

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22191 - L2 Version 1
Chandra X-Ray Center

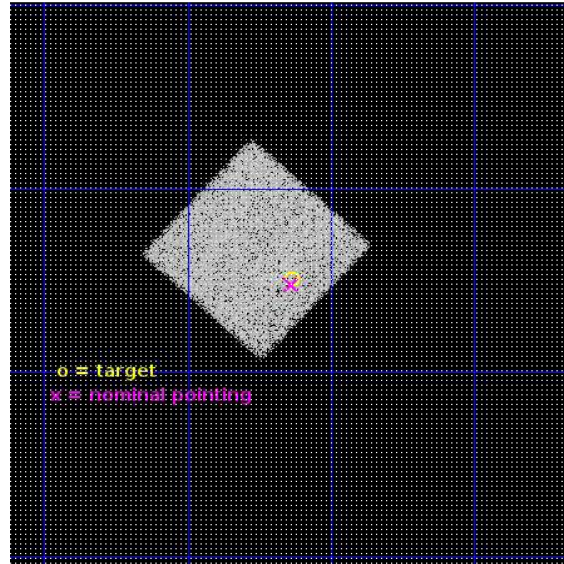
L2 Processing Date : Apr 29 2019

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1 Front

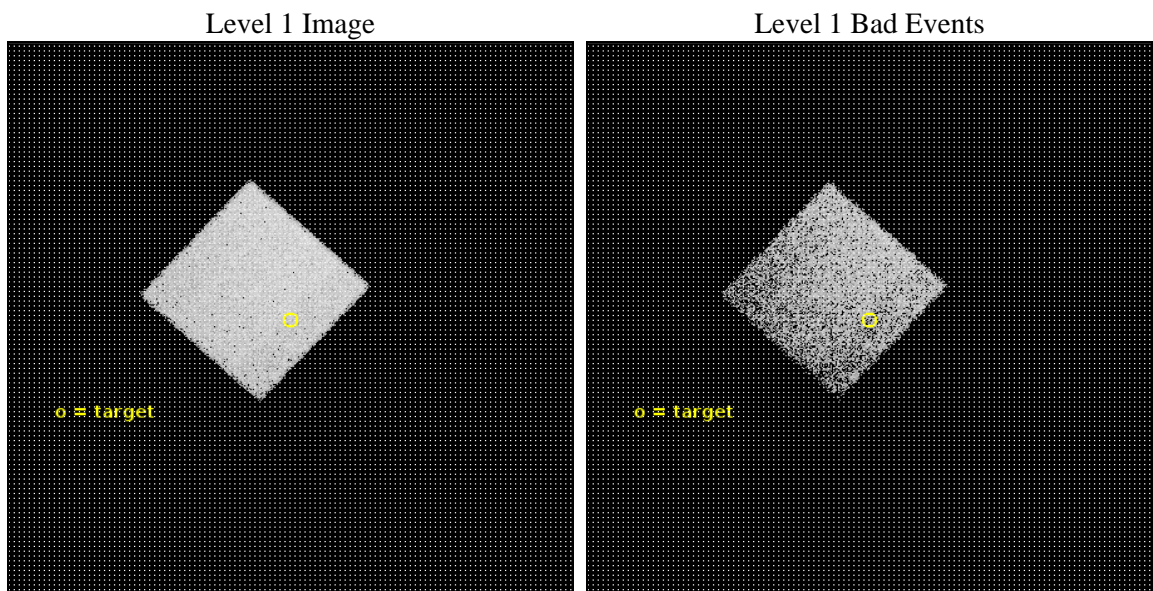
seq_num	703882	Sequence number
obs_id	22191	Observation id
title	Chandra-NuSTAR synergy in the NuSTAR serendipitous survey	Proposal
observer	Dr David Alexander	Principal investigator
object	J133331d15m012653d3_s1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	203.408661	Observer's specified target RA [deg]
dec_targ	-1.416083	Observer's specified target Dec [deg]
ra_nom	203.40939488925	Nominal RA [deg]
dec_nom	-1.4206207017362	Nominal Dec [deg]
roll_nom	222.65172722833	Nominal Roll [deg]
revision	1	Processing version of data
ontime	10090.744160295	Sum of GTIs [s]
livetime	9954.5657014981	Livetime [s]
ontime7	10090.744160295	Sum of GTIs [s]
l2events	41074	Number of level 2 events



2 OBI

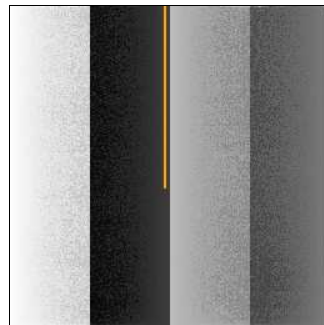
2.1 OBI

2.1.1 Images



2.1.2 Bias

Chip 7



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	10000.149000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	10090.744160295	Sum of GTIs [s]
caldsver	4.8.2	 	ontime7	10090.744160295	Sum of GTIs [s]
date	2019-04-29T05:00:32	Date and time of file creation	l1events	98056	Number of level 1 events
revision	1	Processing version of data			

