

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 1927 - L2 Version 3  
Chandra X-Ray Center

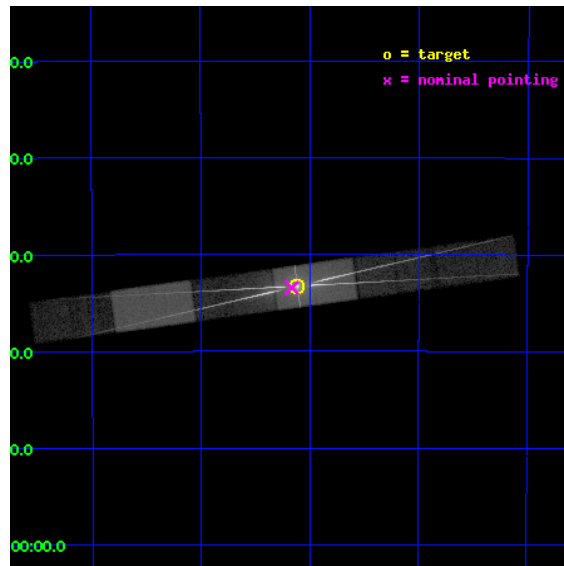
L2 Processing Date : Sep 18 2012

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# 1 Front

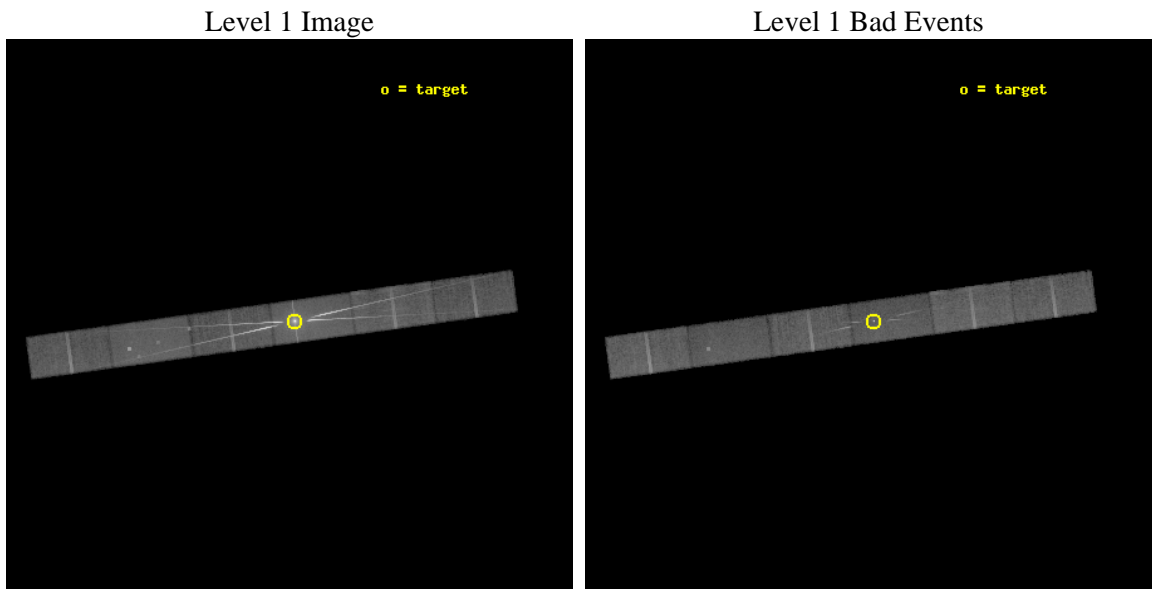
seq_num	400140	Sequence number
obs_id	1927	Observation id
title	DYNAMICS OF THE IONIZED STELLAR WIND IN VELA X-1	Proposal title
observer	PROF. STEVEN KAHN	Principal investigator
object	VELA X-1	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	135.52875	Observer's specified target RA [deg]
dec_targ	-40.554694	Observer's specified target Dec [deg]
ra_nom	135.54102096121	Nominal RA [deg]
dec_nom	-40.55774886764	Nominal Dec [deg]
roll_nom	352.16469858626	Nominal Roll [deg]
revision	3	Processing version of data
ontime	30140.959032729	Sum of GTIs [s]
livetime	29430.472795364	Livetime [s]
ontime4	30142.700052828	Sum of GTIs [s]
ontime5	30142.700052828	Sum of GTIs [s]
ontime6	30140.959062651	Sum of GTIs [s]
ontime7	30140.959032729	Sum of GTIs [s]
ontime8	30140.959032729	Sum of GTIs [s]
ontime9	30140.959062651	Sum of GTIs [s]
l2events	476650	Number of level 2 events



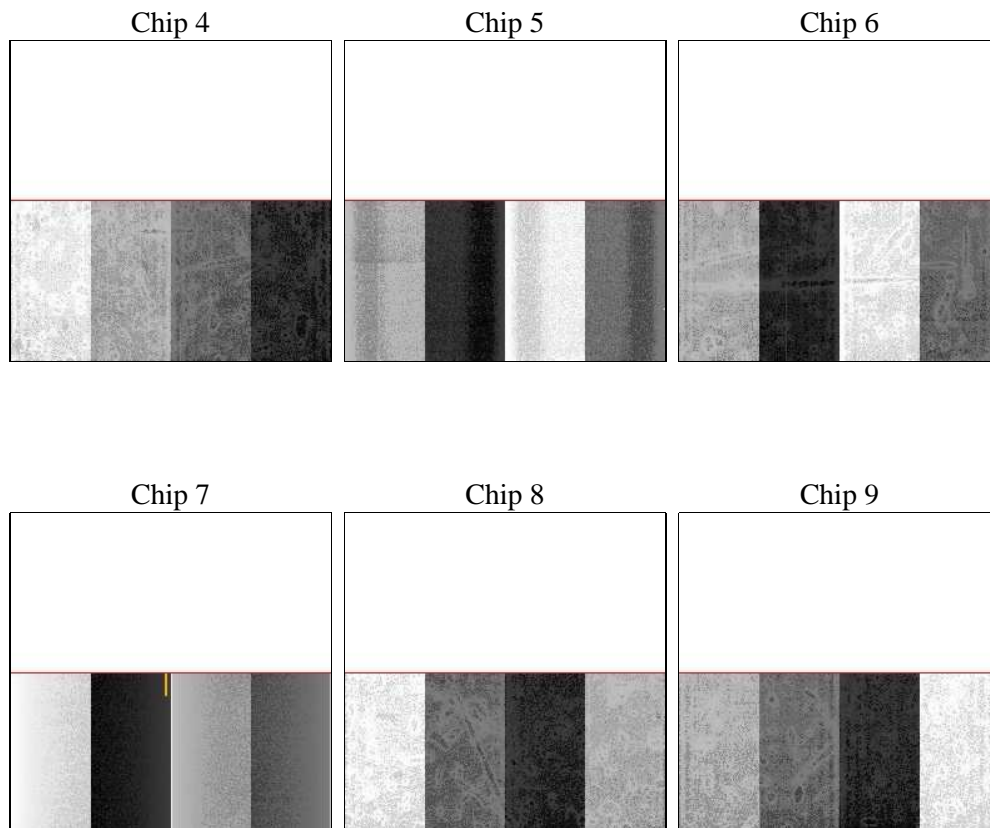
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	30140.959032729	Sum of GTIs [s]
caldsver	4.5.1.1	&#160	ontime4	30142.700052828	Sum of GTIs [s]
date	2012-09-16T03:54:34	Date and time of file creation	ontime5	30142.700052828	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	30140.959062651	Sum of GTIs [s]
			ontime7	30140.959032729	Sum of GTIs [s]
			ontime8	30140.959032729	Sum of GTIs [s]
			ontime9	30140.959062651	Sum of GTIs [s]
			l1events	1074592	Number of level 1 events

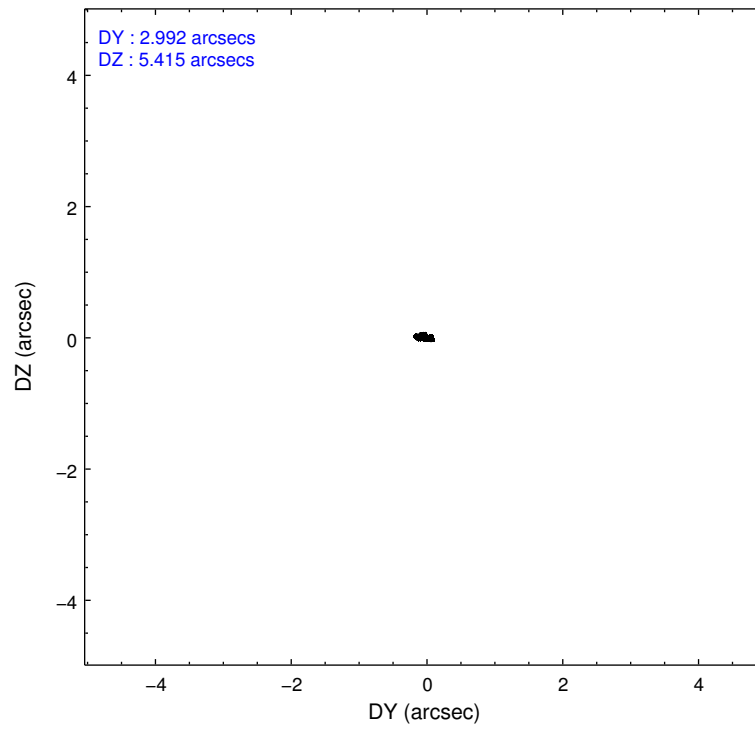
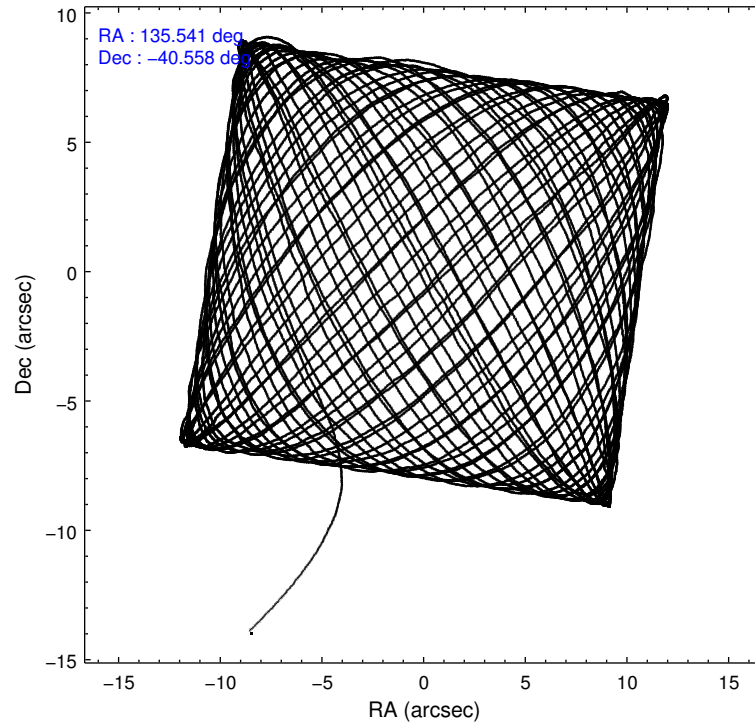
### 2.1.4 Events

