

V&V Reference Report

L2 ASCDS Version : 10.8

Observation 21715 - L2 Version 2
Chandra X-Ray Center

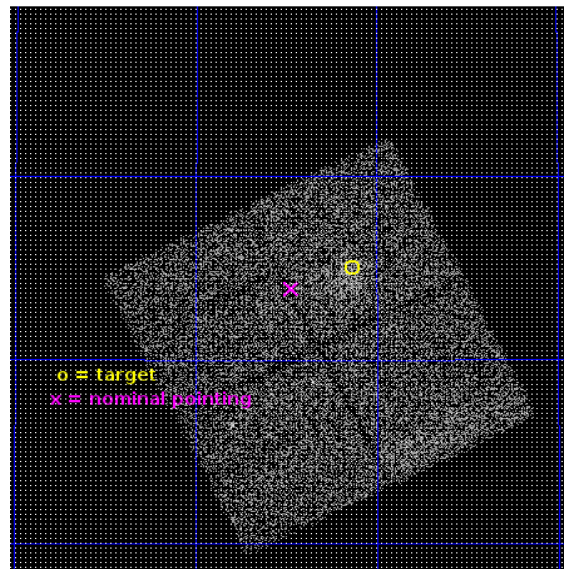
L2 Processing Date : Sep 10 2019

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1 Front

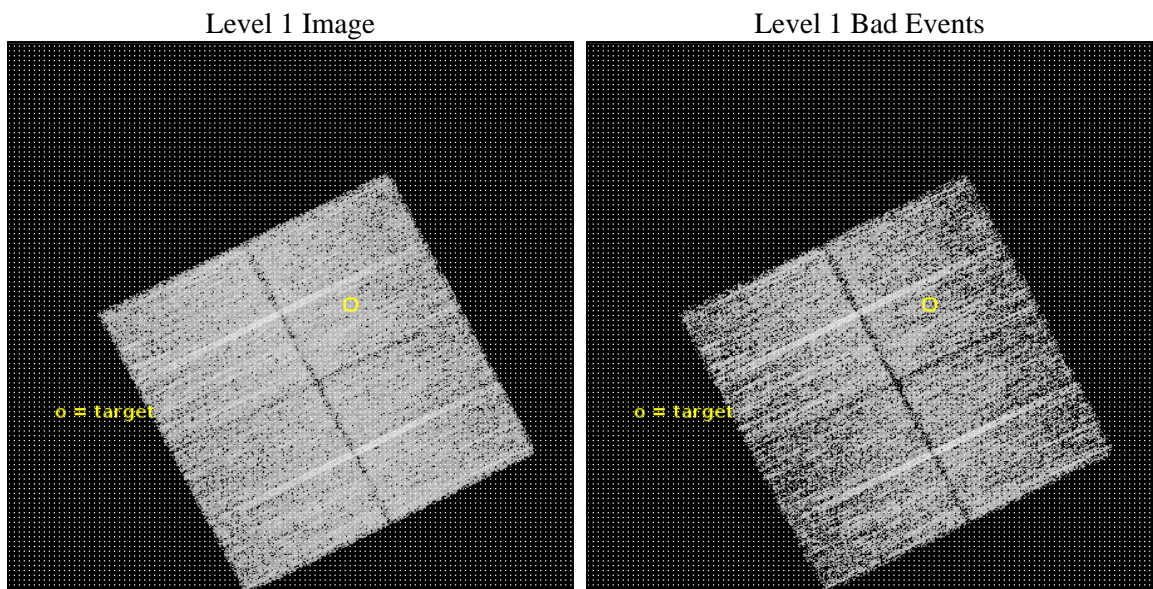
seq_num	801861	Sequence number
obs_id	21715	Observation id
title	Snapshot Survey of LOFAR-selected Galaxy Clusters	Proposal title
observer	Ralph Kraft	Principal investigator
object	PSZ1 G135.24+65.43	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	184.783333	Observer's specified target RA [deg]
dec_targ	50.916667	Observer's specified target Dec [deg]
ra_nom	184.86800187083	Nominal RA [deg]
dec_nom	50.897928747335	Nominal Dec [deg]
roll_nom	333.15054568496	Nominal Roll [deg]
revision	2	Processing version of data
ontime	9036.5000696182	Sum of GTIs [s]
livetime	8918.4315436341	Livetime [s]
ontime0	9036.5000696182	Sum of GTIs [s]
ontime1	9036.5000696182	Sum of GTIs [s]
ontime2	9036.5000696182	Sum of GTIs [s]
ontime3	9036.5000696182	Sum of GTIs [s]
l2events	25931	Number of level 2 events



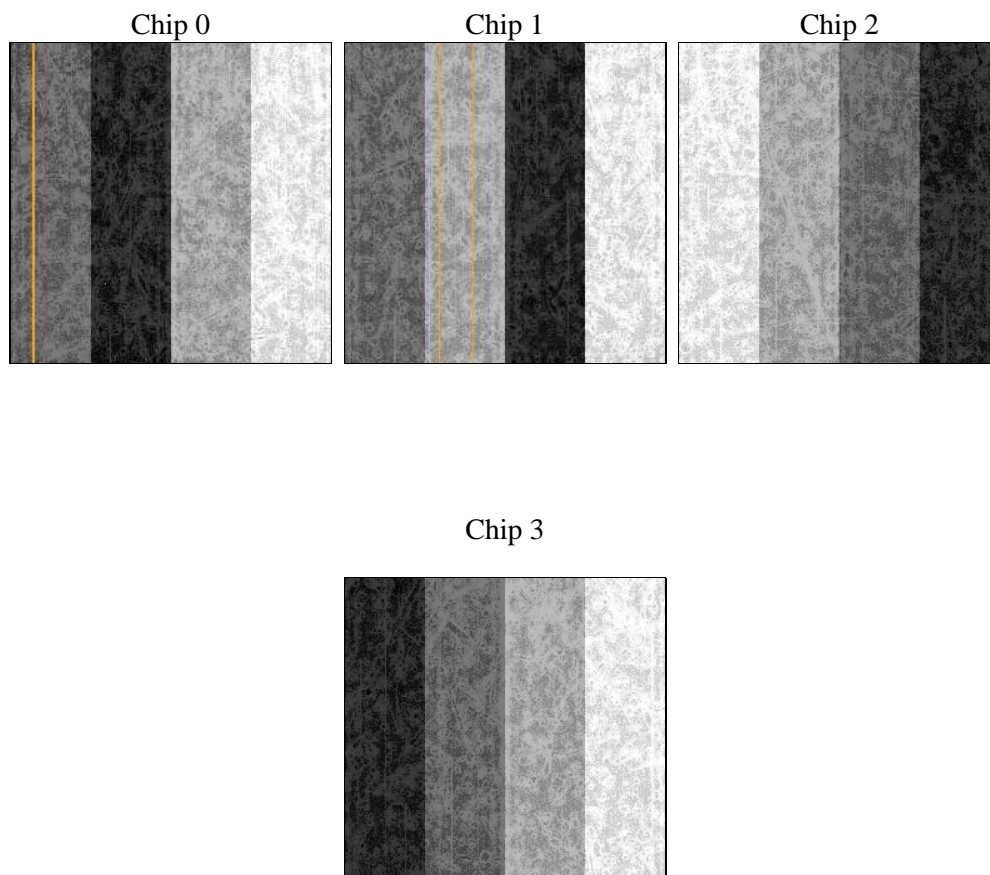
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	10.8	Processing system revision	ontime	9036.5000696182	Sum of GTIs [s]
caldsver	4.8.4.1	 	ontime0	9036.5000696182	Sum of GTIs [s]
date	2019-09-10T20:24:29	Date and time of file creation	ontime1	9036.5000696182	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	9036.5000696182	Sum of GTIs [s]
			ontime3	9036.5000696182	Sum of GTIs [s]
			l1events	274829	Number of level 1 events