2.1.4 Events

	ccd 7
level 1 events	98056
rejected events	55835
rejected %	56%

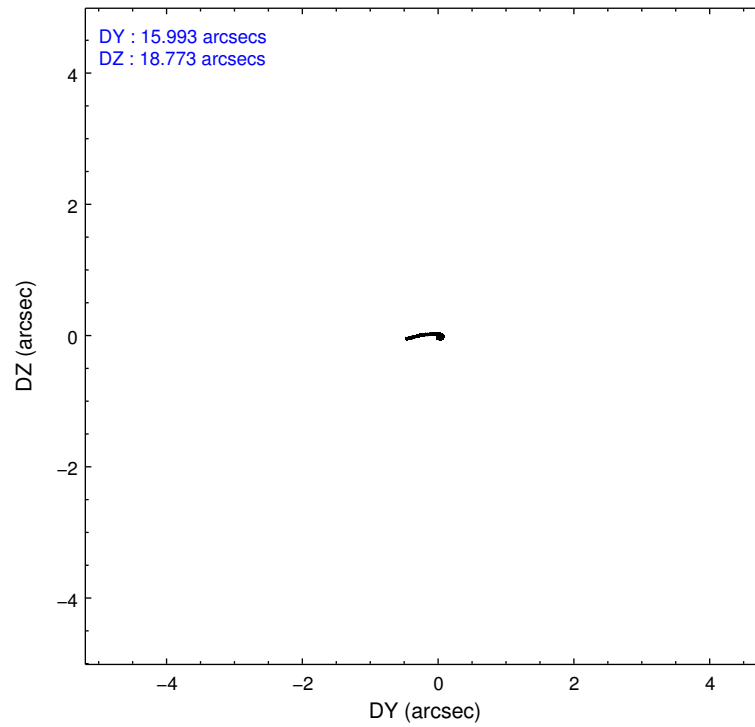
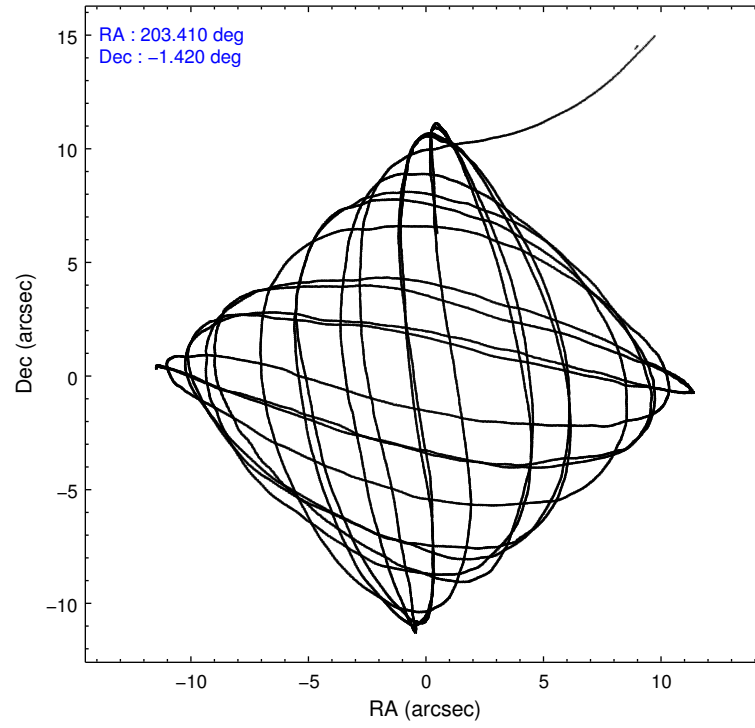
	ccd 7
grade 0 events	3510
	3%
grade 1 events	136
	0%
grade 2 events	8602
	8%
grade 3 events	3478
	3%
grade 4 events	3209
	3%
grade 5 events	9345
	9%
grade 6 events	23453
	23%
grade 7 events	46323
	47%

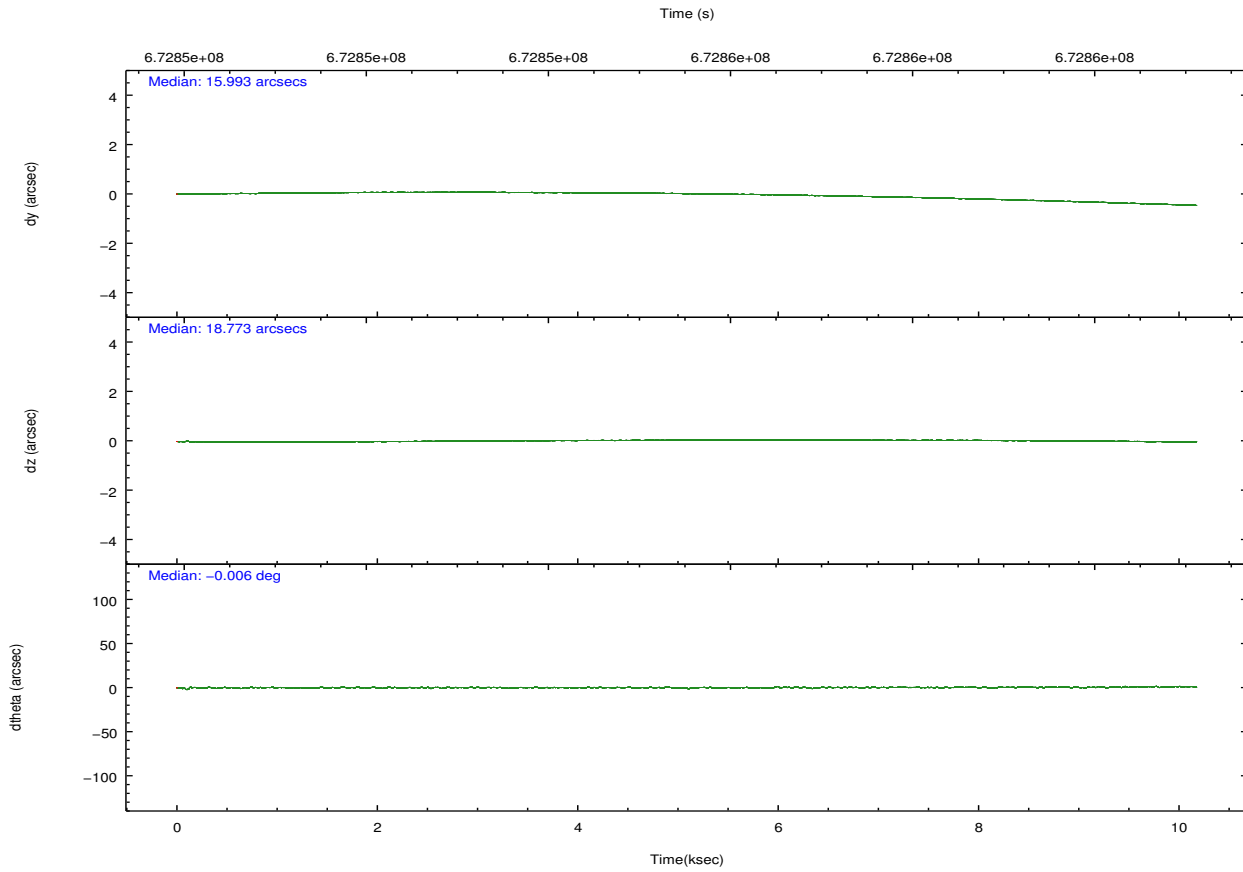
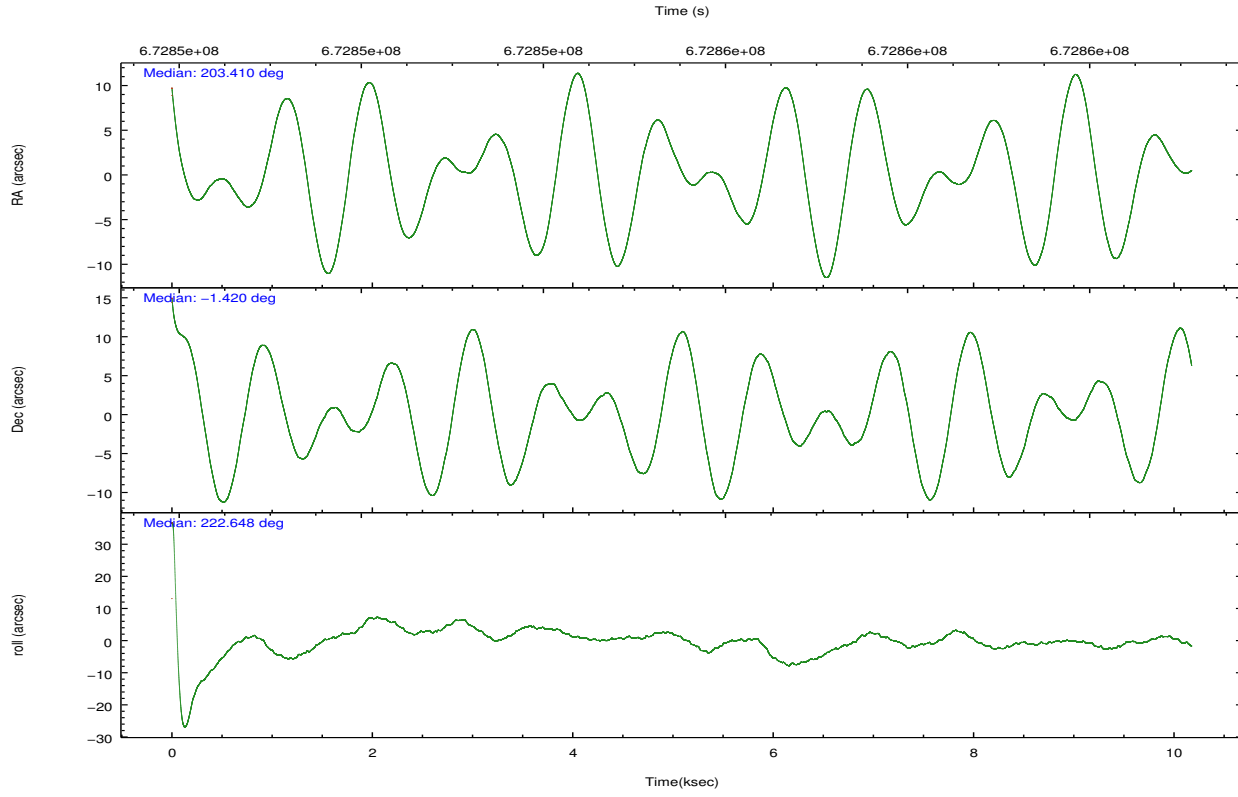
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-7	ACIS-7
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	203.417222	203.4093948892526
[deg] Pointing Dec	-1.394375	-1.420620701736156
[deg] Pointing Roll	222.495200	222.6517272283299
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	672850632.184000	672849899.76966
Observation start date	2019-04-28T14:56:03	2019-04-28T14:44:59
[s] Observation end time (MET)	672860632.184000	672861612.4453599
Observation end date	2019-04-28T17:42:43	2019-04-28T18:00:12
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
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

