

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 20499 - L2 Version 1
Chandra X-Ray Center

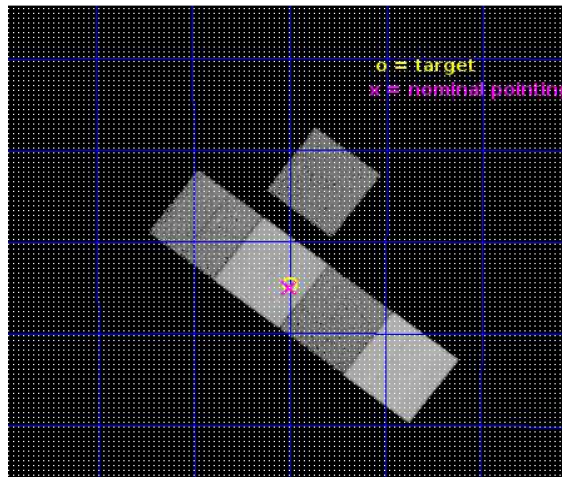
L2 Processing Date : Apr 25 2019

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1 Front

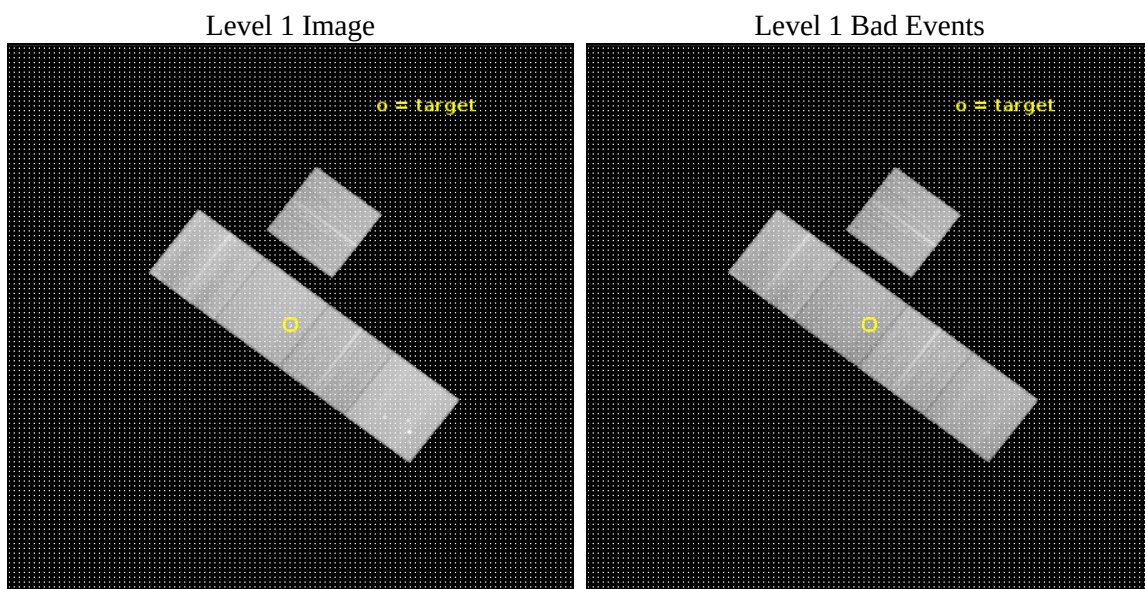
seq_num	703600	Sequence number
obs_id	20499	Observation id
title	Is an Accreting Binary Black Hole Precursor Driving the Ionisation Structure and its Kinematics in the Carafe?	Proposal title
observer	Prajval Shastri	Principal investigator
object	ESO202-G023	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	67.0	Observer's specified target RA [deg]
dec_targ	-47.912778	Observer's specified target Dec [deg]
ra_nom	67.000553065719	Nominal RA [deg]
dec_nom	-47.917270419925	Nominal Dec [deg]
roll_nom	217.2066729858	Nominal Roll [deg]
revision	1	Processing version of data
ontime	30050.07087791	Sum of GTIs [s]
livetime	29657.444579349	Livetime [s]
ontime3	30049.947757959	Sum of GTIs [s]
ontime5	30050.029837966	Sum of GTIs [s]
ontime6	30049.988797903	Sum of GTIs [s]
ontime7	30050.07087791	Sum of GTIs [s]
ontime8	30049.906717896	Sum of GTIs [s]
l2events	369518	Number of level 2 events



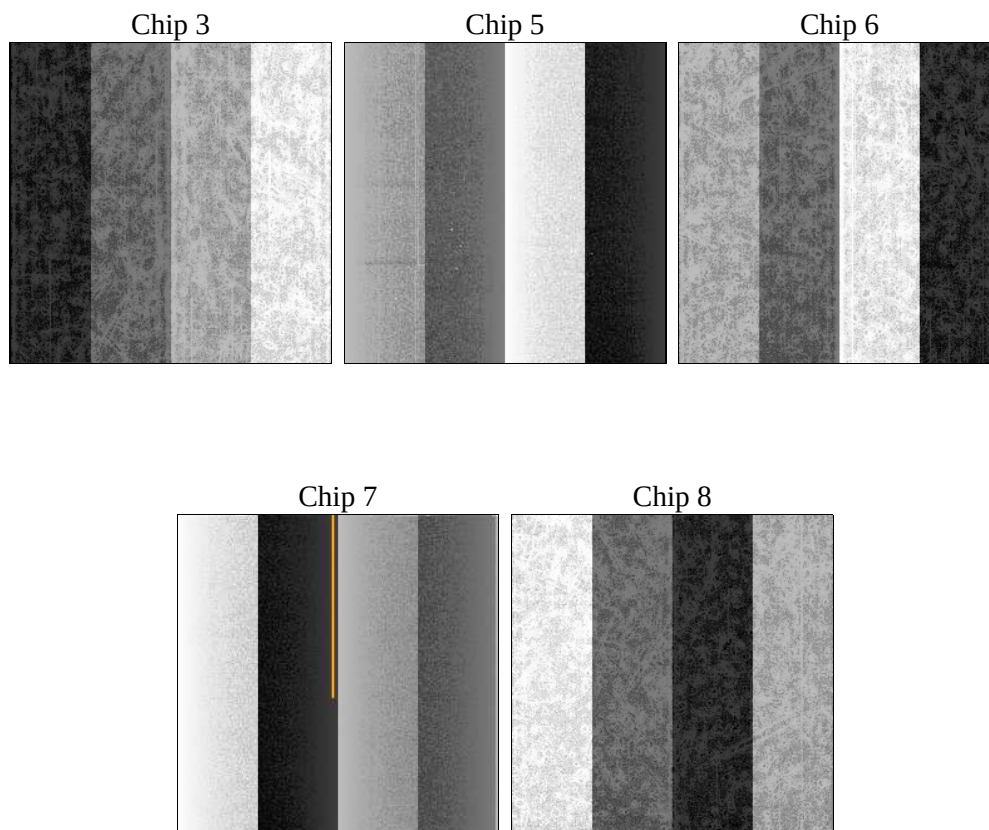
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	30050.07087791	Sum of GTIs [s]
caldsver	4.8.2	 	ontime3	30049.947757959	Sum of GTIs [s]
date	2019-04-25T19:10:11	Date and time of file creation	ontime5	30050.029837966	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	30049.988797903	Sum of GTIs [s]
			ontime7	30050.07087791	Sum of GTIs [s]
			ontime8	30049.906717896	Sum of GTIs [s]
			l1events	1463135	Number of level 1 events