2.1.4 Events

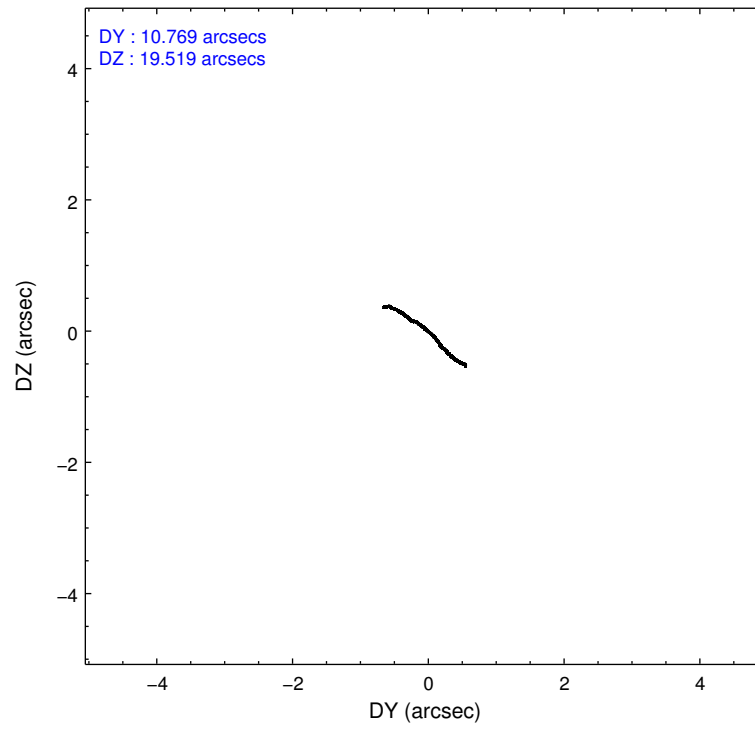
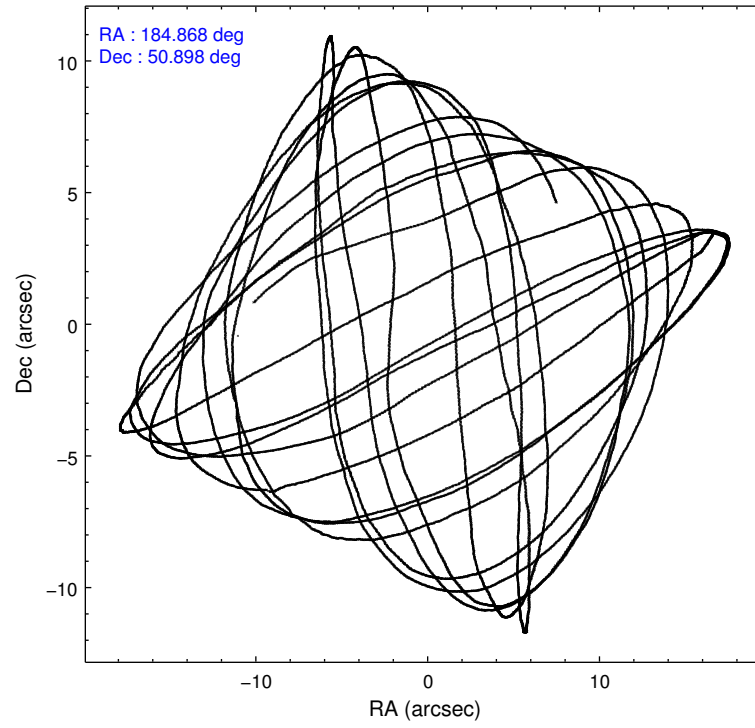
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	63389	67023	75174	69243
rejected events	55781	58712	68036	61648
rejected %	87%	87%	90%	89%

