

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 15568 - L2 Version 2  
Chandra X-Ray Center

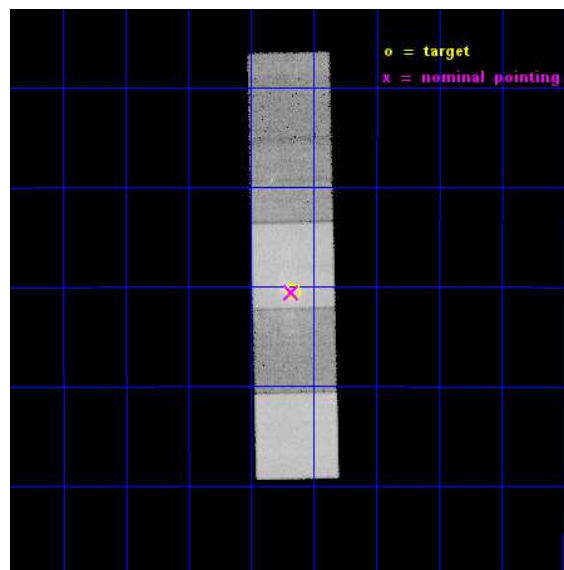
L2 Processing Date : Dec 17 2014

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# 1 Front

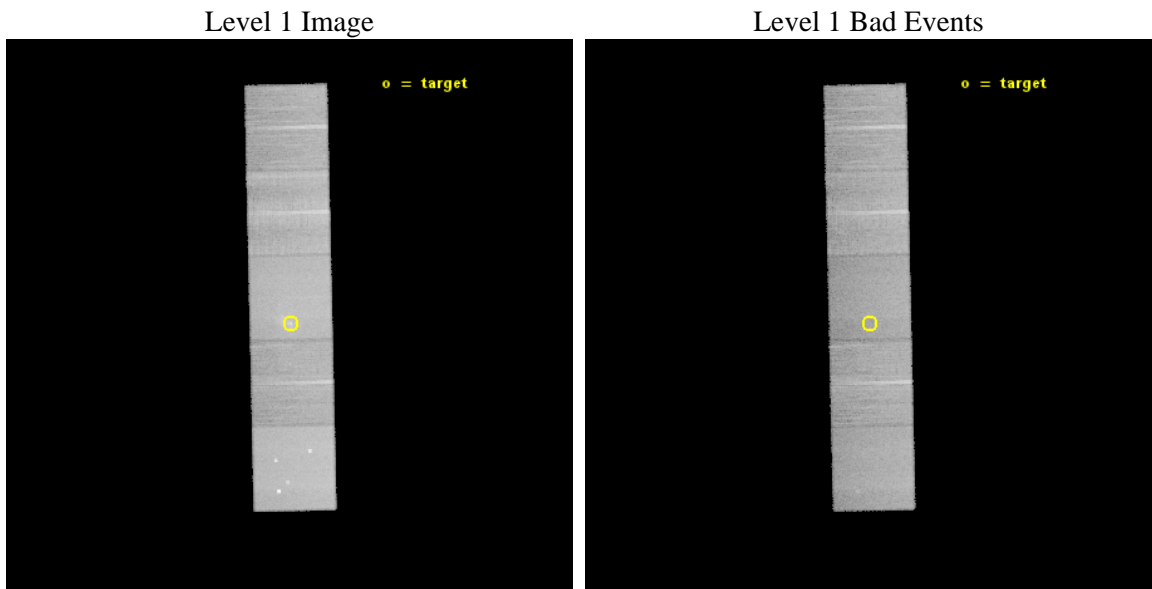
seq_num	601012	Sequence number
obs_id	15568	Observation id
title	Chandra HETG Ultra-deep Gratings Spectroscopy of Sgr A* (CHUGSS)	P
observer	Dr. Frederick Baganoff	Principal investigator
object	Sgr A*	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	266.416667	Observer's specified target RA [deg]
dec_targ	-29.007806	Observer's specified target Dec [deg]
ra_nom	266.41953965081	Nominal RA [deg]
dec_nom	-29.00949927234	Nominal Dec [deg]
roll_nom	268.65802647031	Nominal Roll [deg]
revision	2	Processing version of data
ontime	36062.300277352	Sum of GTIs [s]
livetime	35591.119775549	Livetime [s]
ontime5	36062.300277352	Sum of GTIs [s]
ontime6	36062.300277352	Sum of GTIs [s]
ontime7	36062.300277352	Sum of GTIs [s]
ontime8	36062.300277352	Sum of GTIs [s]
ontime9	36062.300277352	Sum of GTIs [s]
l2events	382270	Number of level 2 events