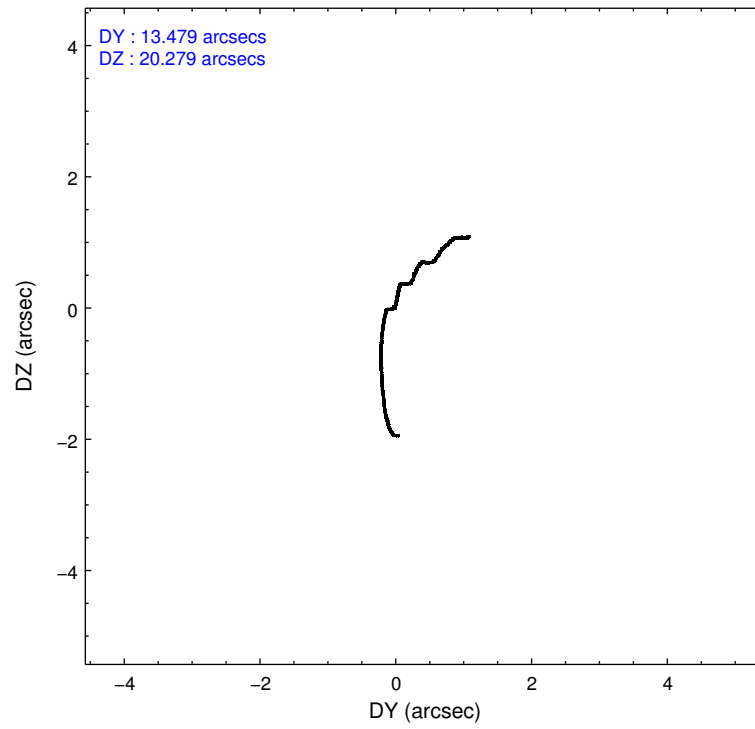
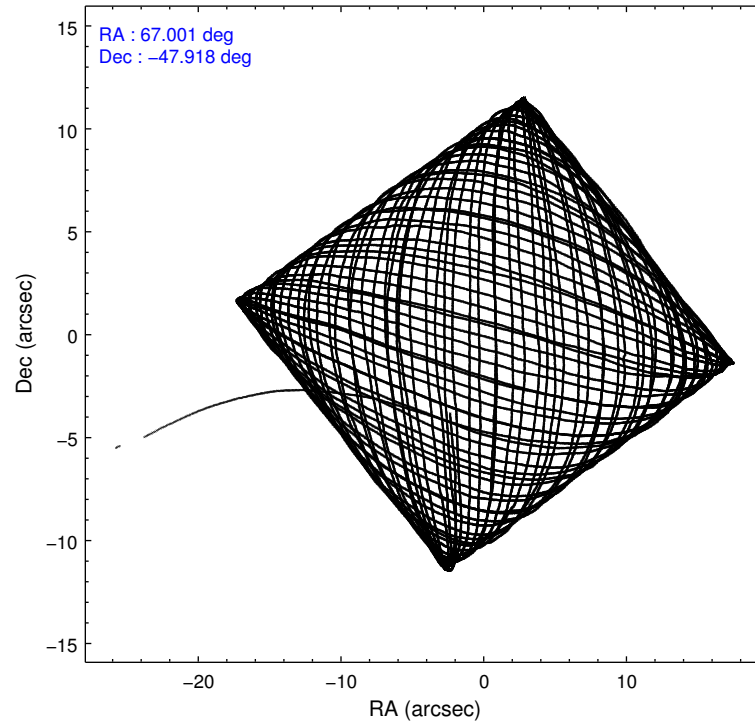
2.1.4 Events

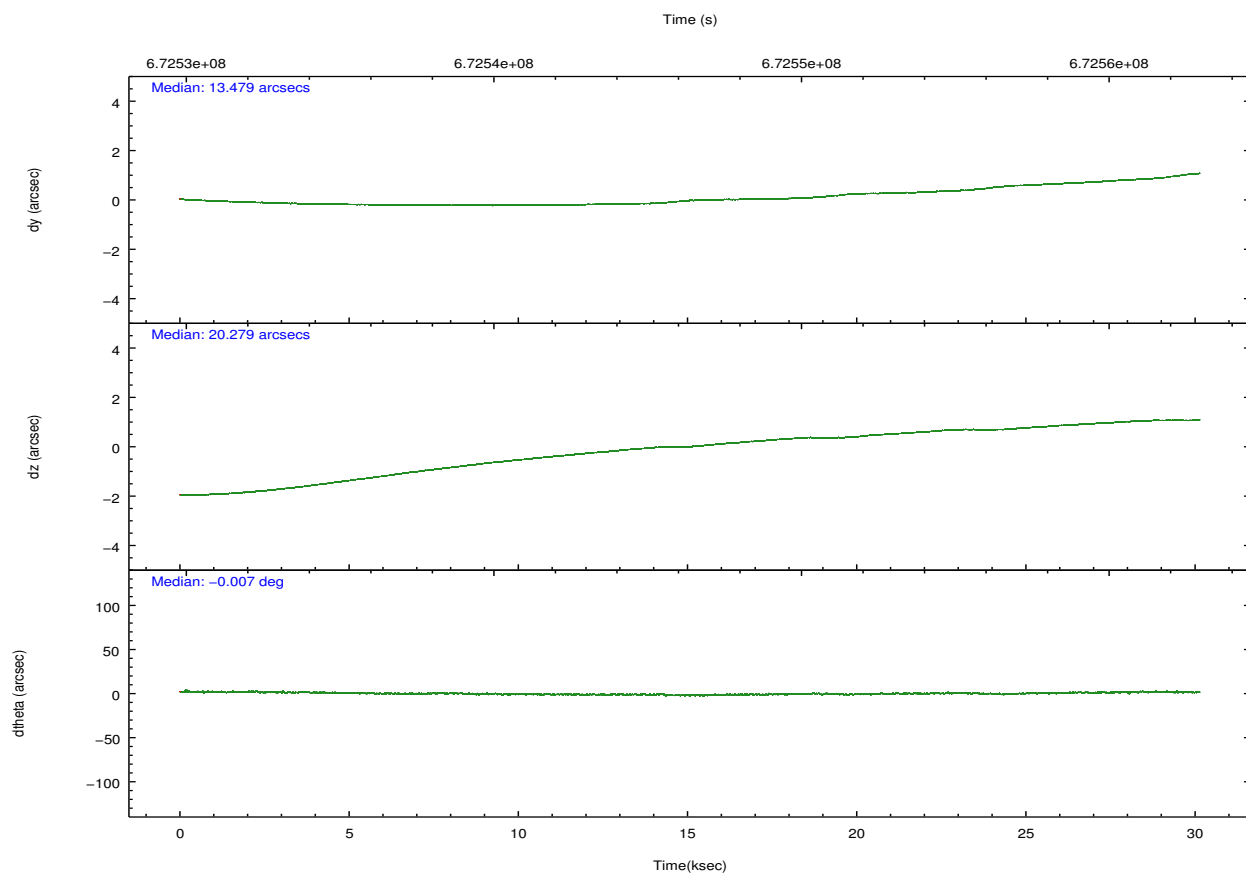
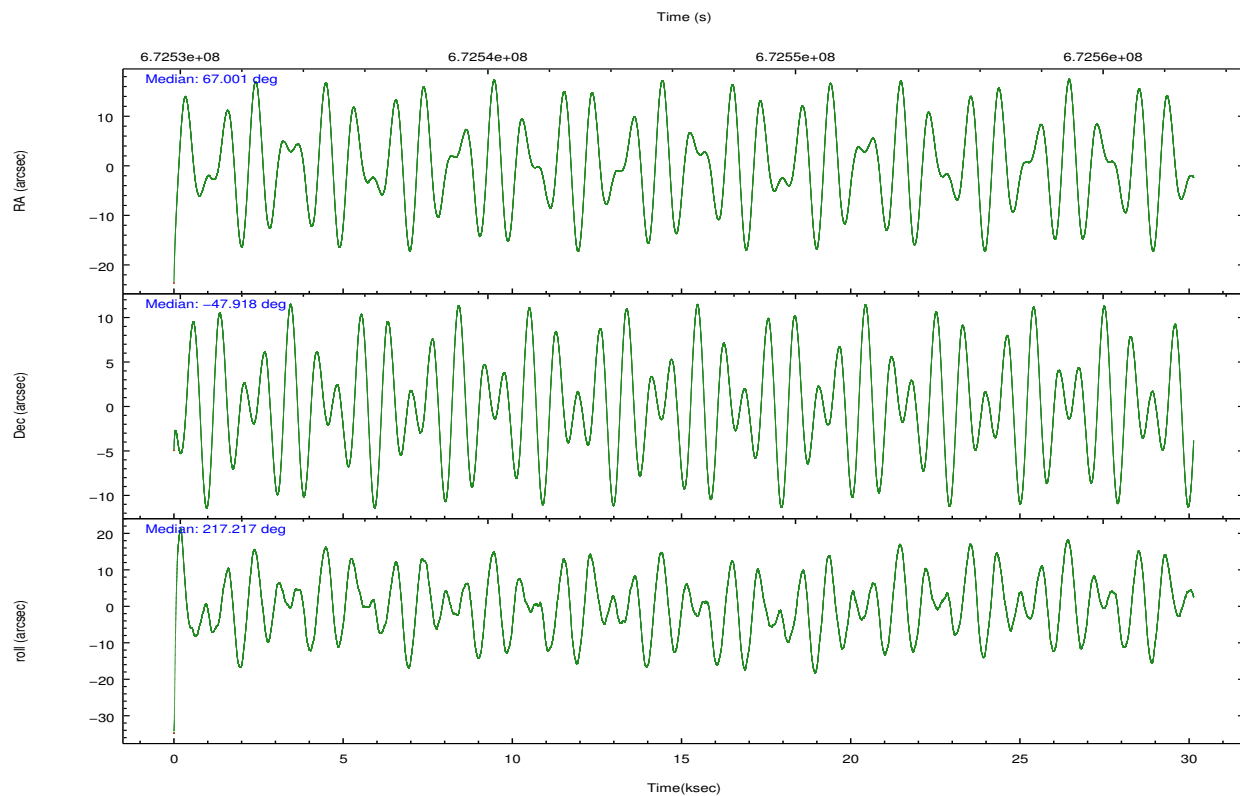
	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8		ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	231011	377394	248067	302674	303989	grade 0 events	8339	14033	7685	11421	22850
rejected events	207246	195890	221782	170953	224541		3%	3%	3%	3%	7%
rejected %	89%	51%	89%	56%	73%	grade 1 events	137	1117	112	452	210
							0%	0%	0%	0%	0%
						grade 2 events	5200	56168	6990	27977	19292
							2%	14%	2%	9%	6%
						grade 3 events	2431	5514	2274	10419	8029
							1%	1%	0%	3%	2%
						grade 4 events	2465	5461	2275	10173	7446
							1%	1%	0%	3%	2%
						grade 5 events	10116	24486	9956	29644	15840
							4%	6%	4%	9%	5%
						grade 6 events	5330	100347	7061	71753	21837
							2%	26%	2%	23%	7%
						grade 7 events	196993	170268	211714	140835	208485
							85%	45%	85%	46%	68%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-35678	ACIS-35678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	67.015918	67.00055306571885	CCD I2 on	N	N
[deg] Pointing Dec	-47.891812	-47.91727041992489	CCD I3 on	O2	Y
[deg] Pointing Roll	217.061467	217.2066729857954	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	O1	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	672531422.184000	672530298.60052	CCD S5 on	N	N
Observation start date	2019-04-24T22:15:53	2019-04-24T21:58:18	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	672561422.184000	672562395.96494	On-chip summing requested	N	N
Observation end date	2019-04-25T06:35:53	2019-04-25T06:53:15	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



