

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 22049 - L2 Version 1  
Chandra X-Ray Center

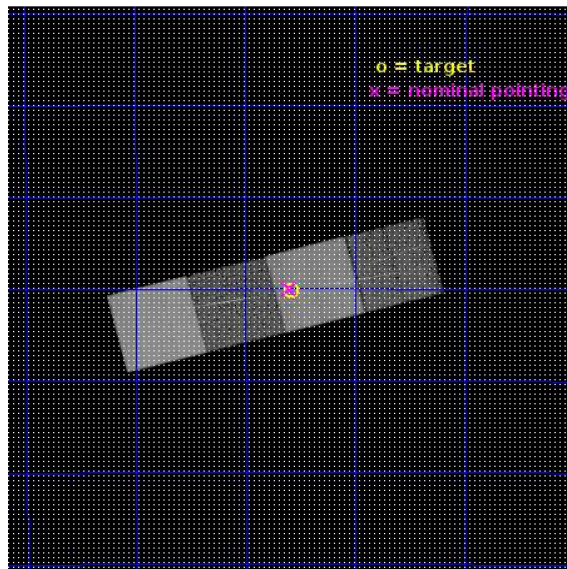
L2 Processing Date : Feb 1 2019

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# 1 Front

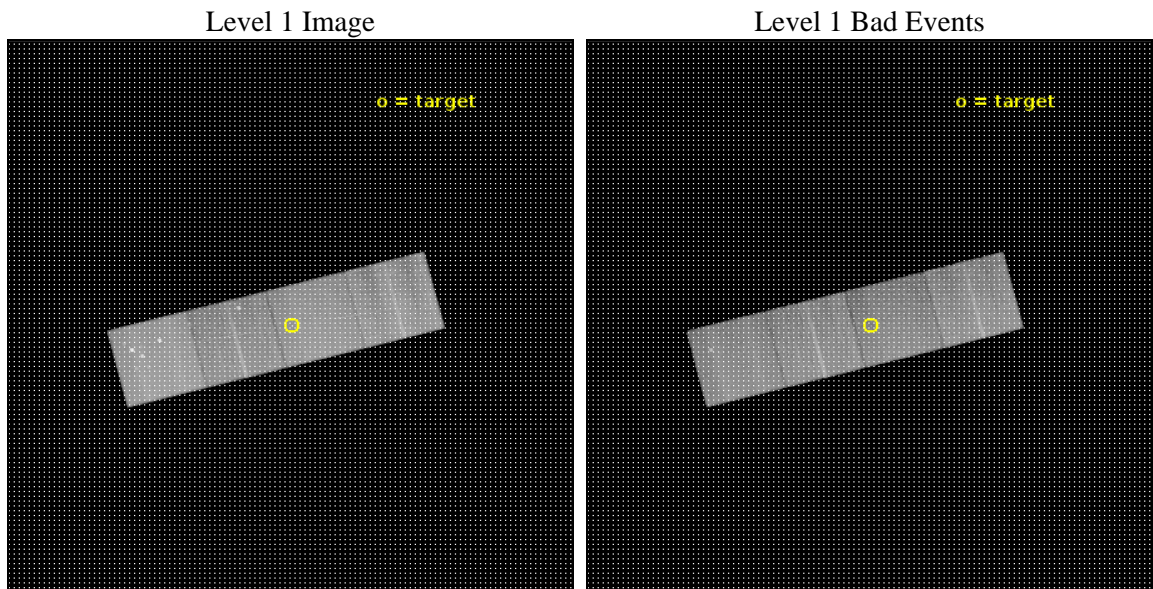
seq_num	201176	Sequence number
obs_id	22049	Observation id
title	Legacy HETG Spectrum of a Massive Star: zeta Pup	Proposal title
observer	Wayne Waldron	Principal investigator
object	zeta Pup	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	120.895833	Observer's specified target RA [deg]
dec_targ	-40.003139	Observer's specified target Dec [deg]
ra_nom	120.89988303425	Nominal RA [deg]
dec_nom	-40.000126637173	Nominal Dec [deg]
roll_nom	345.36994892256	Nominal Roll [deg]
revision	1	Processing version of data
ontime	28061.200215936	Sum of GTIs [s]
livetime	27694.559976759	Livetime [s]
ontime5	28061.200215936	Sum of GTIs [s]
ontime6	28058.059155703	Sum of GTIs [s]
ontime7	28061.200215936	Sum of GTIs [s]
ontime8	28058.059165835	Sum of GTIs [s]
l2events	317460	Number of level 2 events



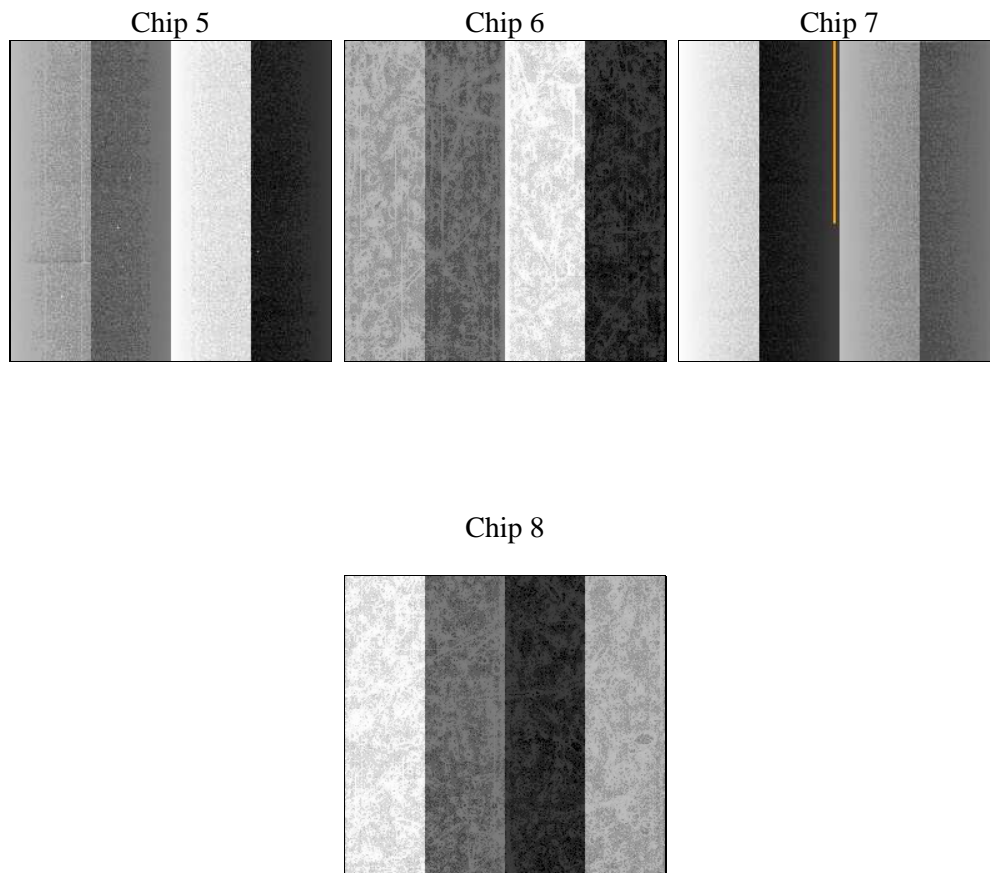
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	28000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	28061.200215936	Sum of GTIs [s]
caldsver	4.8.2	&#160	ontime5	28061.200215936	Sum of GTIs [s]
date	2019-02-01T20:40:57	Date and time of file creation	ontime6	28058.059155703	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	28061.200215936	Sum of GTIs [s]
			ontime8	28058.059165835	Sum of GTIs [s]
			l1events	1144249	Number of level 1 events
			tgmethod	TGDETECT	Method used to create src1a file
			zo_pos	(4120.08, 4074.51)	src1a sky pixel position

### 2.1.4 Events

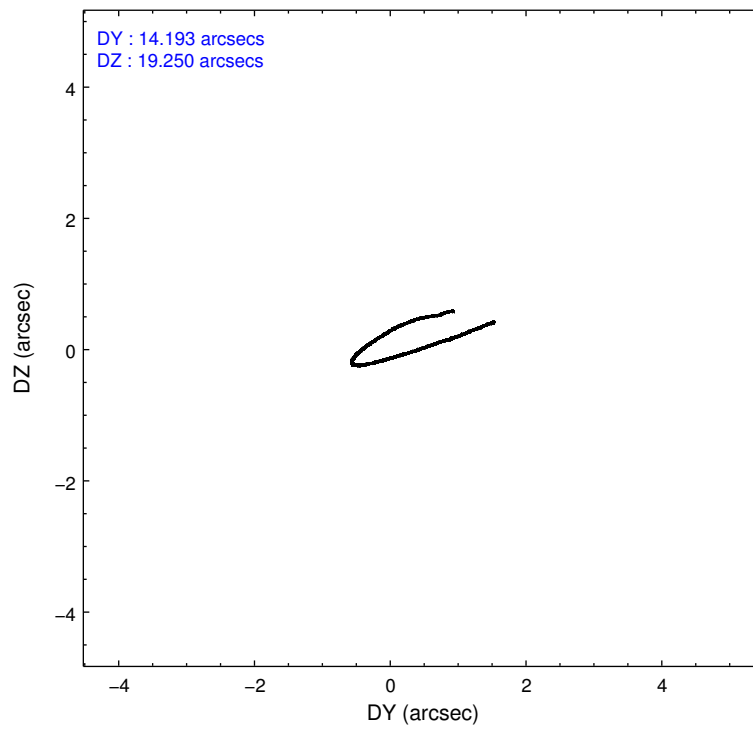
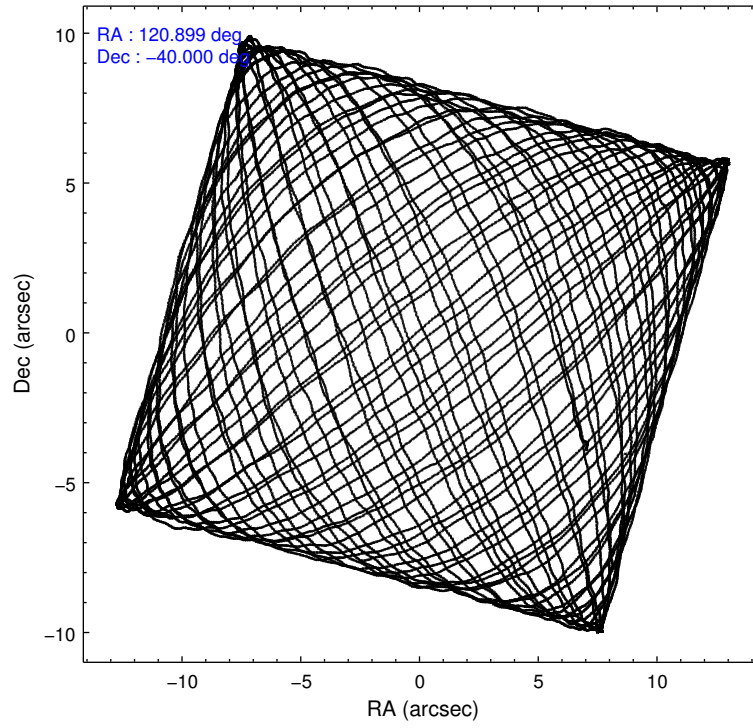
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	360097	226402	277018	280732
rejected events	179894	198304	156780	210067
rejected %	49%	87%	56%	74%

