

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 20920 - L2 Version 1  
Chandra X-Ray Center

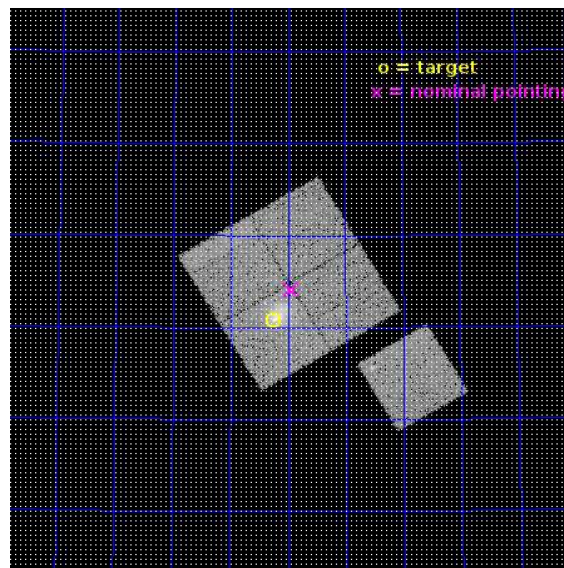
L2 Processing Date : May 9 2019

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# 1 Front

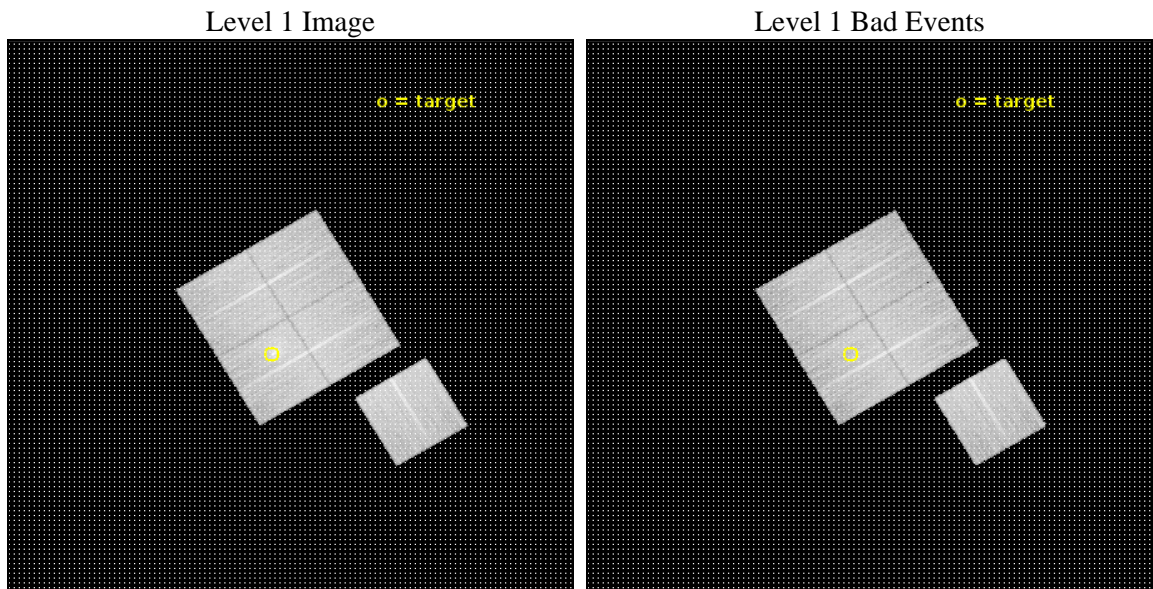
seq_num	801762	Sequence number
obs_id	20920	Observation id
title	Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146	Proposal title
observer	Helen Russell	Principal investigator
object	Abell 2146	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	239.06125	Observer's specified target RA [deg]
dec_targ	66.346917	Observer's specified target Dec [deg]
ra_nom	238.98495225684	Nominal RA [deg]
dec_nom	66.402086829898	Nominal Dec [deg]
roll_nom	149.27861096287	Nominal Roll [deg]
revision	1	Processing version of data
ontime	21169.818281889	Sum of GTIs [s]
livetime	20893.219021043	Livetime [s]
ontime0	21176.100162983	Sum of GTIs [s]
ontime1	21172.959202766	Sum of GTIs [s]
ontime2	21172.959192514	Sum of GTIs [s]
ontime3	21169.818281889	Sum of GTIs [s]
ontime6	21176.100162983	Sum of GTIs [s]
l2events	85023	Number of level 2 events



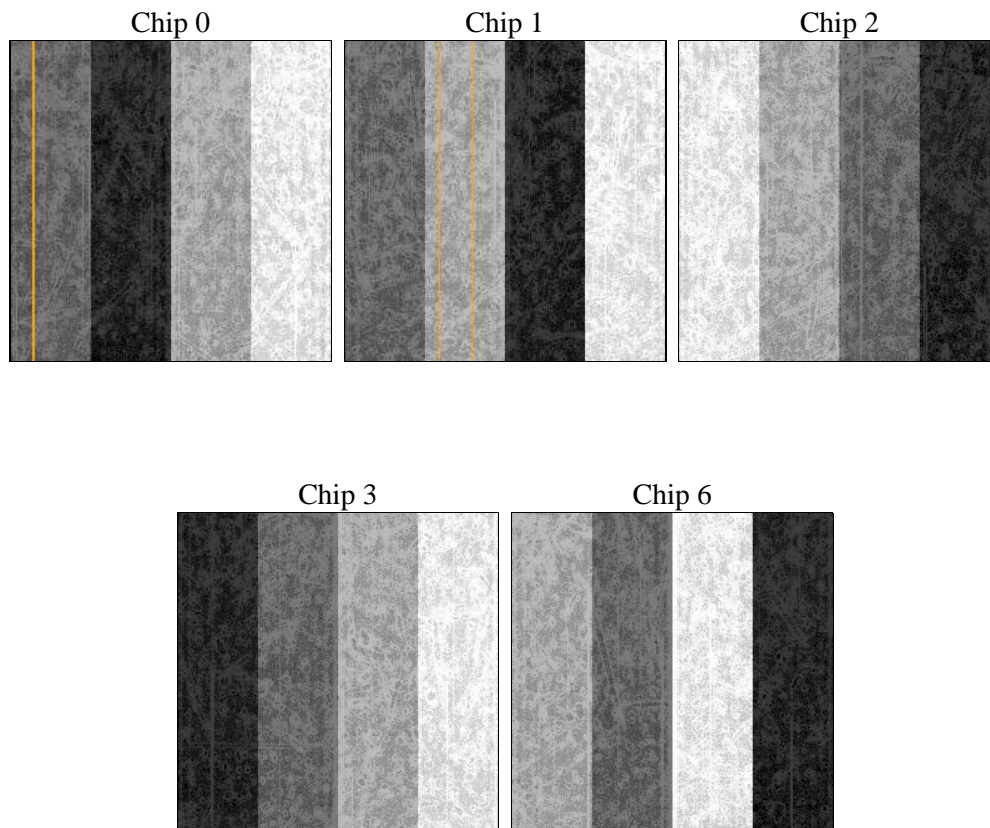
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	21108.303000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	21169.818281889	Sum of GTIs [s]
caldbver	4.8.2	&#160	ontime0	21176.100162983	Sum of GTIs [s]
date	2019-05-09T15:35:19	Date and time of file creation	ontime1	21172.959202766	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	21172.959192514	Sum of GTIs [s]
			ontime3	21169.818281889	Sum of GTIs [s]
			ontime6	21176.100162983	Sum of GTIs [s]
			l1events	785151	Number of level 1 events

