

# V&V Reference Report

## L2 ASCDS Version : 10.2.1

Observation 16170 - L2 Version 2  
Chandra X-Ray Center

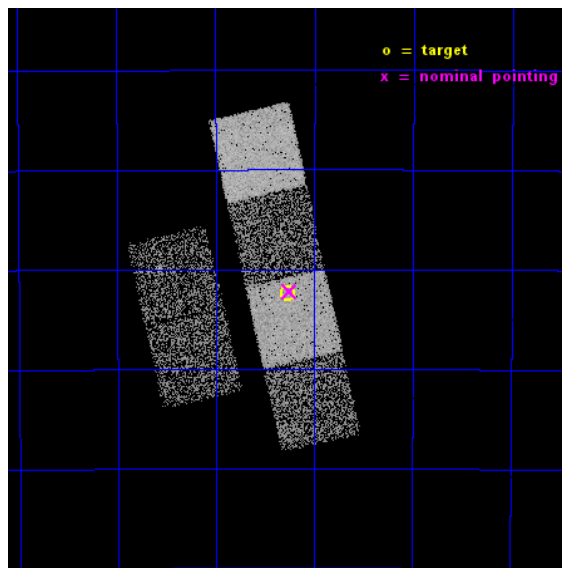
L2 Processing Date : Dec 10 2014

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# 1 Front

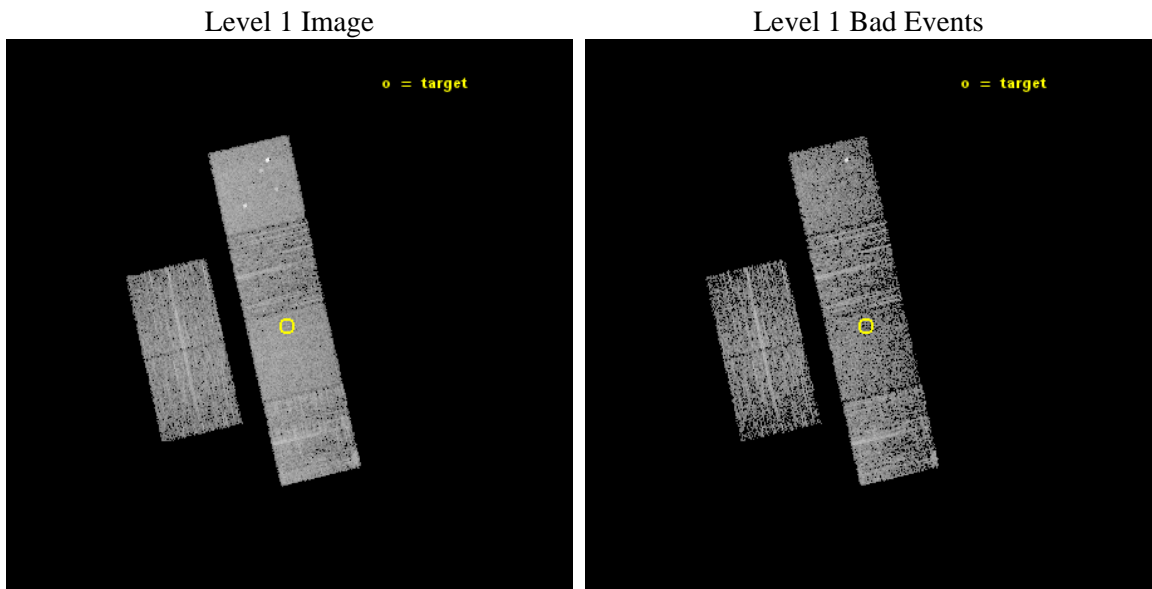
seq_num	901110	Sequence number
obs_id	16170	Observation id
title	Localizing NuSTAR-Discovered Sources in the Galactic Plane	Proposa
observer	Dr. John Tomsick	Principal investigator
object	NuSTAR J164115-4632.3	Source name
dtycycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	250.316292	Observer's specified target RA [deg]
dec_targ	-46.539083	Observer's specified target Dec [deg]
ra_nom	250.31319520257	Nominal RA [deg]
dec_nom	-46.536853574078	Nominal Dec [deg]
roll_nom	77.119953414349	Nominal Roll [deg]
revision	2	Processing version of data
ontime	4966.3999815583	Sum of GTIs [s]
livetime	4903.5124345848	Livetime [s]
ontime2	4966.3999815583	Sum of GTIs [s]
ontime3	4966.3999815583	Sum of GTIs [s]
ontime5	4966.3999815583	Sum of GTIs [s]
ontime6	4966.3999815583	Sum of GTIs [s]
ontime7	4966.3999815583	Sum of GTIs [s]
ontime8	4966.3999815583	Sum of GTIs [s]
l2events	42246	Number of level 2 events



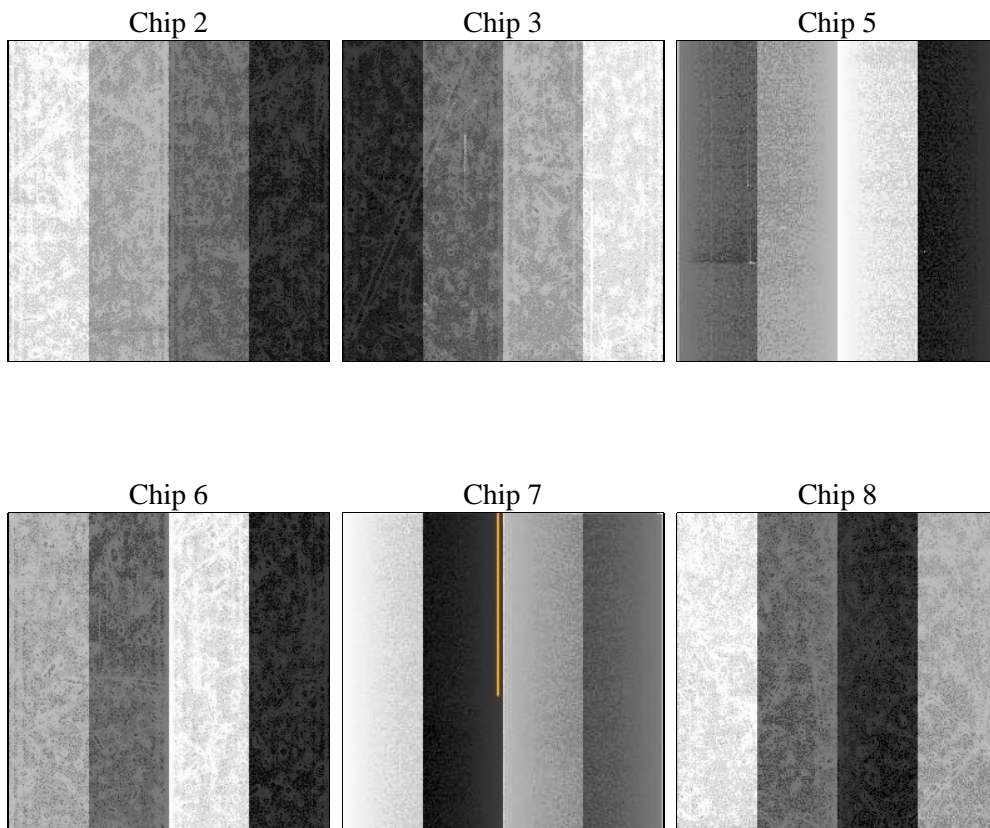
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	4966.3999815583	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime2	4966.3999815583	Sum of GTIs [s]
date	2014-12-10T22:50:47	Date and time of file creation	ontime3	4966.3999815583	Sum of GTIs [s]
revision	2	Processing version of data	ontime5	4966.3999815583	Sum of GTIs [s]
			ontime6	4966.3999815583	Sum of GTIs [s]
			ontime7	4966.3999815583	Sum of GTIs [s]
			ontime8	4966.3999815583	Sum of GTIs [s]
			l1events	171727	Number of level 1 events