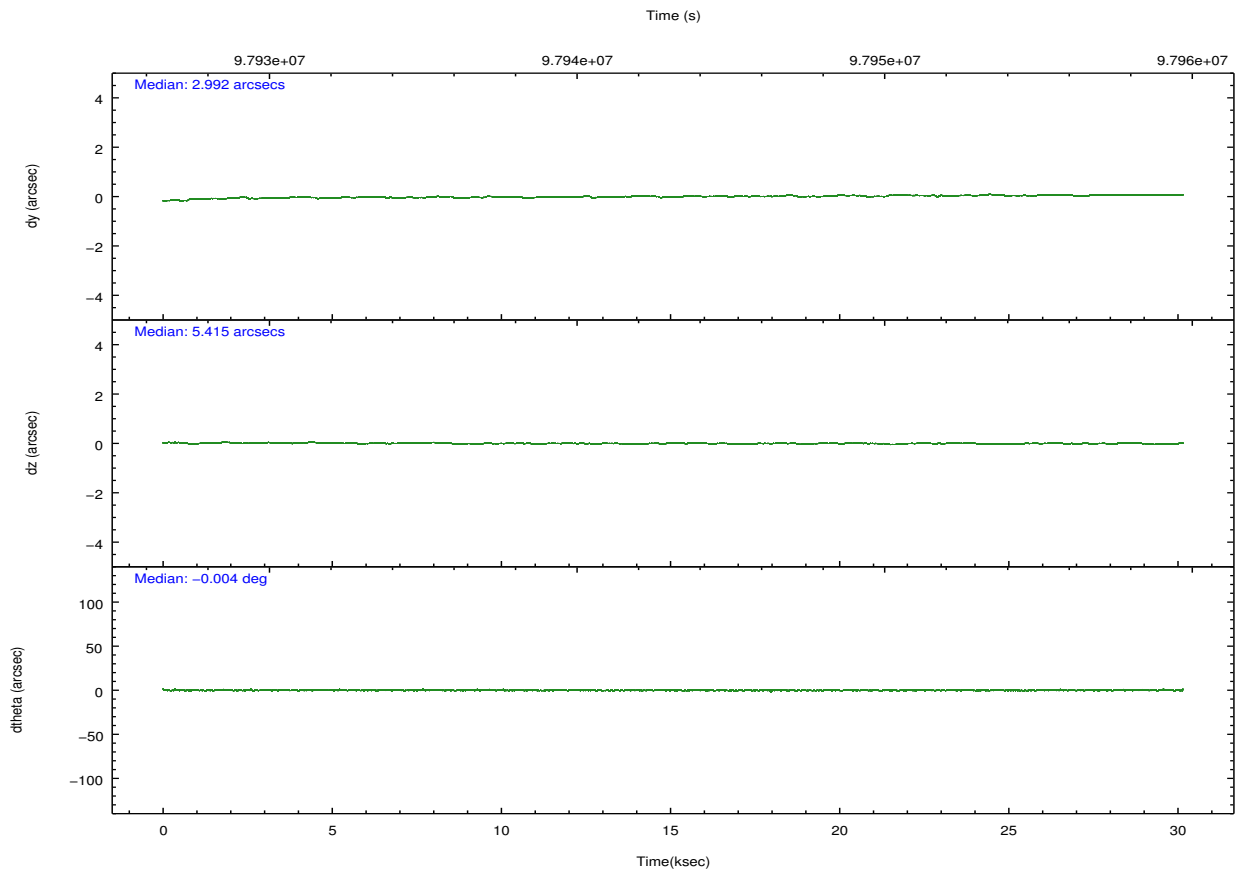
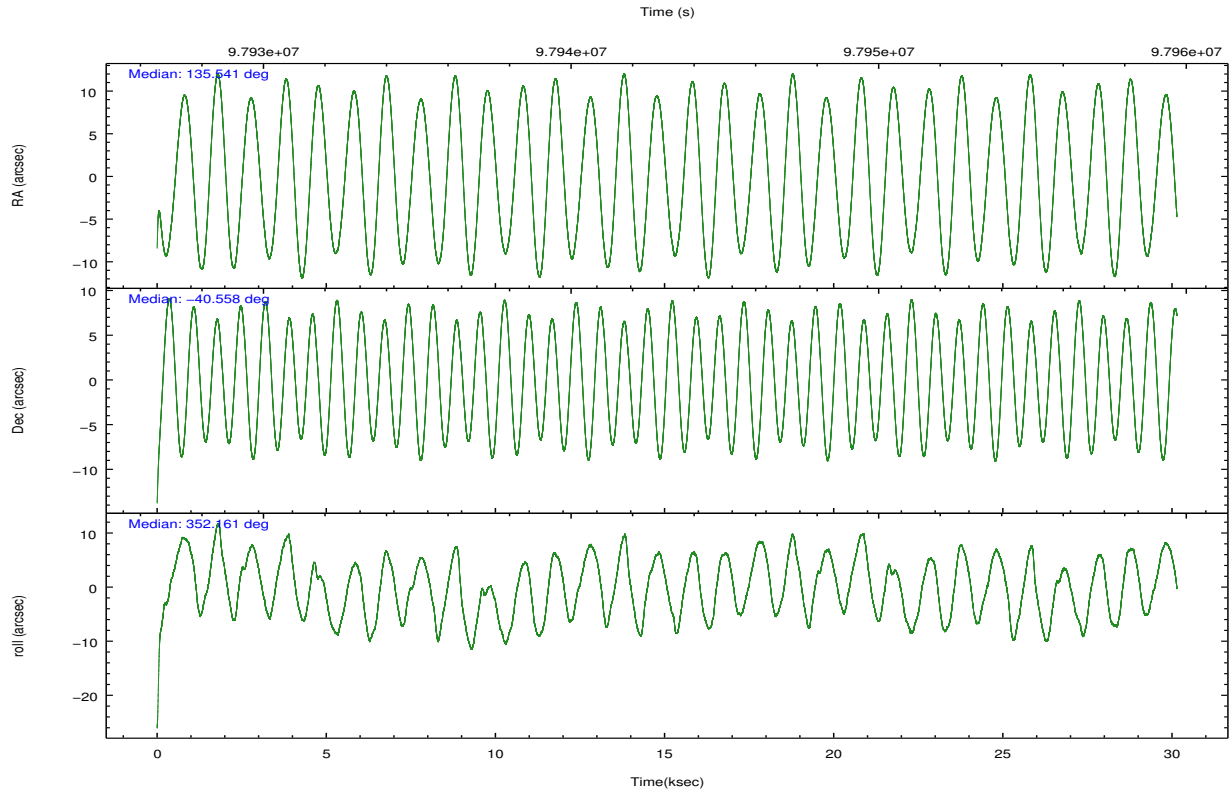
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	118299	146628	200603	351022	153375	104665	grade 0 events	6052	9540	61148	53575	20390	6674
rejected events	105406	76862	96516	83473	109721	90029		5%	6%	30%	15%	13%	6%
rejected %	89%	52%	48%	23%	71%	86%	grade 1 events	51	180	499	1051	103	45
								0%	0%	0%	0%	0%	0%
							grade 2 events	2923	20577	17151	59977	8049	2645
								2%	14%	8%	17%	5%	2%
							grade 3 events	1481	5288	6662	26723	3732	1629
								1%	3%	3%	7%	2%	1%
							grade 4 events	1496	4199	6732	26764	3596	1626
								1%	2%	3%	7%	2%	1%
							grade 5 events	3369	12320	4557	15382	5046	4060
								2%	8%	2%	4%	3%	3%
							grade 6 events	2199	32753	13680	103685	8527	2290
								1%	22%	6%	29%	5%	2%
							grade 7 events	100728	61771	90174	63865	103932	85696
								85%	42%	44%	18%	67%	81%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-456789	ACIS-456789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	135.507851	135.541020961209	Subarray requested	CUSTOM	1/2
[deg] Pointing Dec	-40.568285	-40.55774886763997	Subarray start row	1	1
[deg] Pointing Roll	351.986511	352.164698586261	Subarray row count	512	512
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	1.7
[mm] SIM translation stage pos	-184.032523	-184.0277655517795			
[mm] SIM translation stage offset	-6.1	-6.104757031228274			
Phase constraints	Y	Y			
[d] Phase period	8.964416	8.964416			
[d] Phase epoch (MJD)	50132.313800	50132.313800			
Phase start	0.480000	0.480000			
Phase end	0.520000	0.520000			
Phase start error	0.010000	0.010000			
Phase end error	0.010000	0.010000			
[s] Observation start time (MET)	97928195.184000	97927037.138004			
Observation start date	2001-02-07T10:15:31	2001-02-07T09:57:17			
[s] Observation end time (MET)	97958195.184000	97958996.126735			
Observation end date	2001-02-07T18:35:31	2001-02-07T18:49:56			
Read mode	TIMED	TIMED			