### 2.1.4 Events

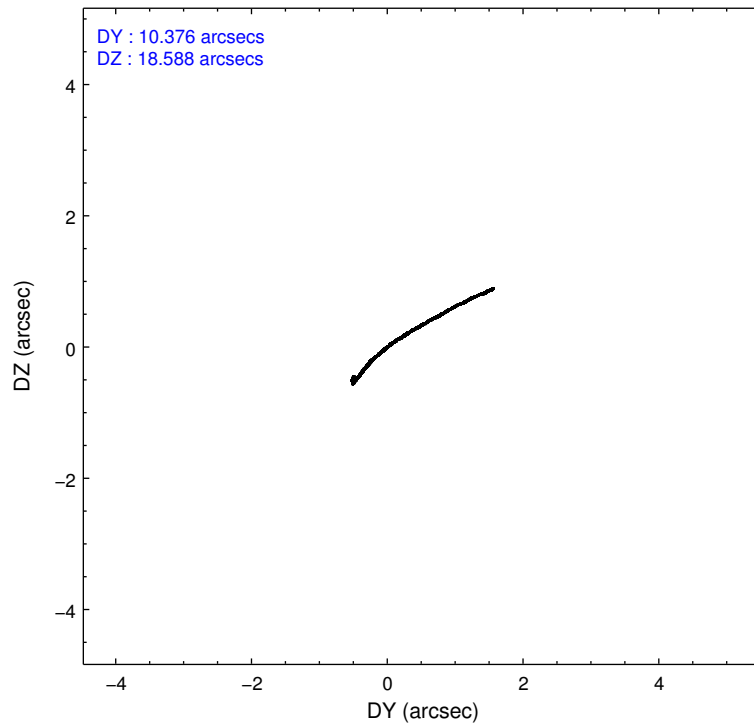
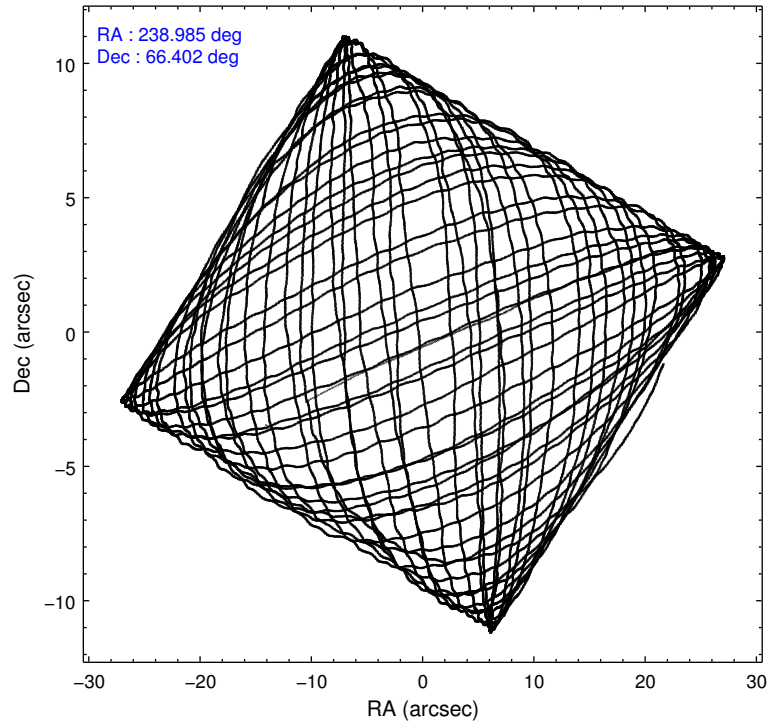
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	146546	151211	160740	165969	160685
rejected events	128449	131184	143651	139724	142826
rejected %	87%	86%	89%	84%	88%

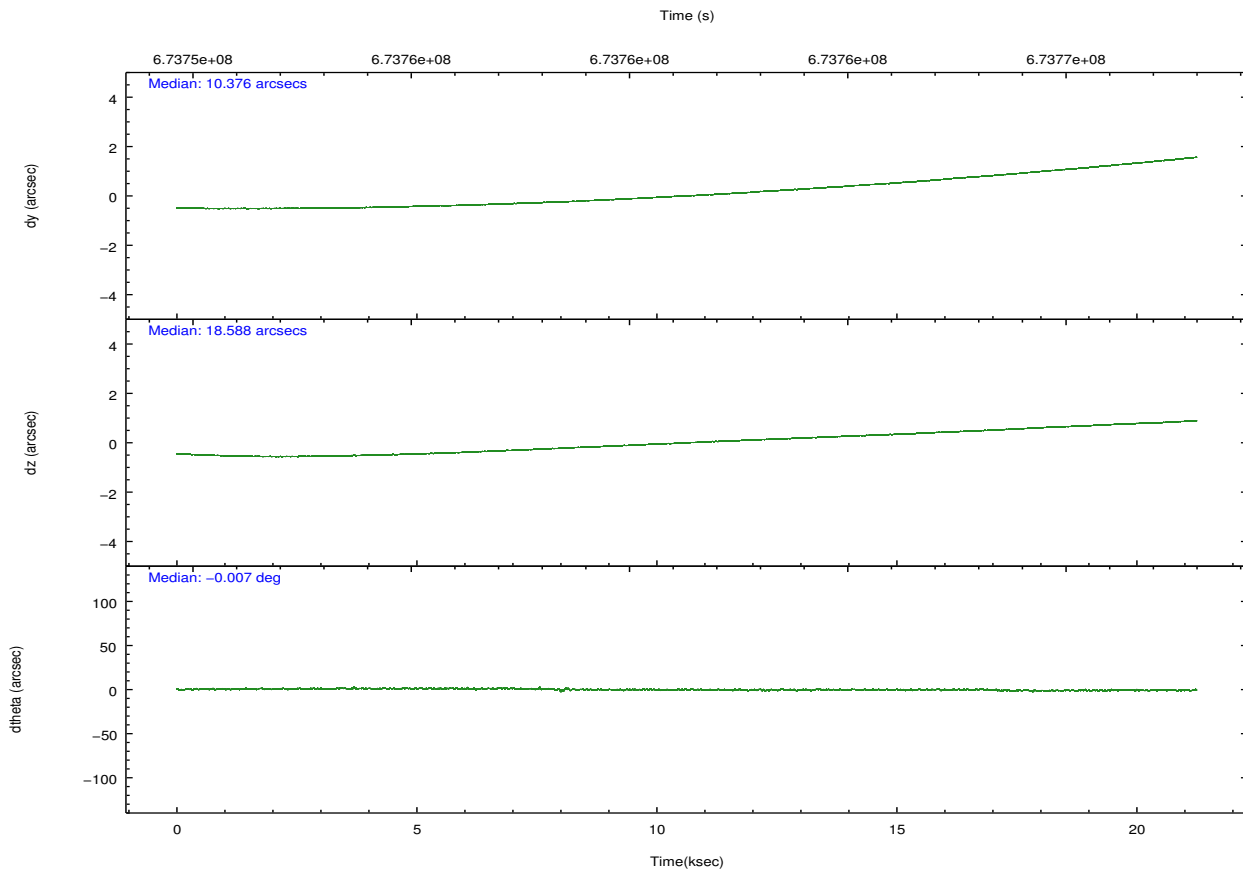
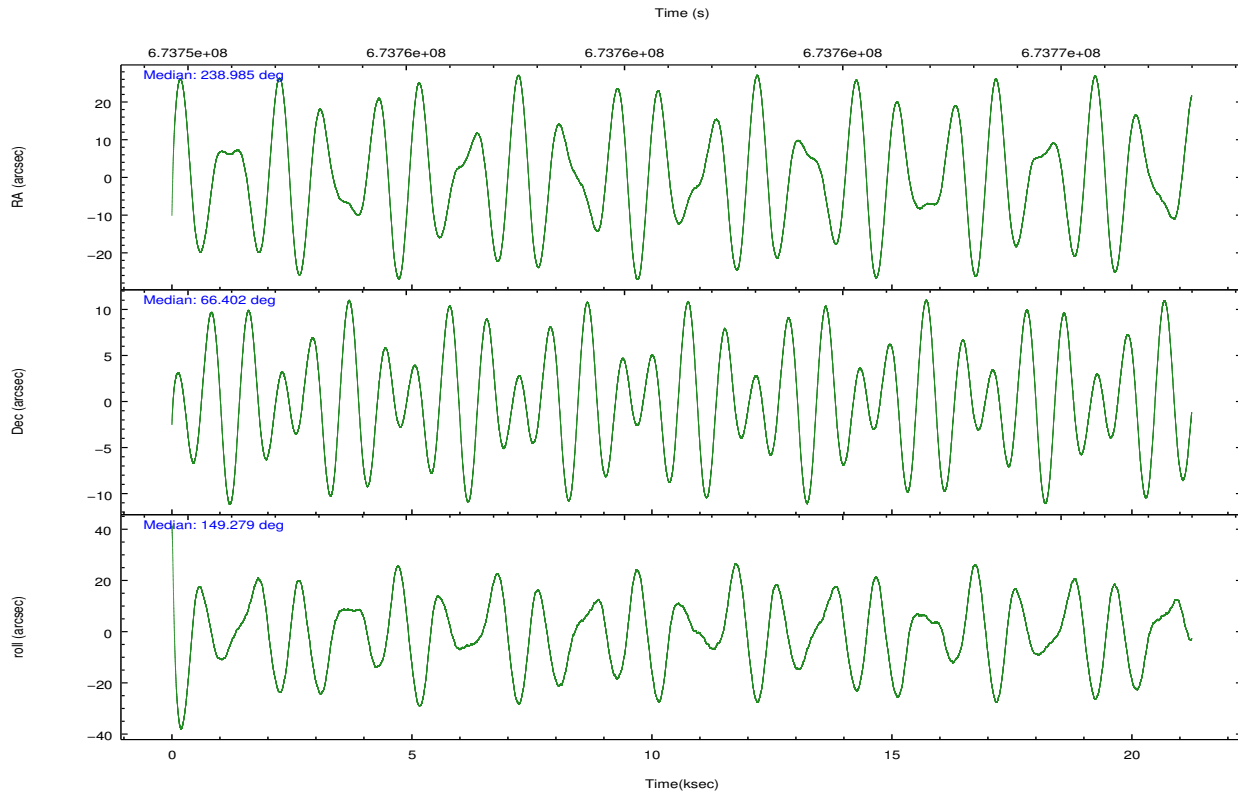
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	6144	6406	5950	13586	5776
	4%	4%	3%	8%	3%
grade 1 events	73	76	90	134	81
	0%	0%	0%	0%	0%
grade 2 events	4545	5441	4200	4600	4369
	3%	3%	2%	2%	2%
grade 3 events	1792	1836	1670	2119	1727
	1%	1%	1%	1%	1%
grade 4 events	1710	1798	1752	2053	1704
	1%	1%	1%	1%	1%
grade 5 events	6935	7053	6342	7507	7181
	4%	4%	3%	4%	4%
grade 6 events	3909	4553	3521	3897	4289
	2%	3%	2%	2%	2%
grade 7 events	121438	124048	137215	132073	135558
	82%	82%	85%	79%	84%

