

# V&V Reference Report

## L2 ASCDS Version : 10.6.4

Observation 20717 - L2 Version 1  
Chandra X-Ray Center

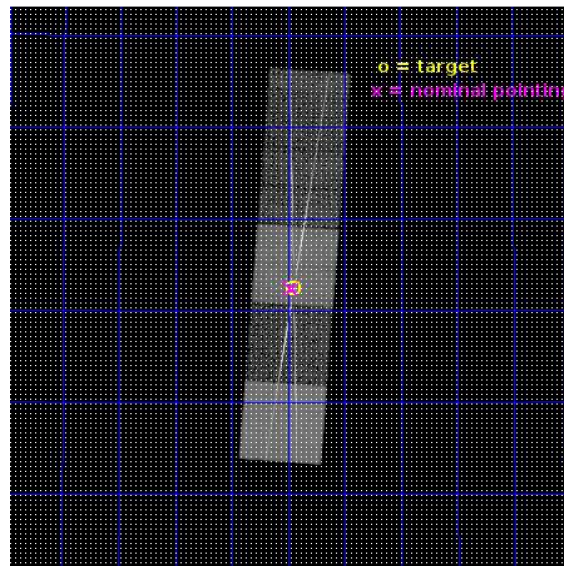
L2 Processing Date : Jul 14 2018

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# 1 Front

seq_num	790316	Sequence number
obs_id	20717	Observation id
title	AO-19 Calibration Observations of Mkn421	Proposal title
observer	CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11810738385	Nominal RA [deg]
dec_nom	38.206889229638	Nominal Dec [deg]
roll_nom	274.23566009333	Nominal Roll [deg]
revision	1	Processing version of data
ontime	15053.600115895	Sum of GTIs [s]
livetime	14856.913748082	Livetime [s]
ontime5	15053.600115895	Sum of GTIs [s]
ontime6	15053.600115895	Sum of GTIs [s]
ontime7	15053.600115895	Sum of GTIs [s]
ontime8	15050.459285021	Sum of GTIs [s]
ontime9	15053.600115895	Sum of GTIs [s]
l2events	256514	Number of level 2 events

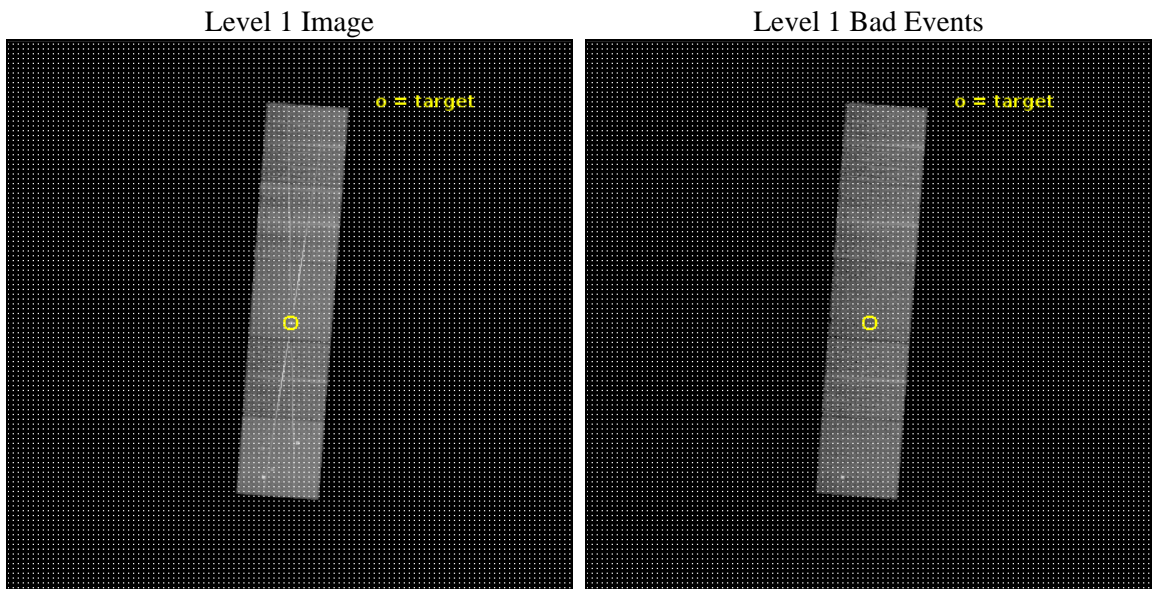




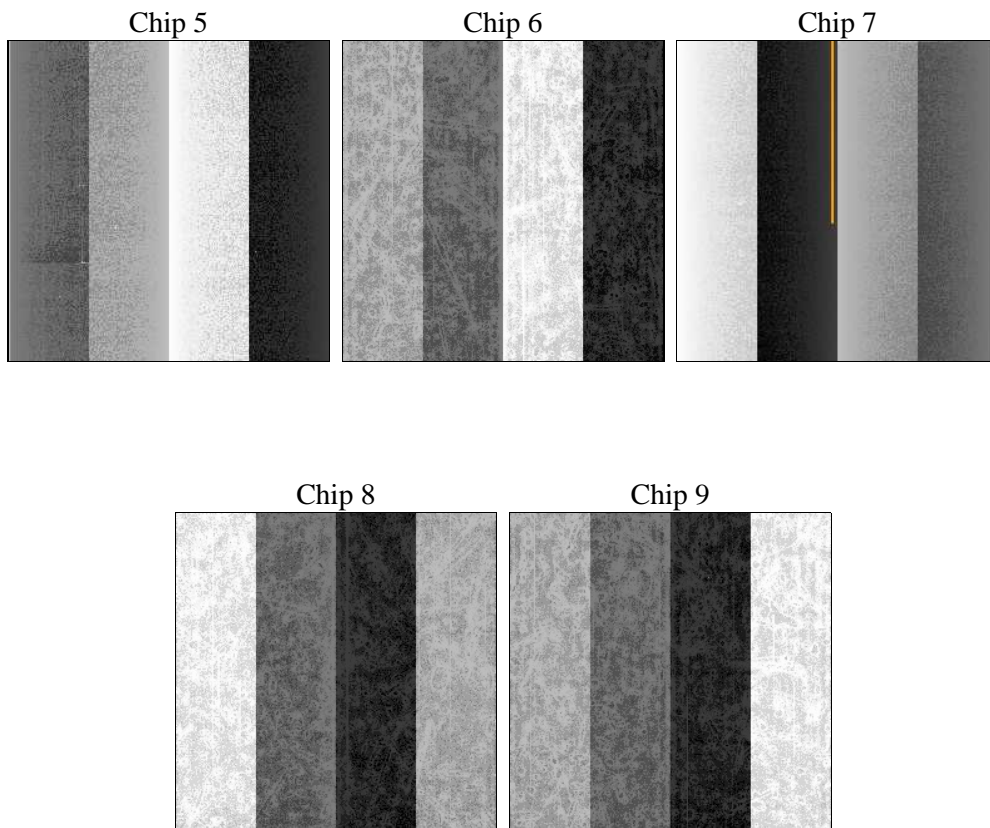
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ascdsver	10.6.4	Processing system revision	ontime	15053.600115895	Sum of GTIs [s]
caldsver	4.7.8	&#160	ontime5	15053.600115895	Sum of GTIs [s]
date	2018-07-14T06:30:00	Date and time of file creation	ontime6	15053.600115895	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	15053.600115895	Sum of GTIs [s]
			ontime8	15050.459285021	Sum of GTIs [s]
			ontime9	15053.600115895	Sum of GTIs [s]
			l1events	794485	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4120.61, 4109.76)	src1a sky pixel position
					src1a sky pixel position via

### 2.1.4 Events

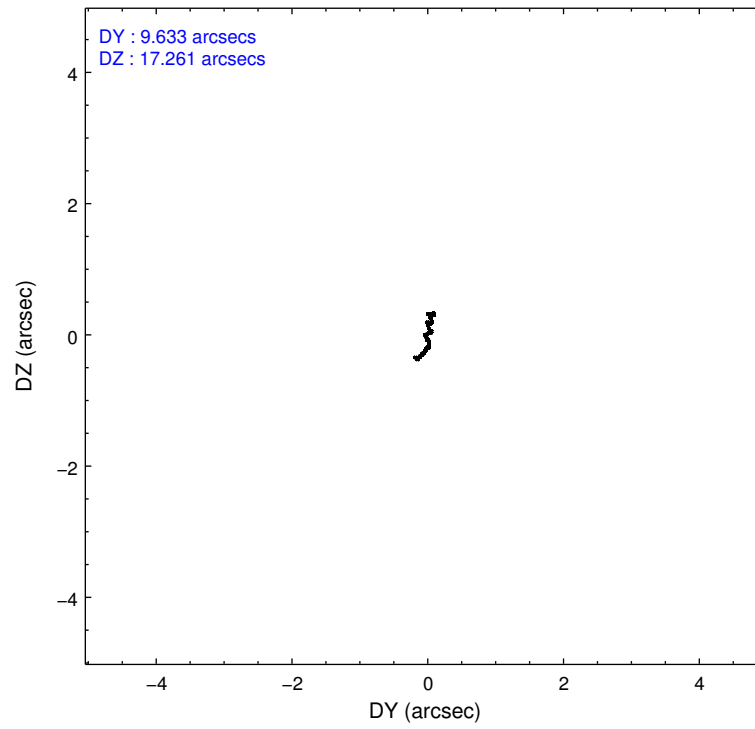
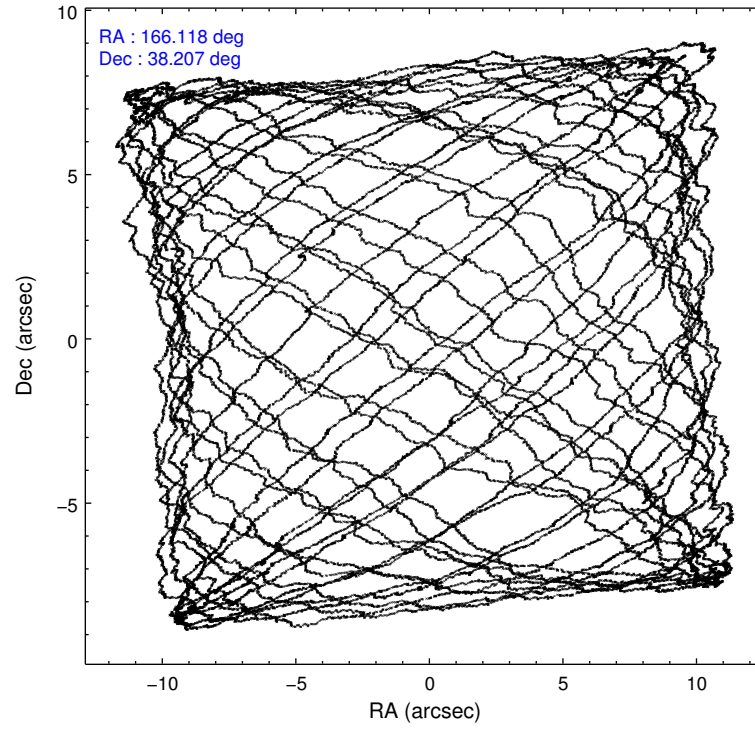
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	195546	137905	175582	167885	117567
rejected events	94816	98738	84950	111884	100814
rejected %	48%	71%	48%	66%	85%