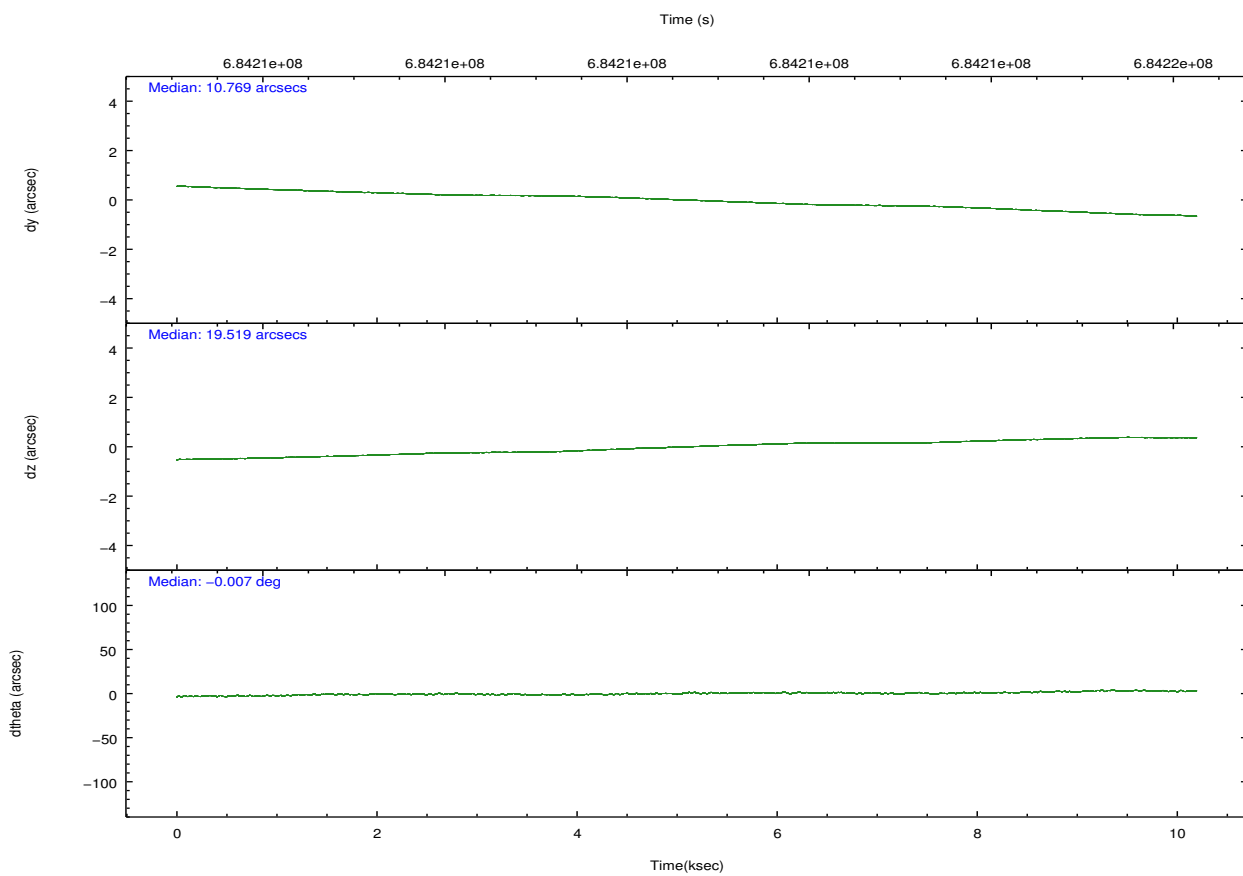
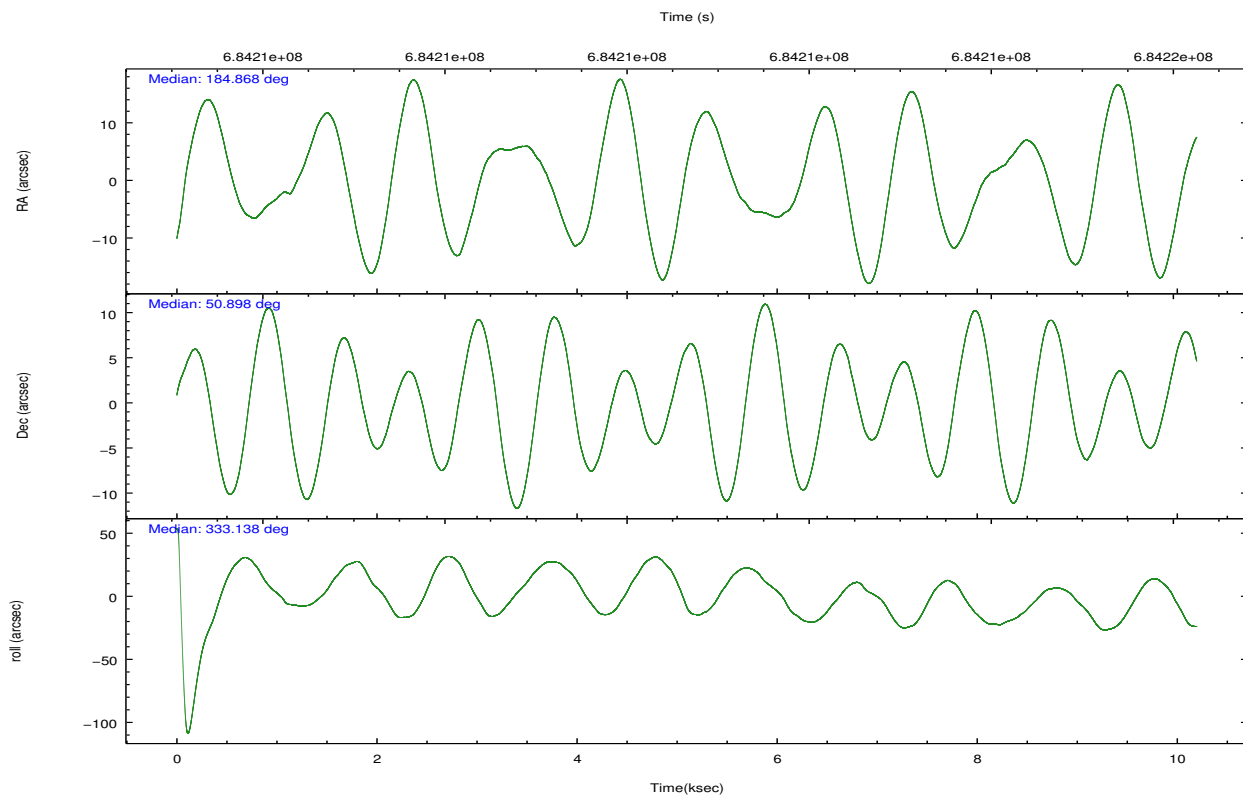
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	2539	2258	2453	2934
	4%	3%	3%	4%
grade 1 events	21	31	33	39
	0%	0%	0%	0%
grade 2 events	1973	2563	1792	1655
	3%	3%	2%	2%
grade 3 events	696	716	701	734
	1%	1%	0%	1%
grade 4 events	746	652	715	694
	1%	0%	0%	1%
grade 5 events	2615	2629	2458	2956
	4%	3%	3%	4%
grade 6 events	1662	2126	1480	1581
	2%	3%	1%	2%
grade 7 events	53137	56048	65542	58650
	83%	83%	87%	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	184.824300	184.8680018708335	CCD I2 on	Y	Y
[deg] Pointing Dec	50.896260	50.89792874733521	CCD I3 on	Y	Y
[deg] Pointing Roll	332.975766	333.1505456849584	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	-225.842463	-225.8458576473255	CCD S3 on	N	N
[mm] SIM translation stage offset	-7.75	-7.746595355604228	CCD S4 on	N	N
[s] Observation start time (MET)	684205734.184000	684205304.5264	CCD S5 on	N	N
Observation start date	2019-09-07T01:07:45	2019-09-07T01:01:44	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	684215734.184000	684216597.97708	On-chip summing requested	N	N
Observation end date	2019-09-07T03:54:25	2019-09-07T04:09:57	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