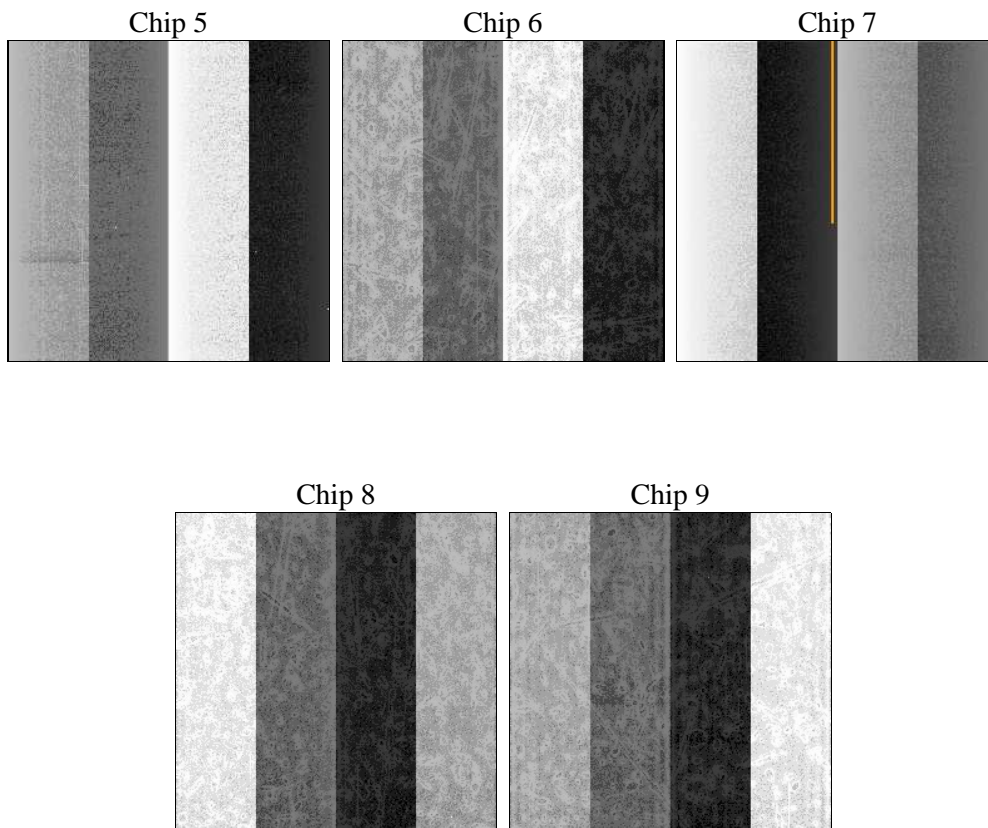
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	36000.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	36062.300277352	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime5	36062.300277352	Sum of GTIs [s]
date	2014-11-28T10:18:59	Date and time of file creation	ontime6	36062.300277352	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	36062.300277352	Sum of GTIs [s]
			ontime8	36062.300277352	Sum of GTIs [s]
			ontime9	36062.300277352	Sum of GTIs [s]
			l1events	1246743	Number of level 1 events
			tgmethod	USER	Method used to create src1a file
			zo_pos	(4114.77, 4108.93)	src1a sky pixel position