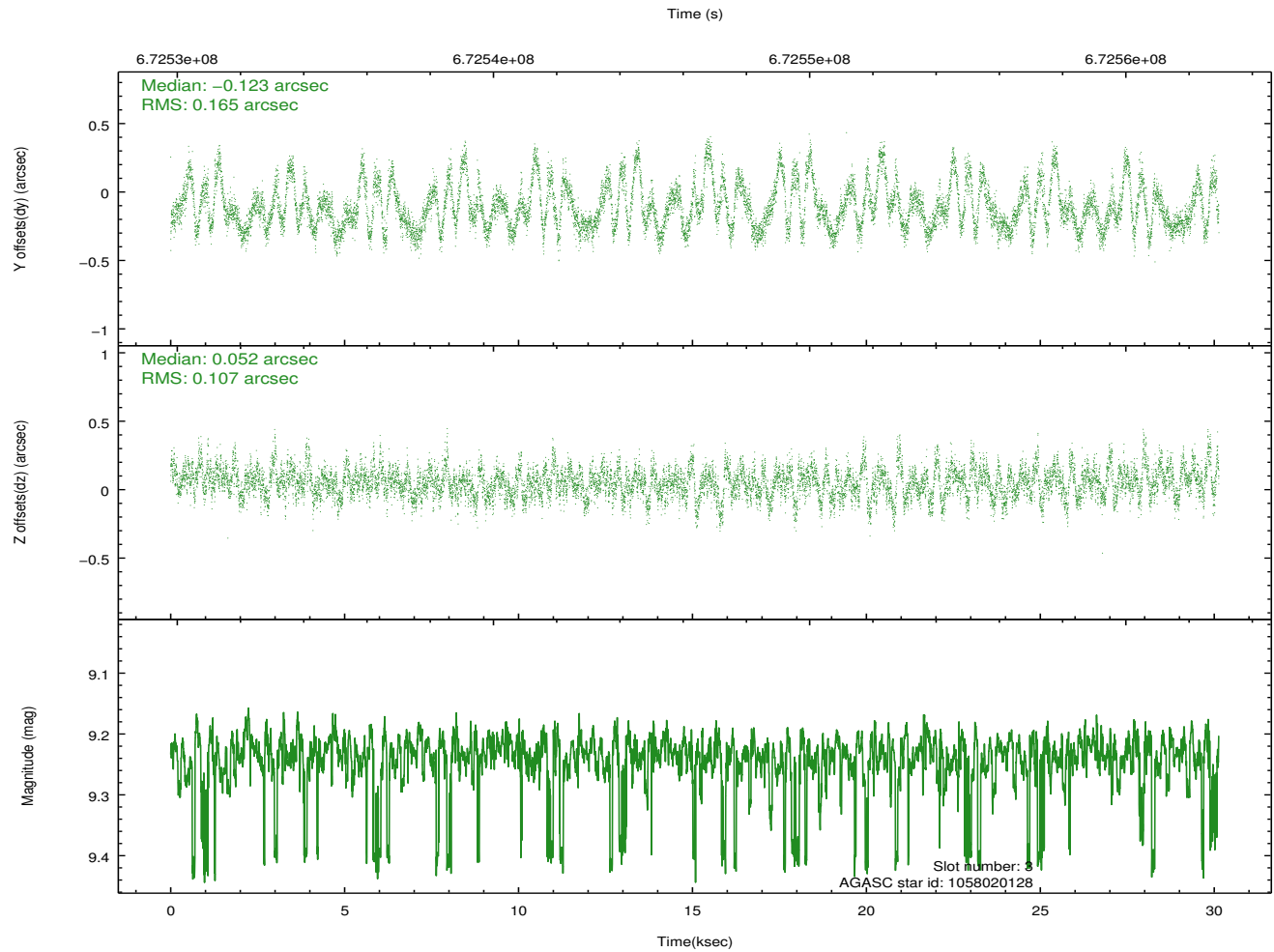
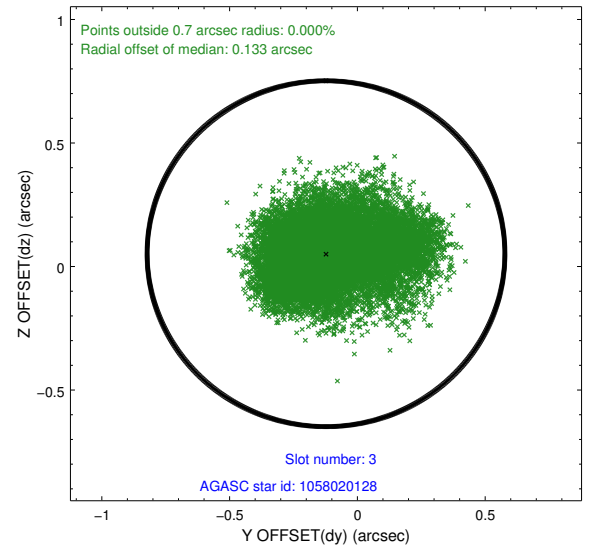
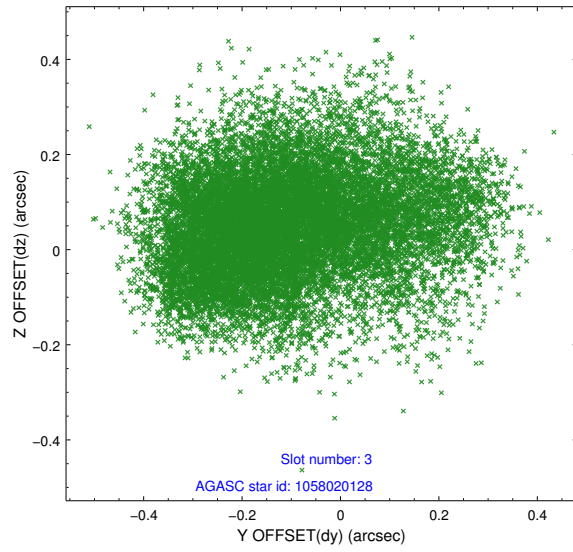


