

# V&V Reference Report

## L2 ASCDS Version : 10.6.3

Observation 21105 - L2 Version 1  
Chandra X-Ray Center

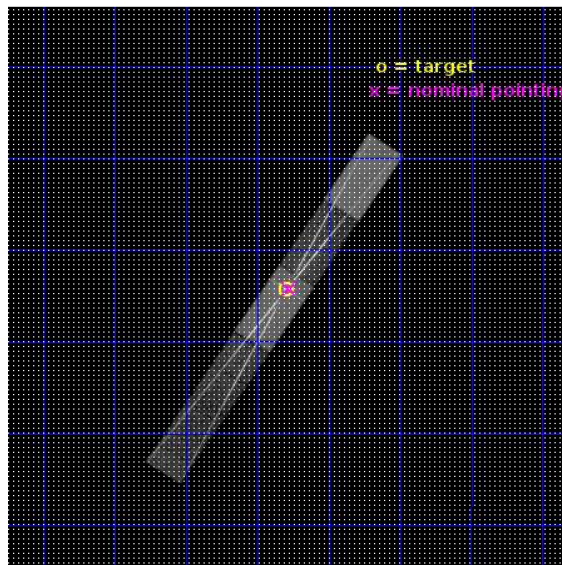
L2 Processing Date : Jun 16 2018

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# 1 Front

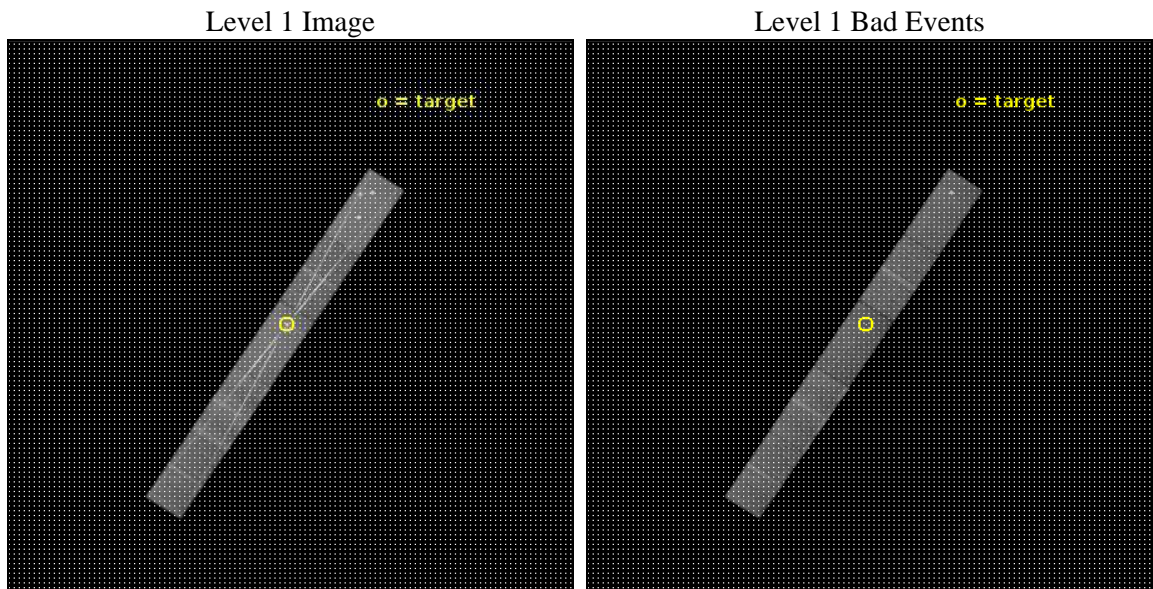
seq_num	401899	Sequence number
obs_id	21105	Observation id
title	An X-ray Outflow in an Ultracompact X-ray Binary	Proposal title
observer	Jon Miller	Principal investigator
object	4U 1916-053	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	289.699583	Observer's specified target RA [deg]
dec_targ	-5.238083	Observer's specified target Dec [deg]
ra_nom	289.69358102786	Nominal RA [deg]
dec_nom	-5.2371468171519	Nominal Dec [deg]
roll_nom	123.15606845998	Nominal Roll [deg]
revision	1	Processing version of data
ontime	21685.177835941	Sum of GTIs [s]
livetime	21174.012269161	Livetime [s]
ontime5	21685.136795998	Sum of GTIs [s]
ontime6	21685.095755935	Sum of GTIs [s]
ontime7	21685.177835941	Sum of GTIs [s]
ontime8	21685.054715991	Sum of GTIs [s]
ontime9	21685.013675928	Sum of GTIs [s]
l2events	357851	Number of level 2 events



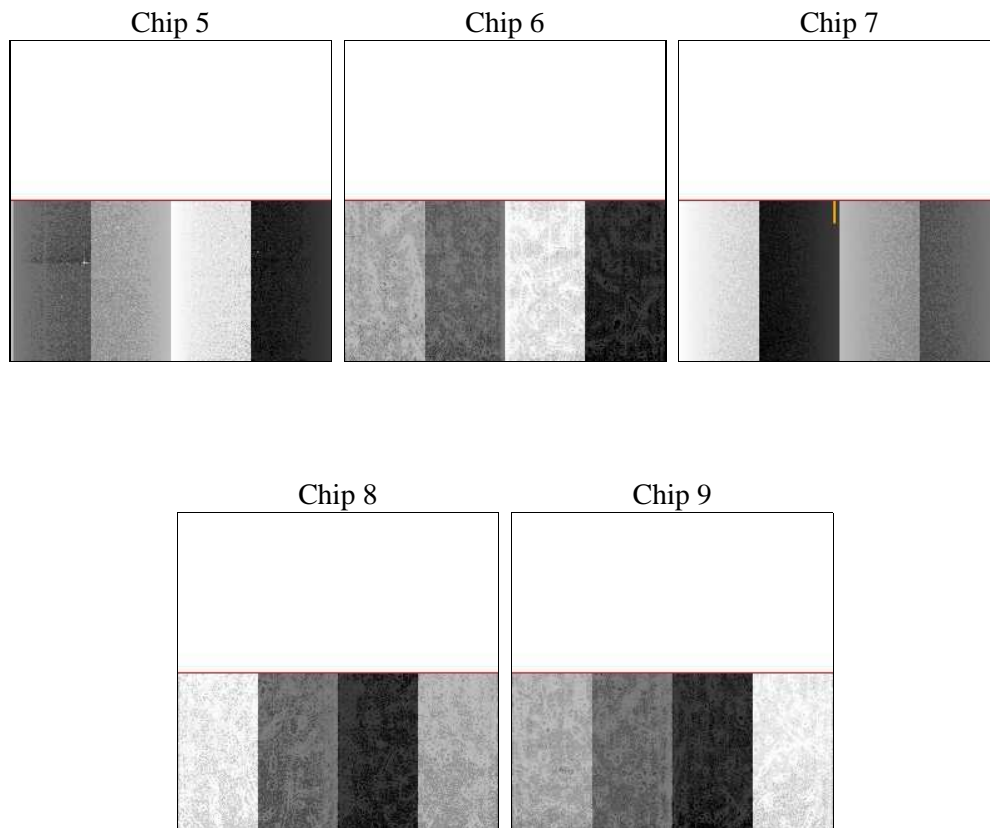
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	21600.000000	[s] Scheduled observation exposure time
ascdsver	10.6.3	Processing system revision	ontime	21685.177835941	Sum of GTIs [s]
caldbver	4.7.8	&#160	ontime5	21685.136795998	Sum of GTIs [s]
date	2018-06-16T14:04:45	Date and time of file creation	ontime6	21685.095755935	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	21685.177835941	Sum of GTIs [s]
			ontime8	21685.054715991	Sum of GTIs [s]
			ontime9	21685.013675928	Sum of GTIs [s]
			l1events	787187	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4053.42, 4089.58)	src1a sky pixel position

### 2.1.4 Events

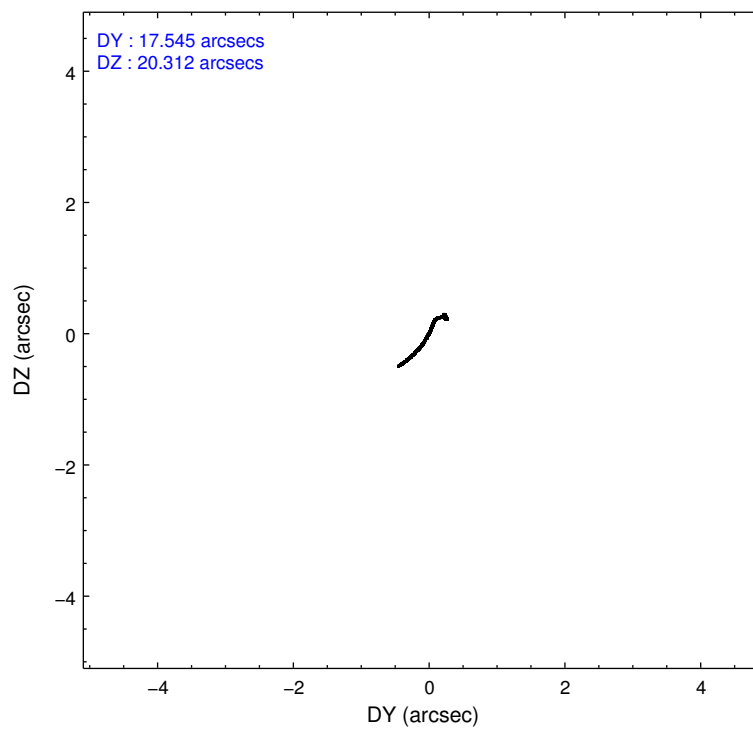
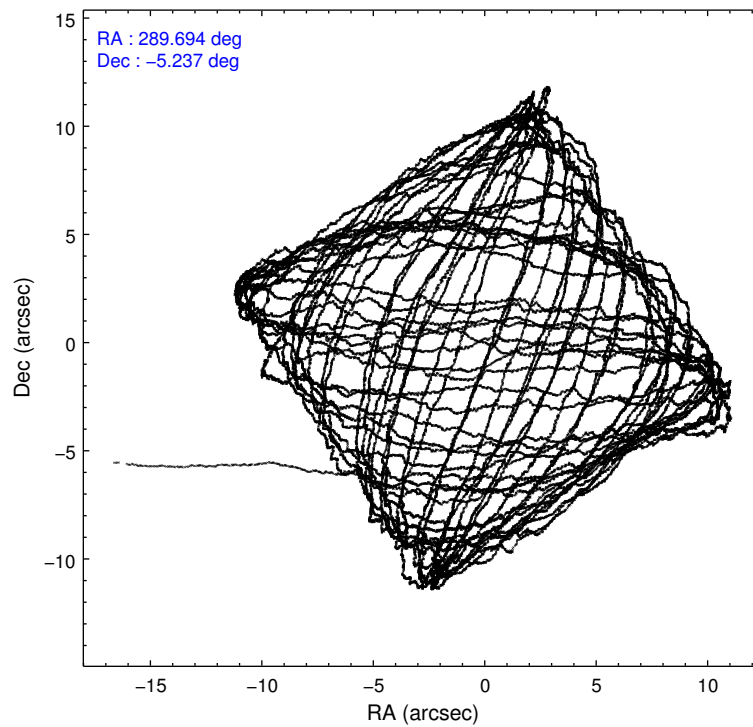
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	175208	170740	210281	143534	87424
rejected events	73570	79117	63625	82653	71531
rejected %	41%	46%	30%	57%	81%