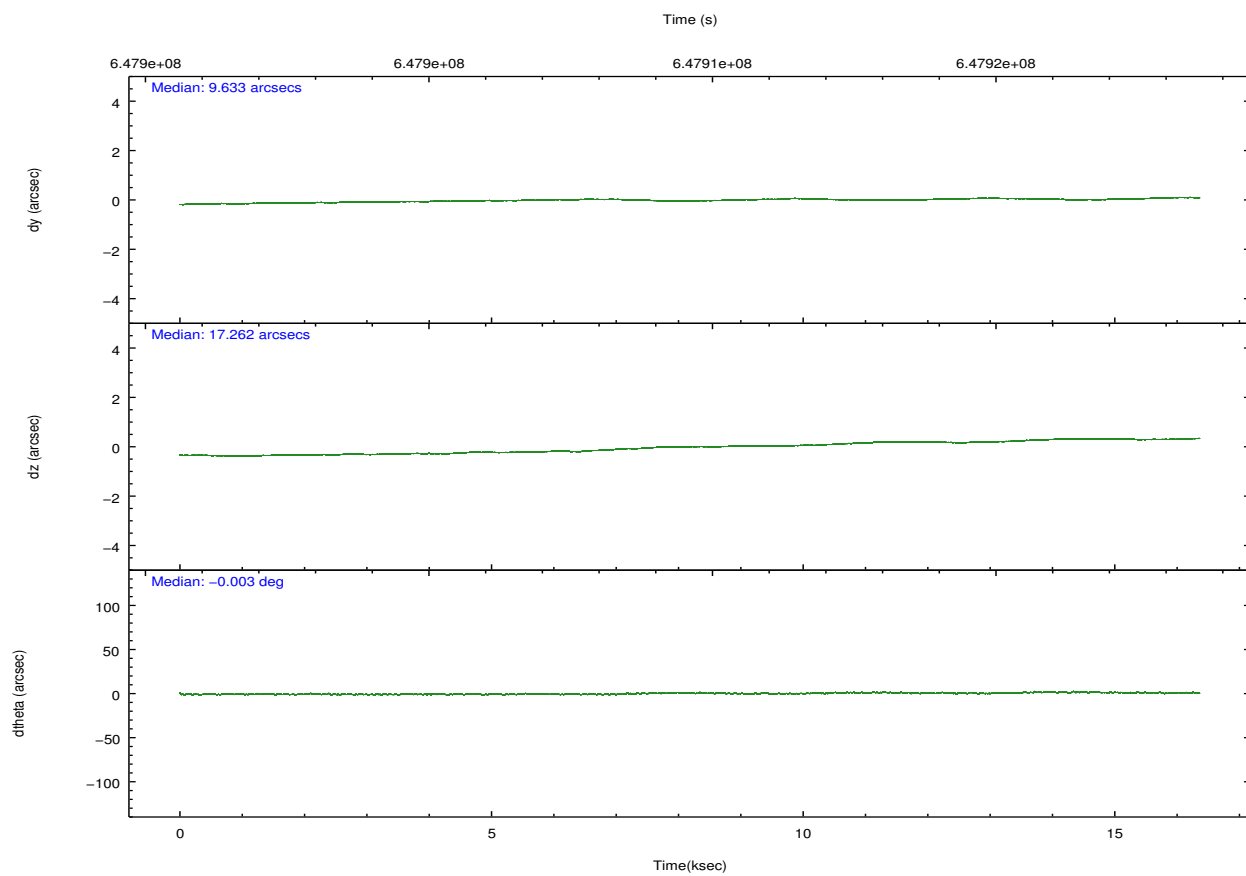
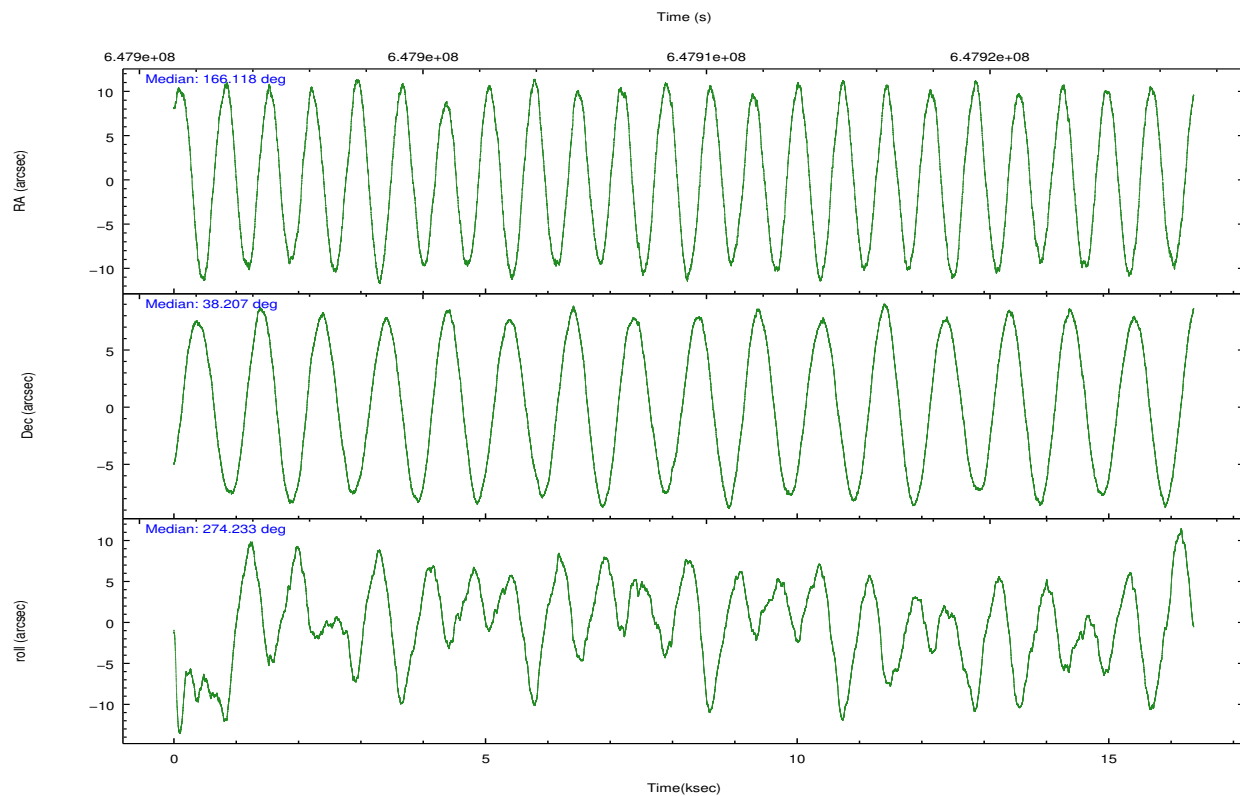
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	13203	25598	12800	23947	7214
	6%	18%	7%	14%	6%
grade 1 events	455	220	375	208	70
	0%	0%	0%	0%	0%
grade 2 events	32348	5858	20523	11560	3417
	16%	4%	11%	6%	2%
grade 3 events	3531	2154	8098	4740	1477
	1%	1%	4%	2%	1%
grade 4 events	3423	2043	7968	4439	1490
	1%	1%	4%	2%	1%
grade 5 events	13348	5521	15499	8201	6061
	6%	4%	8%	4%	5%
grade 6 events	48230	3522	41262	11322	3161
	24%	2%	23%	6%	2%
grade 7 events	81008	92989	69057	103468	94677
	41%	67%	39%	61%	80%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-56789	ACIS-56789	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	166.098055	166.1181073838524	CCD I2 on	N	N
[deg] Pointing Dec	38.229363	38.20688922963755	CCD I3 on	N	N
[deg] Pointing Roll	274.091439	274.2356600933254	CCD S0 on	N	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)	647902758.184000	647901057.39059	CCD S5 on	O1	Y
Observation start date	2018-07-13T20:58:09	2018-07-13T20:30:57	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	647917758.184000	647918820.12914	On-chip summing requested	N	N
Observation end date	2018-07-14T01:08:09	2018-07-14T01:27:00	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect



