

V&V Reference Report

L2 ASCDS Version : 10.6.4.1

Observation 20566 - L2 Version 1
Chandra X-Ray Center

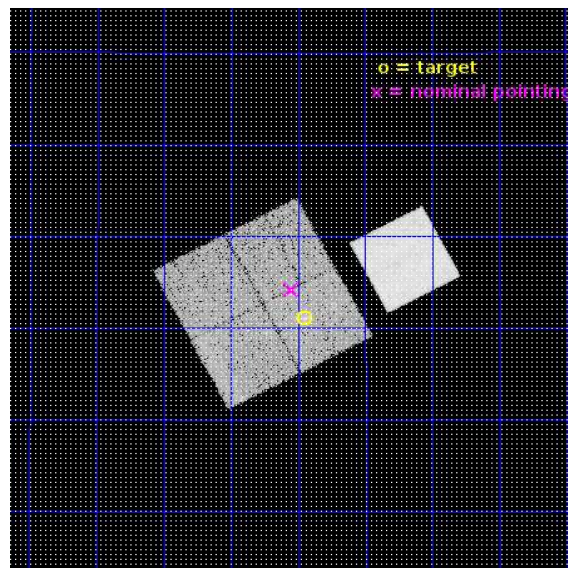
L2 Processing Date : Oct 6 2018

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

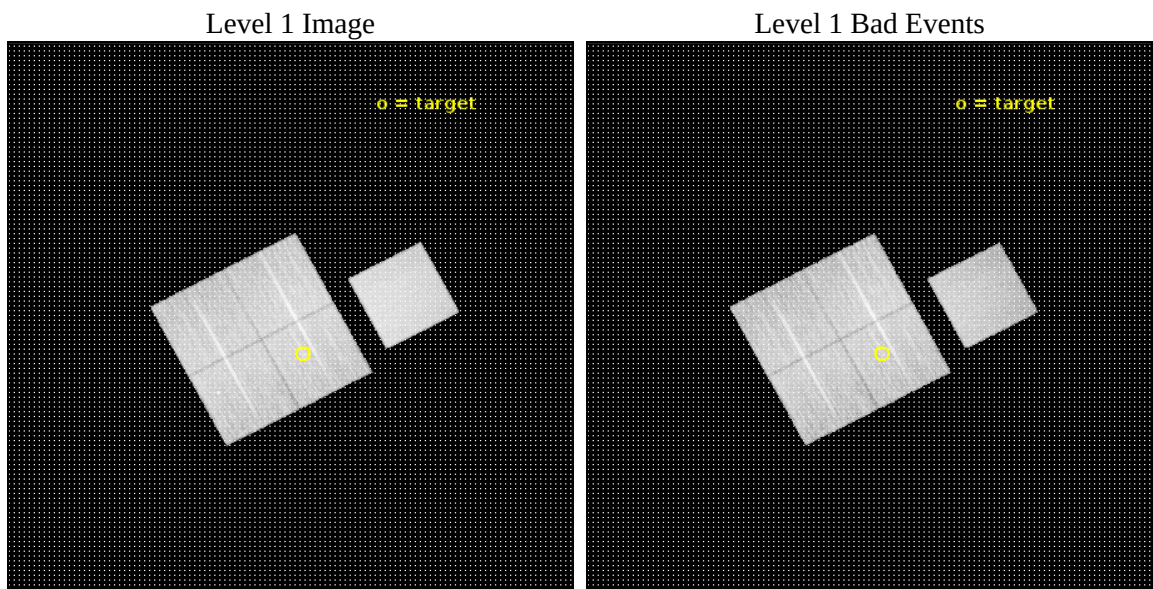
seq_num	801765	Sequence number
obs_id	20566	Observation id
title	The Chandra Strong Lens Sample: Revealing Baryonic Physics In Strong Lensing Selected Clusters	Proposal title
observer	Matthew Bayliss	Principal investigator
object	SDSSJ1002+2031	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	150.6125	Observer's specified target RA [deg]
dec_targ	20.5175	Observer's specified target Dec [deg]
ra_nom	150.63764659863	Nominal RA [deg]
dec_nom	20.569636746592	Nominal Dec [deg]
roll_nom	62.156249972835	Nominal Roll [deg]
revision	1	Processing version of data
ontime	20456.482453942	Sum of GTIs [s]
livetime	20189.203450838	Livetime [s]
ontime0	20453.218363643	Sum of GTIs [s]
ontime1	20456.400373936	Sum of GTIs [s]
ontime2	20453.300443649	Sum of GTIs [s]
ontime3	20456.482453942	Sum of GTIs [s]
ontime7	20456.523493886	Sum of GTIs [s]
l2events	142731	Number of level 2 events



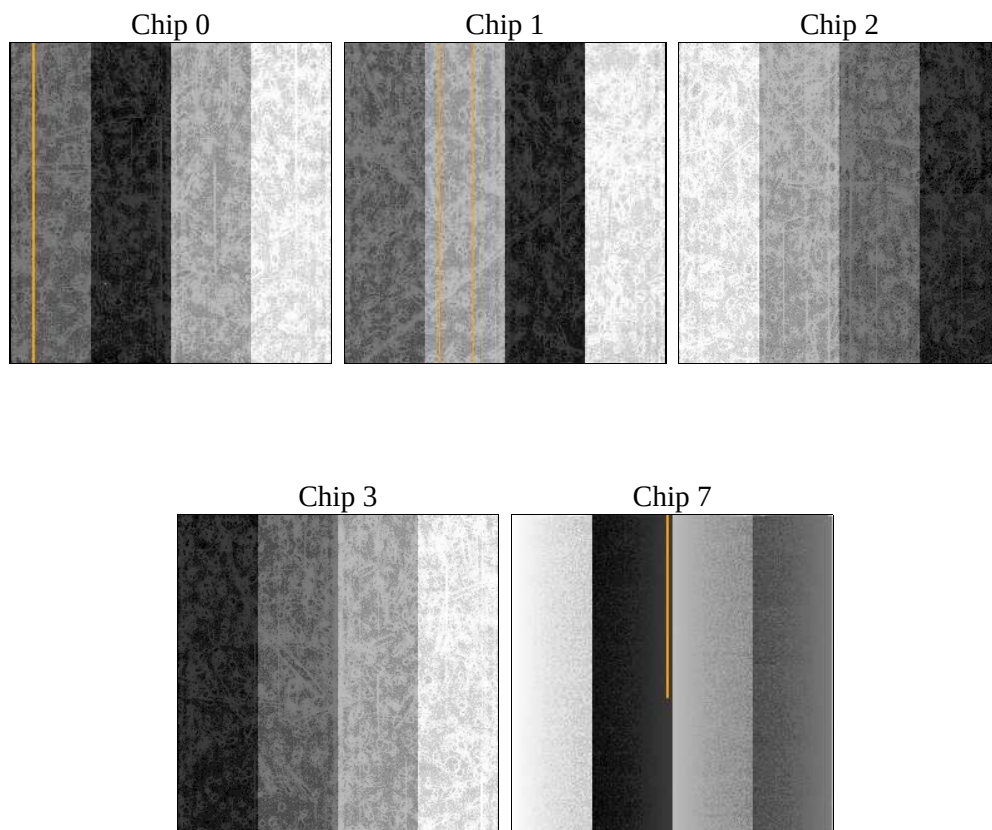
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	20400.000000	[s] Scheduled observation exposure time
ascdsver	10.6.4.1	Processing system revision	ontime	20456.482453942	Sum of GTIs [s]
caldsver	4.8.0	 	ontime0	20453.218363643	Sum of GTIs [s]
date	2018-10-06T14:33:06	Date and time of file creation	ontime1	20456.400373936	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	20453.300443649	Sum of GTIs [s]
			ontime3	20456.482453942	Sum of GTIs [s]
			ontime7	20456.523493886	Sum of GTIs [s]
			l1events	816907	Number of level 1 events