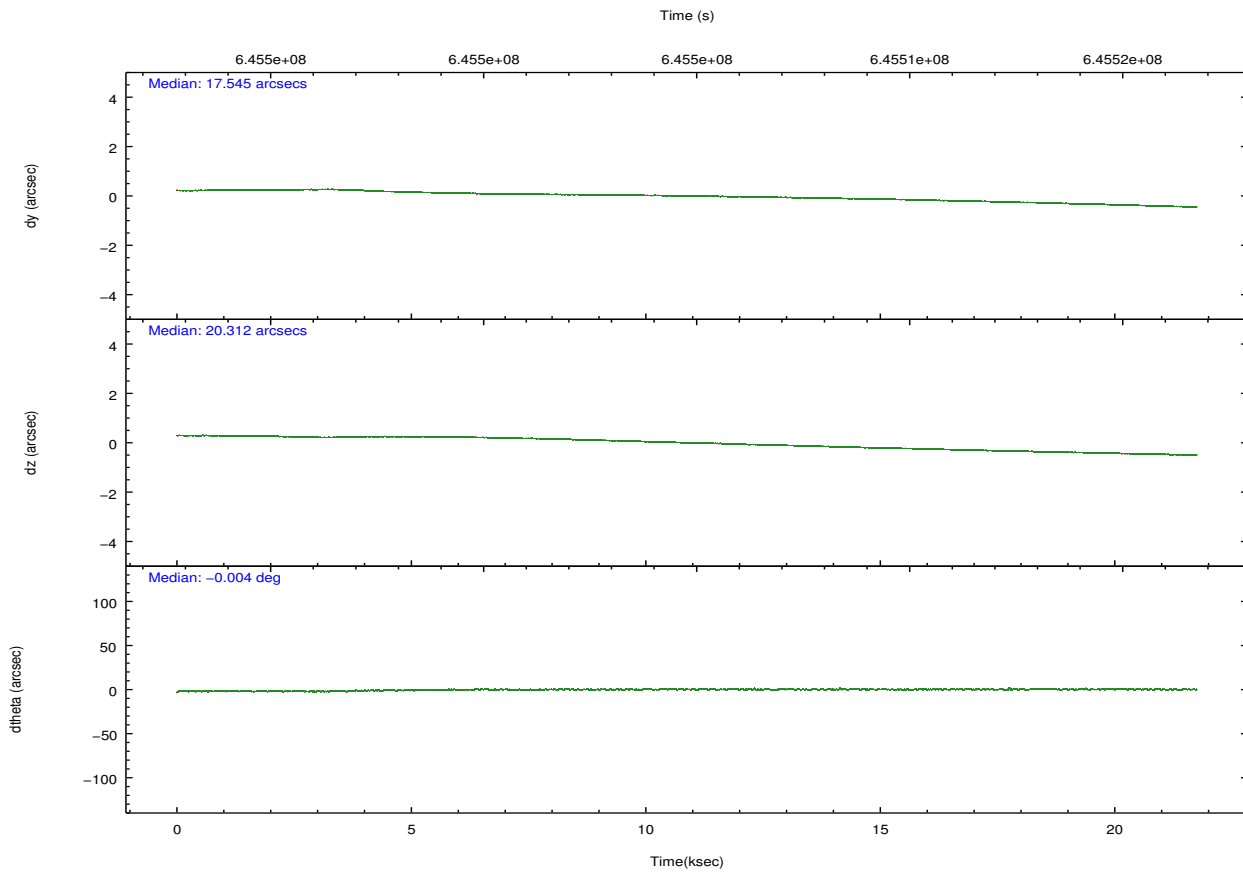
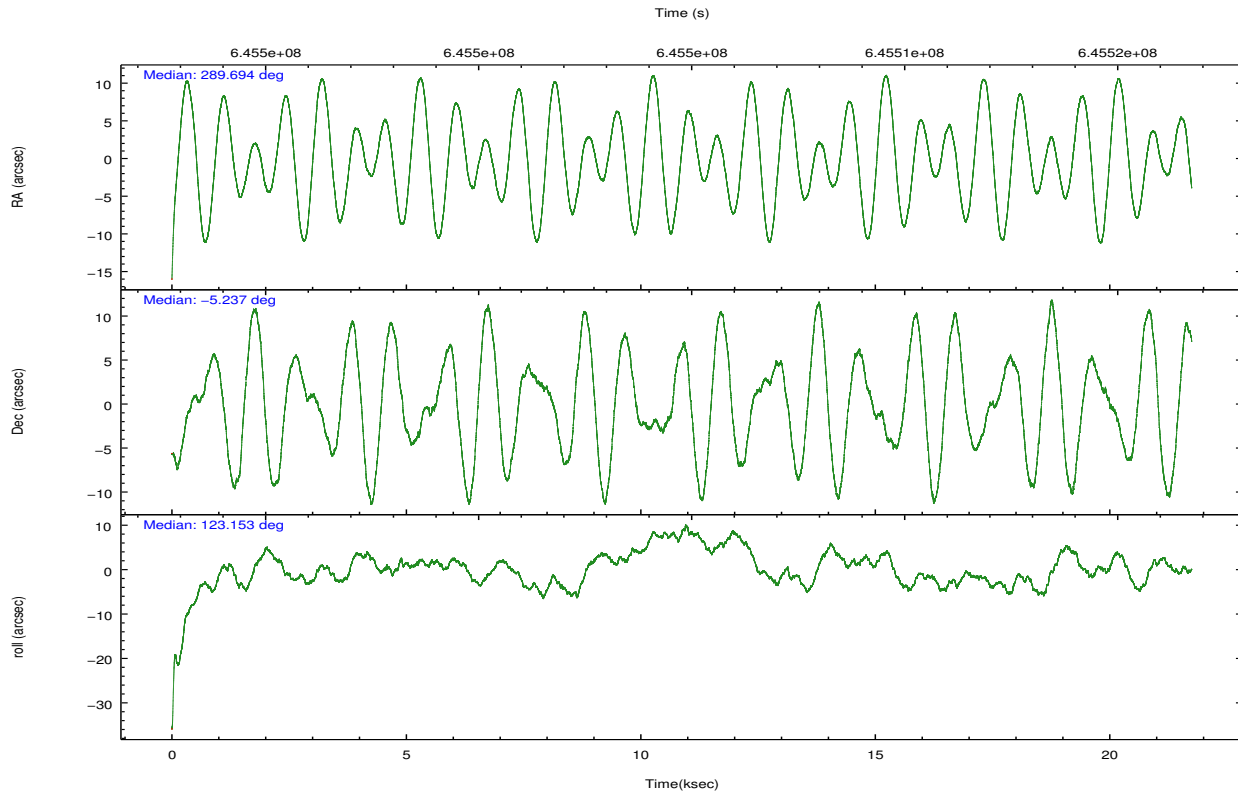
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	28307	64395	25819	31522	7655
	16%	37%	12%	21%	8%
grade 1 events	261	386	503	145	42
	0%	0%	0%	0%	0%
grade 2 events	26249	12487	34995	10708	3012
	14%	7%	16%	7%	3%
grade 3 events	5374	4517	14926	4592	1396
	3%	2%	7%	3%	1%
grade 4 events	4773	4358	14926	4320	1378
	2%	2%	7%	3%	1%
grade 5 events	12848	4141	12963	5889	4400
	7%	2%	6%	4%	5%
grade 6 events	36951	5880	56016	9747	2454
	21%	3%	26%	6%	2%
grade 7 events	60445	74576	50133	76611	67087
	34%	43%	23%	53%	76%

## 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	289.718320	289.6935810278559	CCD I2 on	N	N
[deg] Pointing Dec	-5.249193	-5.237146817151933	CCD I3 on	N	N
[deg] Pointing Roll	123.001714	123.1560684599797	CCD S0 on	O1	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	-183.992523	-183.985022191653	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-6.14	-6.147500391354811	CCD S4 on	Y	Y
[s] Observation start time (MET)	645494030.184000	645492987.33552	CCD S5 on	Y	Y
Observation start date	2018-06-15T23:52:41	2018-06-15T23:36:27	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	645515630.184000	645516599.74942	On-chip summing requested	N	N
Observation end date	2018-06-16T05:52:41	2018-06-16T06:09:59	Subarray requested	CUSTOM	1/2
Read mode	TIMED	TIMED	Subarray start row	1	1
			Subarray row count	512	512
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	1.7