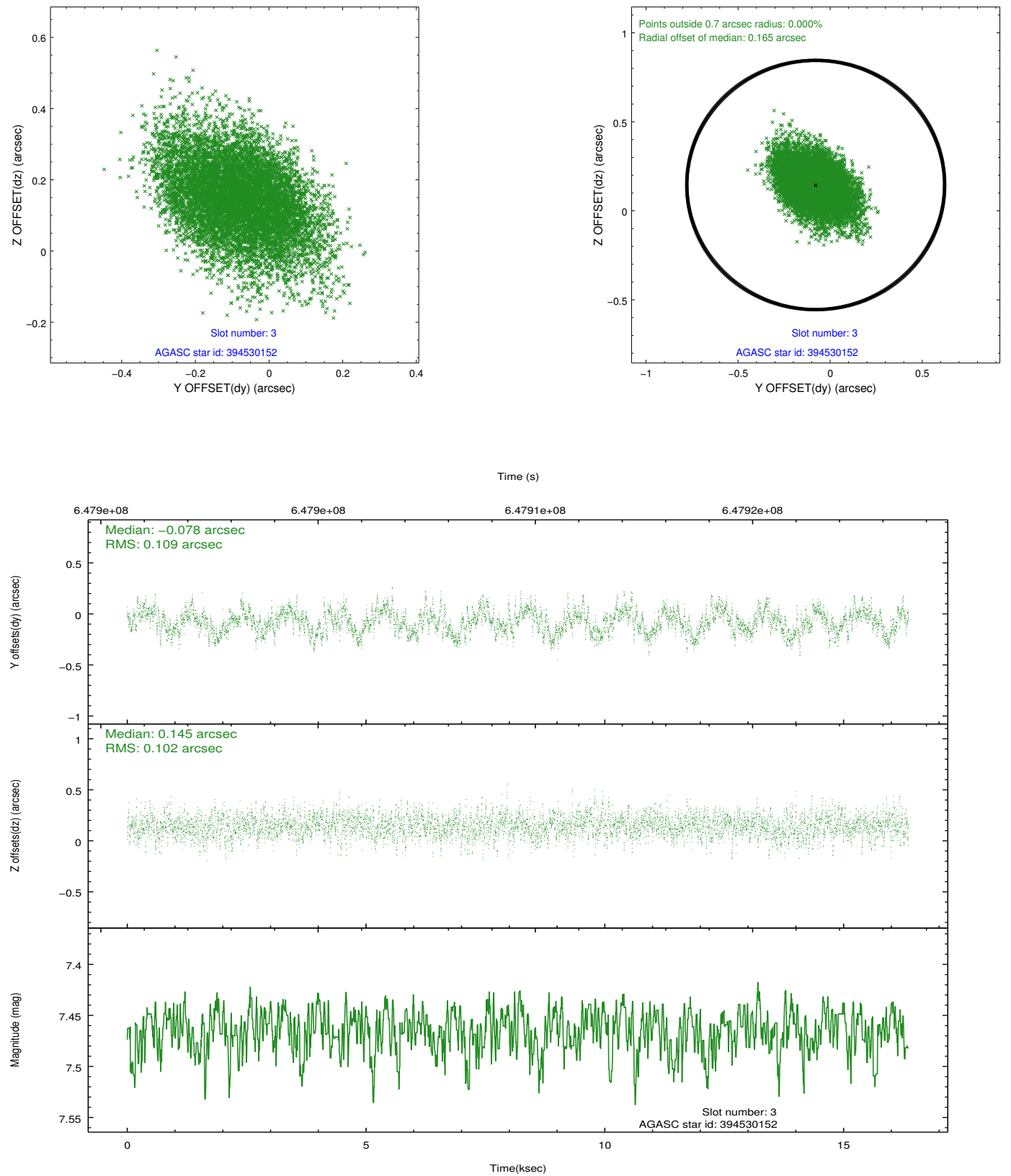


Slot Statistics

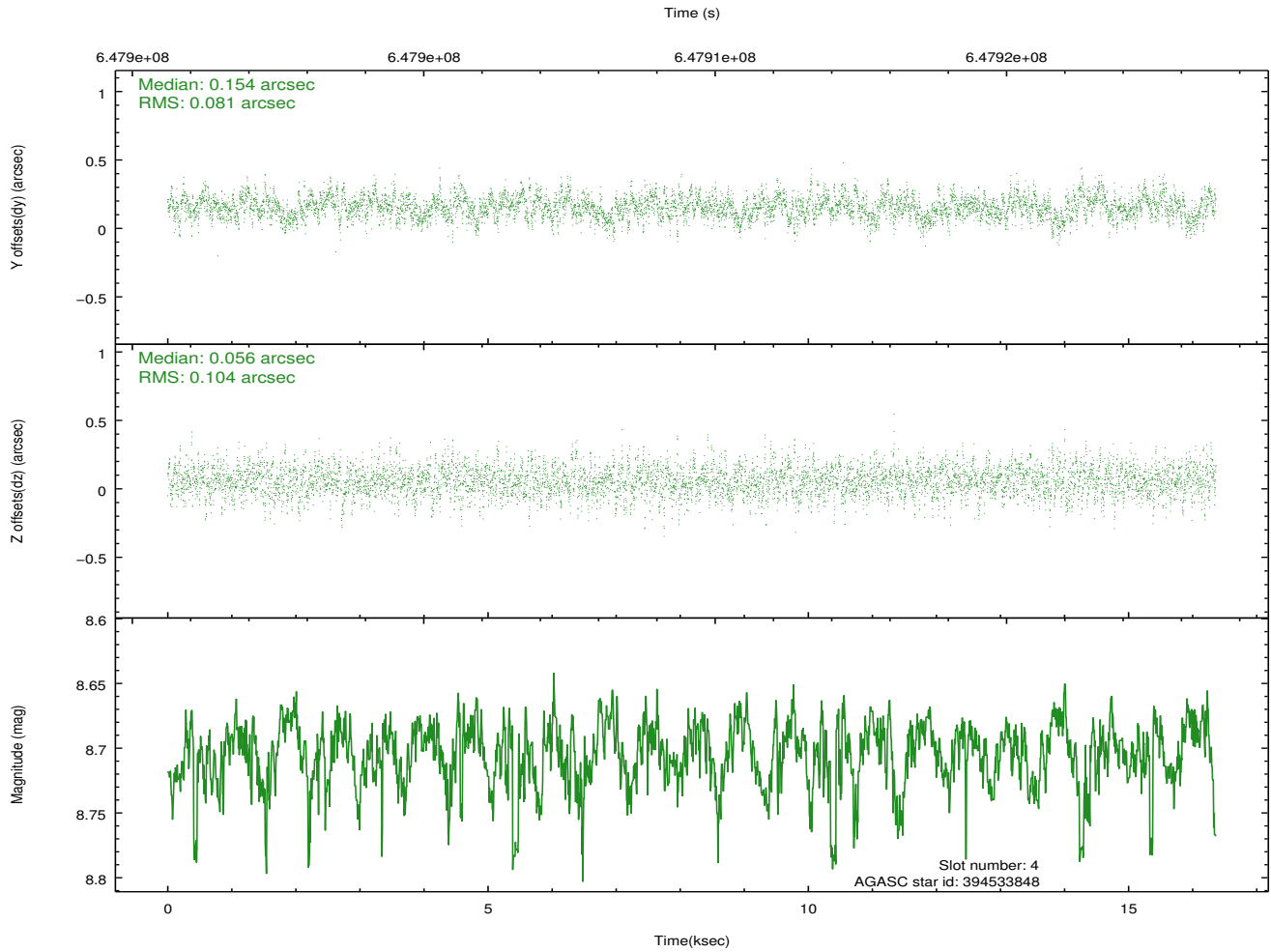
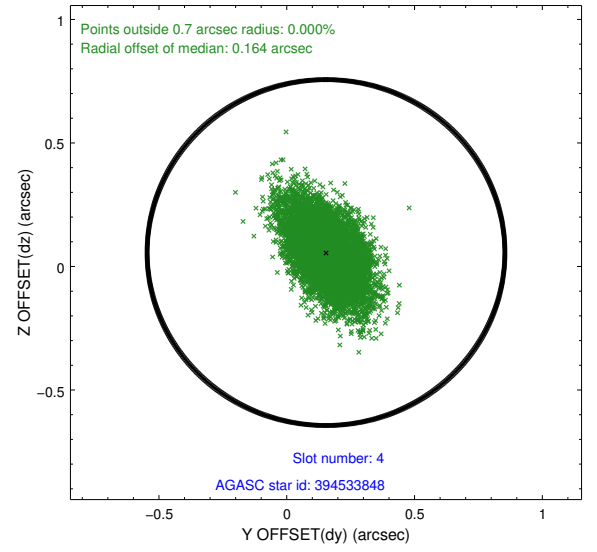
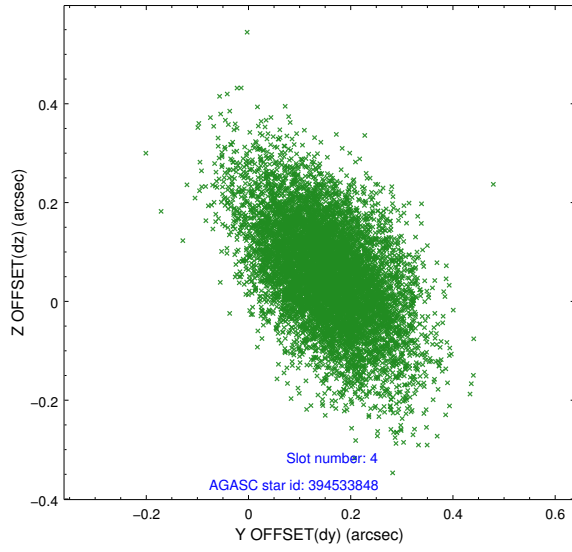
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	6.87	3991	1.000	-0.124	-0.048	0.010	0.016	0.000000	0.000000	-762.58	-1738
1	FID		ACIS-S-4	6.99	3990	1.000	0.333	0.073	0.006	0.012	0.000000	0.000000	2151.05	169
2	FID		ACIS-S-5	6.98	3991	1.000	-0.240	-0.015	0.011	0.016	0.000000	0.000000	-1815.18	163
3	GUIDE	used	394530152	7.46	7983	1.000	-0.078	0.145	0.157	0.259	166.075805	38.868252	-2298.50	101
4	GUIDE	used	394533848	8.70	7977	1.000	0.154	0.056	0.134	0.243	166.382906	38.276007	-112.80	809
5	GUIDE	used	394543960	9.74	7977	1.000	0.075	0.127	0.220	0.354	165.802757	37.787371	1526.19	-951
6	GUIDE	used	394546712	6.58	7983	1.000	-0.164	-0.015	0.123	0.231	166.451462	38.394357	-522.80	1035
7	GUIDE	used	394546720	6.40	7982	1.000	0.022	-0.315	0.142	0.253	166.130115	38.241361	-36.54	92

