

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21159 - L2 Version 1
Chandra X-Ray Center

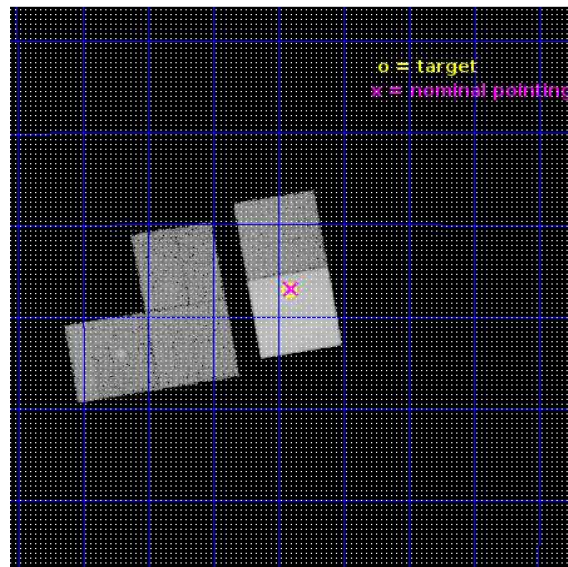
L2 Processing Date : Jan 20 2019

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1 Front

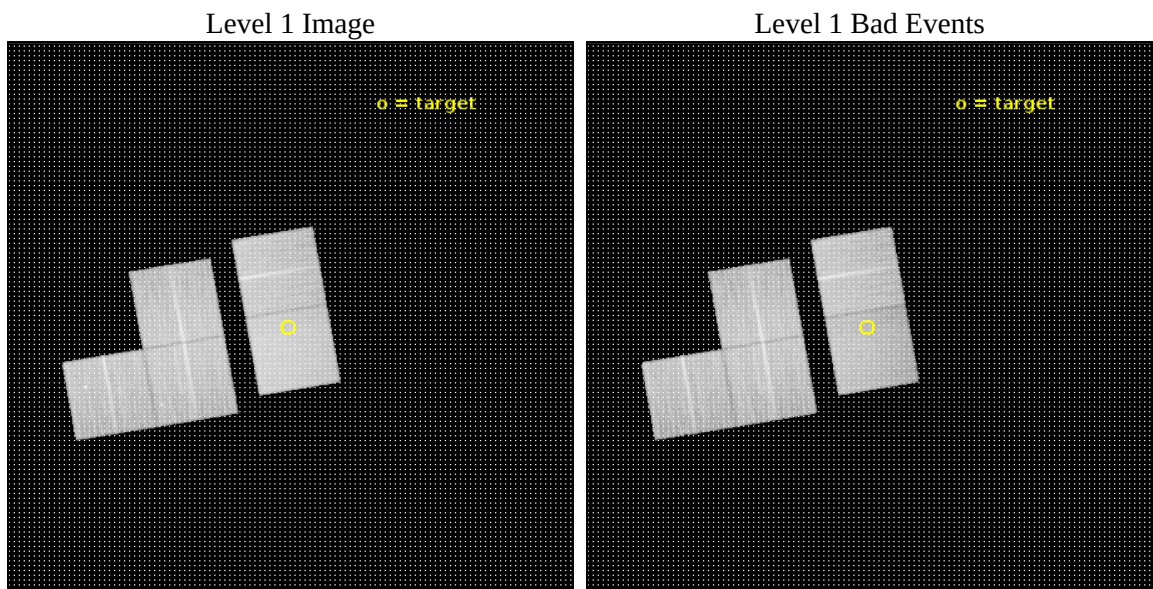
seq_num	201215	Sequence number
obs_id	21159	Observation id
title	Spin-down, dynamos and habitability: Chandra/K2 exploration of nearby M dwarfs	Proposal title
observer	Beate Stelzer	Principal investigator
object	EPIC 203869467	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	243.72875	Observer's specified target RA [deg]
dec_targ	-24.618444	Observer's specified target Dec [deg]
ra_nom	243.7253653658	Nominal RA [deg]
dec_nom	-24.616262145159	Nominal Dec [deg]
roll_nom	80.1552278116	Nominal Roll [deg]
revision	1	Processing version of data
ontime	28095.083994508	Sum of GTIs [s]
livetime	27728.00103882	Livetime [s]
ontime1	28091.778864264	Sum of GTIs [s]
ontime2	28091.819914222	Sum of GTIs [s]
ontime3	28091.860924363	Sum of GTIs [s]
ontime6	28095.042954564	Sum of GTIs [s]
ontime7	28095.083994508	Sum of GTIs [s]
l2events	199106	Number of level 2 events



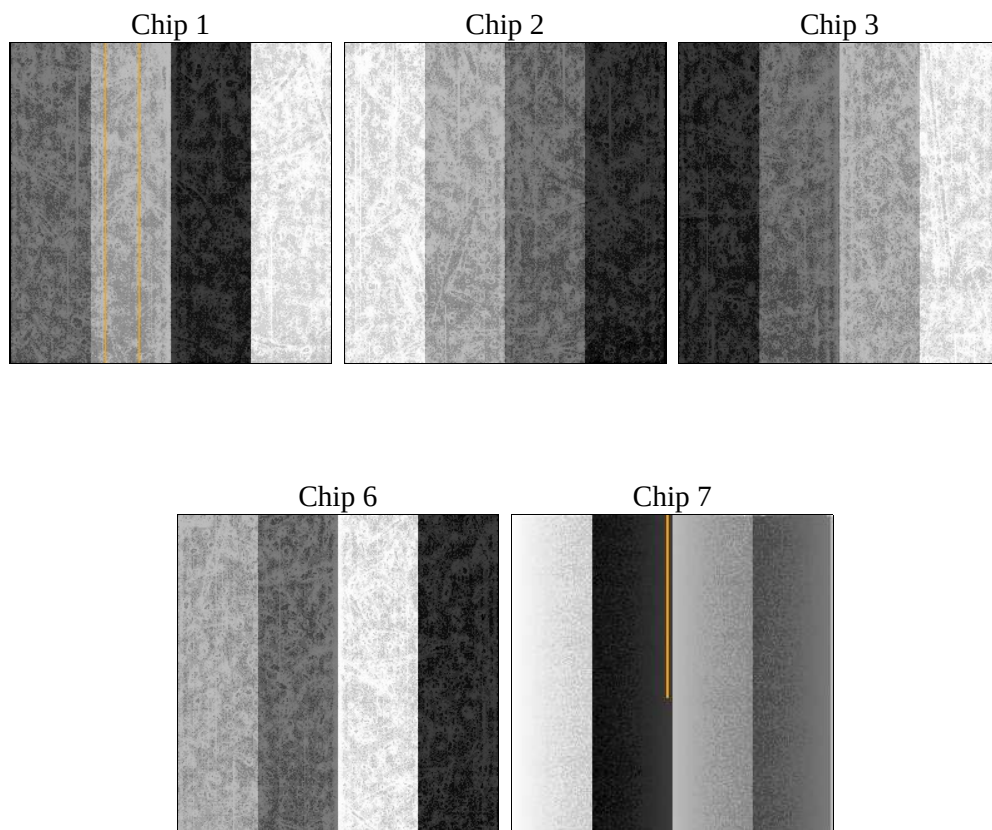
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	28000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	28095.083994508	Sum of GTIs [s]
caldsver	4.8.2	 	ontime1	28091.778864264	Sum of GTIs [s]
date	2019-01-20T21:31:21	Date and time of file creation	ontime2	28091.819914222	Sum of GTIs [s]
revision	1	Processing version of data	ontime3	28091.860924363	Sum of GTIs [s]
			ontime6	28095.042954564	Sum of GTIs [s]
			ontime7	28095.083994508	Sum of GTIs [s]
			l1events	1167032	Number of level 1 events