## 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	239.053856	238.9849522568384	CCD I2 on	Y	Y
[deg] Pointing Dec	66.401837	66.4020868298978	CCD I3 on	Y	Y
[deg] Pointing Roll	149.006782	149.2786109628659	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	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	673750841.184000	673749703.24857	CCD S5 on	N	N
Observation start date	2019-05-09T00:59:32	2019-05-09T00:41:43	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	673771949.184000	673772815.97496	On-chip summing requested	N	N
Observation end date	2019-05-09T06:51:20	2019-05-09T07:06:55	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect





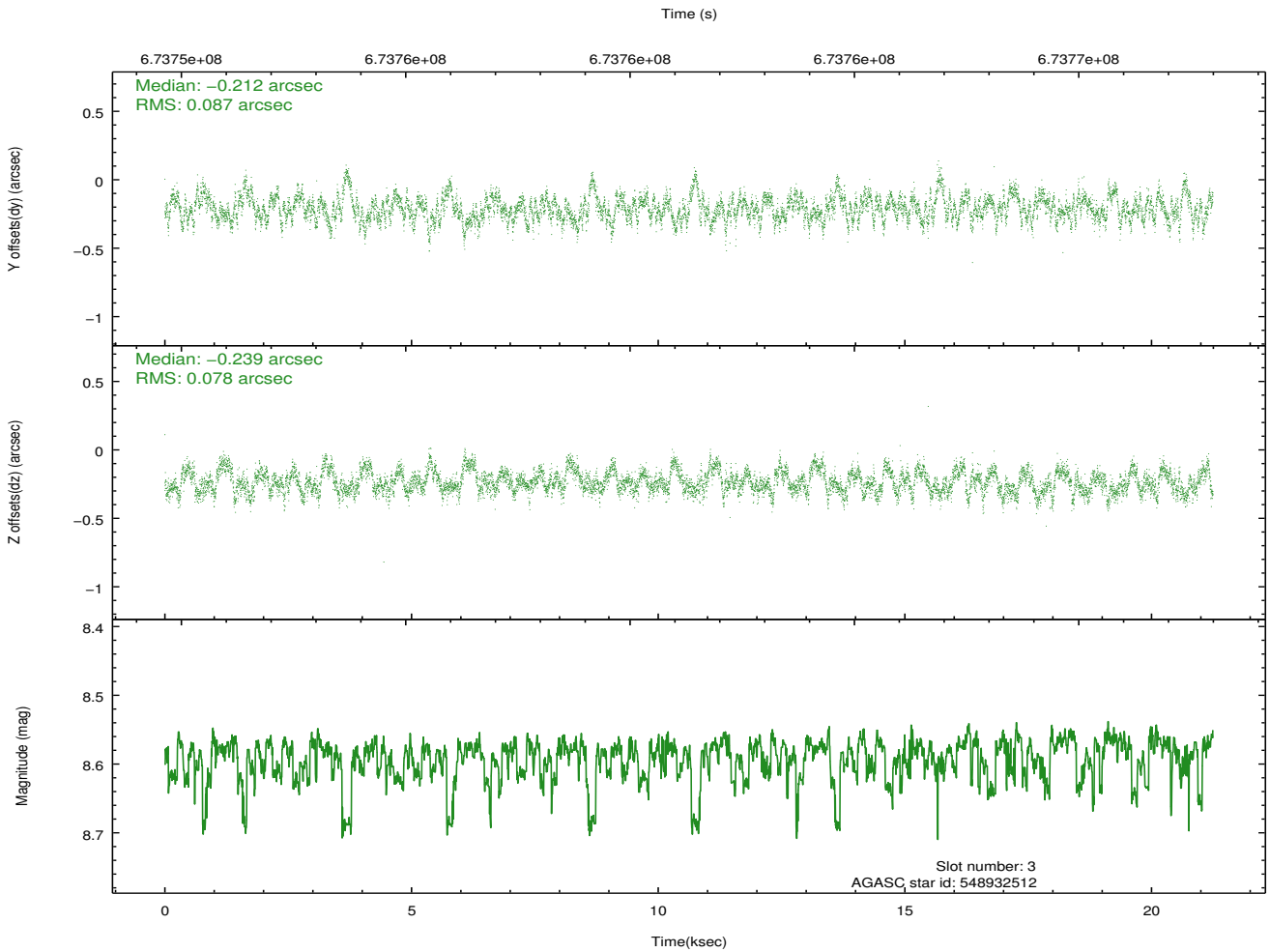
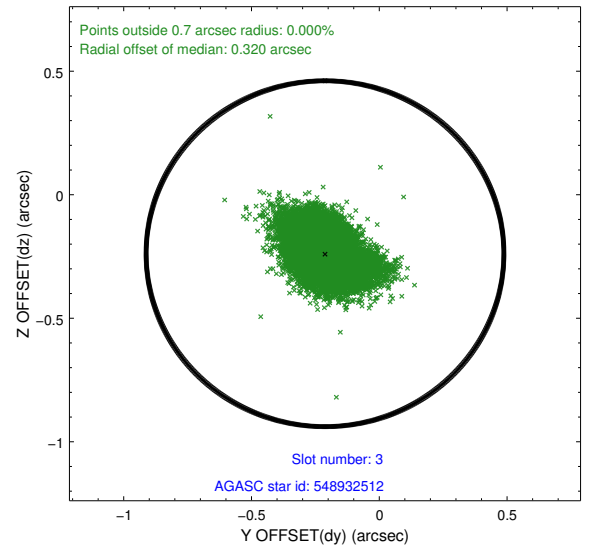
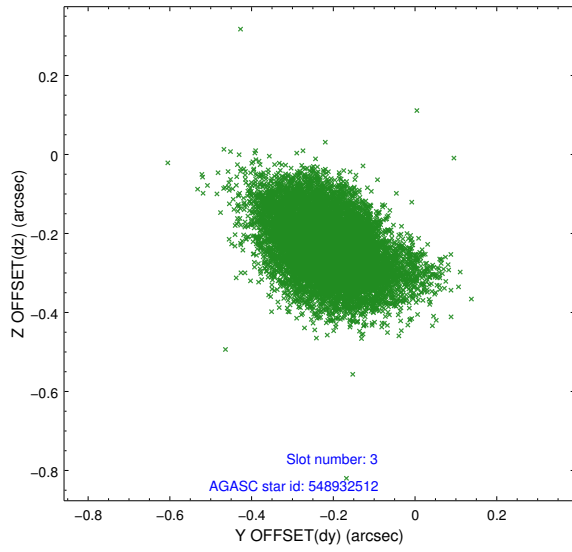
### Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-I-1	7.24	5182	1.000	0.077	-0.039	0.017	0.026	0.000000	0.000000	929.18	-842
1	FID		ACIS-I-5	7.21	5181	1.000	-0.447	0.013	0.012	0.019	0.000000	0.000000	-1819.52	1054
2	FID		ACIS-I-6	7.21	5181	1.000	0.277	0.099	0.017	0.025	0.000000	0.000000	394.52	1699
3	GUIDE	used	548932512	8.59	10361	1.000	-0.212	-0.239	0.124	0.202	239.727627	66.054972	-1483.85	558
4	GUIDE	used	548933960	8.44	10355	1.000	-0.336	-0.455	0.122	0.195	237.671184	66.428675	1766.71	924
5	GUIDE	used	548937184	9.82	10323	1.000	-0.107	0.024	0.279	0.463	238.771821	66.565432	650.23	-297
6	GUIDE	used	549849072	9.15	10354	1.000	0.335	0.189	0.172	0.304	240.420863	66.802816	-906.49	-2253
7	GUIDE	used	549850840	9.30	10344	1.000	0.314	0.462	0.179	0.297	241.038865	66.468628	-2298.47	-1713

