

# V&V Reference Report

## L2 ASCDS Version : 10.2.1

Observation 15104 - L2 Version 3  
Chandra X-Ray Center

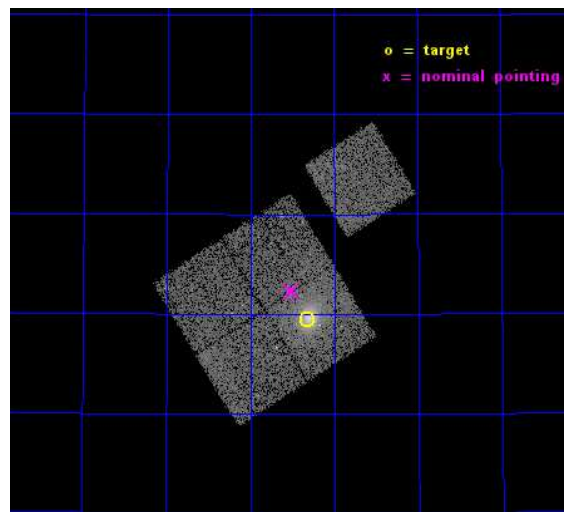
L2 Processing Date : Dec 10 2014

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# 1 Front

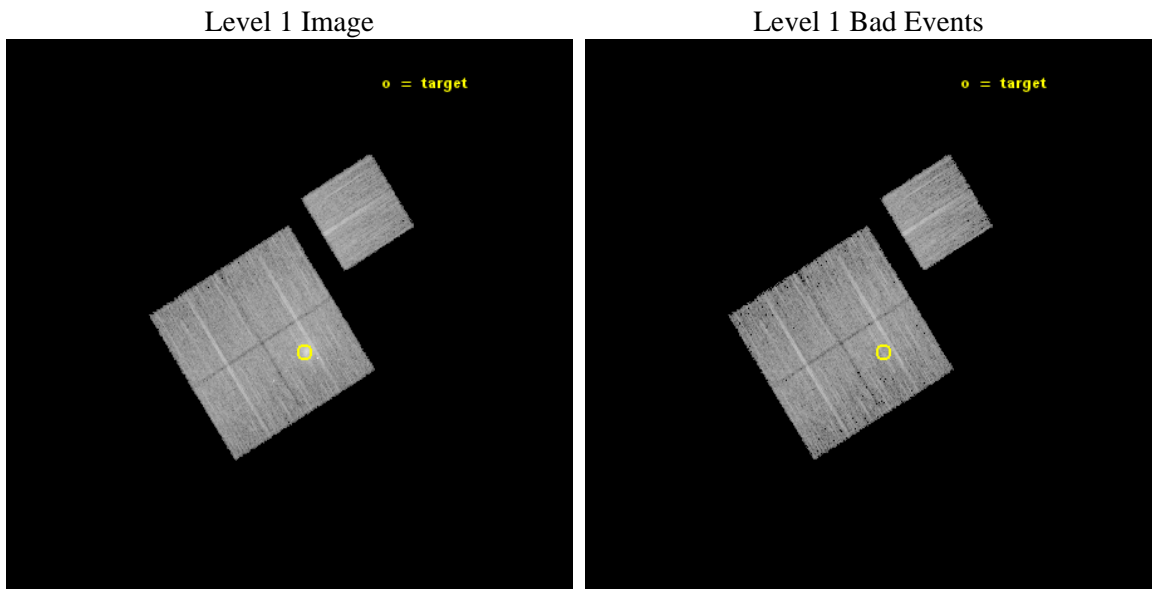
seq_num	801233	Sequence number
obs_id	15104	Observation id
title	A Chandra-Planck Legacy Program for Massive Clusters of Galaxies	P
observer	Dr. Christine Jones	Principal investigator
object	G086.45+15.29	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	294.582083	Observer's specified target RA [deg]
dec_targ	54.157306	Observer's specified target Dec [deg]
ra_nom	294.62788143039	Nominal RA [deg]
dec_nom	54.204653943694	Nominal Dec [deg]
roll_nom	58.110270259982	Nominal Roll [deg]
revision	3	Processing version of data
ontime	15081.412818849	Sum of GTIs [s]
livetime	14884.363057596	Livetime [s]
ontime0	15084.430709124	Sum of GTIs [s]
ontime1	15084.471749127	Sum of GTIs [s]
ontime2	15084.51278913	Sum of GTIs [s]
ontime3	15081.412818849	Sum of GTIs [s]
ontime6	15078.107738078	Sum of GTIs [s]
l2events	47613	Number of level 2 events



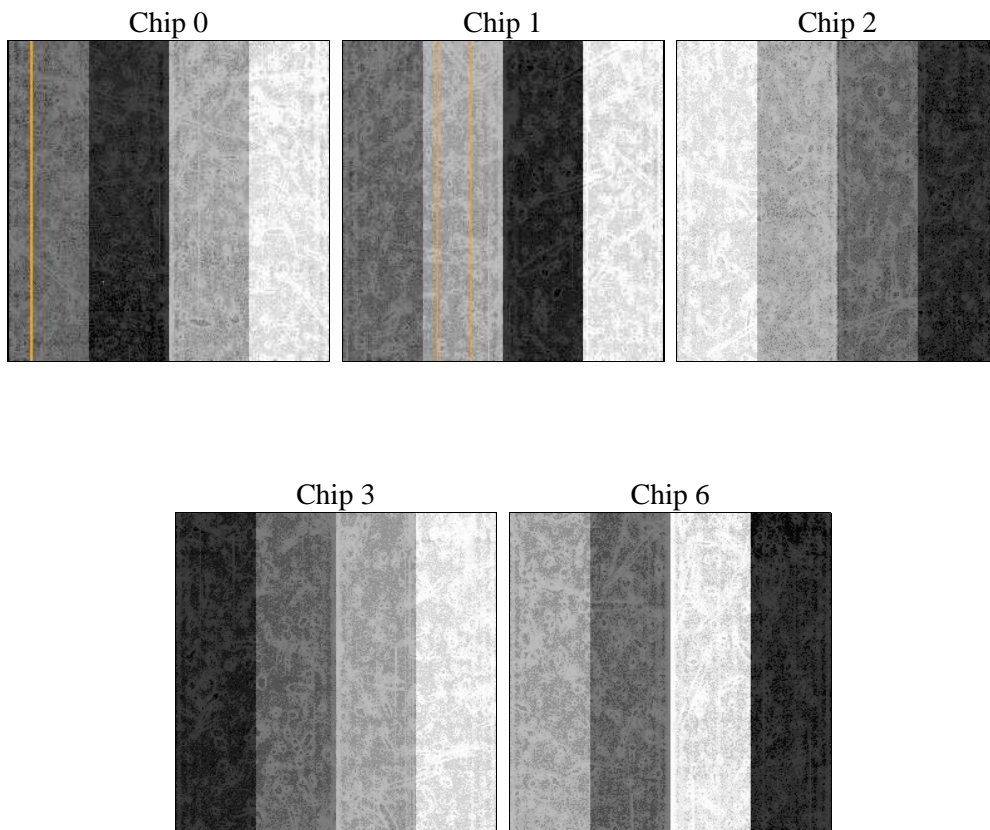
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	15081.412818849	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime0	15084.430709124	Sum of GTIs [s]
date	2014-12-10T16:07:02	Date and time of file creation	ontime1	15084.471749127	Sum of GTIs [s]
revision	3	Processing version of data	ontime2	15084.51278913	Sum of GTIs [s]
			ontime3	15081.412818849	Sum of GTIs [s]
			ontime6	15078.107738078	Sum of GTIs [s]
			l1events	359937	Number of level 1 events