2.1.4 Events

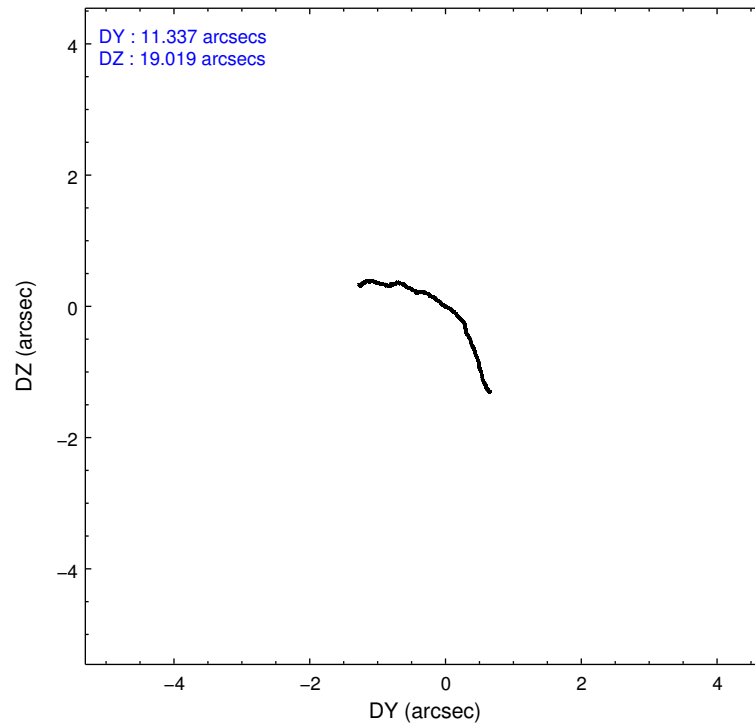
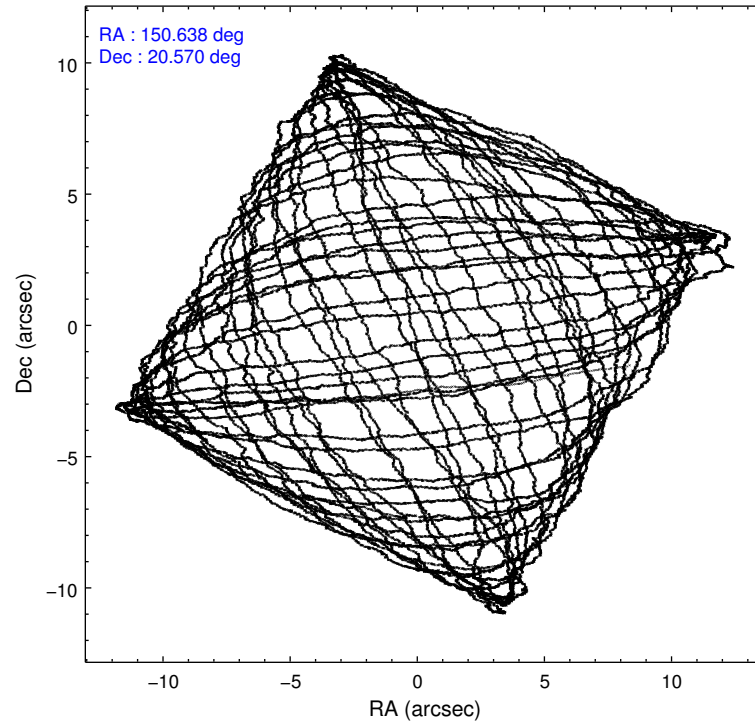
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
level 1 events	145798	148230	165274	158352	199253
rejected events	128816	128341	148972	140456	113518
rejected %	88%	86%	90%	88%	56%

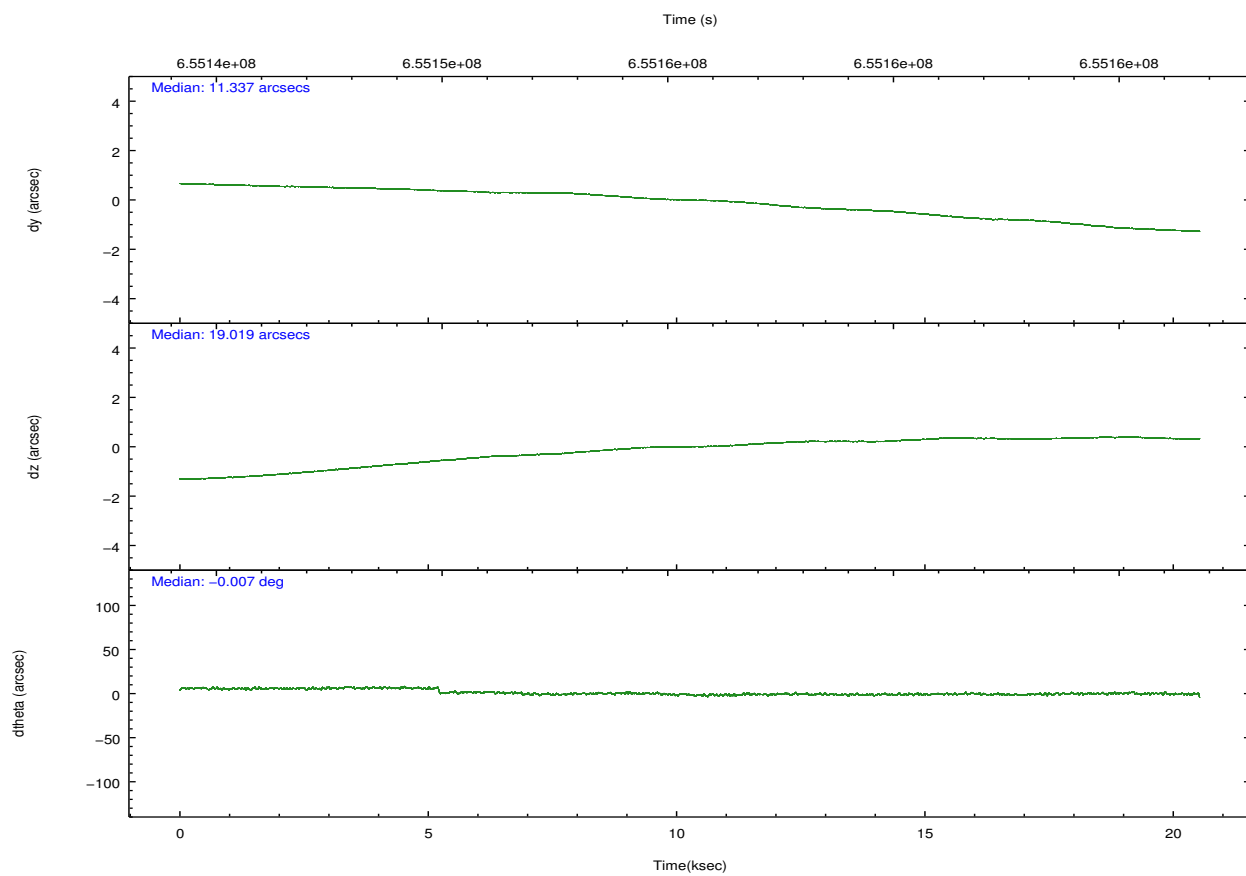
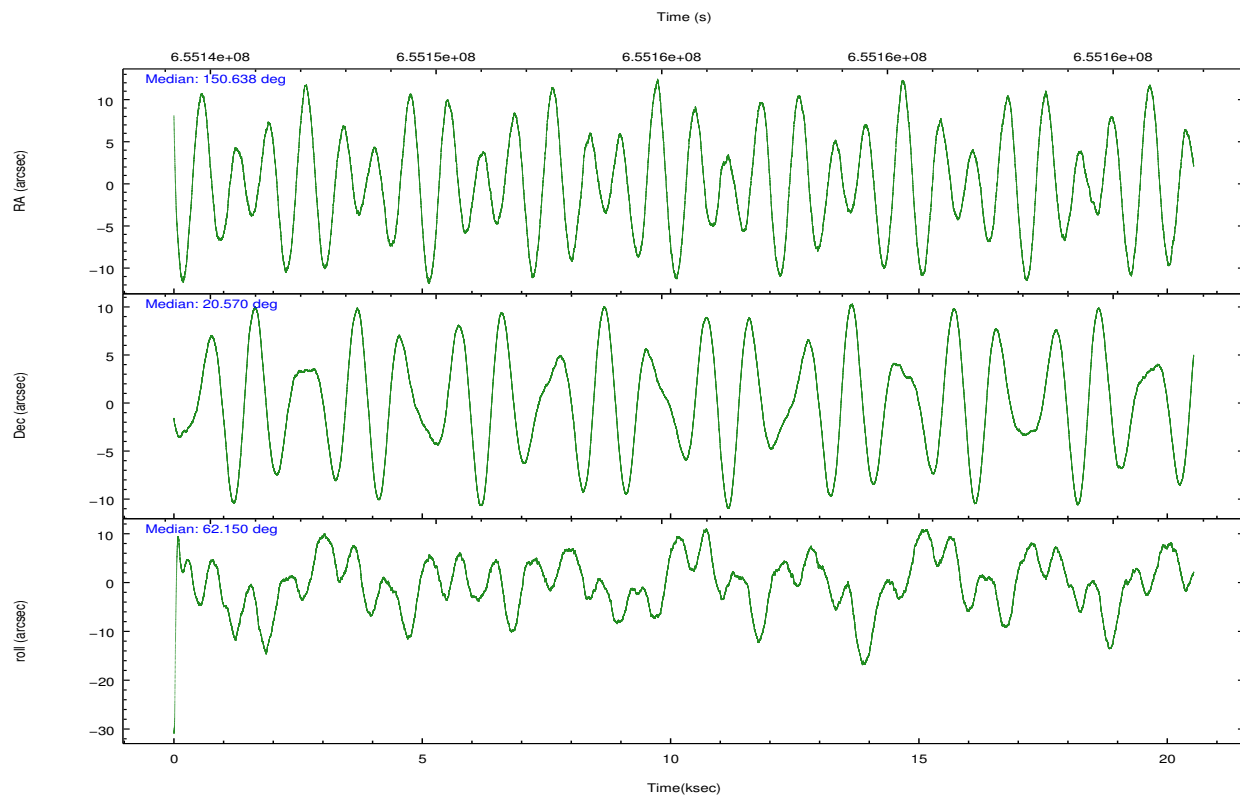
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
grade 0 events	5690	6721	5731	7190	7094
	3%	4%	3%	4%	3%
grade 1 events	83	80	73	102	294
	0%	0%	0%	0%	0%
grade 2 events	4298	5336	3978	3649	18192
	2%	3%	2%	2%	9%
grade 3 events	1732	1643	1621	1755	6637
	1%	1%	0%	1%	3%
grade 4 events	1545	1714	1649	1772	6481
	1%	1%	0%	1%	3%
grade 5 events	6186	6362	5810	7104	19505
	4%	4%	3%	4%	9%
grade 6 events	3717	4476	3326	3534	47337
	2%	3%	2%	2%	23%
grade 7 events	122547	121898	143086	133246	93713
	84%	82%	86%	84%	47%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01237	ACIS-01237	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	150.638868	150.6376465986283	CCD I2 on	Y	Y
[deg] Pointing Dec	20.542077	20.5696367465924	CCD I3 on	Y	Y
[deg] Pointing Roll	61.947167	62.15624997283467	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	-225.840463	-225.8433433320239	CCD S3 on	O2	Y
[mm] SIM translation stage offset	-7.752	-7.749109670905796	CCD S4 on	N	N
[s] Observation start time (MET)	655145337.184000	655143960.9955	CCD S5 on	N	N
Observation start date	2018-10-05T16:47:48	2018-10-05T16:26:00	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	655165737.184000	655166656.54684	On-chip summing requested	N	N
Observation end date	2018-10-05T22:27:48	2018-10-05T22:44:16	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