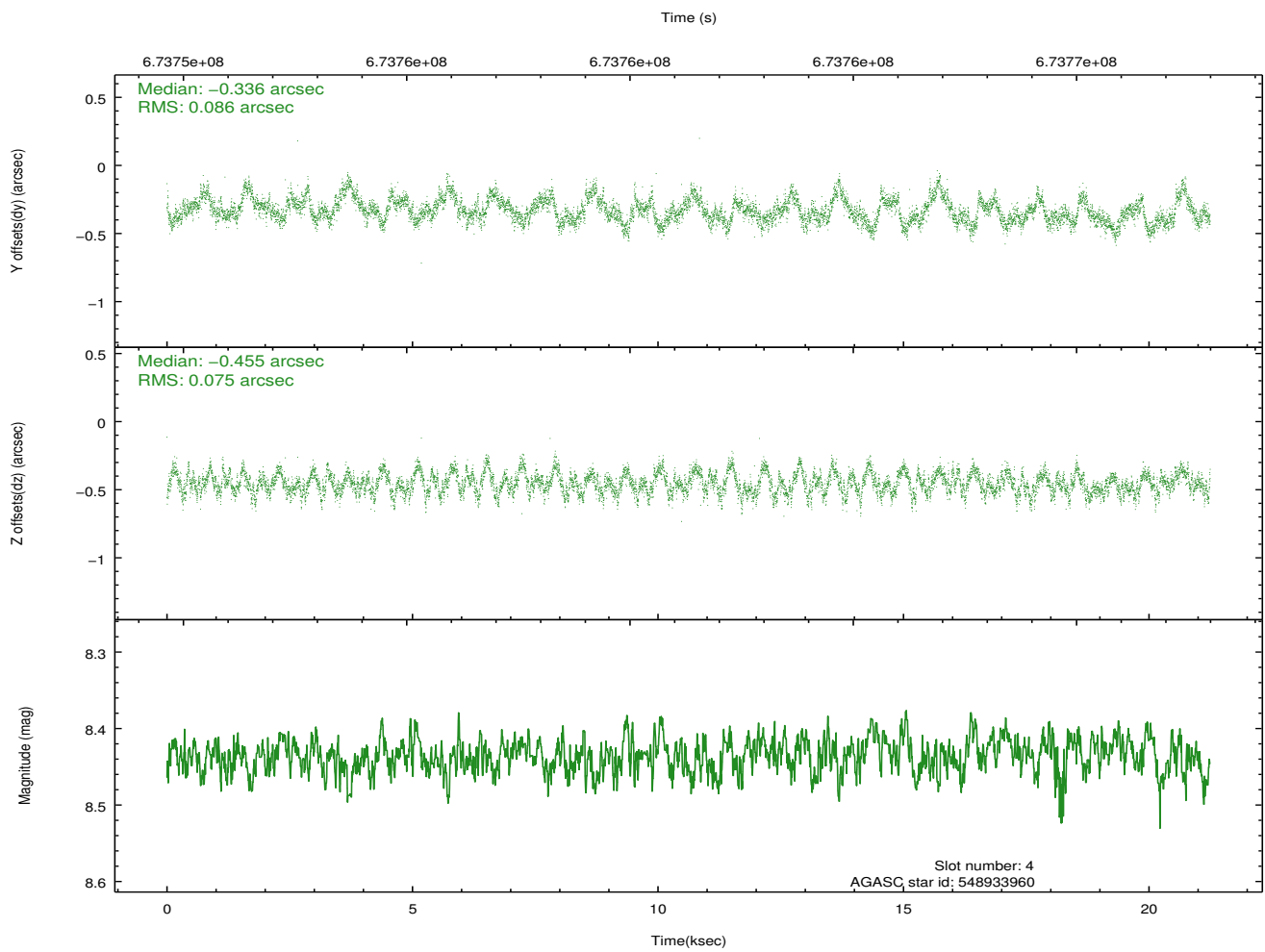
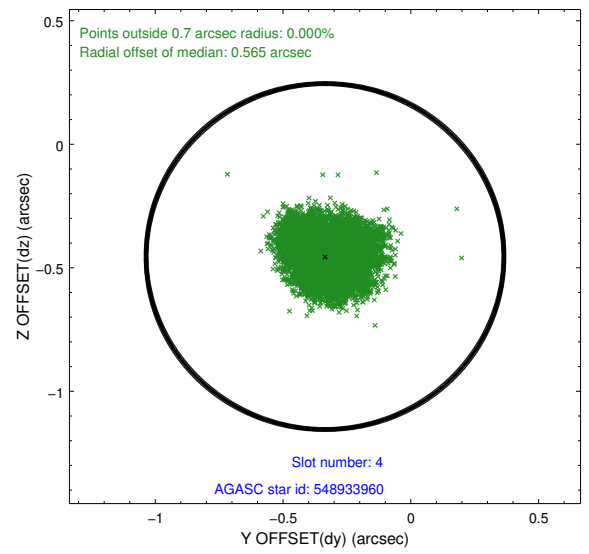
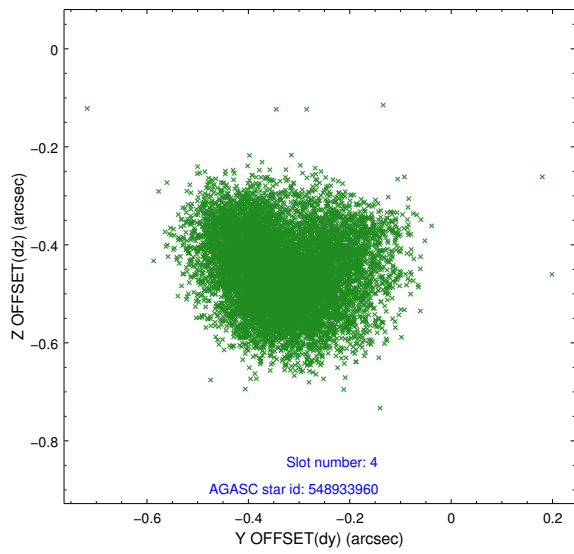
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## 2.4 Star Slots