## 2.3 Aspect



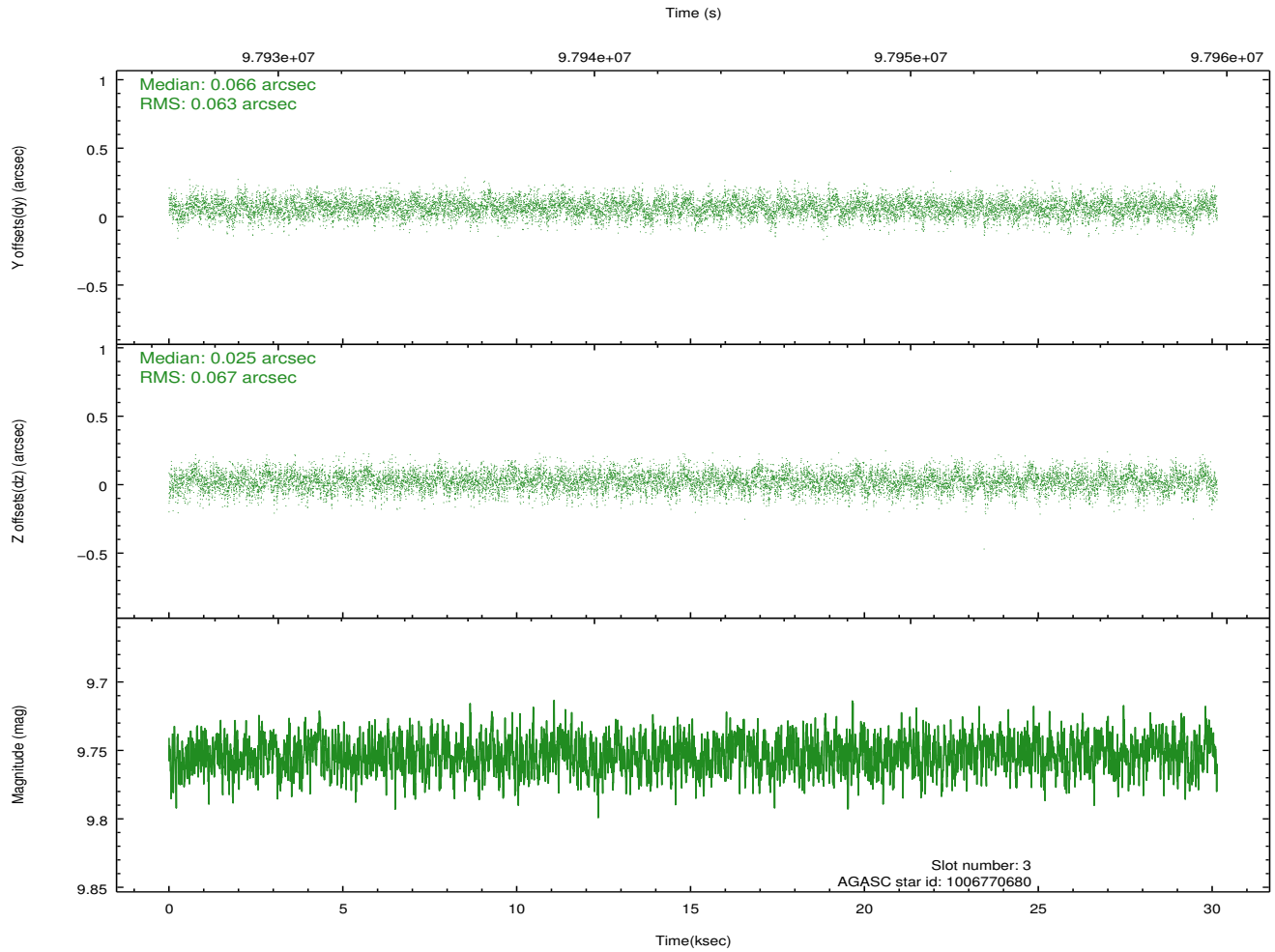
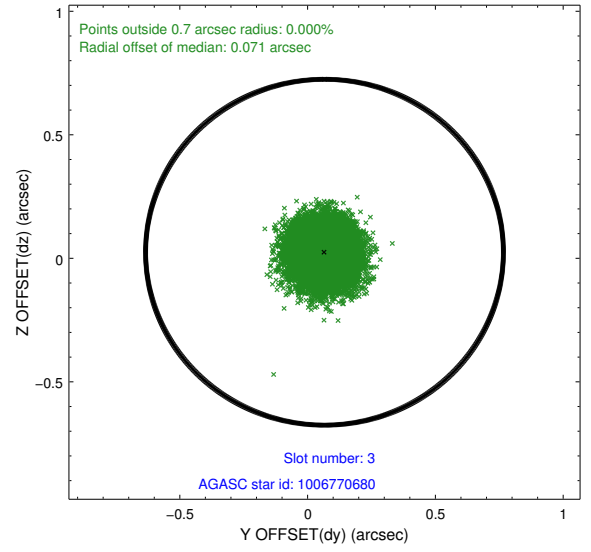
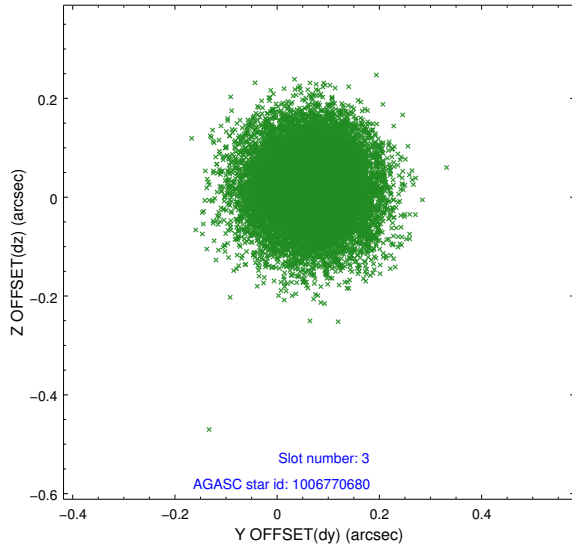


### Slot Statistics

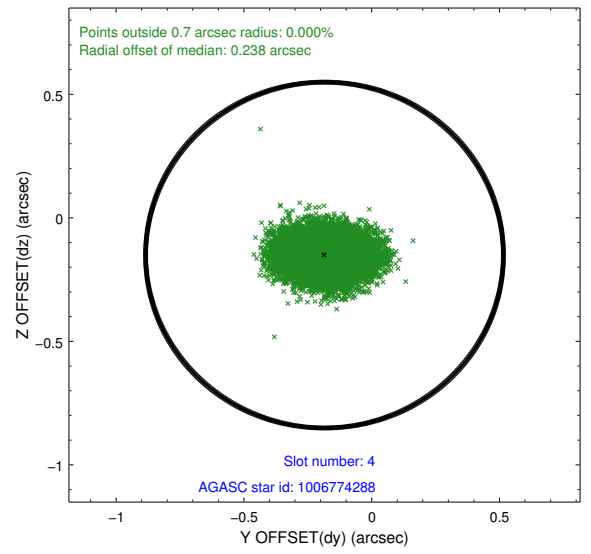
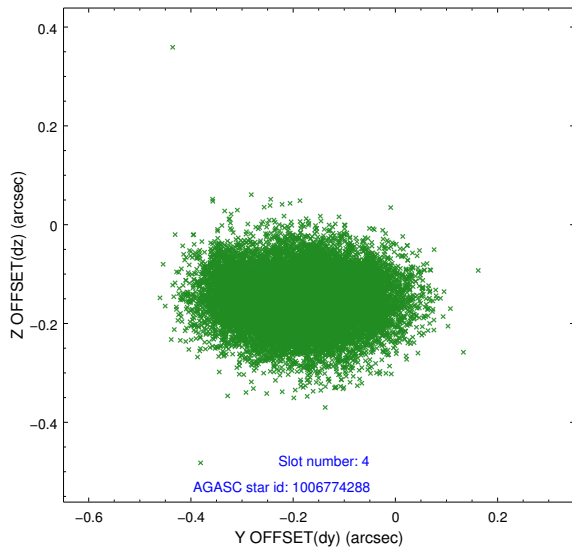
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	7353	-0.040	-0.058	0.007	0.011	0.000000	0.000000	-755.25	-1852.42
1	FID	ACIS-S-4	7.19	7351	-0.029	0.035	0.006	0.011	0.000000	0.000000	2158.02	56.03
2	FID	ACIS-S-5	7.23	7351	0.038	0.032	0.006	0.011	0.000000	0.000000	-1807.91	49.82
3	GUIDE	1006770680	9.75	14566	0.066	0.025	0.098	0.158	136.066277	-40.835914	1641.25	-746.93
4	GUIDE	1006774288	9.43	14626	-0.185	-0.151	0.117	0.188	136.151715	-40.161117	1550.55	1691.67
5	GUIDE	1006784024	9.65	14698	0.063	-0.100	0.109	0.176	135.140125	-40.518811	-1020.89	33.67
6	GUIDE	1006646160	10.41	14688	0.059	0.175	0.132	0.216	134.960399	-40.683654	-1421.34	-624.42
7	GUIDE	1006767392	9.85	14695	0.000	0.056	0.116	0.187	135.128758	-40.847245	-881.99	-1140.90