## 2.4 Star Slots

### 2.4.1 Slot 3

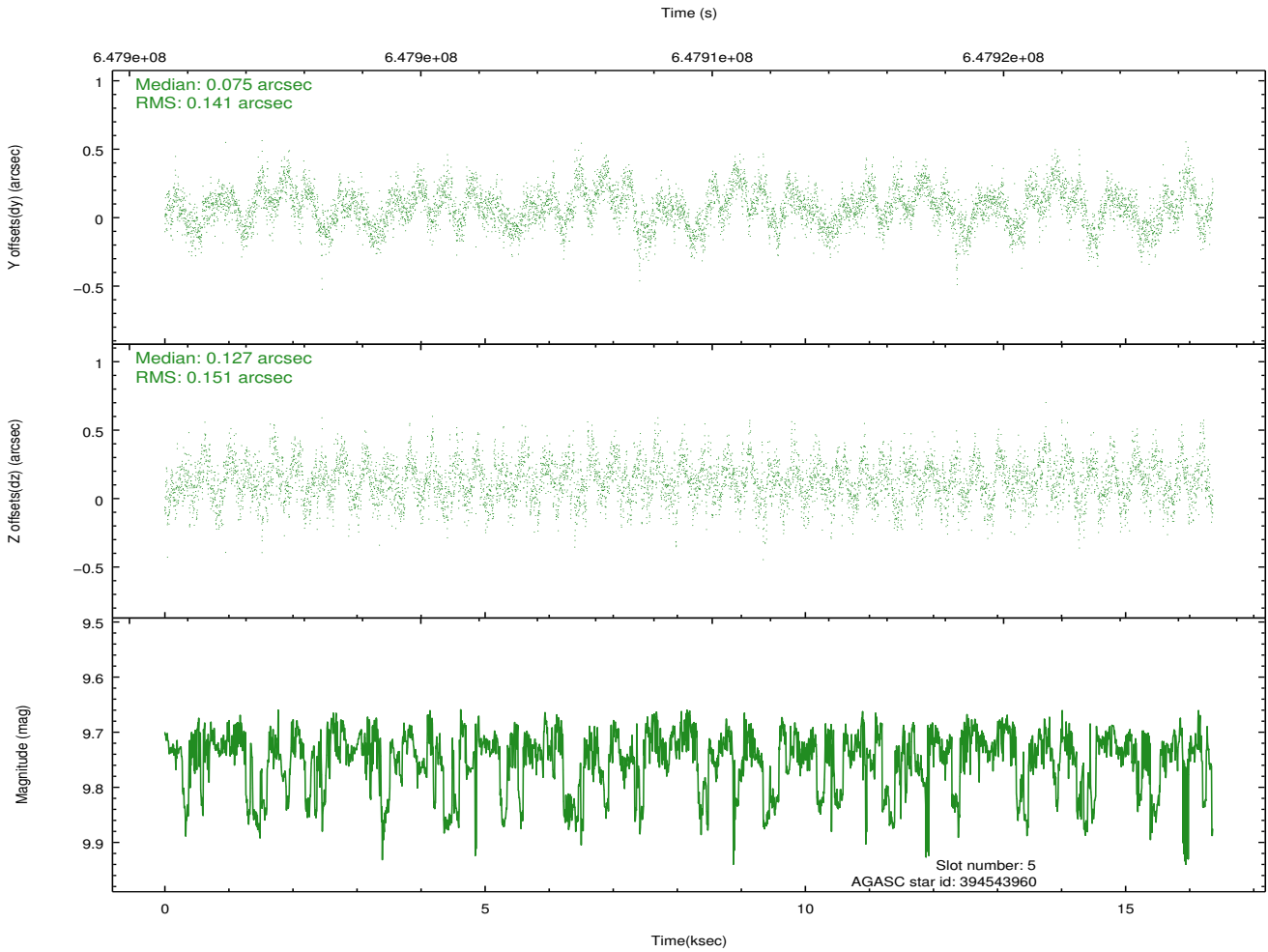
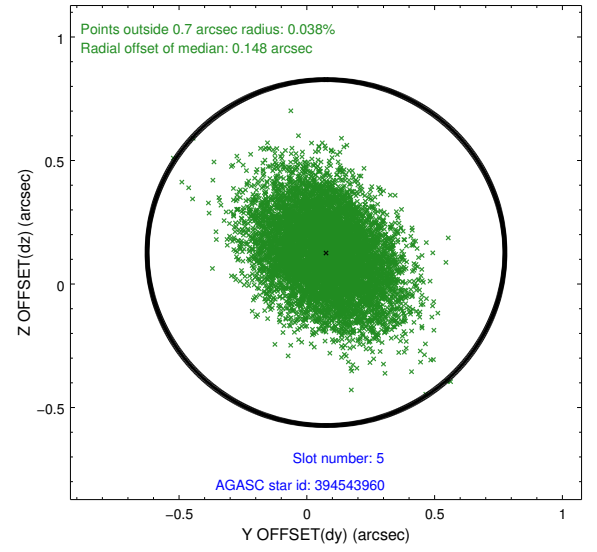
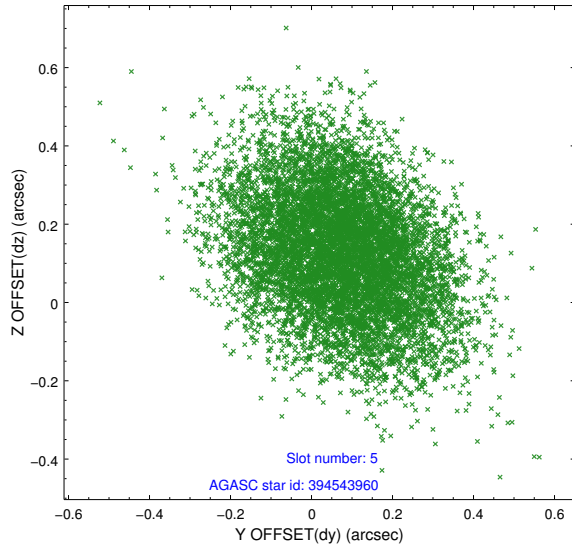


## 2.4.2 Slot 4

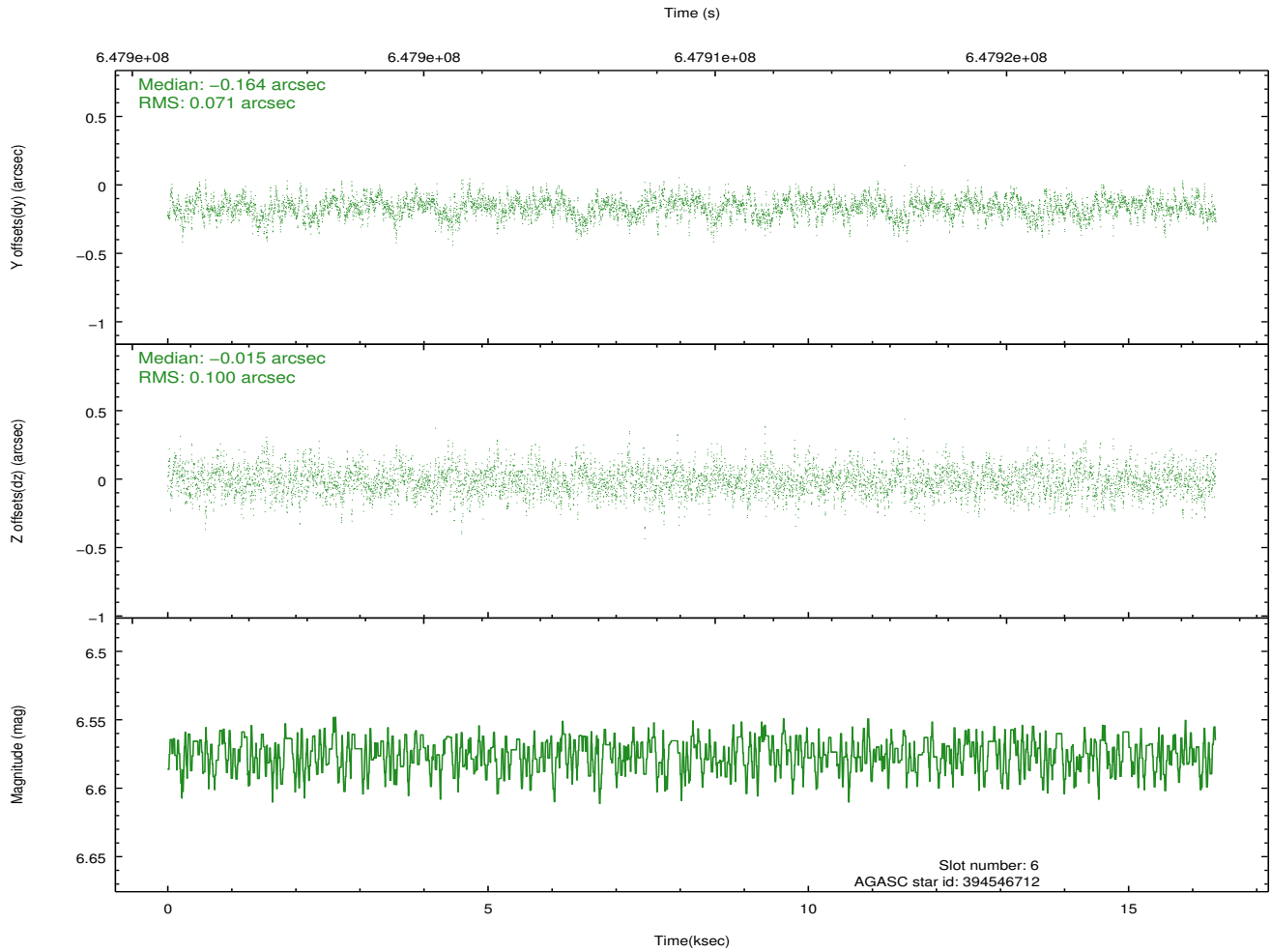
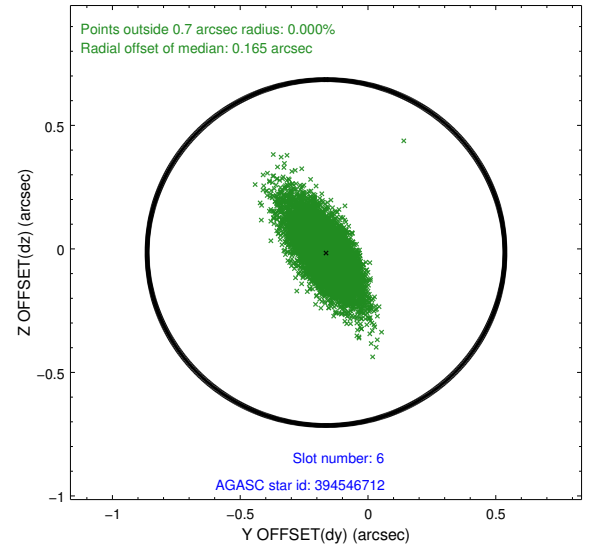
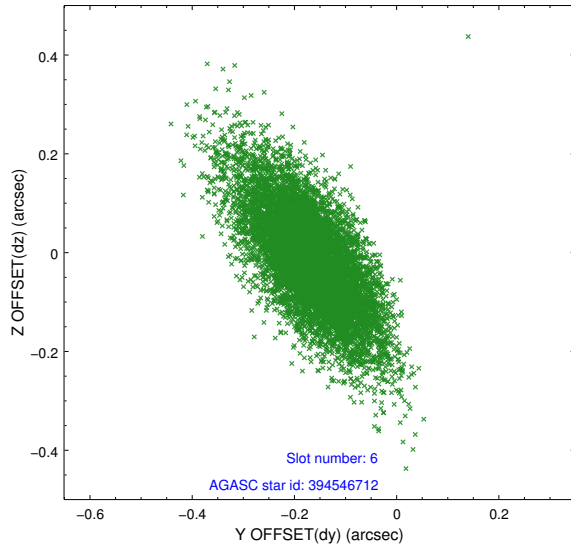