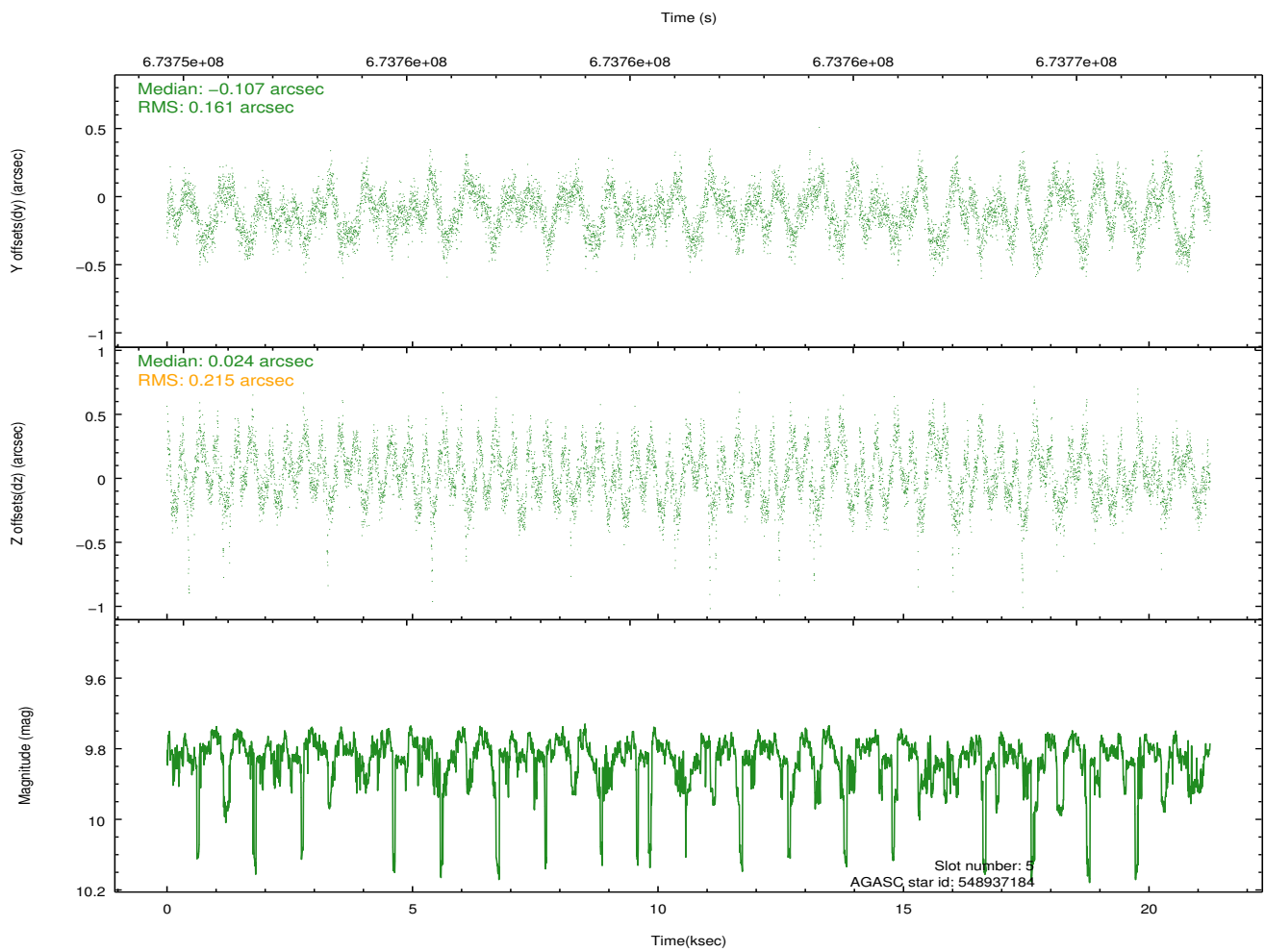
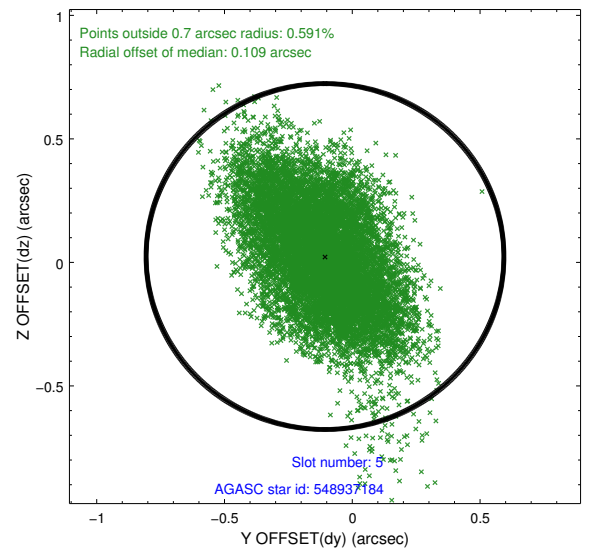
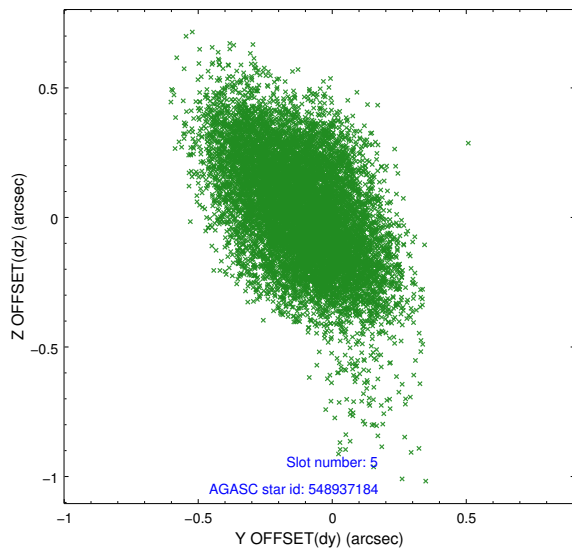
### 2.4.1 Slot 3



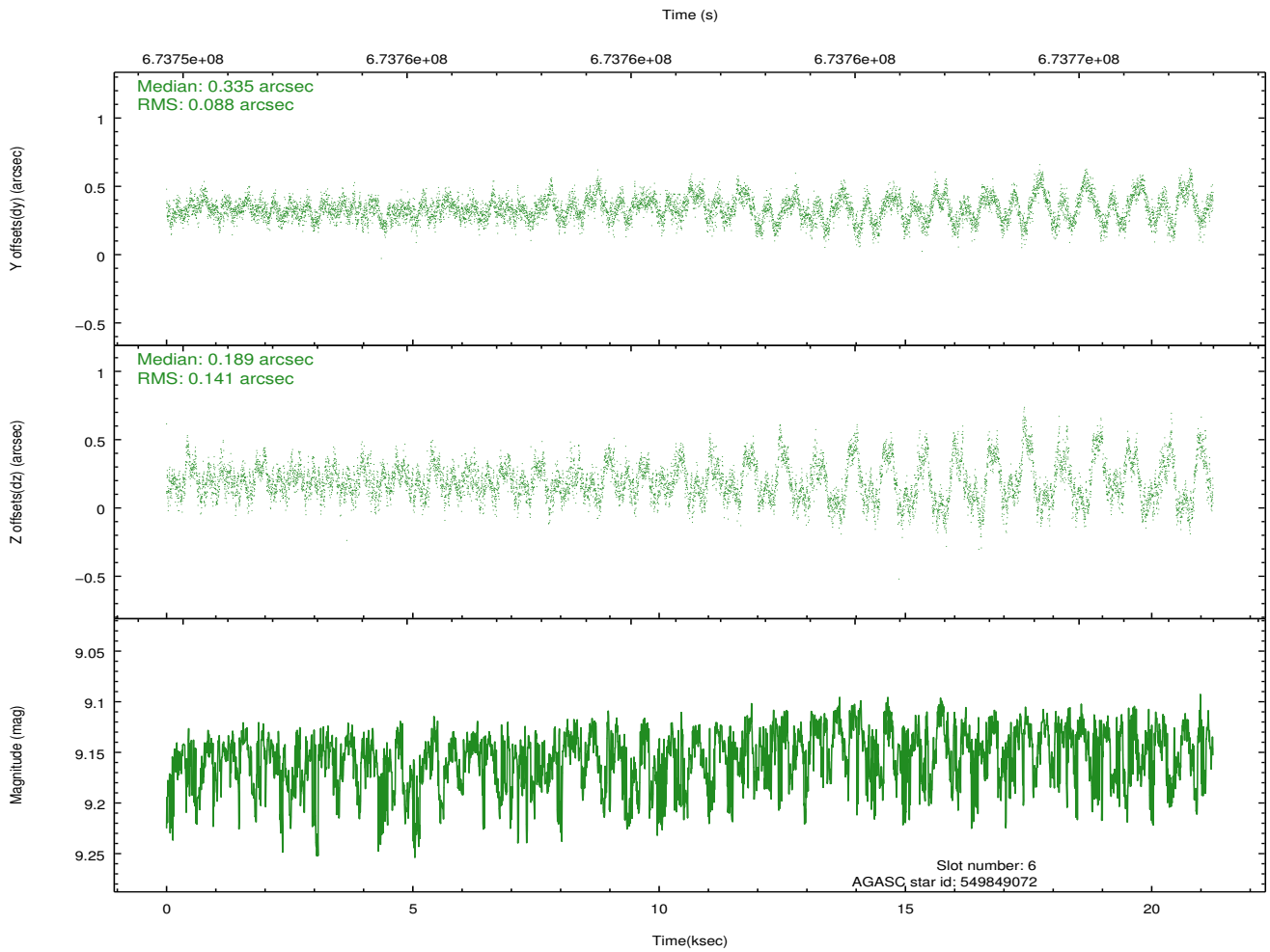
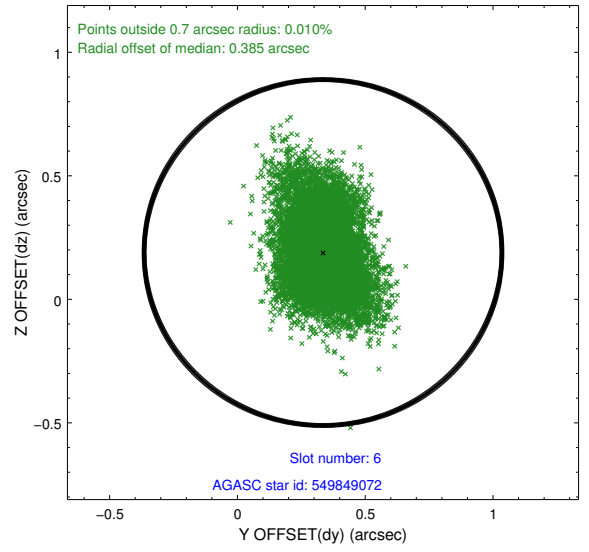
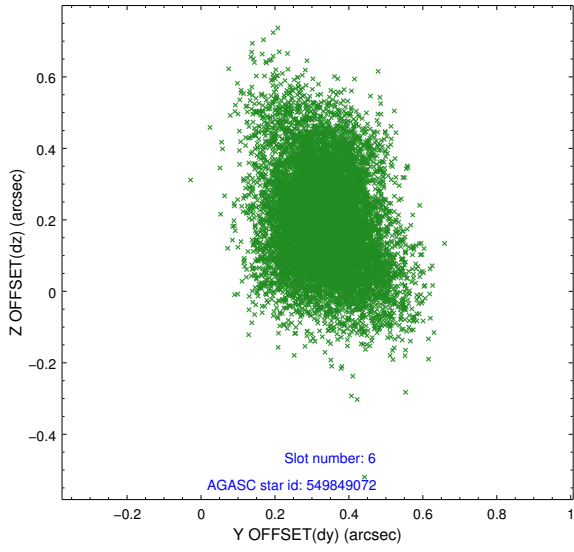
## 2.4.2 Slot 4