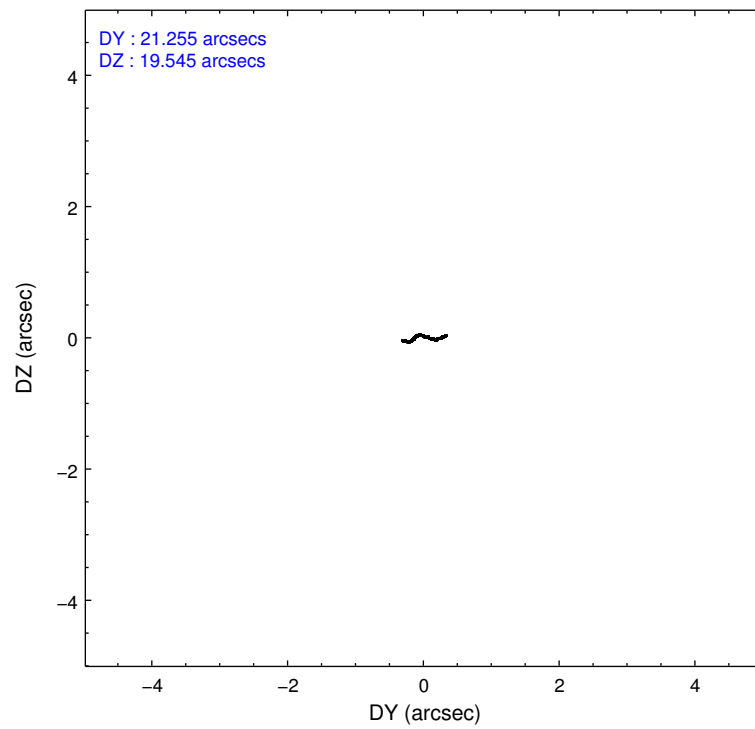
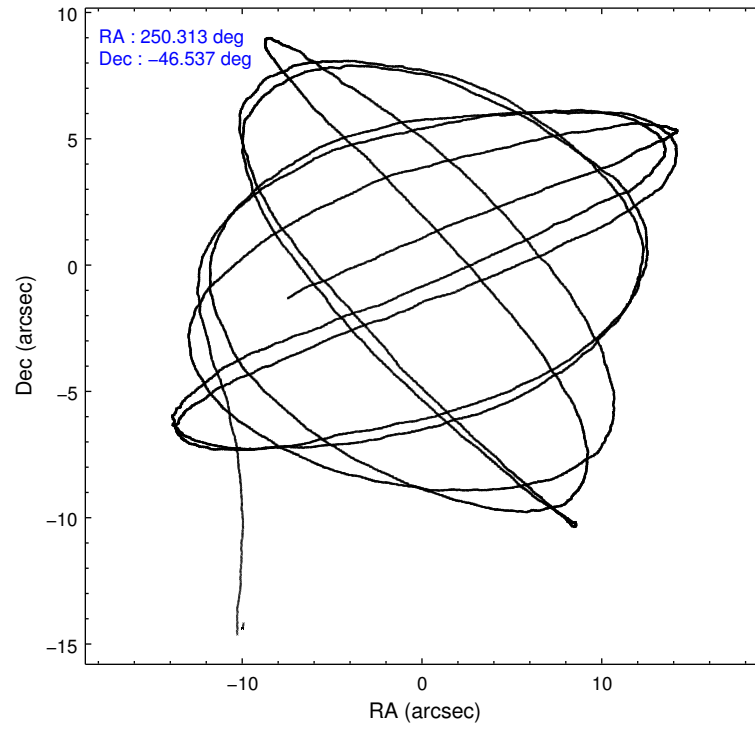
### 2.1.4 Events

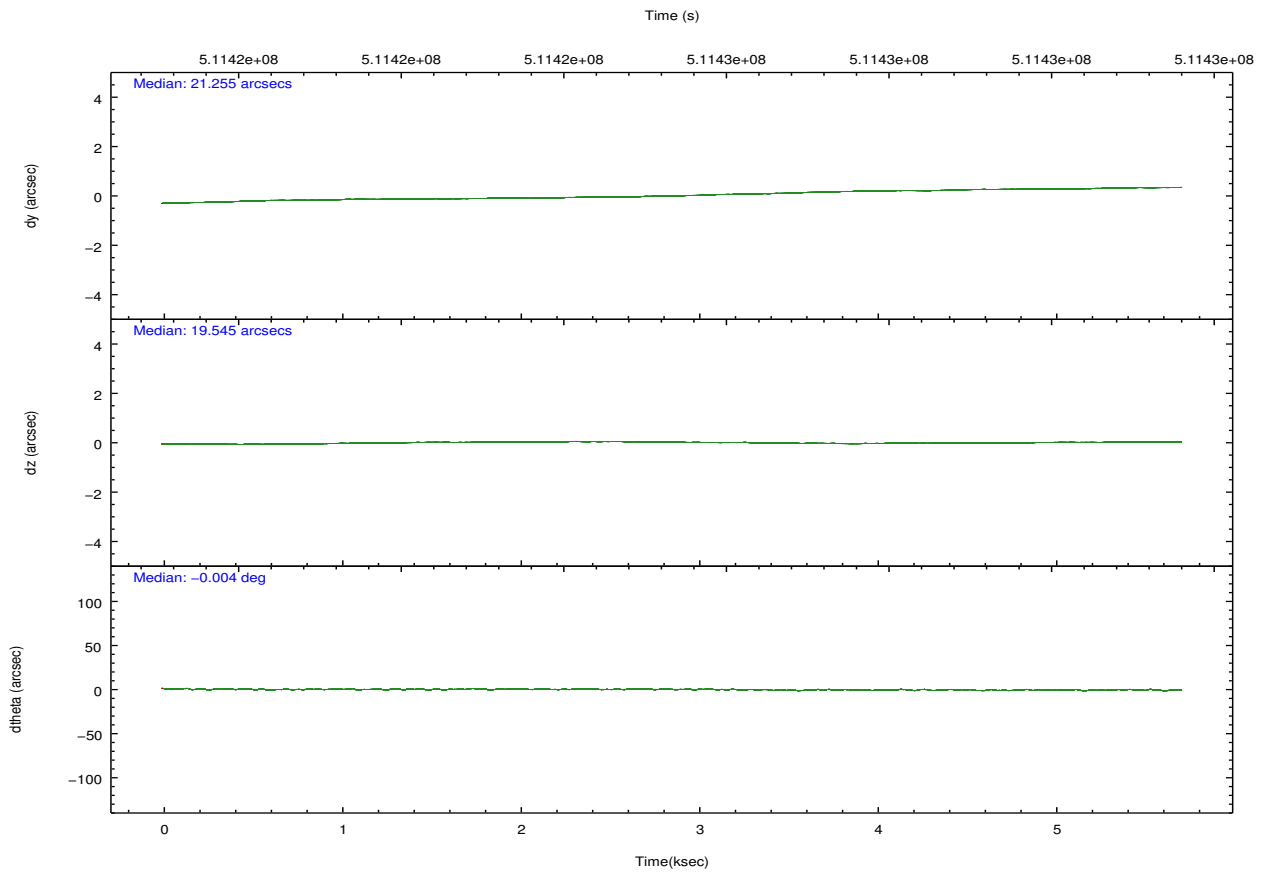
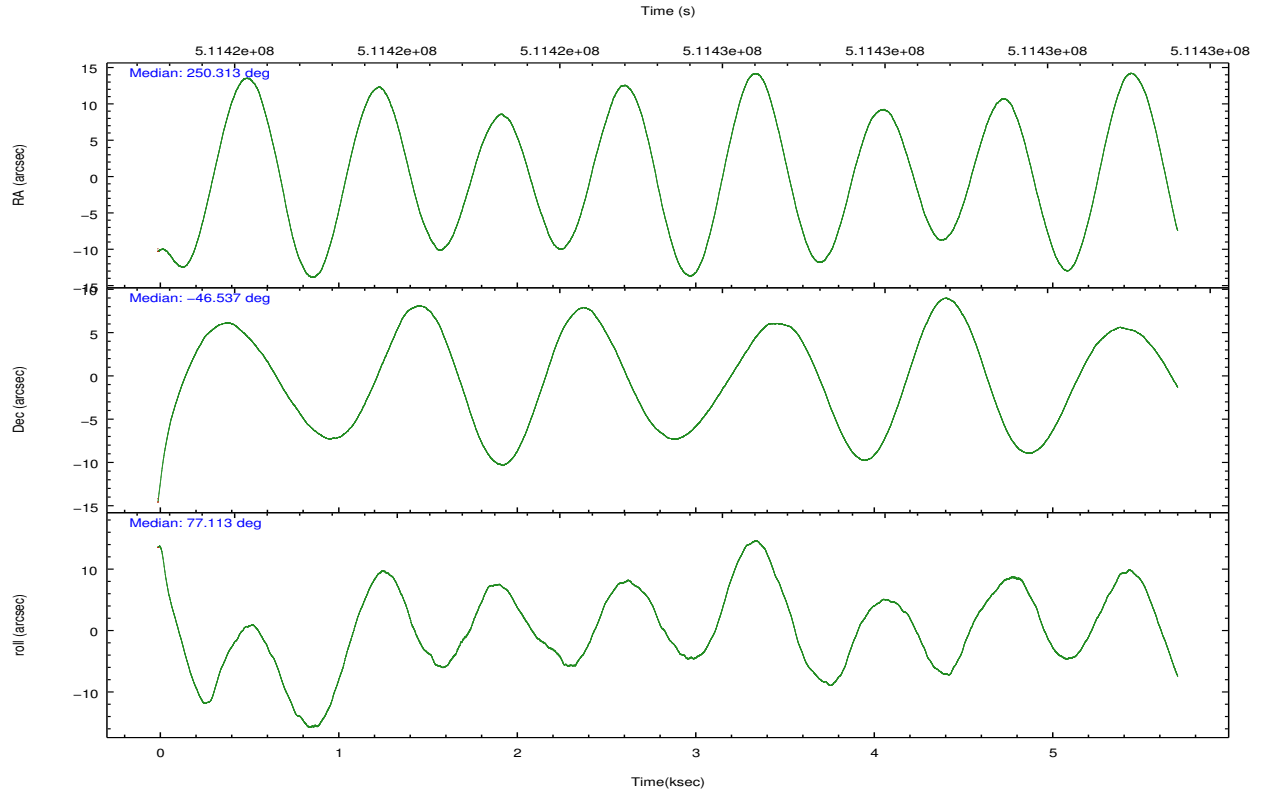
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8		ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	22690	21533	40239	24036	31805	31424	grade 0 events	1163	978	2250	1406	1228	2592
rejected events	19875	18825	20501	20641	17704	23314		5%	4%	5%	5%	3%	8%
rejected %	87%	87%	50%	85%	55%	74%	grade 1 events	20	20	74	14	38	25
								0%	0%	0%	0%	0%	0%
							grade 2 events	635	615	6175	709	2937	1951
								2%	2%	15%	2%	9%	6%
							grade 3 events	251	283	641	306	1200	830
								1%	1%	1%	1%	3%	2%
							grade 4 events	256	312	631	296	1246	727
								1%	1%	1%	1%	3%	2%
							grade 5 events	1043	1189	3030	1275	3207	1678
								4%	5%	7%	5%	10%	5%
							grade 6 events	512	527	10055	680	7501	2013
								2%	2%	24%	2%	23%	6%
							grade 7 events	18810	17609	17383	19350	14448	21608
								82%	81%	43%	80%	45%	68%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-235678	ACIS-235678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	250.325428	250.313195202572	CCD I2 on	O2	Y
[deg] Pointing Dec	-46.562954	-46.53685357407797	CCD I3 on	Y	Y
[deg] Pointing Roll	76.972175	77.11995341434928	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)	511423516.184000	511422290.66417	CCD S5 on	N	N
Observation start date	2014-03-17T06:04:09	2014-03-17T05:44:50	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	511428516.184000	511429744.97708	On-chip summing requested	N	N
Observation end date	2014-03-17T07:27:29	2014-03-17T07:49:04	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.2