## 2.4 Star Slots

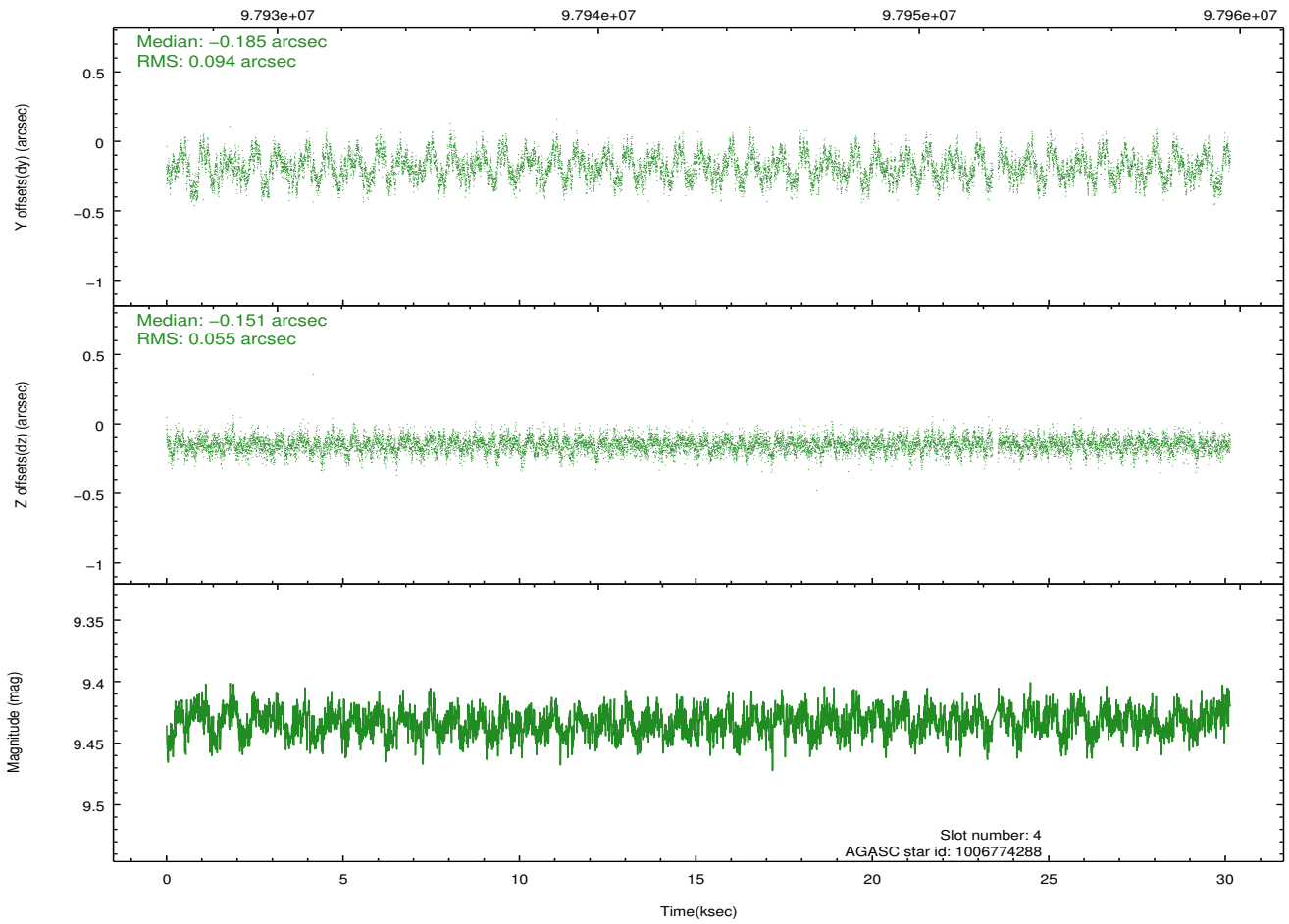
### 2.4.1 Slot 3



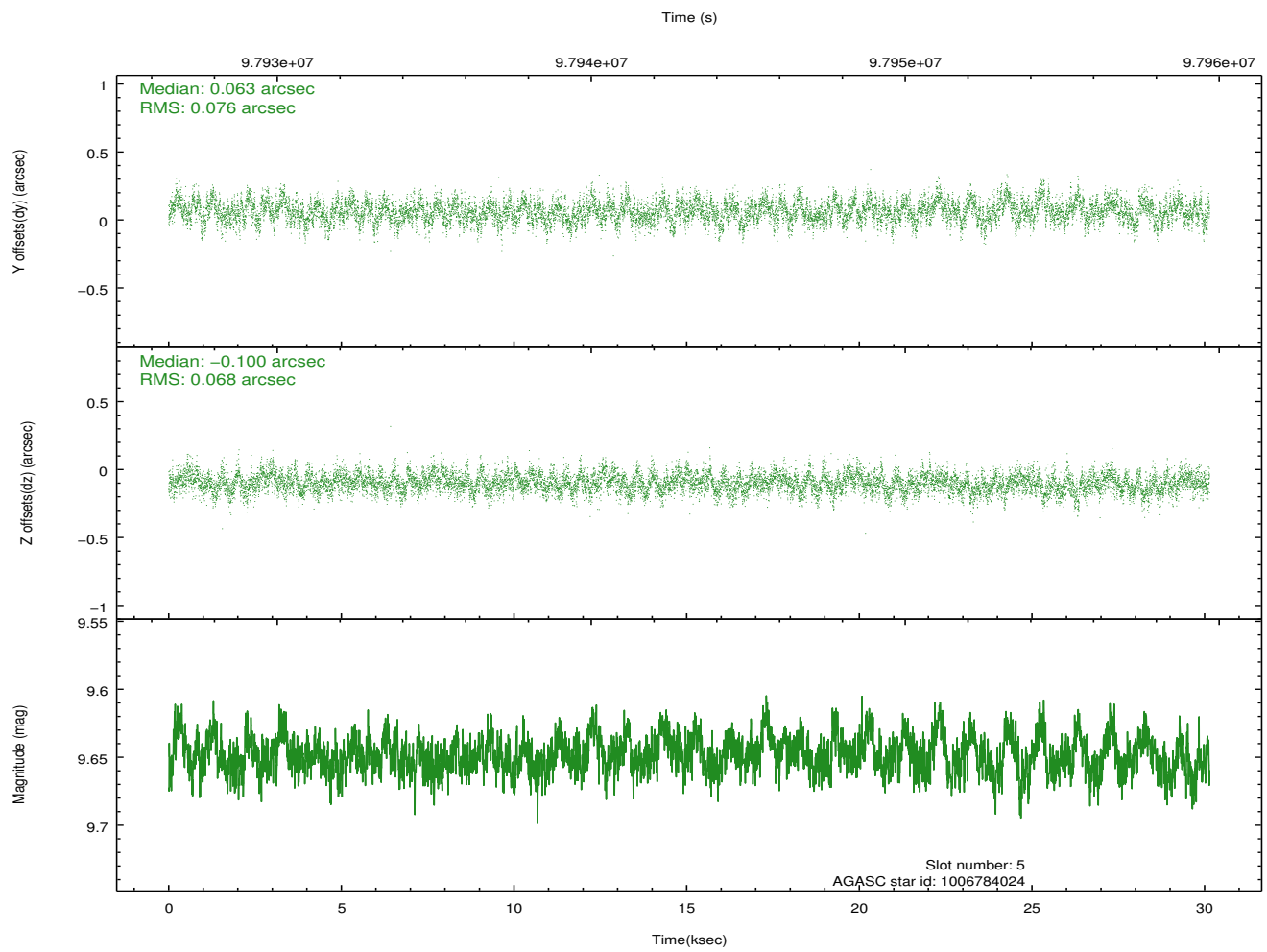
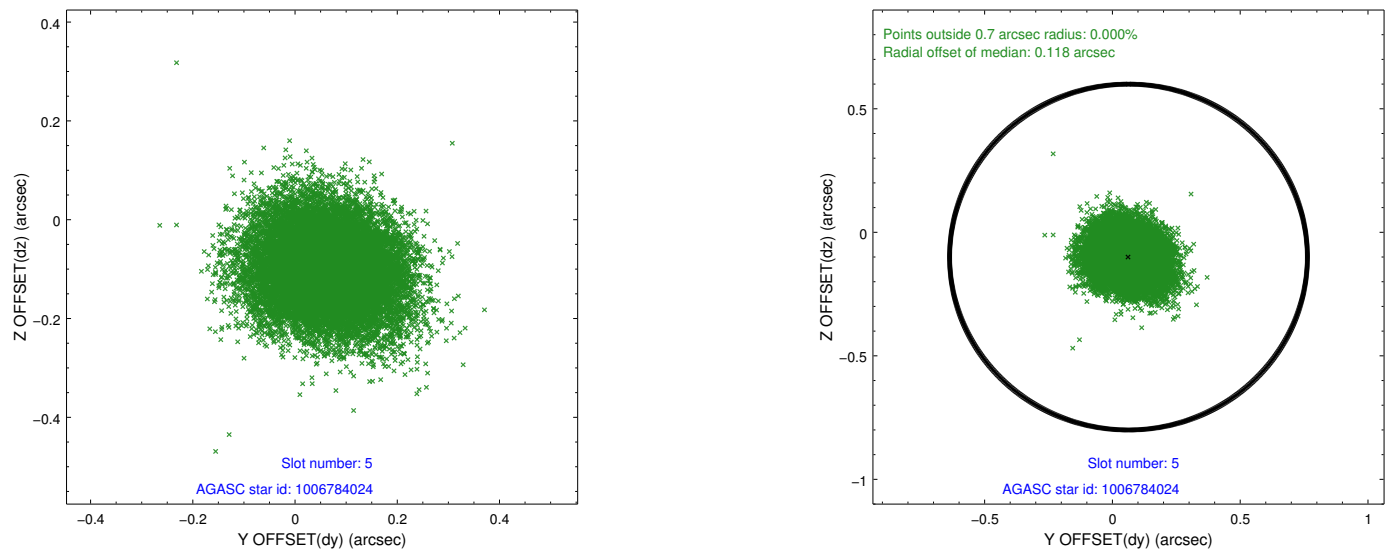
## 2.4.2 Slot 4



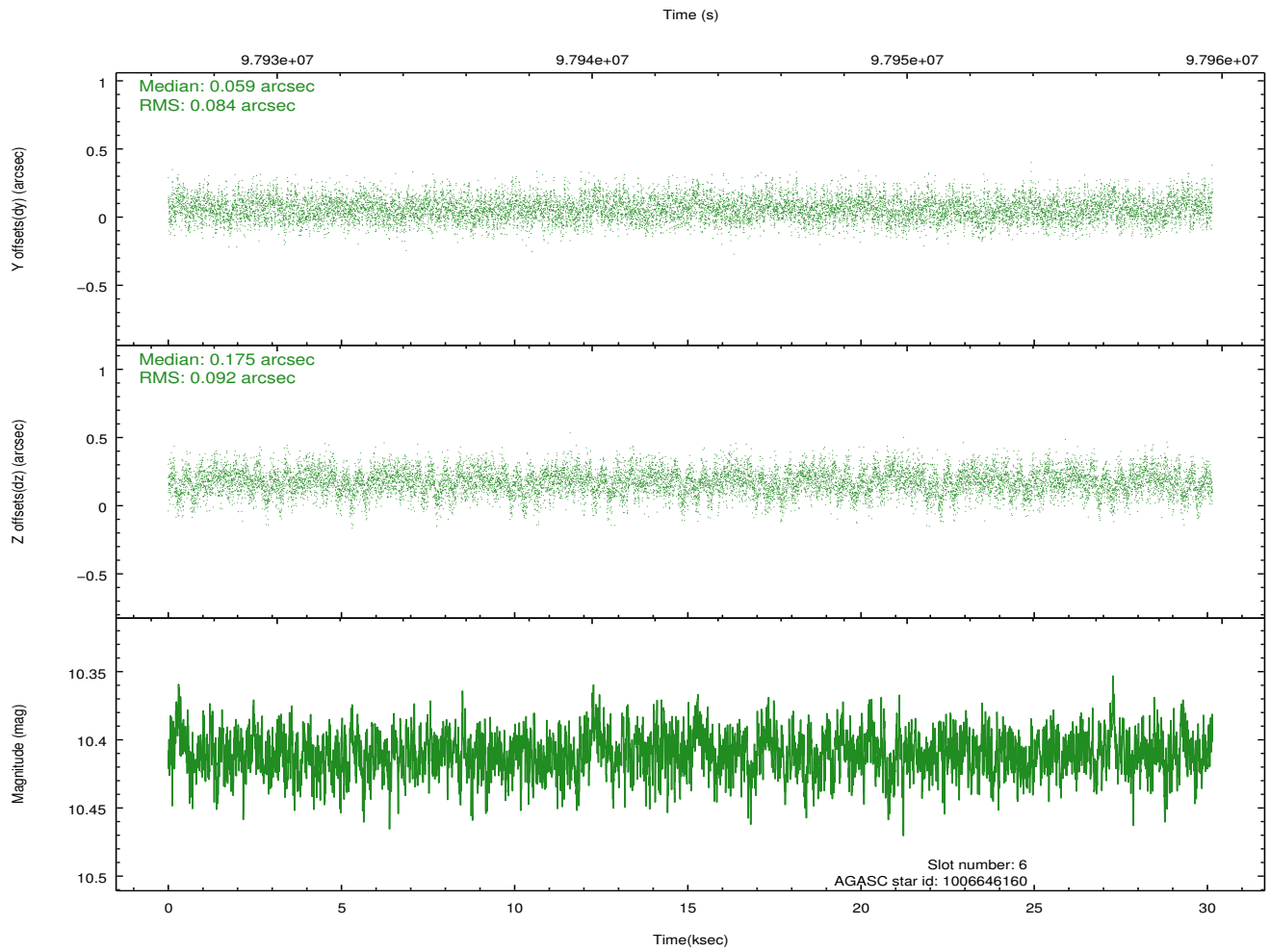
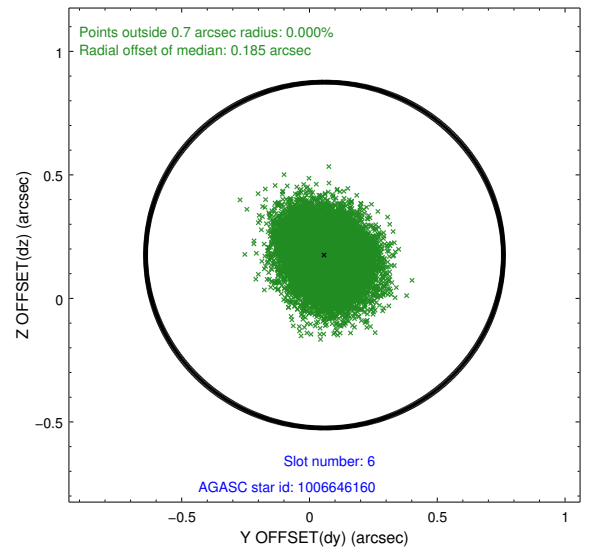
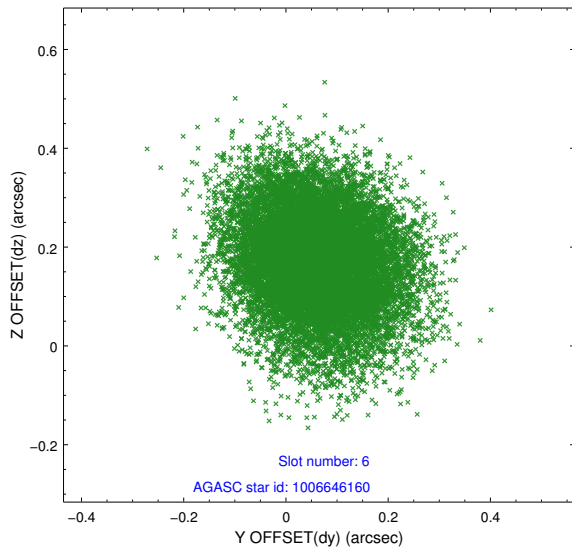
Time (s)