2.1.4 Events

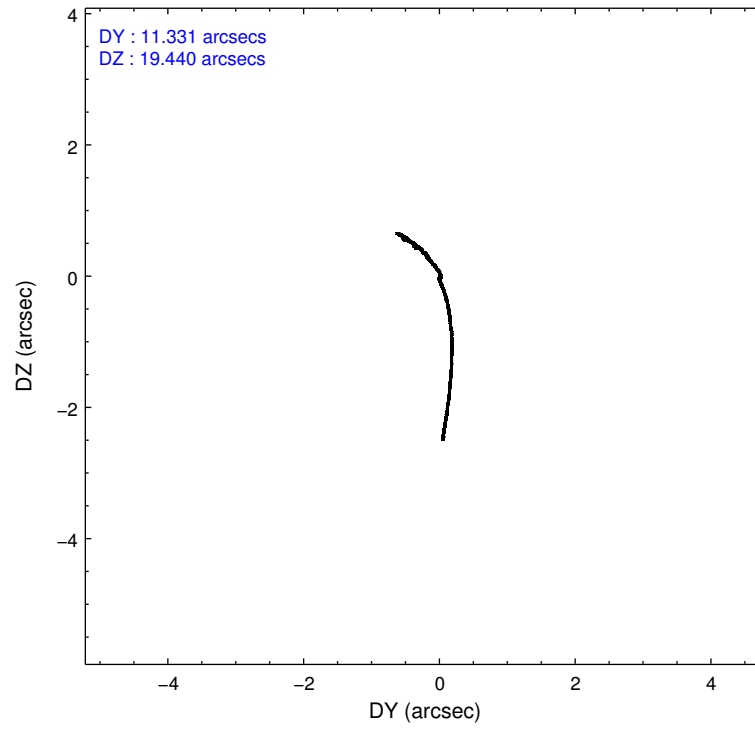
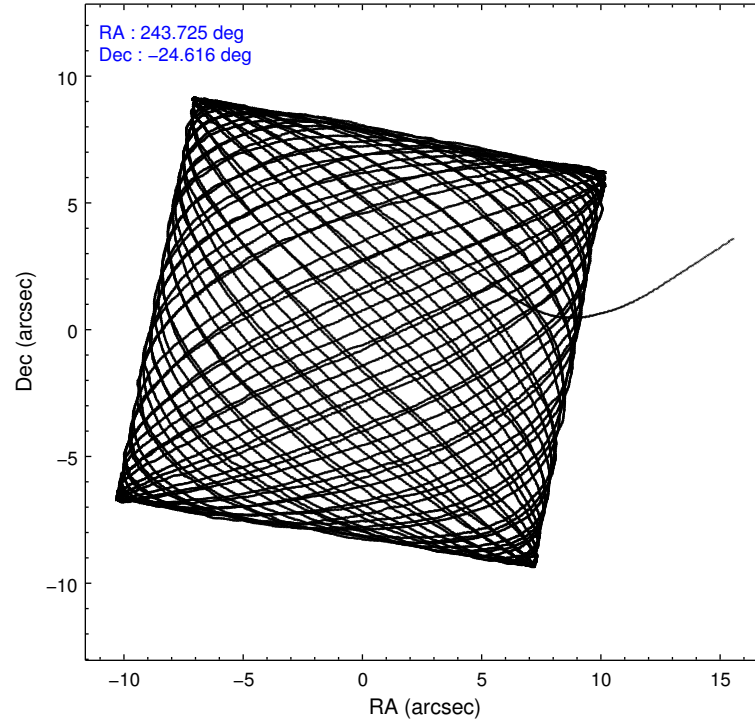
	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7		ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	207731	227797	221398	232410	277696	grade 0 events	8970	7738	8346	7766	9914
rejected events	180357	205679	198807	207010	158112		4%	3%	3%	3%	3%
rejected %	86%	90%	89%	89%	56%	grade 1 events	109	111	142	116	441
							0%	0%	0%	0%	0%
						grade 2 events	7559	5391	4959	6720	24952
							3%	2%	2%	2%	8%
						grade 3 events	2310	2242	2315	2114	9406
							1%	0%	1%	0%	3%
						grade 4 events	2221	2149	2178	2205	9071
							1%	0%	0%	0%	3%
						grade 5 events	8524	7773	9490	9433	26693
							4%	3%	4%	4%	9%
						grade 6 events	6314	4602	4797	6598	66256
							3%	2%	2%	2%	23%
						grade 7 events	171724	197791	189171	197458	130963
							82%	86%	85%	84%	47%