## 2.3 Aspect





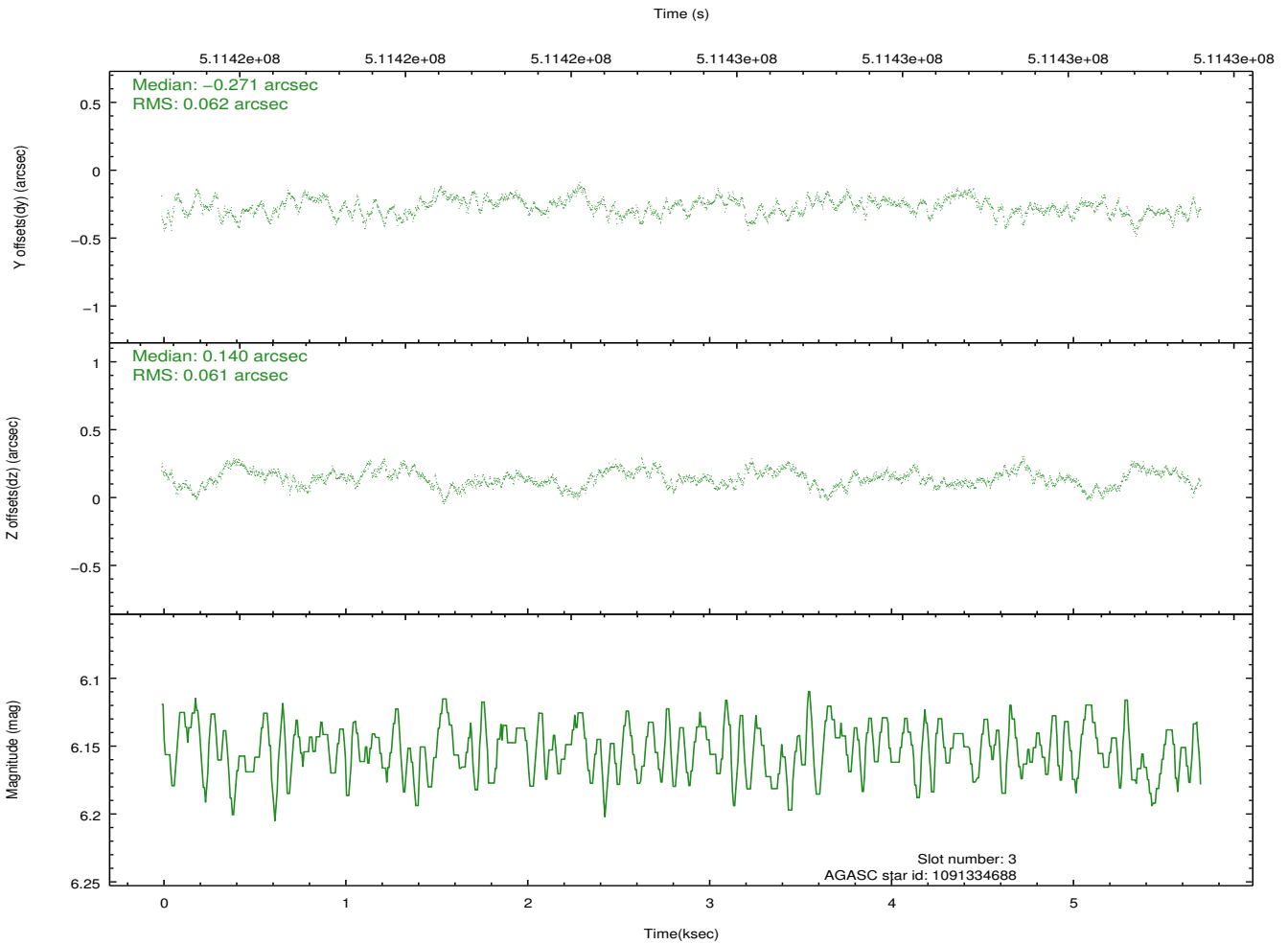
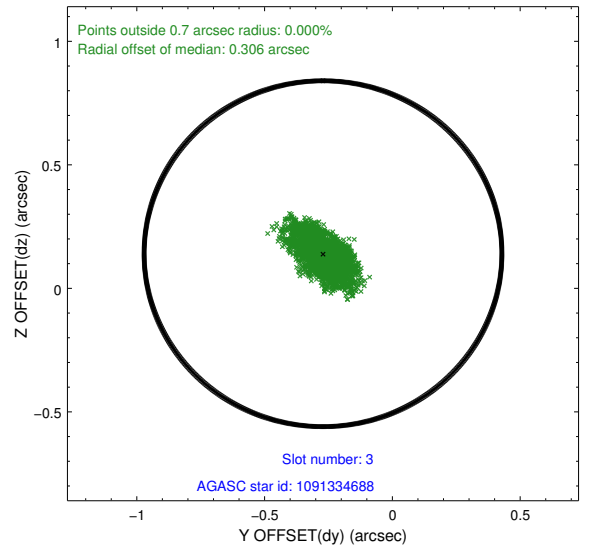
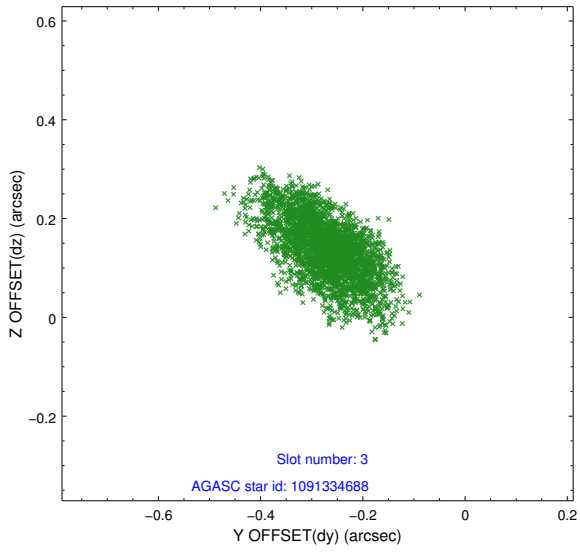
### Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.97	1394	-0.132	-0.039	0.008	0.015	0.000000	0.000000	-774.56	-1741.03
1	FID		ACIS-S-4	7.06	1394	0.273	0.074	0.006	0.012	0.000000	0.000000	2138.63	166.48
2	FID		ACIS-S-5	7.08	1394	-0.172	-0.027	0.007	0.013	0.000000	0.000000	-1826.11	161.23
3	GUIDE	used	1091334688	6.15	2788	-0.271	0.140	0.092	0.155	250.764858	-46.070295	1971.98	-669.83
4	GUIDE	used	1091341680	8.44	2788	-0.348	0.114	0.125	0.197	251.240217	-46.114317	2075.72	-1863.01
5	GUIDE	used	1091703920	9.72	2785	0.360	-0.235	0.214	0.348	249.858992	-46.910499	-1480.05	833.70
6	GUIDE	used	1091842752	7.50	2788	0.144	0.268	0.116	0.197	250.934866	-47.105704	-1573.01	-1896.33
7	GUIDE	used	1091704704	10.02	2776	0.173	-0.281	0.329	0.527	249.457504	-47.039620	-2164.17	1683.84