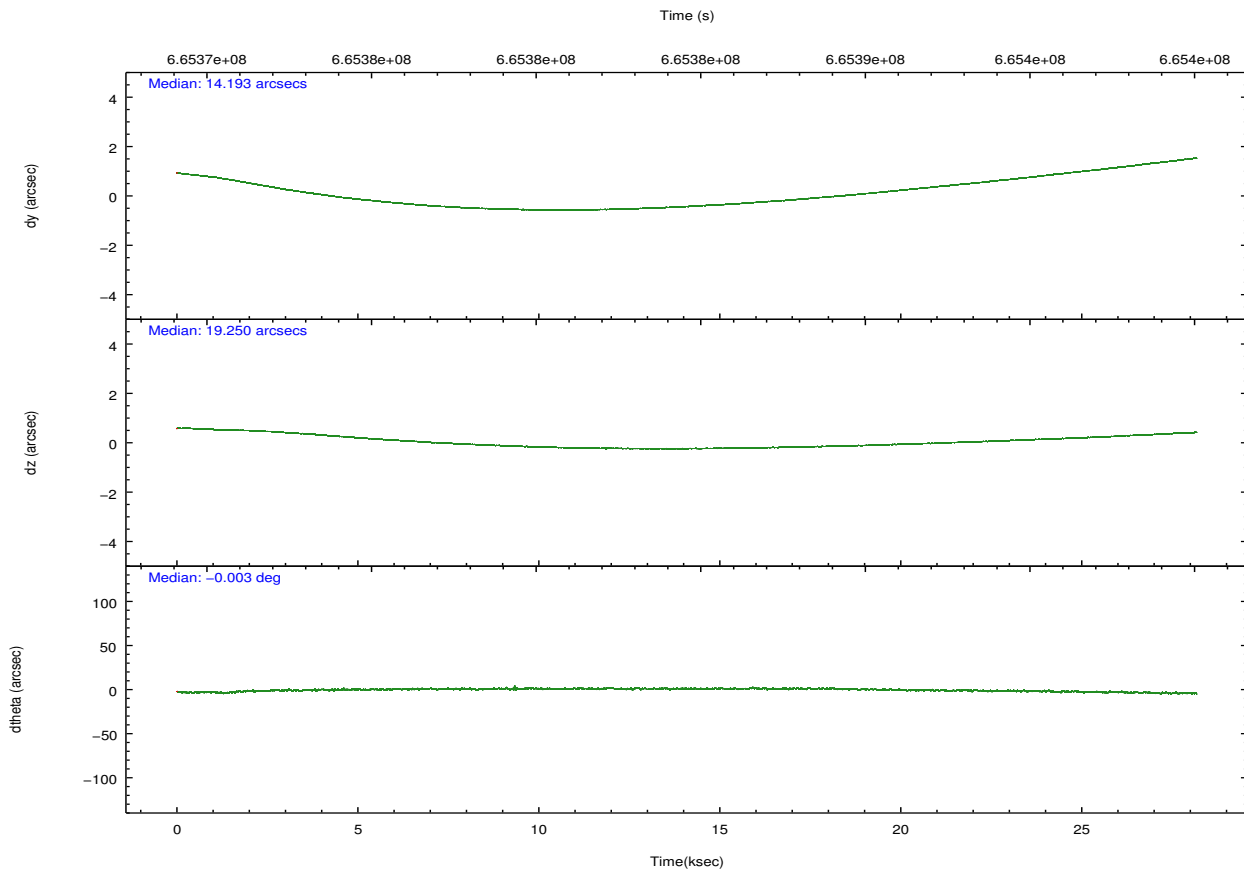
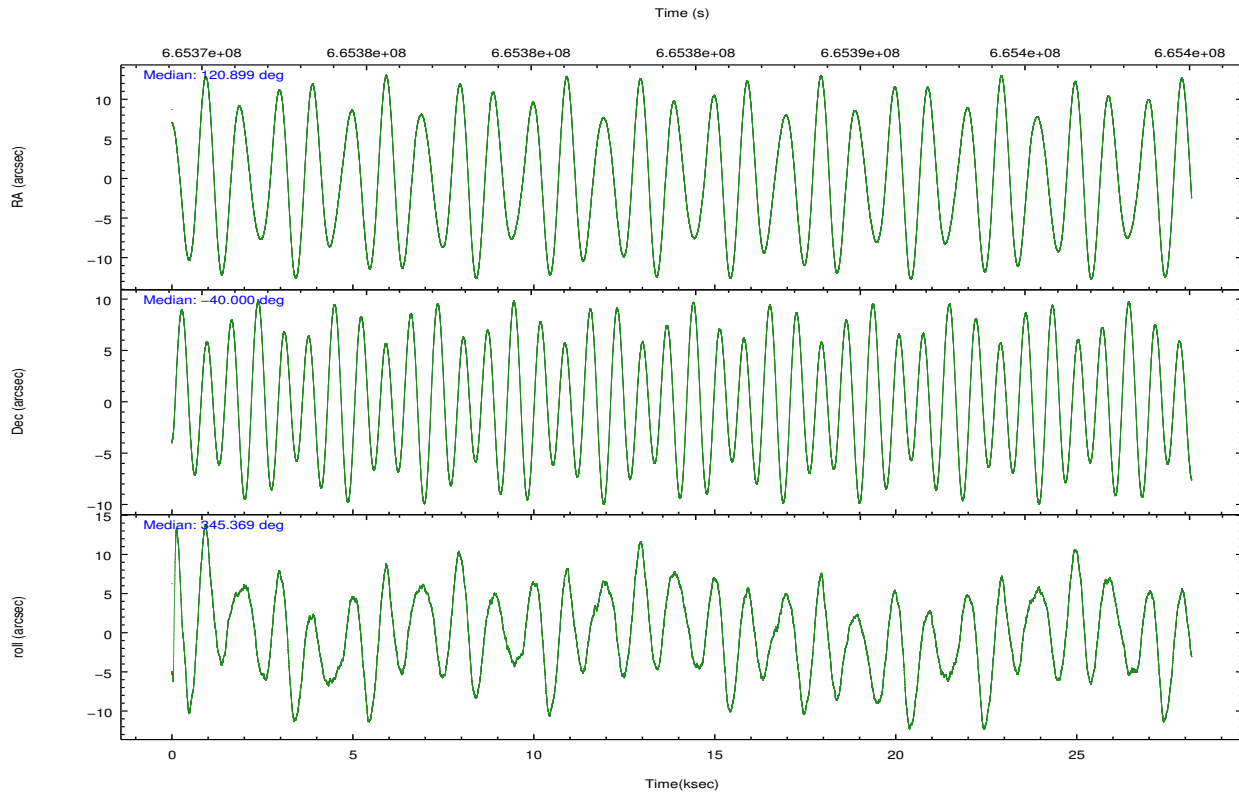
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	23759	10768	10561	19101
	6%	4%	3%	6%
grade 1 events	2431	139	397	194
	0%	0%	0%	0%
grade 2 events	55386	6648	25185	17406
	15%	2%	9%	6%
grade 3 events	5069	2068	9539	7019
	1%	0%	3%	2%
grade 4 events	4836	2061	9212	6647
	1%	0%	3%	2%
grade 5 events	21558	9034	26553	14208
	5%	3%	9%	5%
grade 6 events	91170	6557	65758	20496
	25%	2%	23%	7%
grade 7 events	155888	189127	129813	195661
	43%	83%	46%	69%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	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	120.865451	120.8998830342453	CCD I2 on	N	N
[deg] Pointing Dec	-40.007748	-40.00012663717317	CCD I3 on	N	N
[deg] Pointing Roll	345.191195	345.3699489225634	CCD S0 on	O2	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1400660498719	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.00754346686406393	CCD S4 on	Y	Y
[s] Observation start time (MET)	665370648.184000	665369726.58479	CCD S5 on	O1	N
Observation start date	2019-02-01T01:09:39	2019-02-01T00:55:26	Number of optional ACIS chips dropped	2	2
[s] Observation end time (MET)	665398648.184000	665399331.6615601	On-chip summing requested	N	N
Observation end date	2019-02-01T08:56:19	2019-02-01T09:08:51	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect





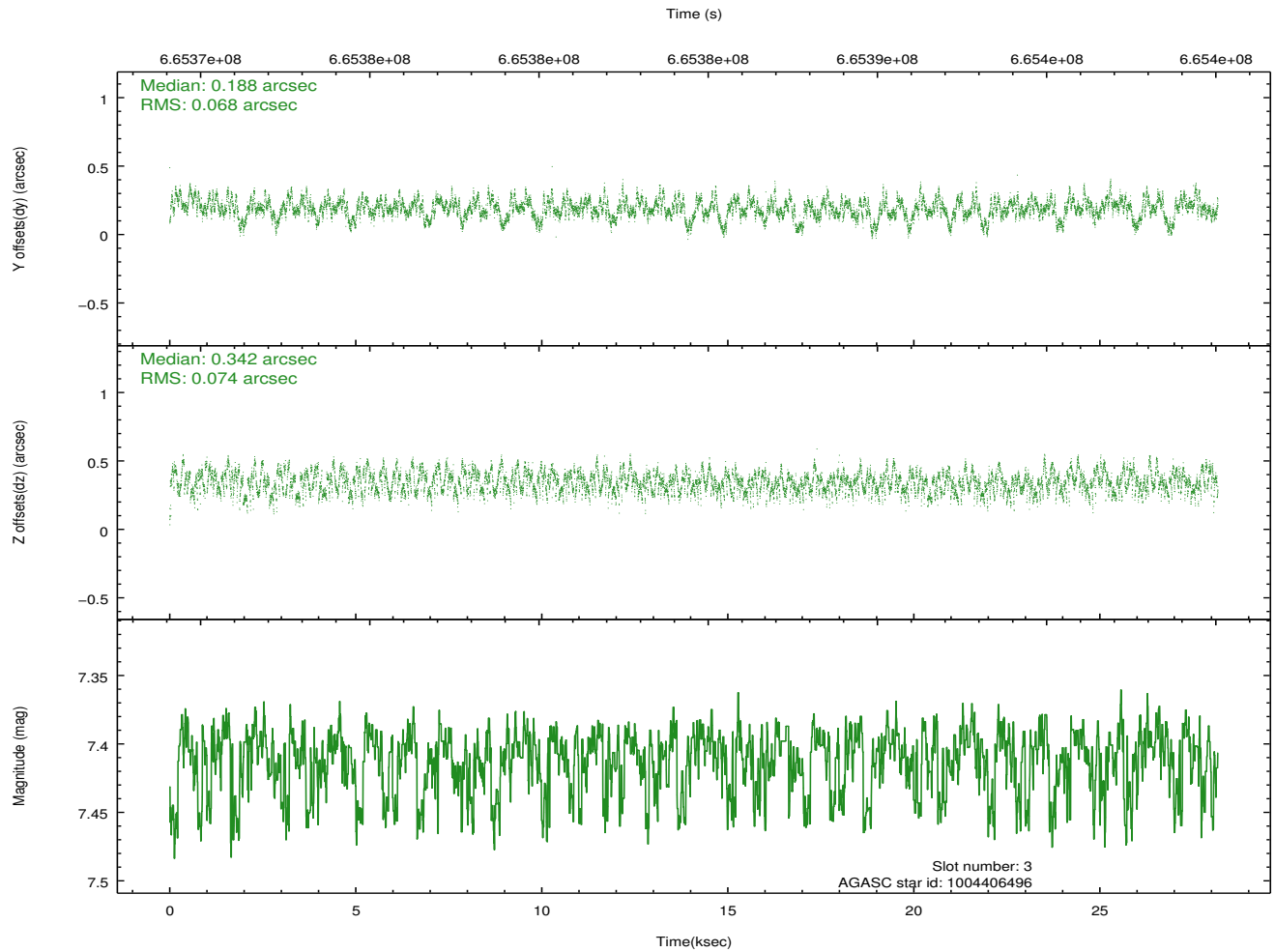
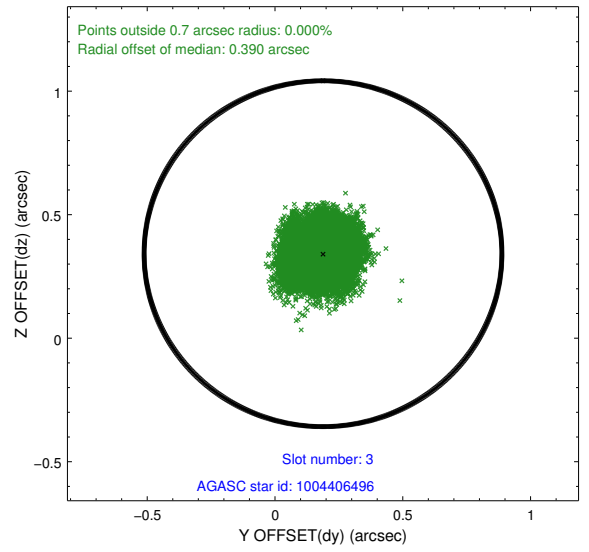
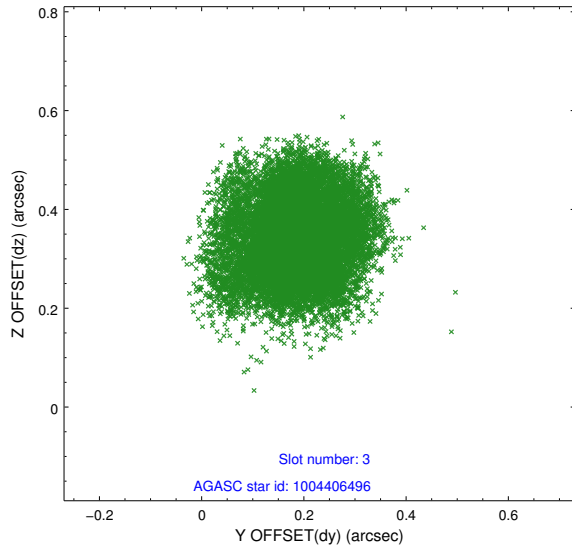
### Slot Statistics

	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	m
	FID		ACIS-S-3	7.34	6871	1.000	0.049	-0.143	0.023	0.036	0.000000	0.000000	45.92	-18
	FID		ACIS-S-5	7.19	6872	1.000	-0.427	-0.027	0.013	0.021	0.000000	0.000000	-1820.74	1
	FID		ACIS-S-6	7.34	6872	1.000	0.353	0.179	0.019	0.027	0.000000	0.000000	394.60	8
	GUIDE	used	1004406496	7.41	13741	1.000	0.188	0.342	0.109	0.170	120.210035	-40.527356	-1252.60	-22
	GUIDE	used	1004425112	8.81	13730	1.000	-0.414	-0.475	0.097	0.159	121.364029	-39.923076	1254.32	6
	GUIDE	used	1004434728	9.07	13731	1.000	-0.060	-0.316	0.145	0.235	120.620626	-39.873298	-776.43	2
	GUIDE	used	1004413080	8.80	13737	1.000	0.282	0.455	0.122	0.193	120.242432	-40.499402	-1193.76	-21
	BAD	unused	1004409560	0.00	0	-nan	0.000	0.000	0.847	1.108	120.328272	-40.211628	-1238.43	-10

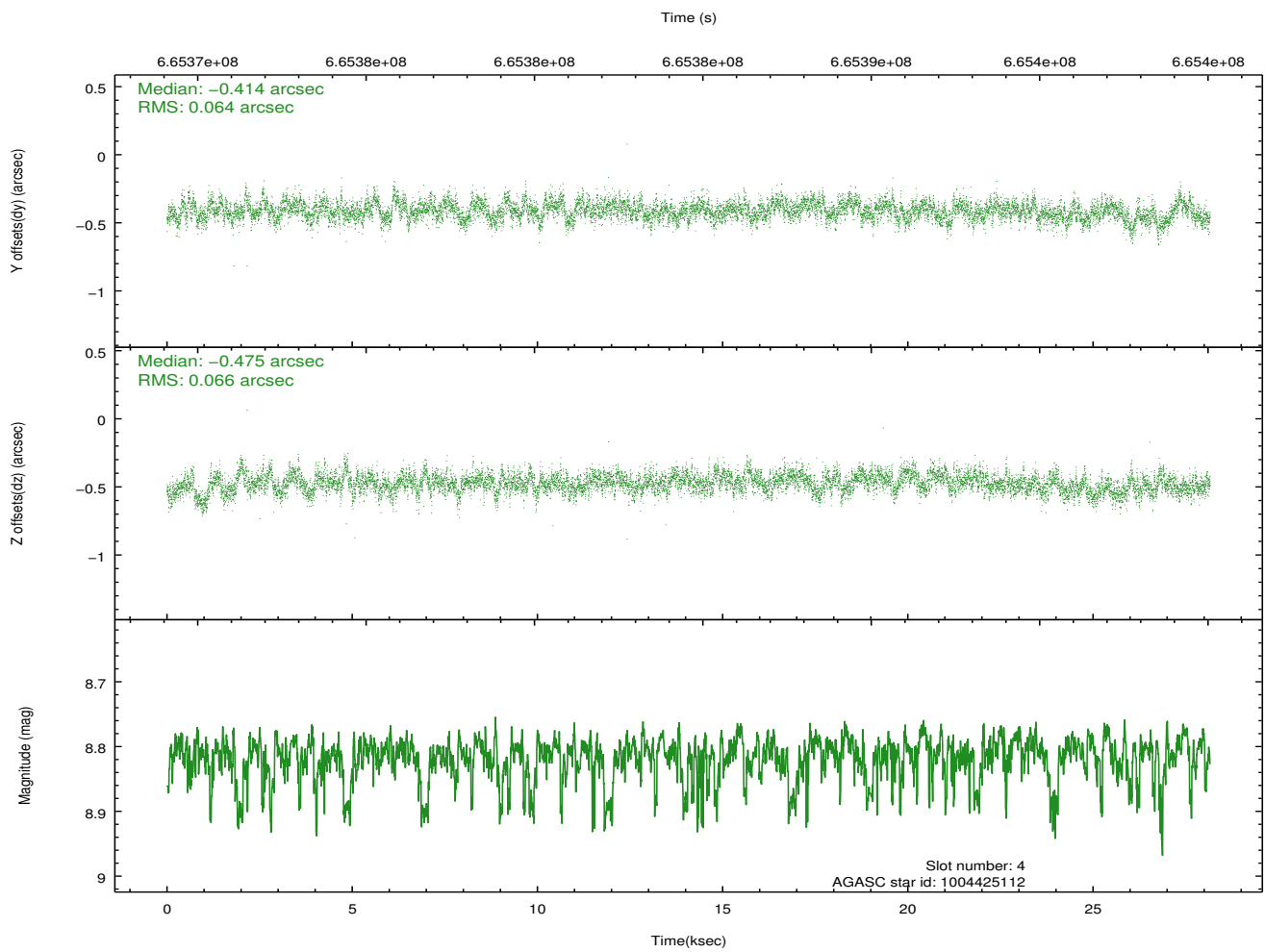
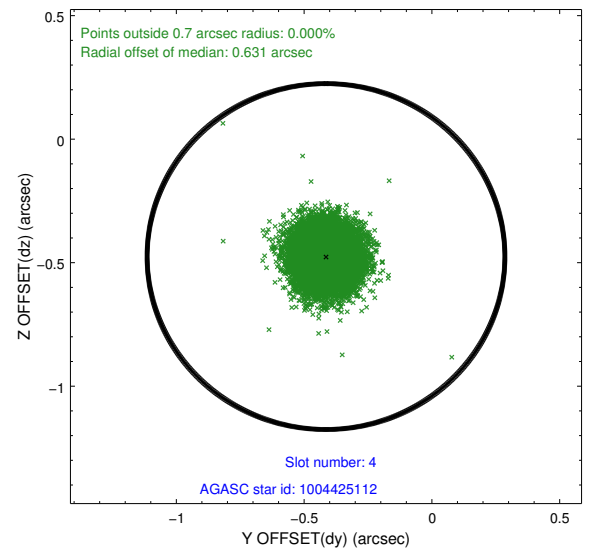
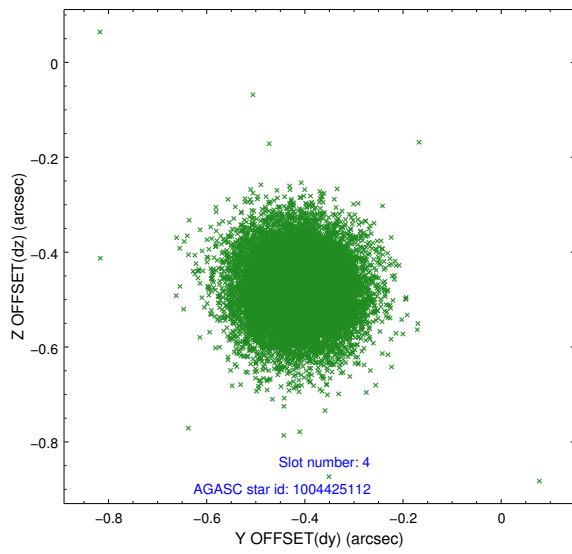
∞