Slot Statistics

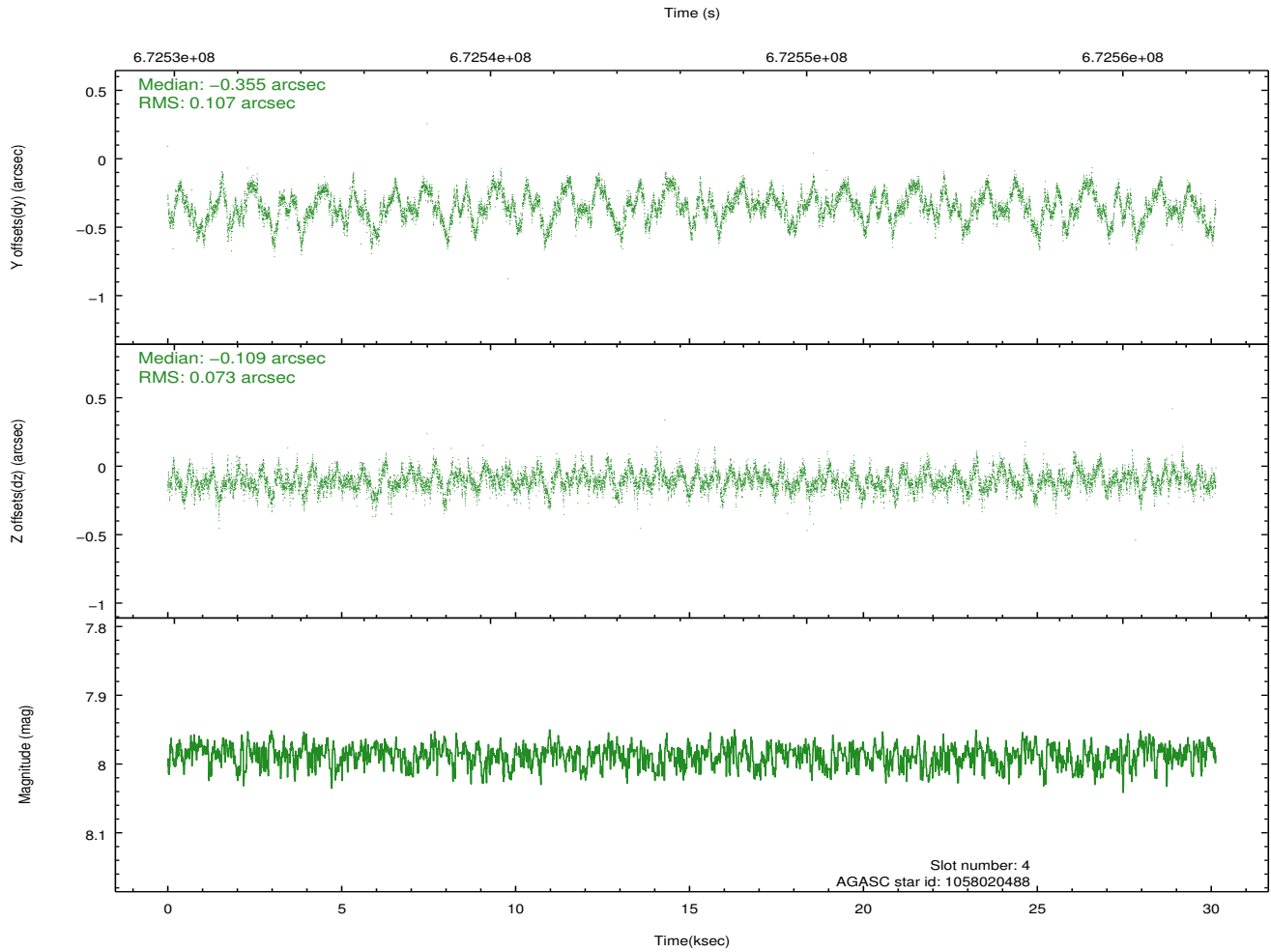
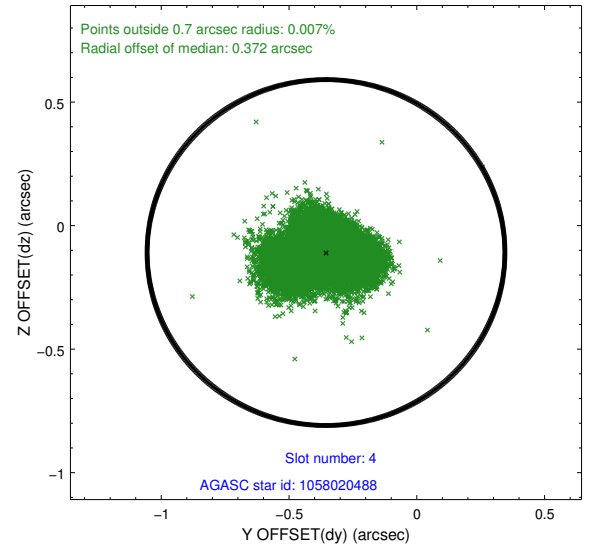
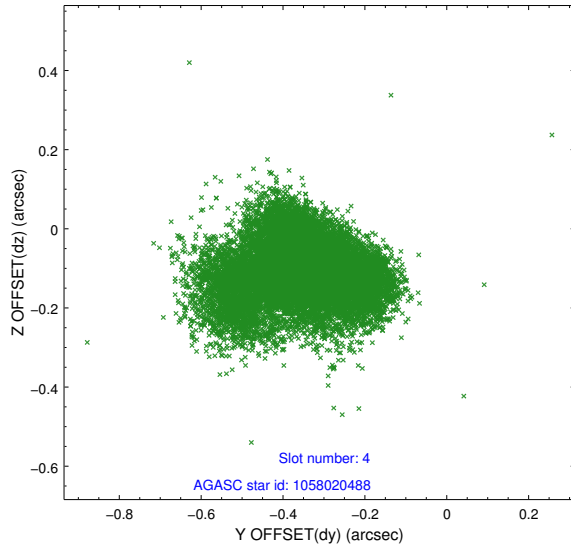
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.12	7350	1.000	-0.290	-0.189	0.029	0.052	0.000000	0.000000	-766.76	-1741
1	FID		ACIS-S-4	7.26	7351	1.000	0.776	0.192	0.013	0.020	0.000000	0.000000	2147.47	167
2	FID		ACIS-S-5	7.23	7349	1.000	-0.511	0.004	0.028	0.062	0.000000	0.000000	-1819.81	160
3	GUIDE	used	1058020128	9.24	14677	1.000	-0.123	0.052	0.207	0.351	66.854849	-48.515145	1659.54	1557
4	GUIDE	used	1058020488	7.99	14693	1.000	-0.355	-0.109	0.139	0.221	67.420383	-48.372314	271.52	1964
5	GUIDE	used	1058020952	9.83	14595	1.000	0.051	-0.125	0.320	0.473	67.189376	-48.422556	822.20	1774
6	GUIDE	used	1058932360	9.16	14683	1.000	0.174	0.084	0.170	0.284	68.081879	-47.788140	-2271.32	1269
7	GUIDE	used	1058933440	8.47	14686	1.000	0.273	0.088	0.110	0.178	67.555952	-47.978444	-848.23	1035