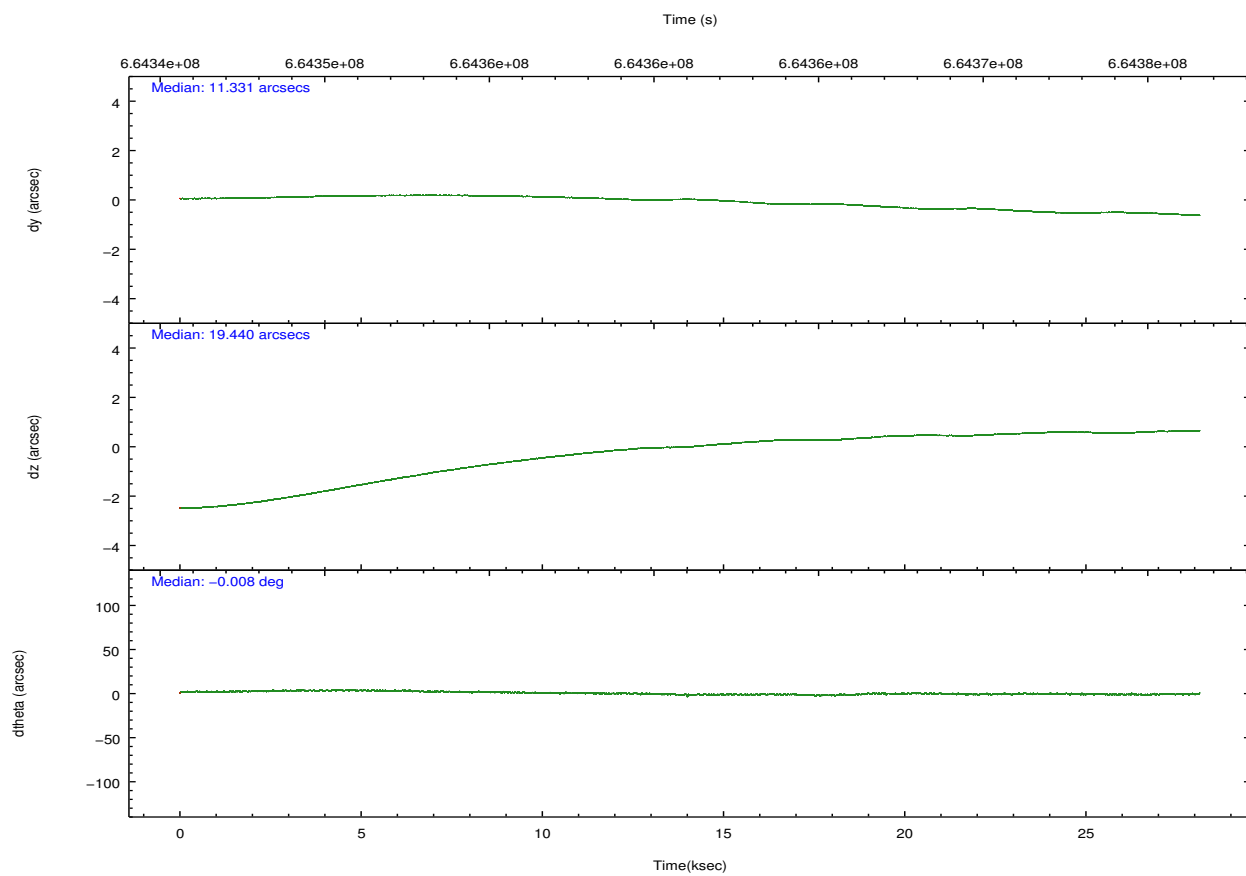
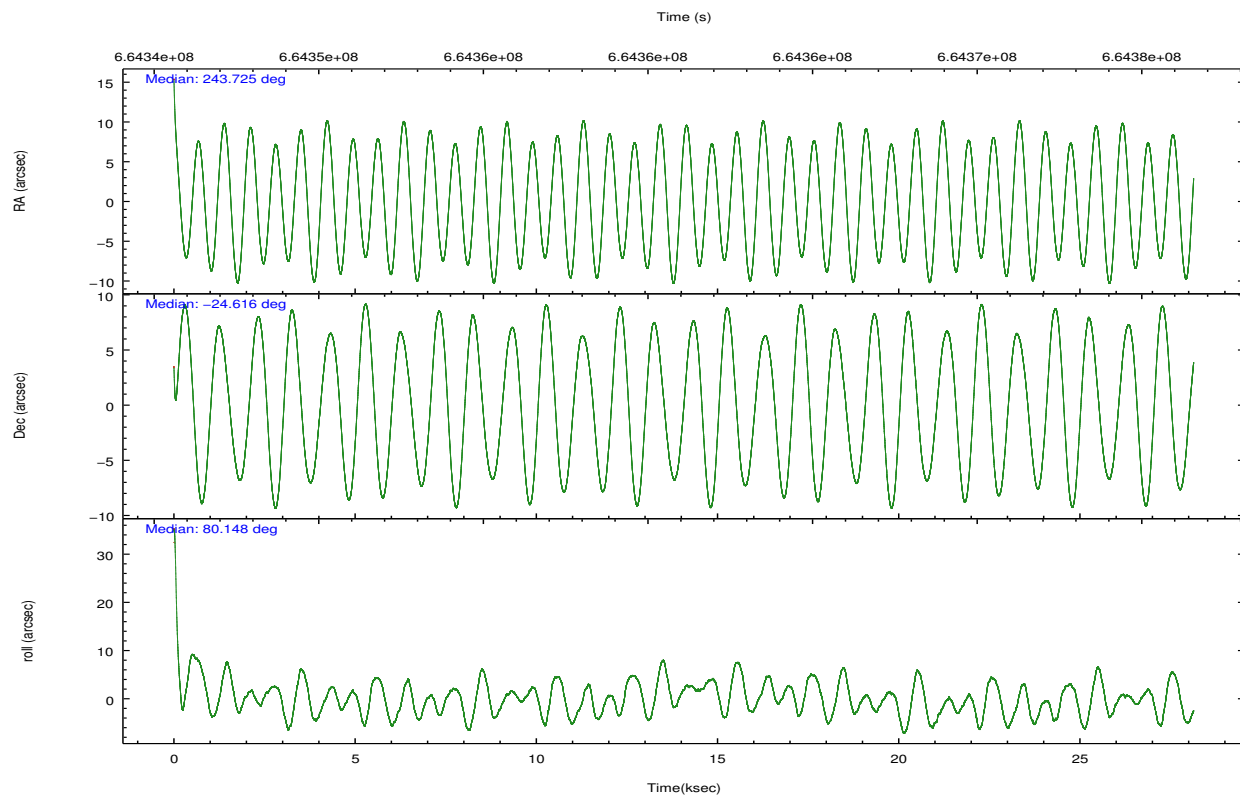
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-12367	ACIS-12367
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	243.736151	243.7253653658031
[deg] Pointing Dec	-24.641902	-24.61626214515923
[deg] Pointing Roll	80.003090	80.1552278116005
[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)	664347140.184000	664345947.81113
Observation start date	2019-01-20T04:51:11	2019-01-20T04:32:27
[s] Observation end time (MET)	664375140.184000	664376278.0754499
Observation end date	2019-01-20T12:37:51	2019-01-20T12:57:58
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	O1	N
CCD I1 on	O2	Y
CCD I2 on	O3	Y
CCD I3 on	O4	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O5	Y
CCD S3 on	Y	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	1	1
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect



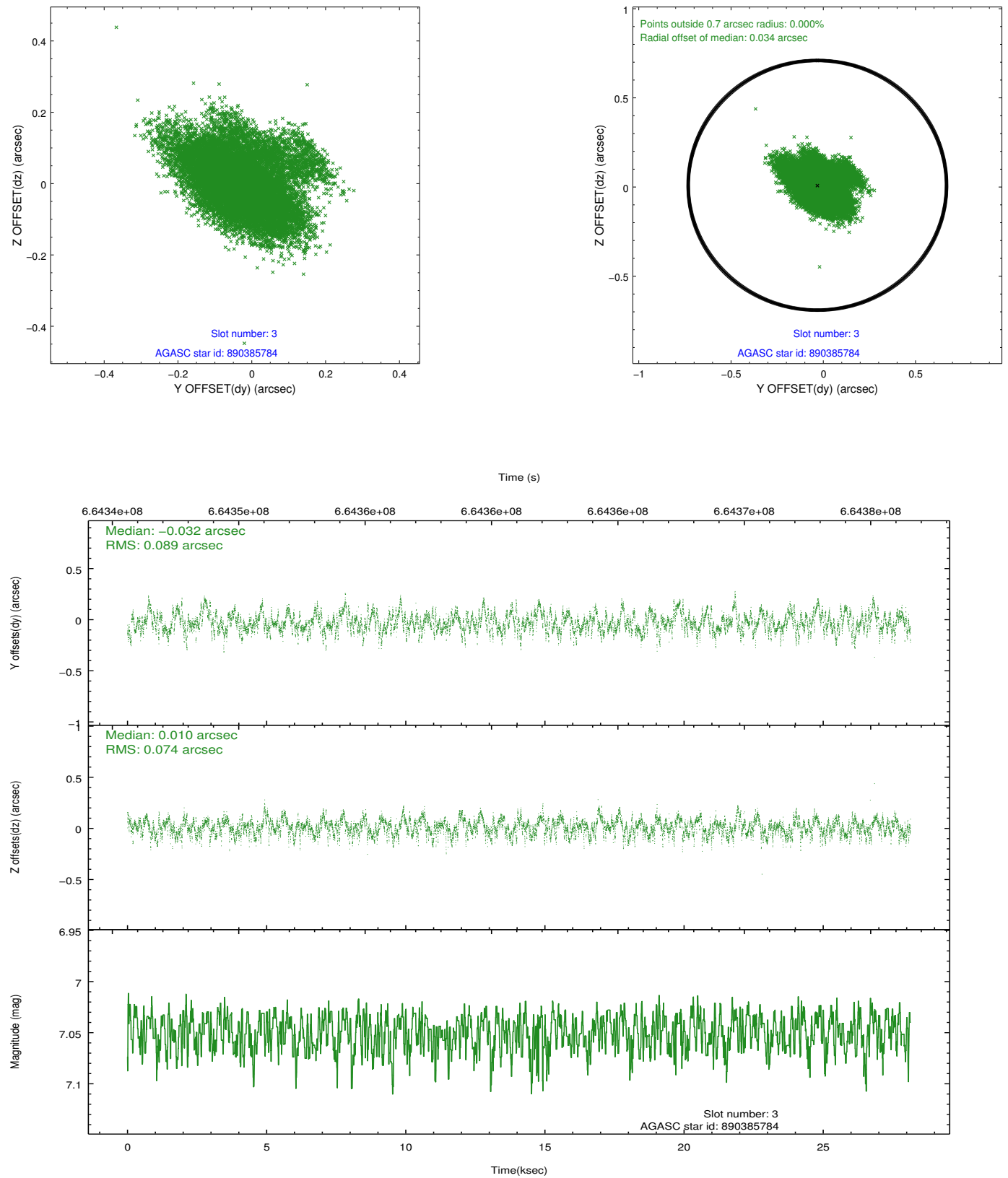


Slot Statistics

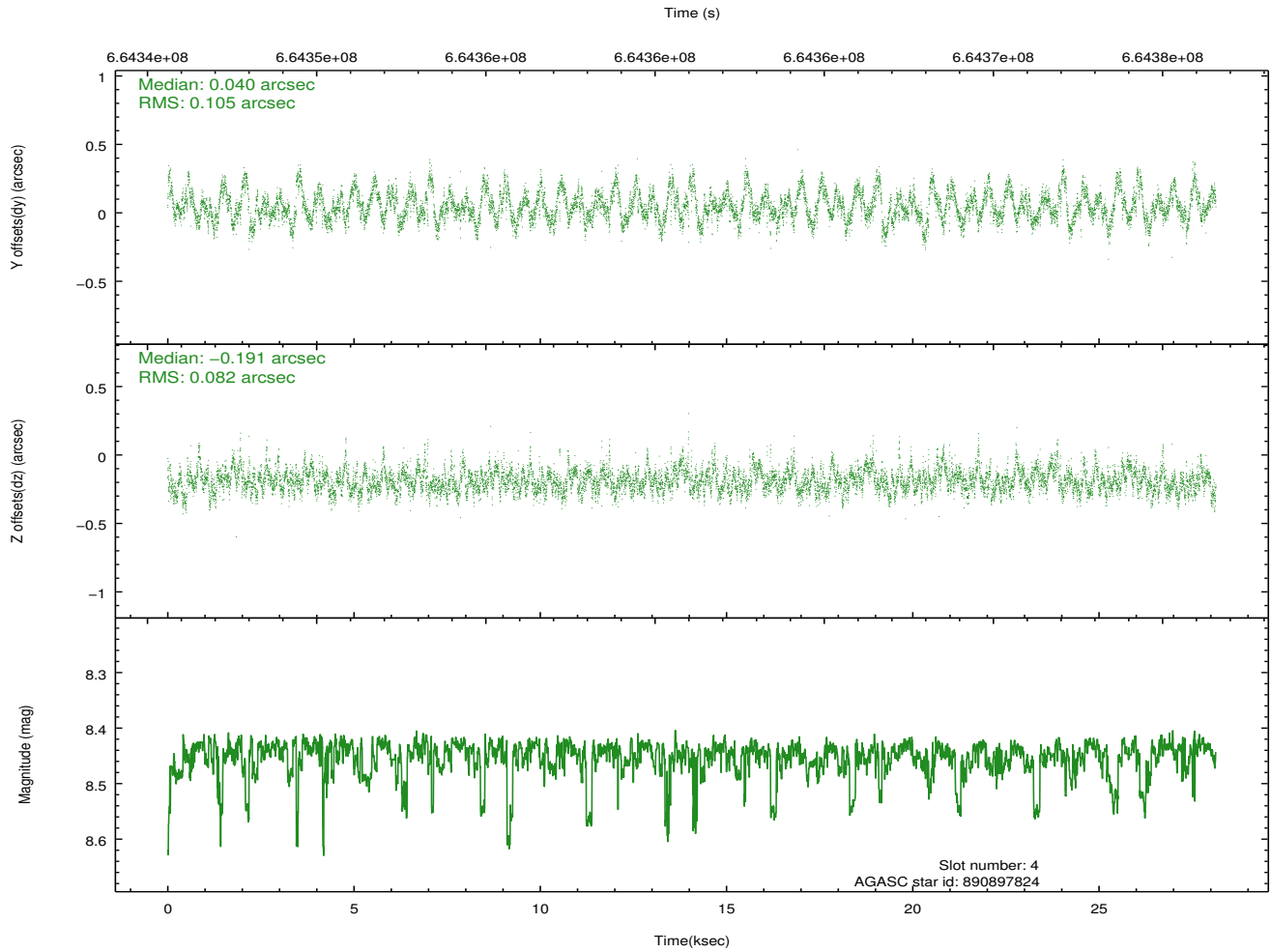
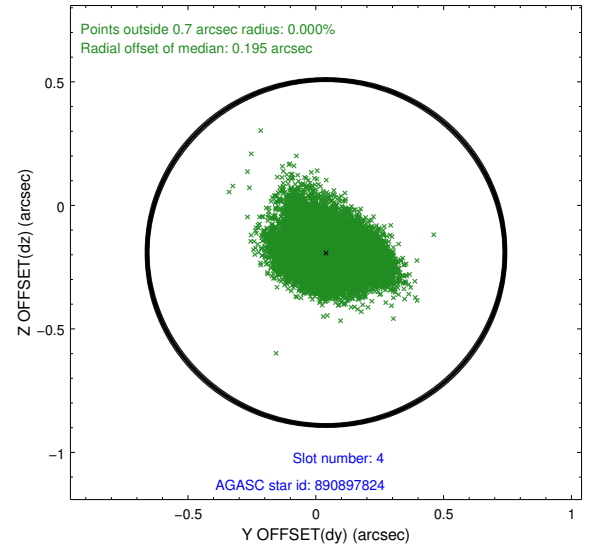
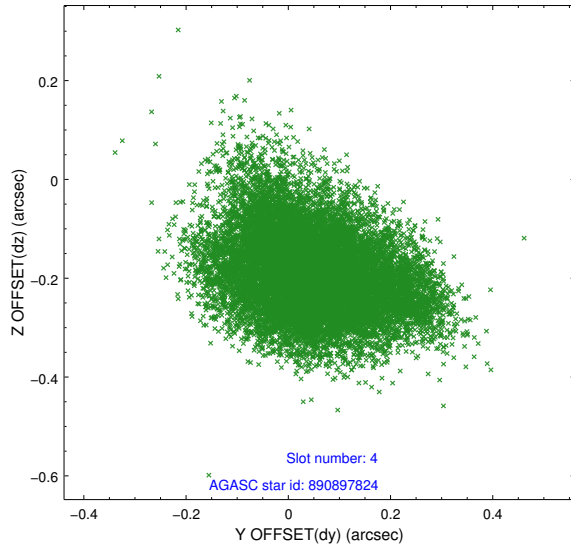
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-1	7.24	6863	1.000	-0.011	-0.096	0.031	0.049	0.000000	0.000000	932.03	-1736
1	FID		ACIS-S-4	7.28	6861	1.000	0.557	0.076	0.027	0.036	0.000000	0.000000	2149.94	168
2	FID		ACIS-S-5	7.26	6860	1.000	-0.576	0.032	0.046	0.059	0.000000	0.000000	-1817.40	161
3	GUIDE	used	890385784	7.05	13726	1.000	-0.032	0.010	0.122	0.206	244.111228	-24.281942	1488.48	-986
4	GUIDE	used	890897824	8.45	13714	1.000	0.040	-0.191	0.142	0.231	243.107309	-25.100425	-1985.91	1731
5	GUIDE	used	890898648	8.95	13707	1.000	-0.064	-0.490	0.174	0.283	243.104587	-24.739235	-708.73	1971
6	GUIDE	used	890900216	7.77	13724	1.000	0.239	0.551	0.118	0.182	243.945266	-25.121526	-1584.22	-970
7	GUIDE	used	890384712	8.39	13717	1.000	-0.193	0.126	0.129	0.240	244.450192	-24.146246	2158.73	-2000