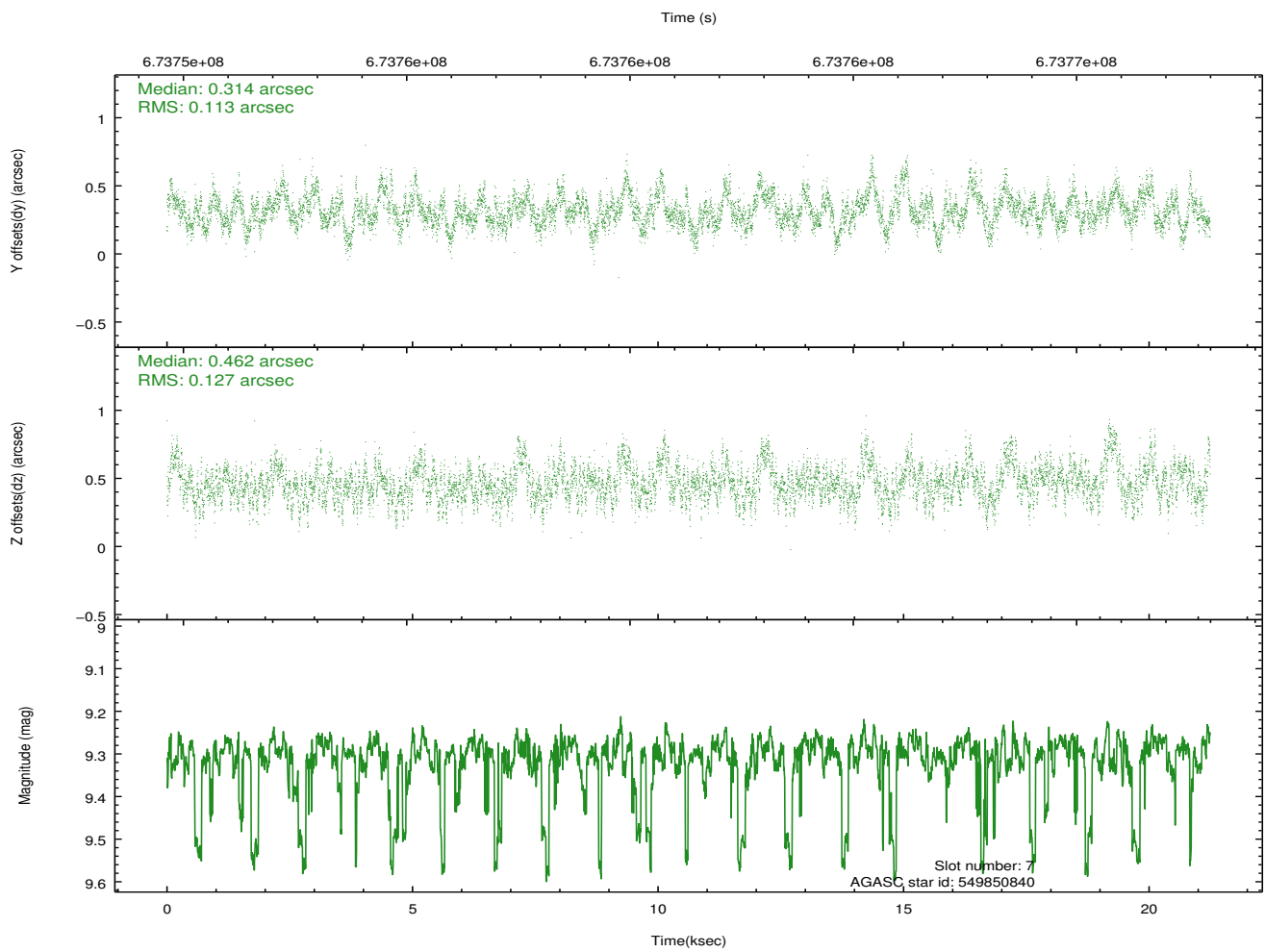
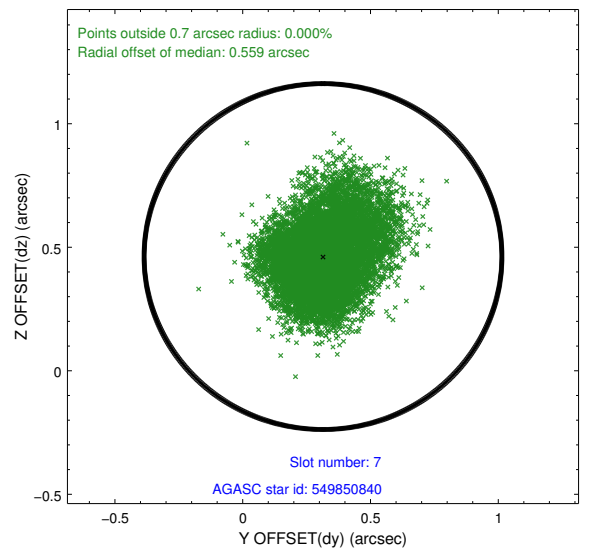
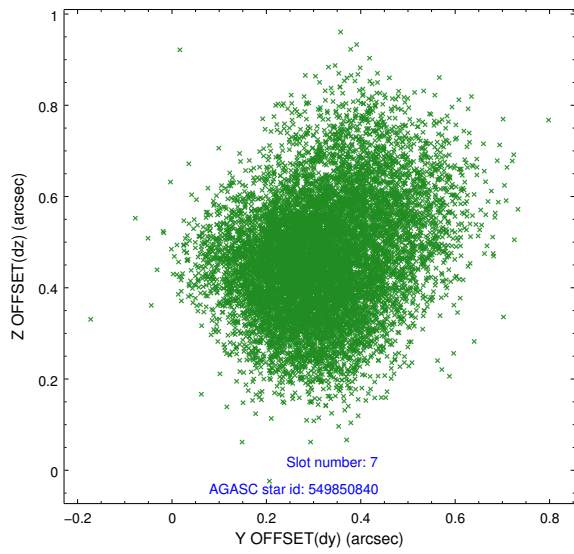
### 2.4.3 Slot 5