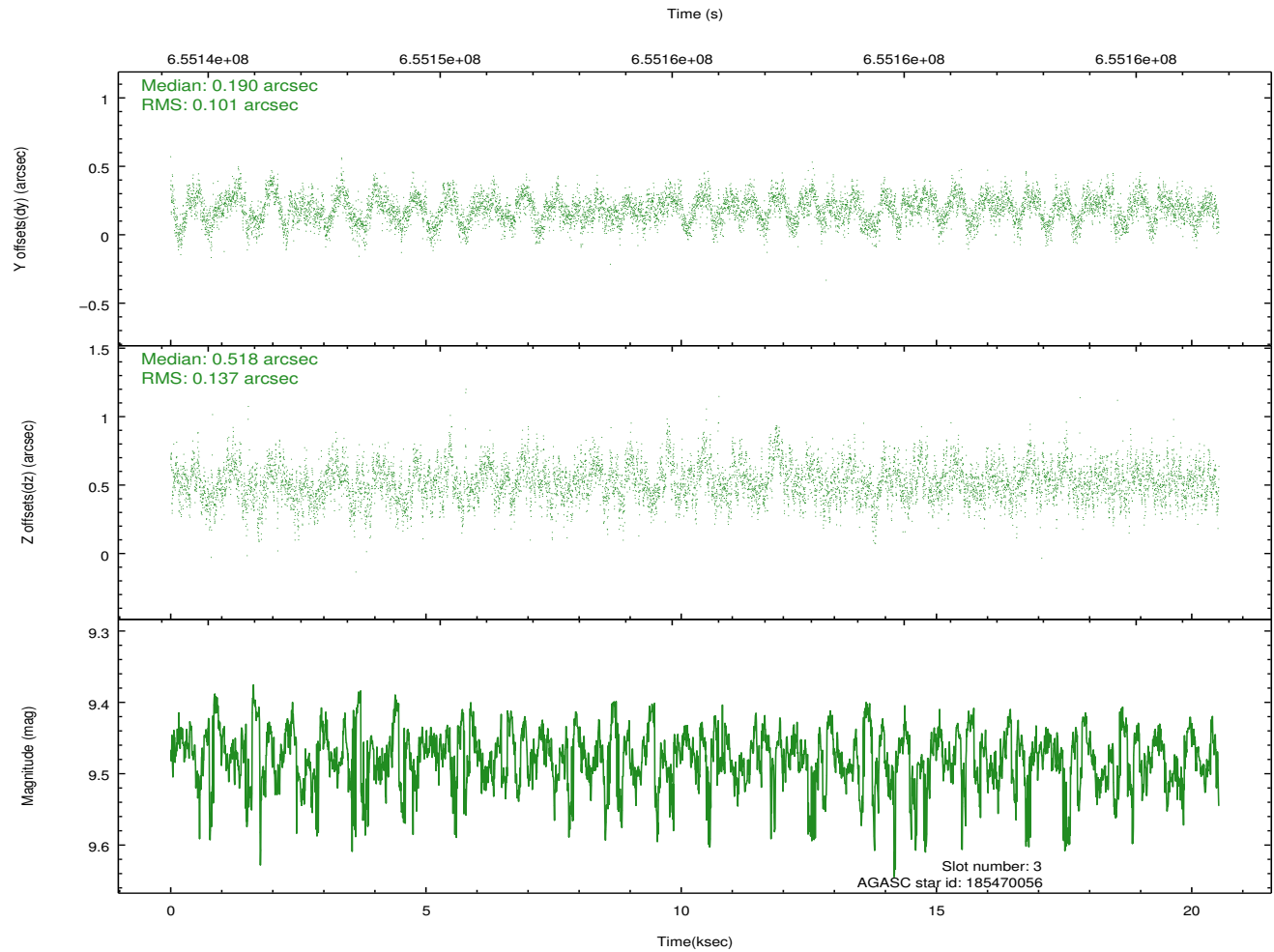
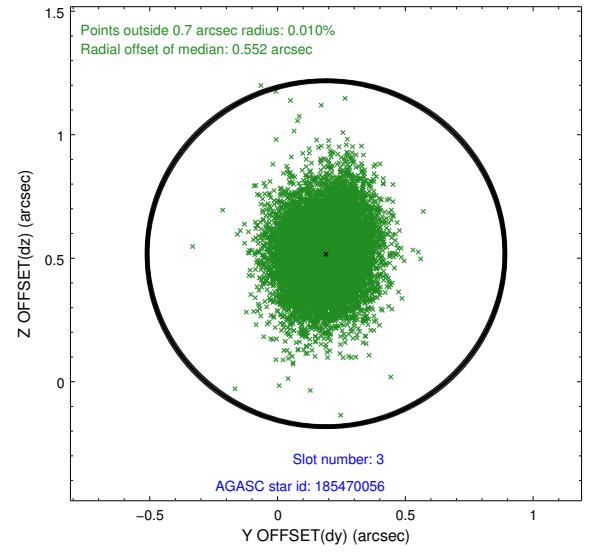
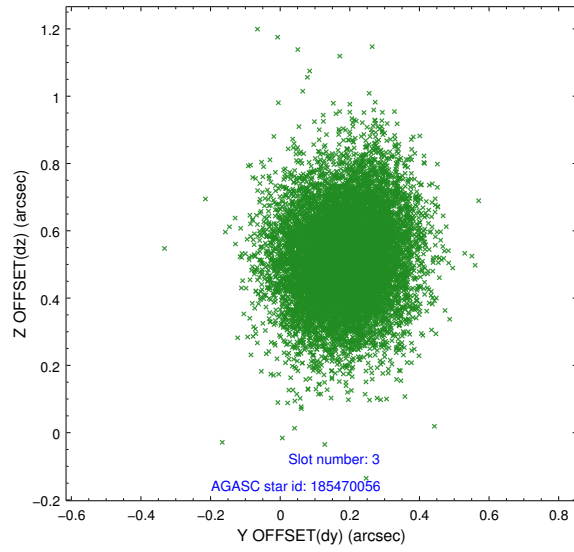


