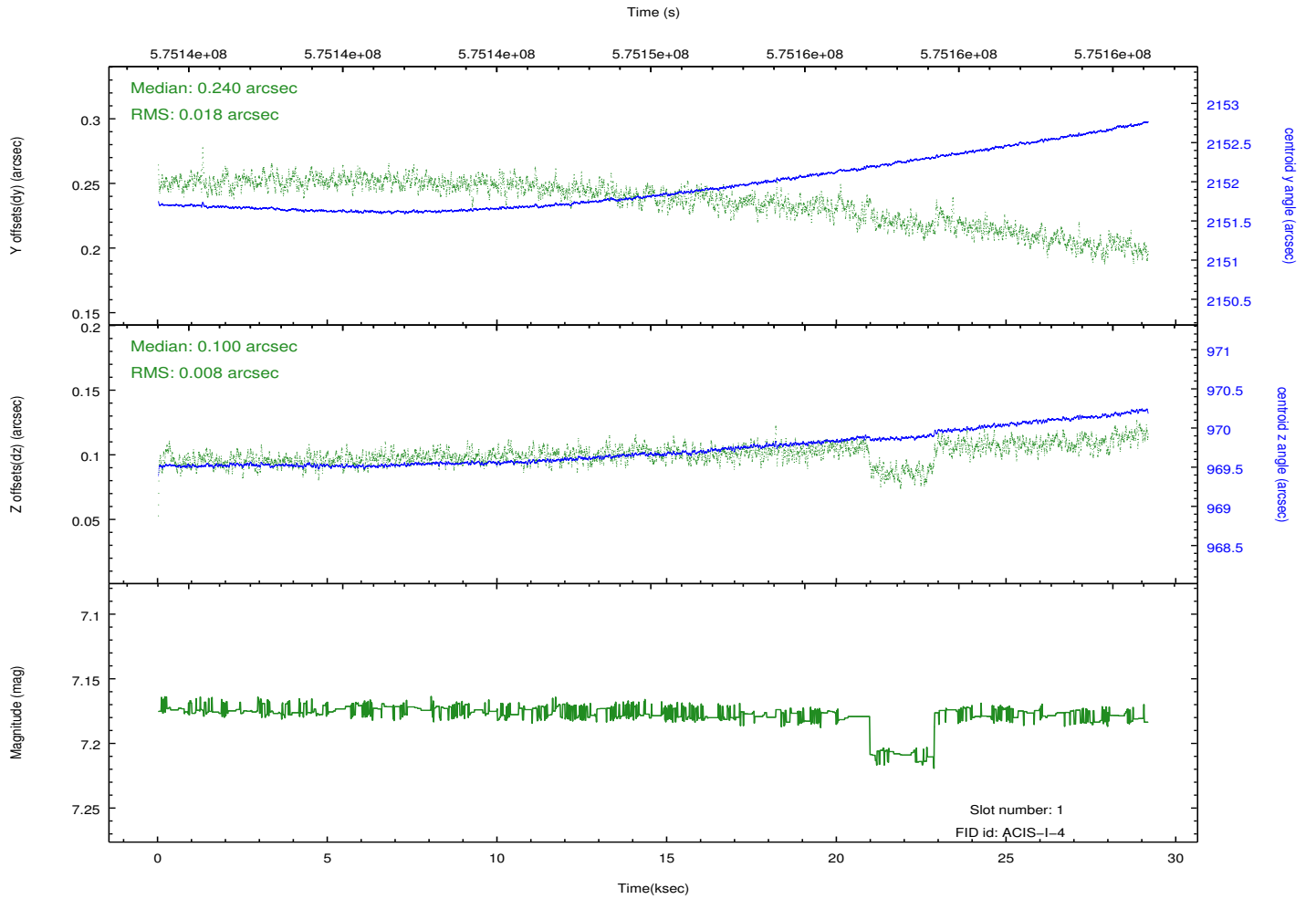
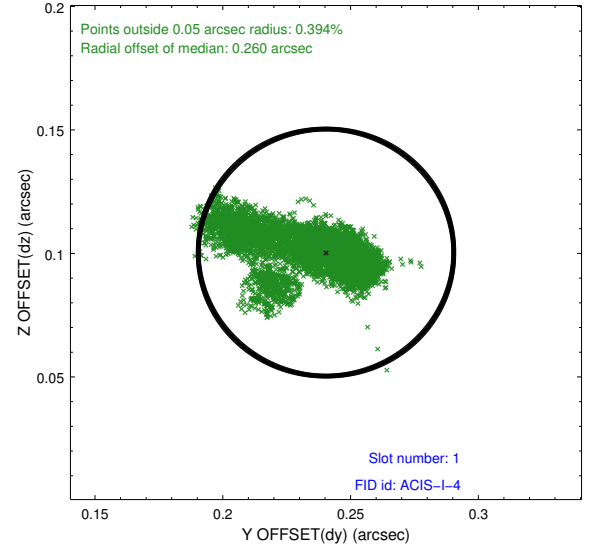
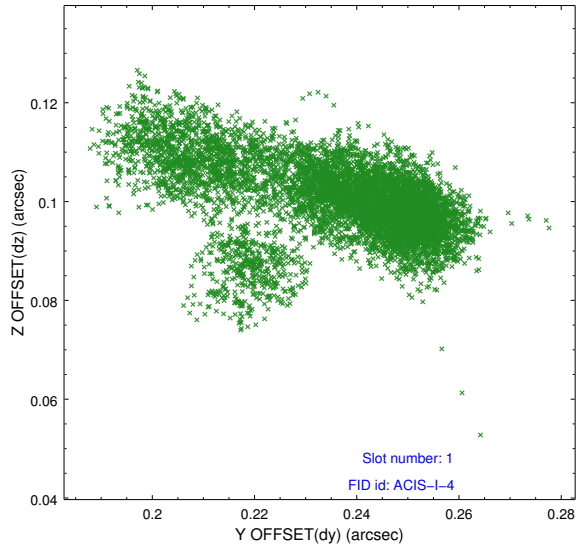