2.3 Aspect



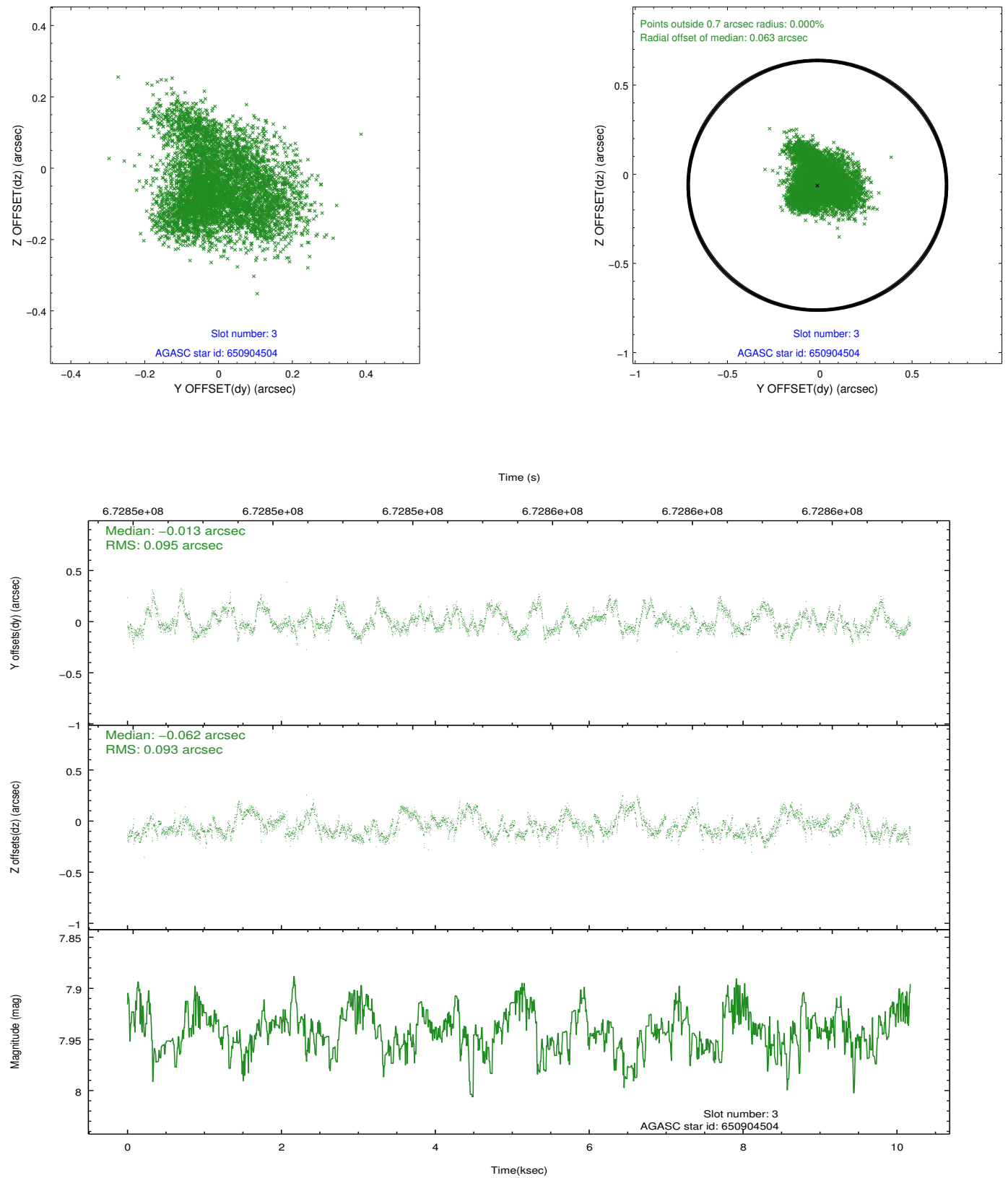


Slot Statistics

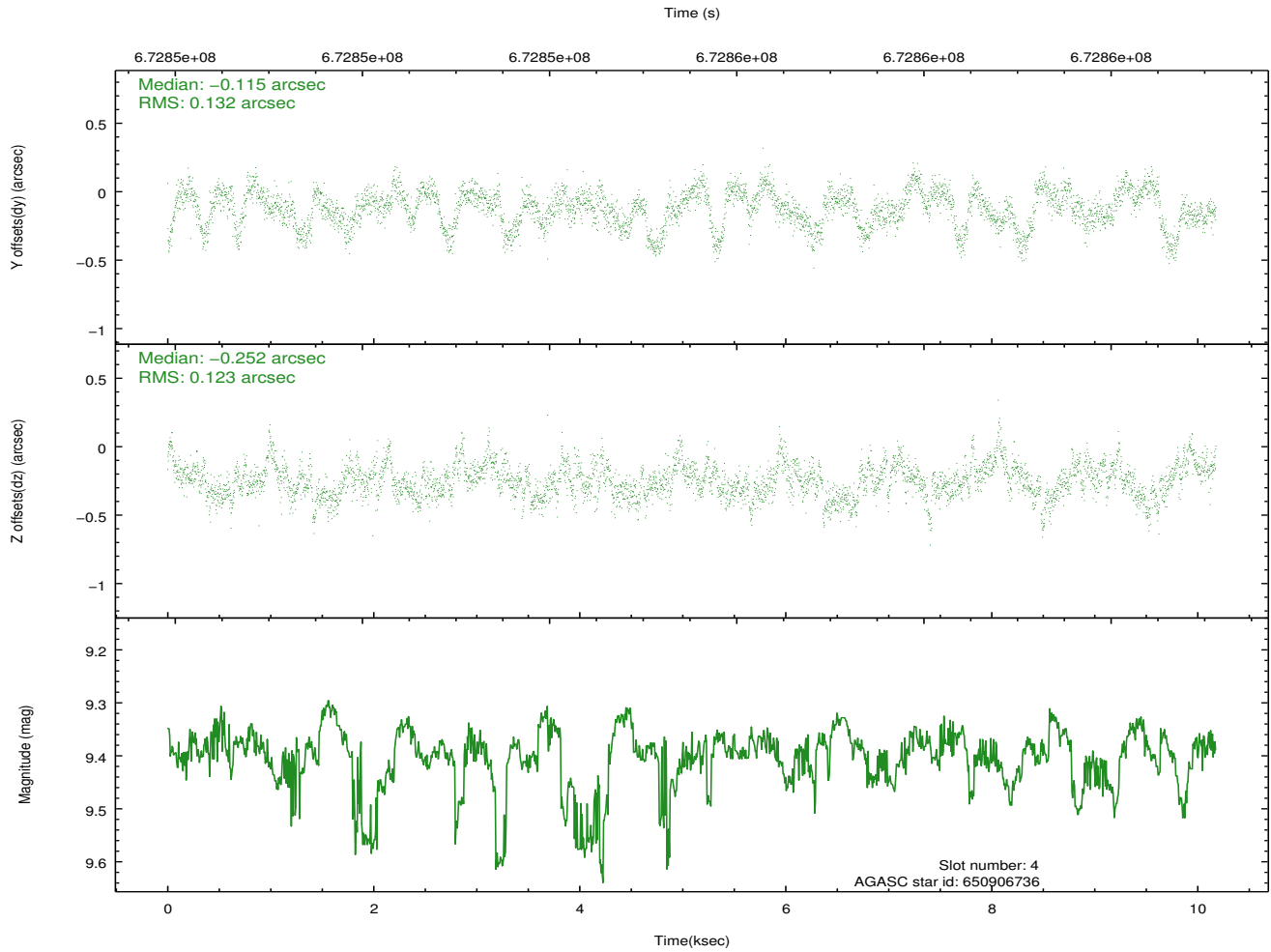
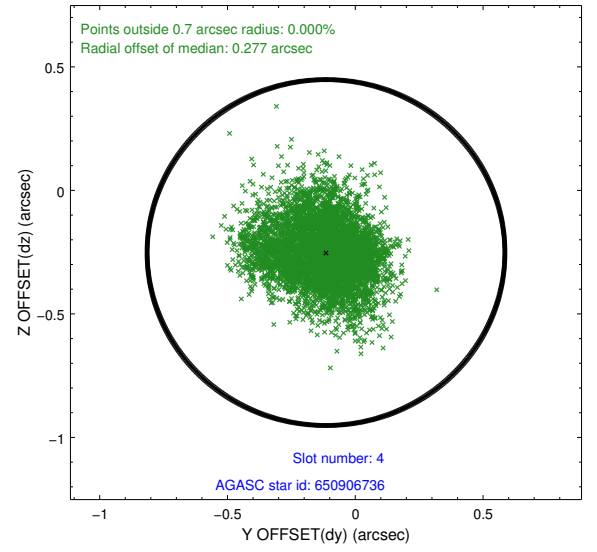
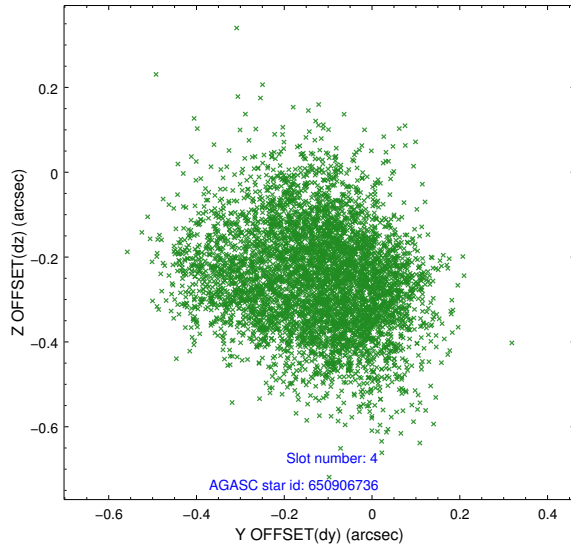
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.17	2483	1.000	-0.337	-0.264	0.008	0.012	0.000000	0.000000	-769.18	-1740
1	FID		ACIS-S-4	7.28	2483	1.000	0.858	0.233	0.011	0.019	0.000000	0.000000	2144.98	168
2	FID		ACIS-S-5	7.24	2483	1.000	-0.551	0.040	0.009	0.015	0.000000	0.000000	-1821.65	161
3	GUIDE	used	650904504	7.94	4964	1.000	-0.013	-0.062	0.144	0.231	202.937627	-1.239362	897.93	-1576
4	GUIDE	used	650906736	9.40	4958	1.000	-0.115	-0.252	0.192	0.309	203.434610	-1.424854	29.88	122
5	GUIDE	used	650911400	8.18	4964	1.000	-0.163	-0.064	0.123	0.196	204.183307	-1.260588	-2357.18	1508
6	GUIDE	used	650912424	9.15	4962	1.000	0.278	0.351	0.160	0.244	203.589398	-0.866485	-1739.52	-981
7	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