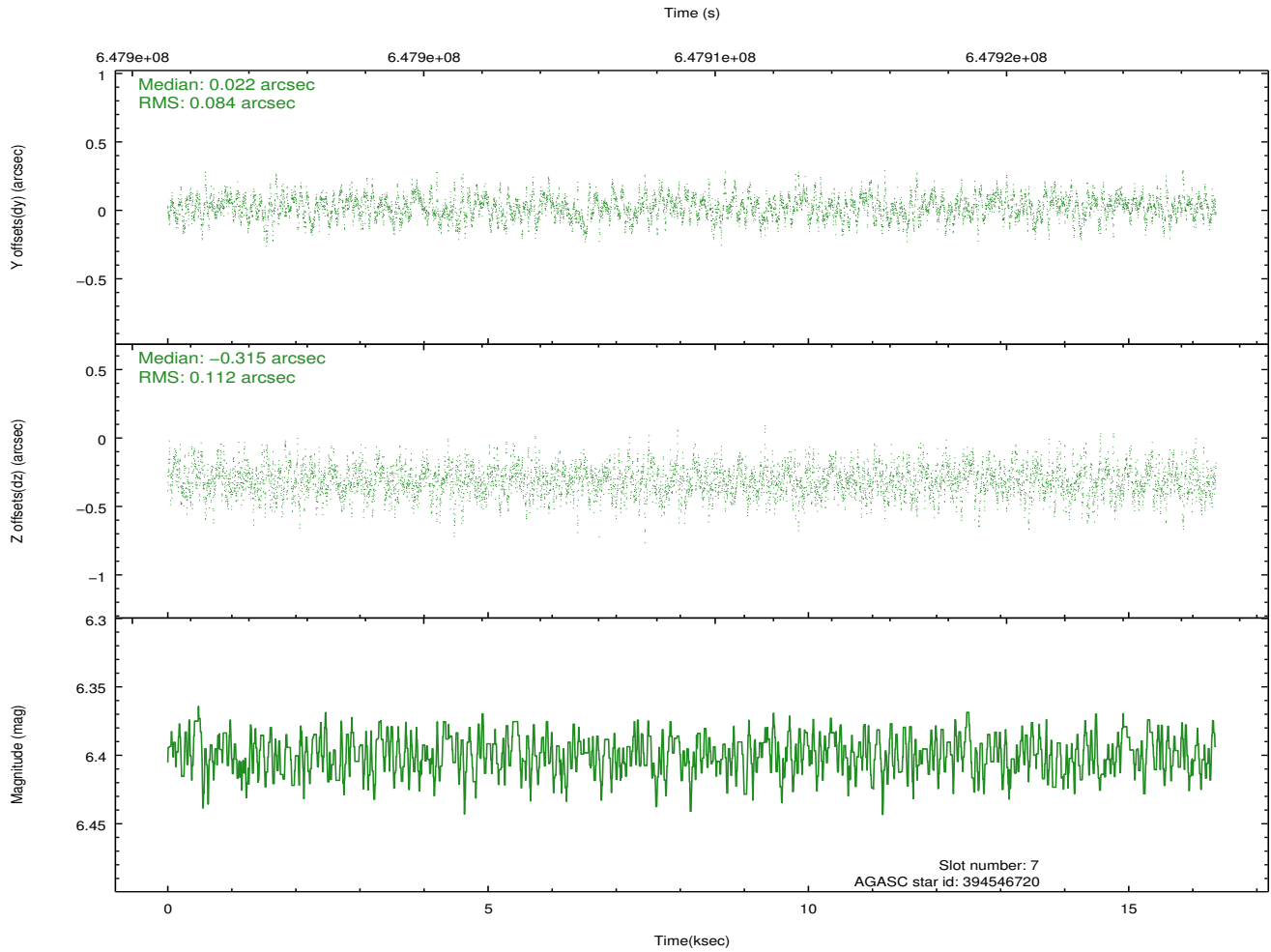
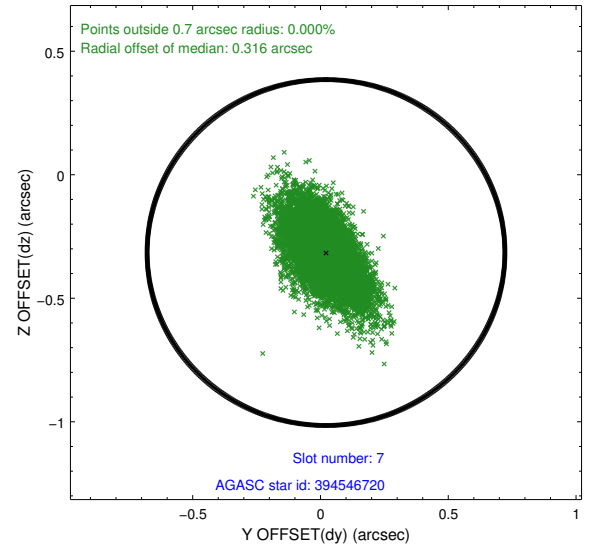
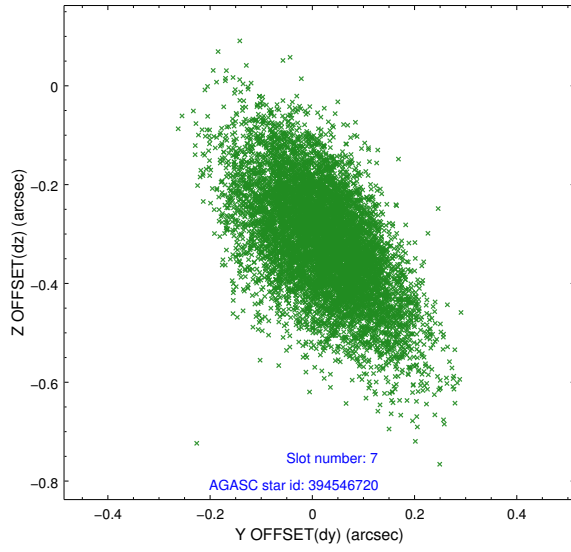
### 2.4.3 Slot 5