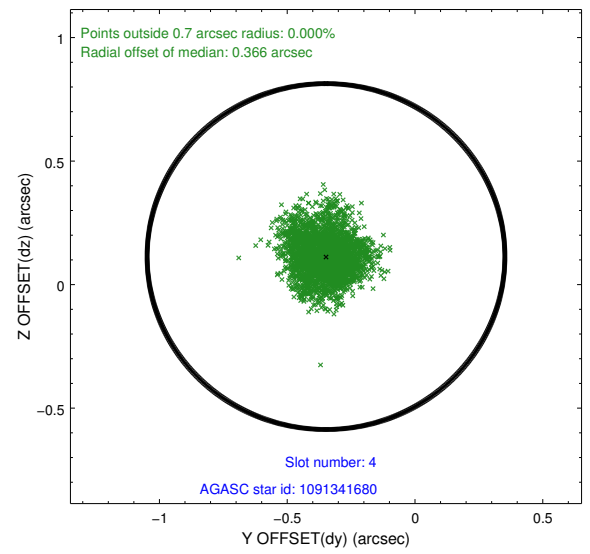
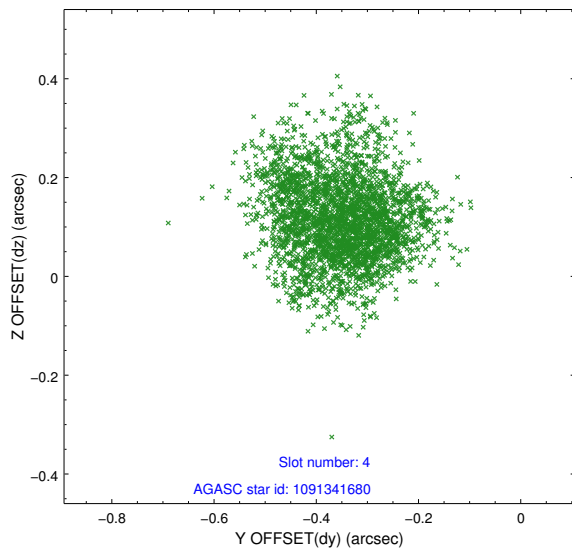
∞

## 2.4 Star Slots

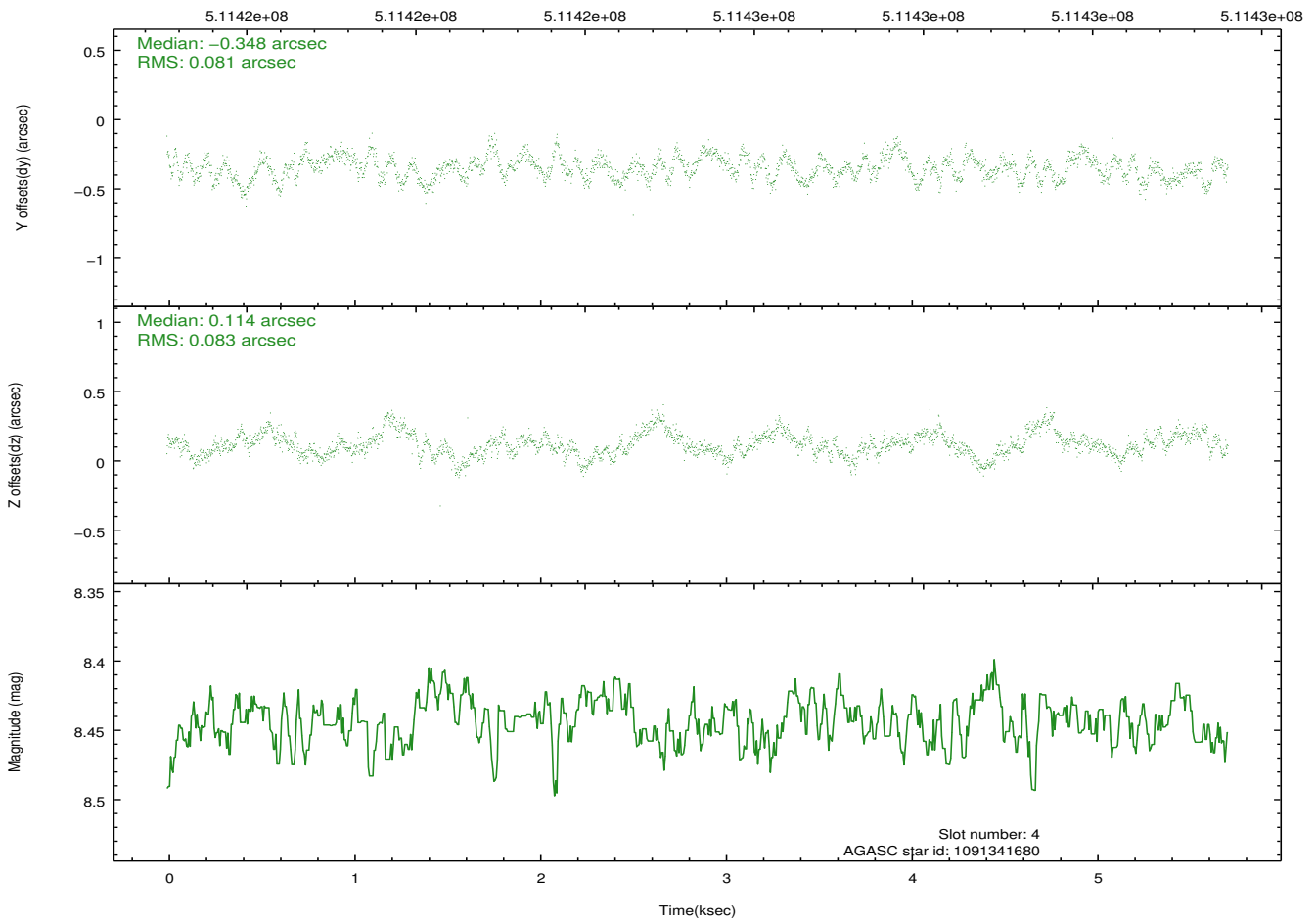
### 2.4.1 Slot 3



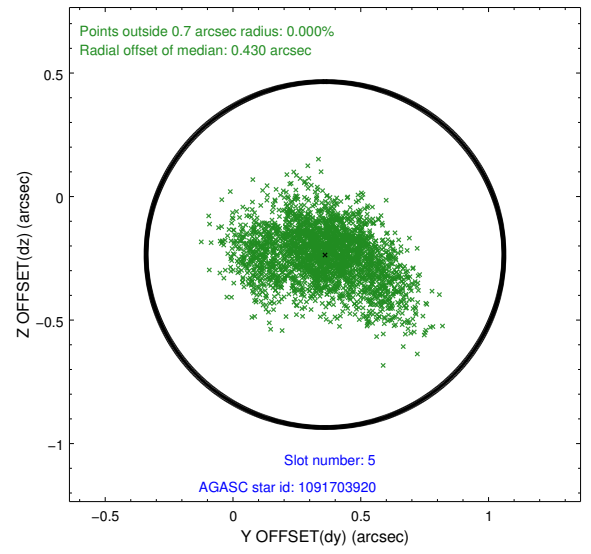
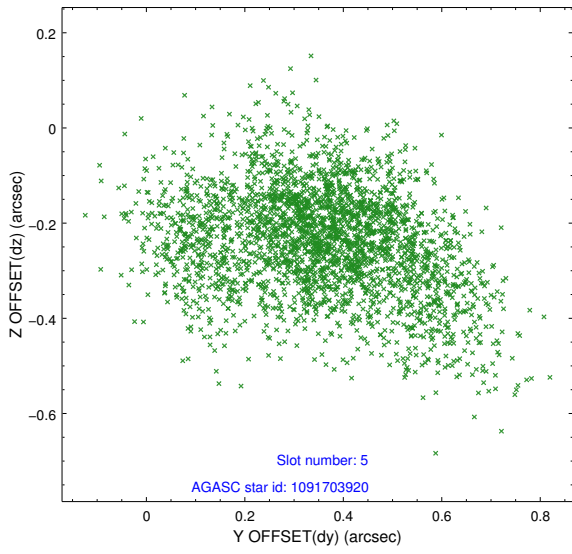
## 2.4.2 Slot 4