2.4 Star Slots

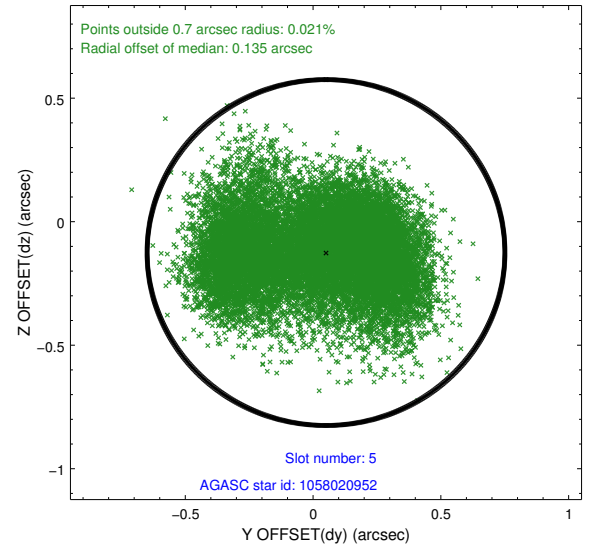
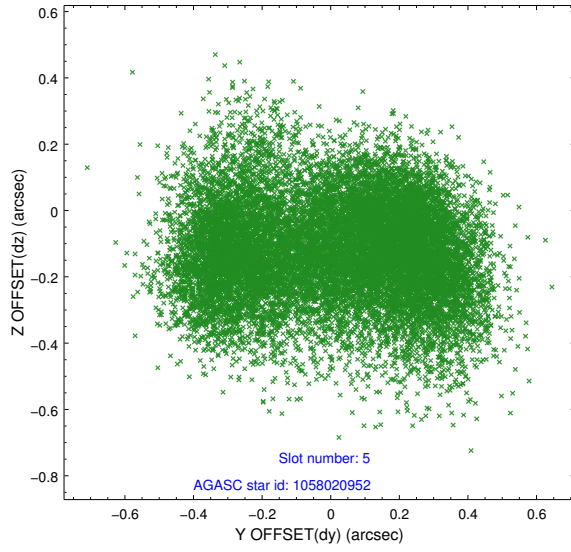
2.4.1 Slot 3