2.4 Star Slots

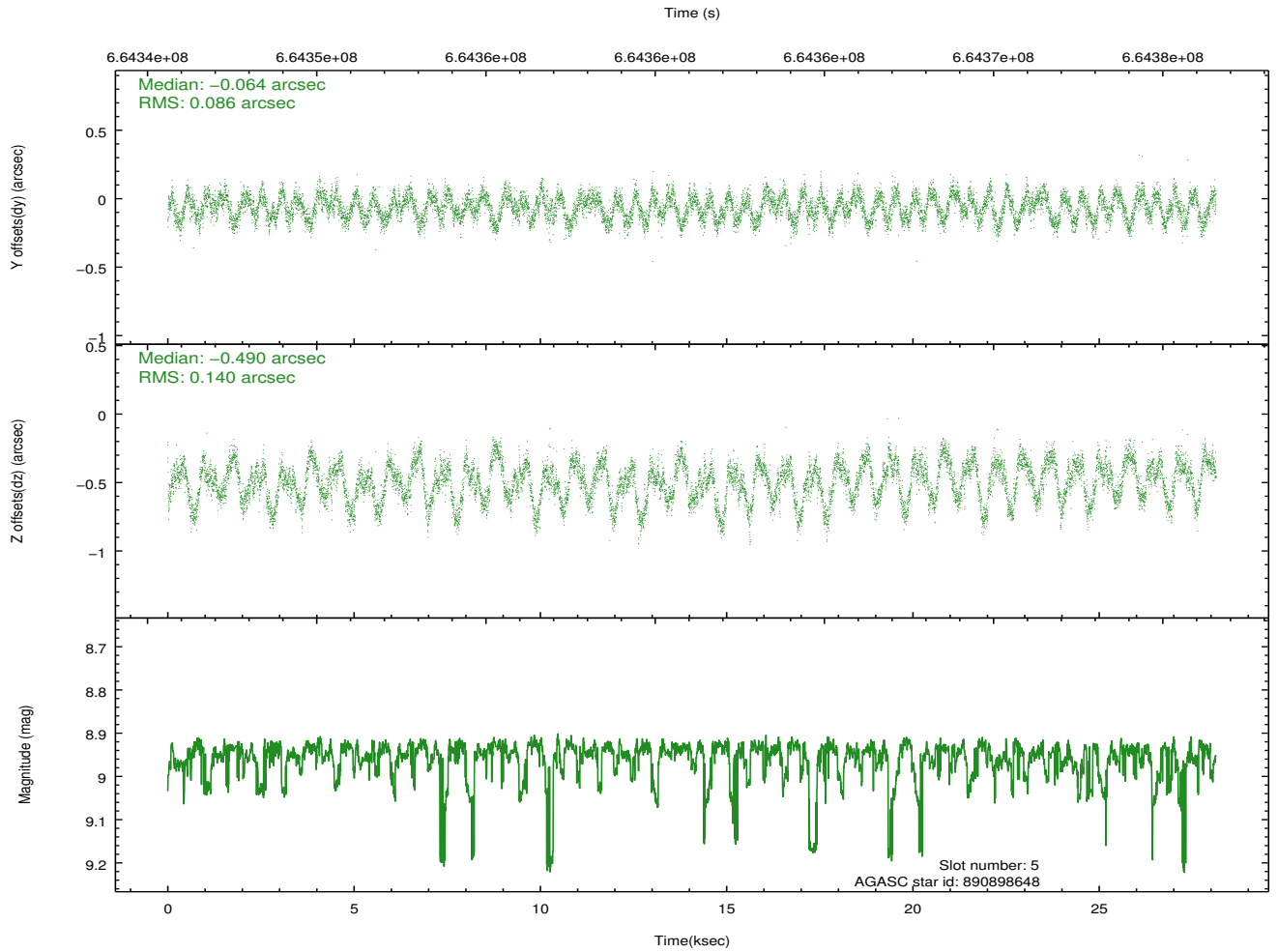
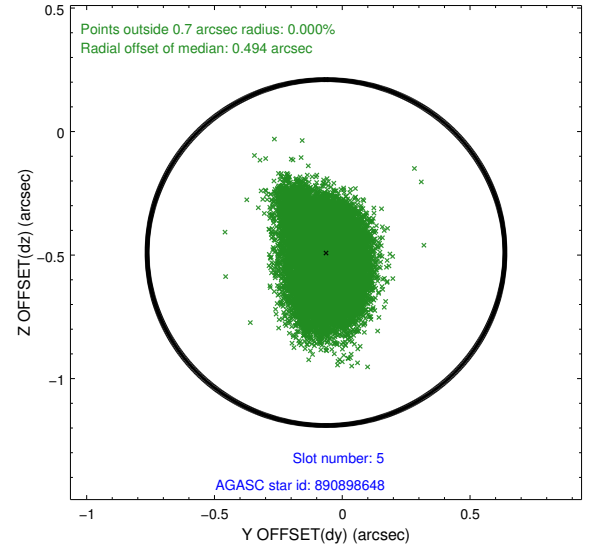
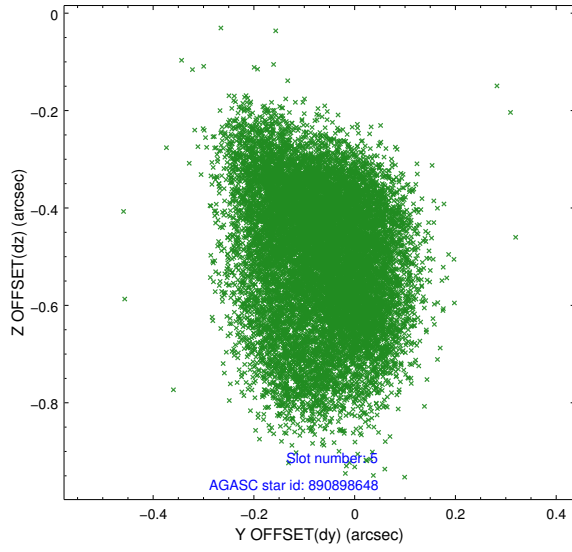
2.4.1 Slot 3