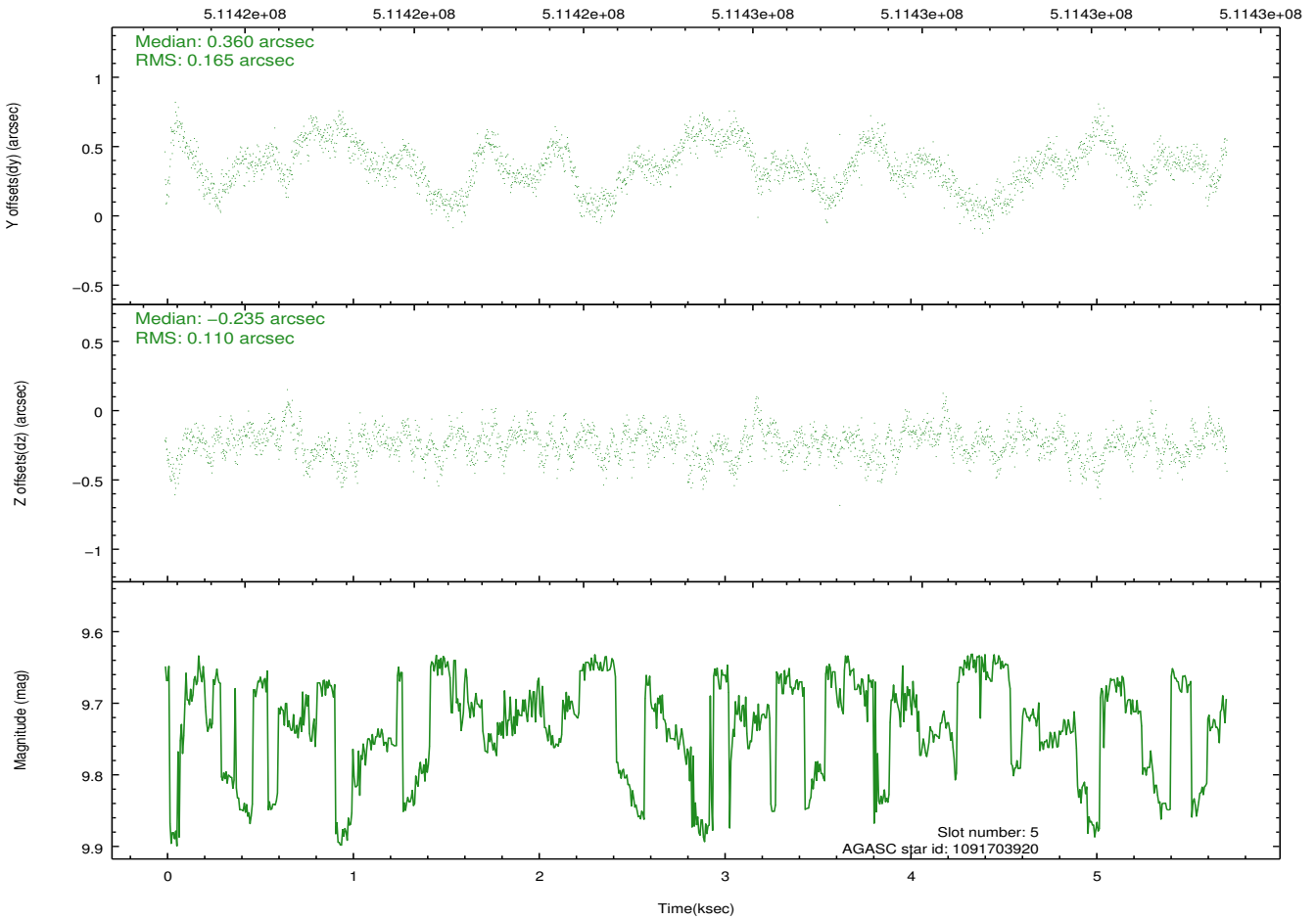
Time (s)



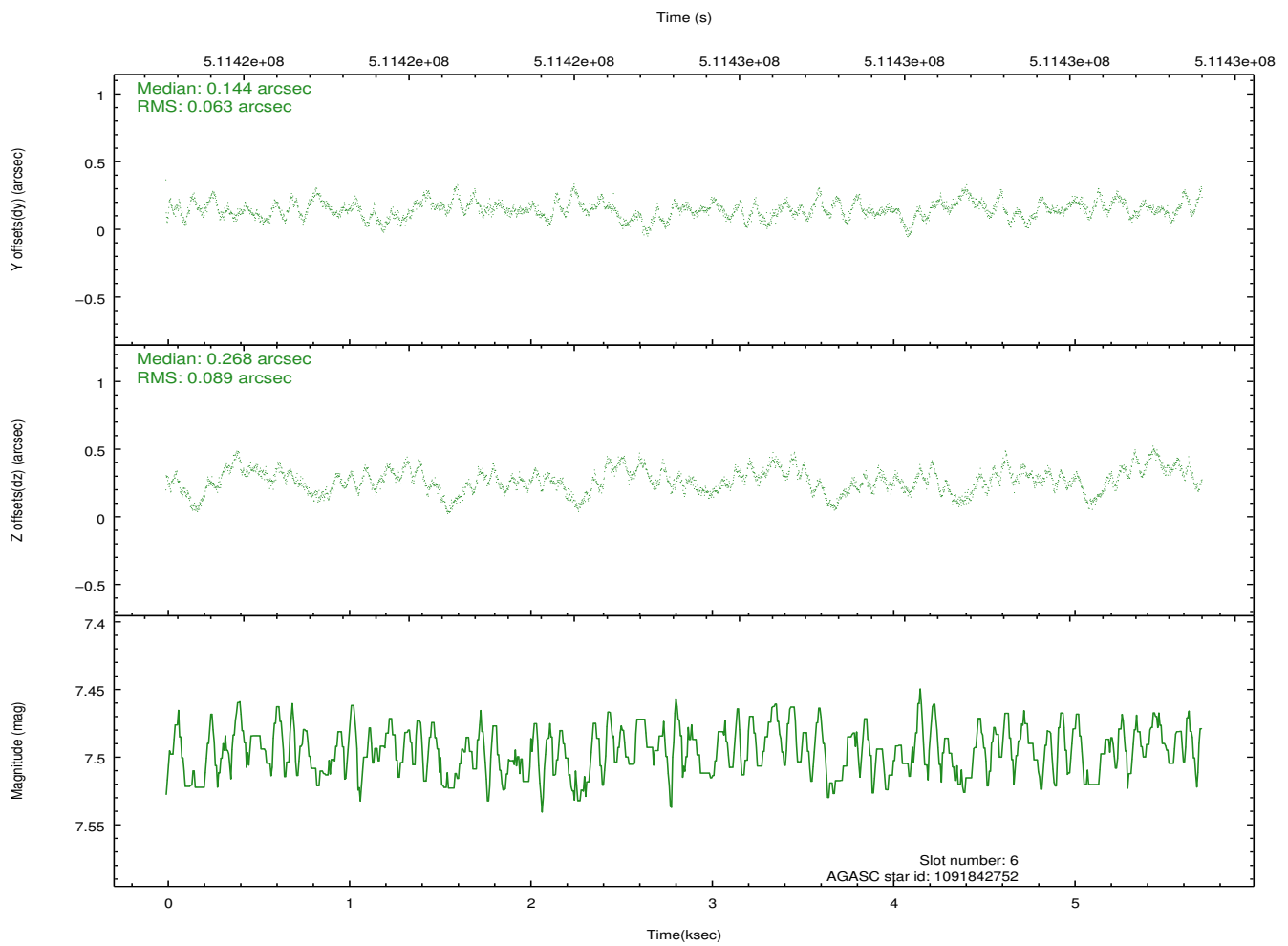
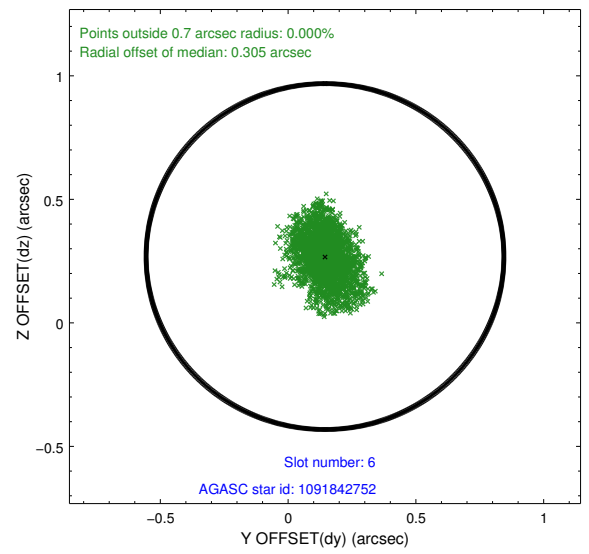
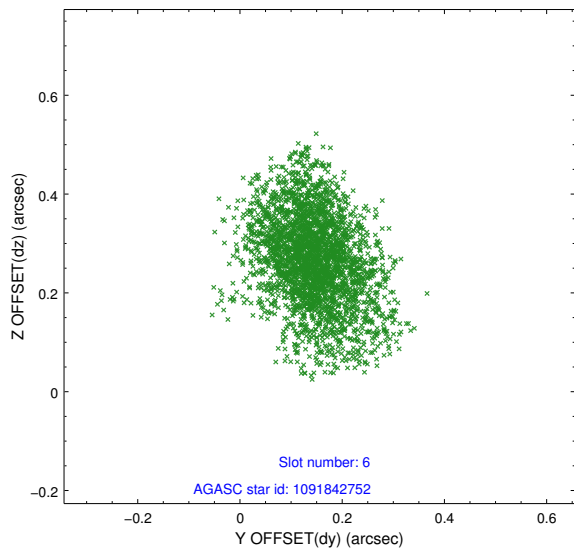
### 2.4.3 Slot 5