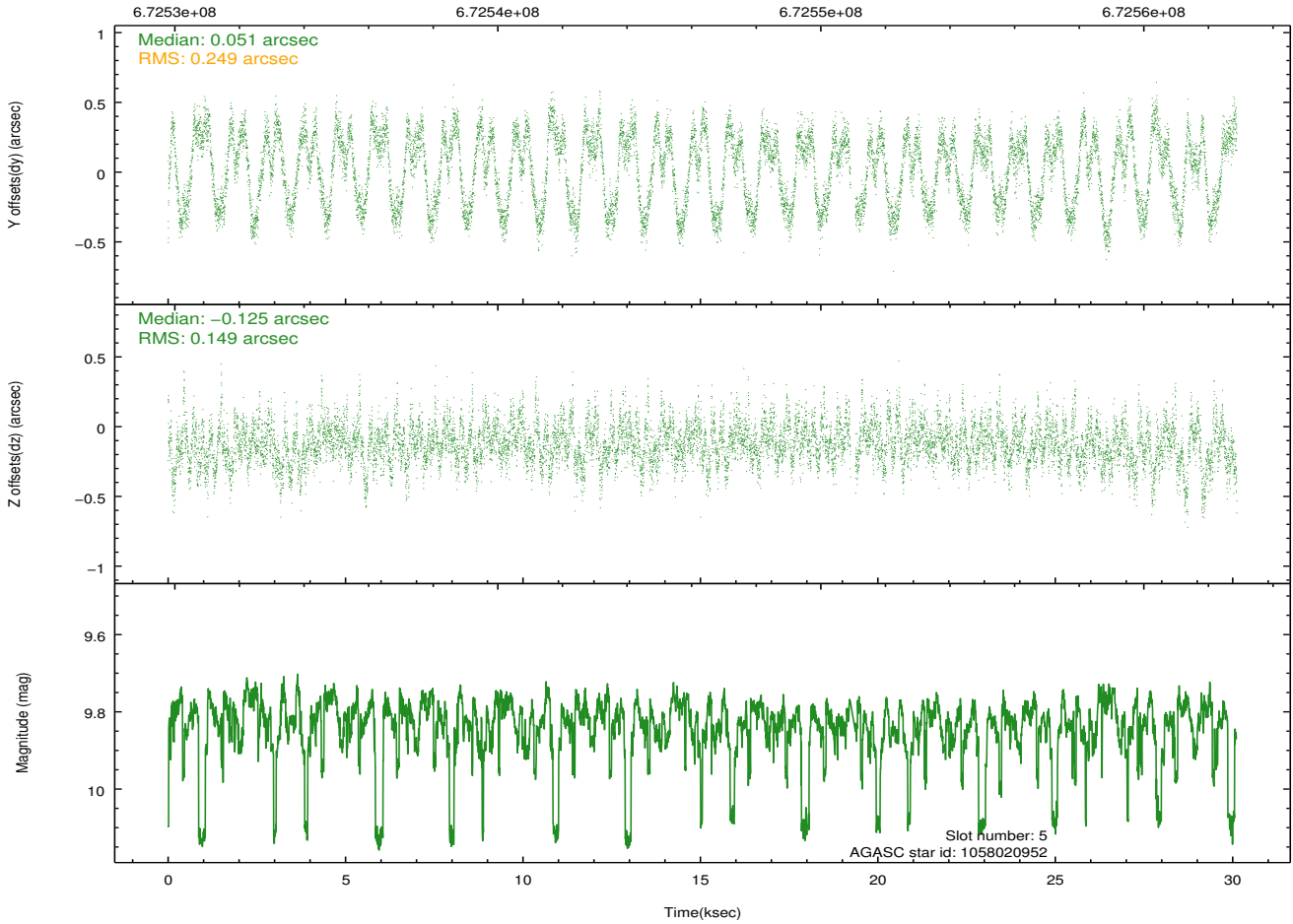
2.4.2 Slot 4



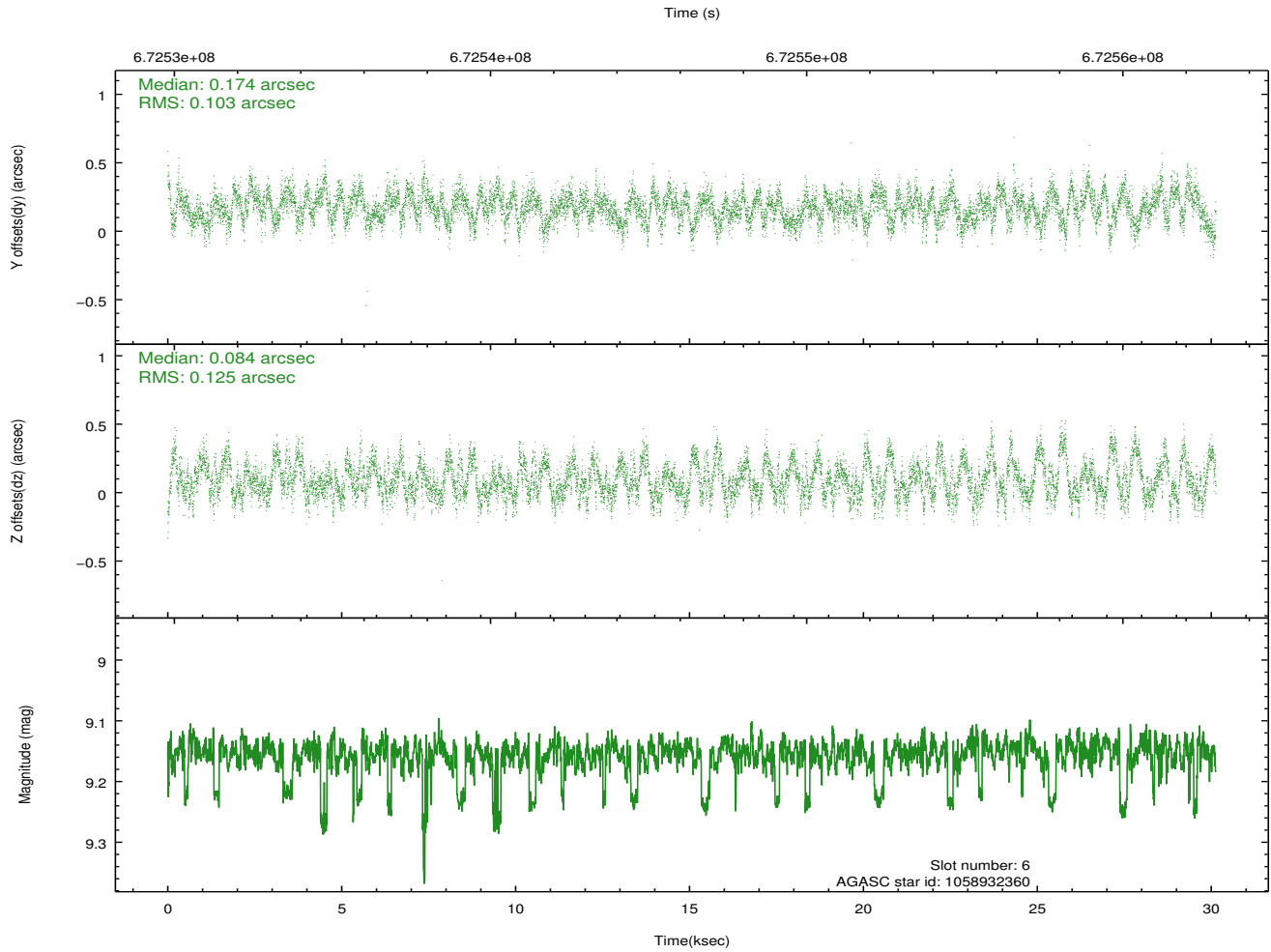
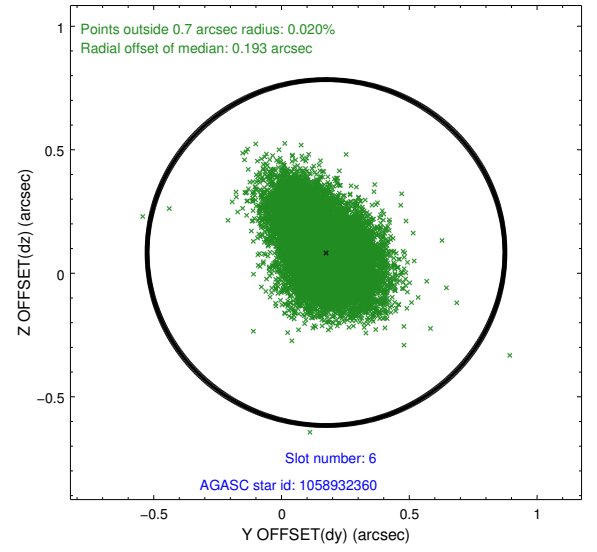
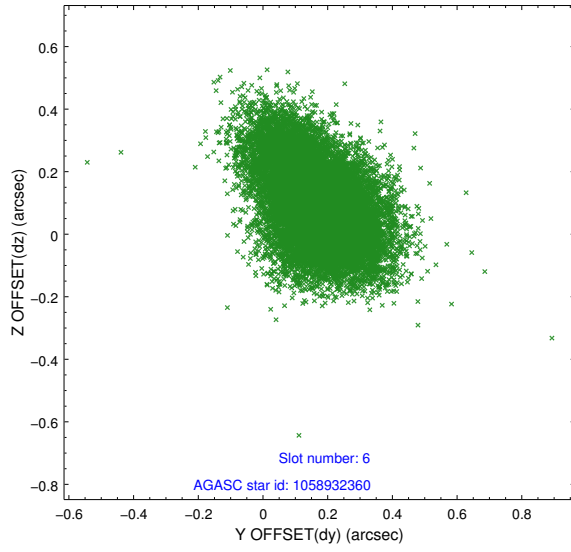