2.4 Star Slots

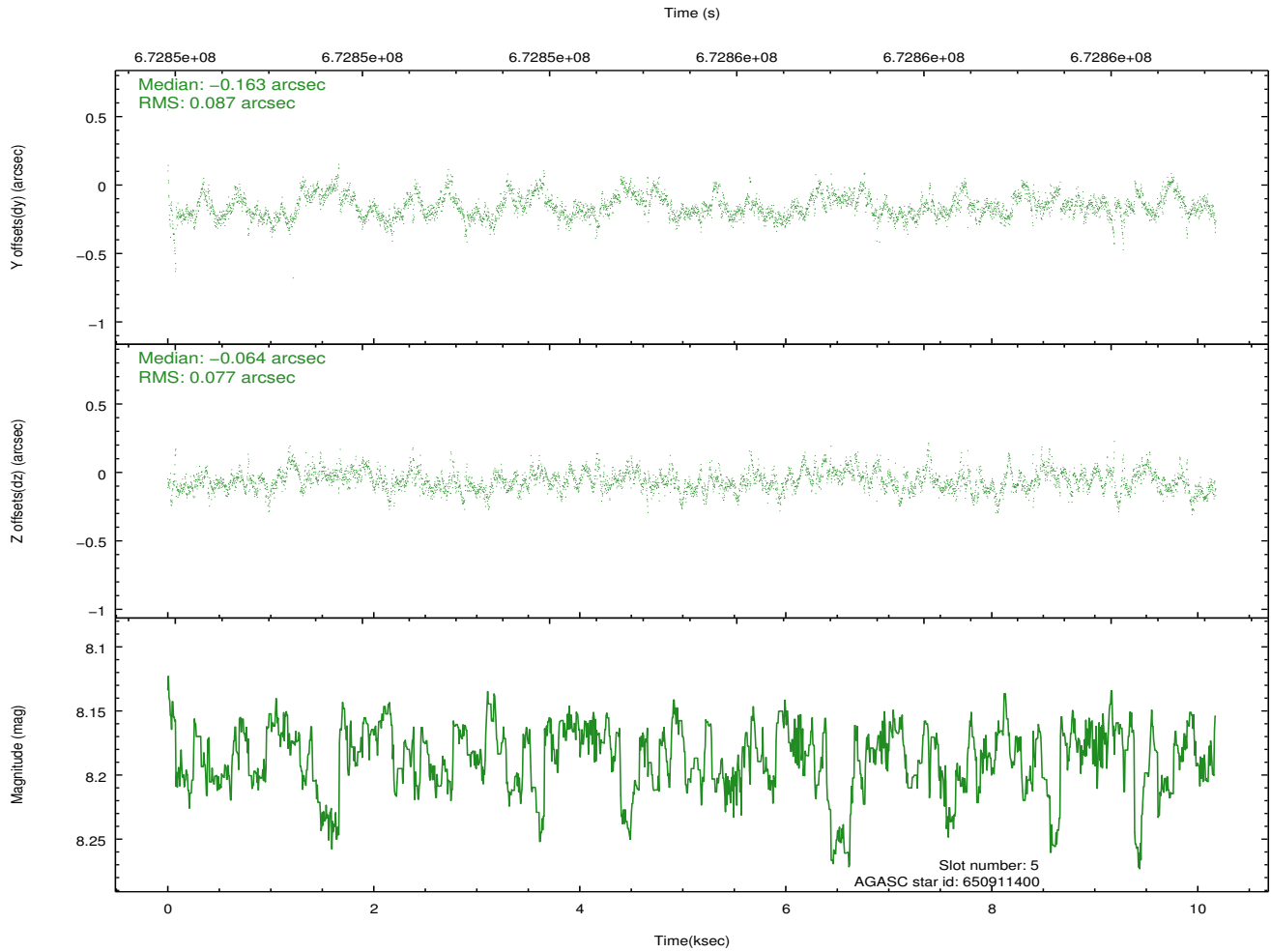
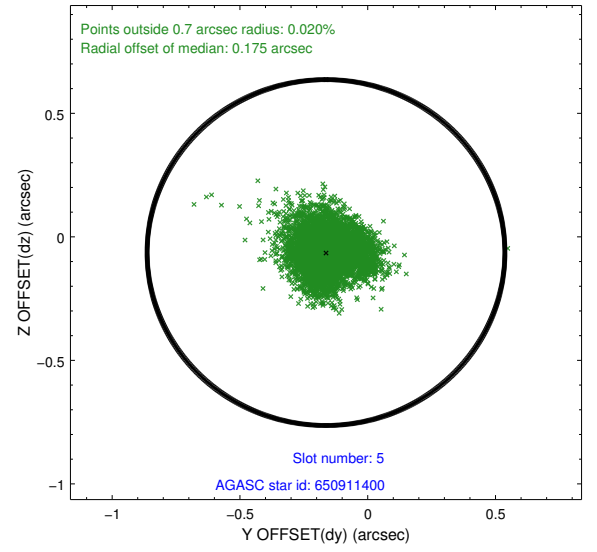
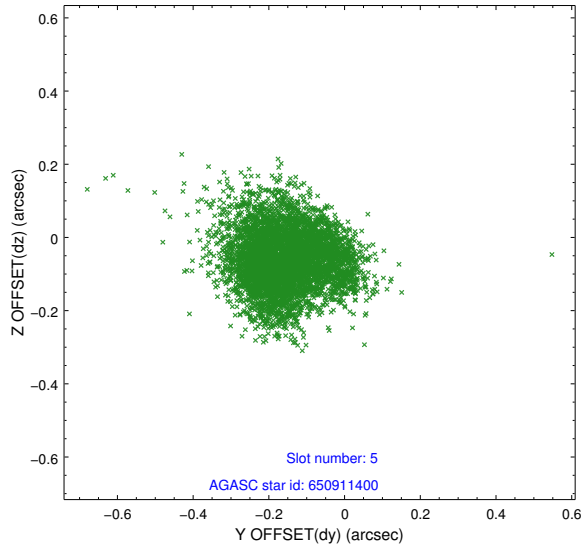
2.4.1 Slot 3