### 2.1.4 Events

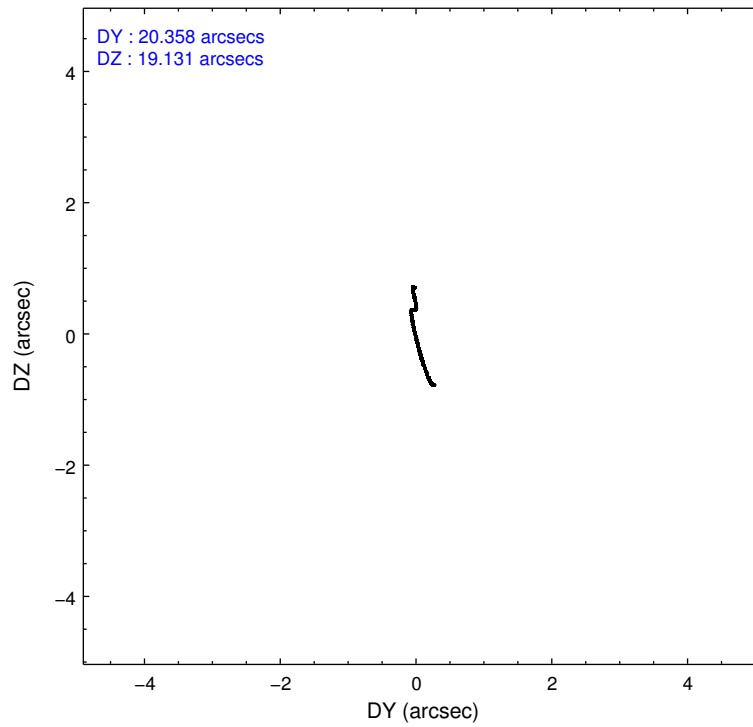
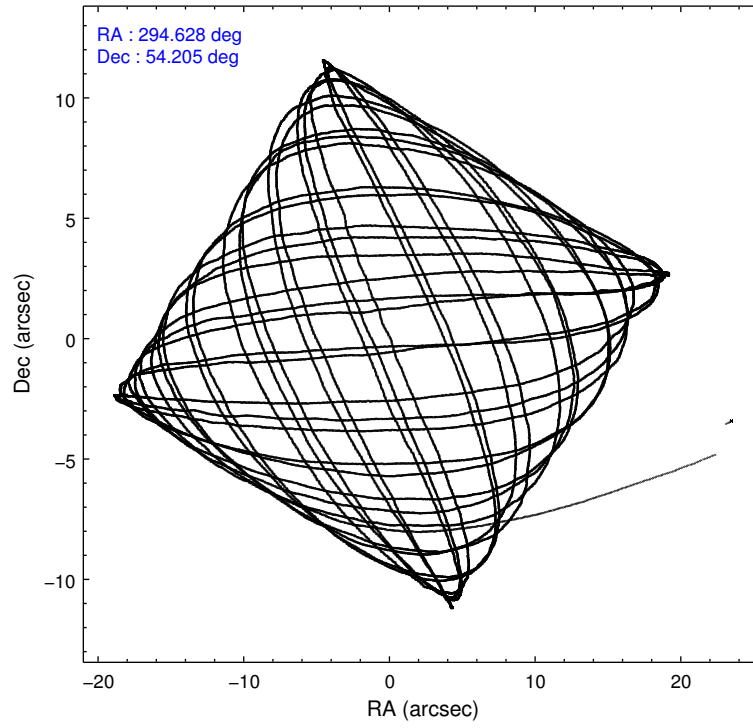
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	63845	67106	71079	82796	75111
rejected events	55567	57680	62560	63296	66343
rejected %	87%	85%	88%	76%	88%

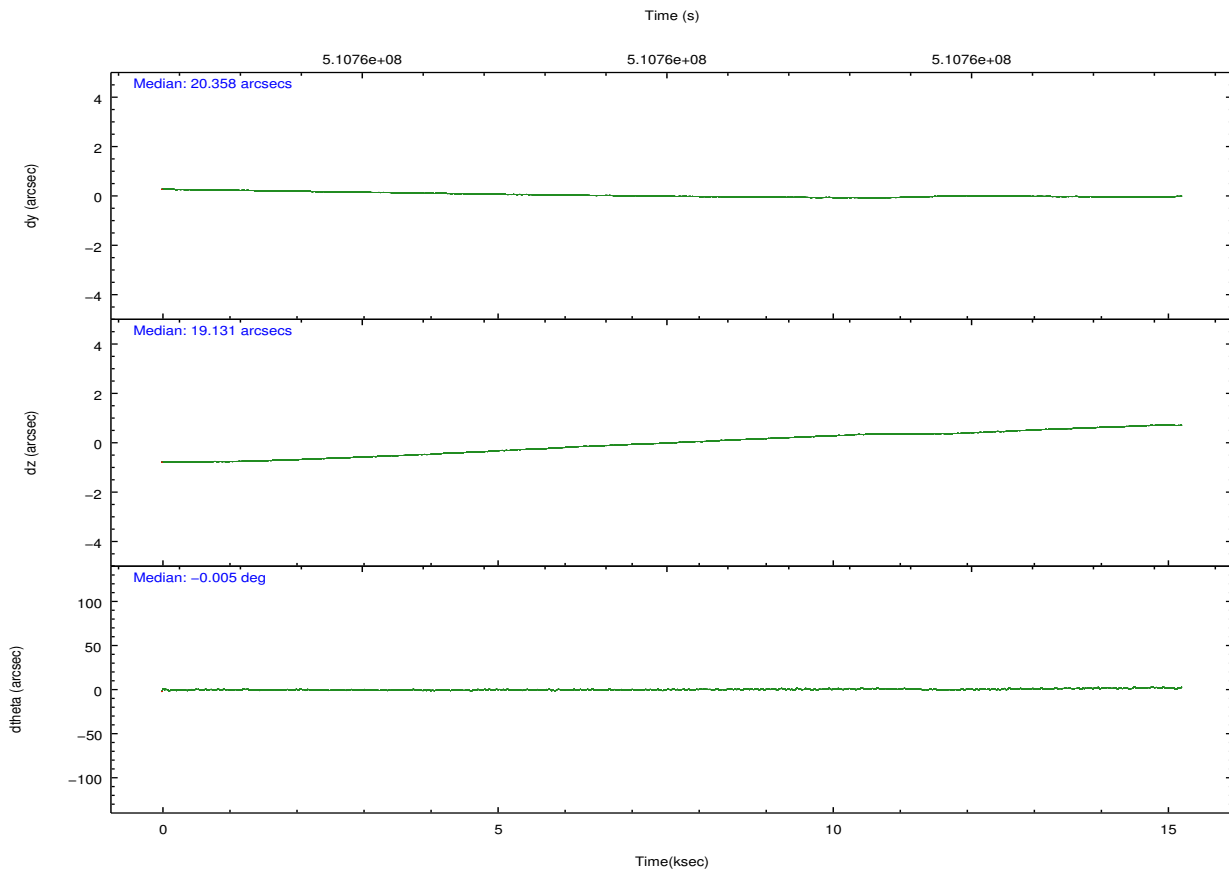
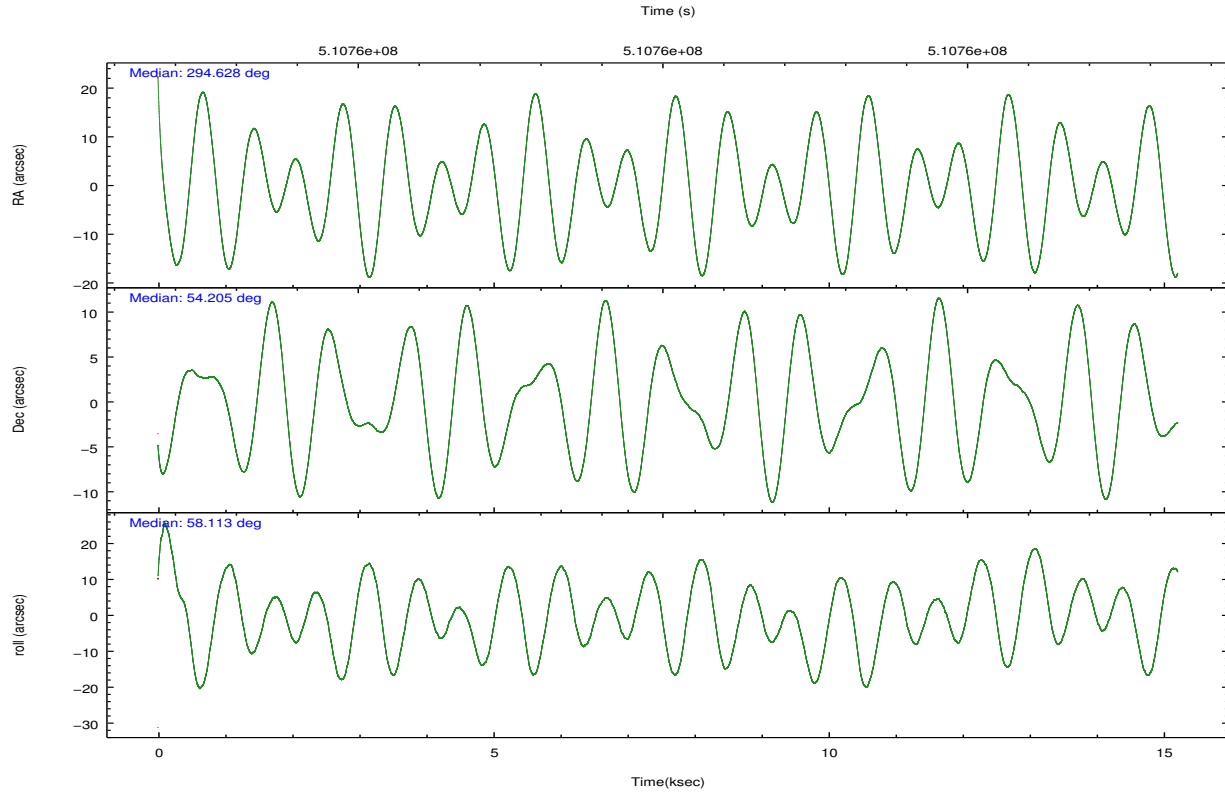
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	2916	3242	3207	12187	2895
	4%	4%	4%	14%	3%
grade 1 events	33	32	44	85	36
	0%	0%	0%	0%	0%
grade 2 events	2002	2265	1982	2858	1962
	3%	3%	2%	3%	2%
grade 3 events	854	901	844	1229	905
	1%	1%	1%	1%	1%
grade 4 events	779	866	889	1180	884
	1%	1%	1%	1%	1%
grade 5 events	3265	3419	3181	3823	3536
	5%	5%	4%	4%	4%
grade 6 events	1729	2161	1600	2052	2126
	2%	3%	2%	2%	2%
grade 7 events	52267	54220	59332	59382	62767
	81%	80%	83%	71%	83%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01236	ACIS-01236	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	294.626556	294.6278814303869	CCD I2 on	Y	Y
[deg] Pointing Dec	54.177177	54.20465394369352	CCD I3 on	Y	Y
[deg] Pointing Roll	57.902655	58.11027025998207	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	Y
[mm] SIM translation stage pos	-225.842463	-225.8433433320239	CCD S3 on	N	N
[mm] SIM translation stage offset	-7.75	-7.749109670905796	CCD S4 on	N	N
[s] Observation start time (MET)	510752679.184000	510751560.86475	CCD S5 on	N	N
Observation start date	2014-03-09T11:43:32	2014-03-09T11:26:00	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	510767679.184000	510769129.36572	On-chip summing requested	N	N
Observation end date	2014-03-09T15:53:32	2014-03-09T16:18:49	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect



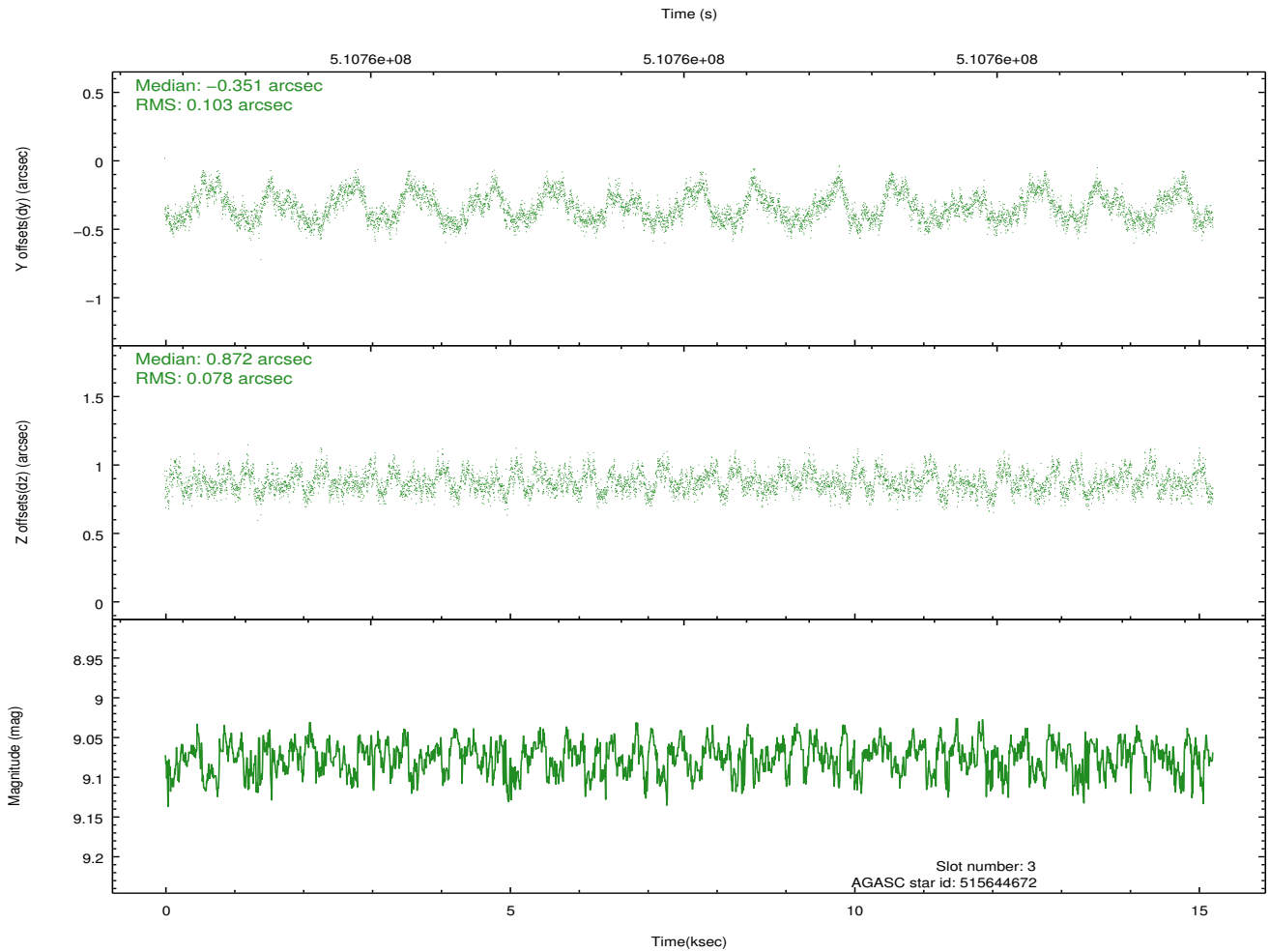
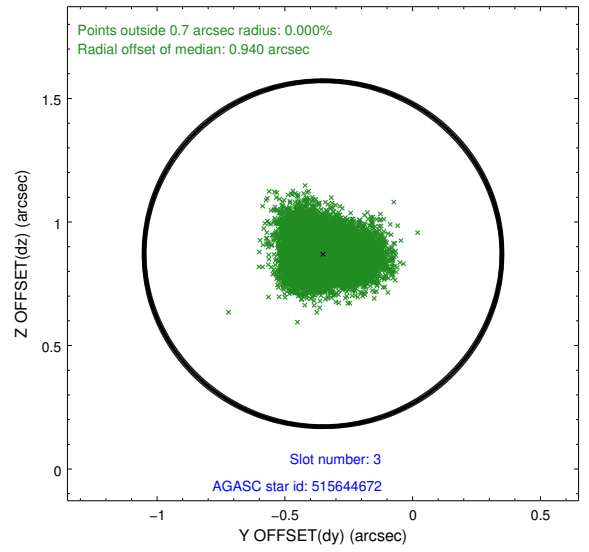
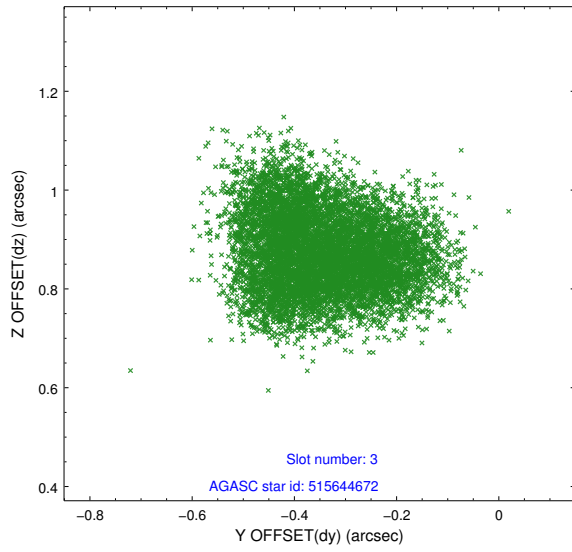