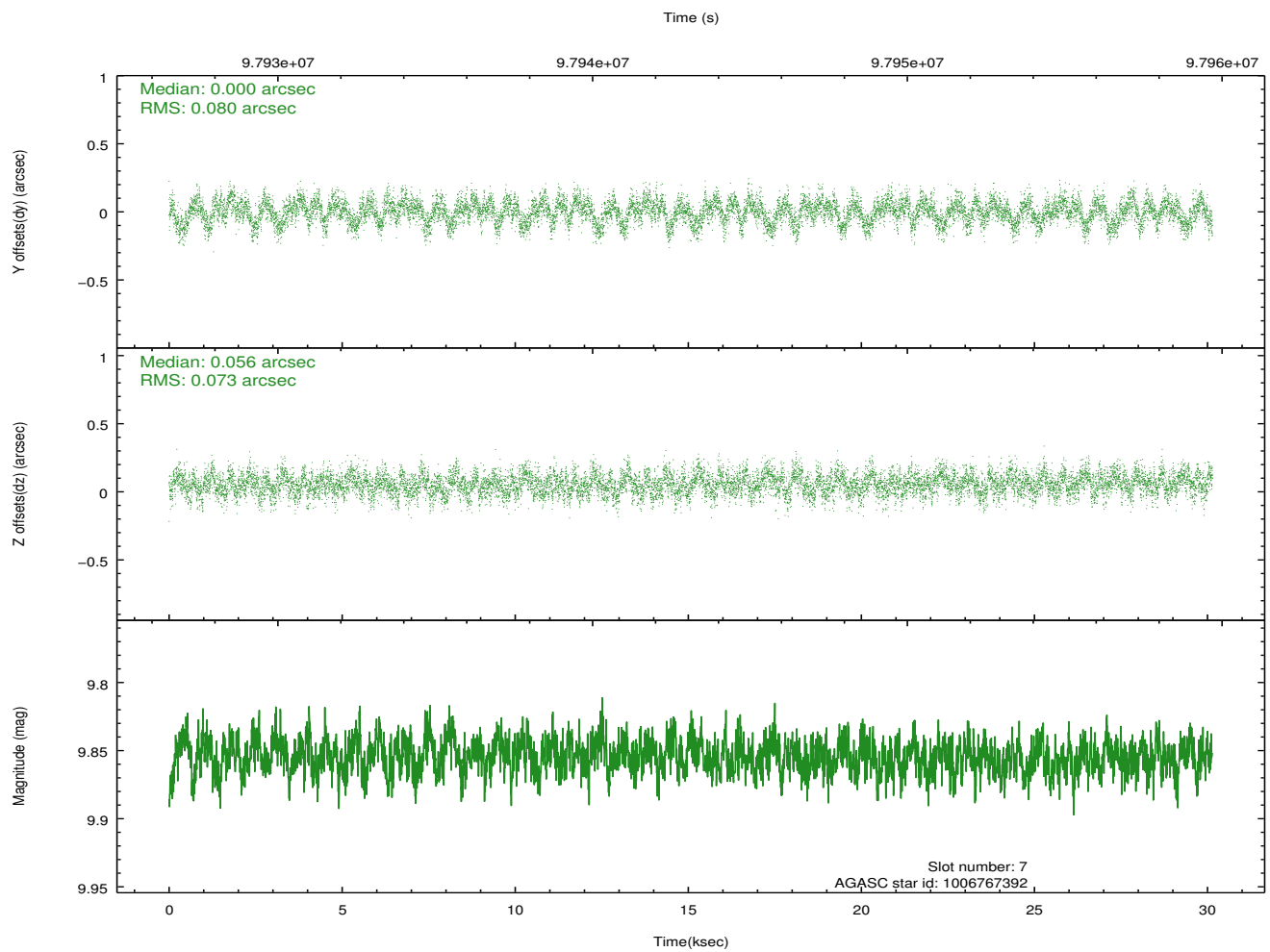
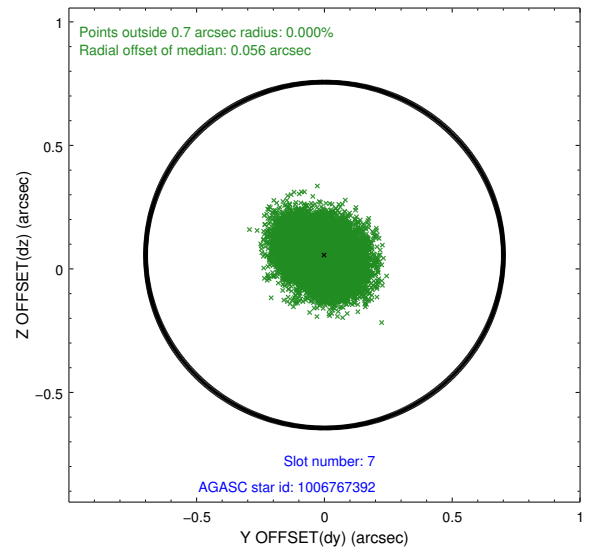
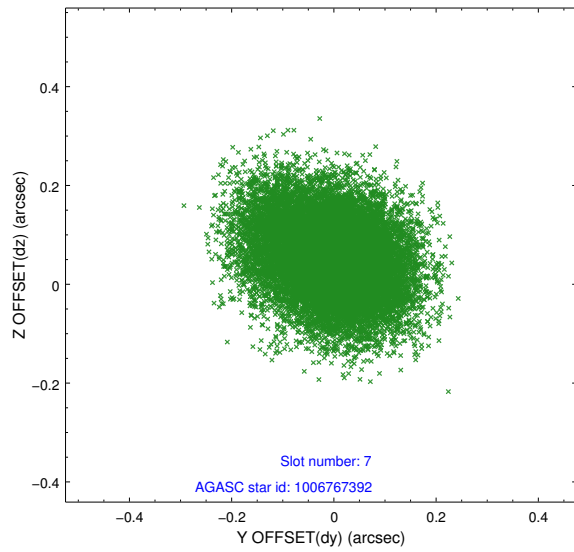
### 2.4.3 Slot 5