## 2.4.4 Slot 6

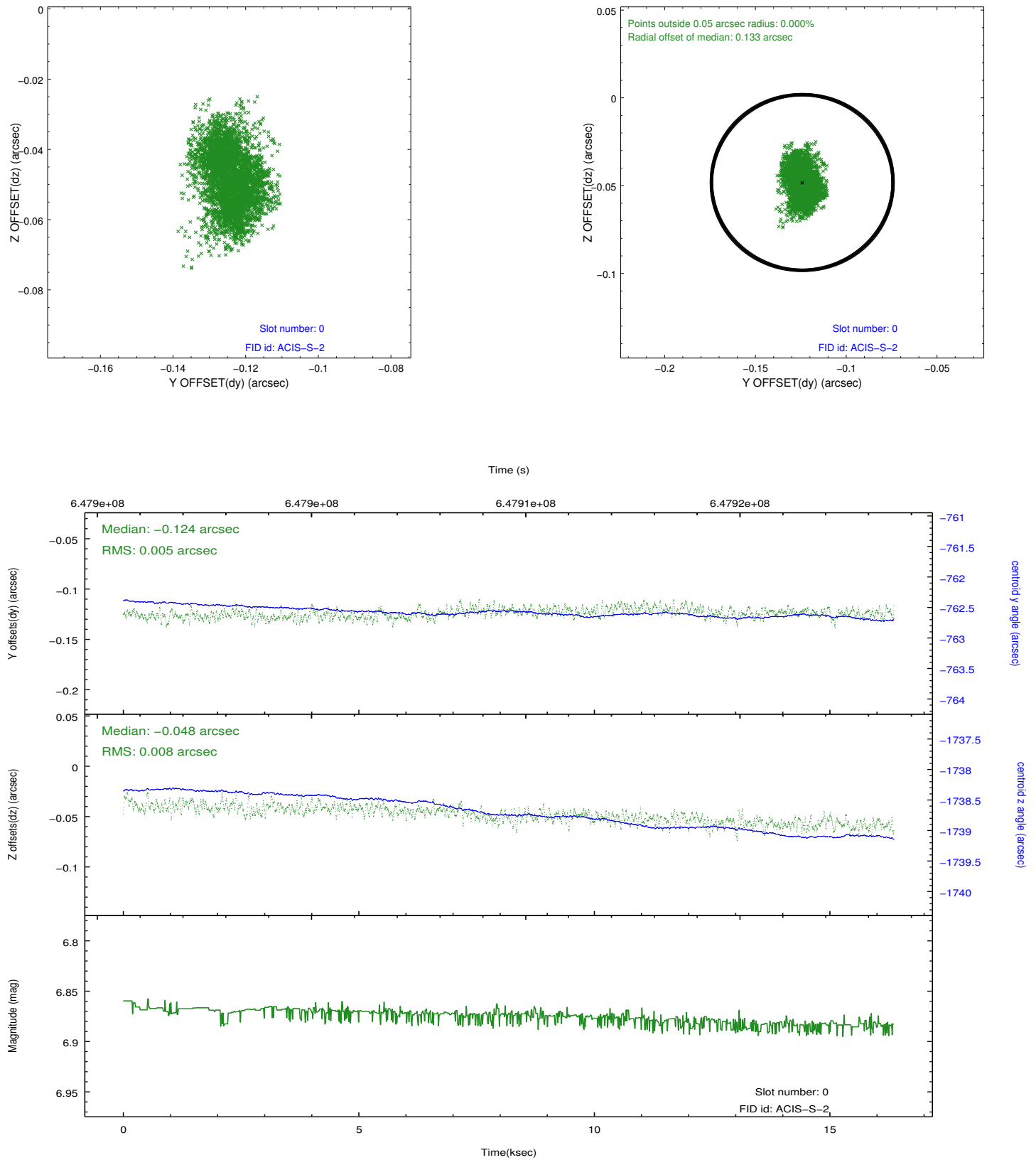


## 2.4.5 Slot 7

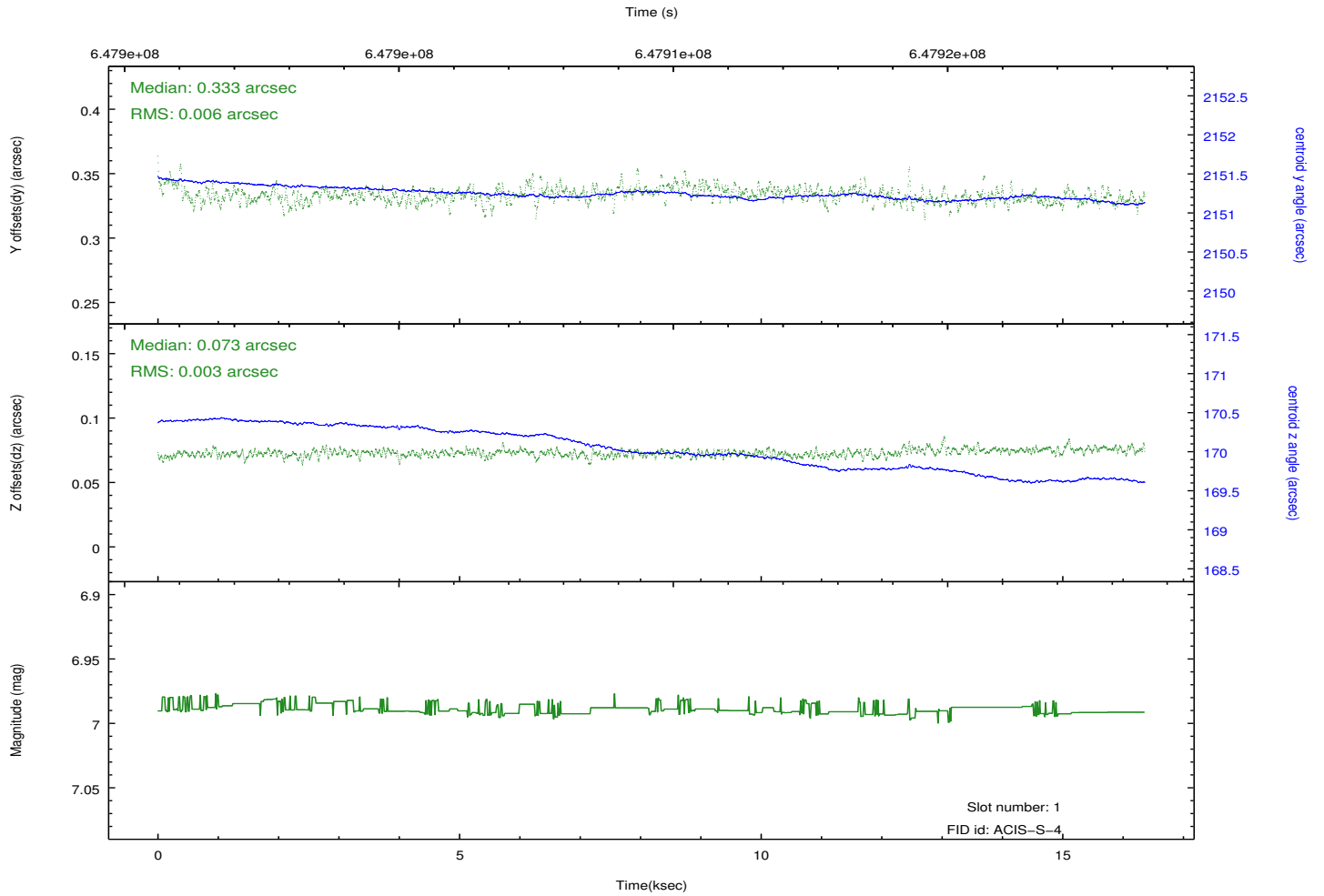
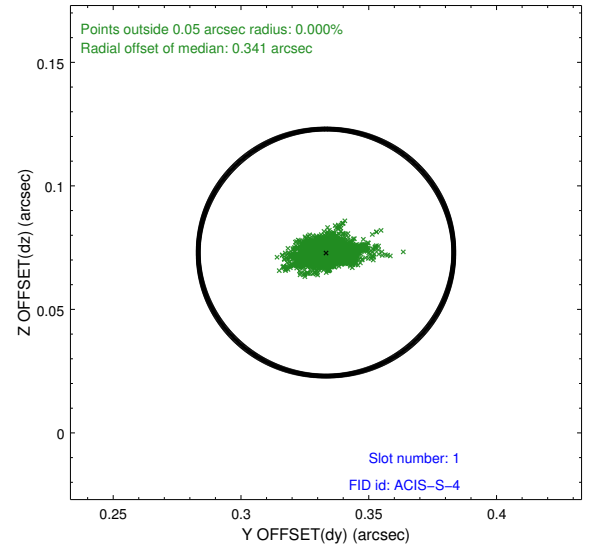
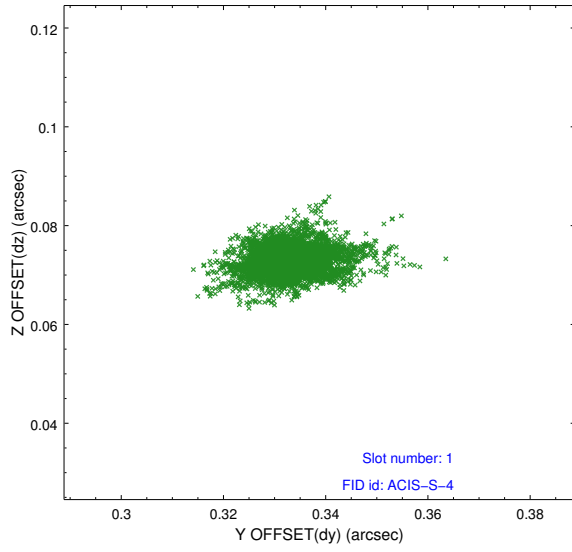


## 2.5 FID Slots

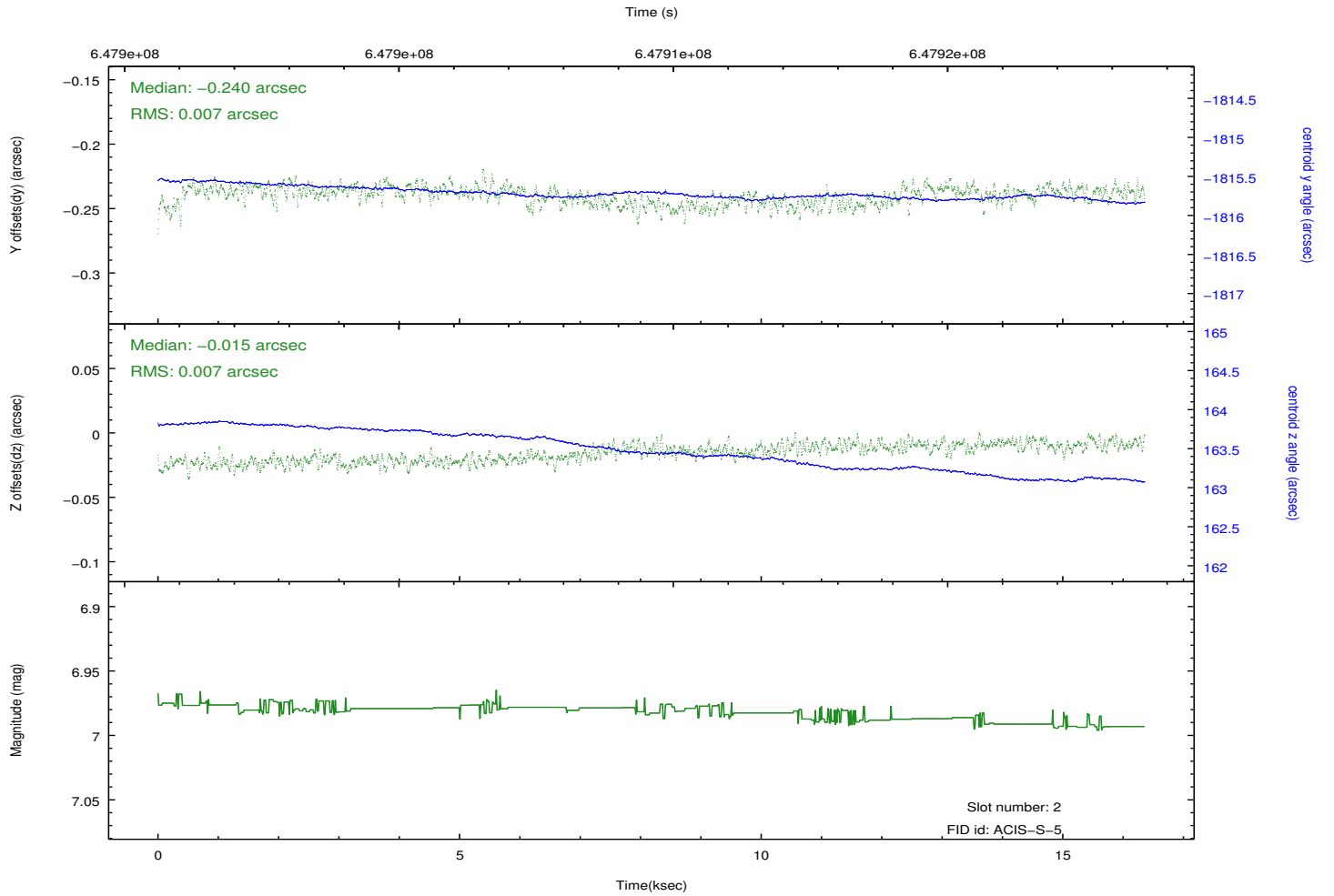
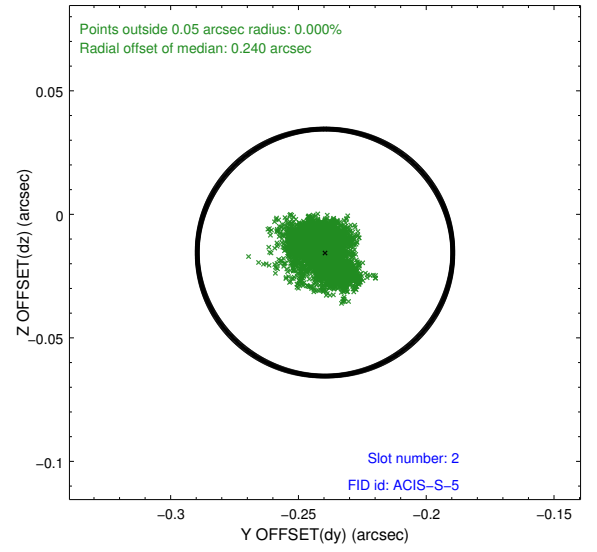
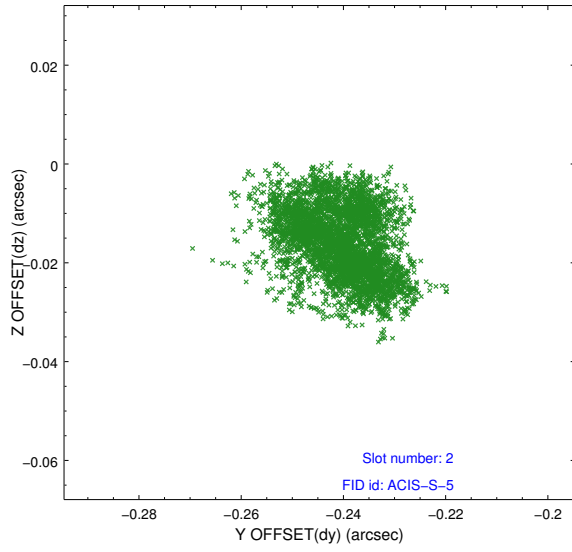
### 2.5.1 Slot 0