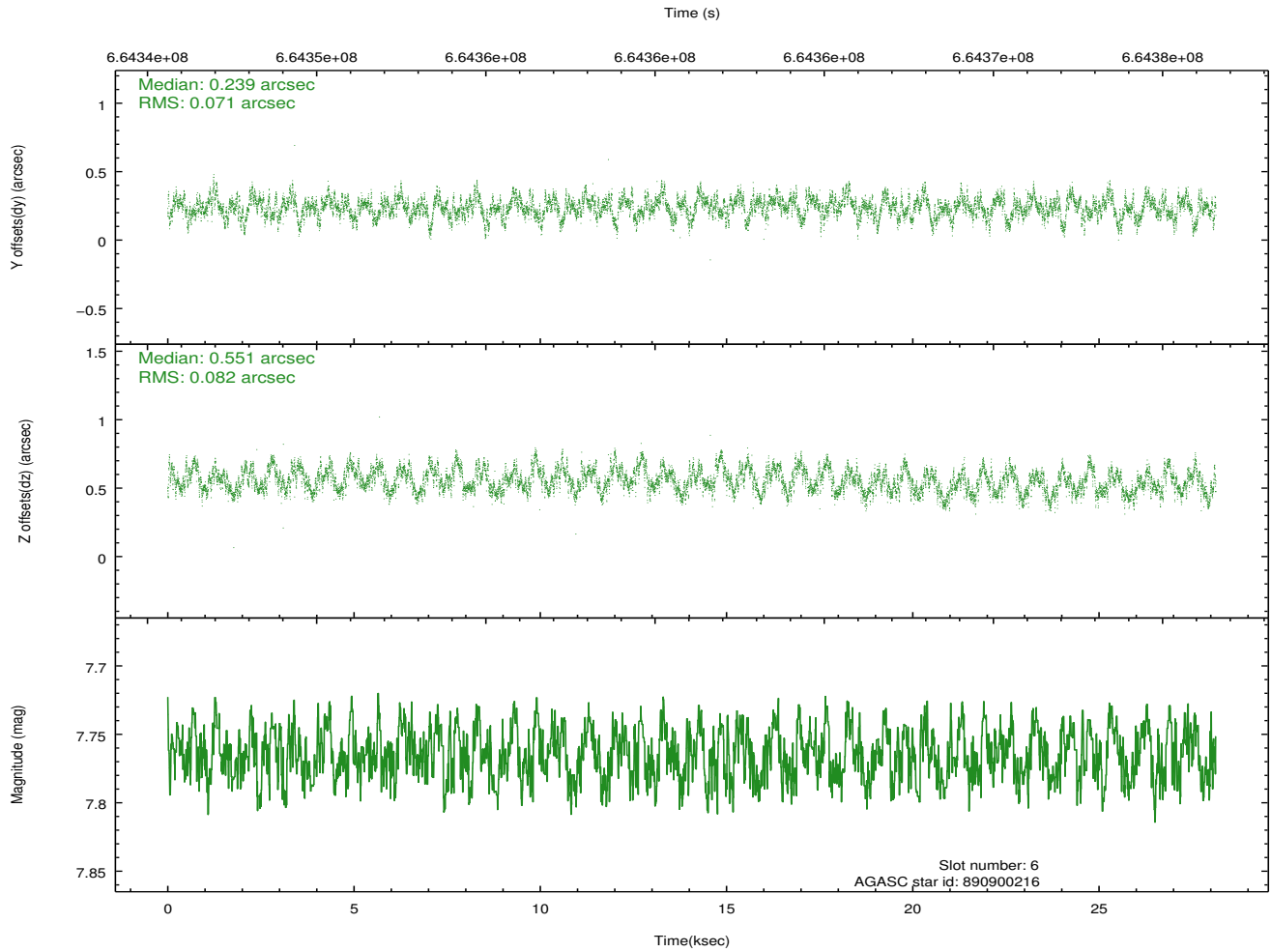
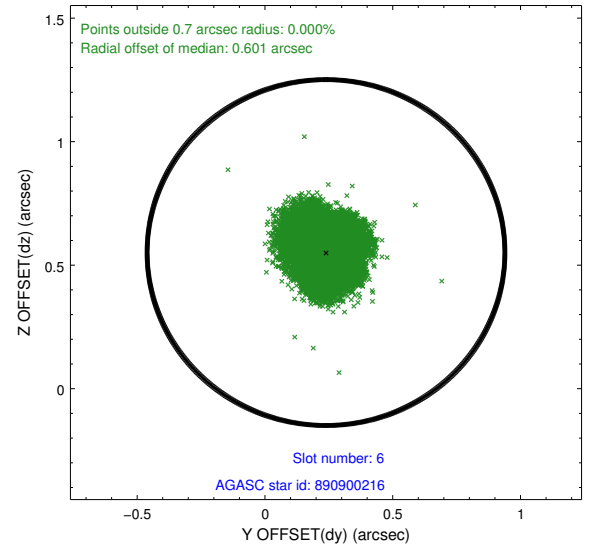
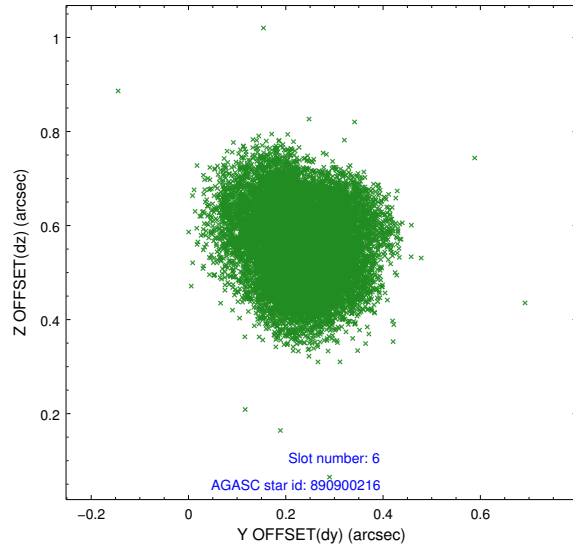
2.4.2 Slot 4



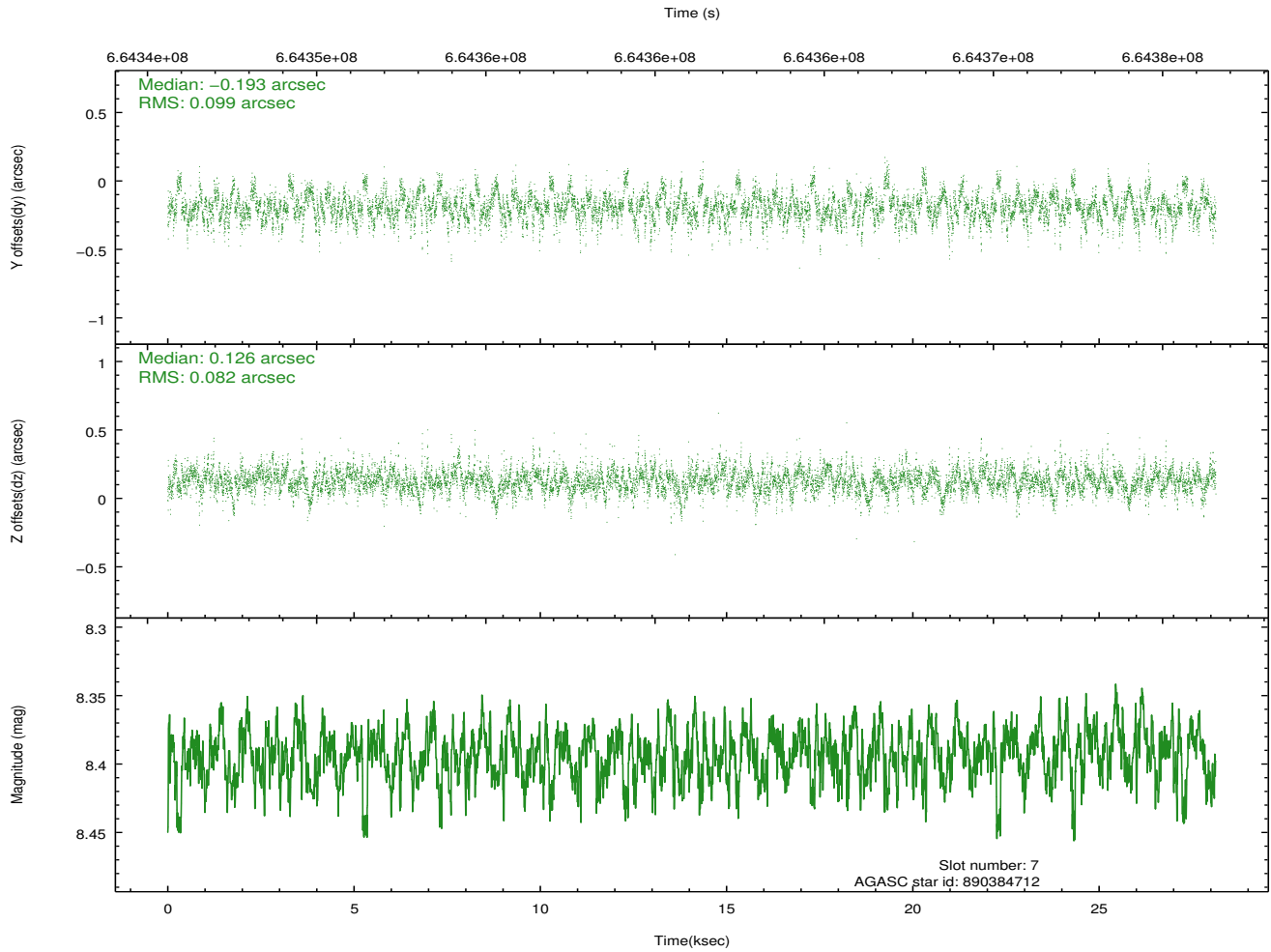
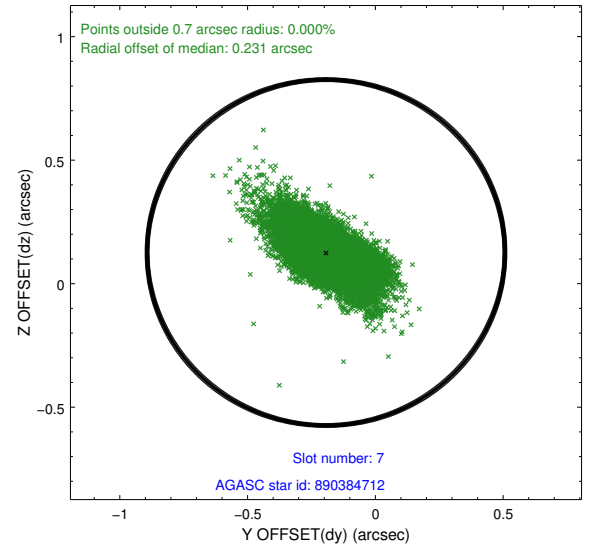
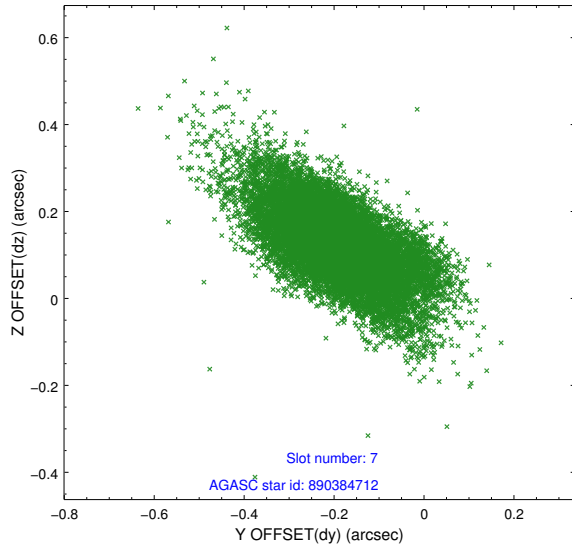
2.4.3 Slot 5