## 2.4 Star Slots

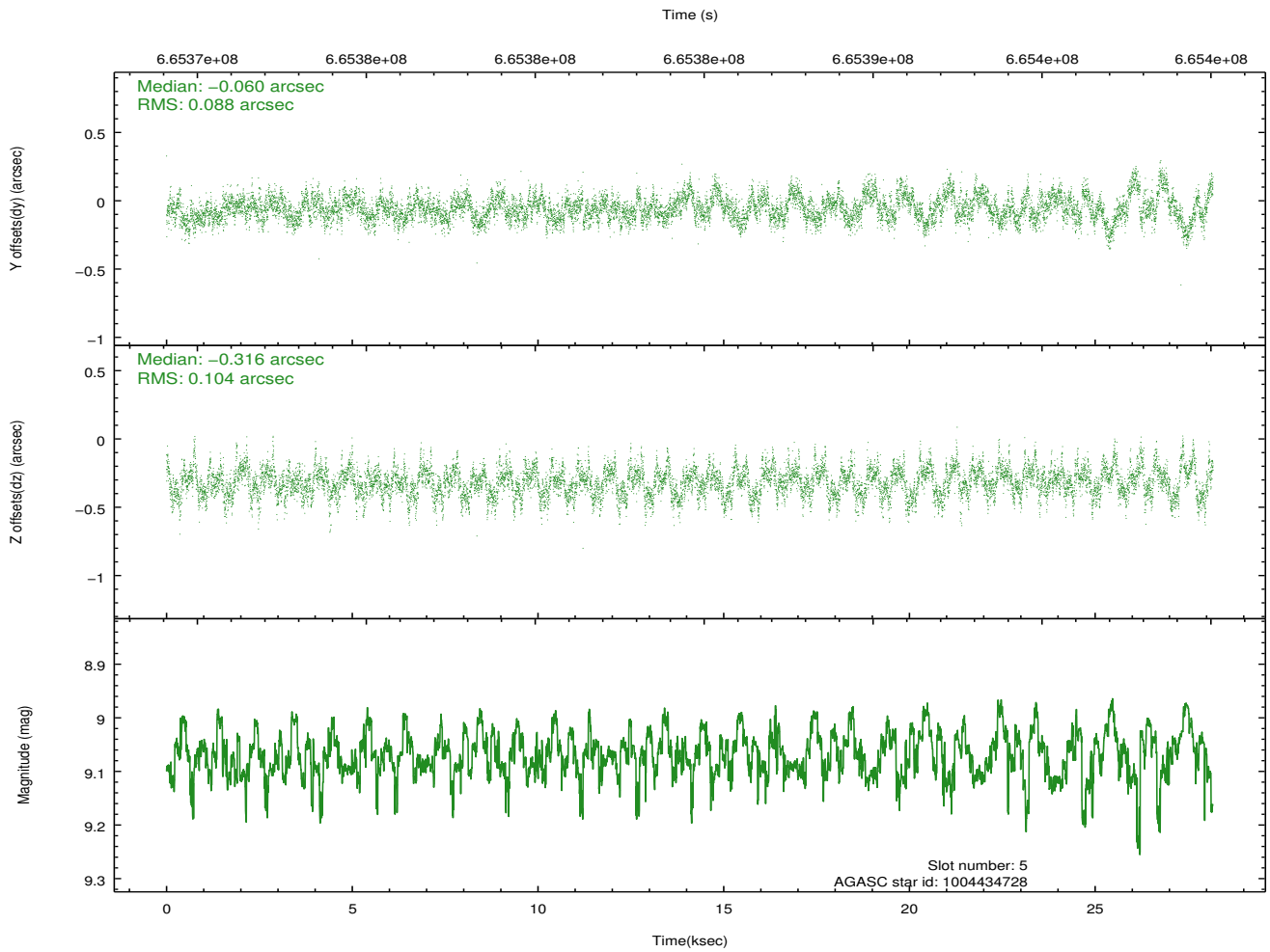
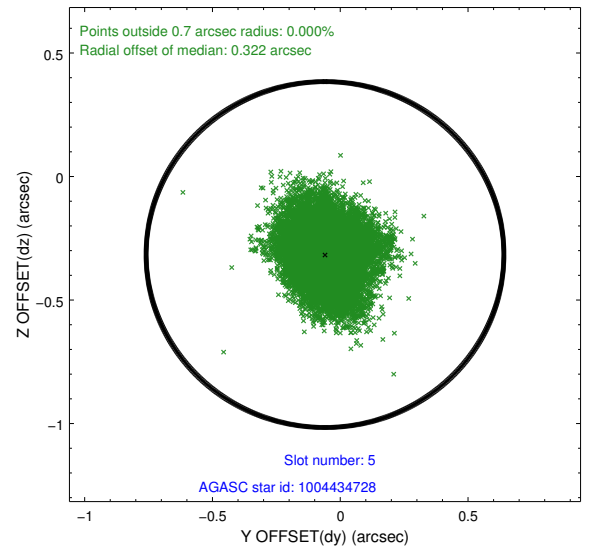
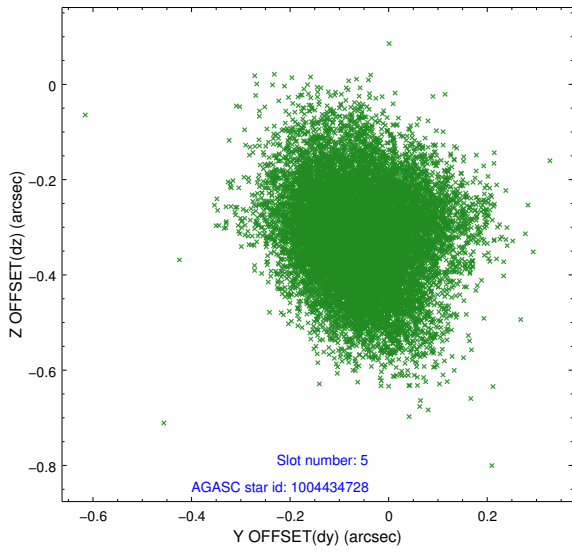
### 2.4.1 Slot 3



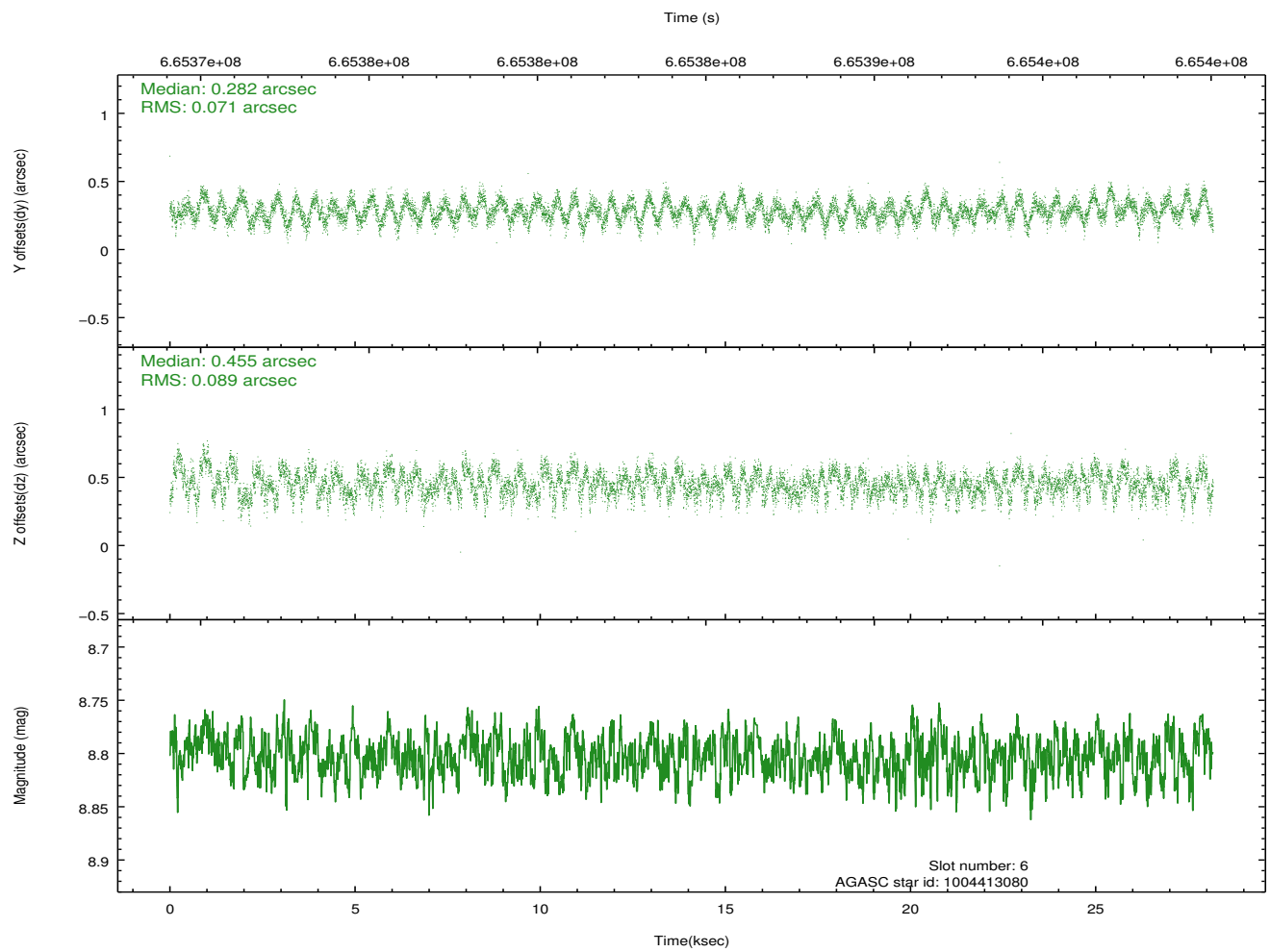
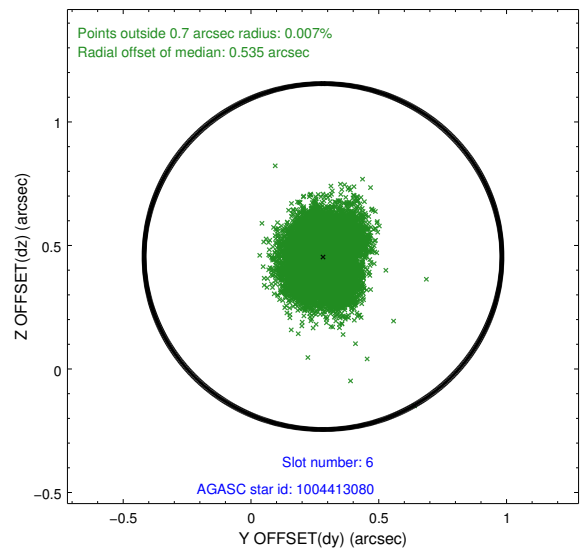
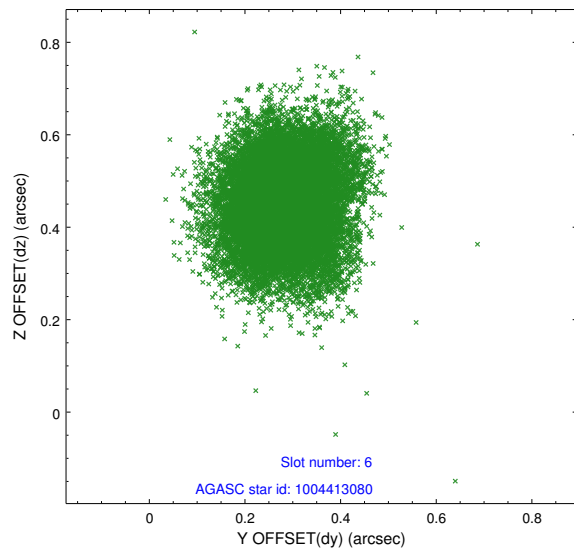
## 2.4.2 Slot 4