Slot Statistics

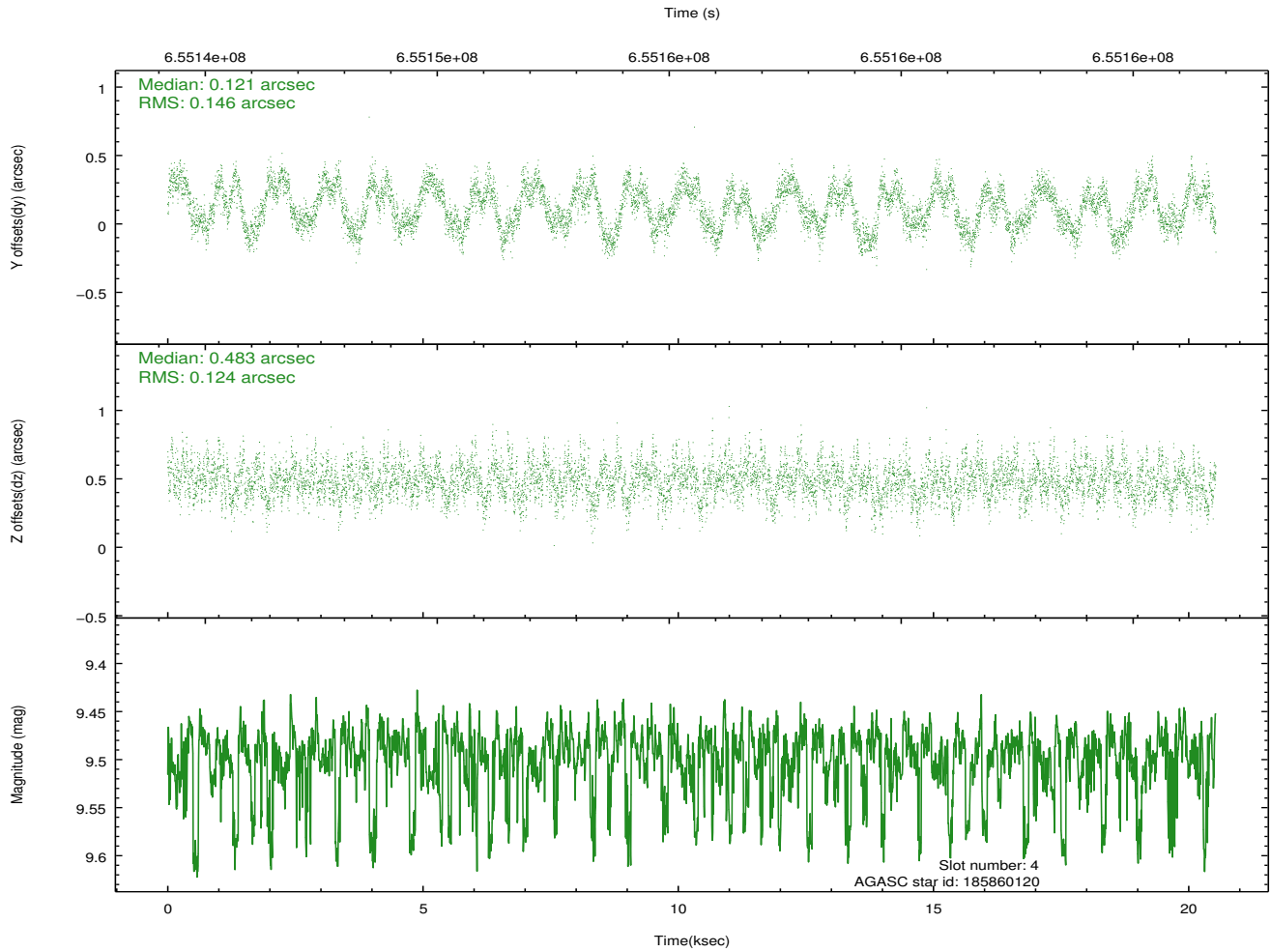
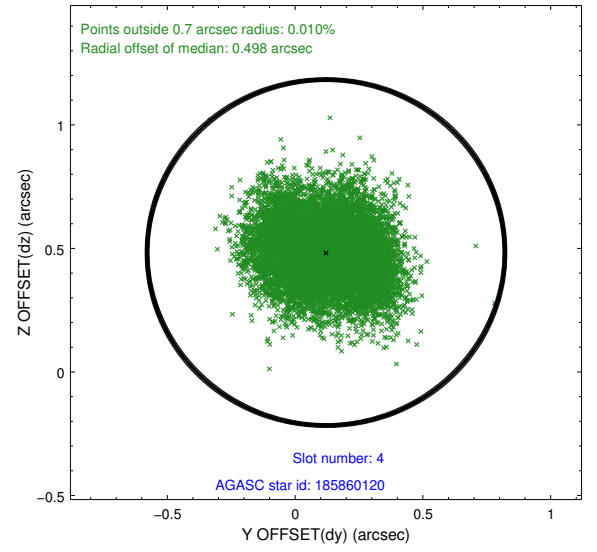
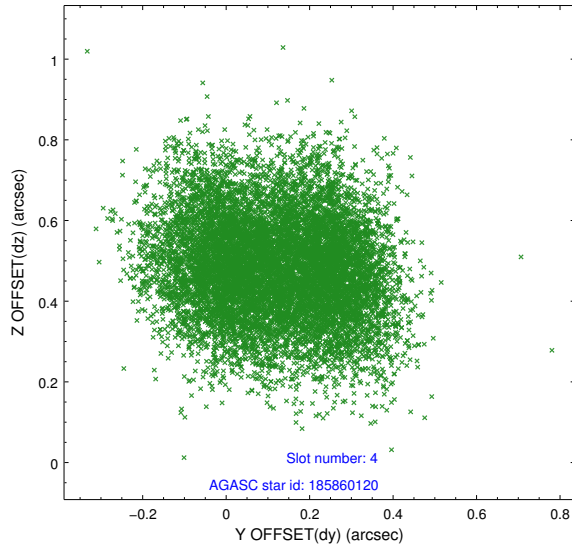
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.23	5008	1.000	-0.102	-0.153	0.030	0.049	0.000000	0.000000	928.19	-1001
1	FID		ACIS-I-4	7.15	5007	1.000	0.016	0.161	0.030	0.066	0.000000	0.000000	2147.87	899
2	FID		ACIS-I-6	7.24	5008	1.000	-0.009	0.053	0.034	0.057	0.000000	0.000000	394.21	1540
3	GUIDE	used	185470056	9.48	9987	1.000	0.190	0.518	0.179	0.293	150.883544	19.849954	-1808.15	-1902
4	GUIDE	used	185860120	9.50	10000	1.000	0.121	0.483	0.209	0.318	150.980746	20.143054	-723.08	-1694
5	GUIDE	used	185861184	9.70	9927	1.000	-0.535	-0.731	0.262	0.421	150.335941	20.997487	968.31	1669
6	GUIDE	used	185863864	9.53	9999	1.000	0.093	0.209	0.214	0.371	150.921921	20.274328	-400.56	-1295
7	GUIDE	used	185861176	9.48	9997	1.000	0.117	-0.465	0.176	0.301	149.800216	20.414490	-1729.88	2284