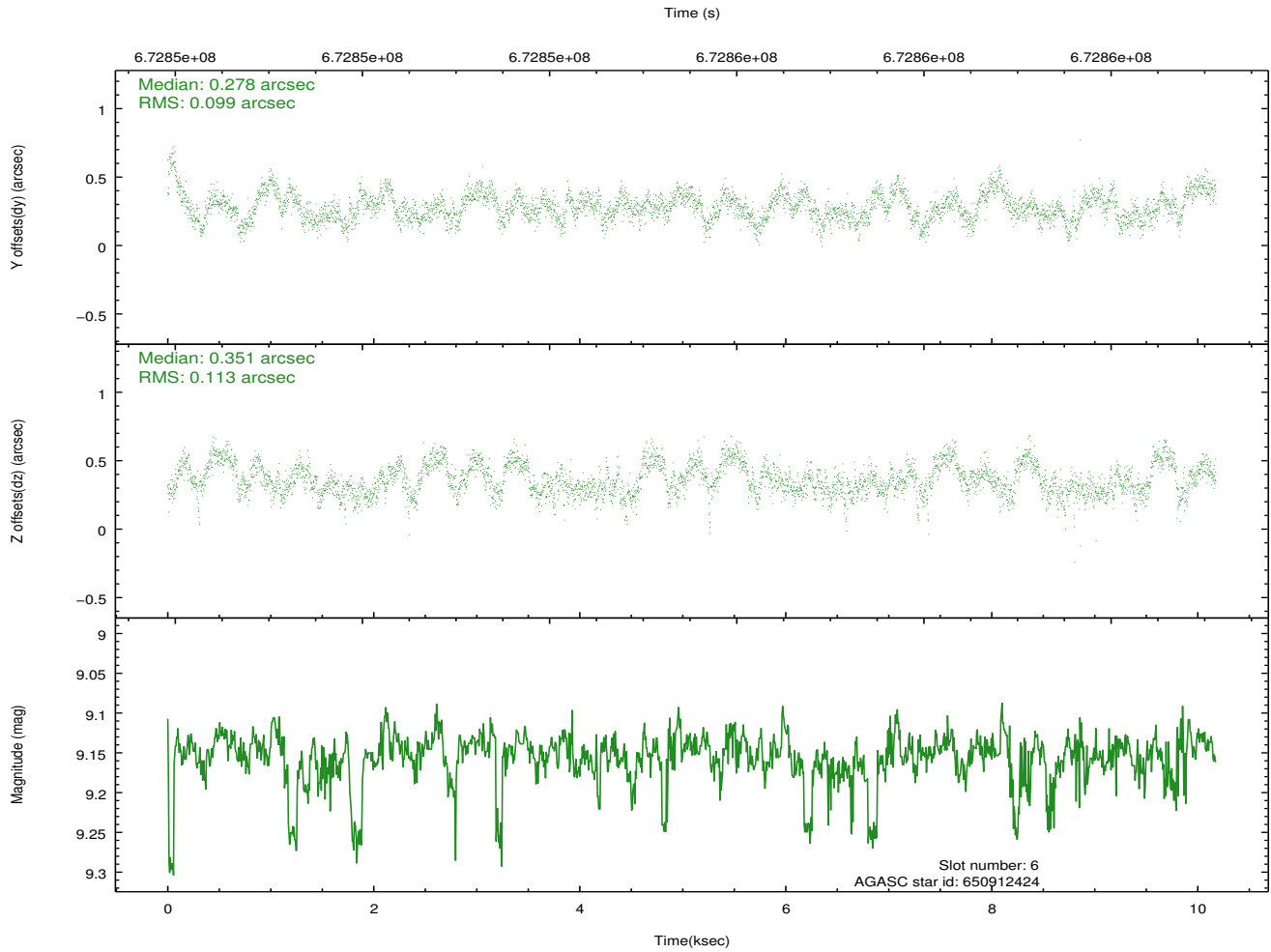
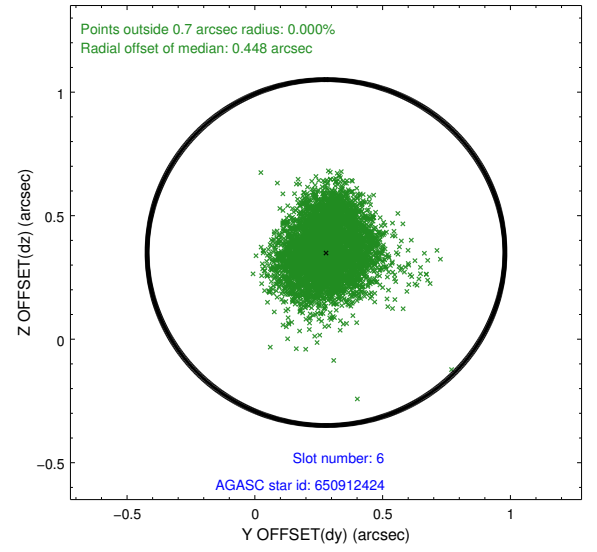
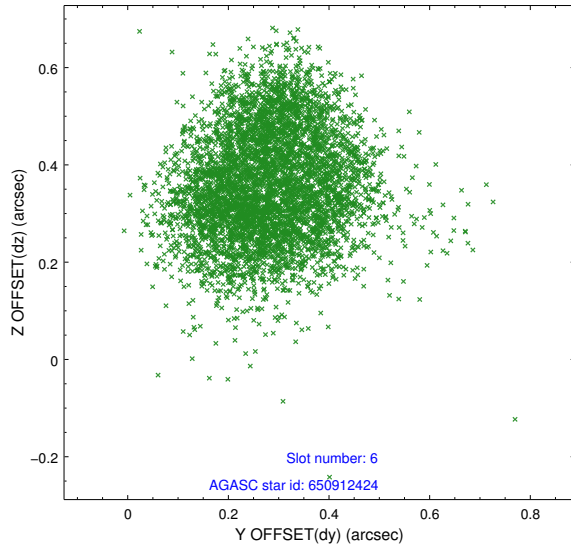
2.4.2 Slot 4