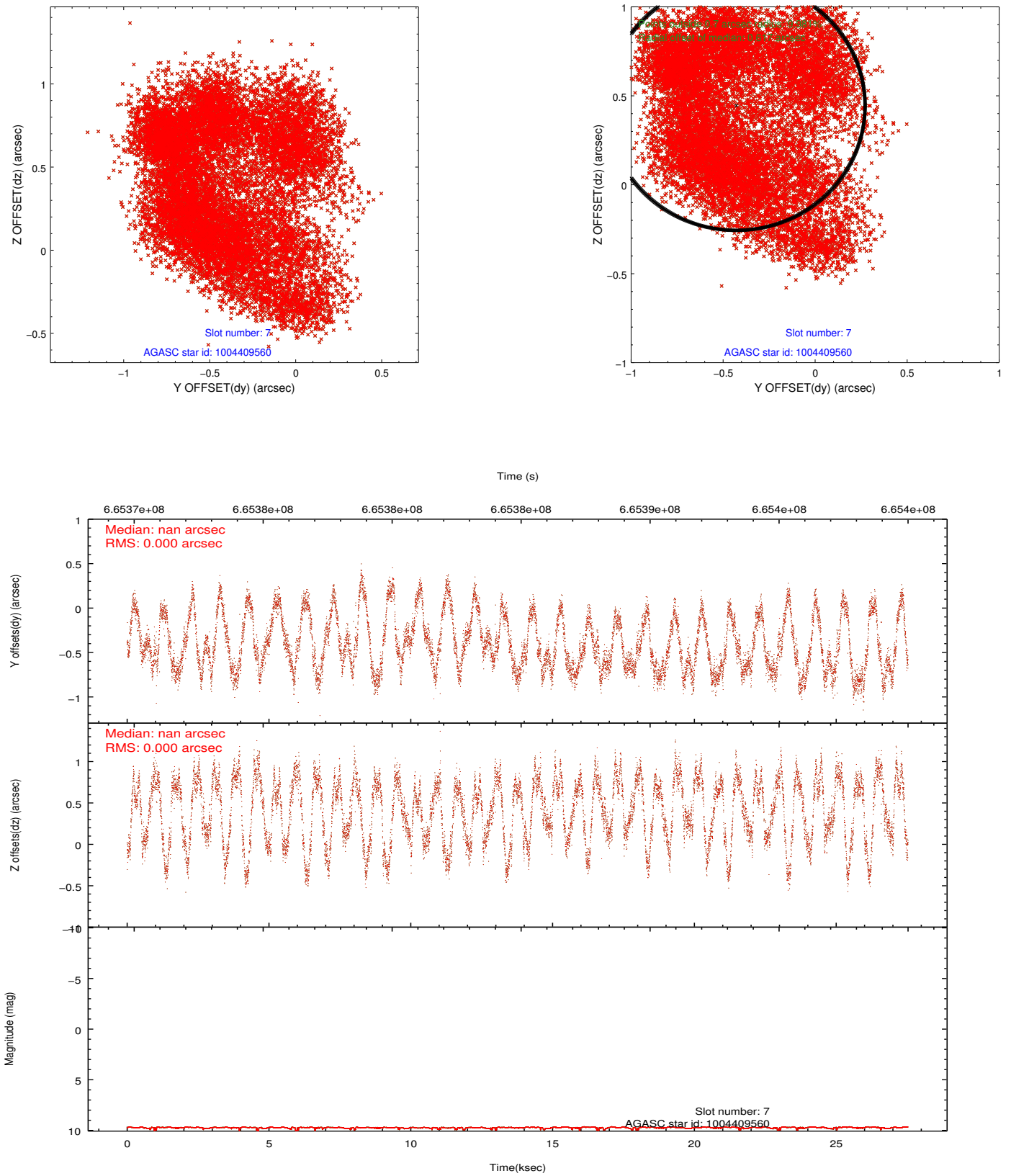
### 2.4.3 Slot 5



## 2.4.4 Slot 6

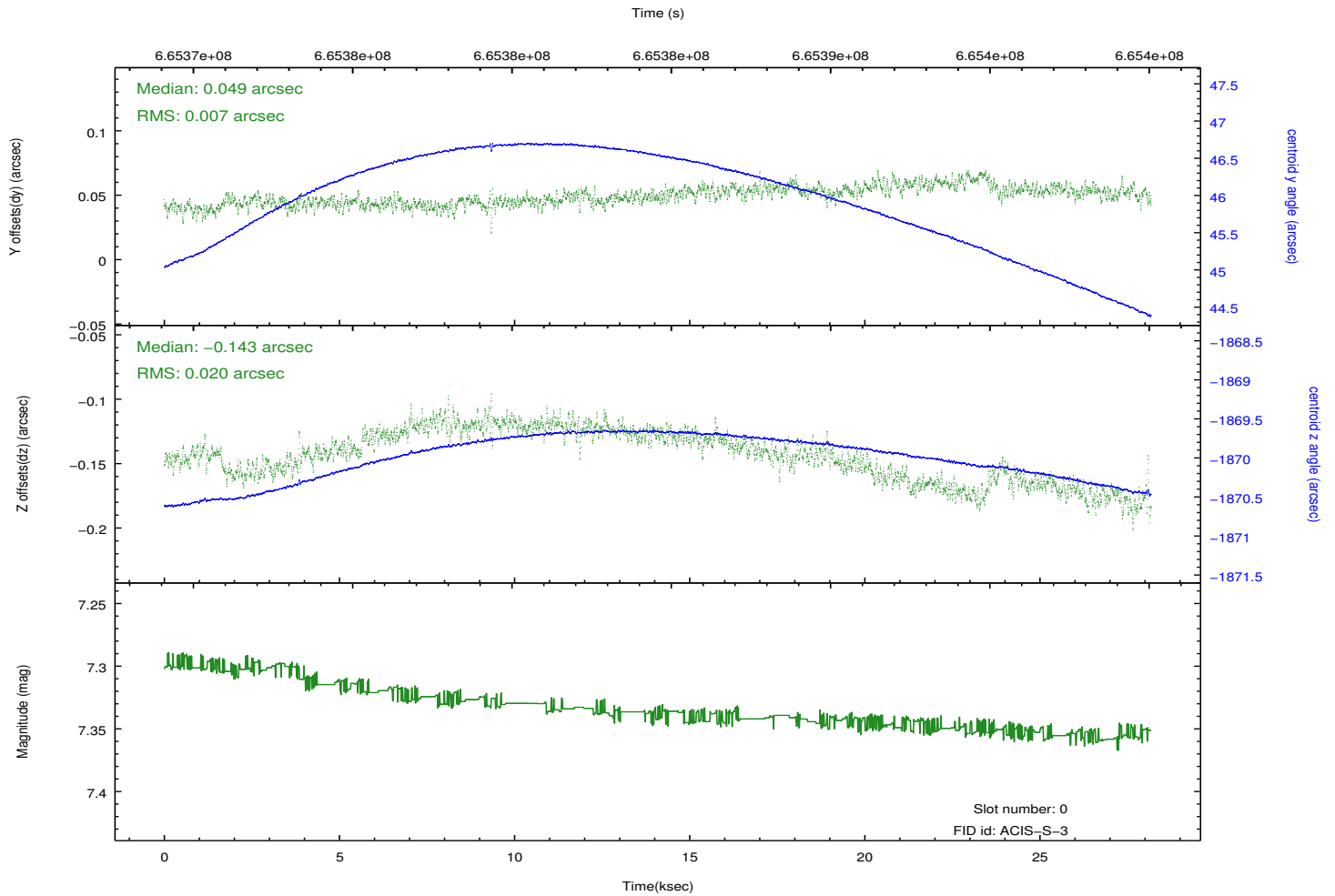
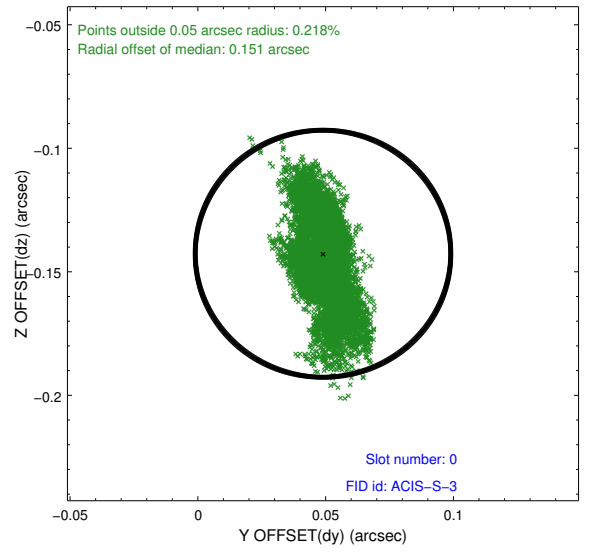
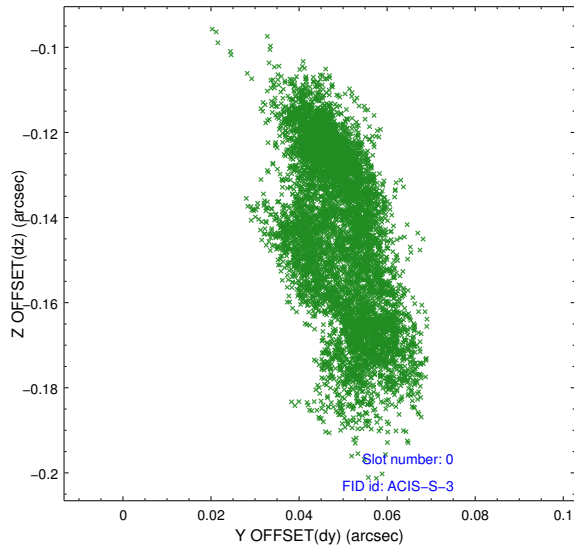