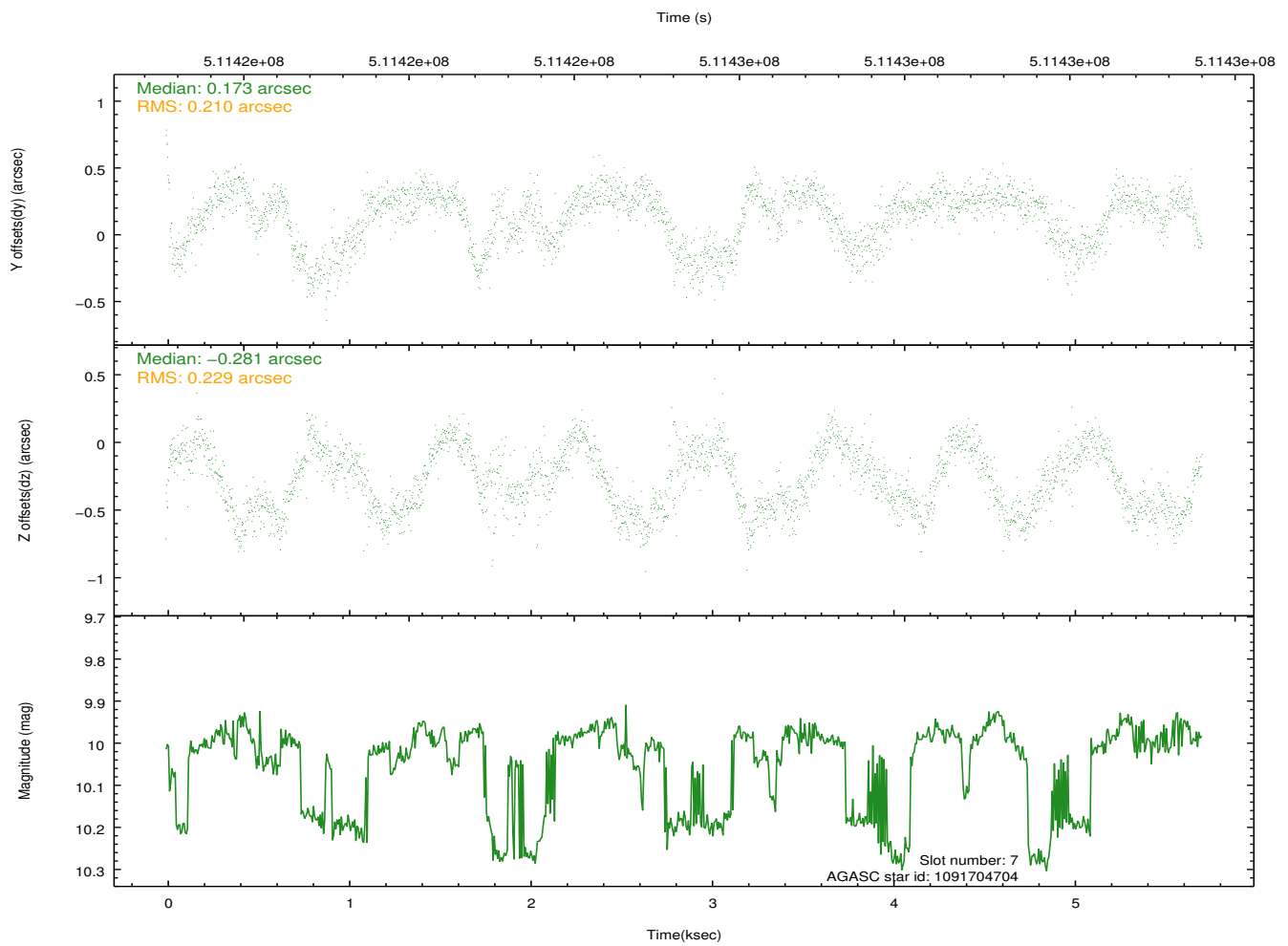
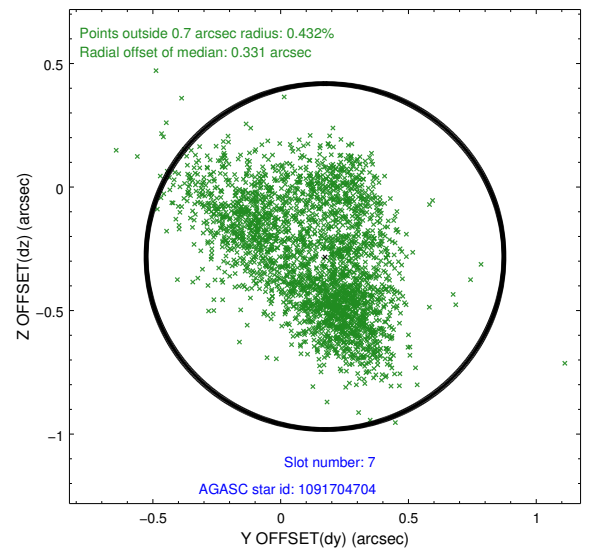
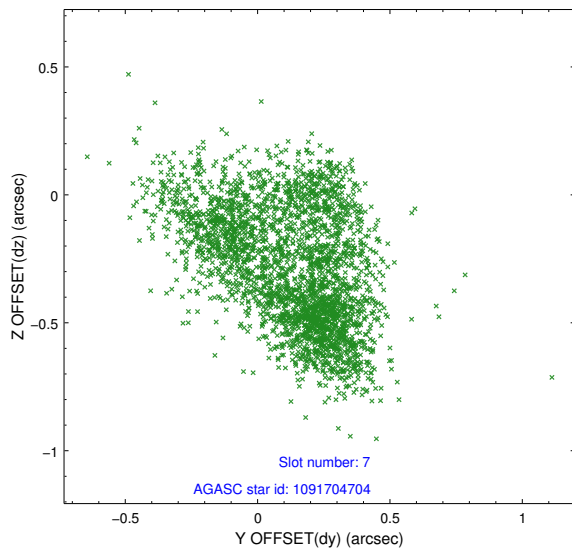
Time (s)