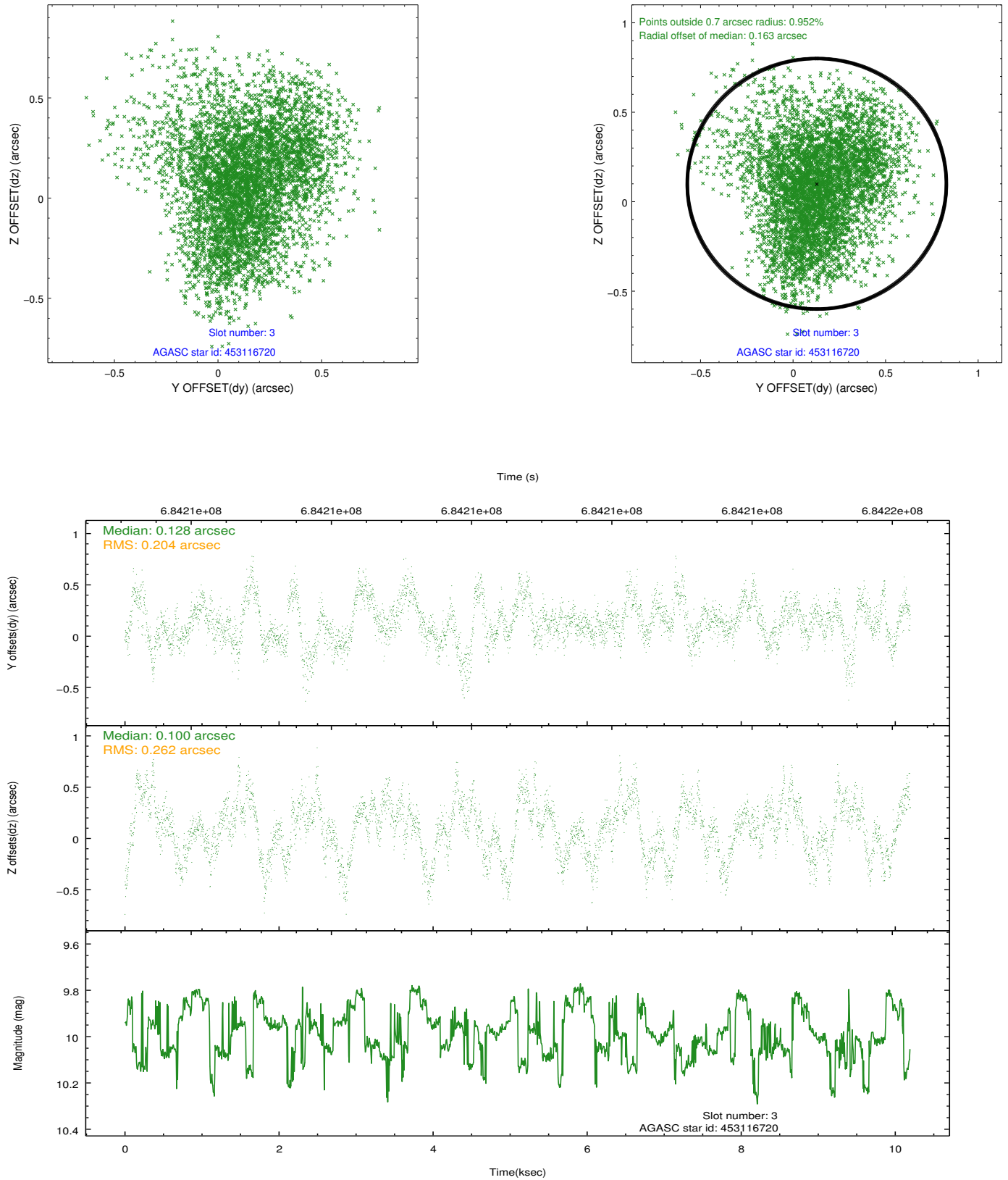


Slot Statistics

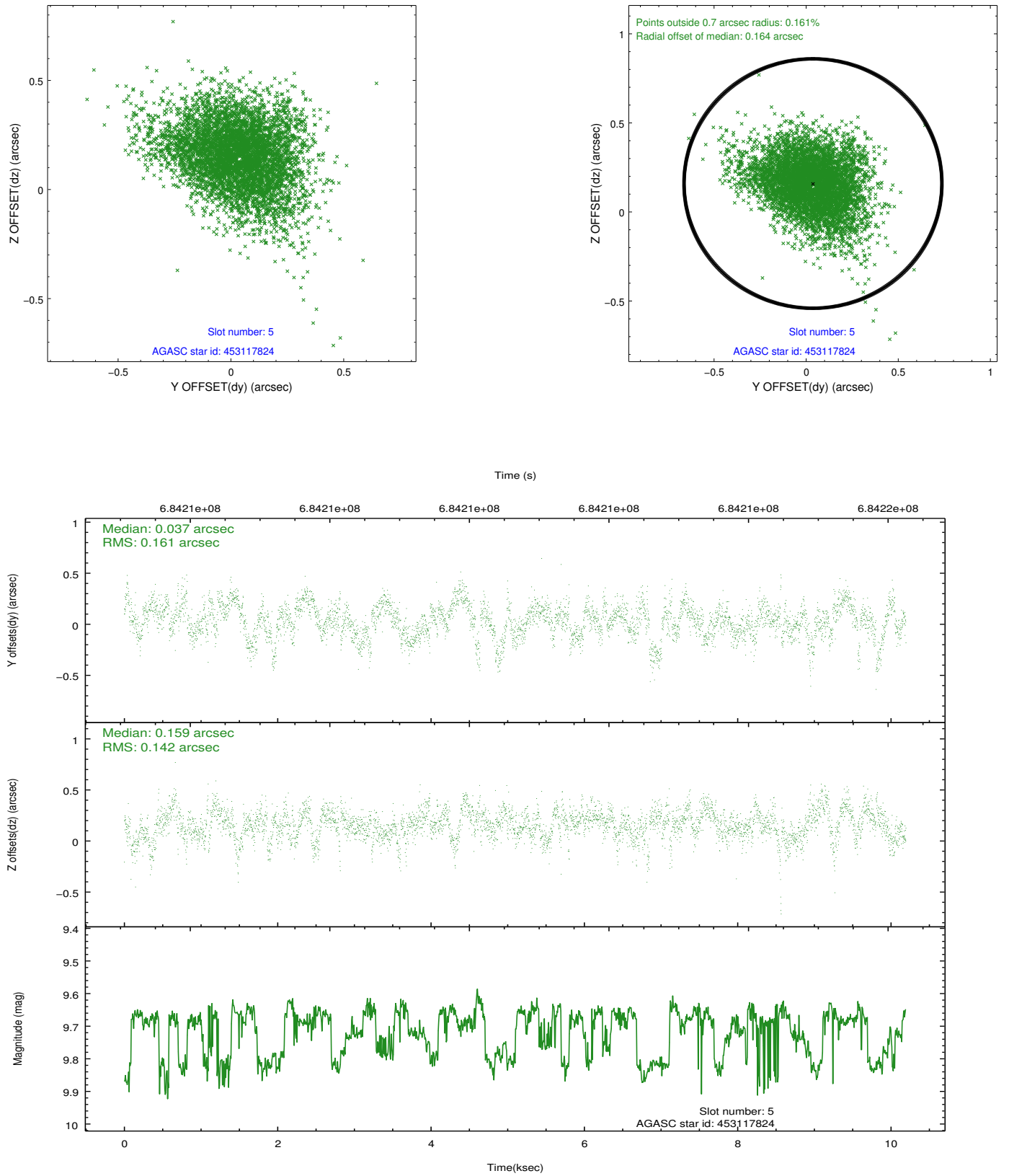
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.25	2487	1.000	0.160	-0.181	0.022	0.043	0.000000	0.000000	928.95	-1002
1	FID		ACIS-I-5	7.22	2486	1.000	-0.485	0.062	0.009	0.014	0.000000	0.000000	-1819.70	894
2	FID		ACIS-I-6	7.28	2486	1.000	0.233	0.188	0.023	0.039	0.000000	0.000000	393.76	1540
3	GUIDE	used	453116720	9.99	4935	1.000	0.128	0.100	0.359	0.570	185.073699	50.596874	997.33	-700
4	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
5	GUIDE	used	453117824	9.71	4963	1.000	0.037	0.159	0.221	0.378	185.156076	50.192485	1832.52	-1907
6	GUIDE	used	453120616	8.95	4970	1.000	-0.018	0.059	0.231	0.357	184.739953	51.163887	-607.53	770
7	GUIDE	used	453248624	9.82	4925	1.000	-0.157	-0.321	0.266	0.411	185.806273	50.890446	1988.81	1007