### Slot Statistics

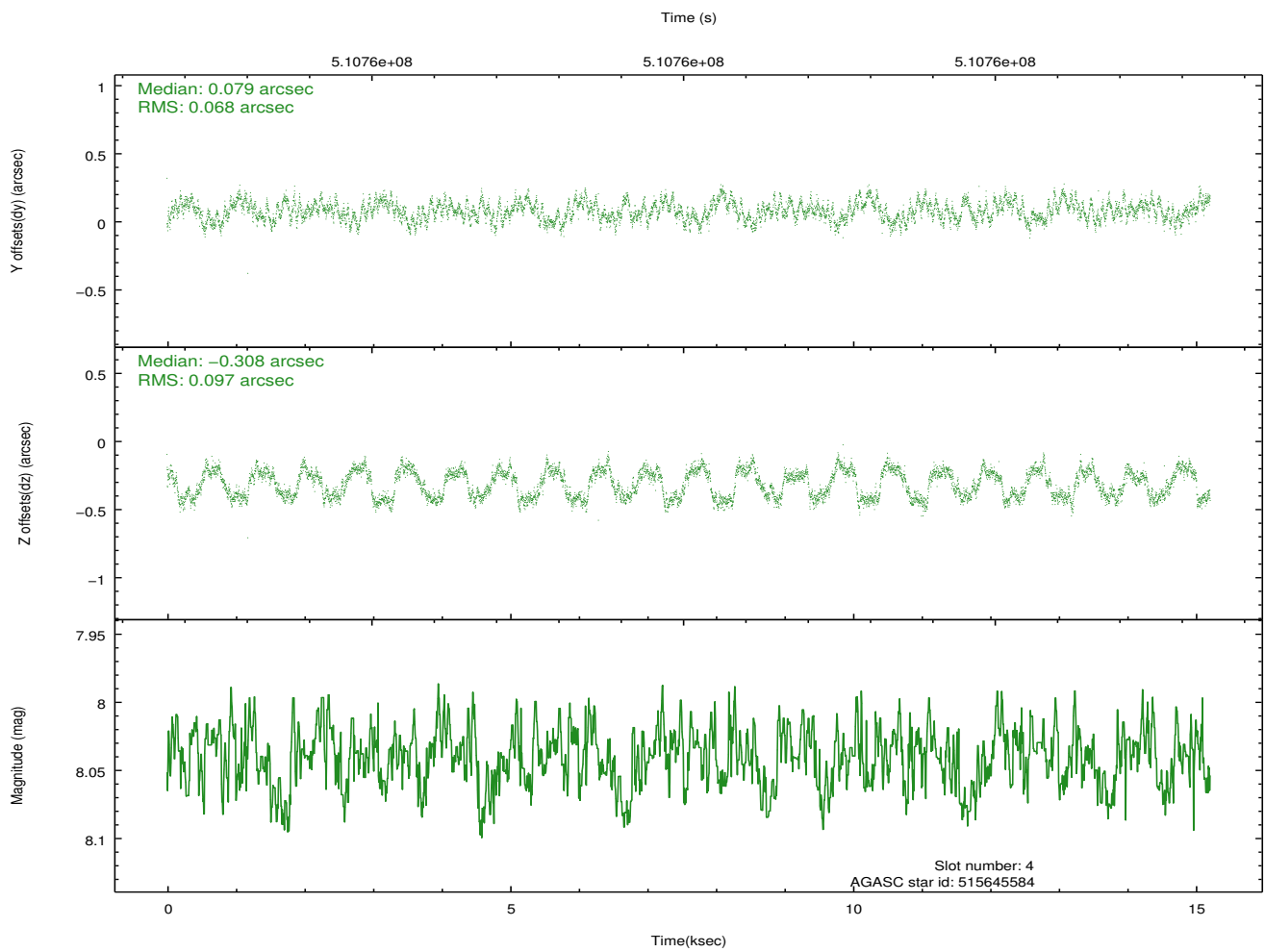
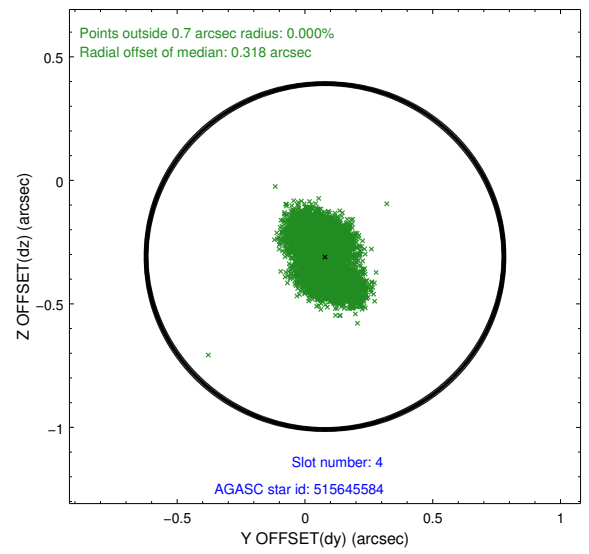
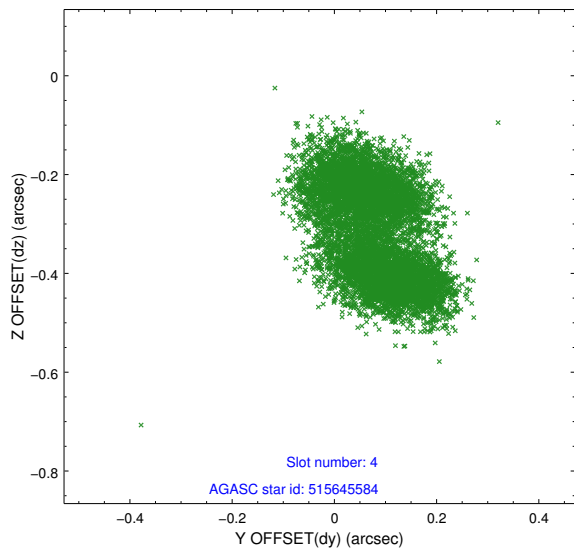
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.23	3709	0.144	-0.108	0.012	0.020	0.000000	0.000000	918.96	-1001.94
1	FID		ACIS-I-5	7.21	3711	-0.353	0.099	0.008	0.014	0.000000	0.000000	-1829.57	895.43
2	FID		ACIS-I-6	7.23	3711	0.117	0.081	0.015	0.022	0.000000	0.000000	384.03	1540.36
3	GUIDE	used	515644672	9.07	7420	-0.351	0.872	0.140	0.214	295.023380	53.978503	-157.47	-1089.21
4	GUIDE	used	515645584	8.04	7422	0.079	-0.308	0.130	0.186	294.773358	54.181408	178.37	-253.98
5	GUIDE	used	515646224	9.28	7415	0.400	-0.421	0.136	0.208	294.730804	53.806226	-1012.61	-897.26
6	GUIDE	used	516162672	9.28	7420	-0.037	0.018	0.142	0.220	295.117994	54.571900	1752.51	-111.60
7	GUIDE	used	516165712	9.12	7409	-0.108	-0.154	0.180	0.261	295.105765	54.505527	1537.05	-218.51