## 2.3 Aspect



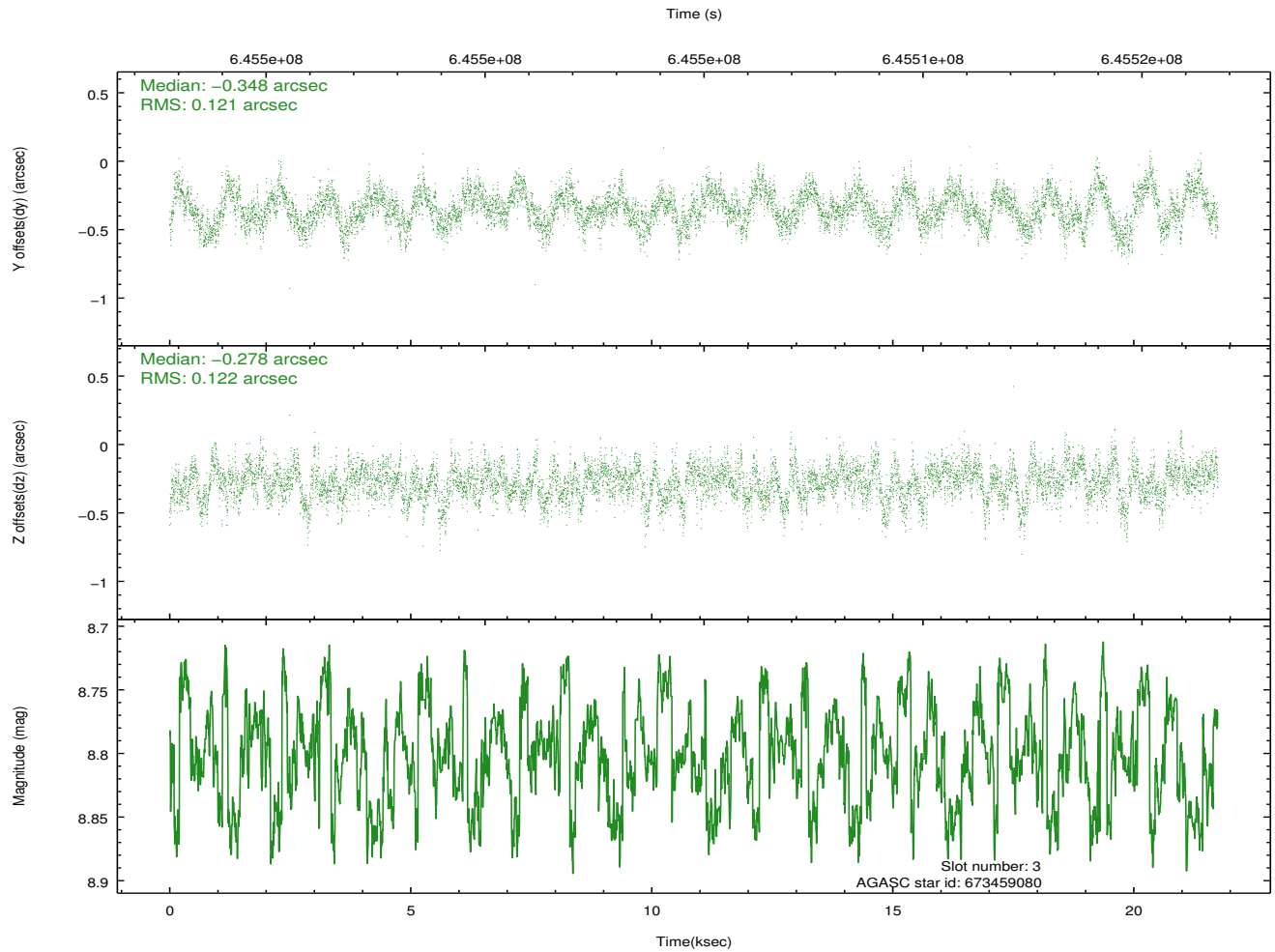
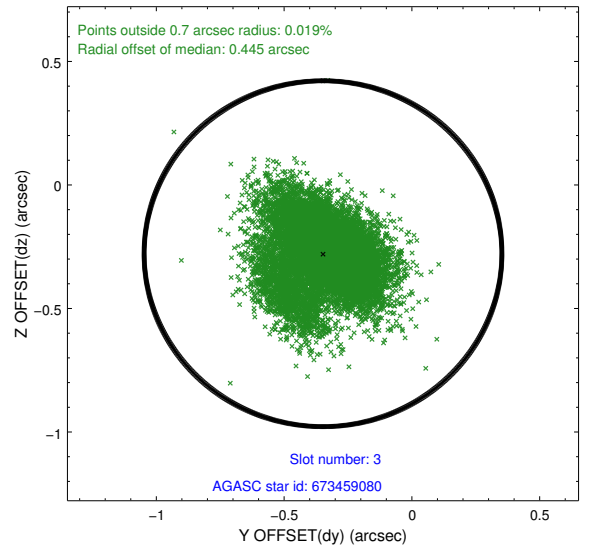
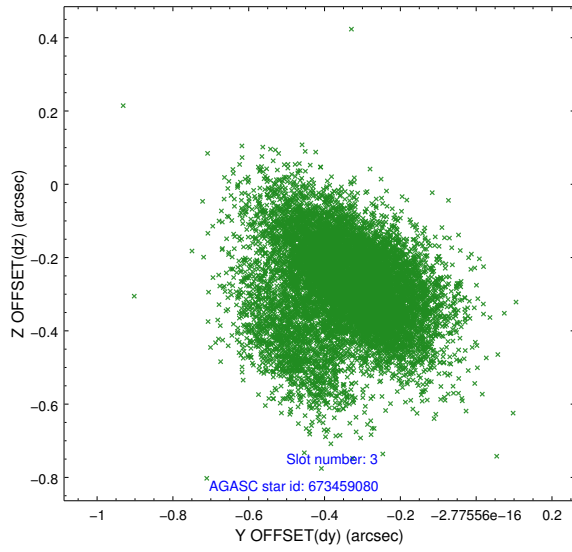


### Slot Statistics

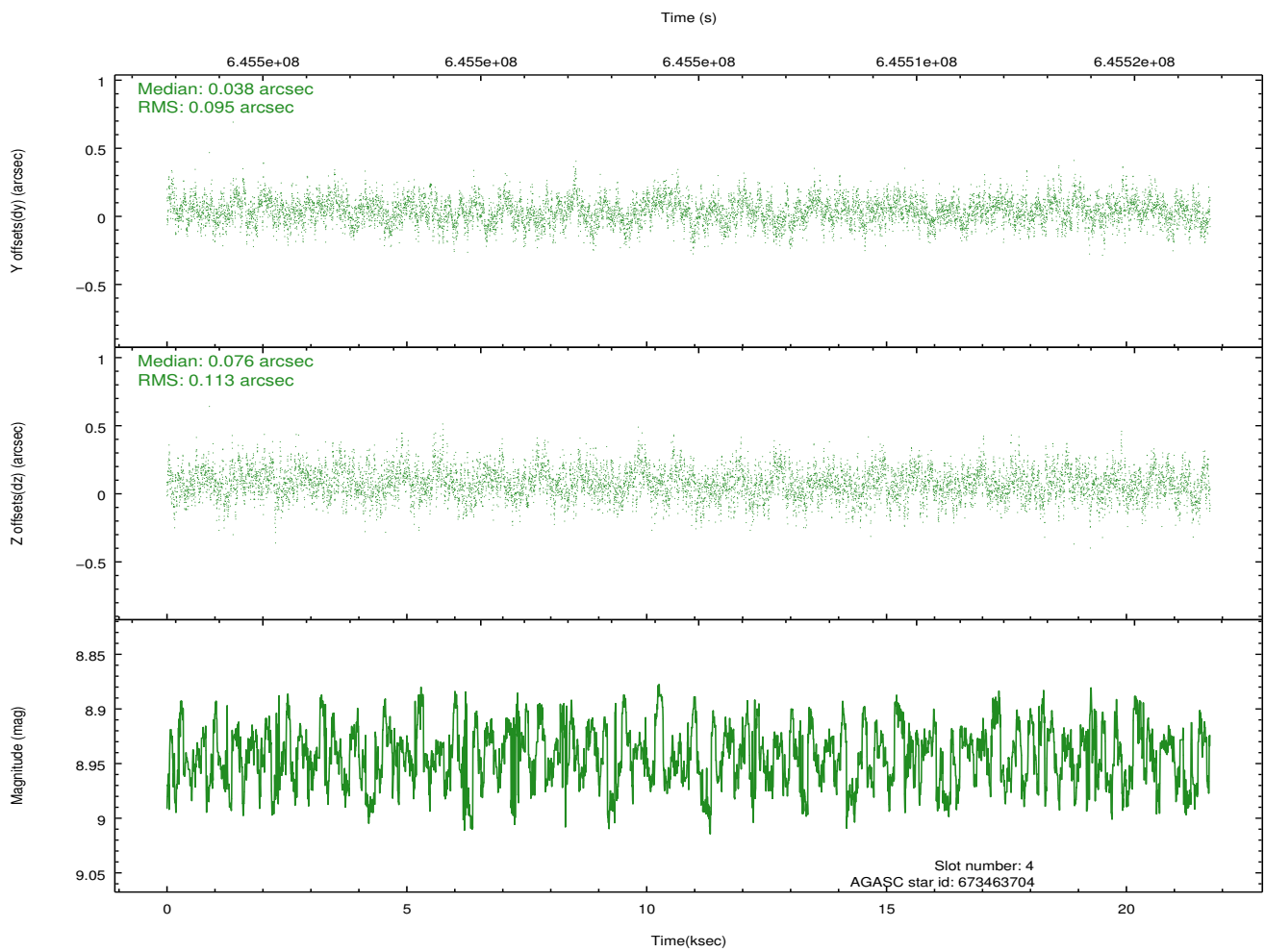
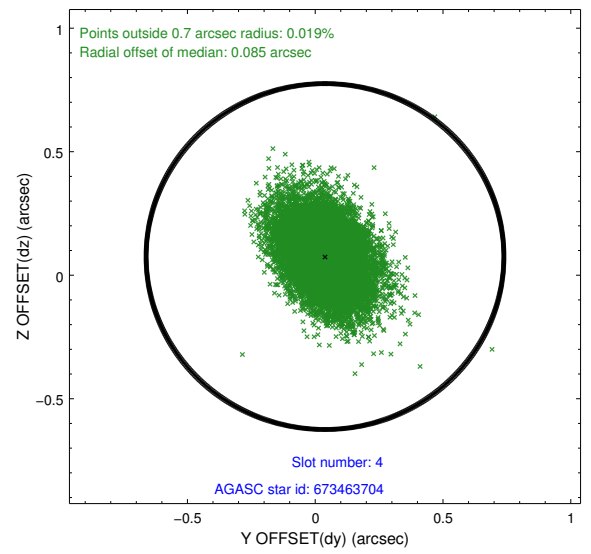
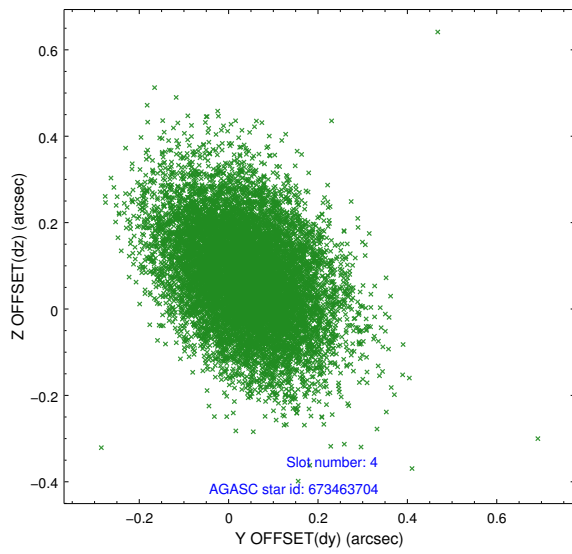
slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	6.95	5305	1.000	-0.204	-0.161	0.009	0.014	0.000000	0.000000	-770.32	-1868
1	FID		ACIS-S-4	7.07	5305	1.000	0.476	0.142	0.007	0.012	0.000000	0.000000	2143.56	39
2	FID		ACIS-S-5	7.09	5304	1.000	-0.304	0.027	0.010	0.018	0.000000	0.000000	-1823.06	33
3	GUIDE	used	673459080	8.80	10606	1.000	-0.348	-0.278	0.183	0.300	289.246637	-5.373686	544.49	1662
4	GUIDE	used	673463704	8.94	10603	1.000	0.038	0.076	0.155	0.260	289.894494	-4.869892	801.16	-1273
5	GUIDE	used	673466464	9.21	10589	1.000	0.233	0.061	0.154	0.258	289.850458	-5.613937	-1358.44	317
6	GUIDE	used	673460992	8.28	10599	1.000	-0.019	0.338	0.149	0.248	289.799374	-5.232721	-108.16	-275
7	GUIDE	used	673455744	9.52	10521	1.000	0.109	-0.196	0.226	0.393	289.673010	-4.488976	2383.97	-1354