2.4 Star Slots

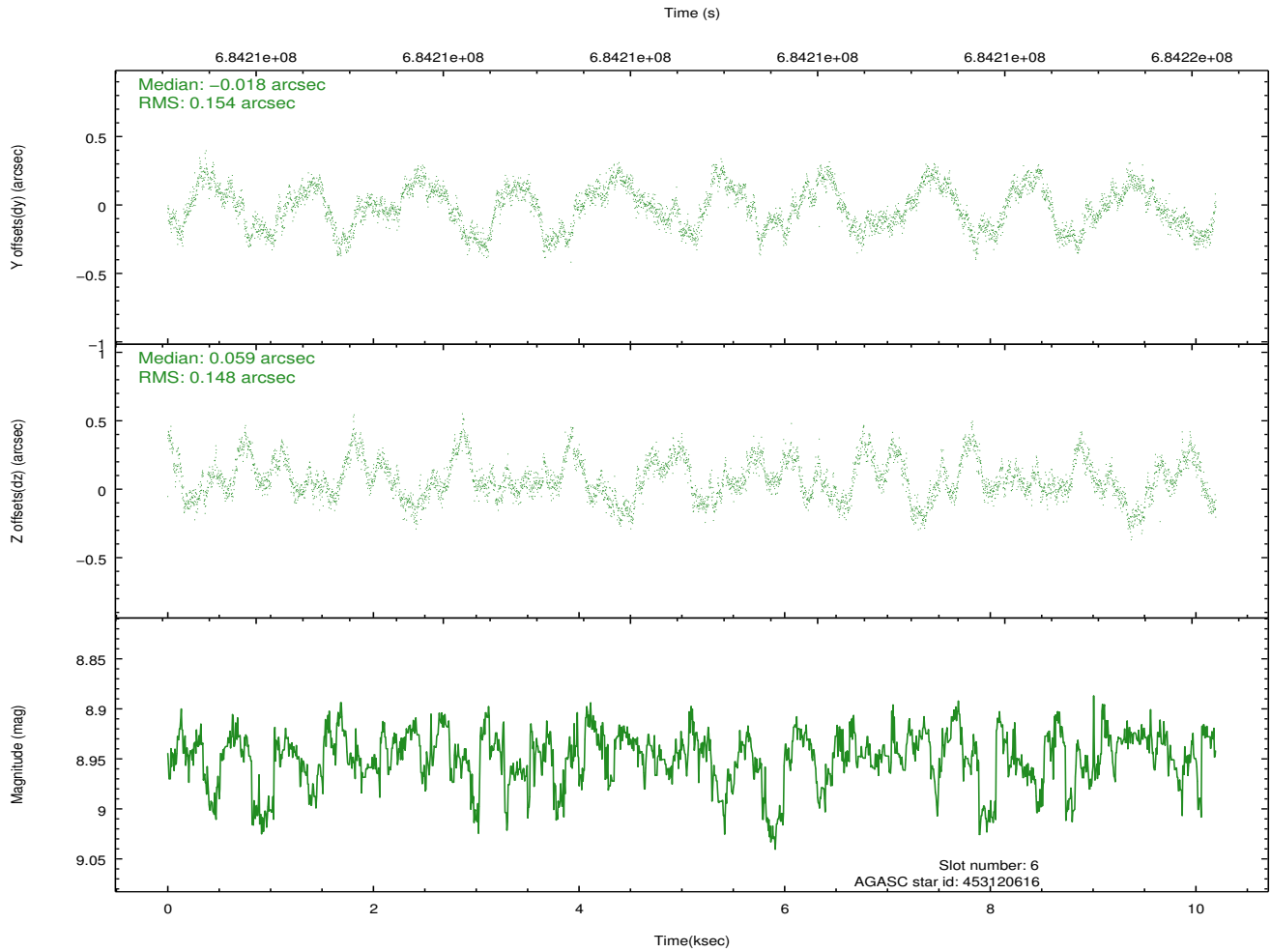
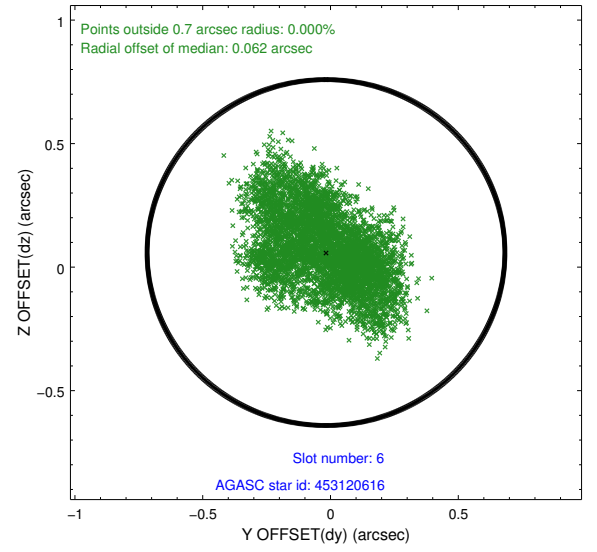
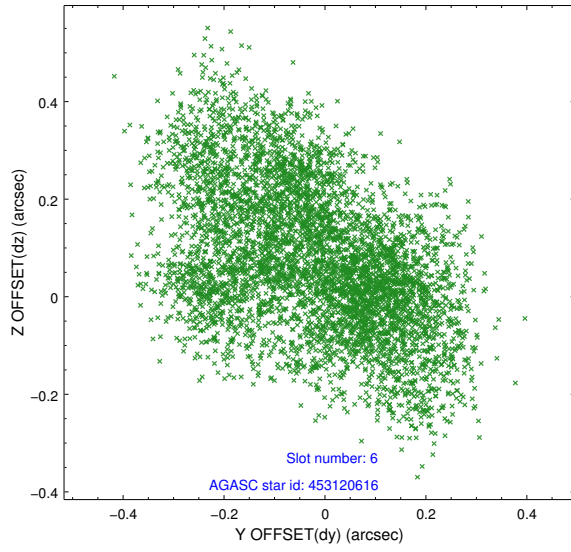
2.4.1 Slot 3