## 2.4 Star Slots

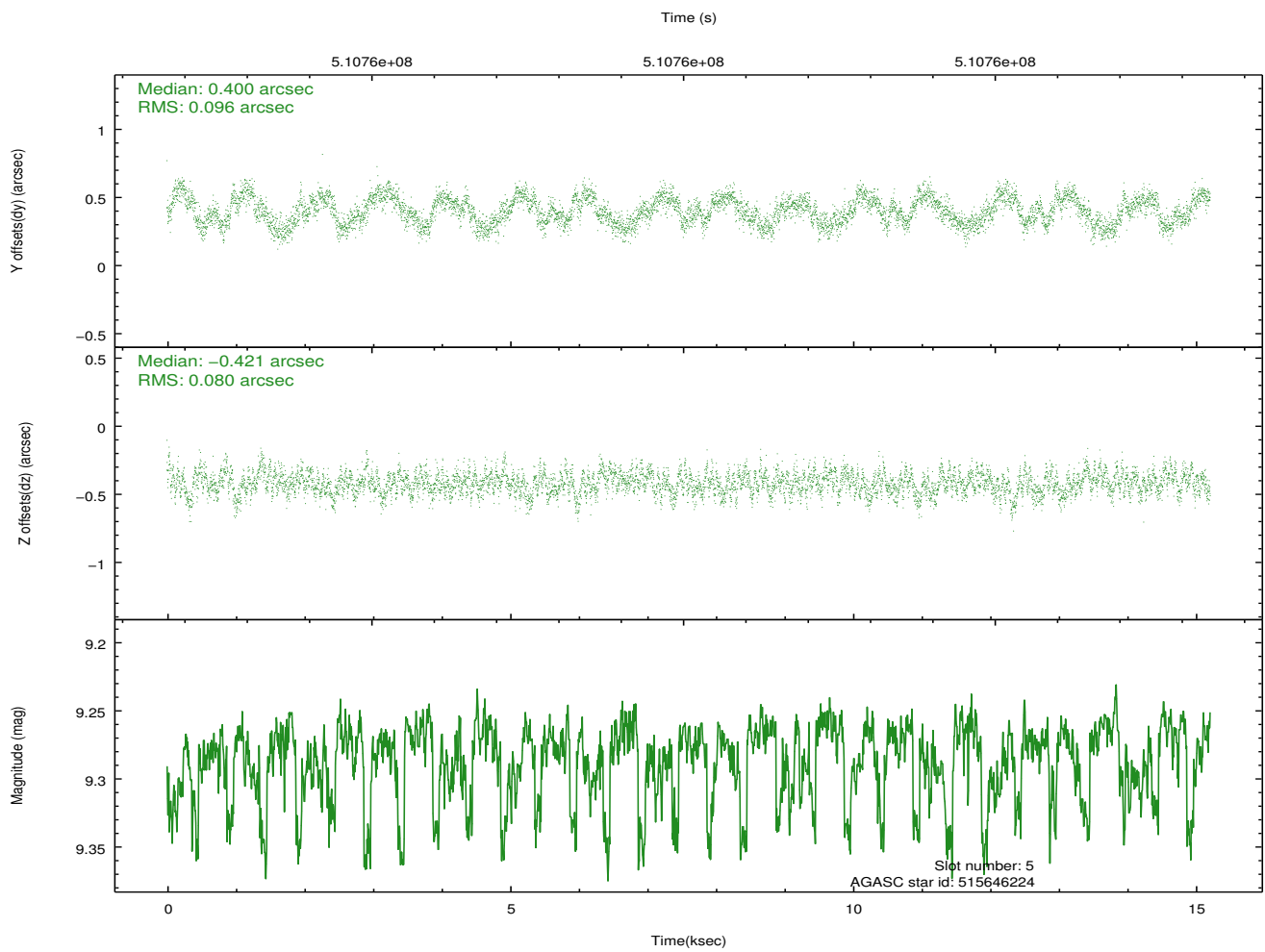
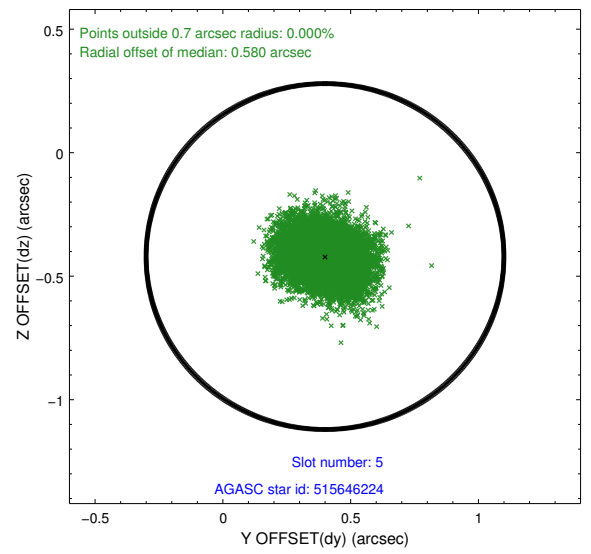
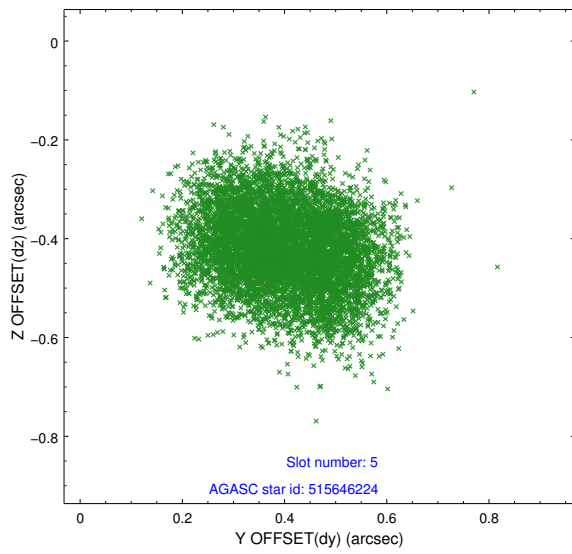
### 2.4.1 Slot 3



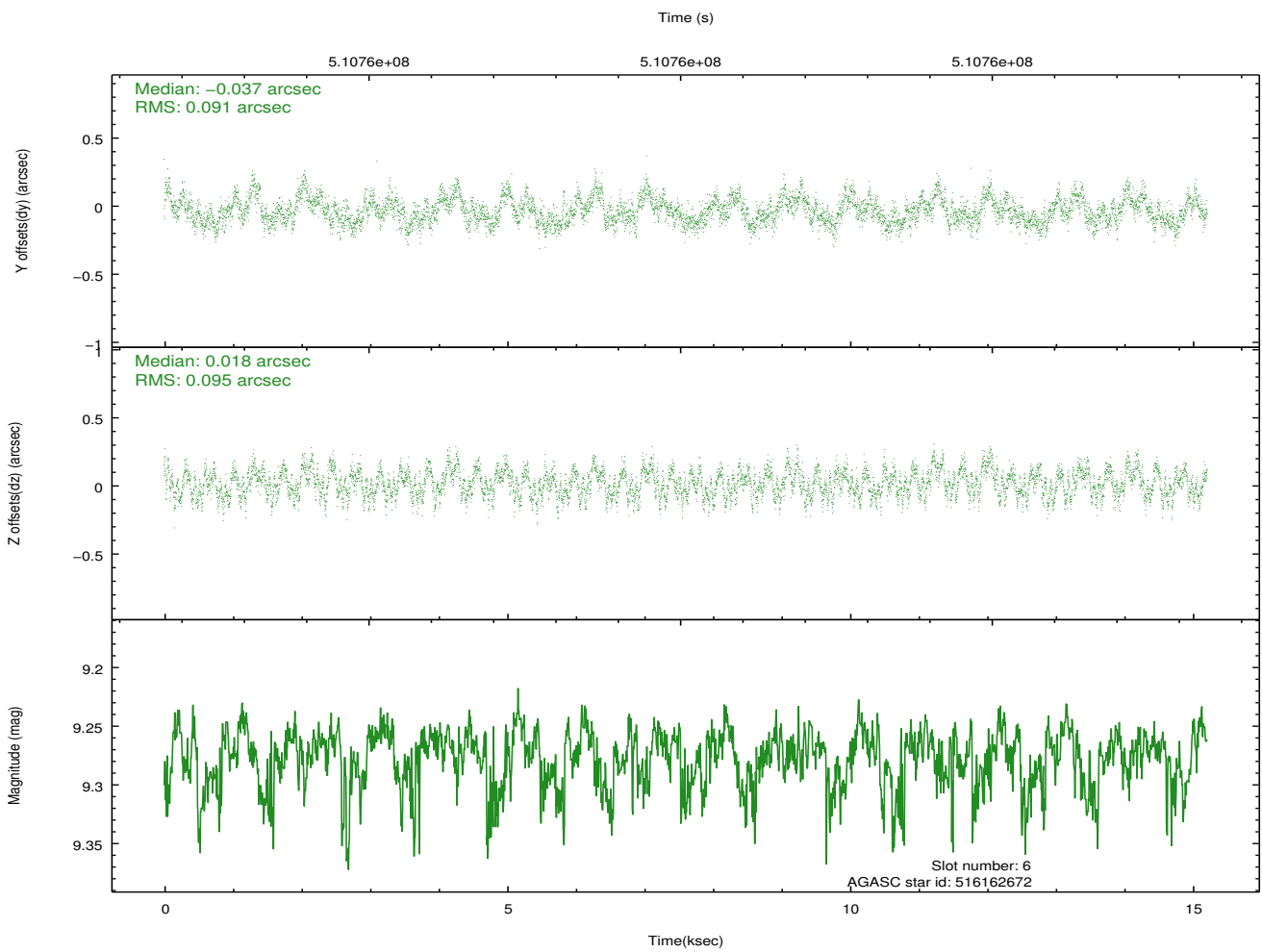
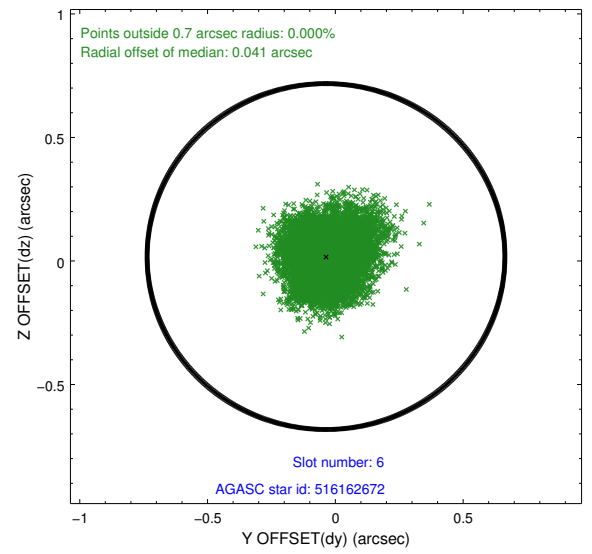
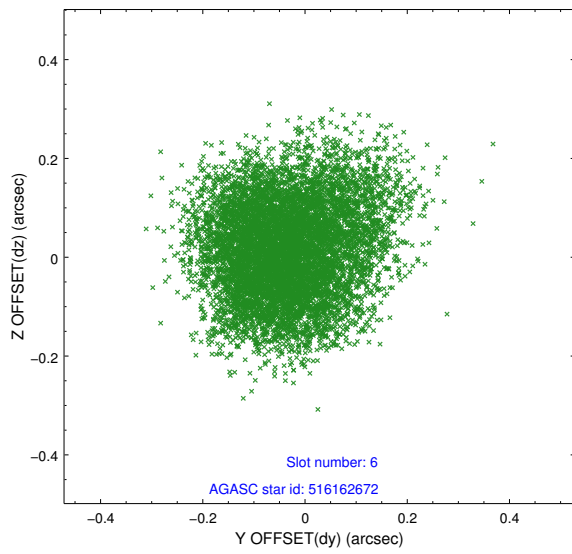
## 2.4.2 Slot 4