2.4.4 Slot 6

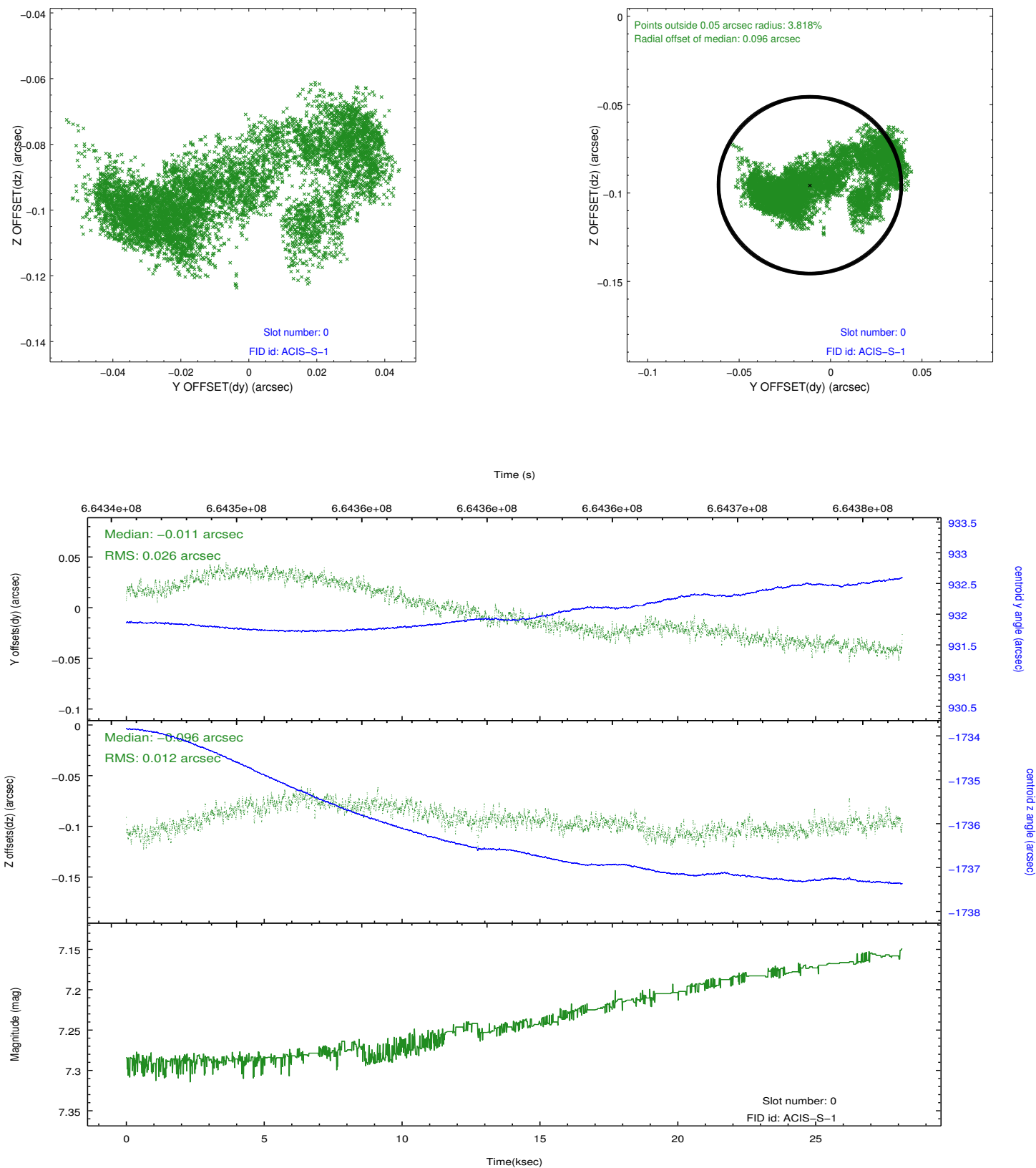


2.4.5 Slot 7

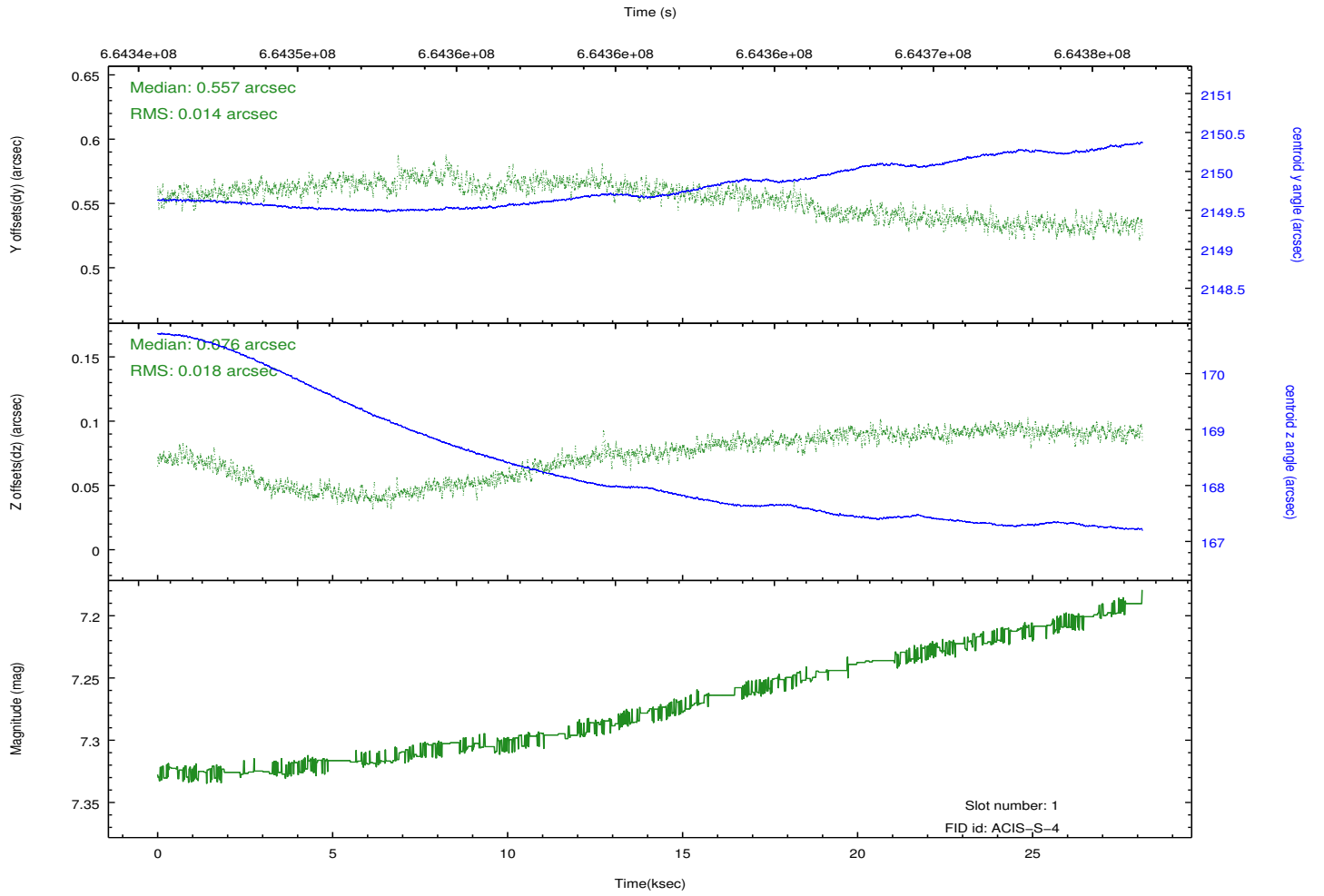
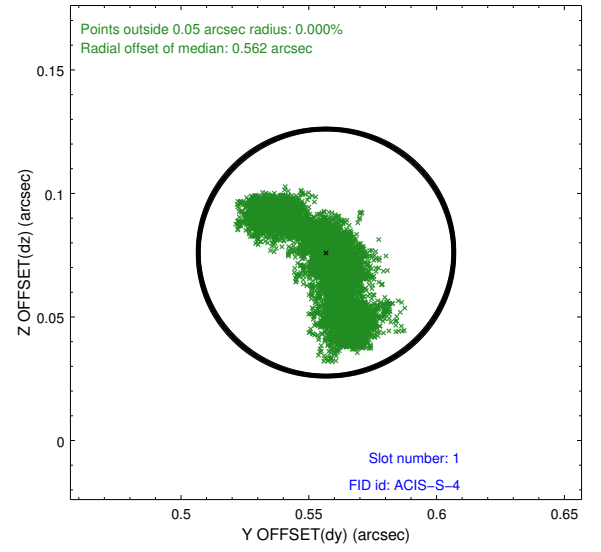
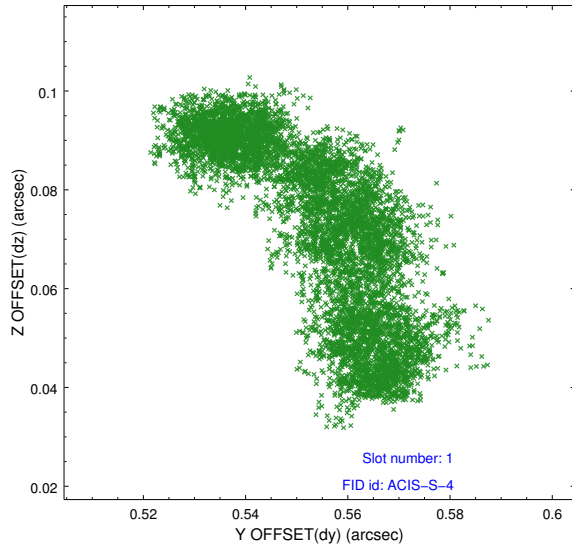


2.5 FID Slots