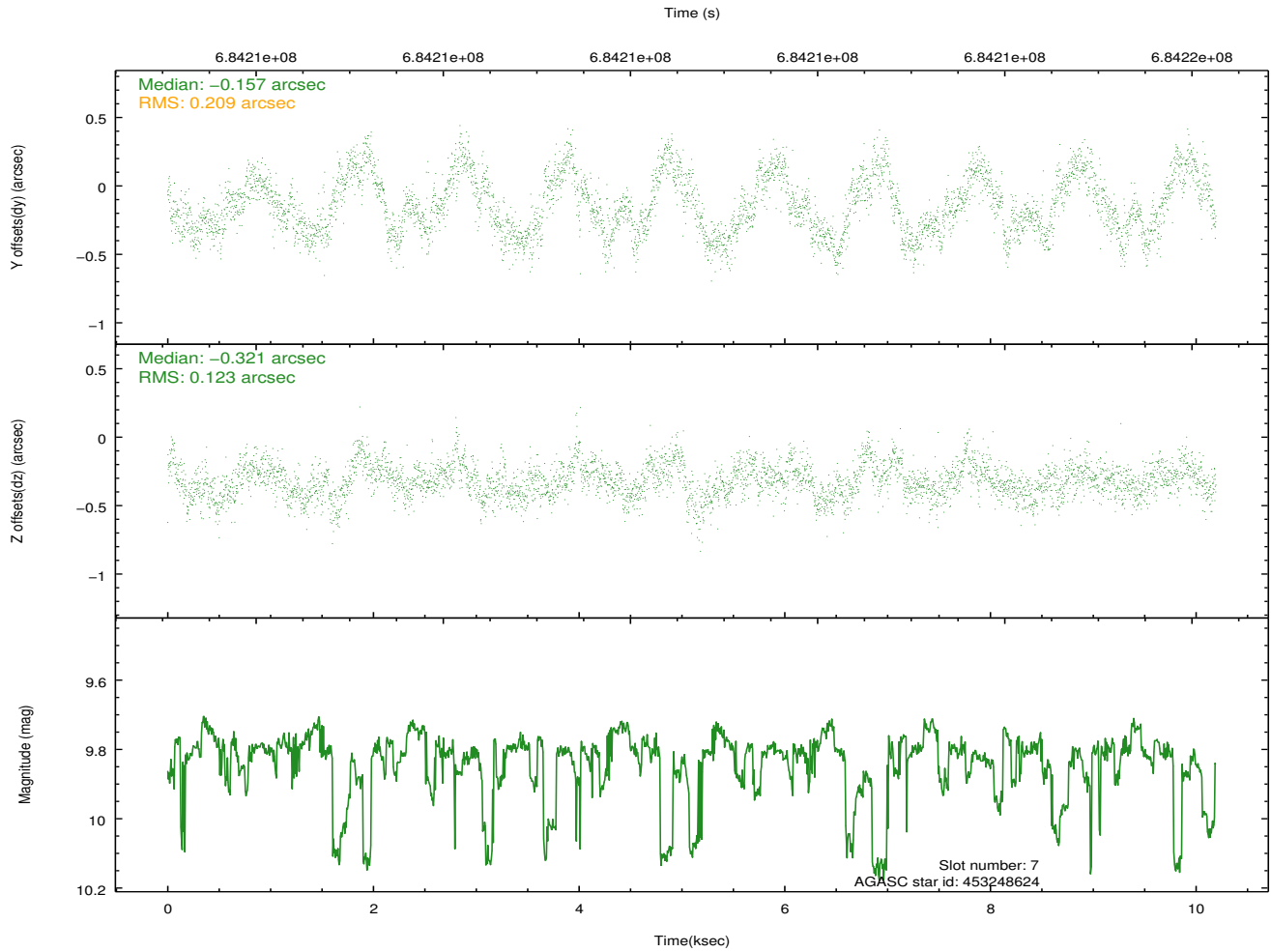
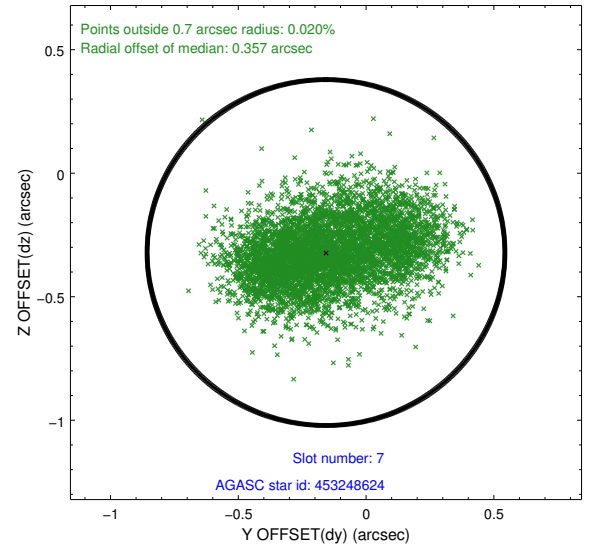
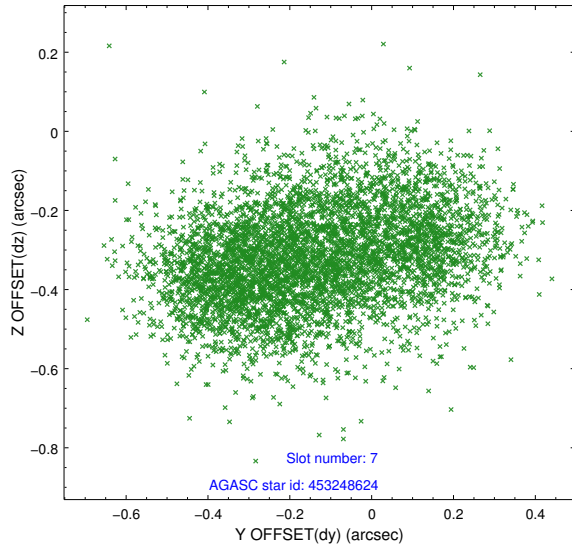
2.4.2 Slot 5