## 2.4 Star Slots

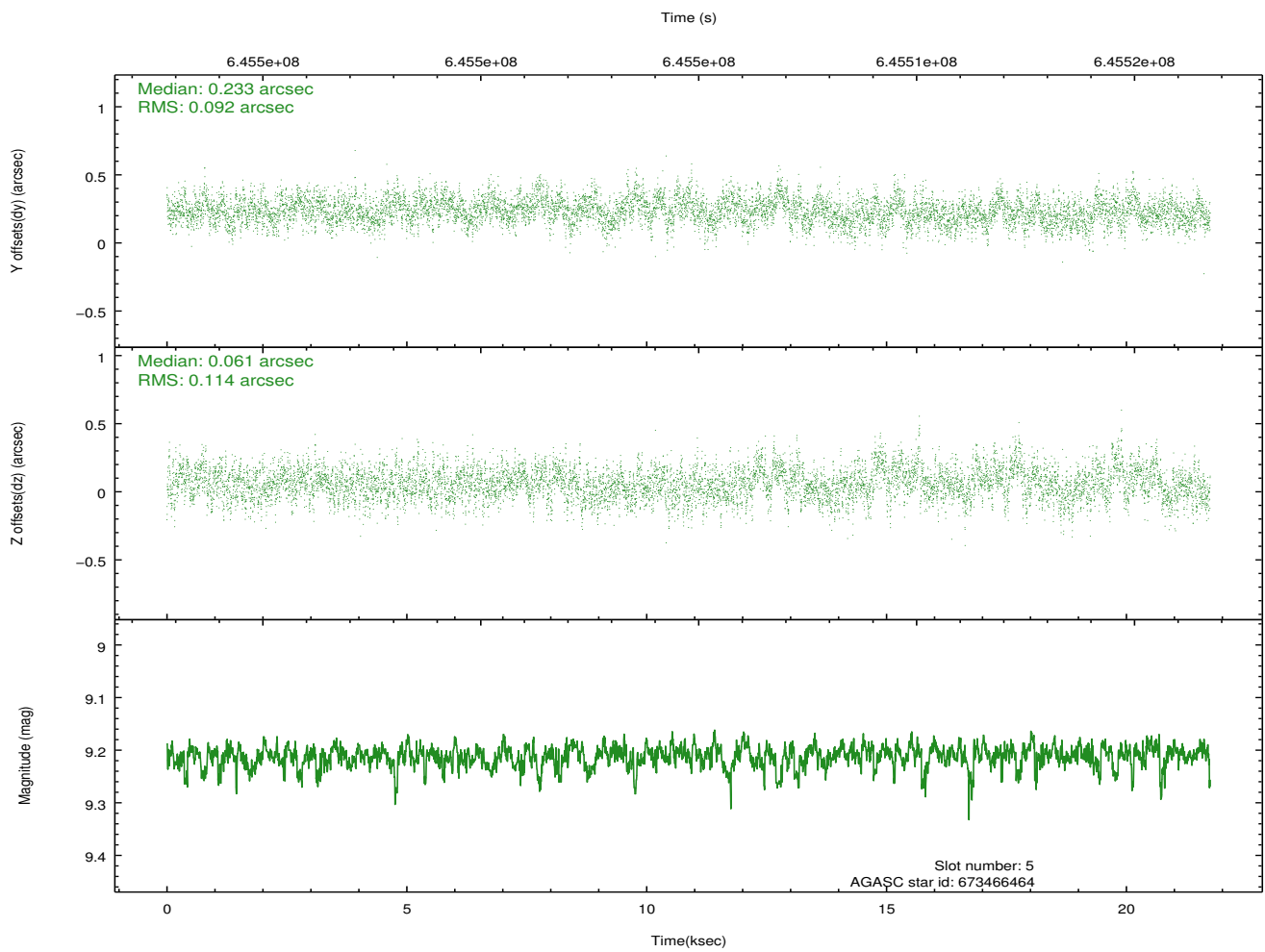
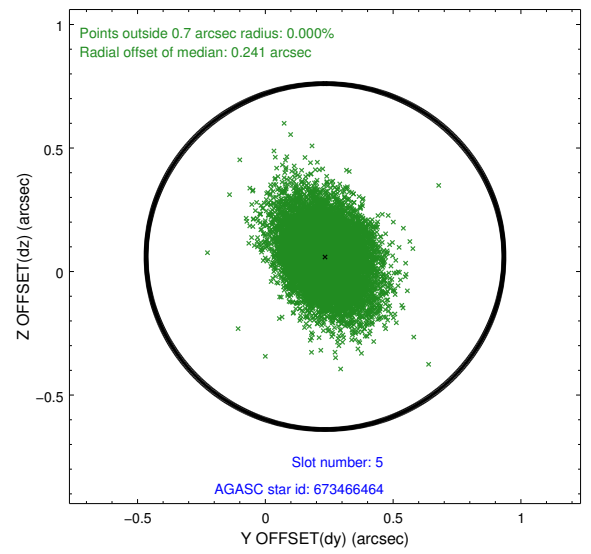
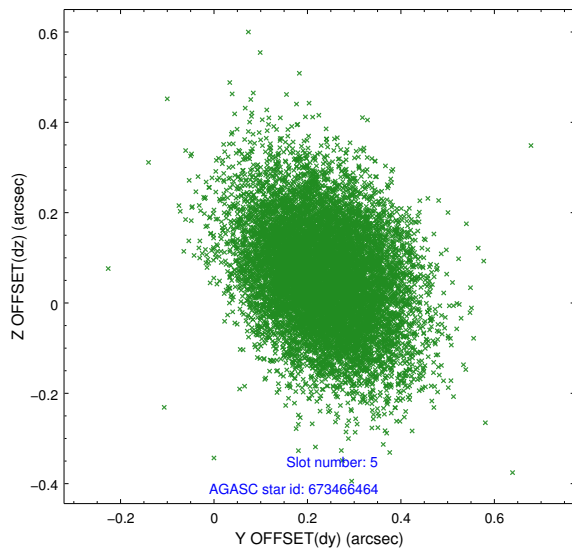
### 2.4.1 Slot 3



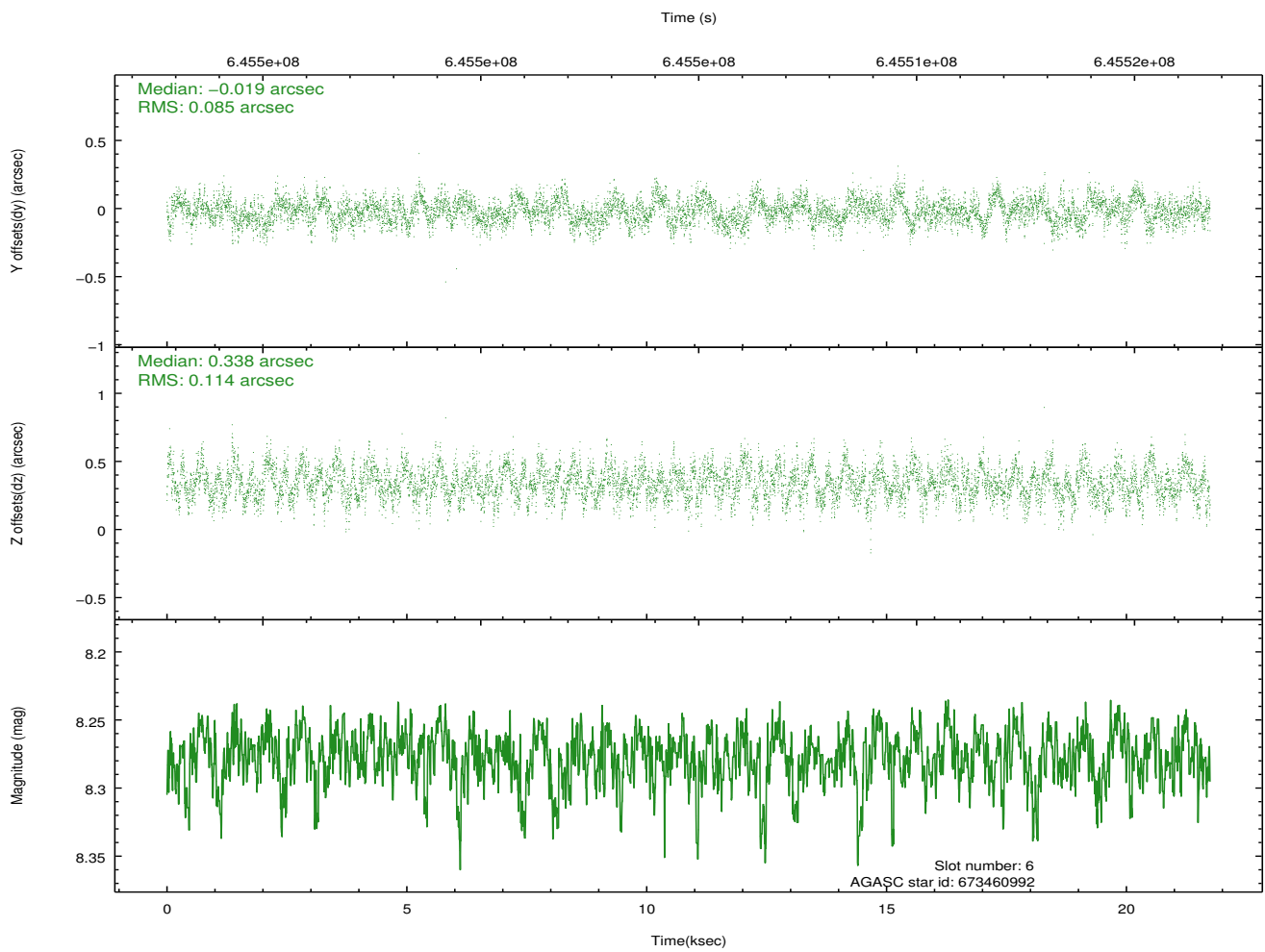
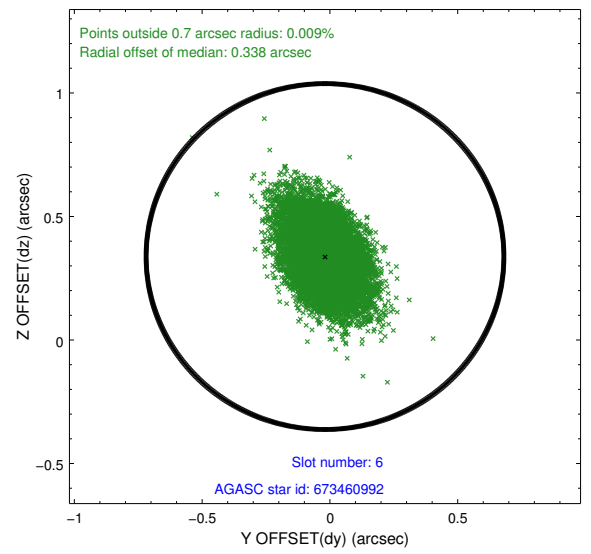
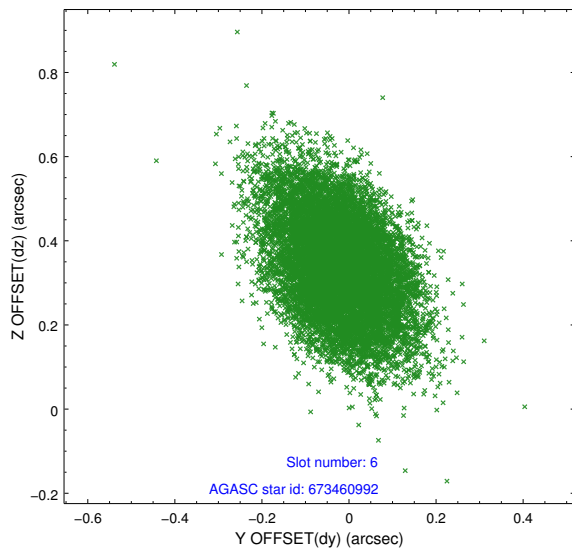
## 2.4.2 Slot 4