### 2.4.4 Slot 6

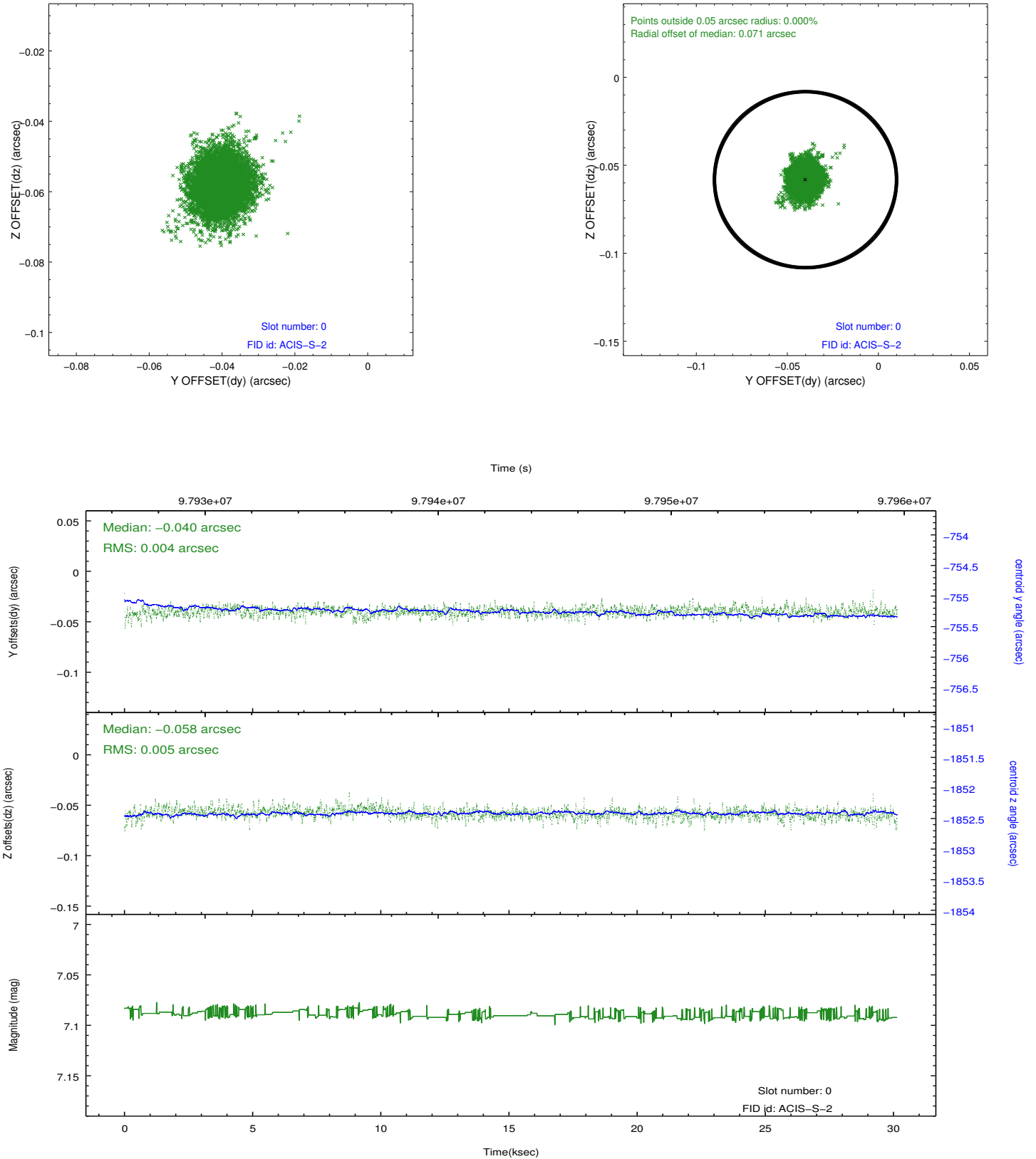


## 2.4.5 Slot 7

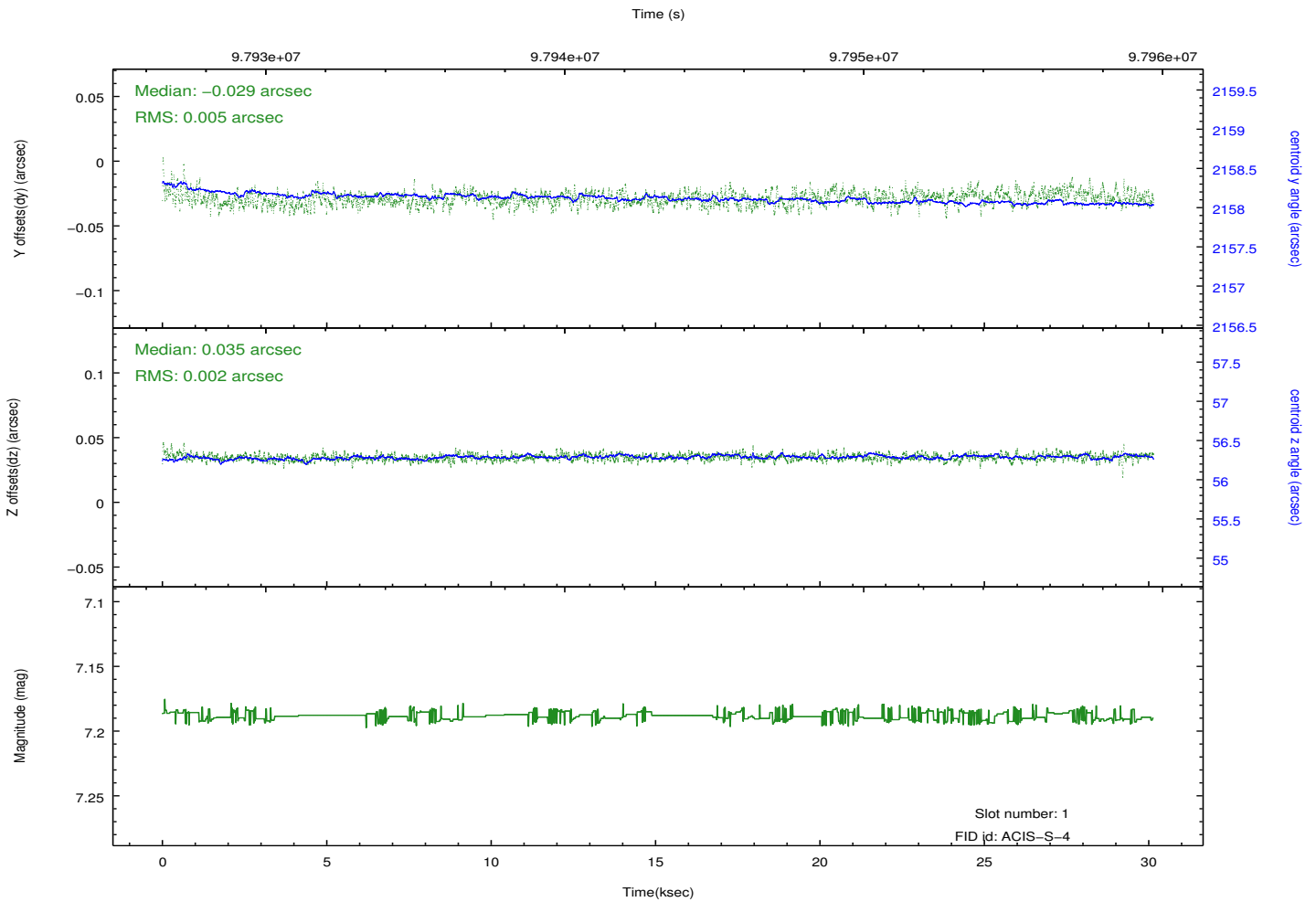
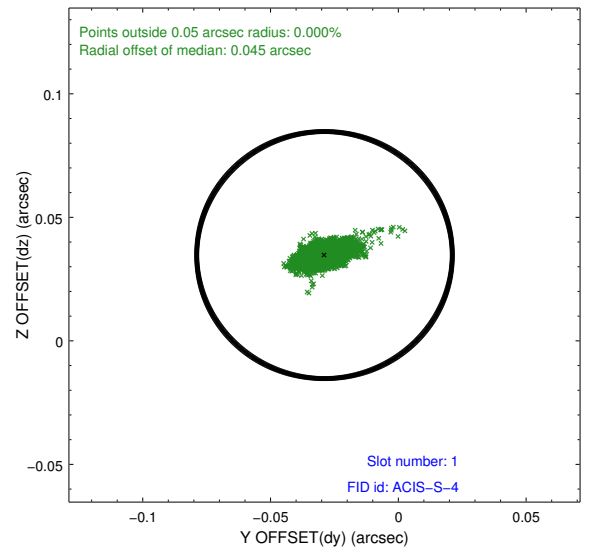
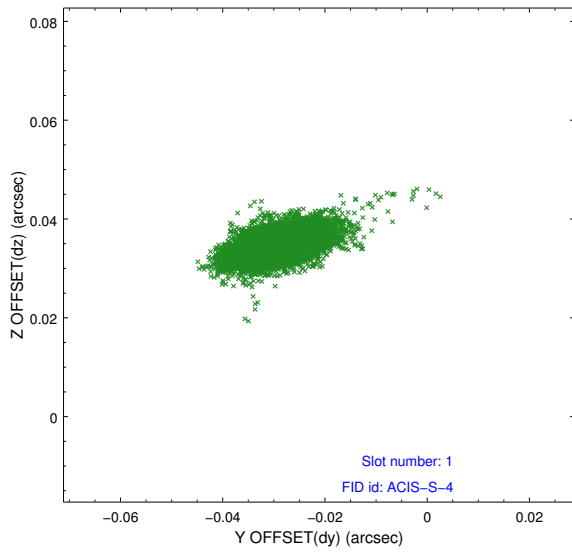


## 2.5 FID Slots

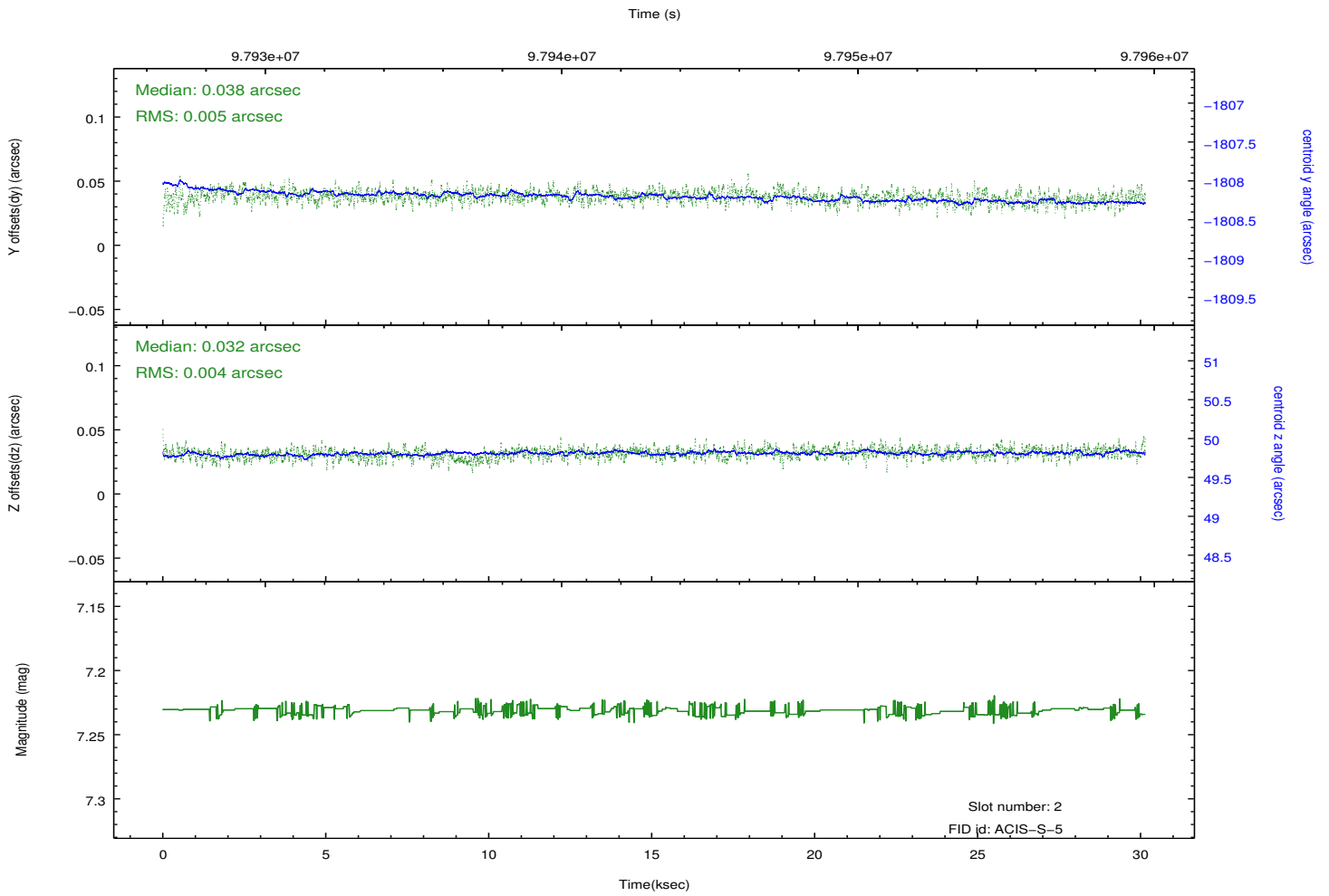
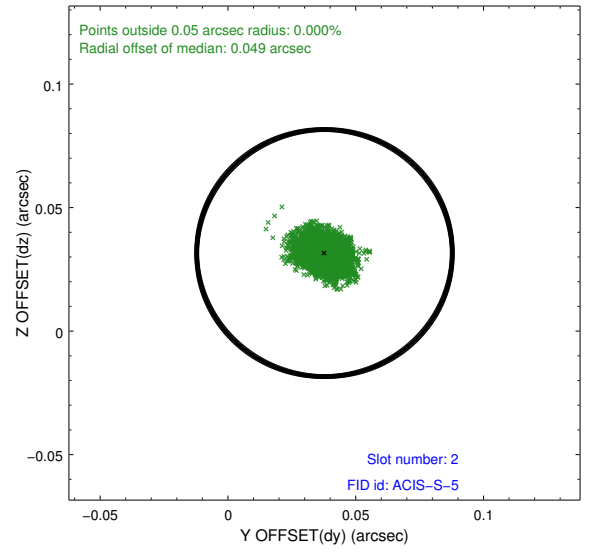
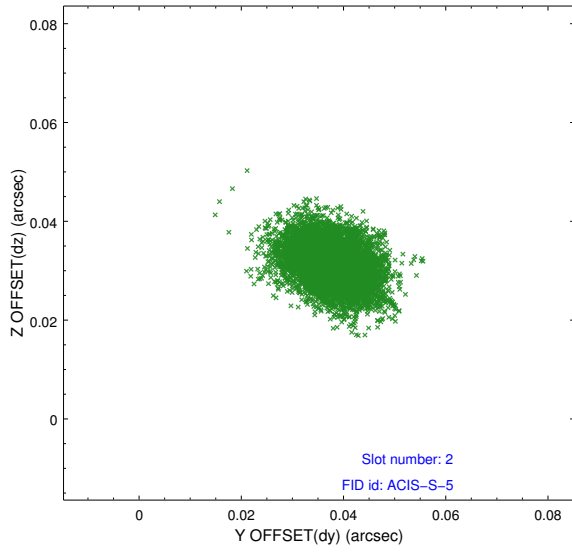
### 2.5.1 Slot 0