2.4.3 Slot 5



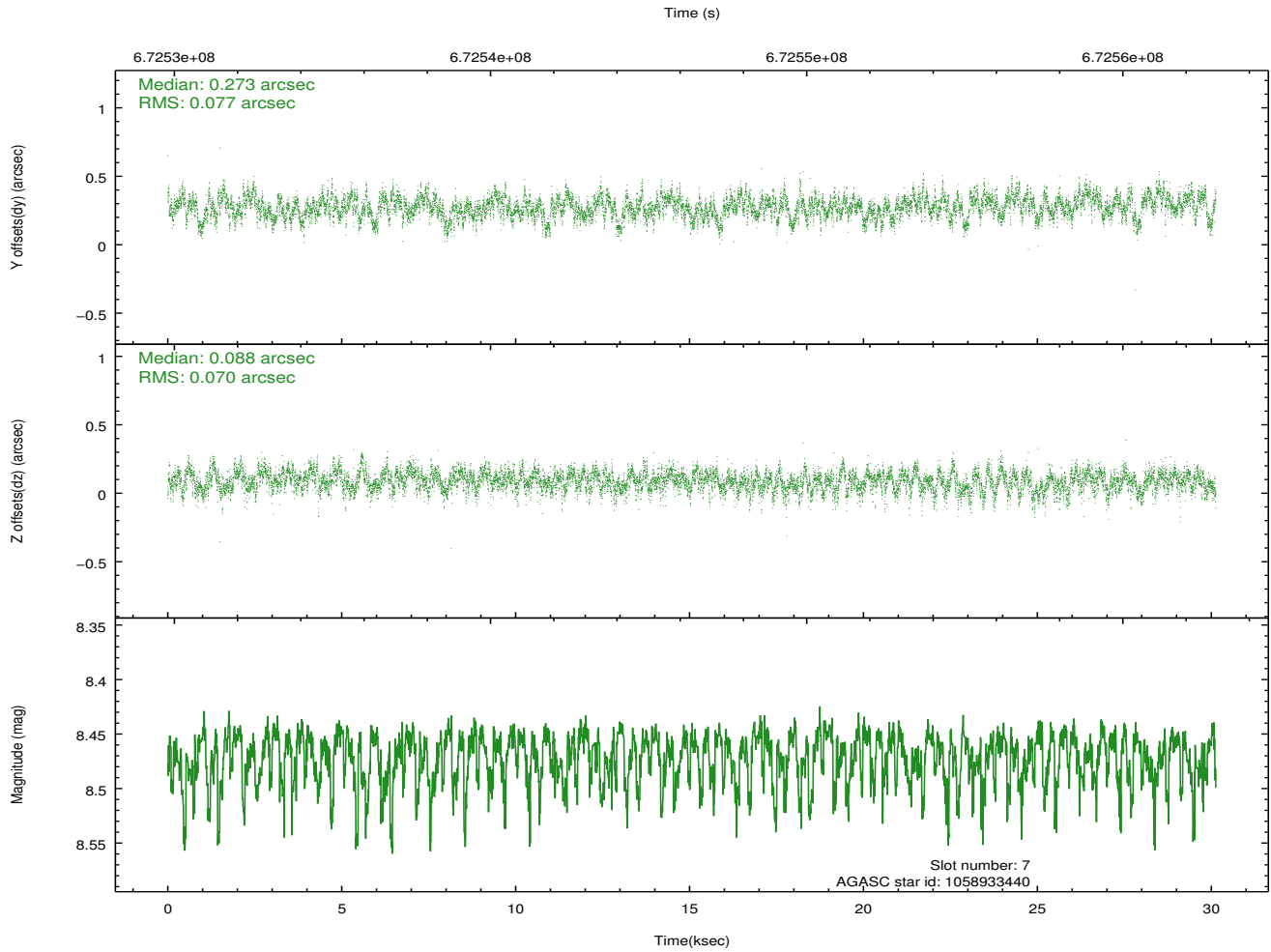
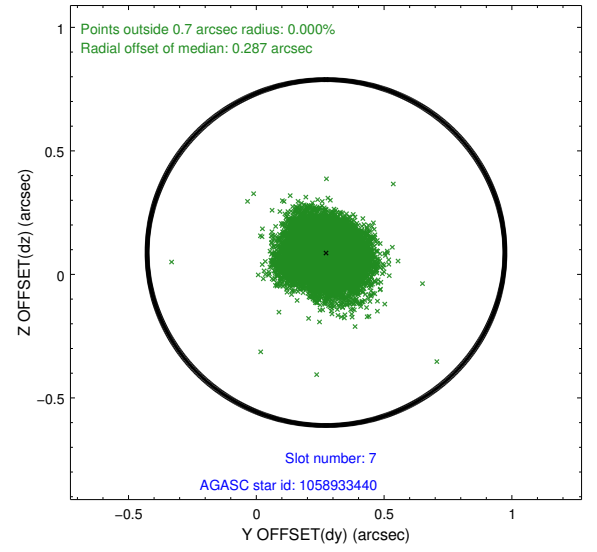
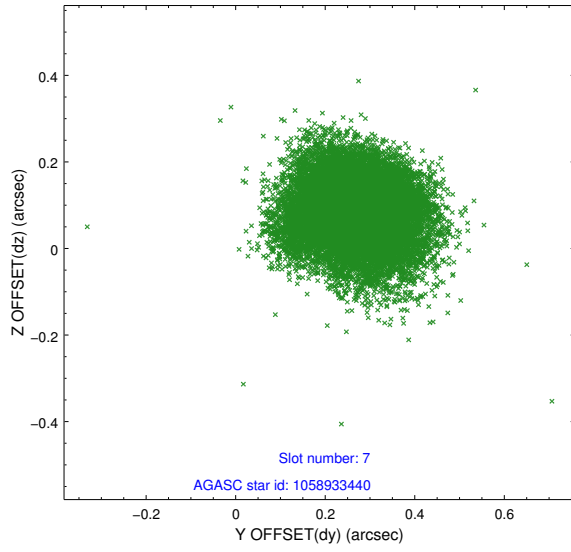
Time (s)