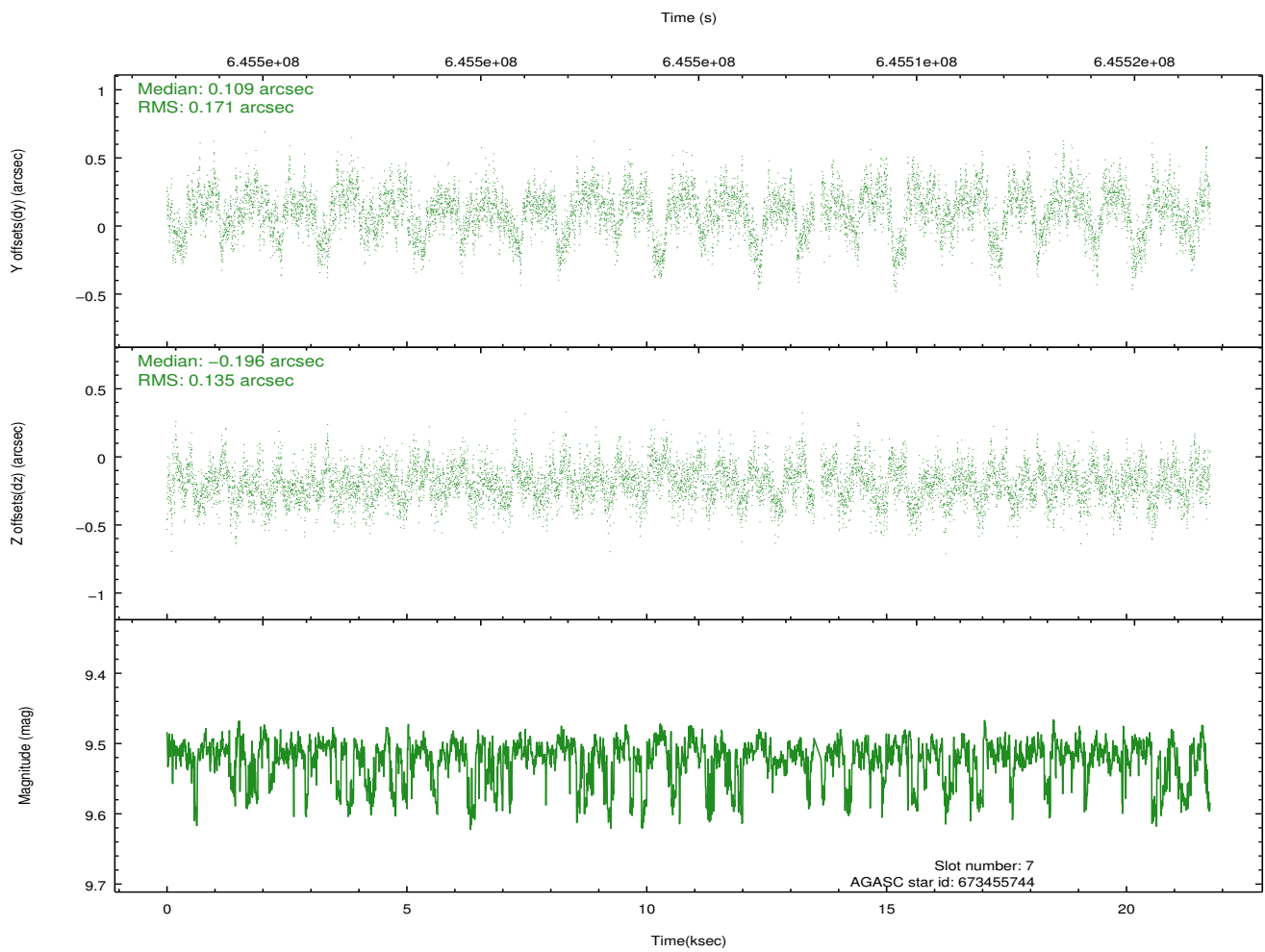
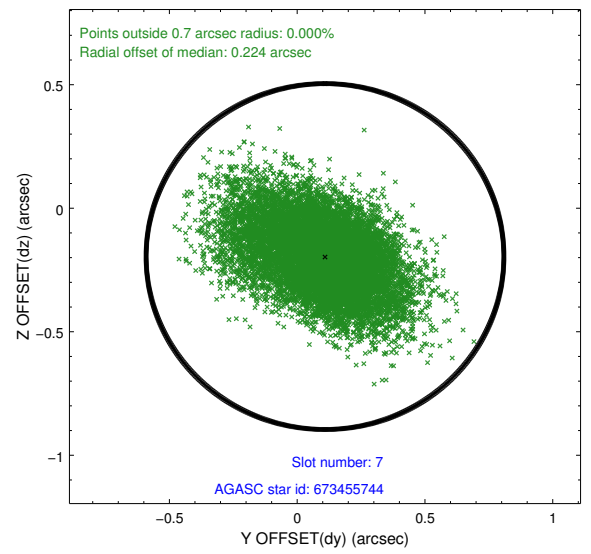
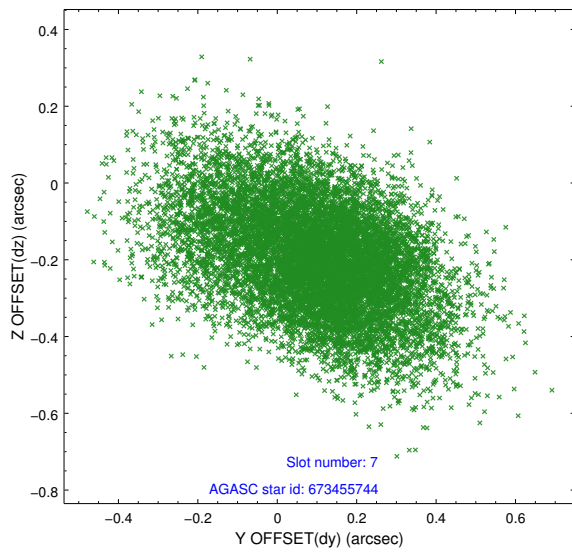
### 2.4.3 Slot 5