2.4.3 Slot 6

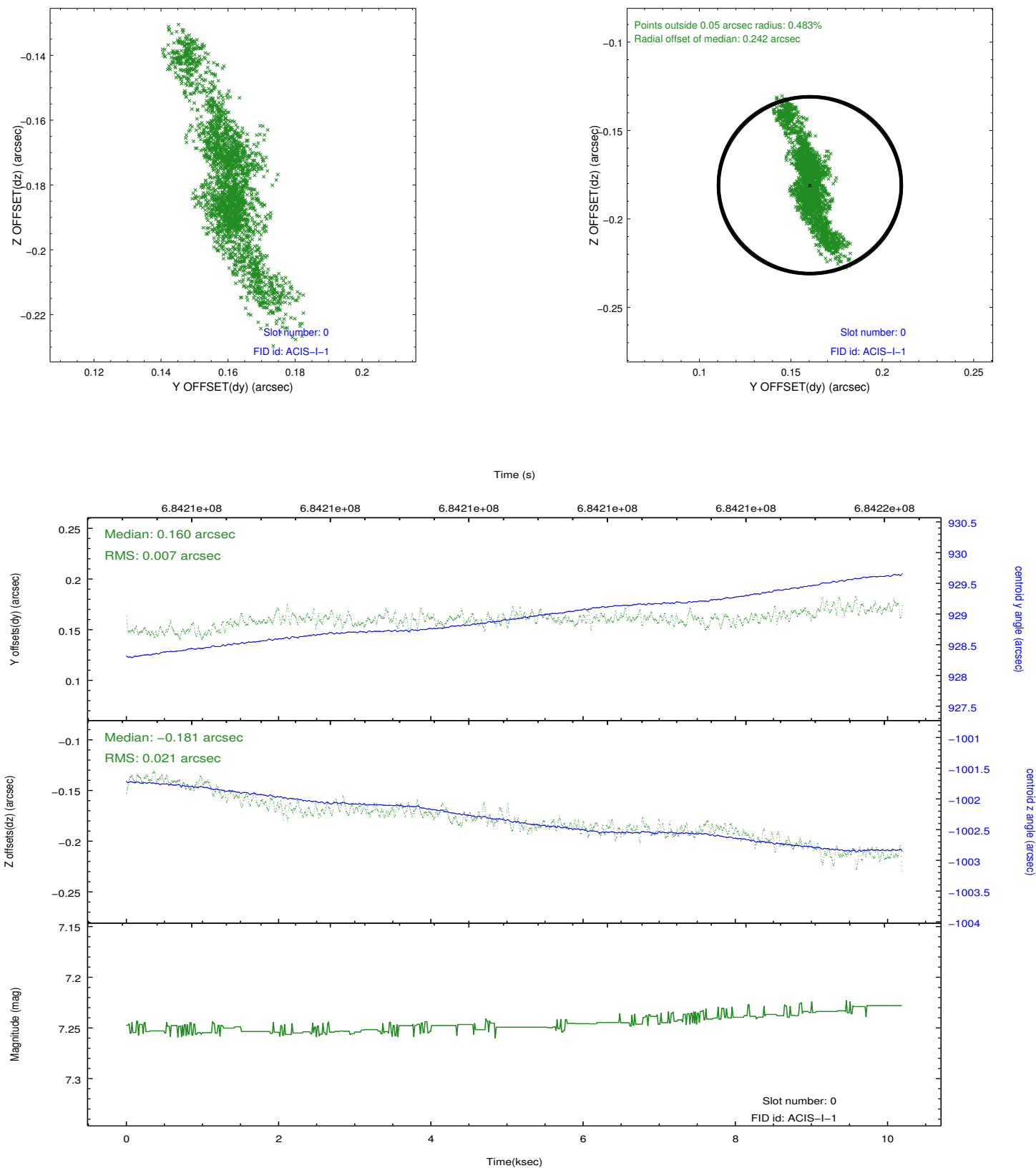


2.4.4 Slot 7

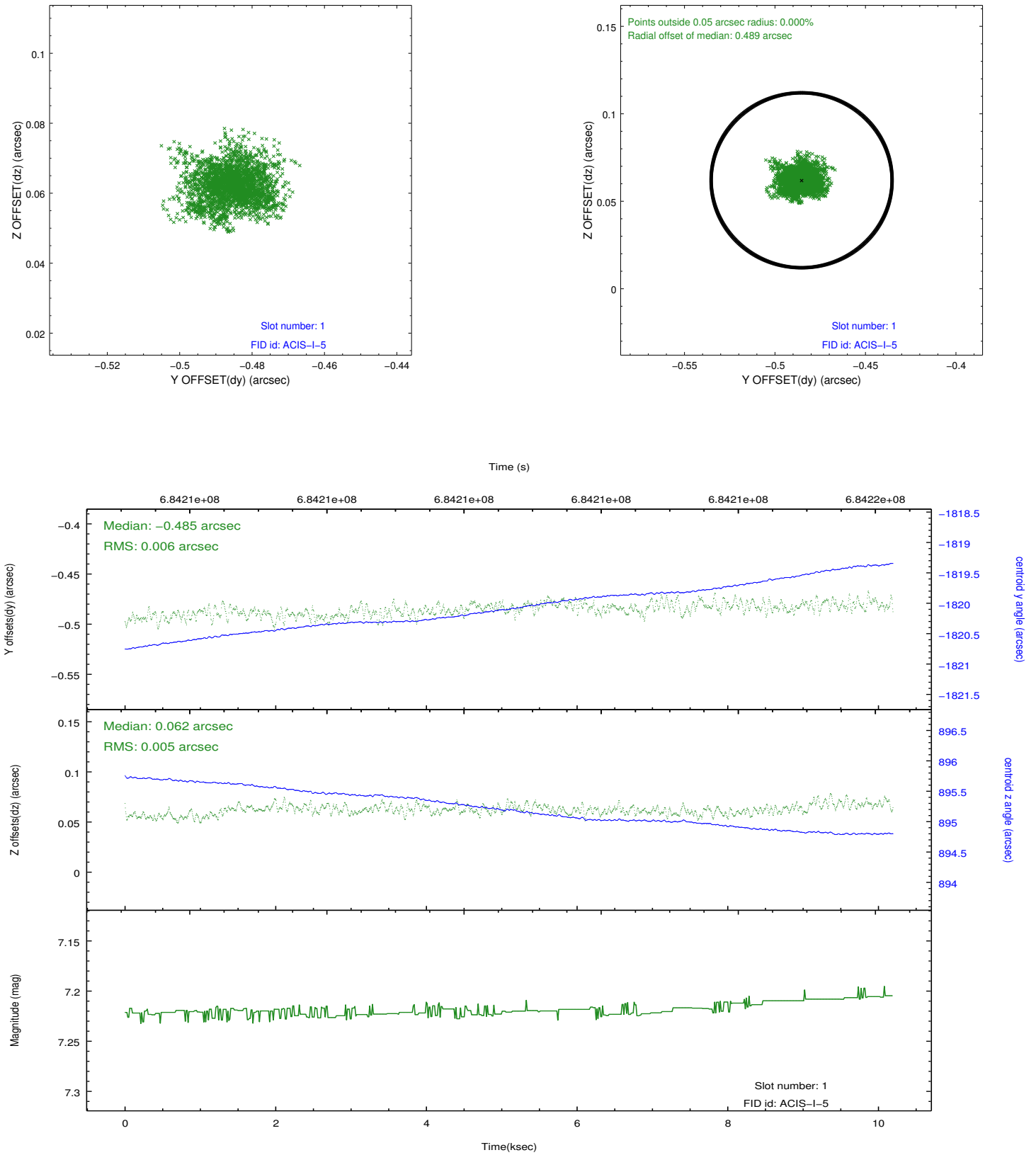


2.5 FID Slots

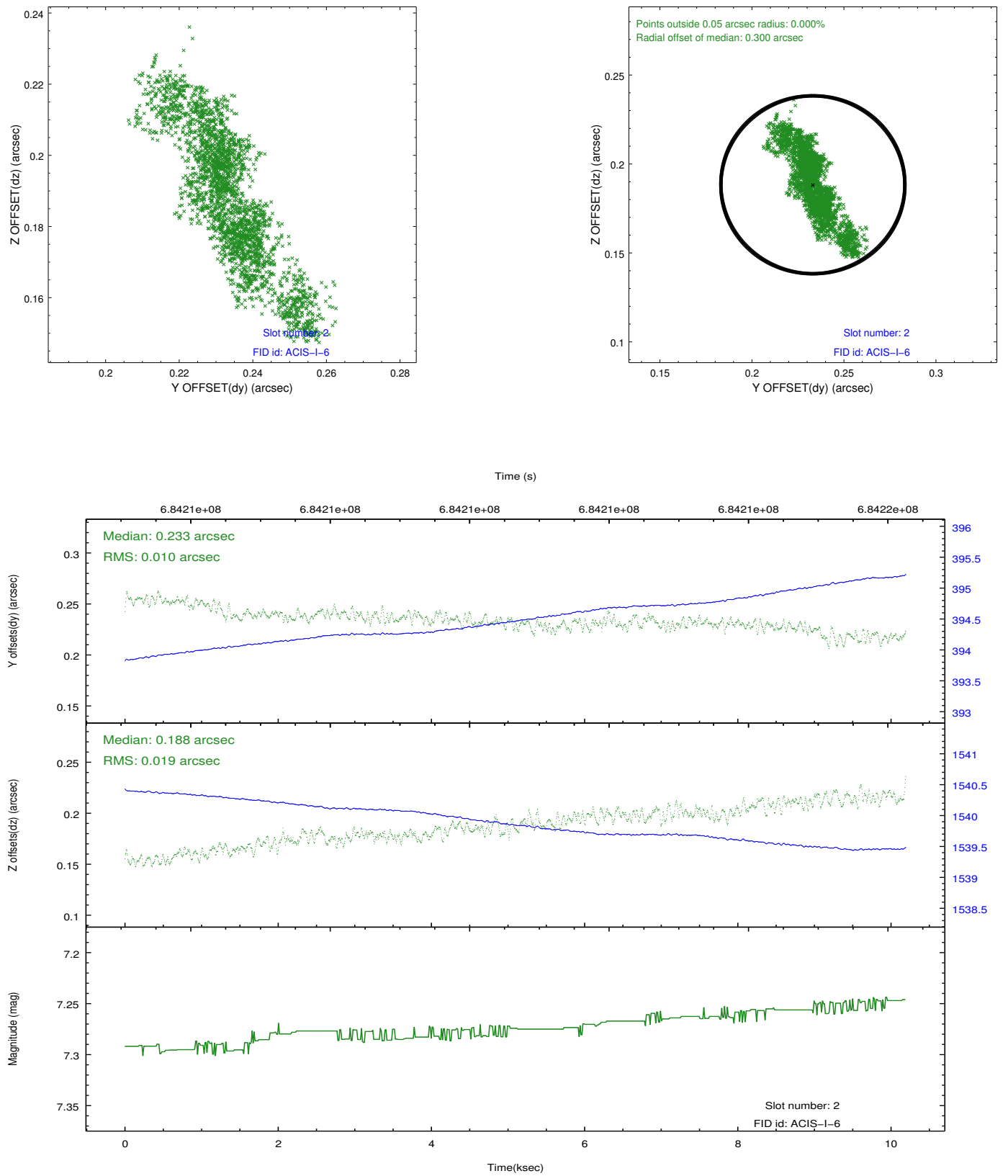
2.5.1 Slot 0



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)	2019.09.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.0365000696182

A.2 Comments

One optional chip was dropped.

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The guide star in slot 4 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.

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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., -111.0 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

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.