2.4 Star Slots

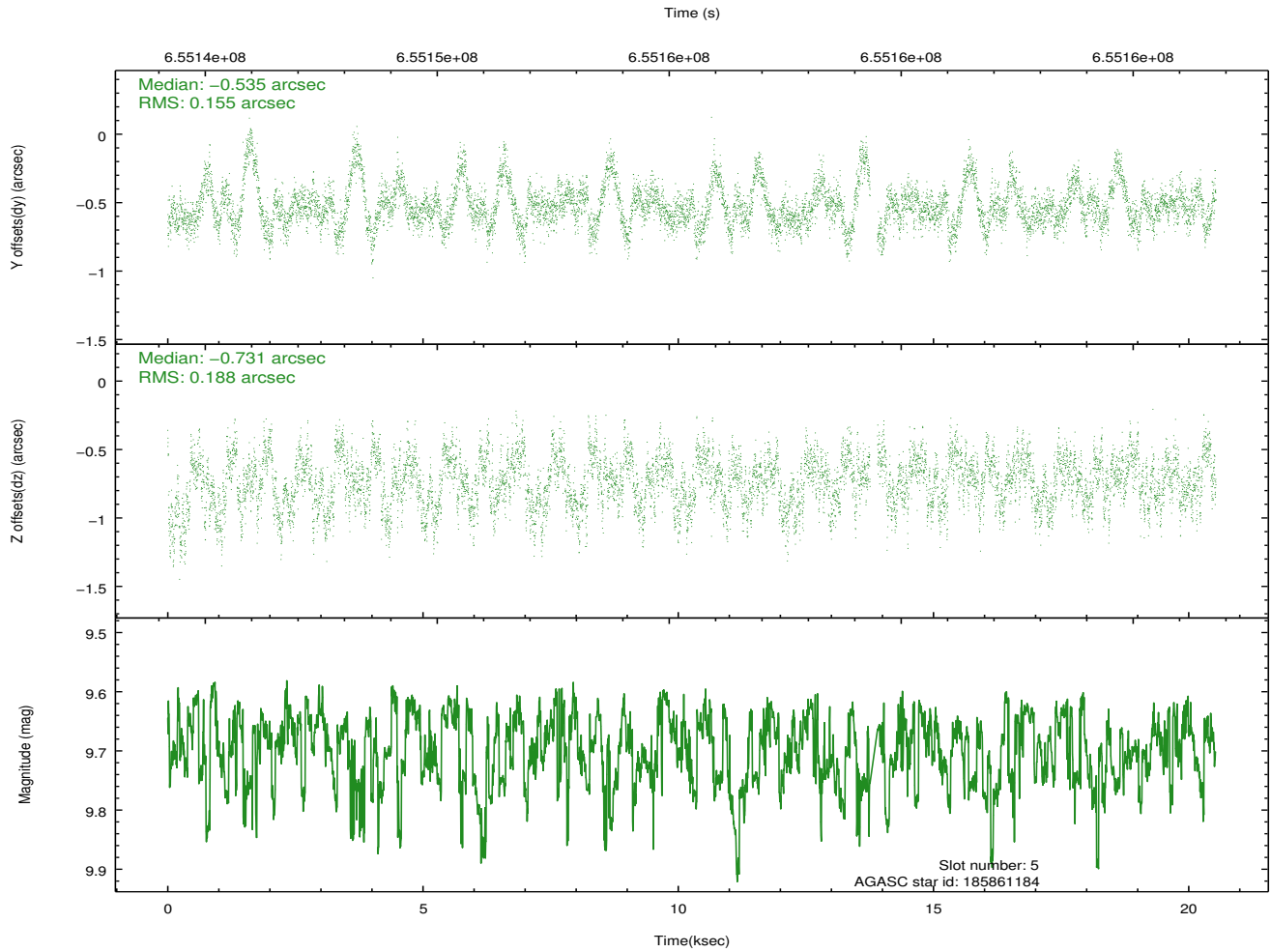
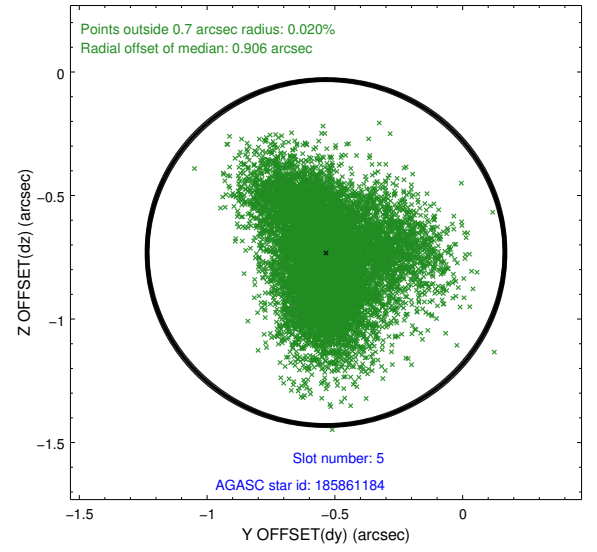
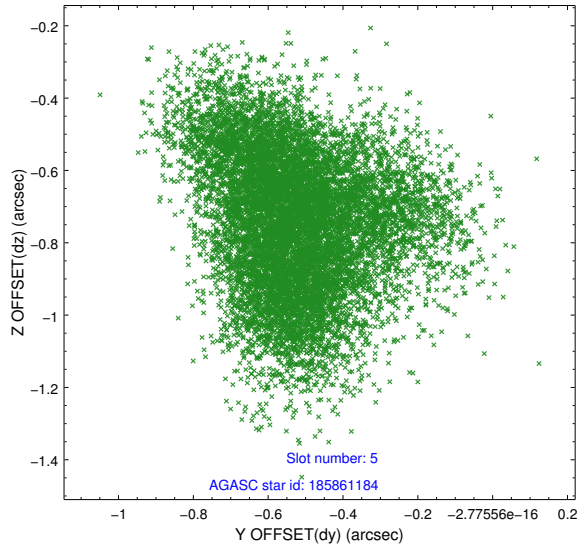
2.4.1 Slot 3