## 2.4.4 Slot 6

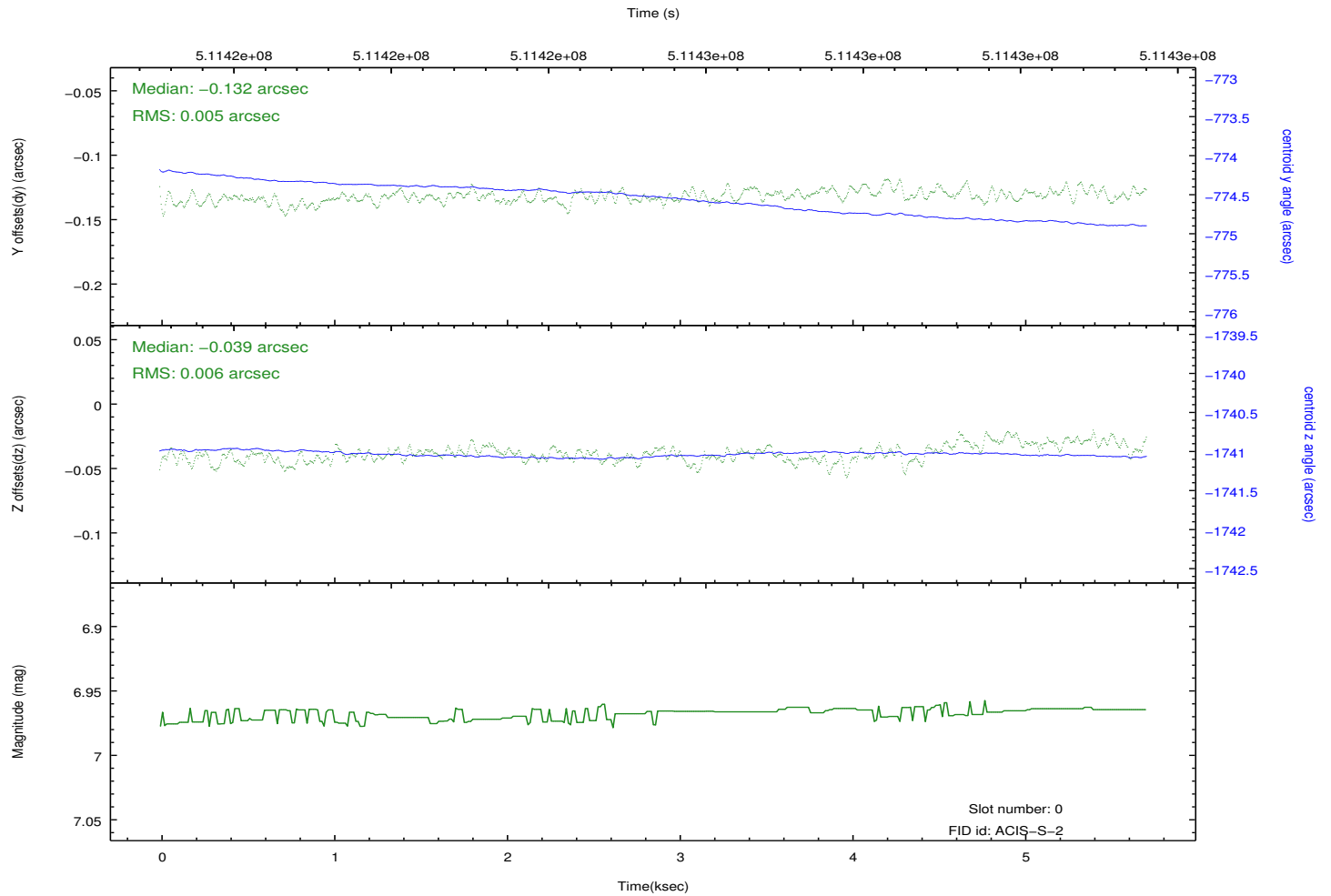
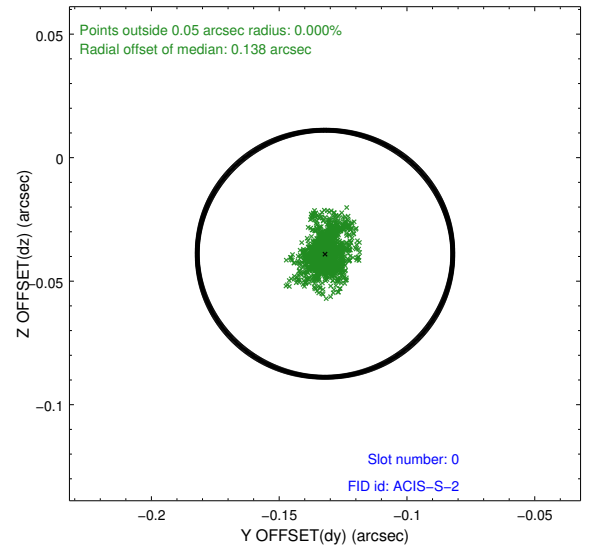
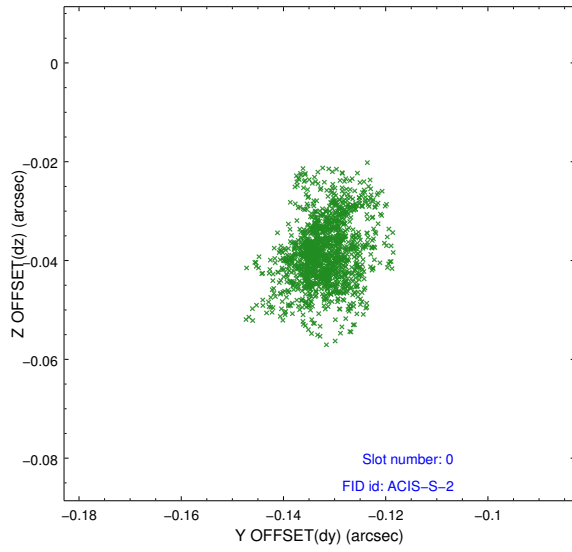


## 2.4.5 Slot 7

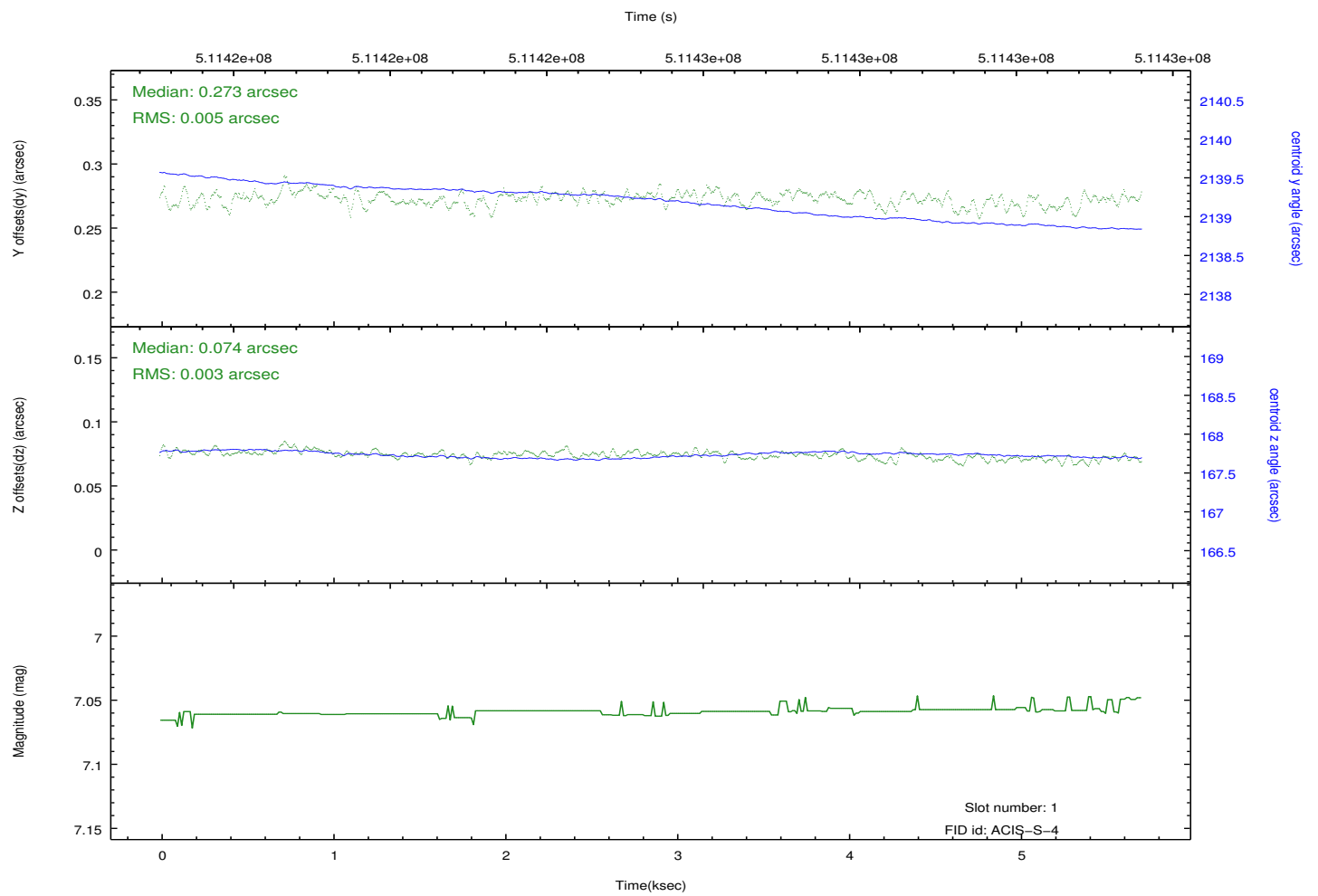
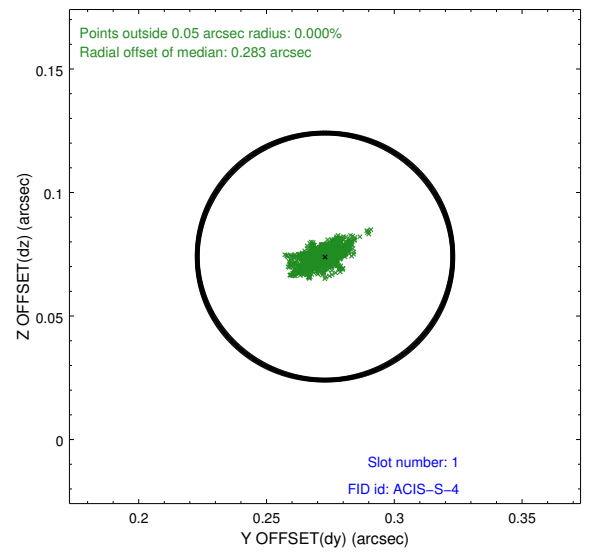
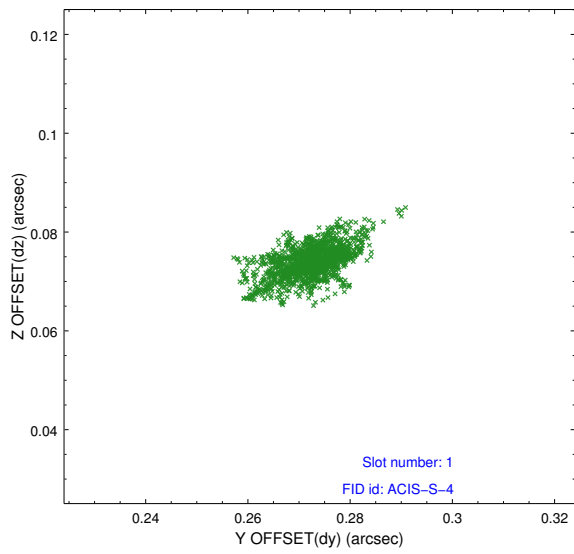