2.5 FID Slots

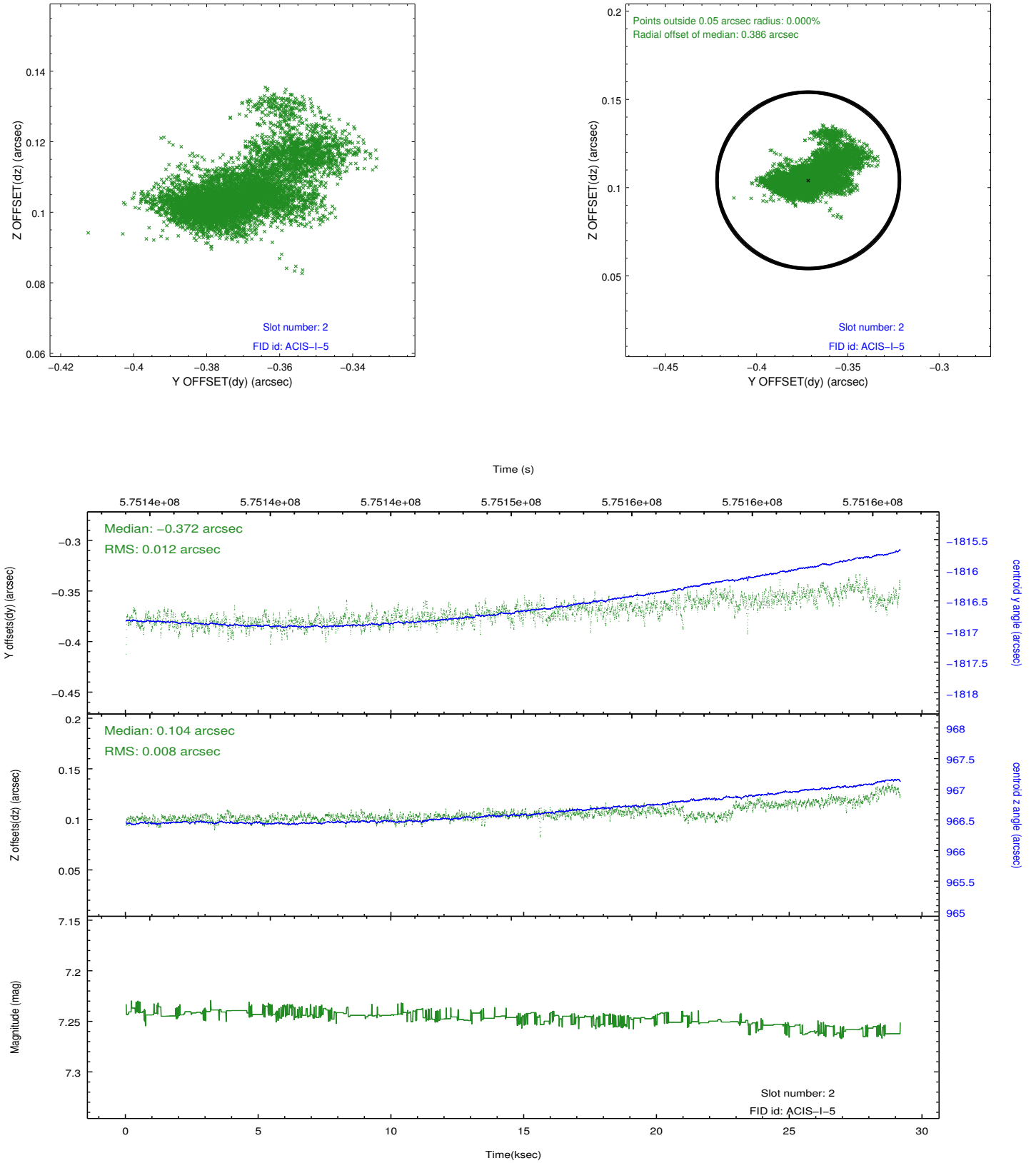
2.5.1 Slot 0



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	29.078000223756

A.2 Comments

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.