## 2.5.2 Slot 1

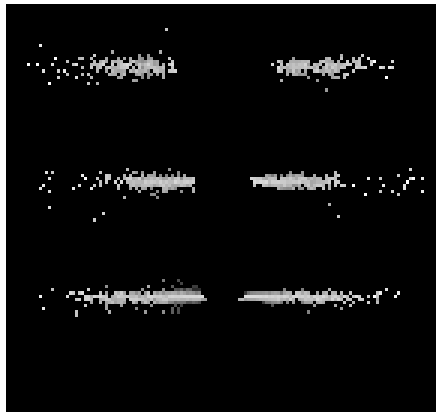


### 2.5.3 Slot 2

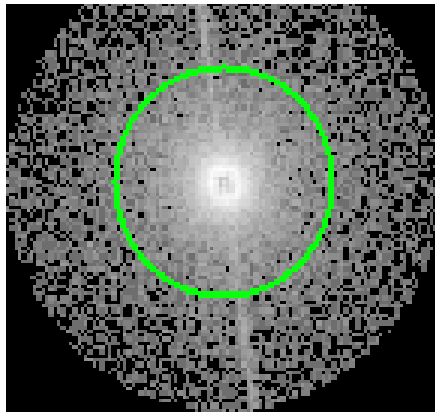


### 3 Gratings

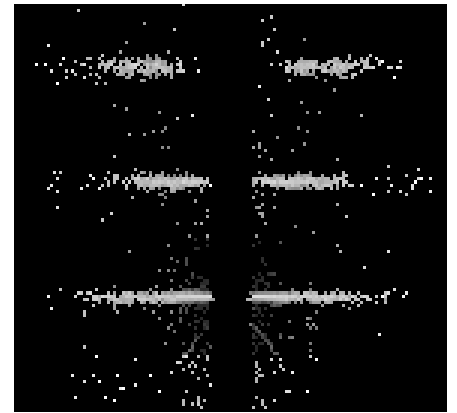
#### 3.1 HEG Arm



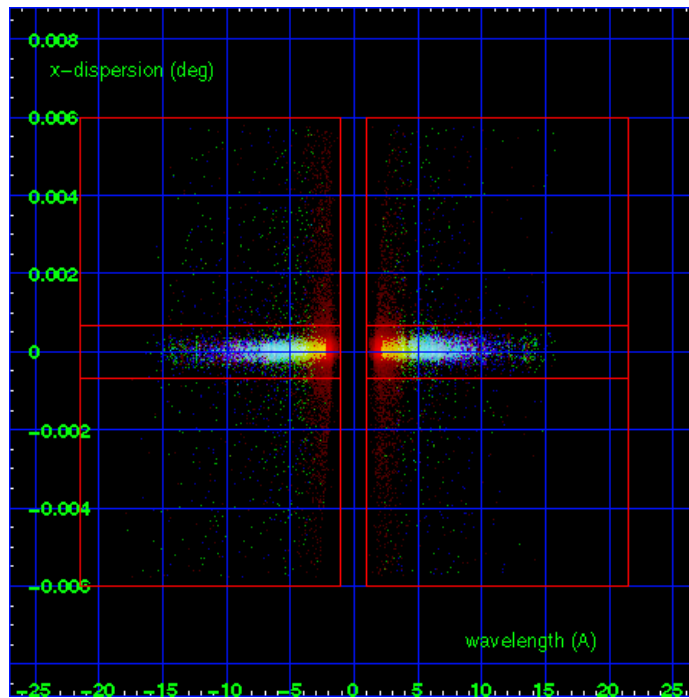
HEG Order Sort 123



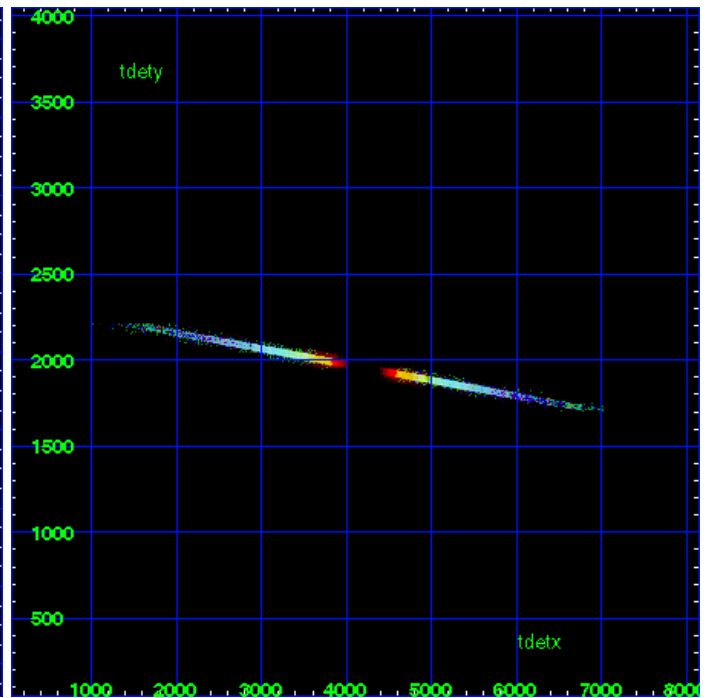
HEG Zero Order



HEG Order Sort ALL

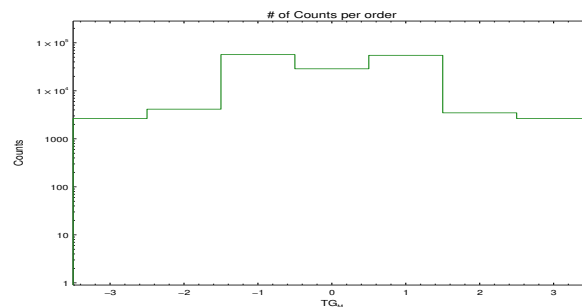


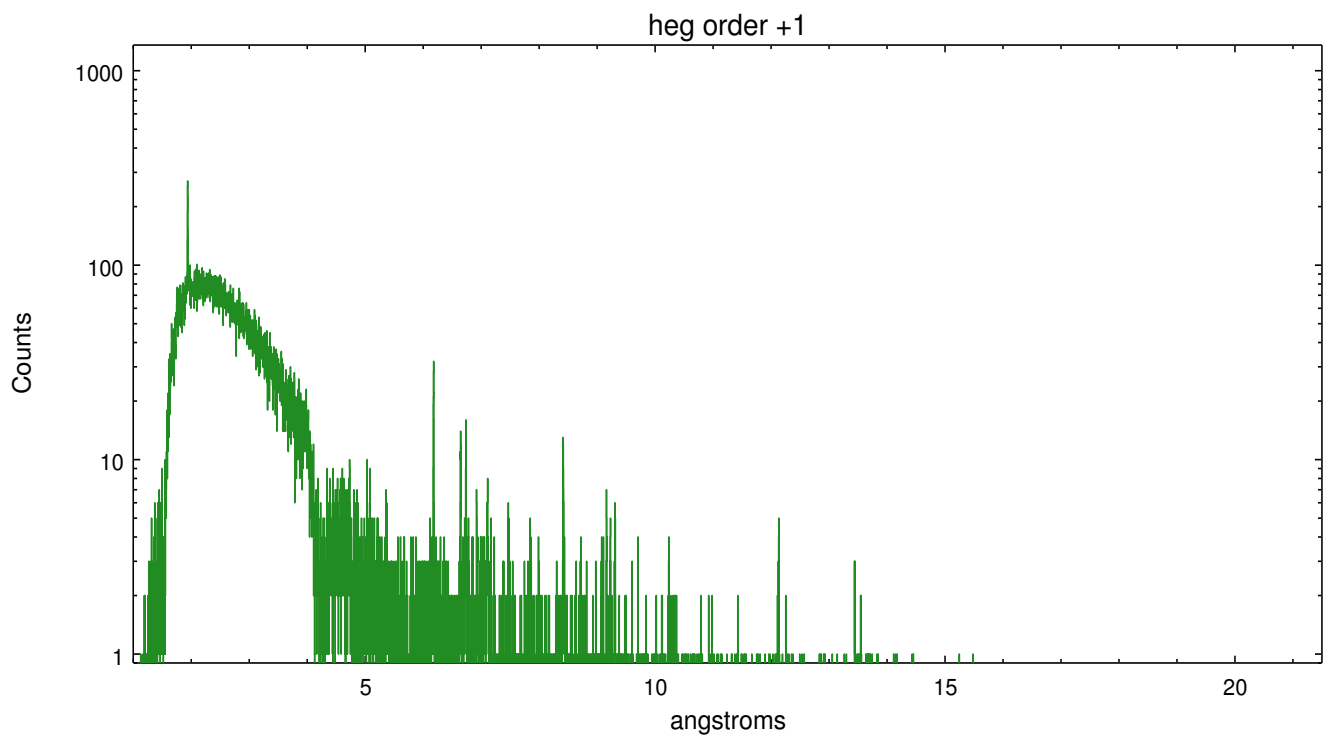
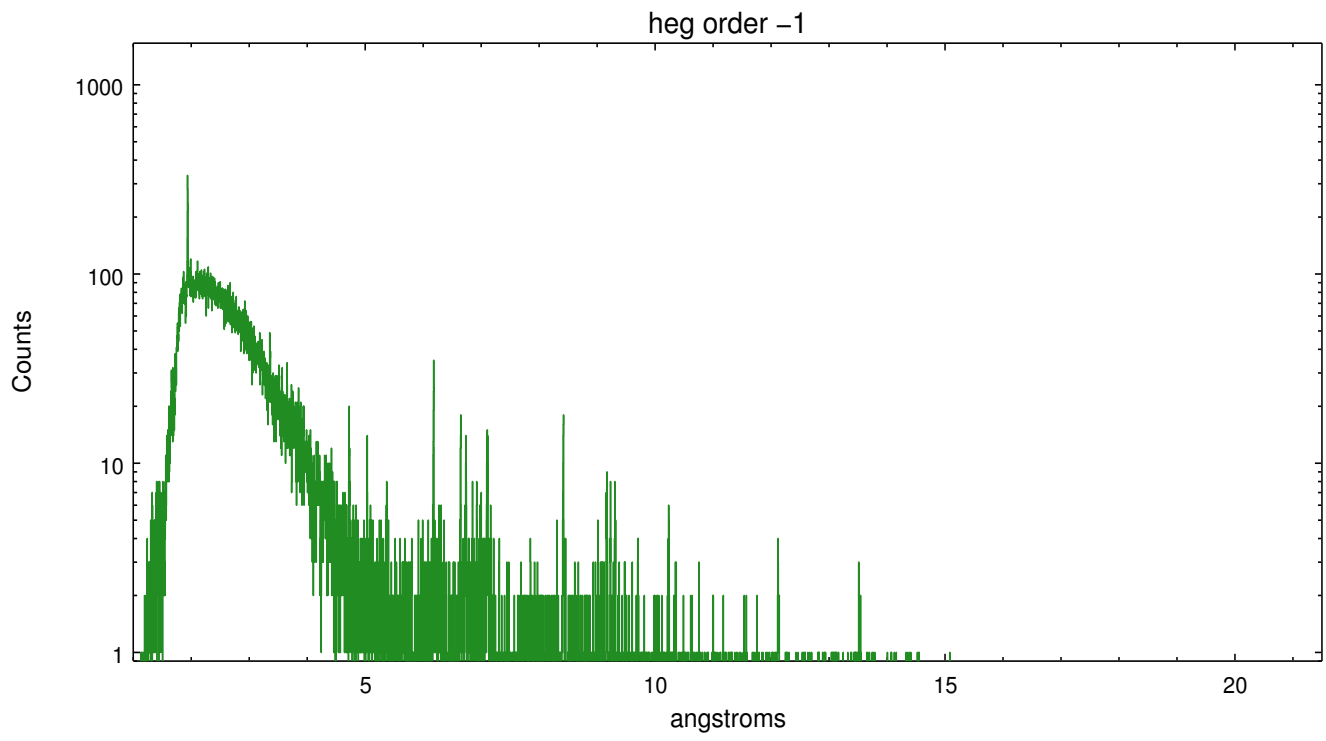
Spot Image HEG



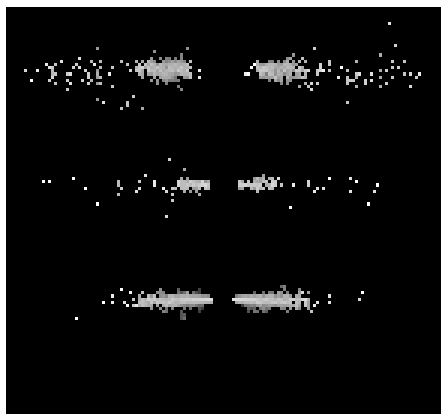
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2641	4142	56740	28739	54778	3476	2643