### 2.4.4 Slot 6

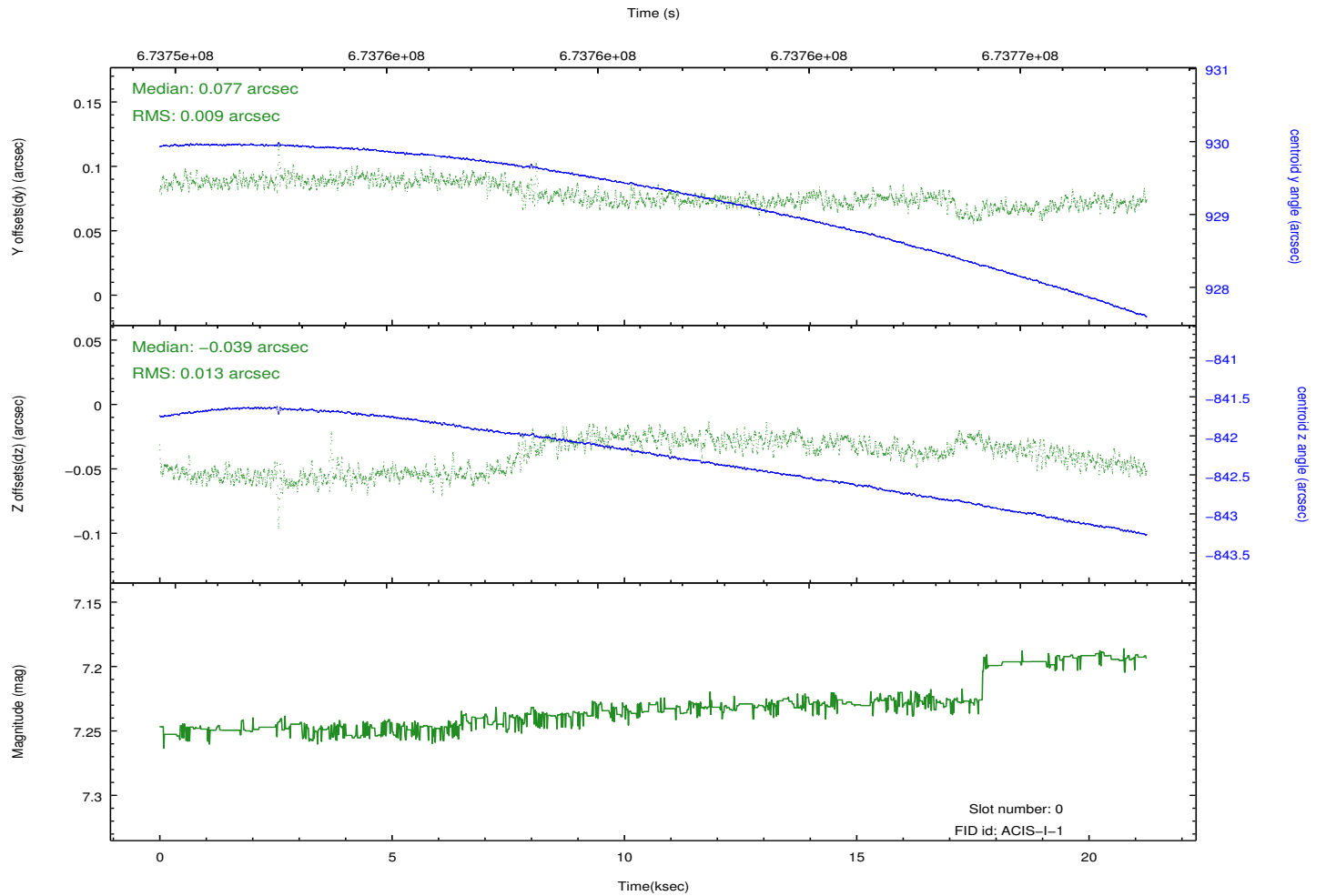
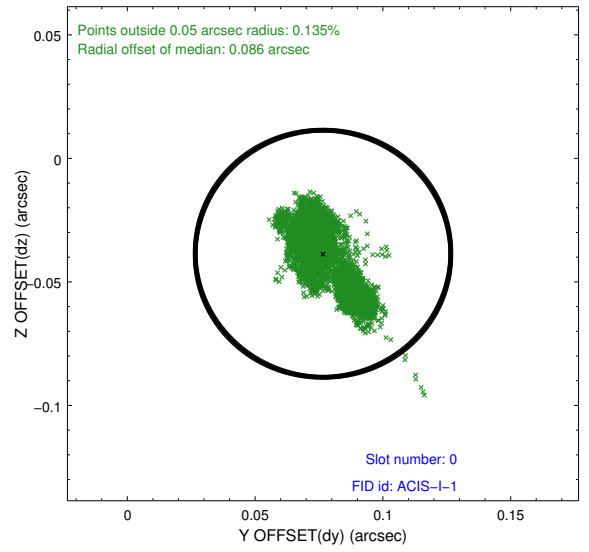
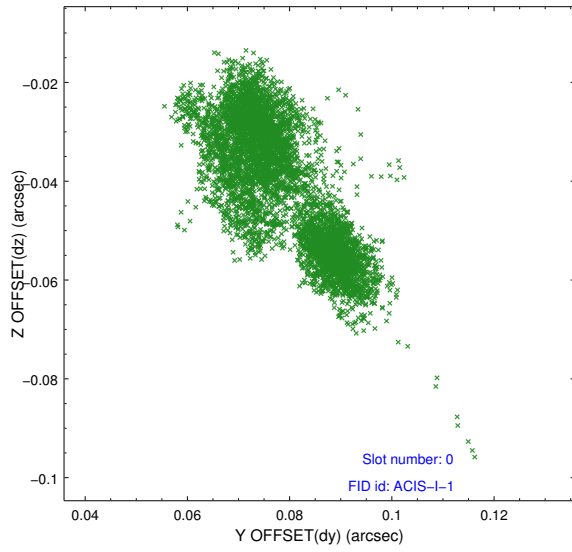


## 2.4.5 Slot 7

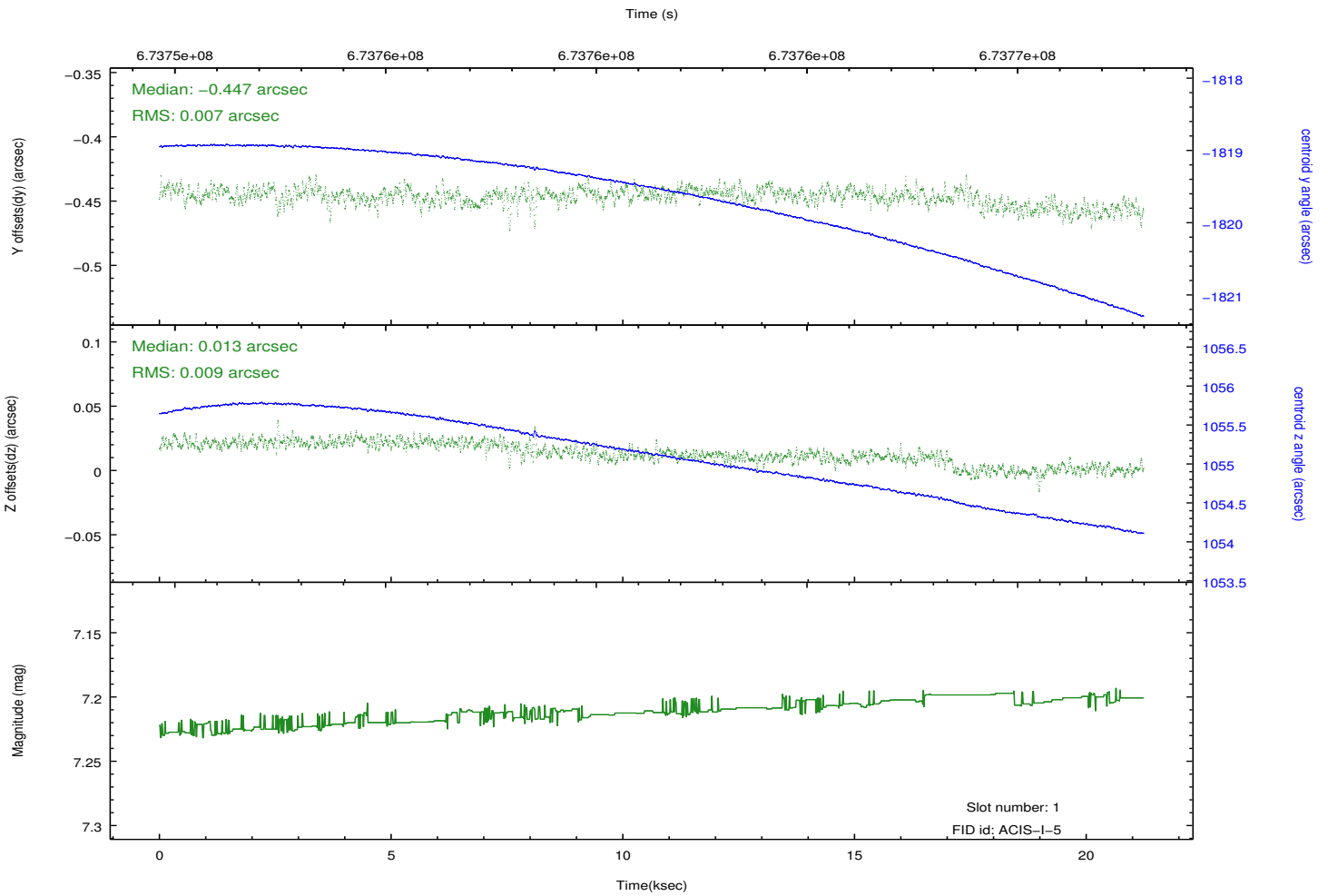
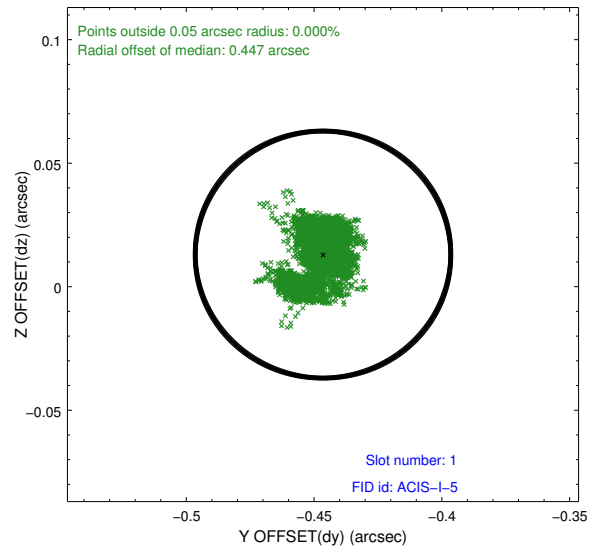
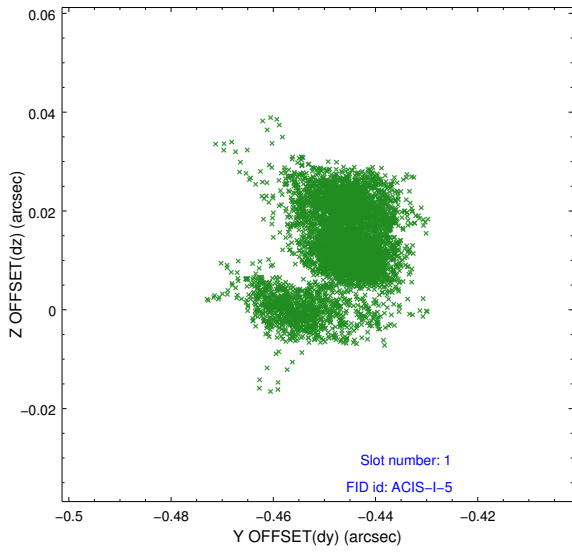