## 2.5.2 Slot 1

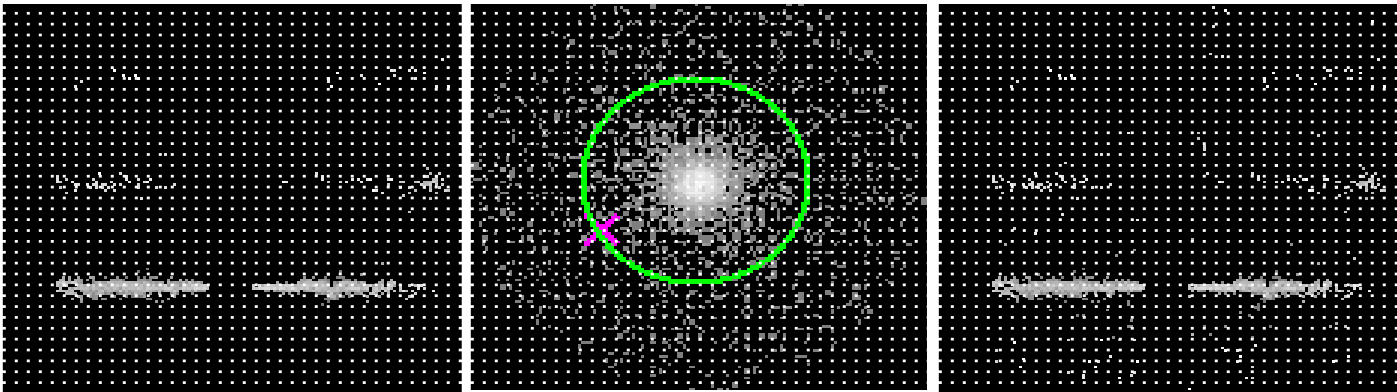


### 2.5.3 Slot 2



# 3 Gratings

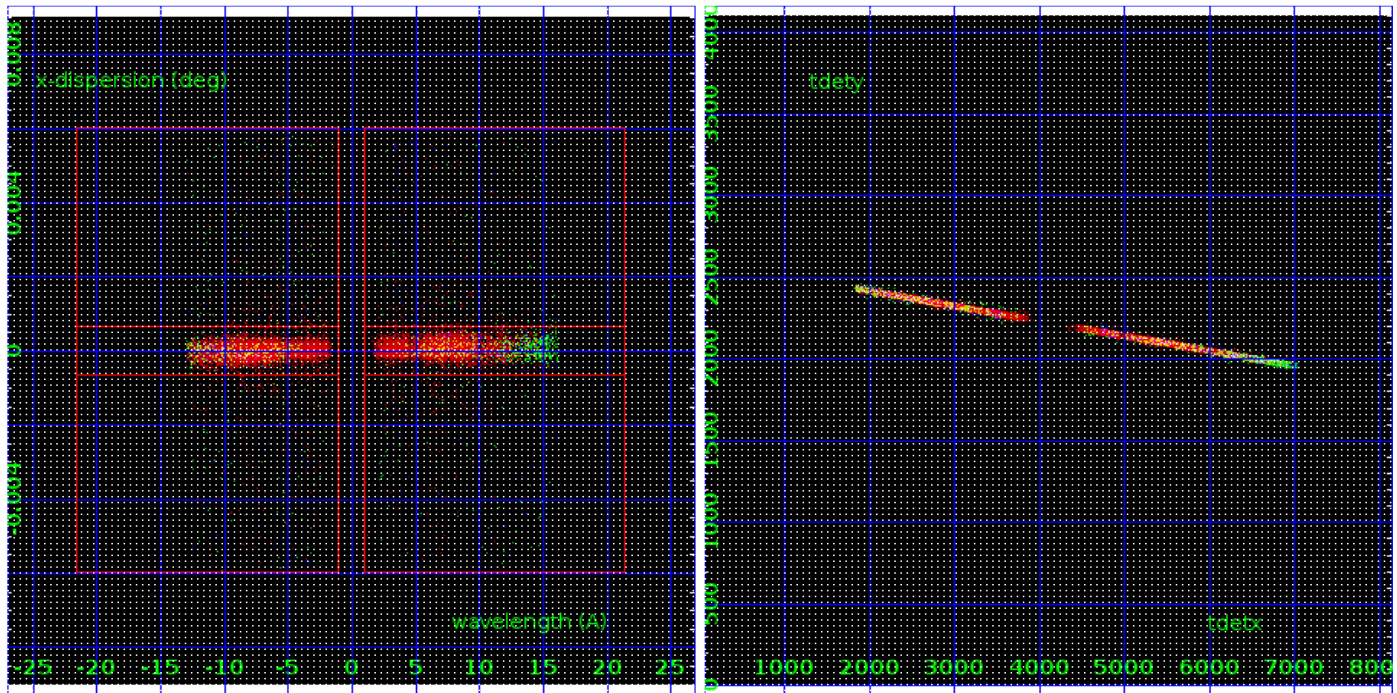
## 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

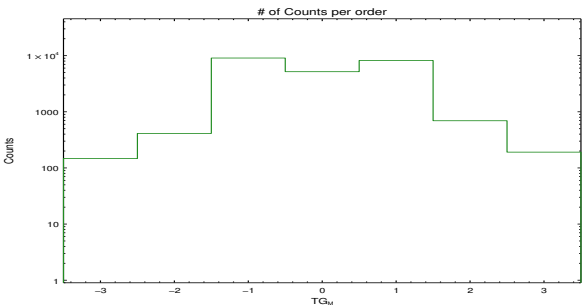
HEG Order Sort ALL

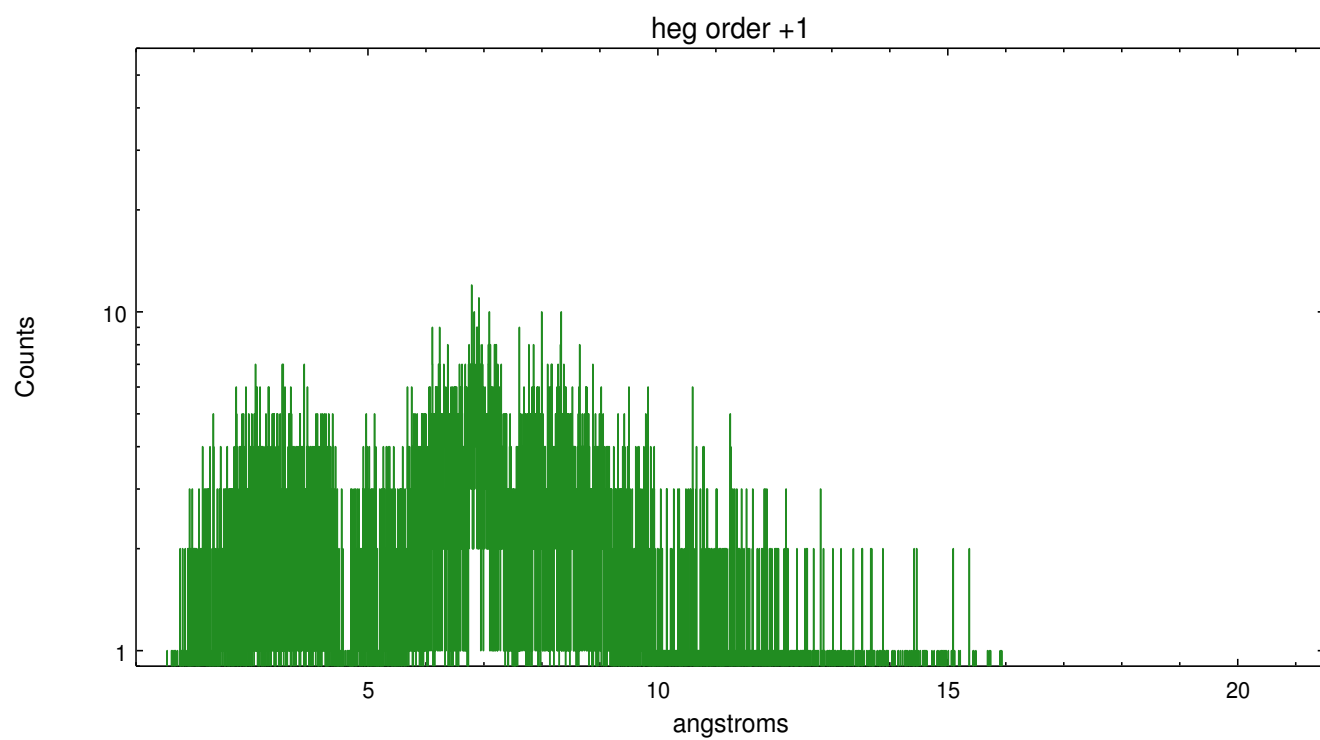
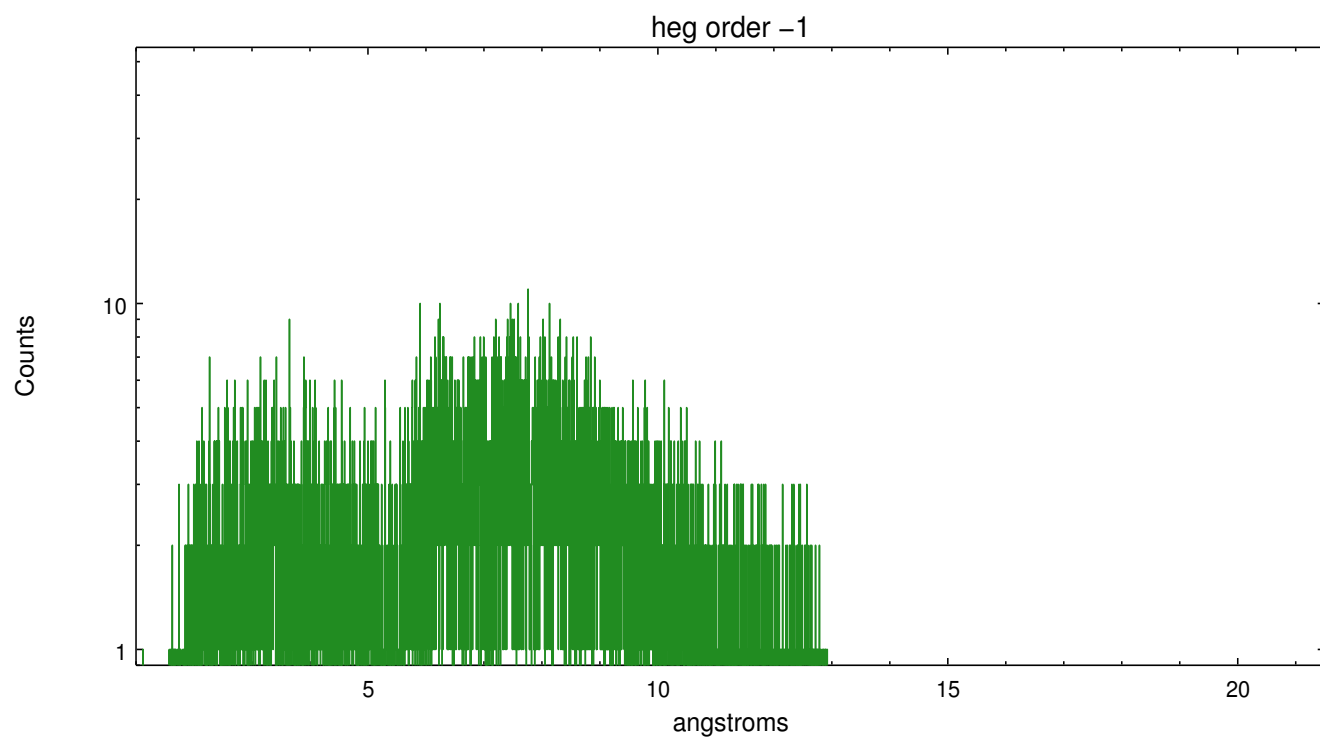


Spot Image HEG

Full Detector HEG

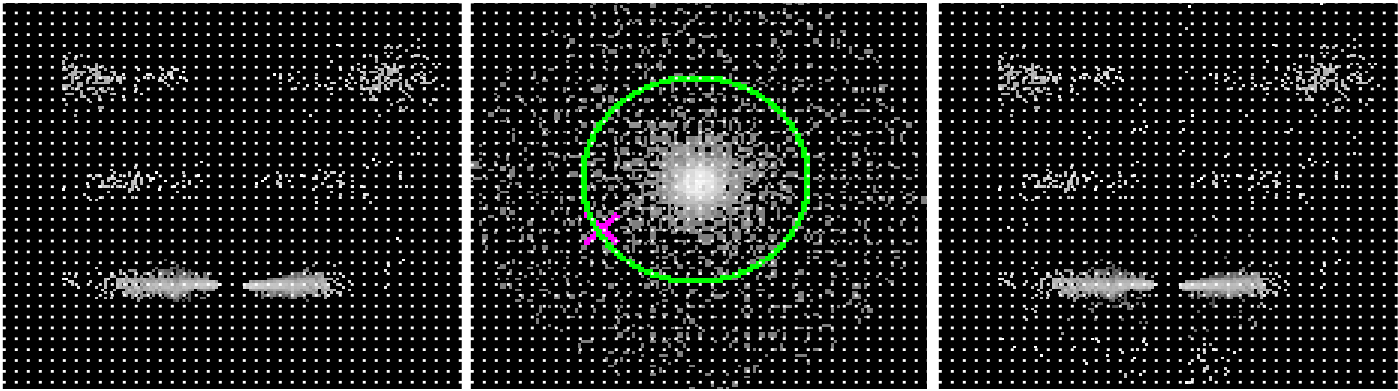
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	147	412	9066	5180	8202	693	191