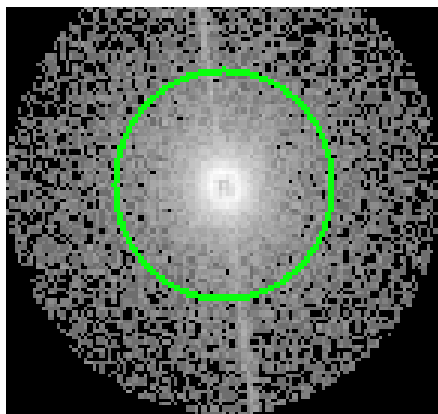




### 3.2 MEG Arm



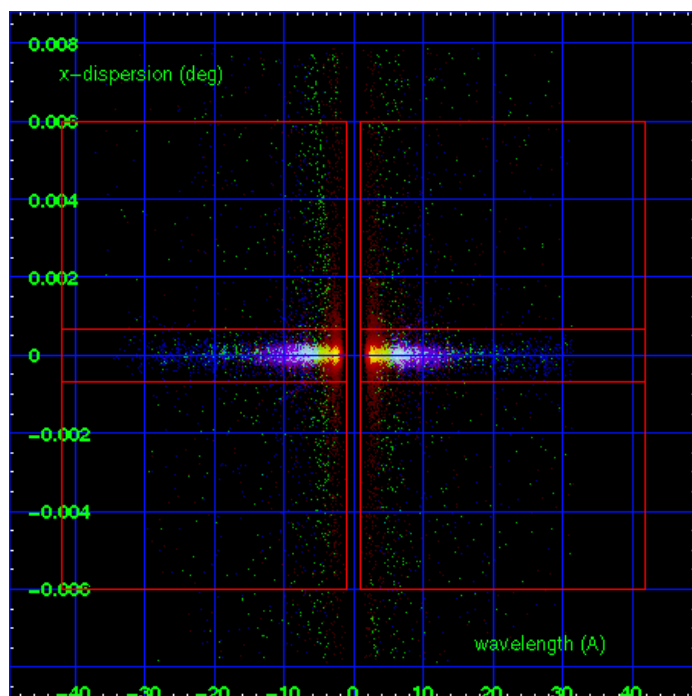
MEG Order Sort 123



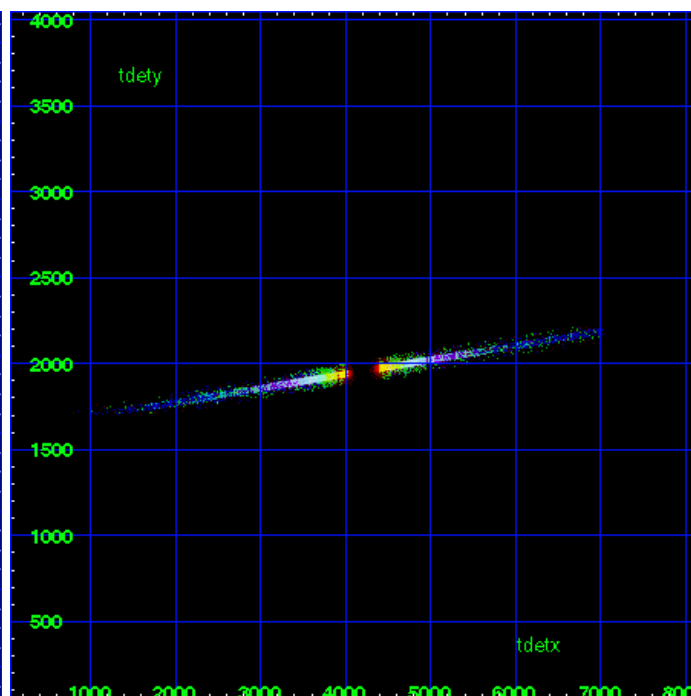
MEG Zero Order



MEG Order Sort ALL

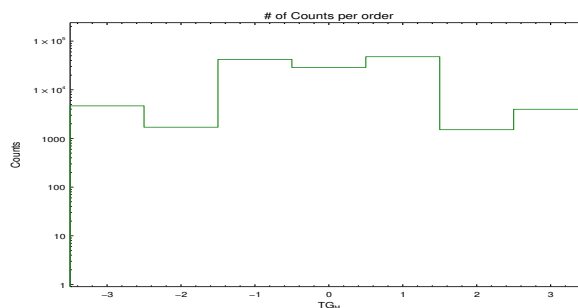


Spot Image MEG

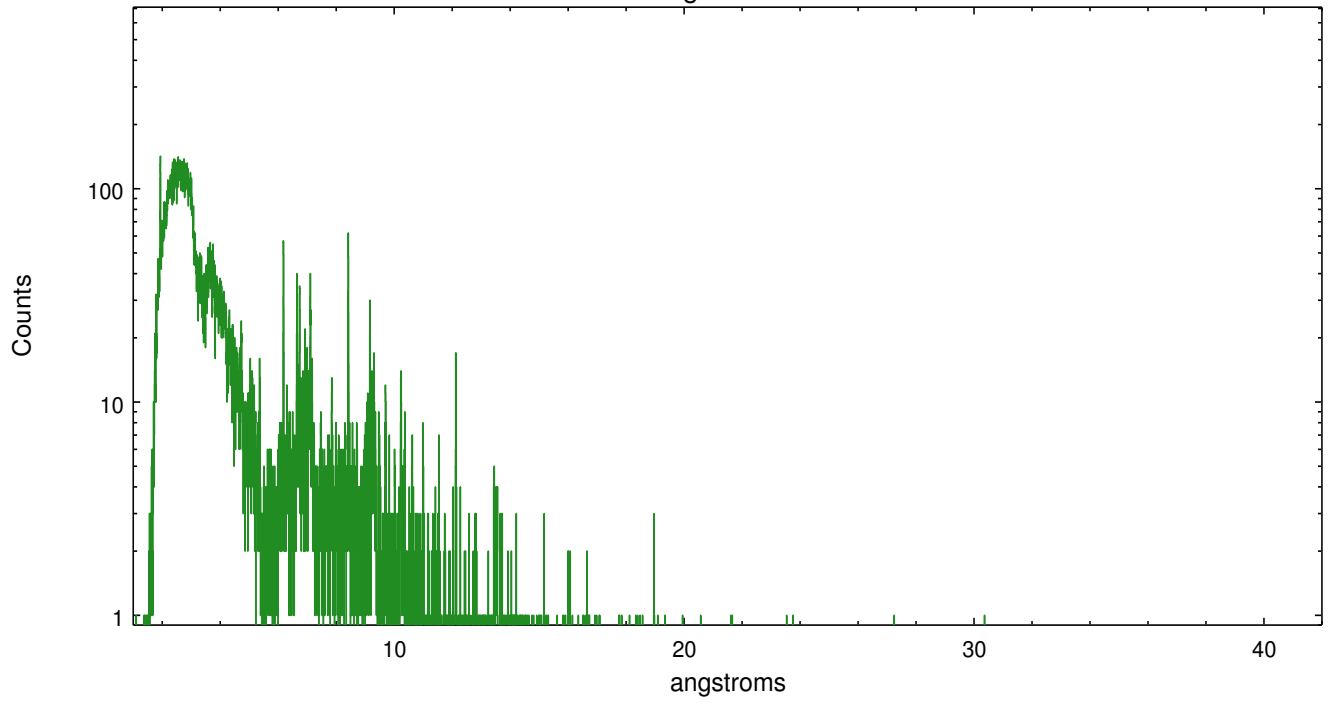


Full Detector MEG

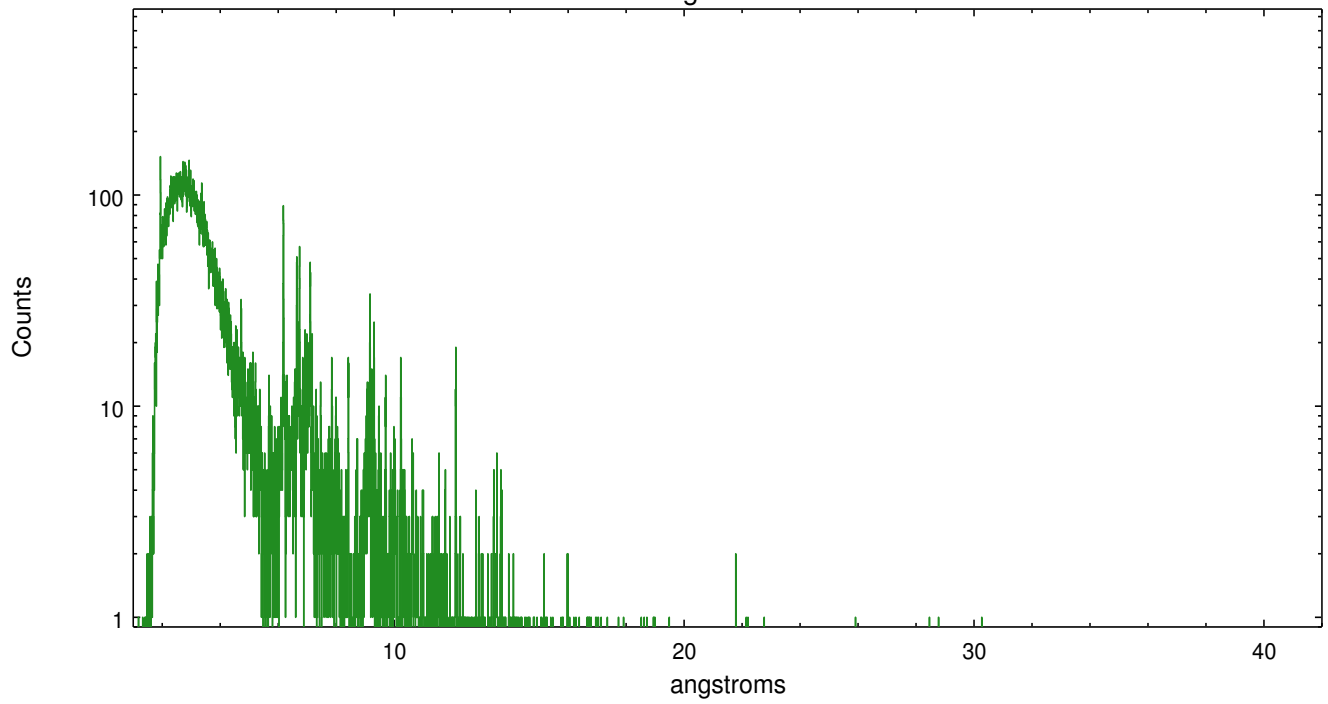
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	4672	1701	42065	28739	47803	1514	3974



meg order -1



meg order +1



# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.09.20
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.141

## A.2 Comments

Phase constraint met.

===

Zeroth order piled up. Standard data processing software did not correctly locate the zeroth order due to pileup. Manual intervention was used to input the correct sky coordinates (x=4165.98, y=4118.96) into the \*src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called findzero, which is expected to be released in CIAO as tg\_findzo (currently in ISIS as findzo). The tool calculates the point of intersection of the readout streak and the meg arm. The zeroth order source position determined by the standard pipeline processing using the tool tgdetect was not used in this processing. The newly determined zeroth order coordinates have been placed in the \*src1a.fits file, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect on the data.

===

Spectral arms also piled up at hardest energies.