## 2.4.5 Slot 7

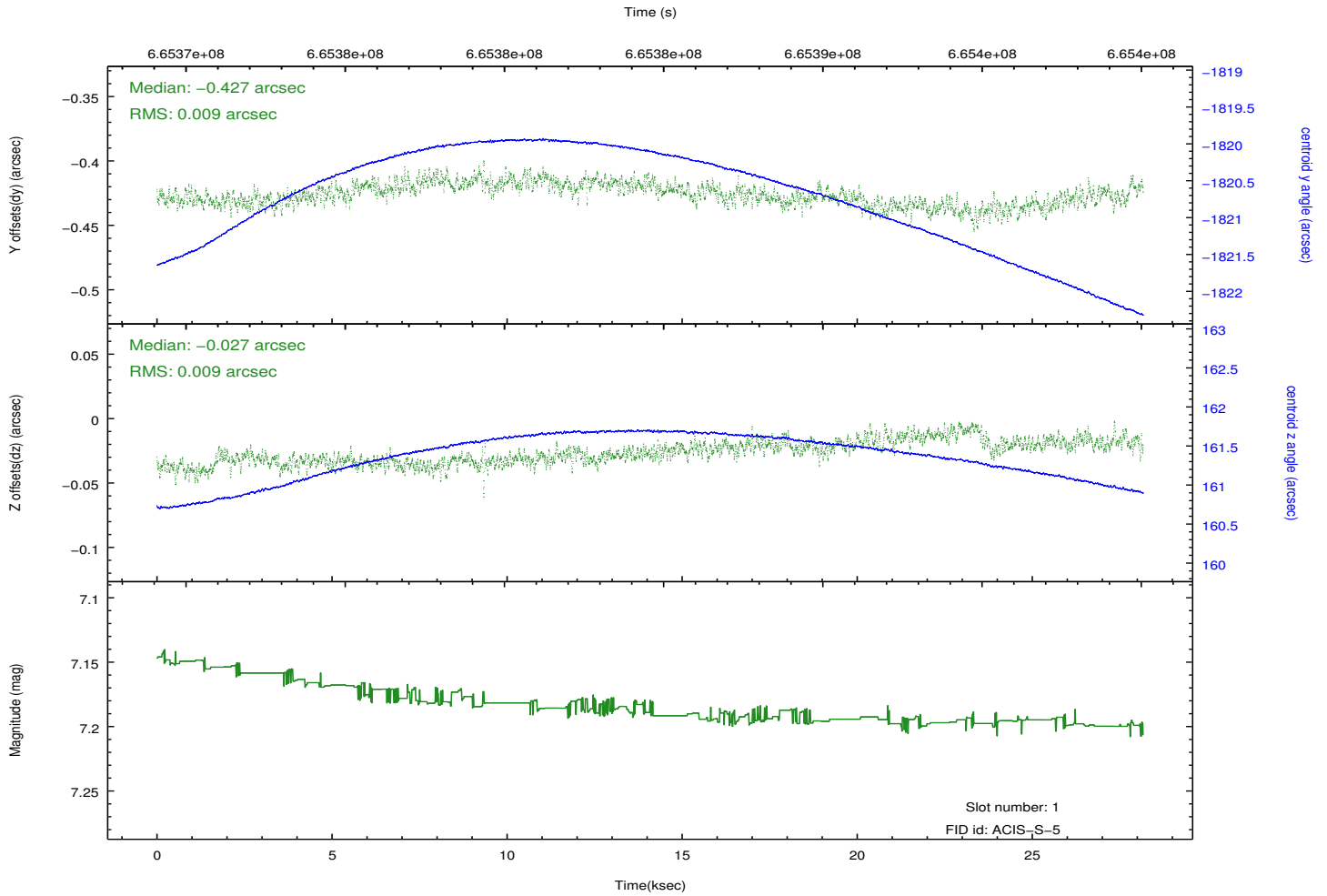
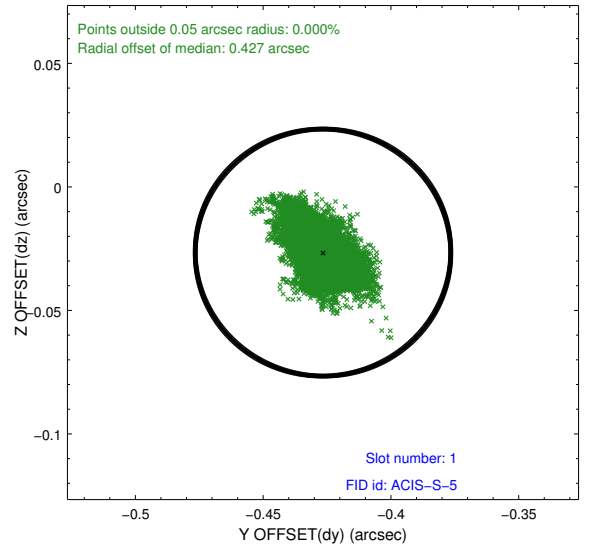
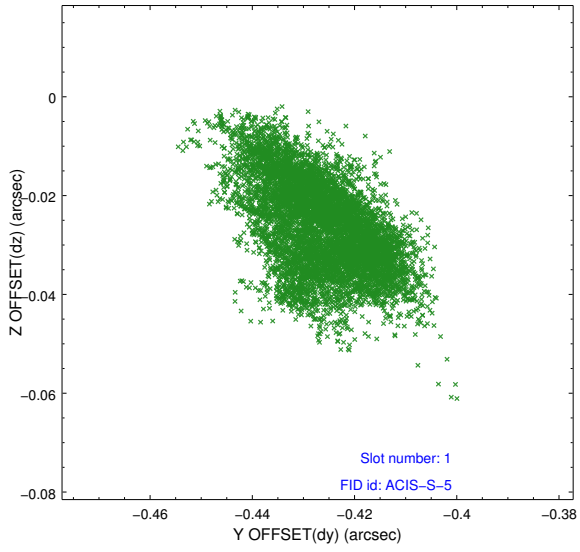


## 2.5 FID Slots

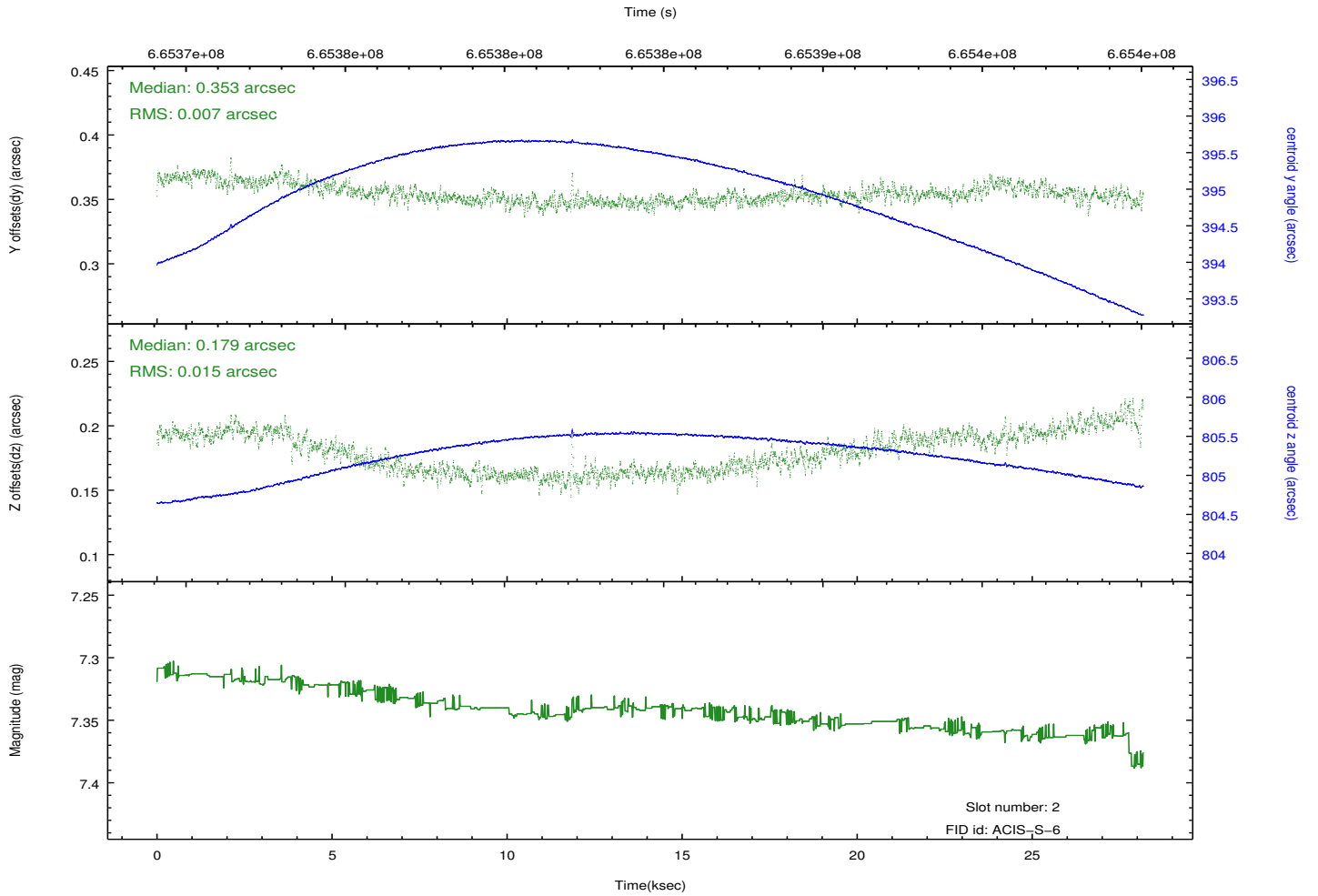
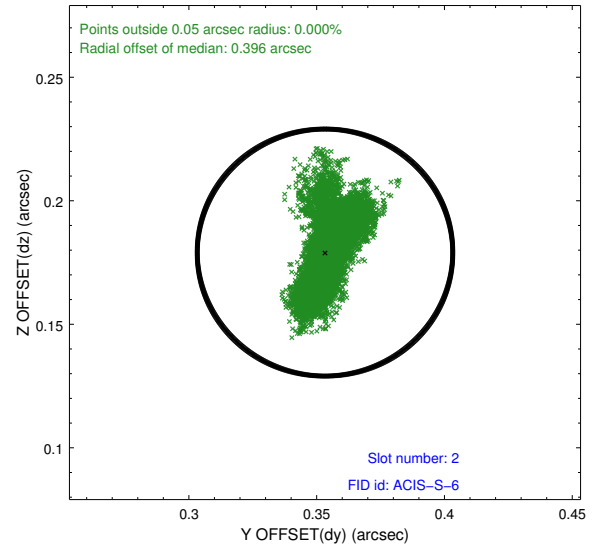
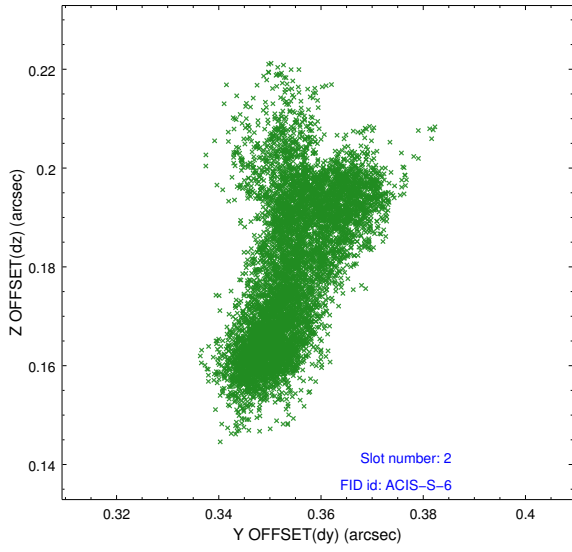
### 2.5.1 Slot 0