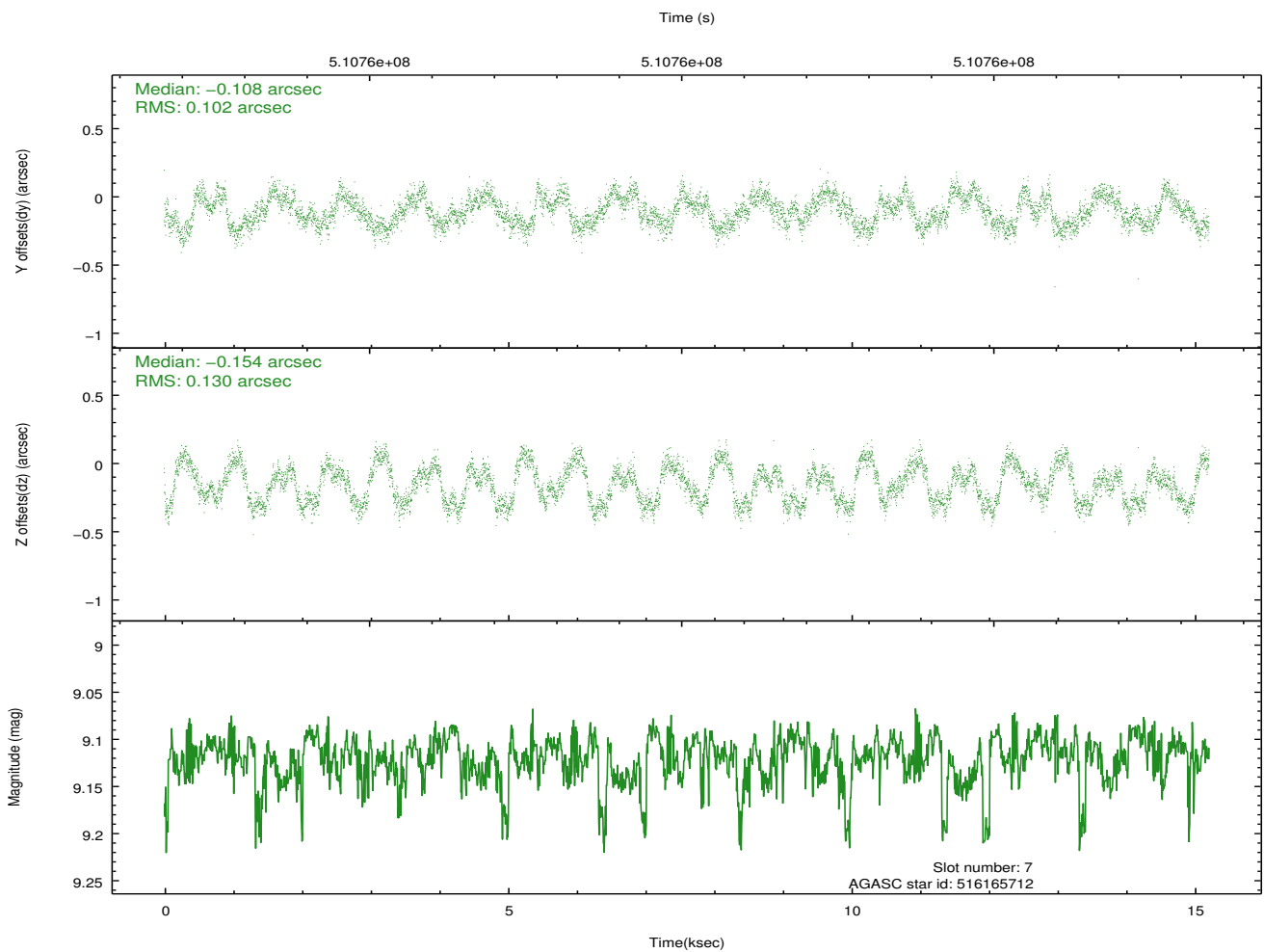
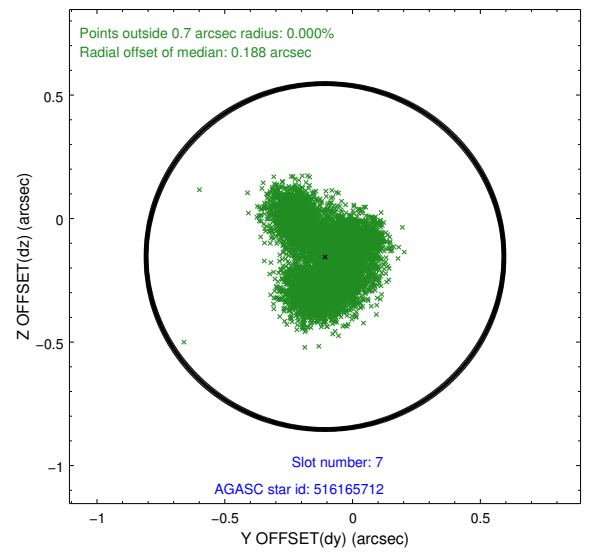
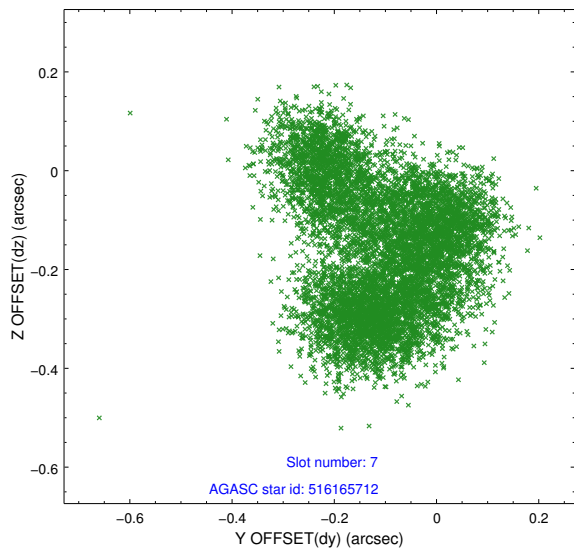
### 2.4.3 Slot 5