2.4.4 Slot 6

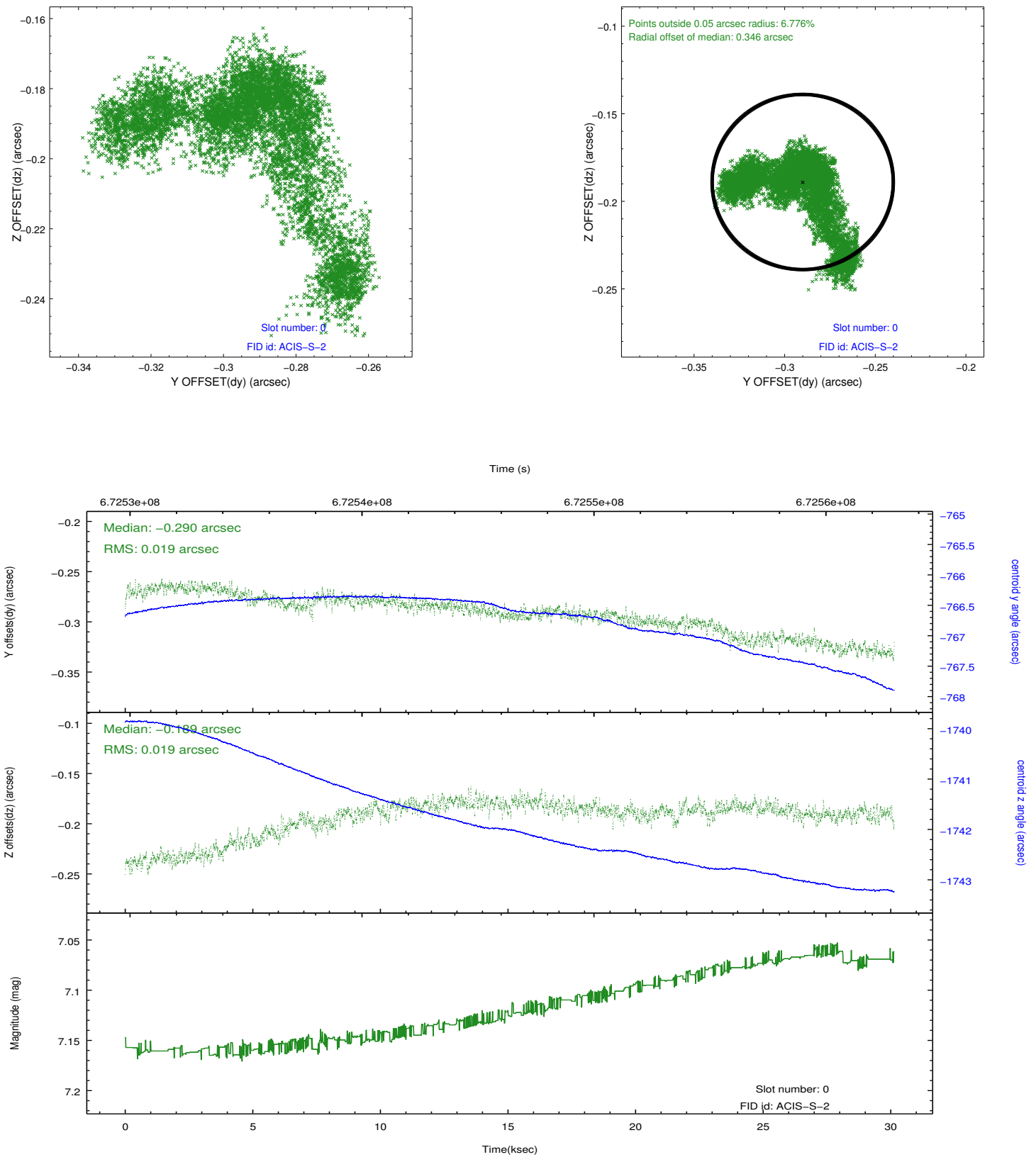


2.4.5 Slot 7

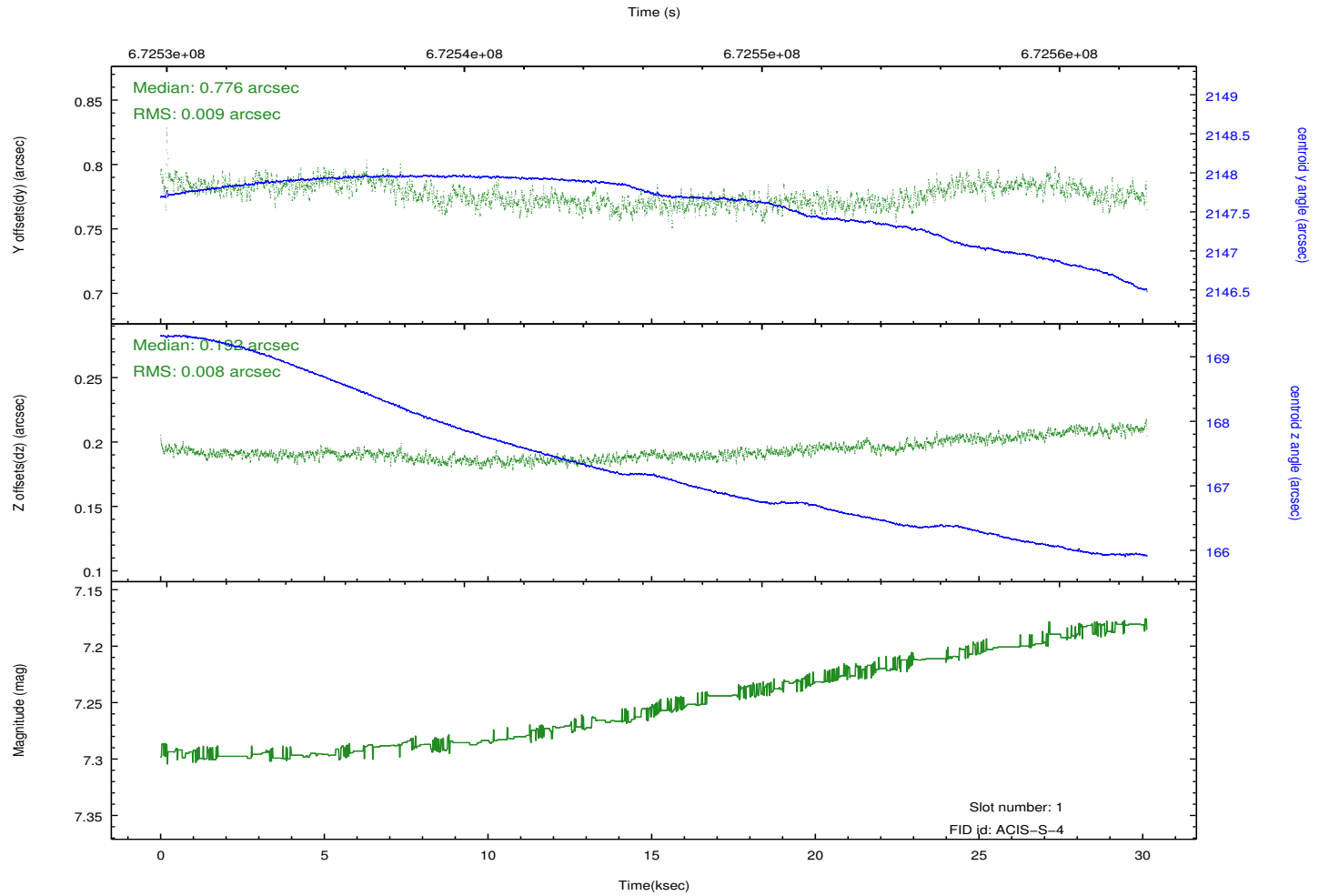
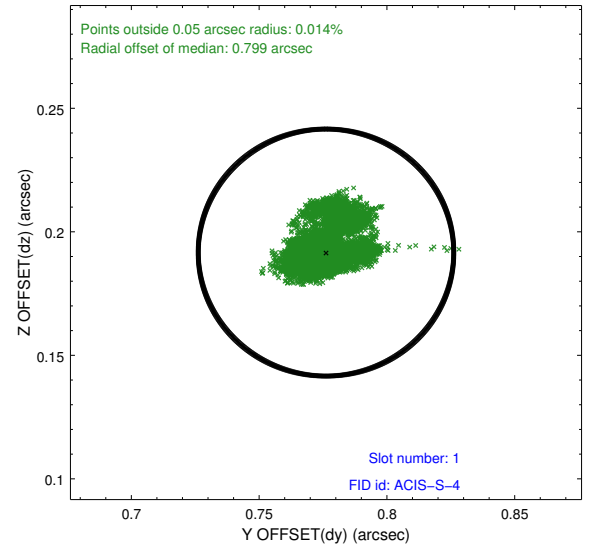
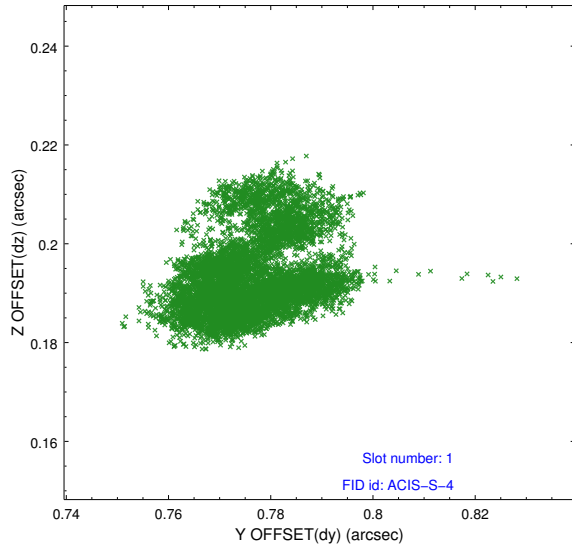


2.5 FID Slots

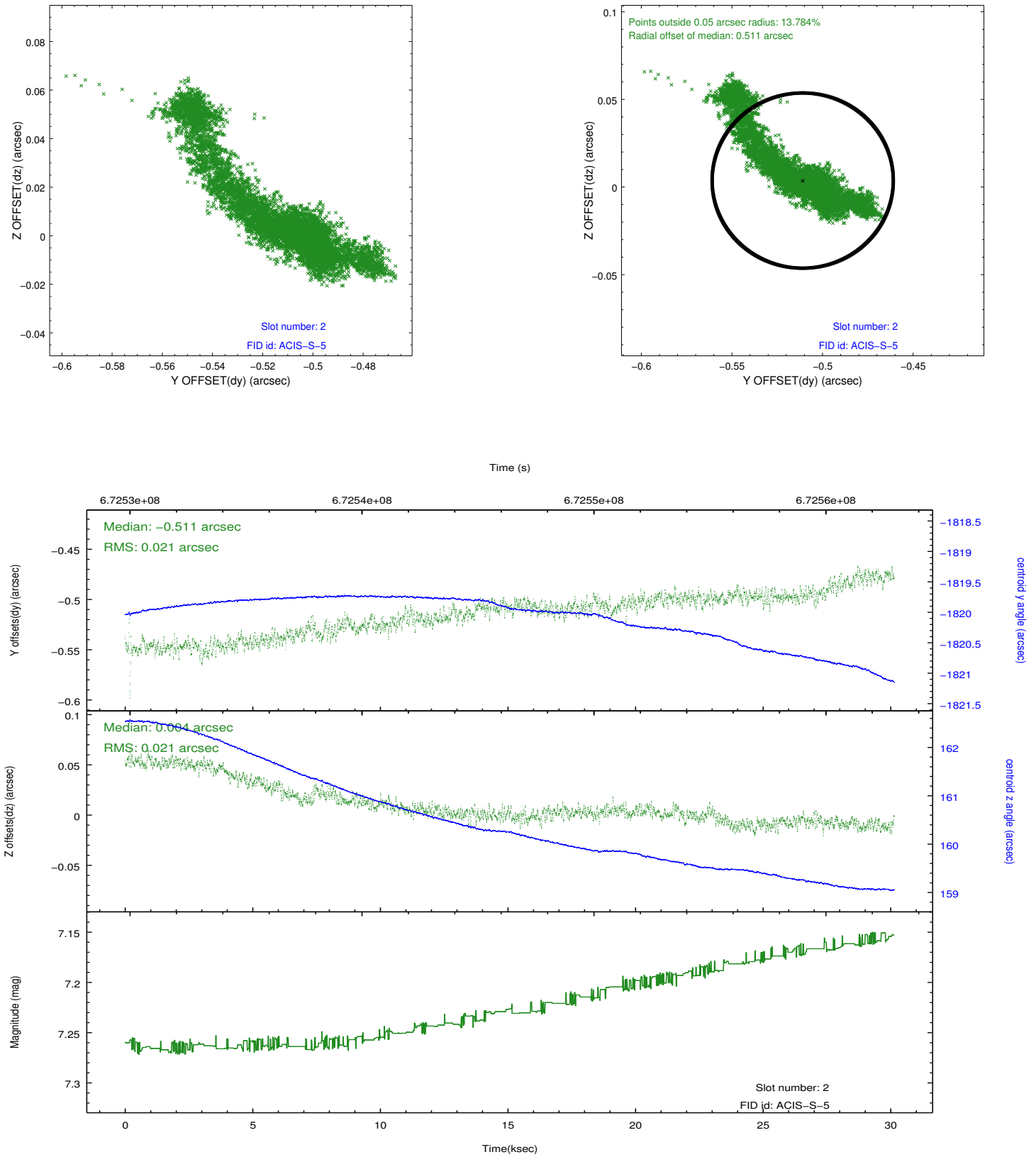
2.5.1 Slot 0



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)	2019.04.25
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.05007087791

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.