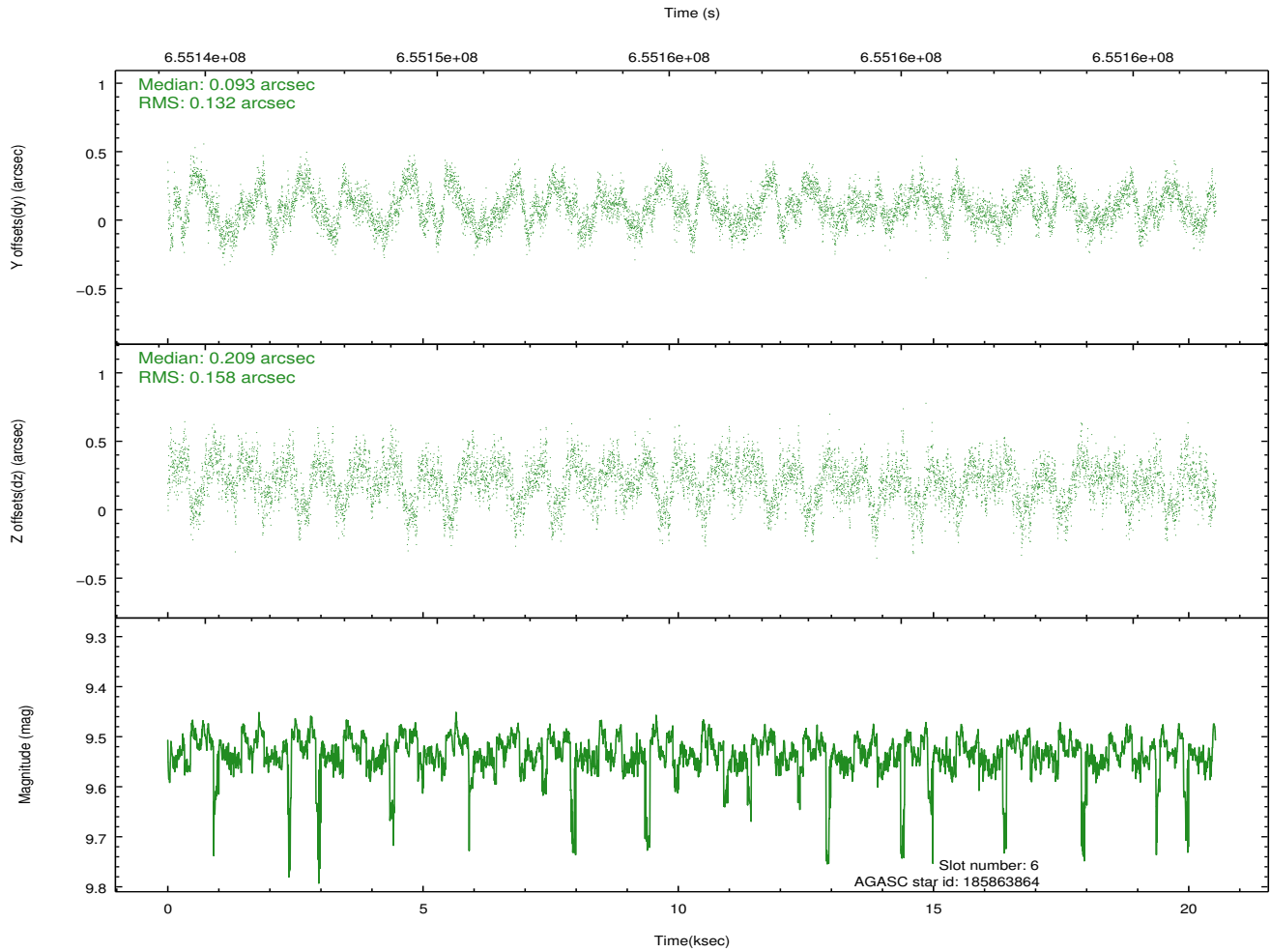
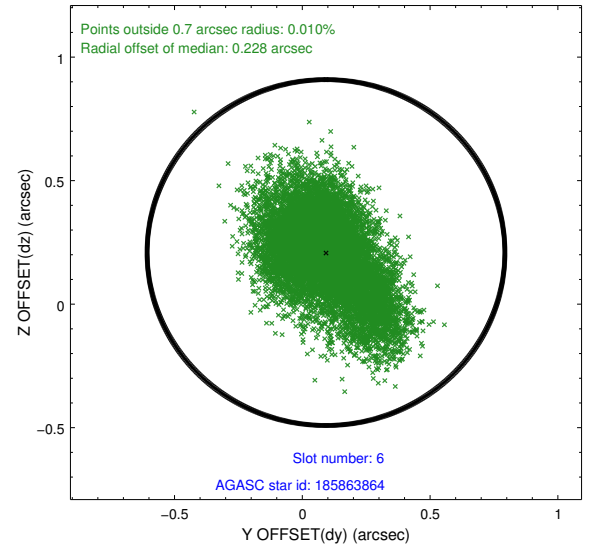
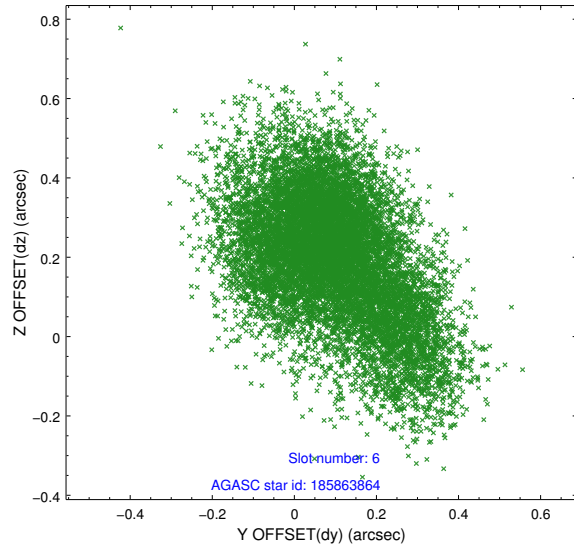
2.4.2 Slot 4



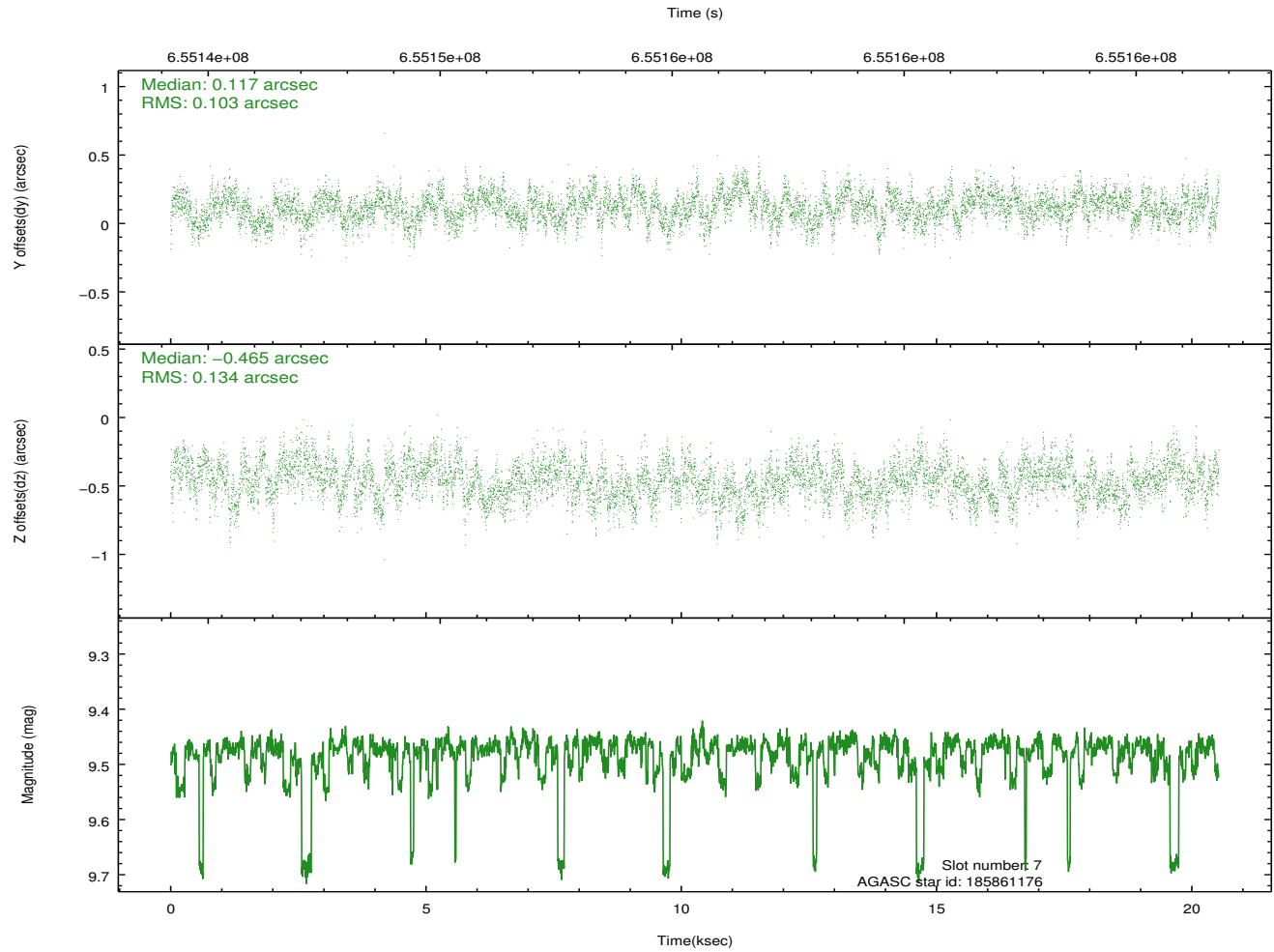
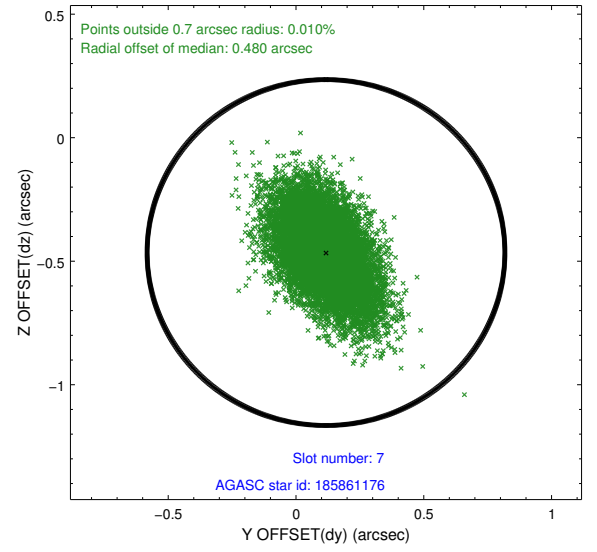
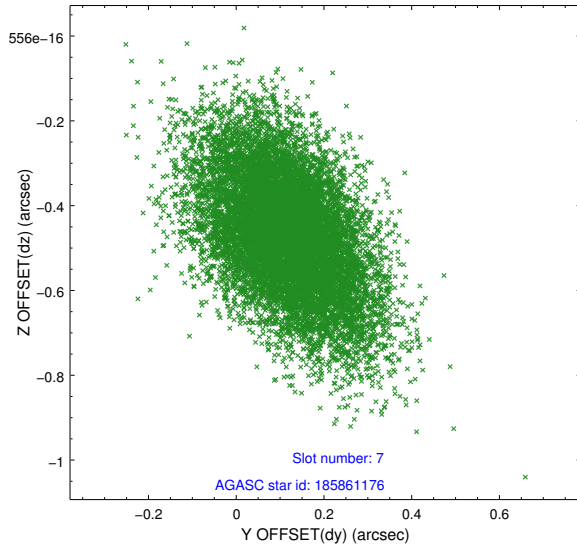
2.4.3 Slot 5