### 2.1.4 Events

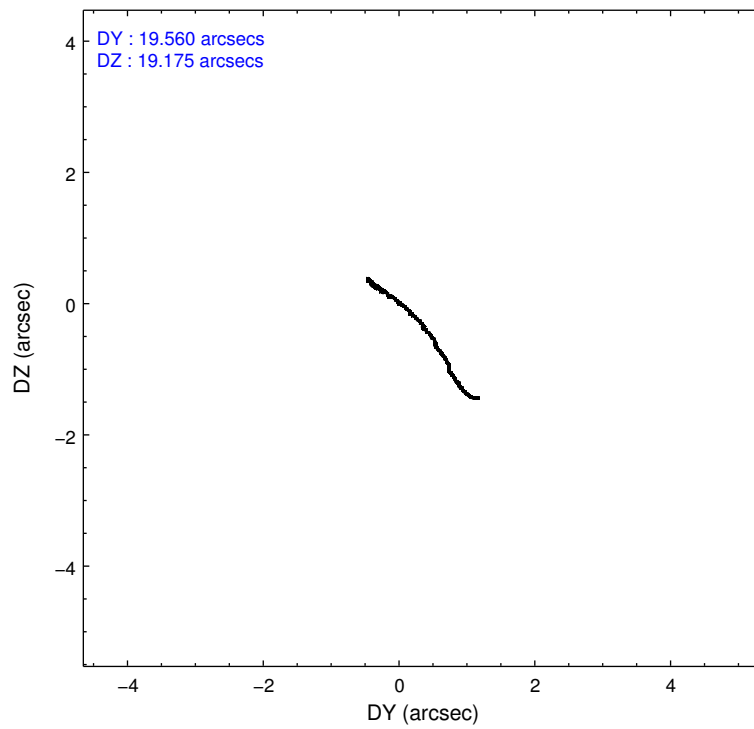
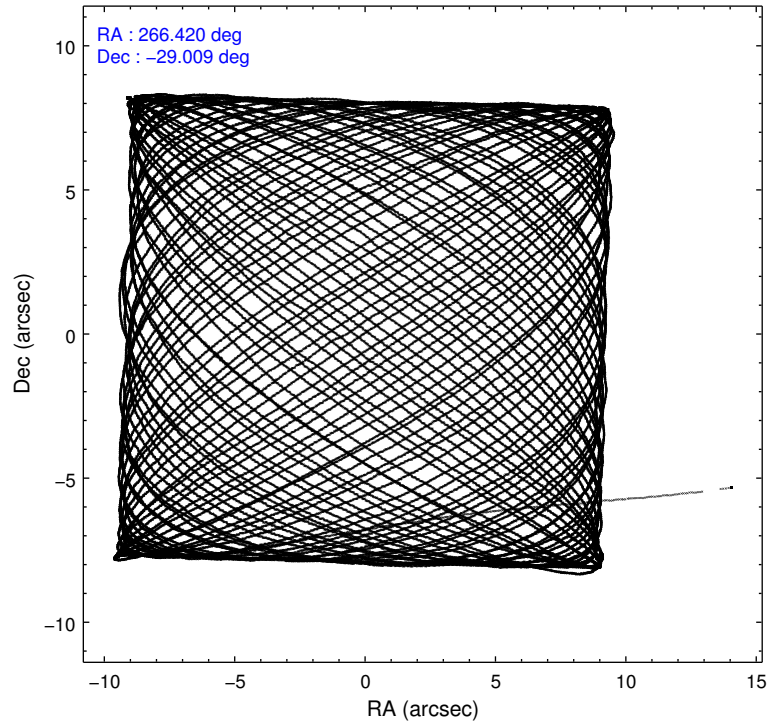
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	311547	204646	282050	255757	192743
rejected events	155999	164829	138720	180535	164692
rejected %	50%	80%	49%	70%	85%