## 2.4.4 Slot 6

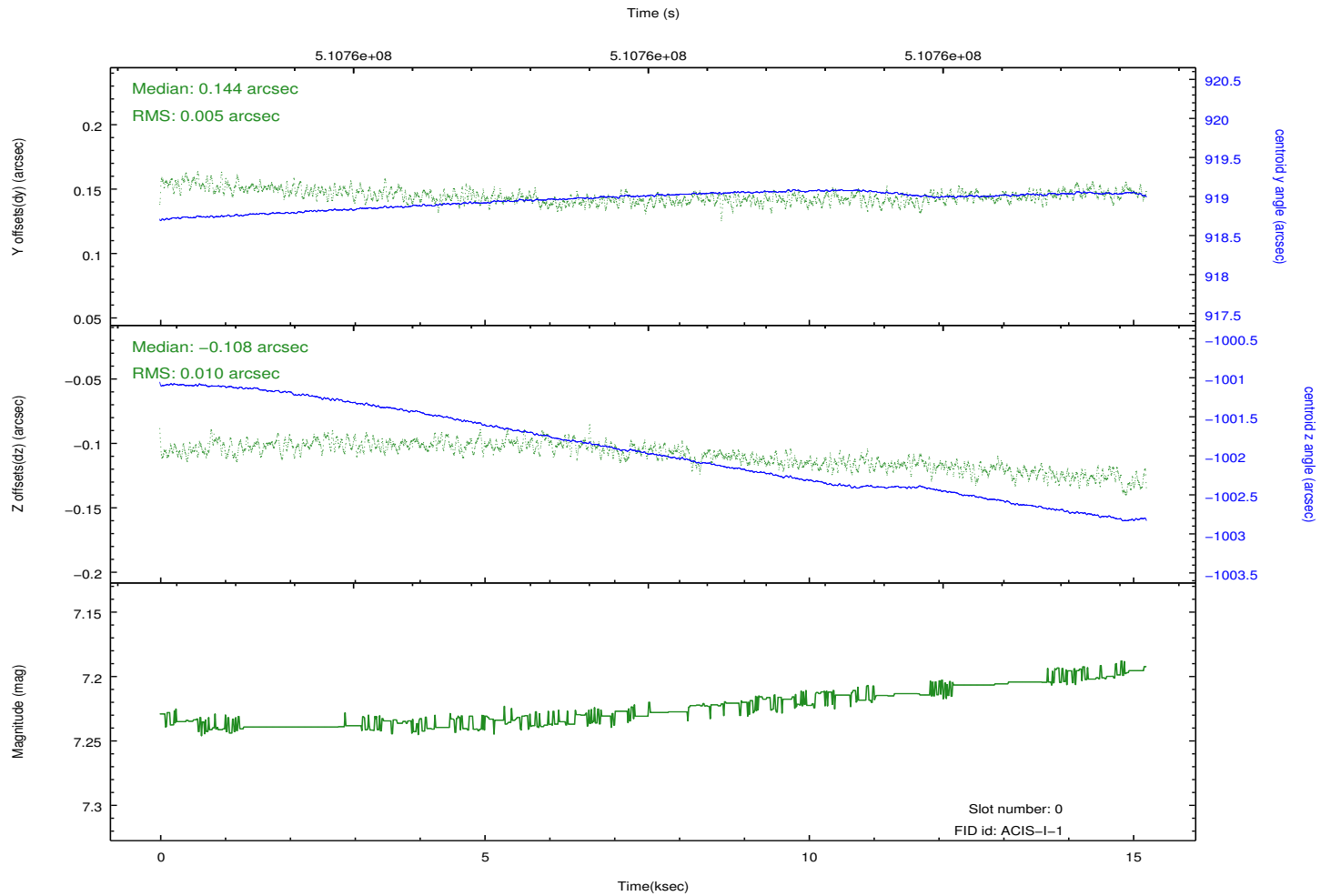
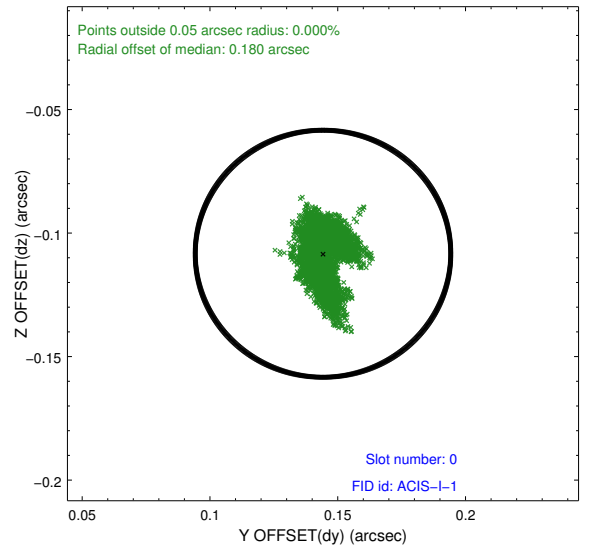
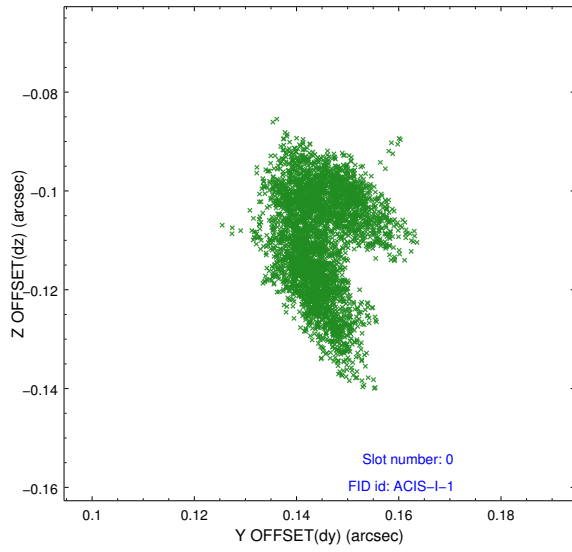


## 2.4.5 Slot 7

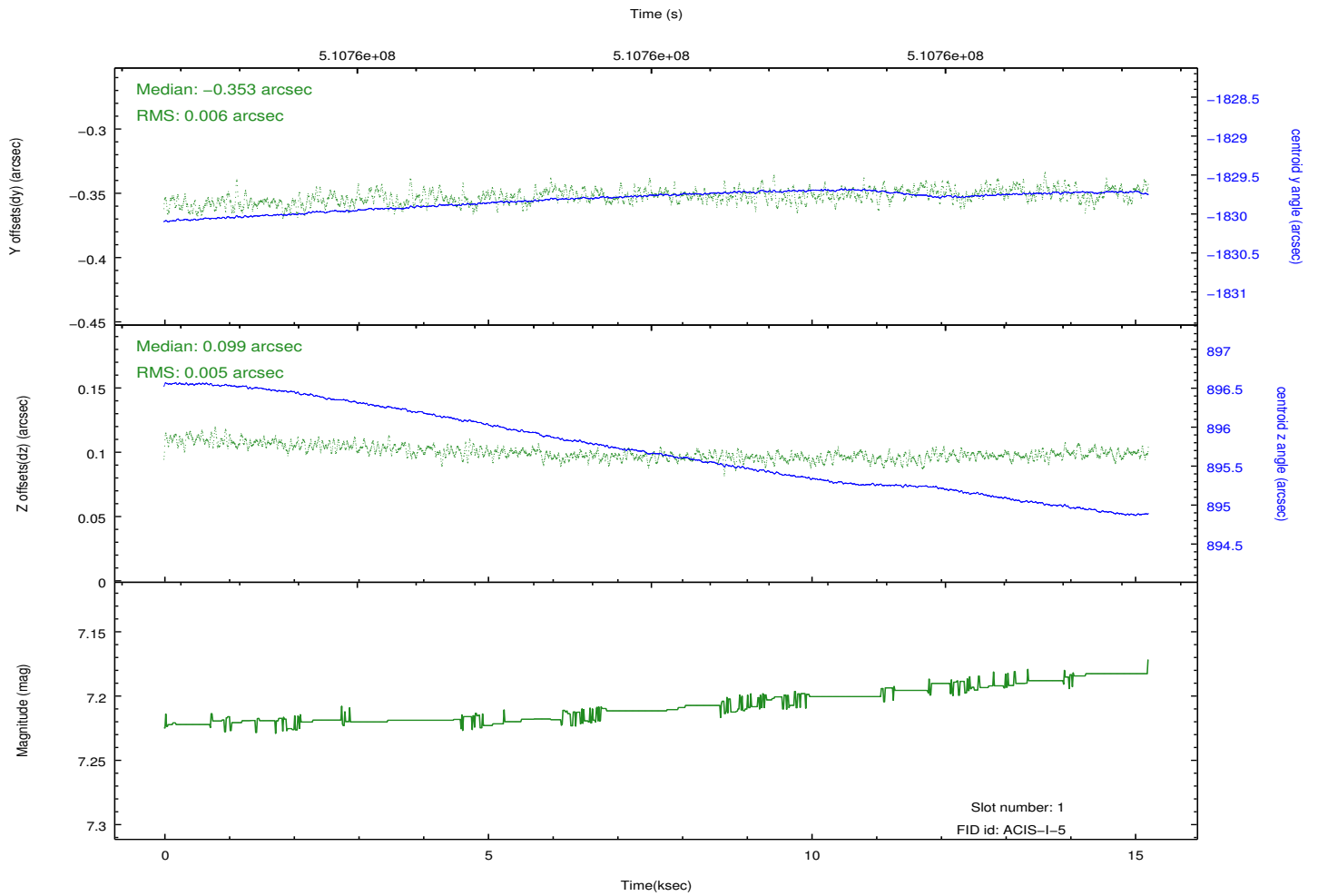
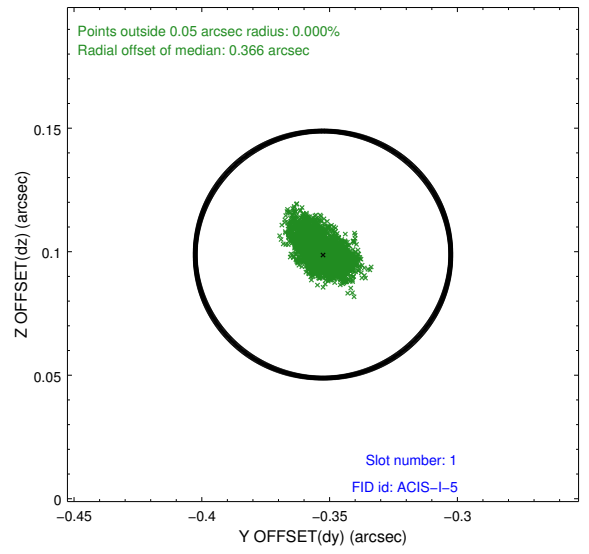
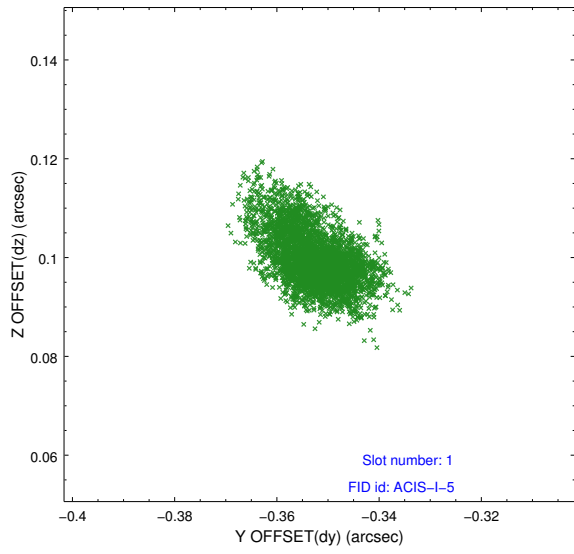