## 2.4.4 Slot 6

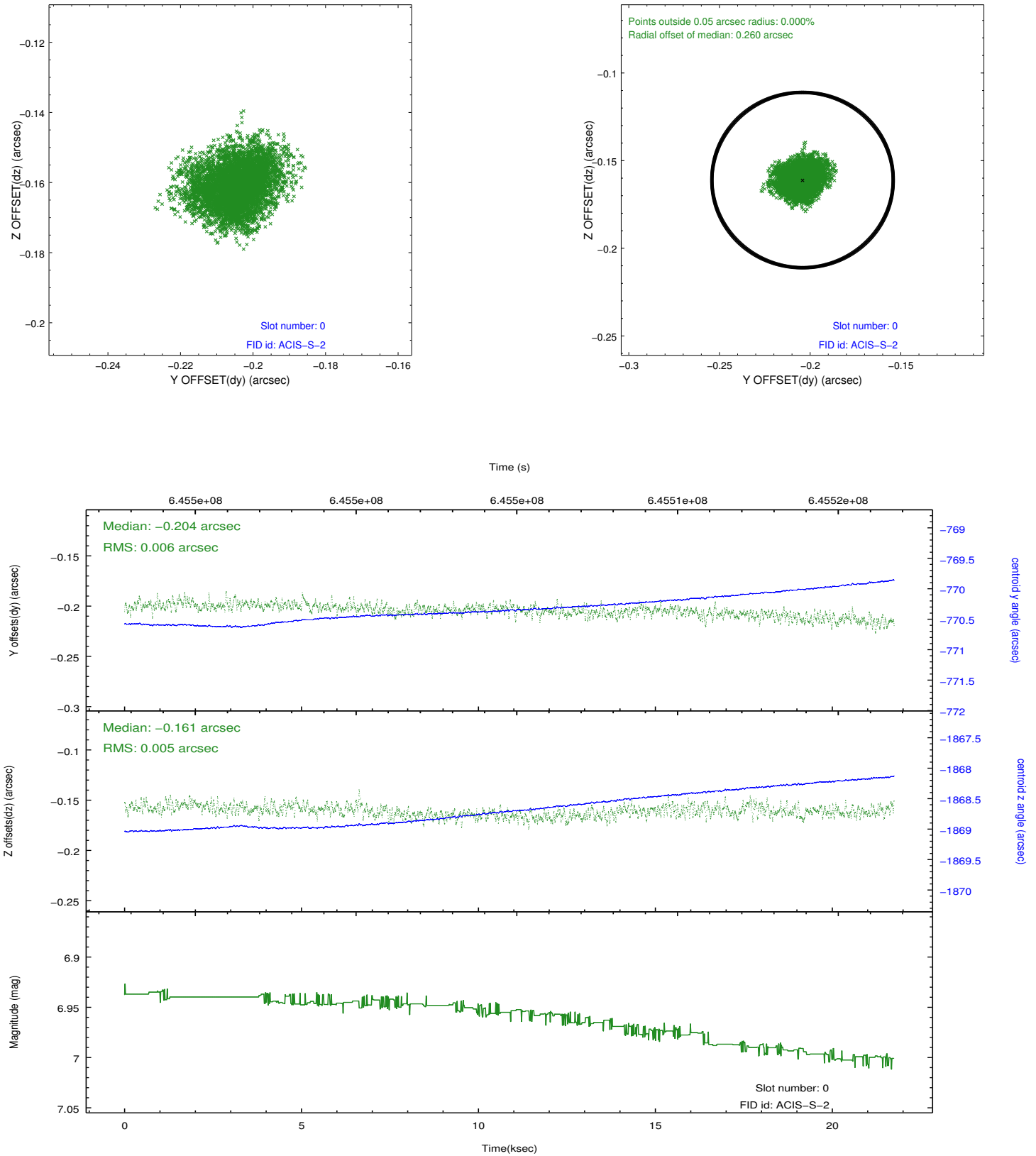


## 2.4.5 Slot 7

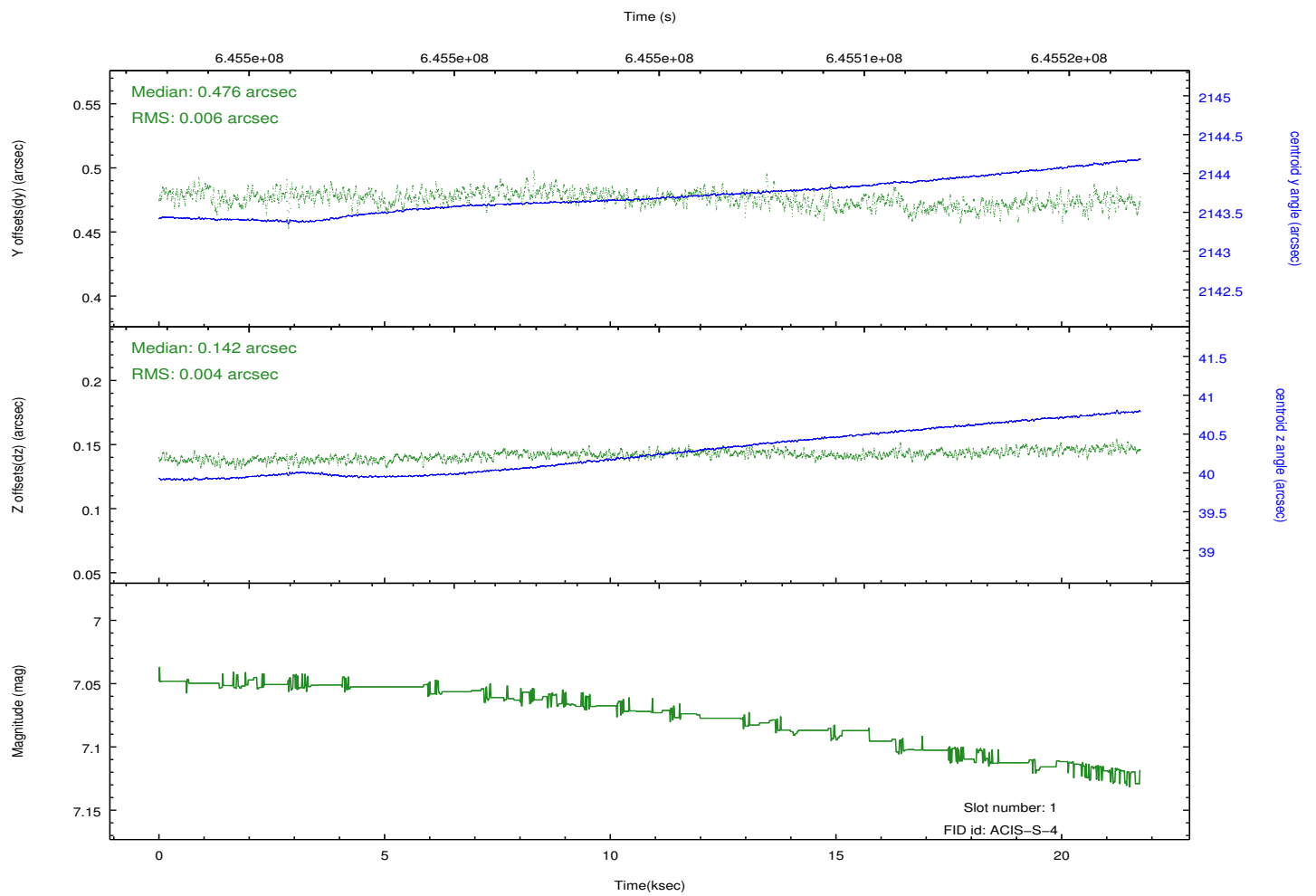
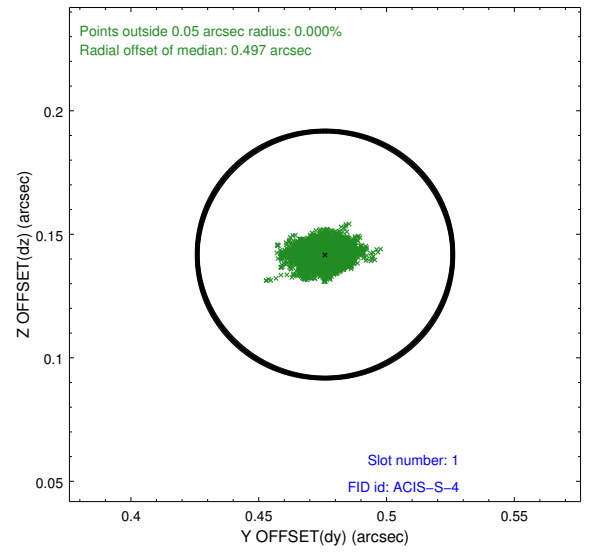
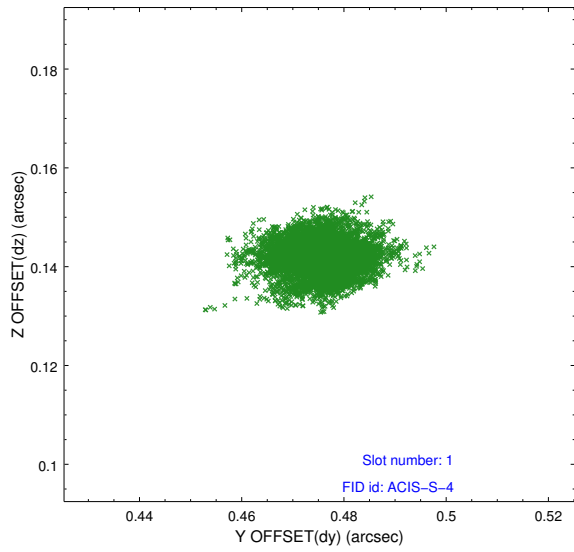


## 2.5 FID Slots

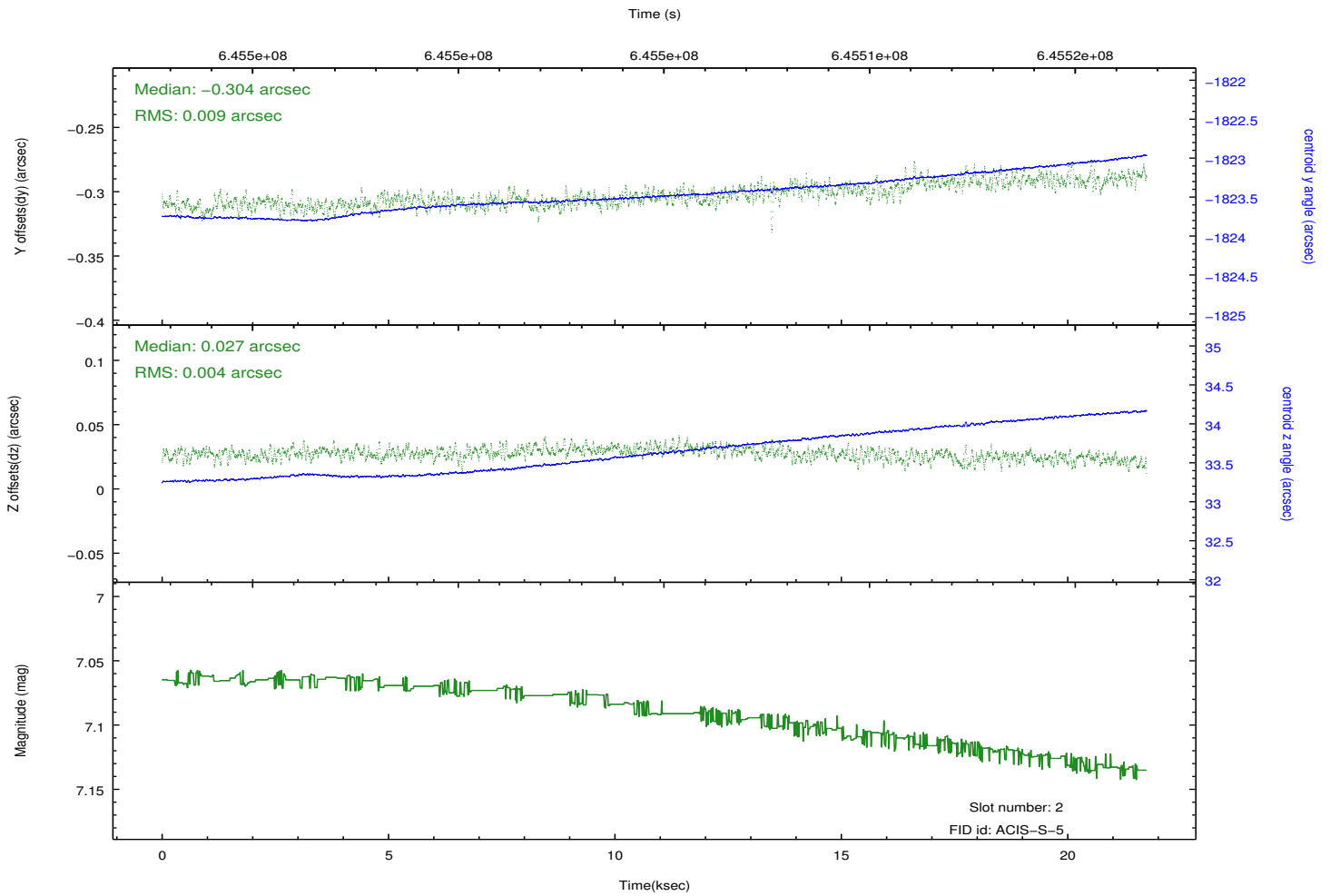
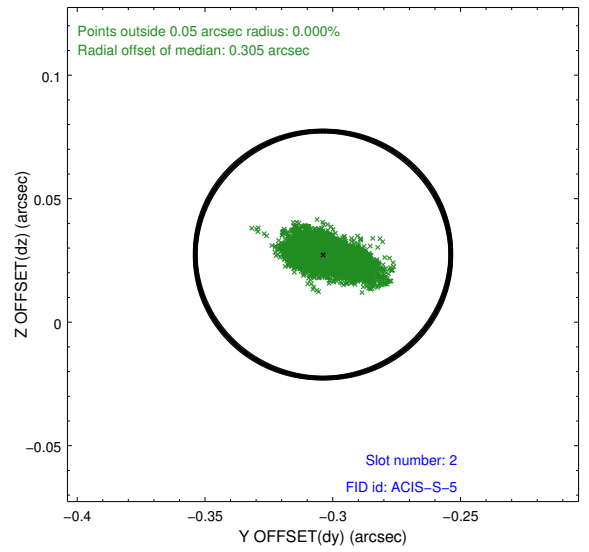
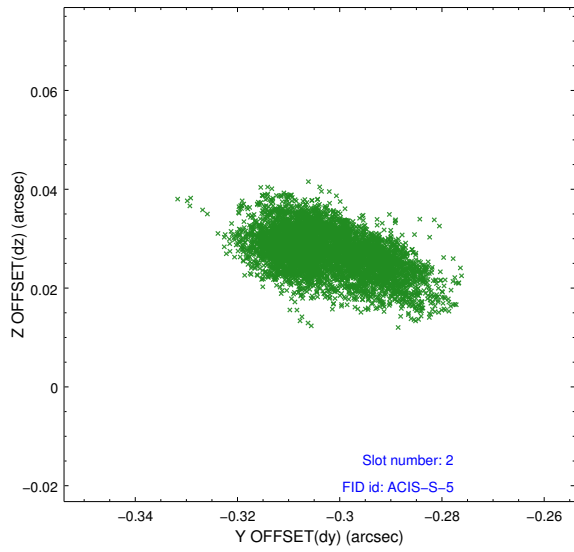
### 2.5.1 Slot 0