## 2.5 FID Slots

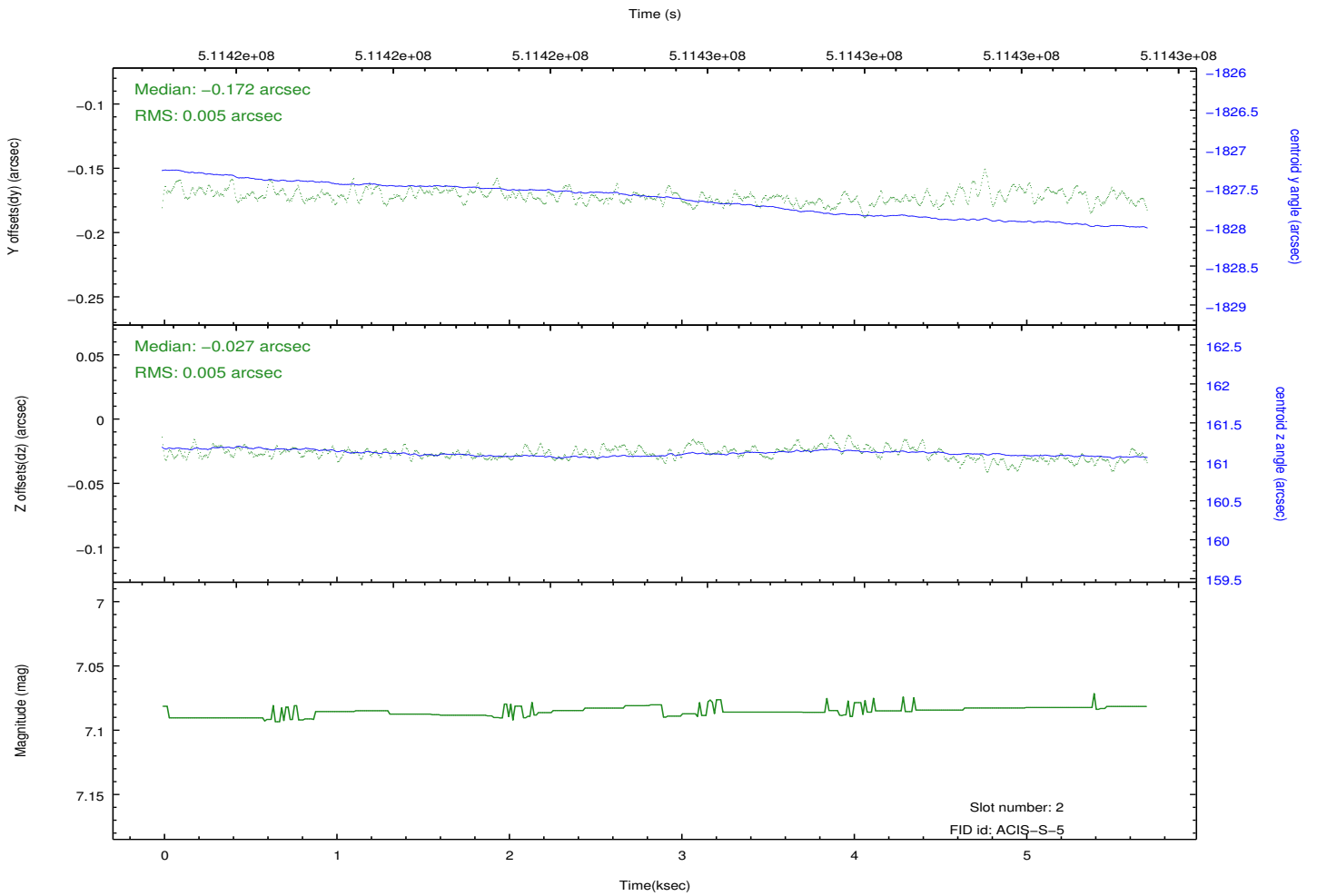
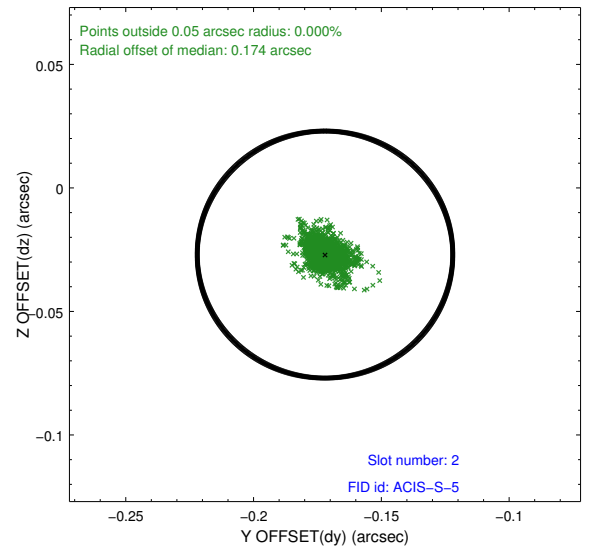
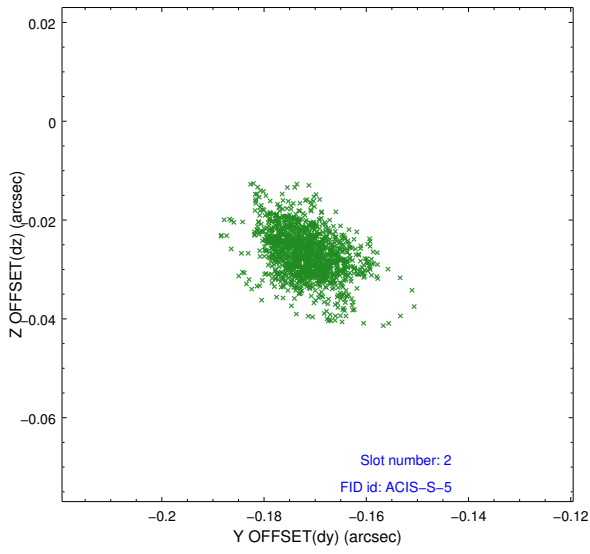
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2014.12.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	4.9663999815583

## A.2 Comments

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.