## 2.5.2 Slot 1

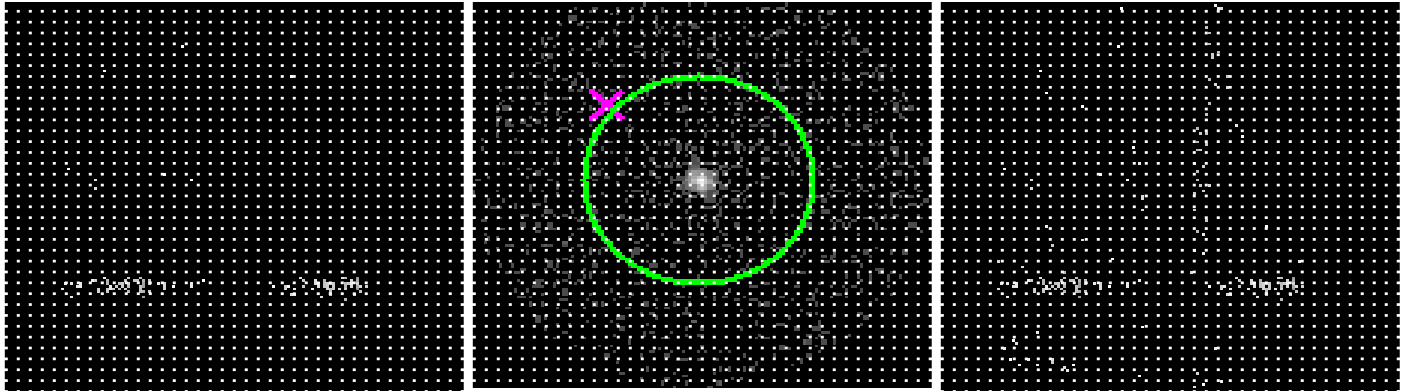


### 2.5.3 Slot 2



# 3 Gratings

## 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

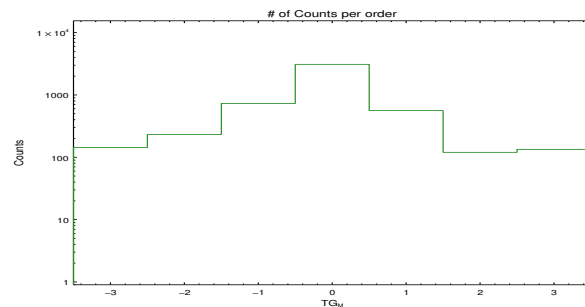
HEG Order Sort ALL

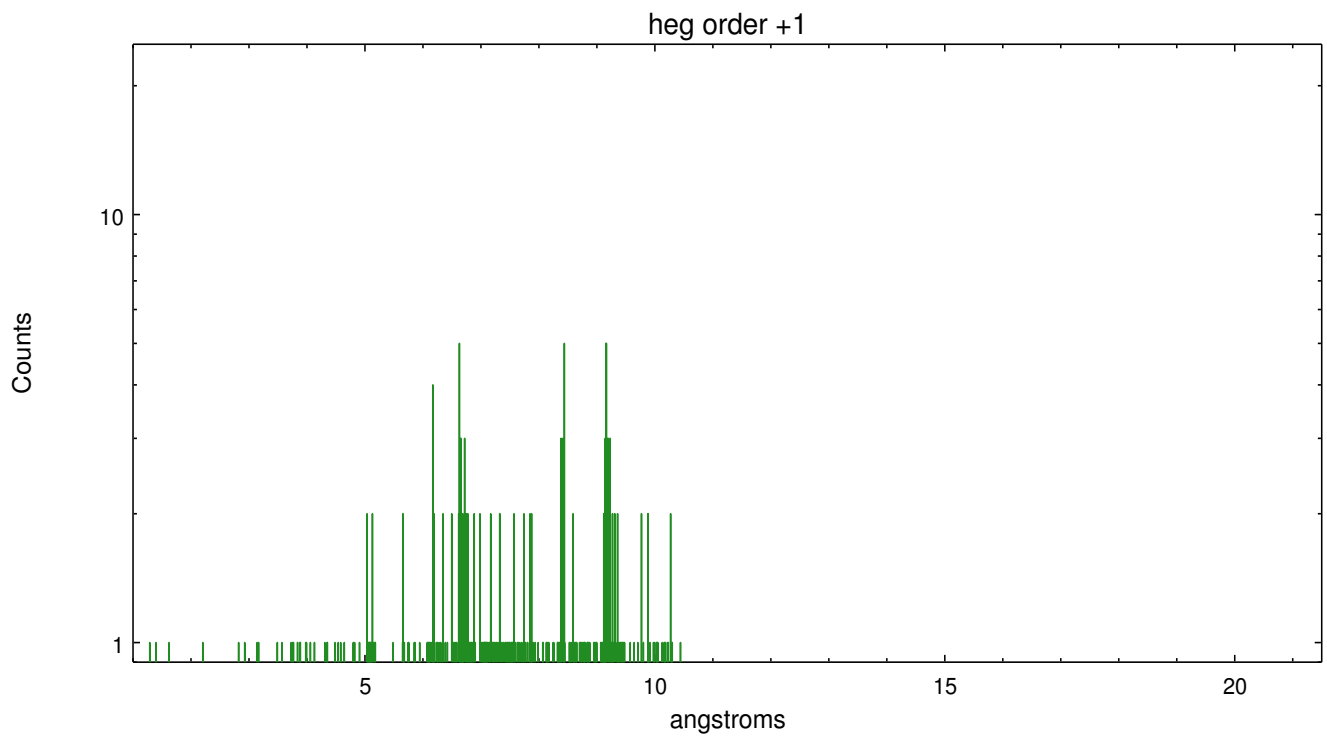
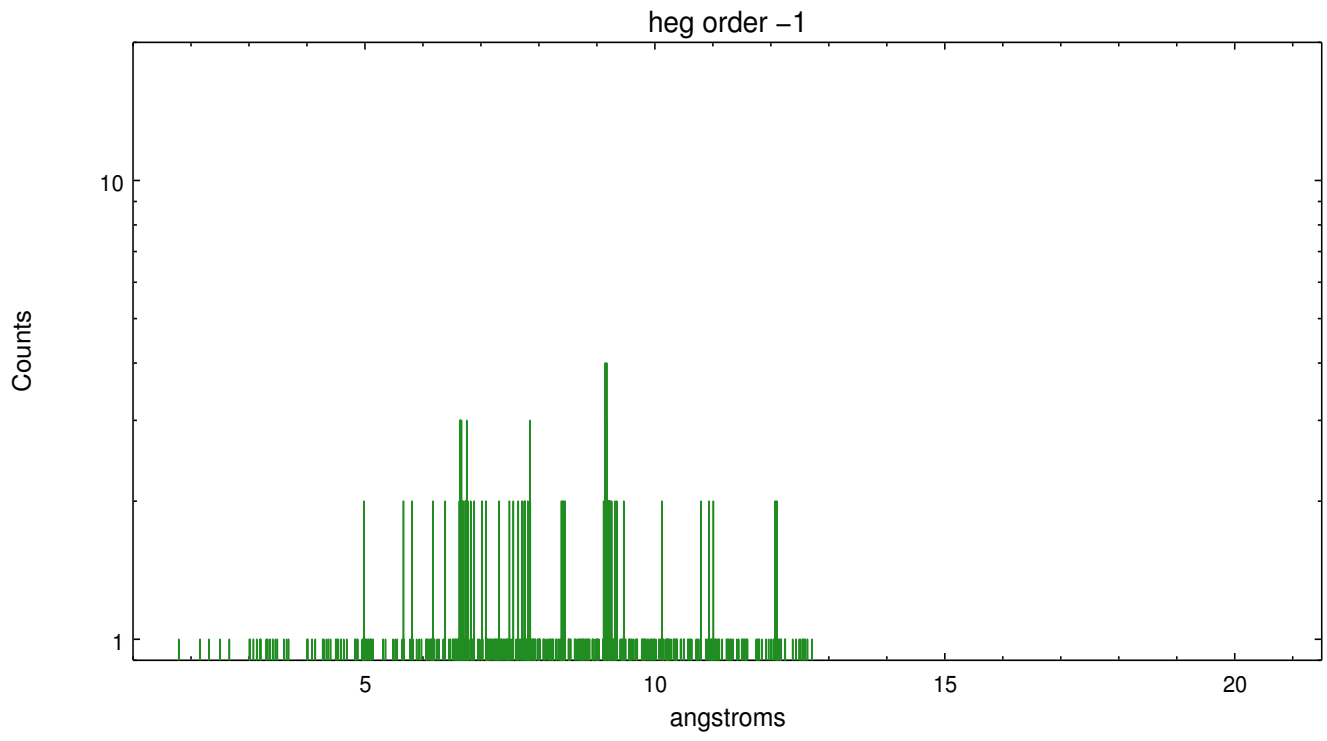


Spot Image HEG

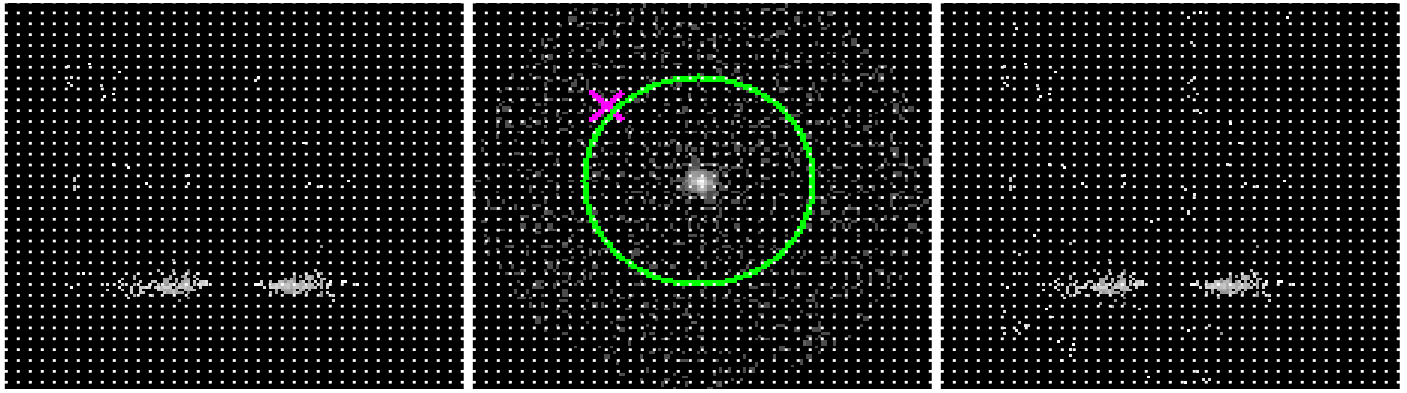
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	144	232	731	3097	561	120	134