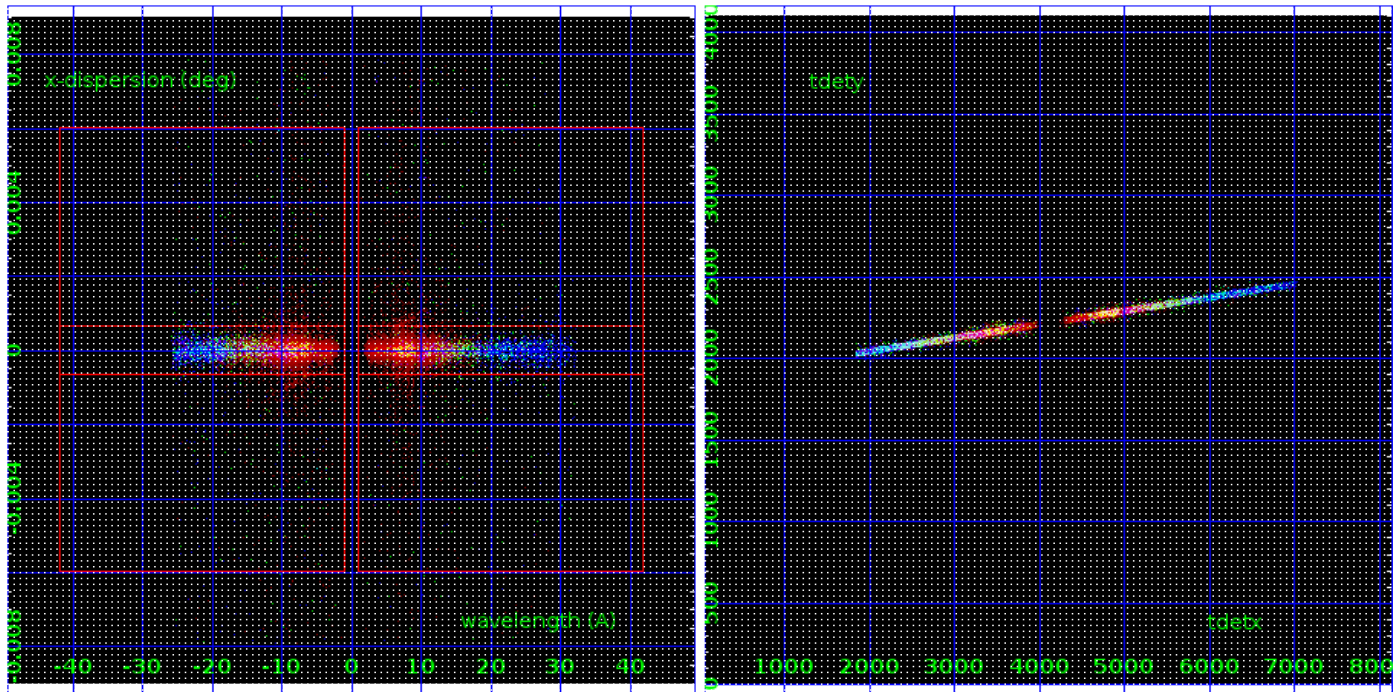
3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

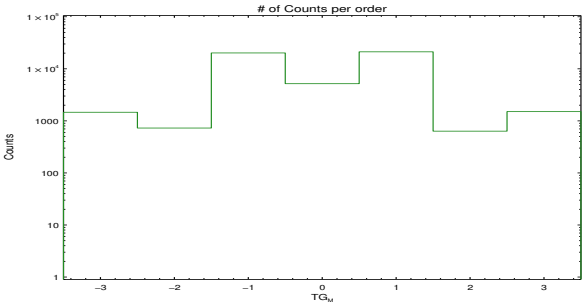
MEG Order Sort ALL

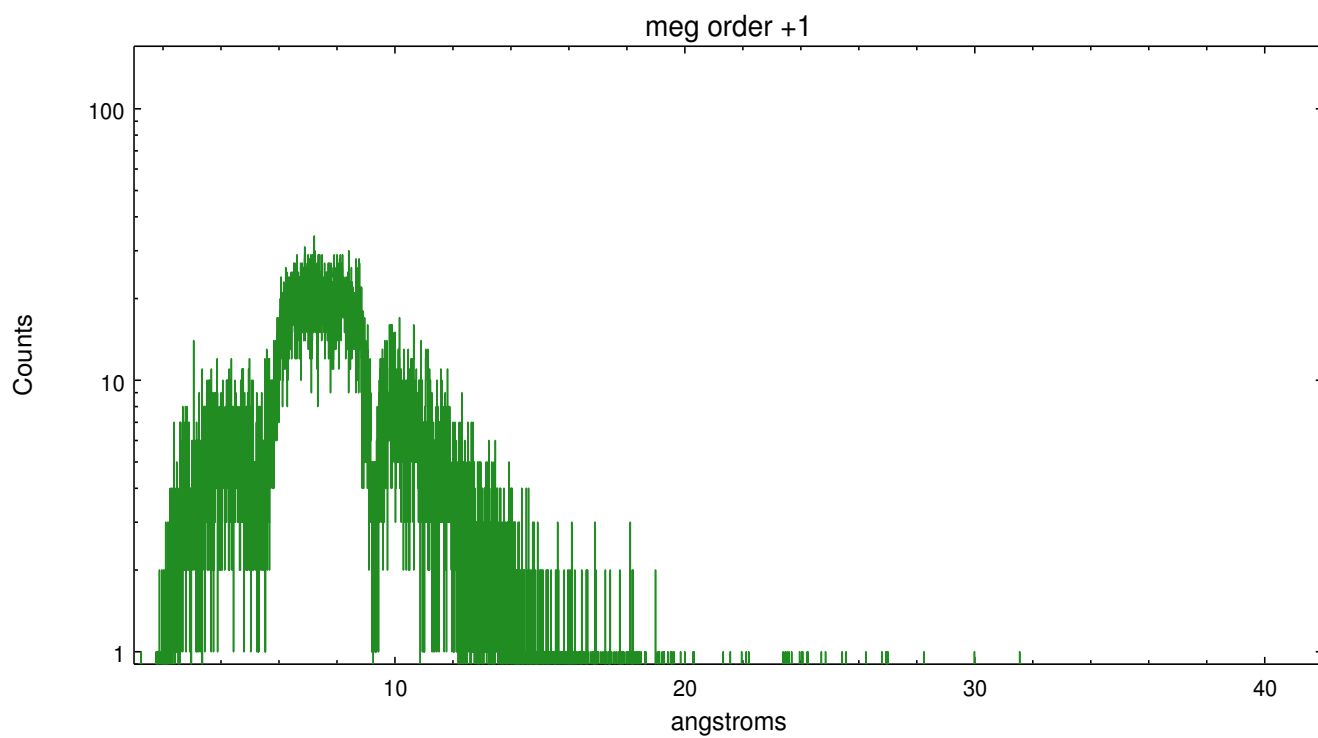
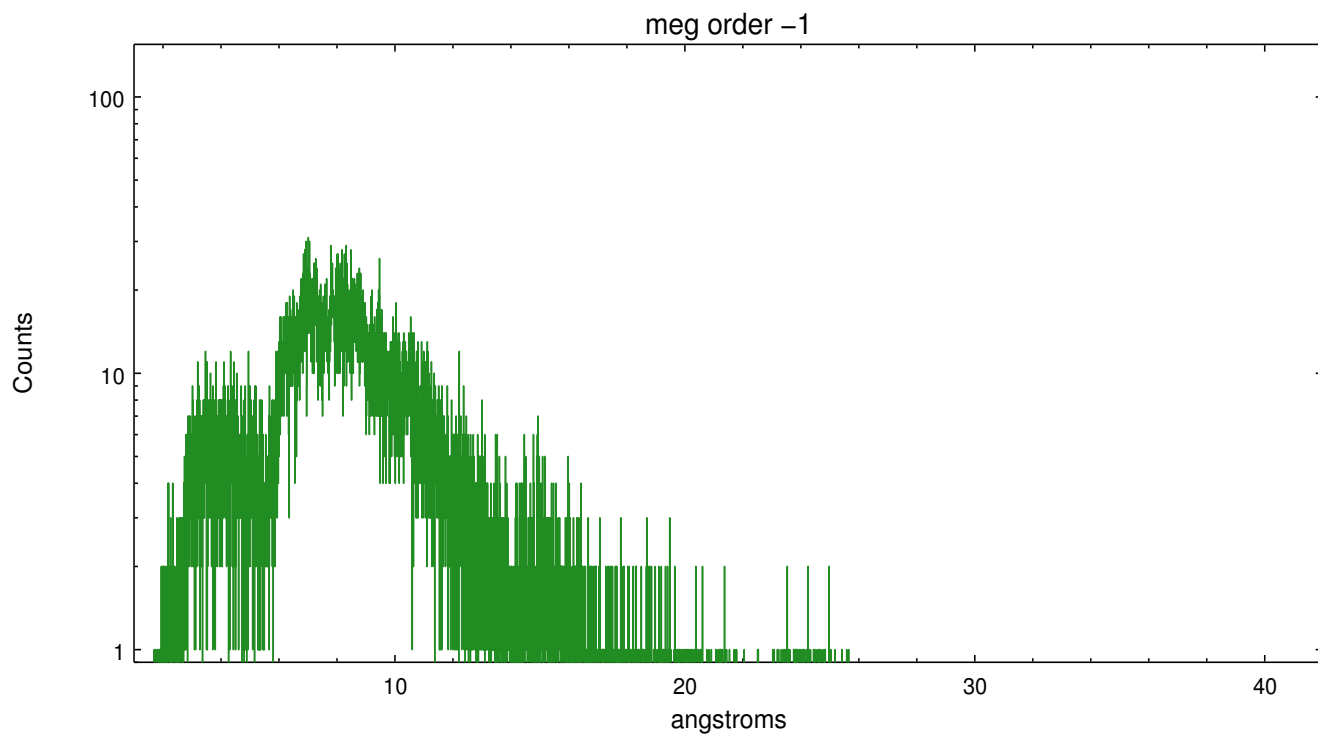


Spot Image MEG

Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1463	728	20178	5180	21206	634	1506





## A Summary

### A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2018.07.16
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	15.053600115895

### A.2 Comments