## 2.5 FID Slots

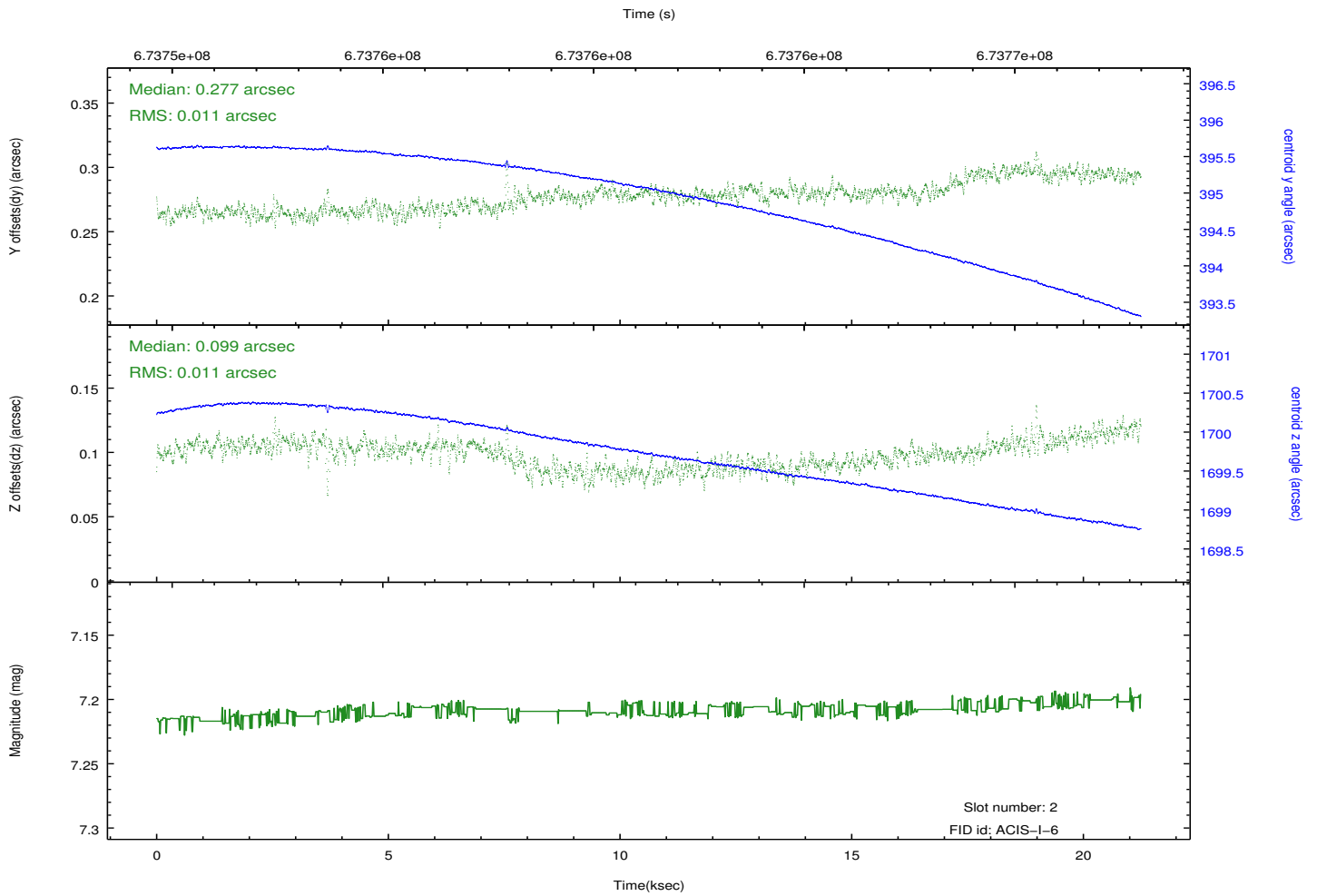
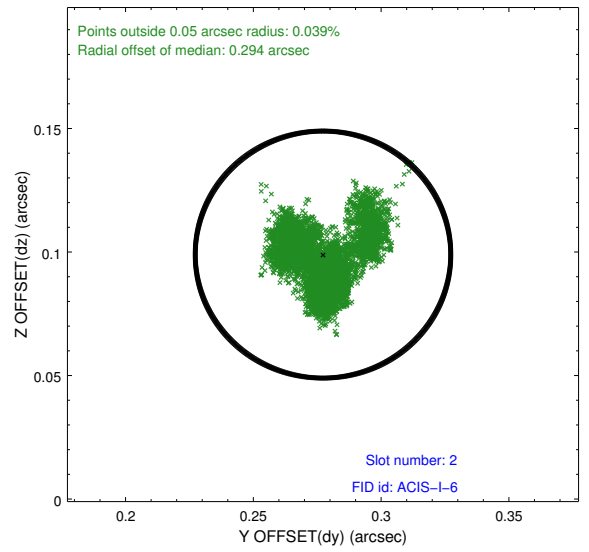
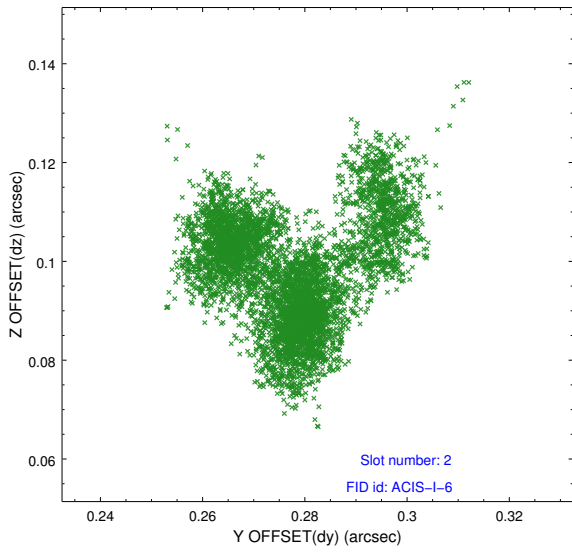
### 2.5.1 Slot 0



## 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)	2019.05.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	21.169818281889

### **A.2 Comments**