## 2.5.2 Slot 1

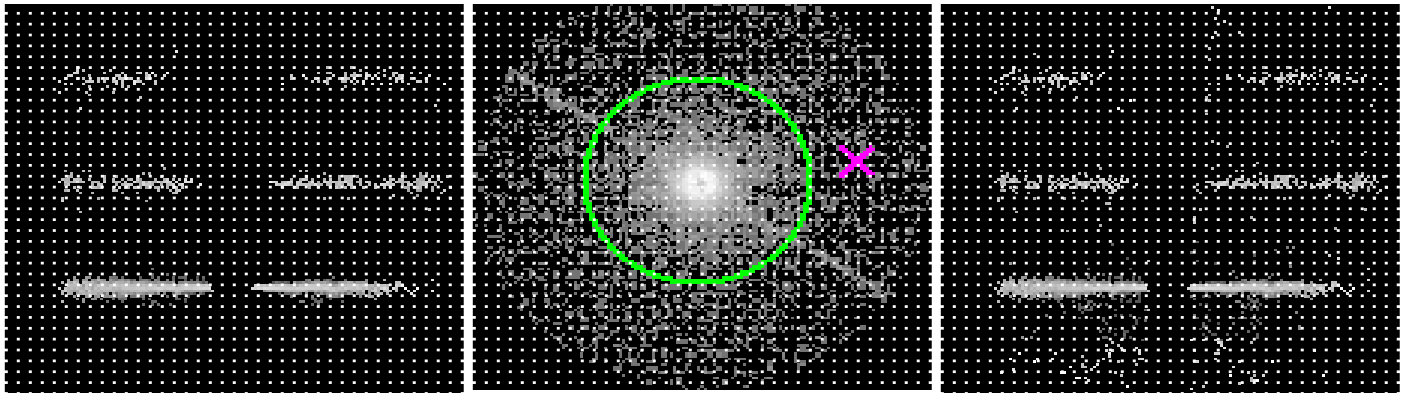


### 2.5.3 Slot 2



### 3 Gratings

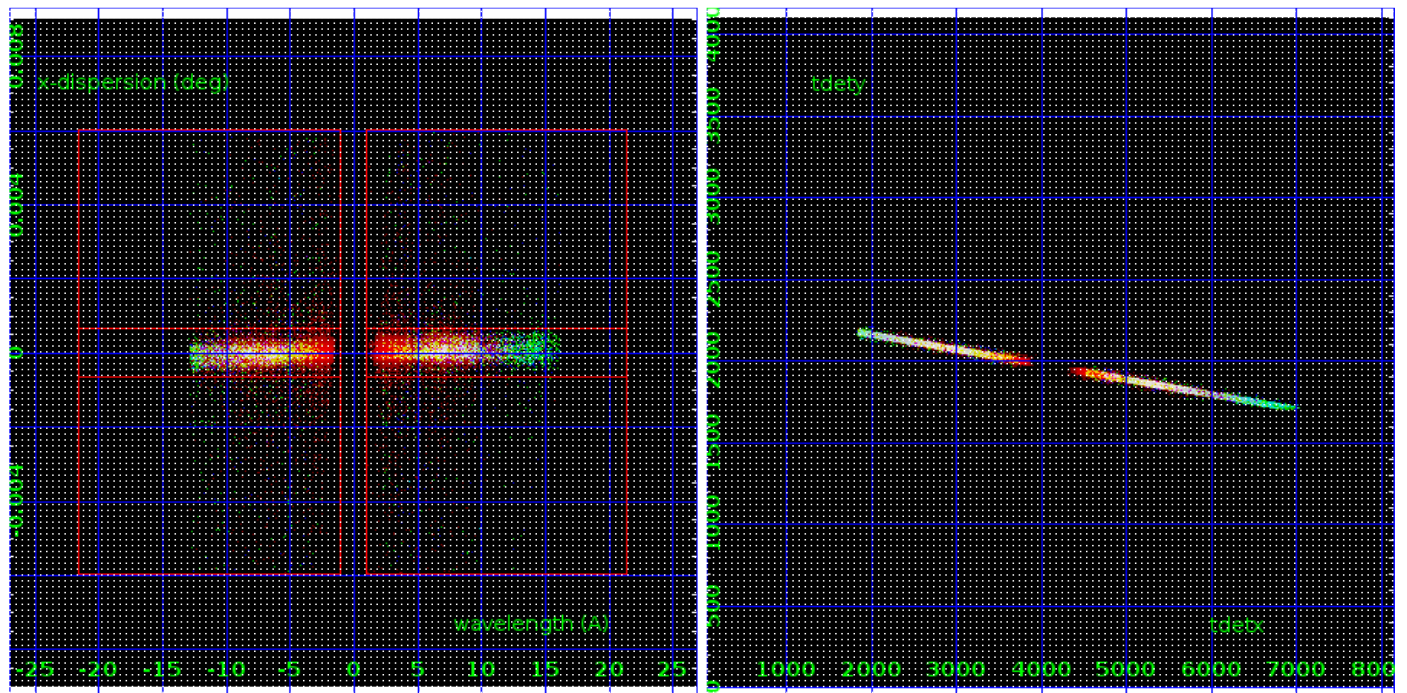
#### 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

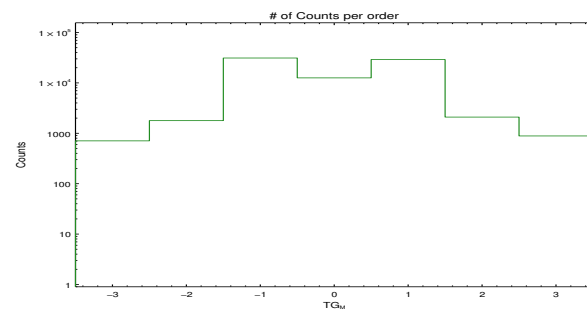
HEG Order Sort ALL

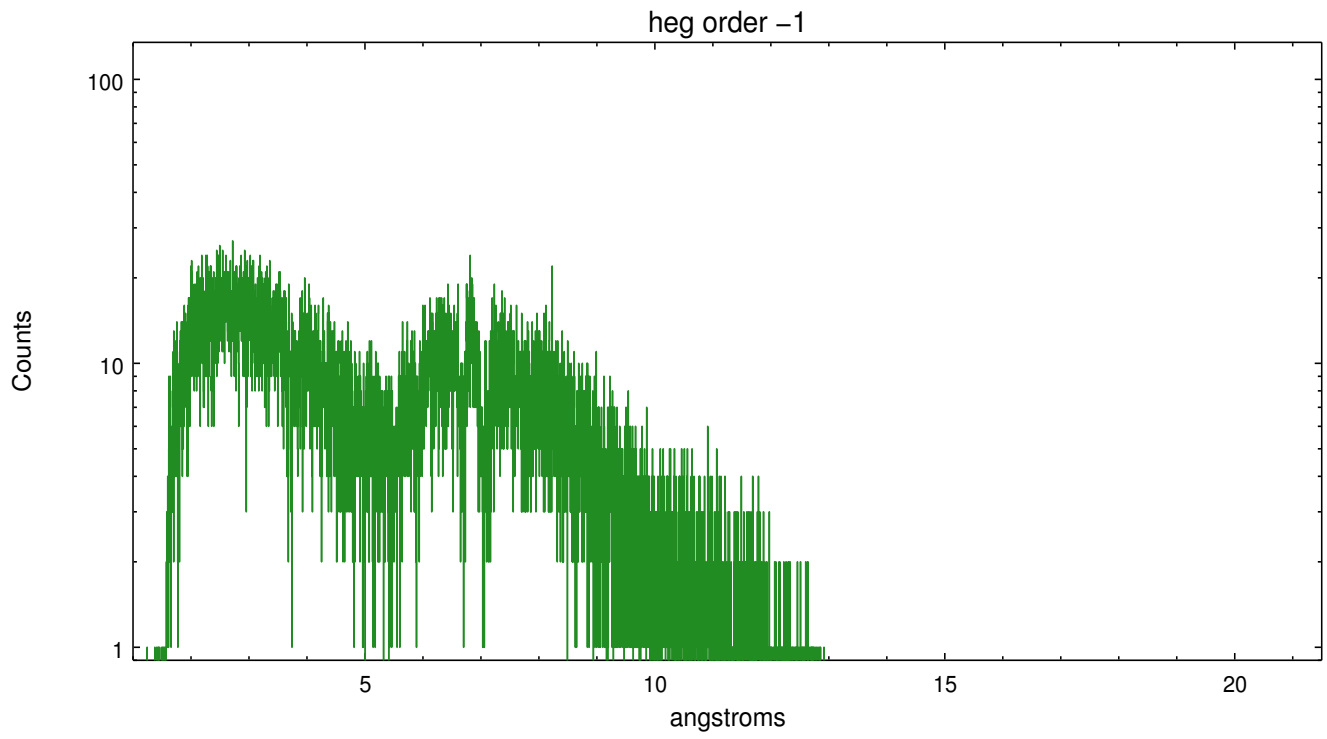


Spot Image HEG

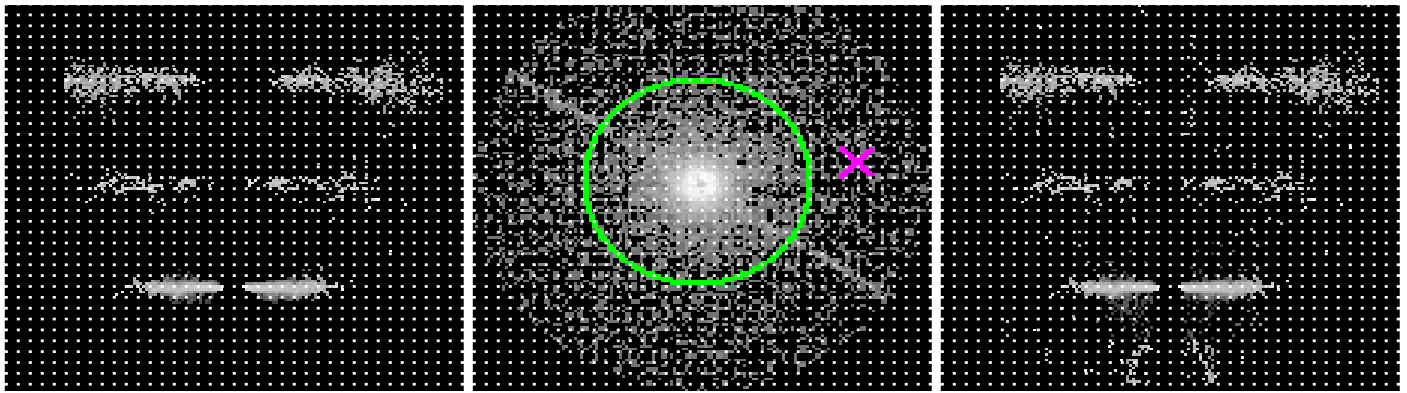
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	708	1784	31172	12581	28992	2096	886