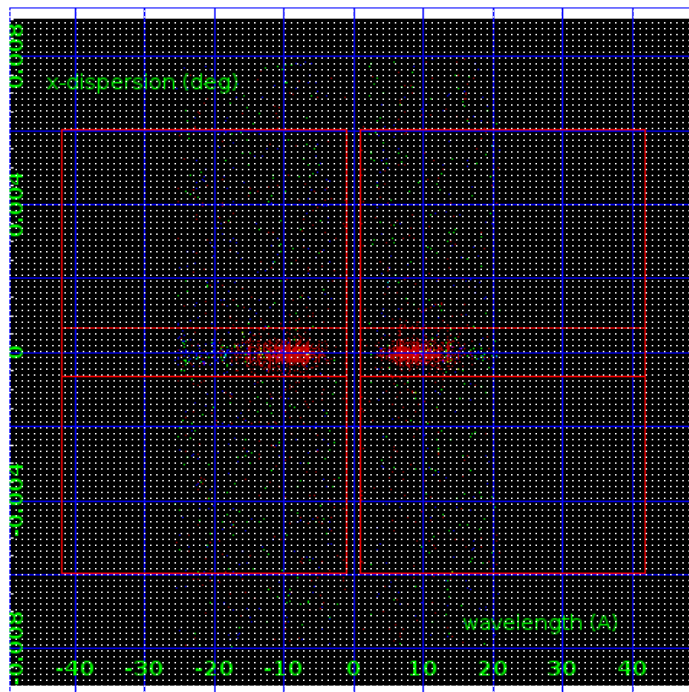
### 3.2 MEG Arm



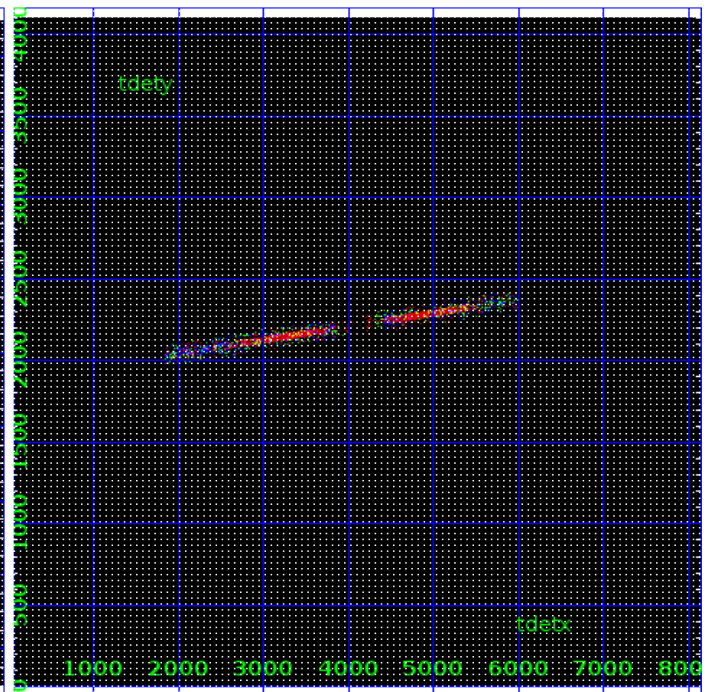
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

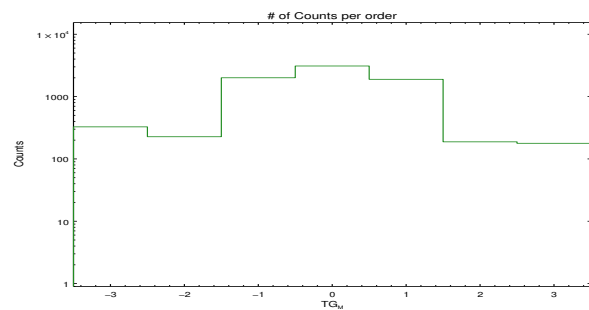


Spot Image MEG

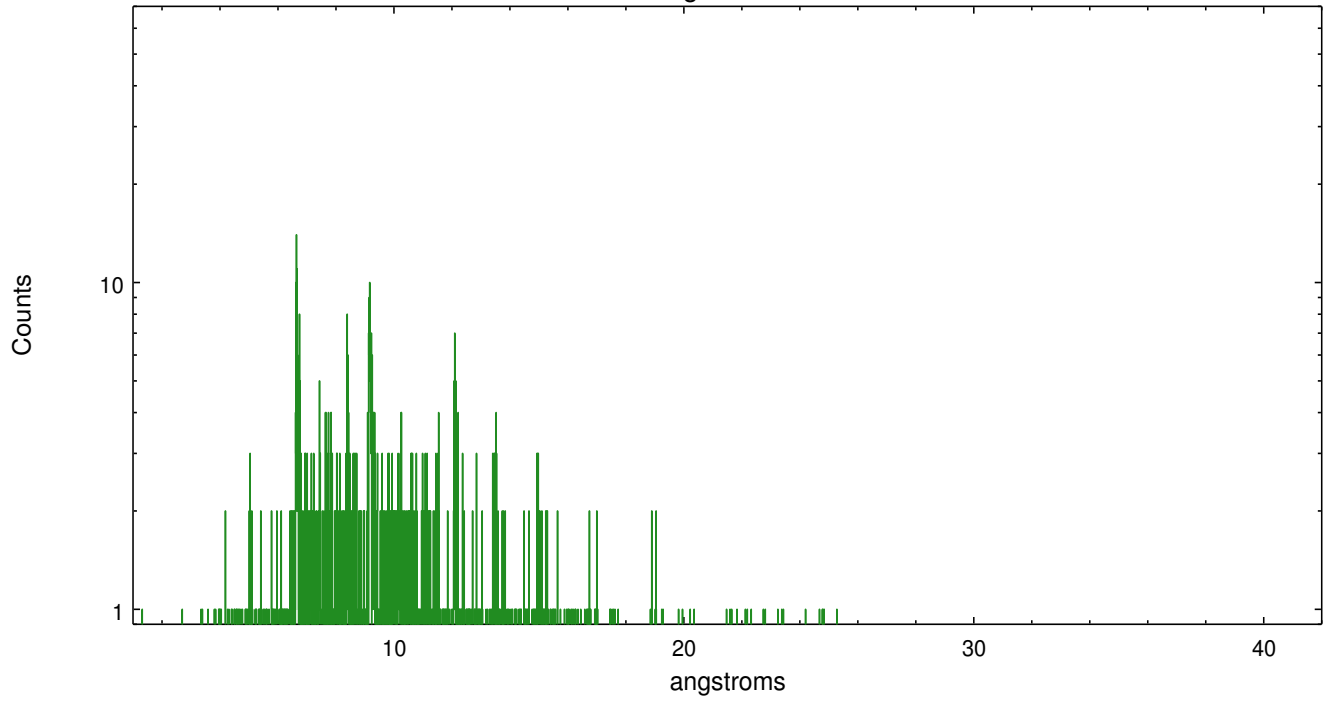


Full Detector MEG

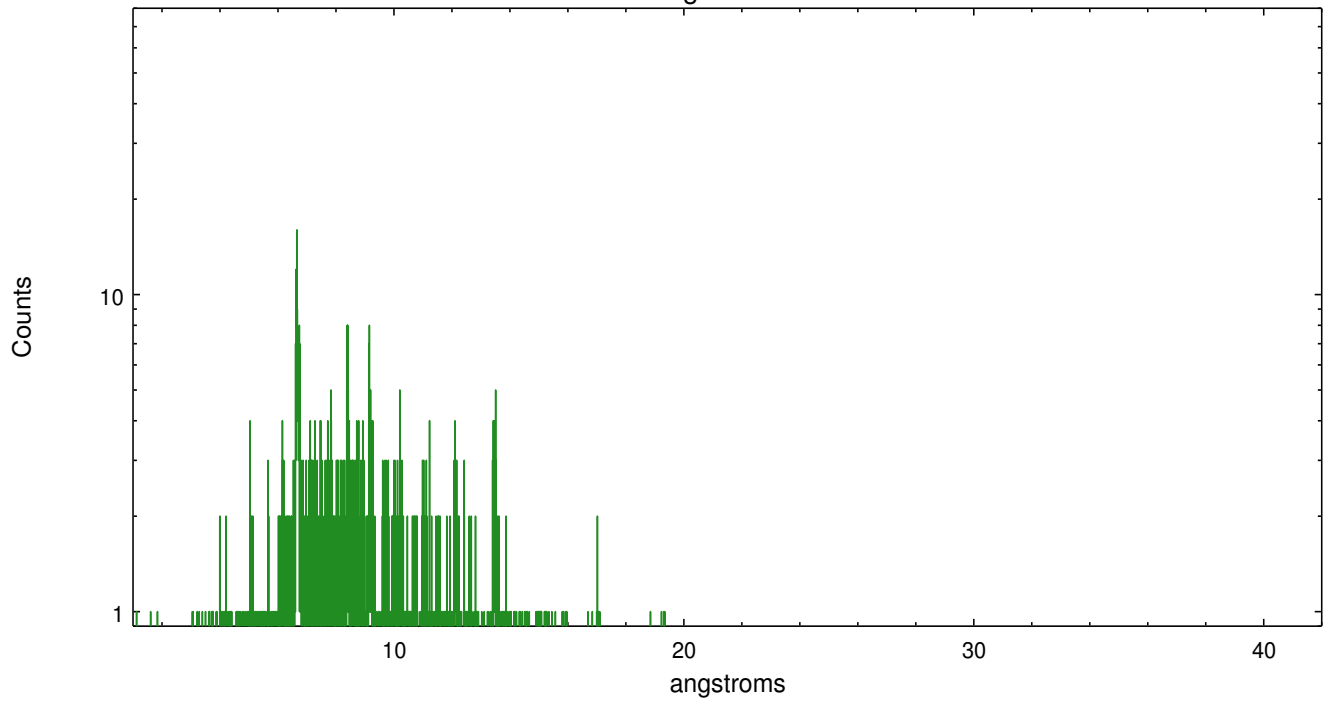
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	327	227	2005	3097	1892	188	178



meg order -1



meg order +1



# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2019.02.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	28.061200215936

## A.2 Comments

Star in slot 7 has deviations  $> 0.700000$  arcsec for more than 17.392282% of the observation (and was not used).