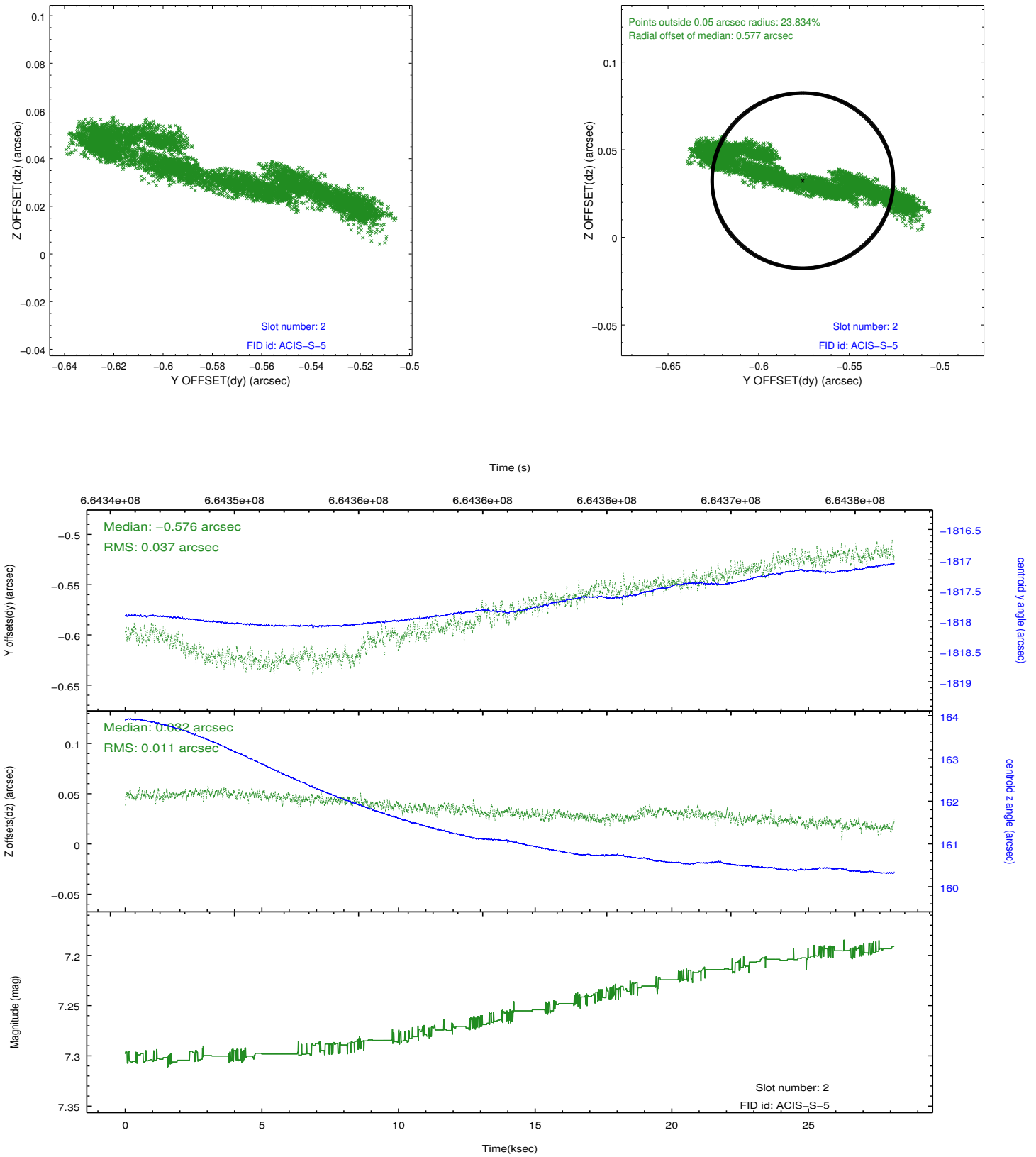
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.01.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	28.095083994508

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.