2.4.4 Slot 6

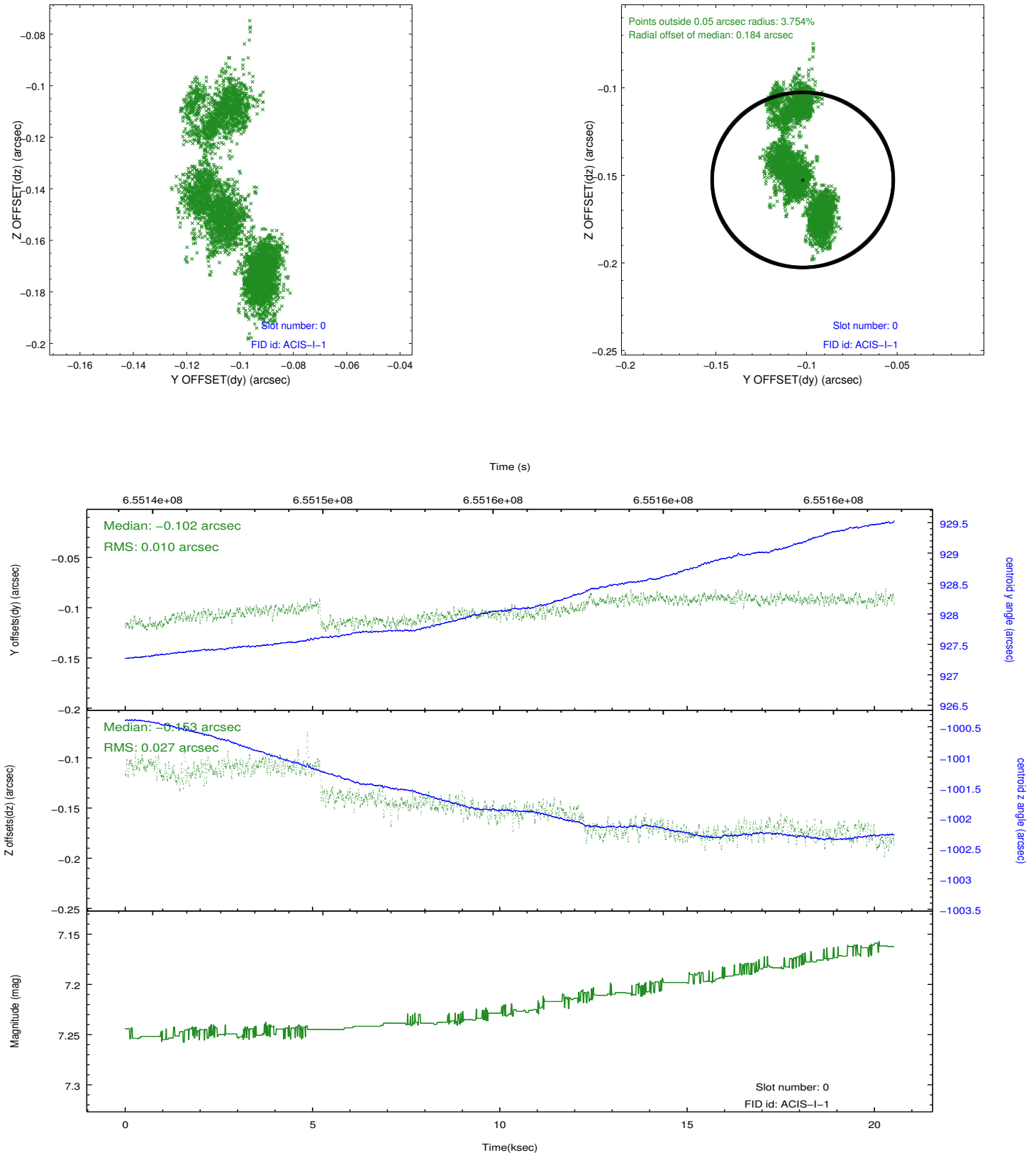


2.4.5 Slot 7

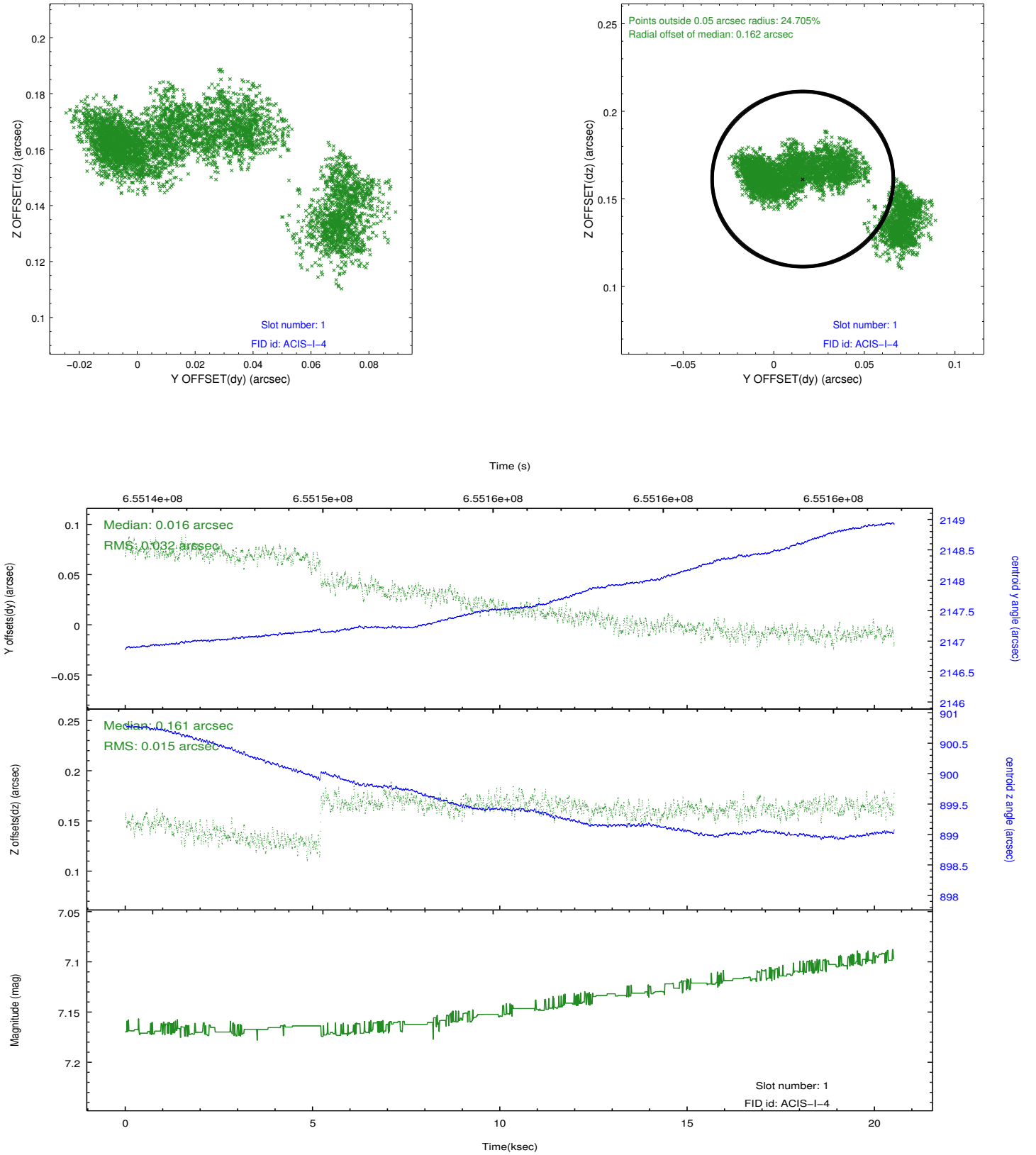


2.5 FID Slots

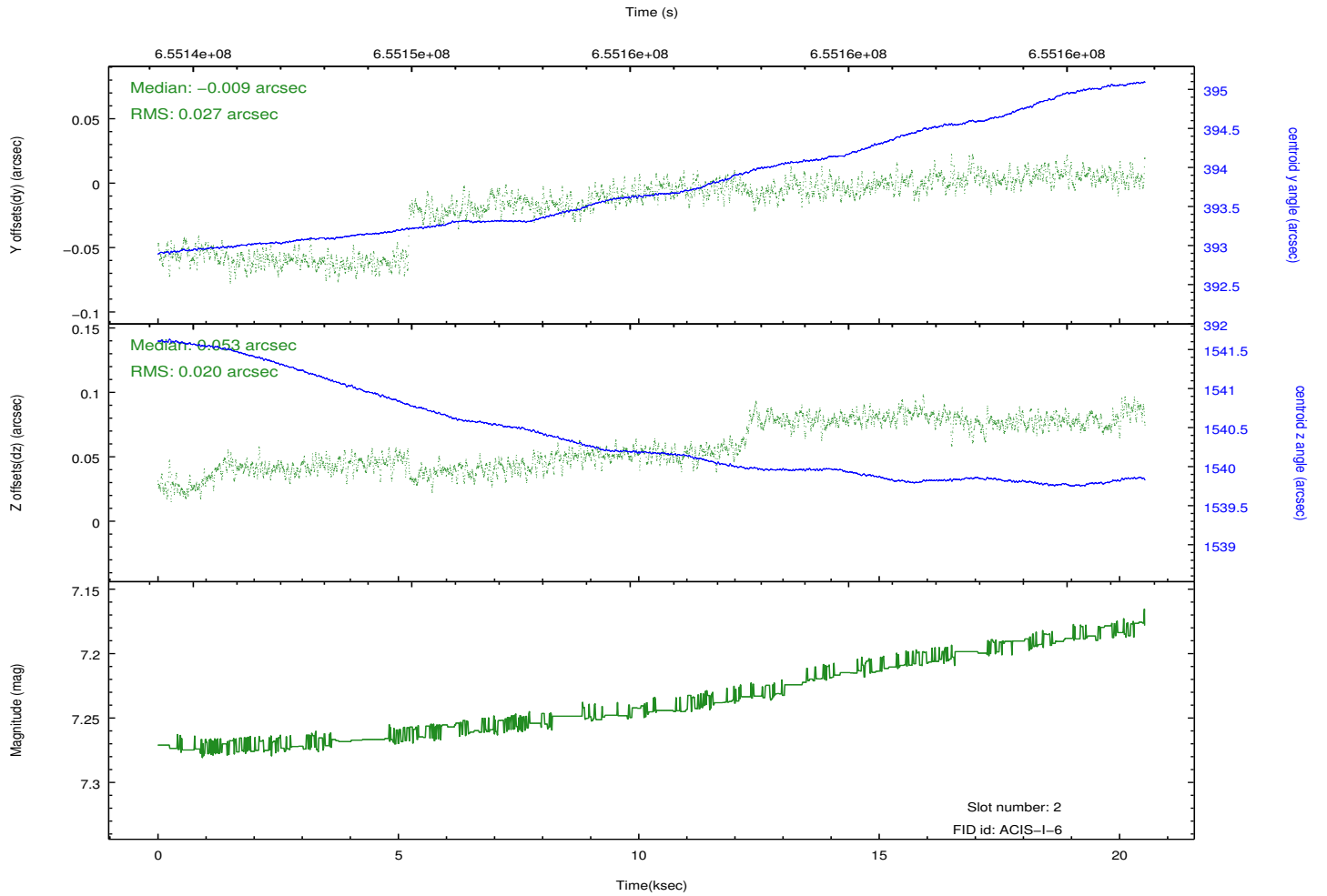
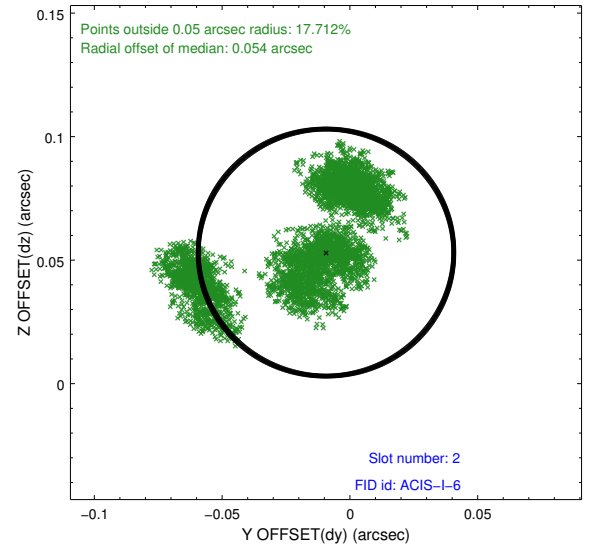
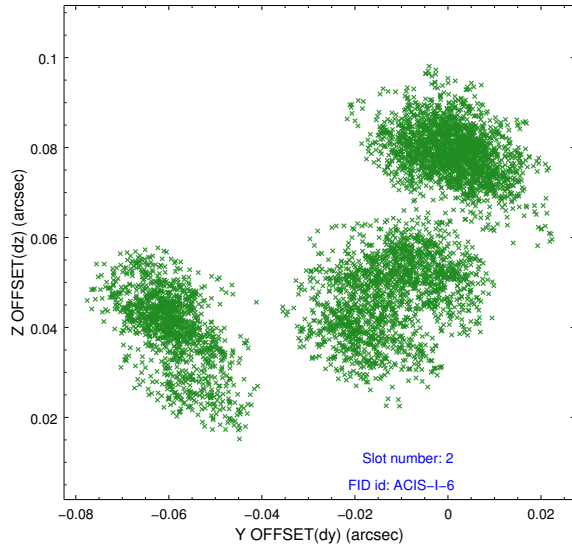
2.5.1 Slot 0



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)	2018.10.06
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.456482453942

A.2 Comments

Joint proposal with HST.

One optional chip was dropped.

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.