2.4.3 Slot 5

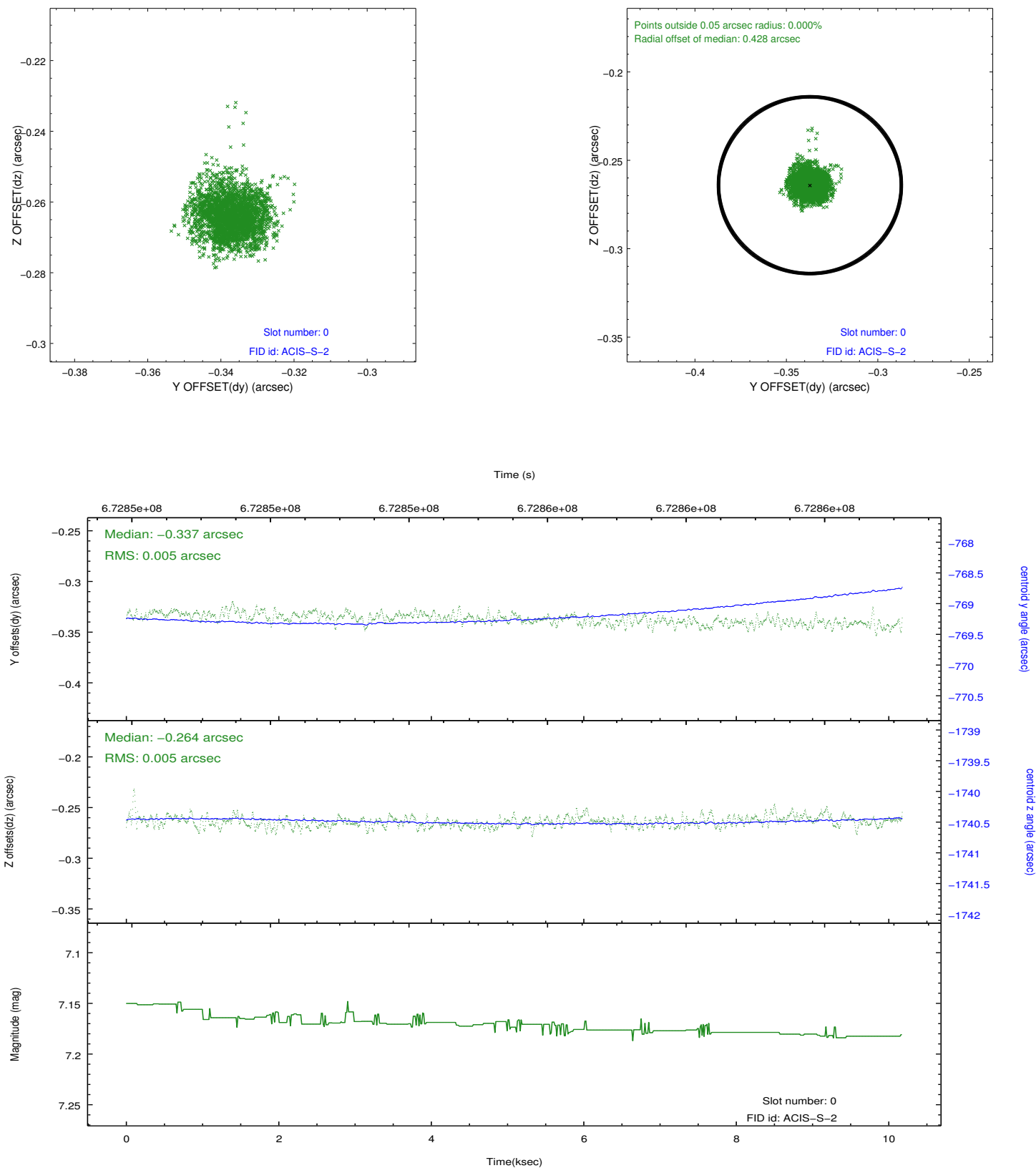


2.4.4 Slot 6

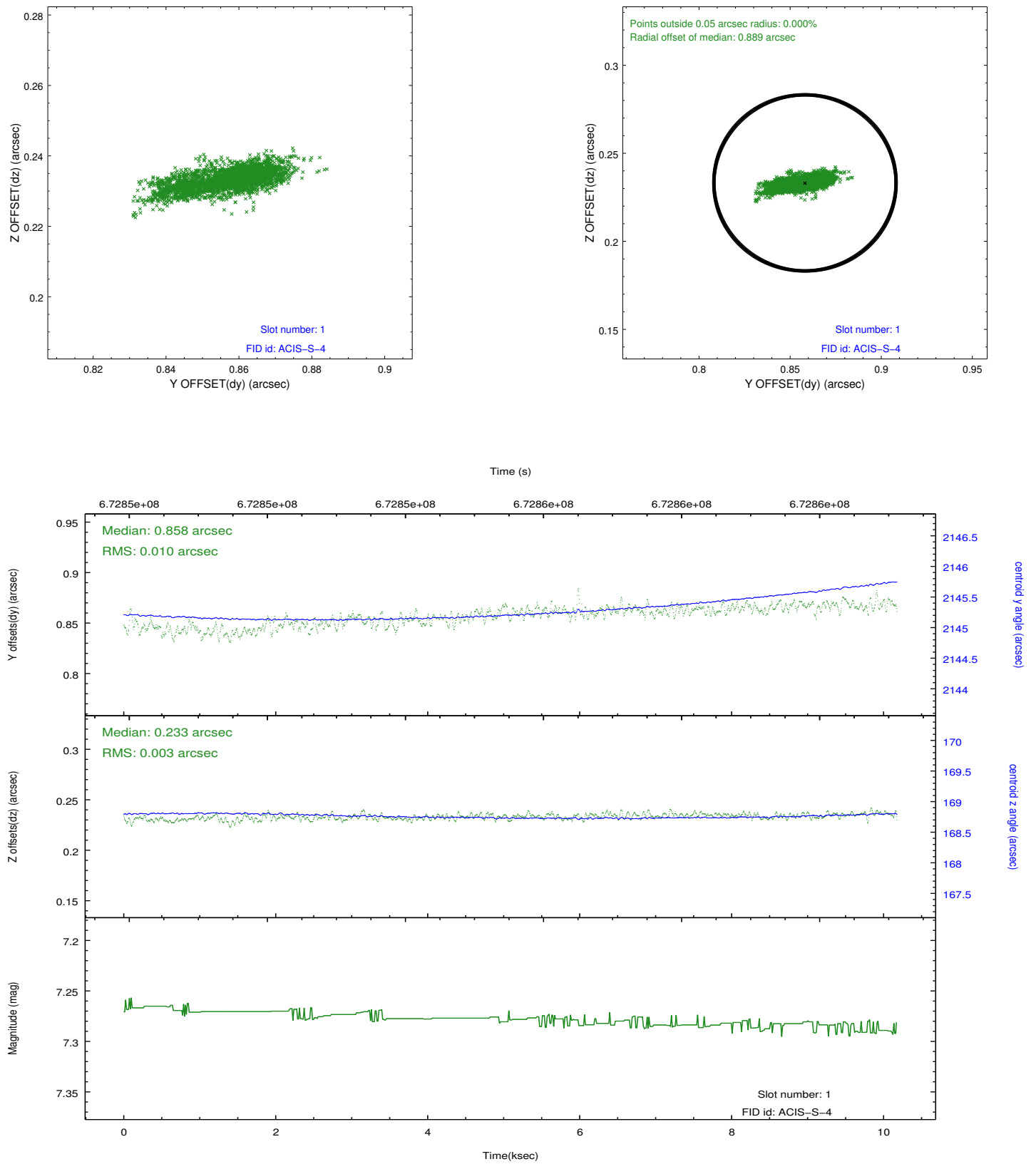


2.5 FID Slots

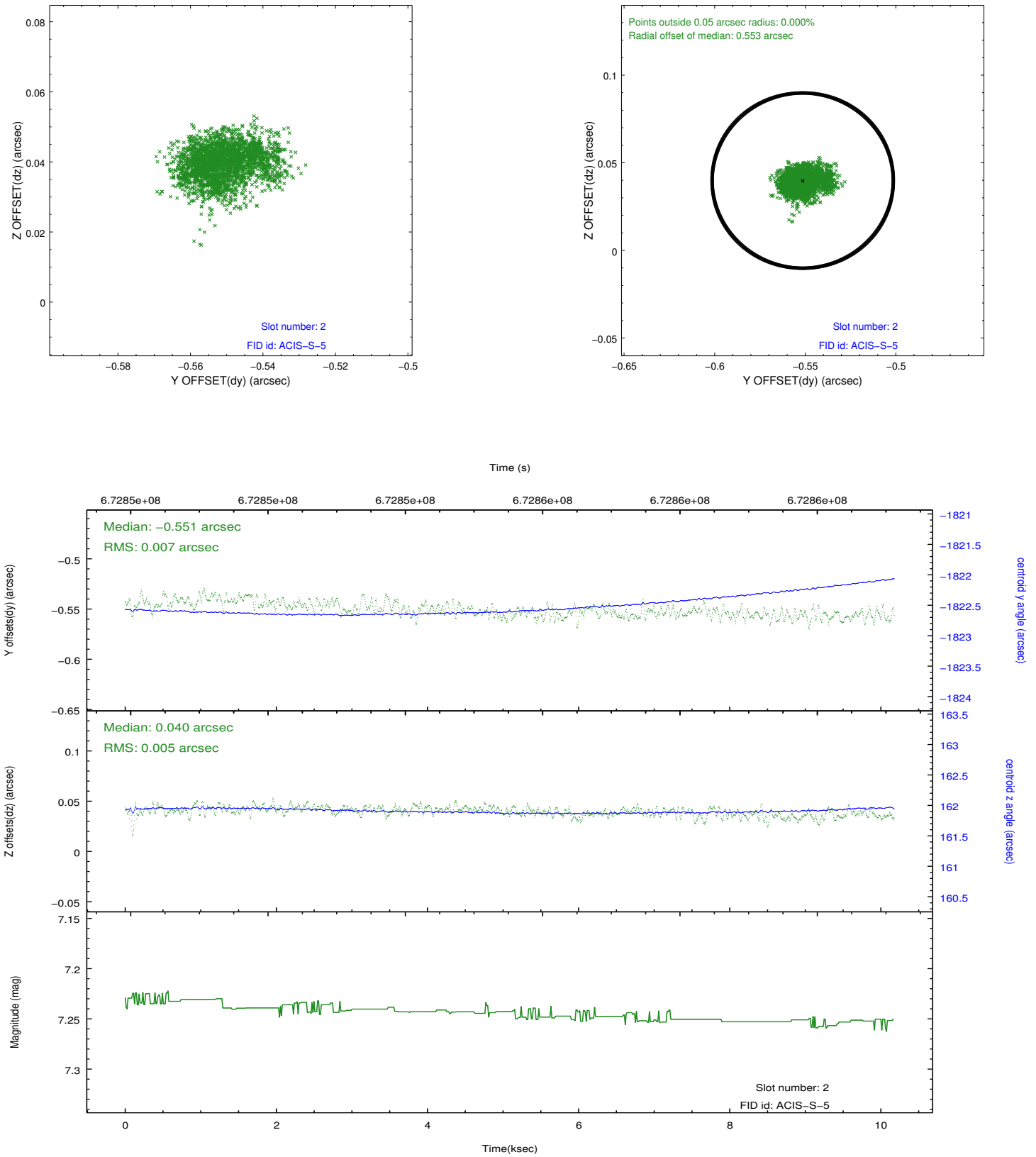
2.5.1 Slot 0



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)	2019.05.05
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.090744160295

A.2 Comments

The guide star in slot 7 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 is warmer than -112.0 C during the interval 672853219.27 - 672860623.27 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the back-illuminated chips. 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.