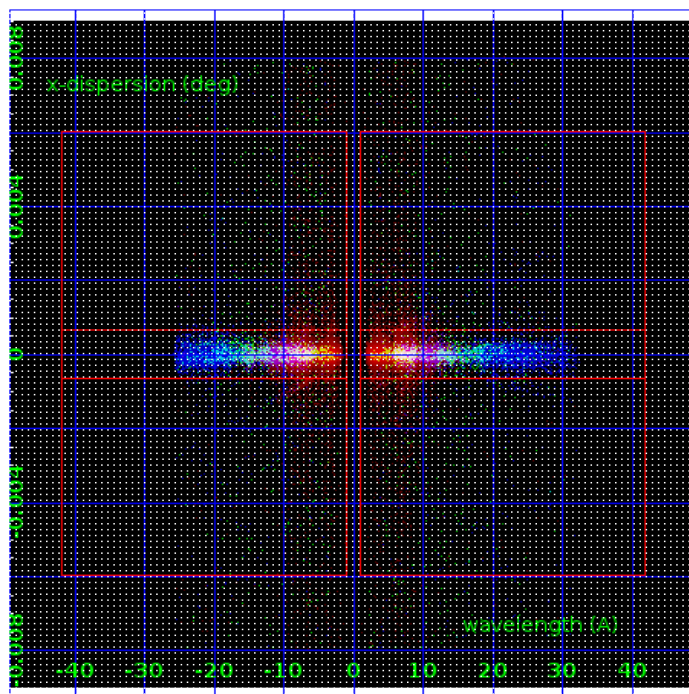
### 3.2 MEG Arm



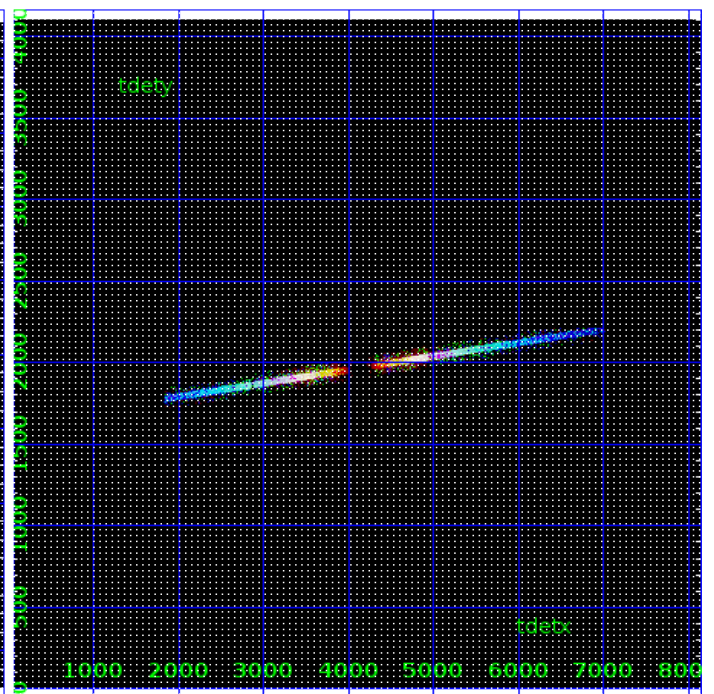
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

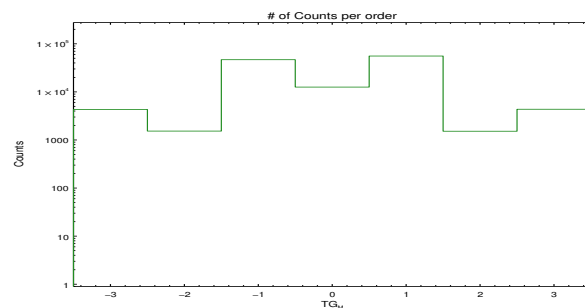


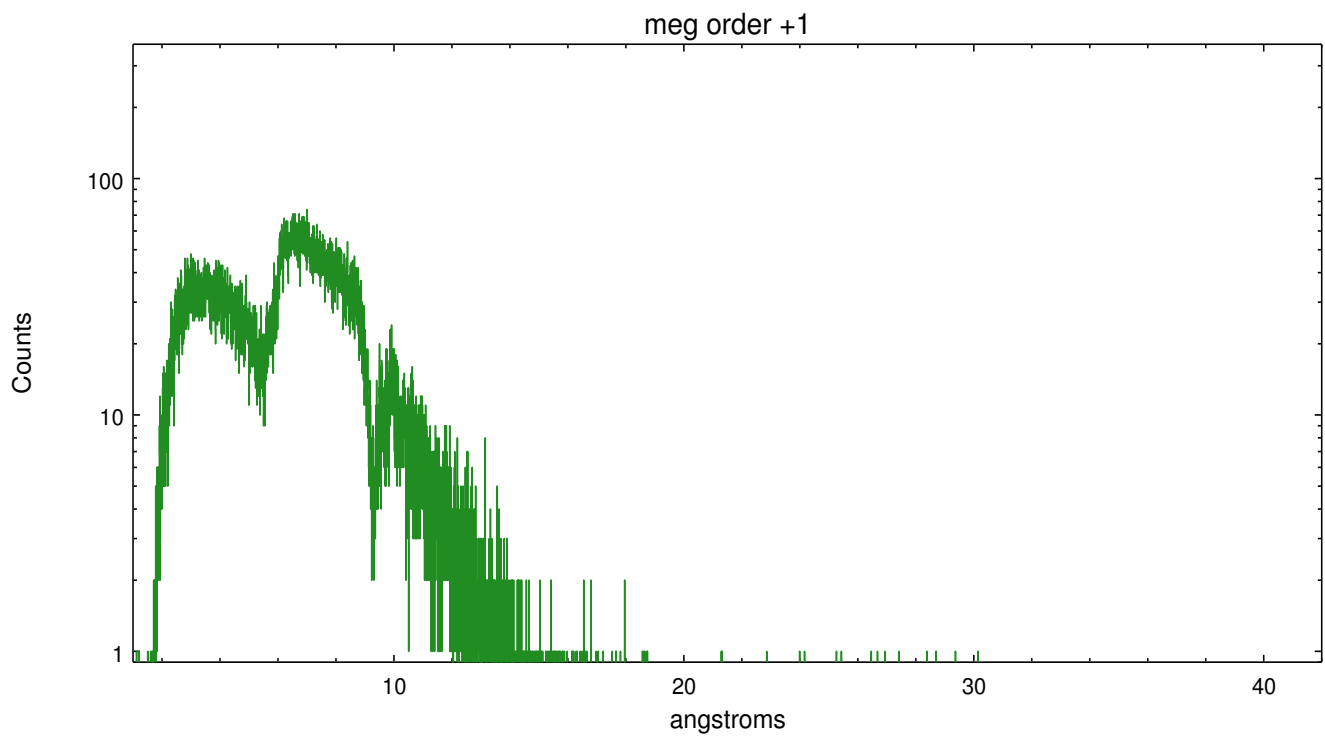
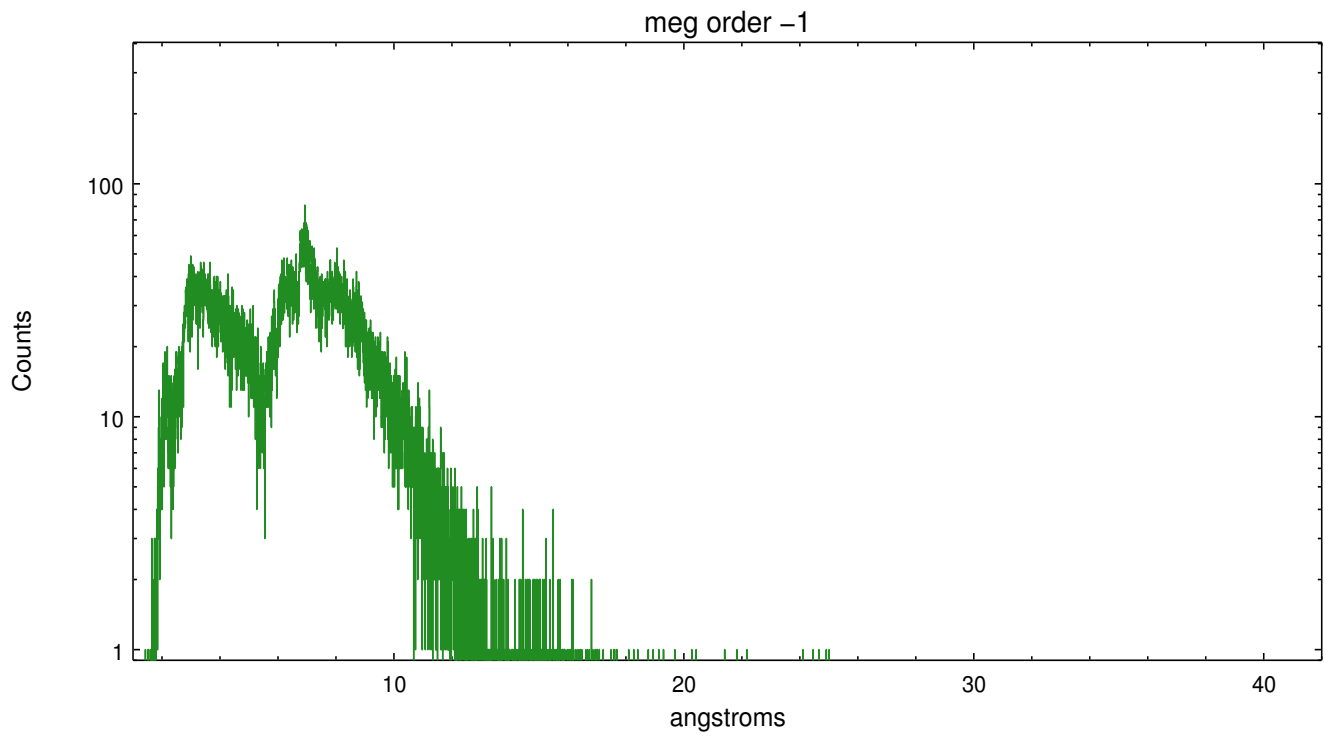
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	4303	1530	46741	12581	55669	1519	4352





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2018.06.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	21.685177835941

## A.2 Comments

Zeroth order piled up. The zeroth order sky position was determined using a software tool developed by CXC called findzero, which is available in CIAO as part of the tgdetect2 tool. The tool calculates the point of intersection of the readout streak on the ACIS CCD and the meg or leg dispersed spectral arm, rather than using a centroid position of the source. The findzero results are more accurate than source centroid in this case.