## 2.5 FID Slots

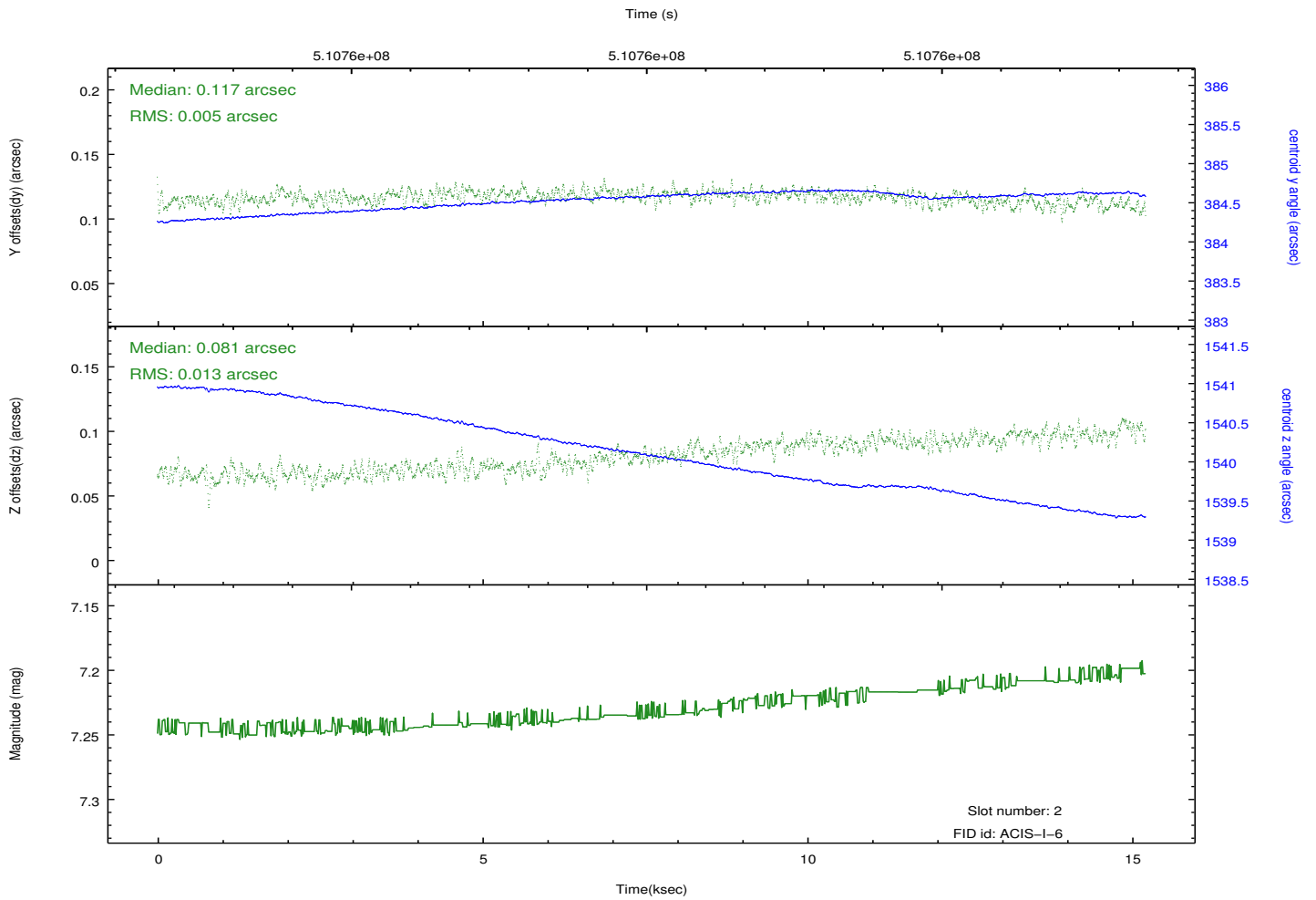
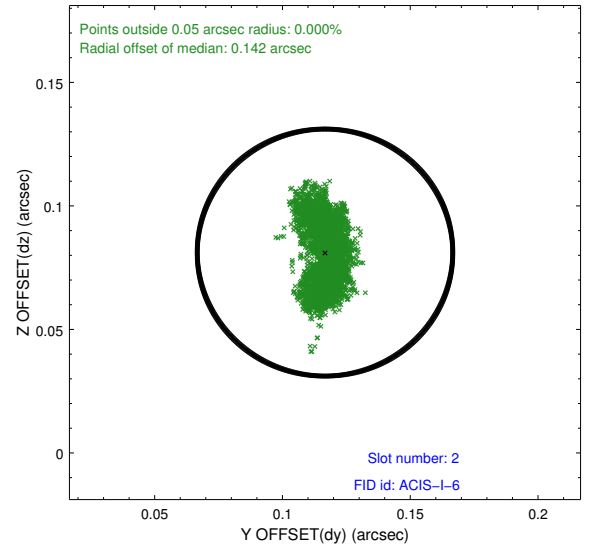
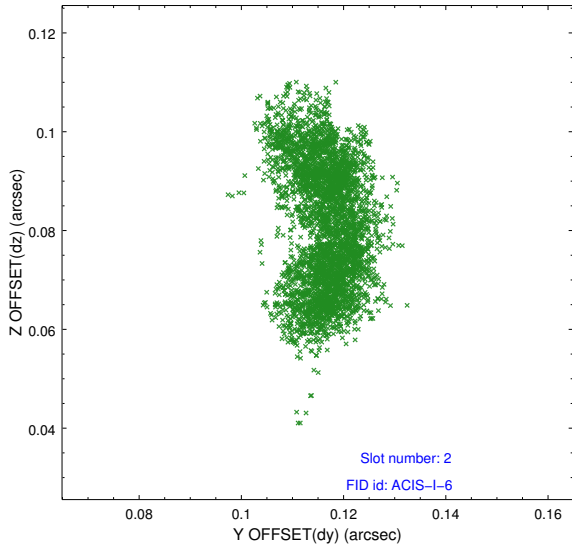
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2014.12.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	15.081412818849

## A.2 Comments

A spatial region of the original bias map for CCD = 2 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 2 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:  
(294.83462,54.29540), (294.83105,54.29670), (294.80354,54.27104), (294.80711,54.26975)

=====

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.