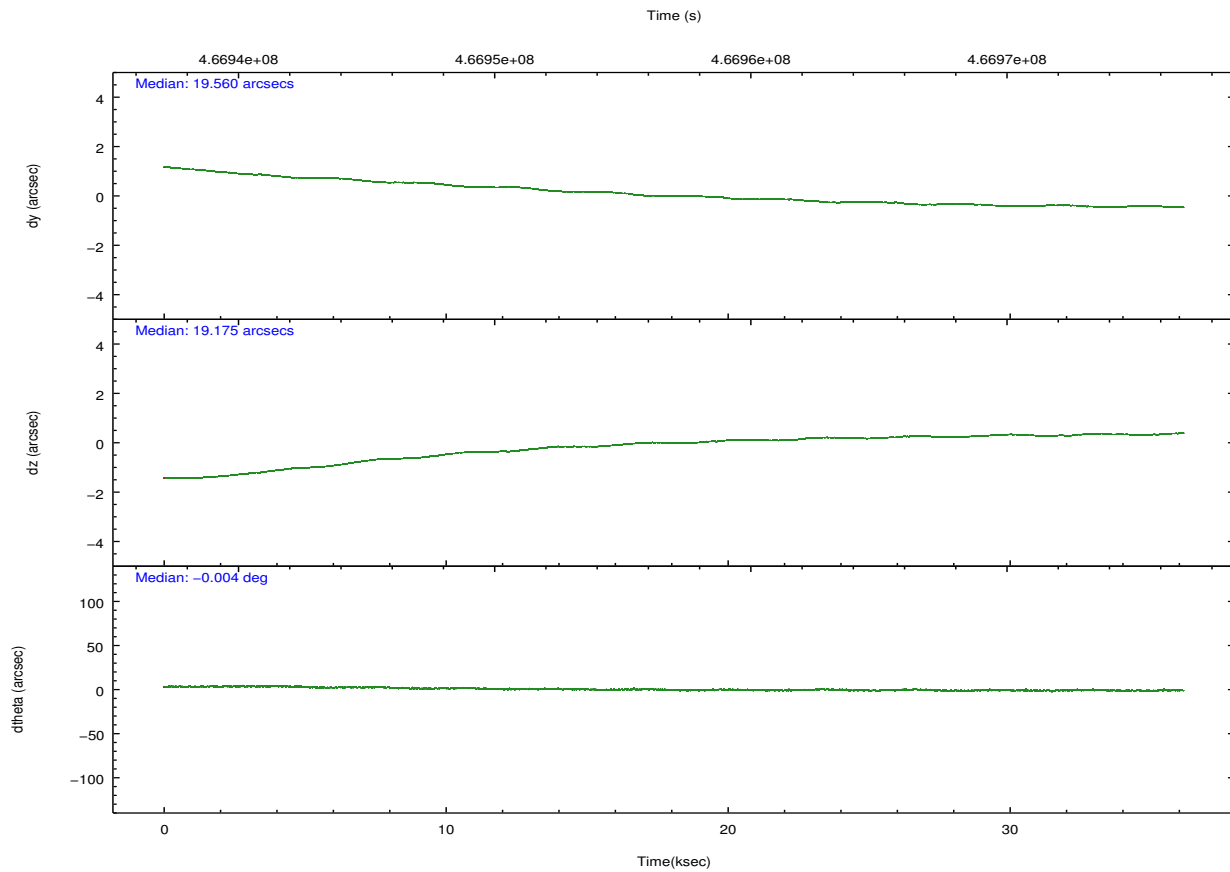
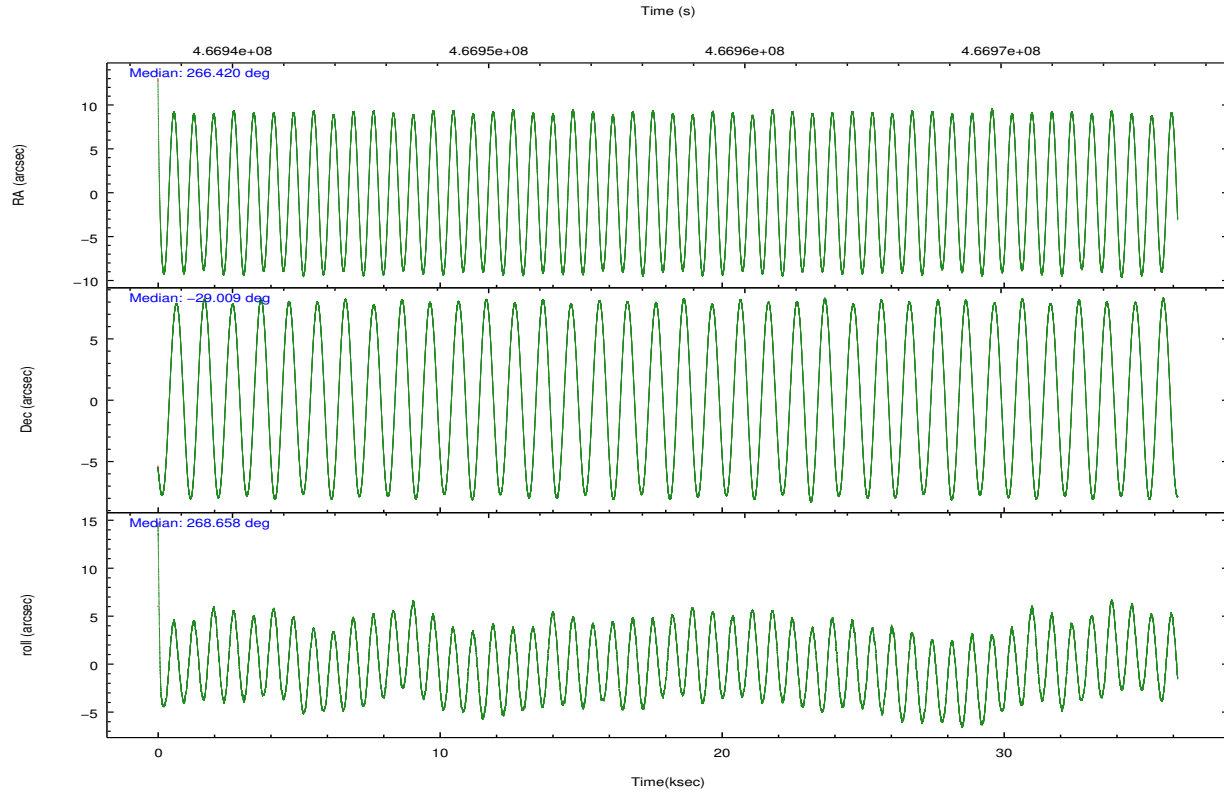
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	16888	18971	16637	26823	11499
	5%	9%	5%	10%	5%
grade 1 events	626	145	291	210	117
	0%	0%	0%	0%	0%
grade 2 events	46323	7785	30557	16659	5819
	14%	3%	10%	6%	3%
grade 3 events	5902	3208	12979	7059	2663
	1%	1%	4%	2%	1%
grade 4 events	5822	3186	13005	6662	2654
	1%	1%	4%	2%	1%
grade 5 events	23363	9504	26088	13805	10608
	7%	4%	9%	5%	5%
grade 6 events	80636	6673	70179	18034	5425
	25%	3%	24%	7%	2%
grade 7 events	131987	155174	112314	166505	153958
	42%	75%	39%	65%	79%

## 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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	266.404171	266.4195396508065	Subarray requested	NONE	NONE
[deg] Pointing Dec	-28.985677	-29.00949927233988	Alternating exposures requested	N	N
[deg] Pointing Roll	268.493947	268.6580264703139	[s] Primary exposure time	0.000000	3.1
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	466939064.184000	466937790.49448			
Observation start date	2012-10-18T09:16:37	2012-10-18T08:56:30			
[s] Observation end time (MET)	466975064.184000	466976234.14655			
Observation end date	2012-10-18T19:16:37	2012-10-18T19:37:14			
Read mode	TIMED	TIMED			

## 2.3 Aspect





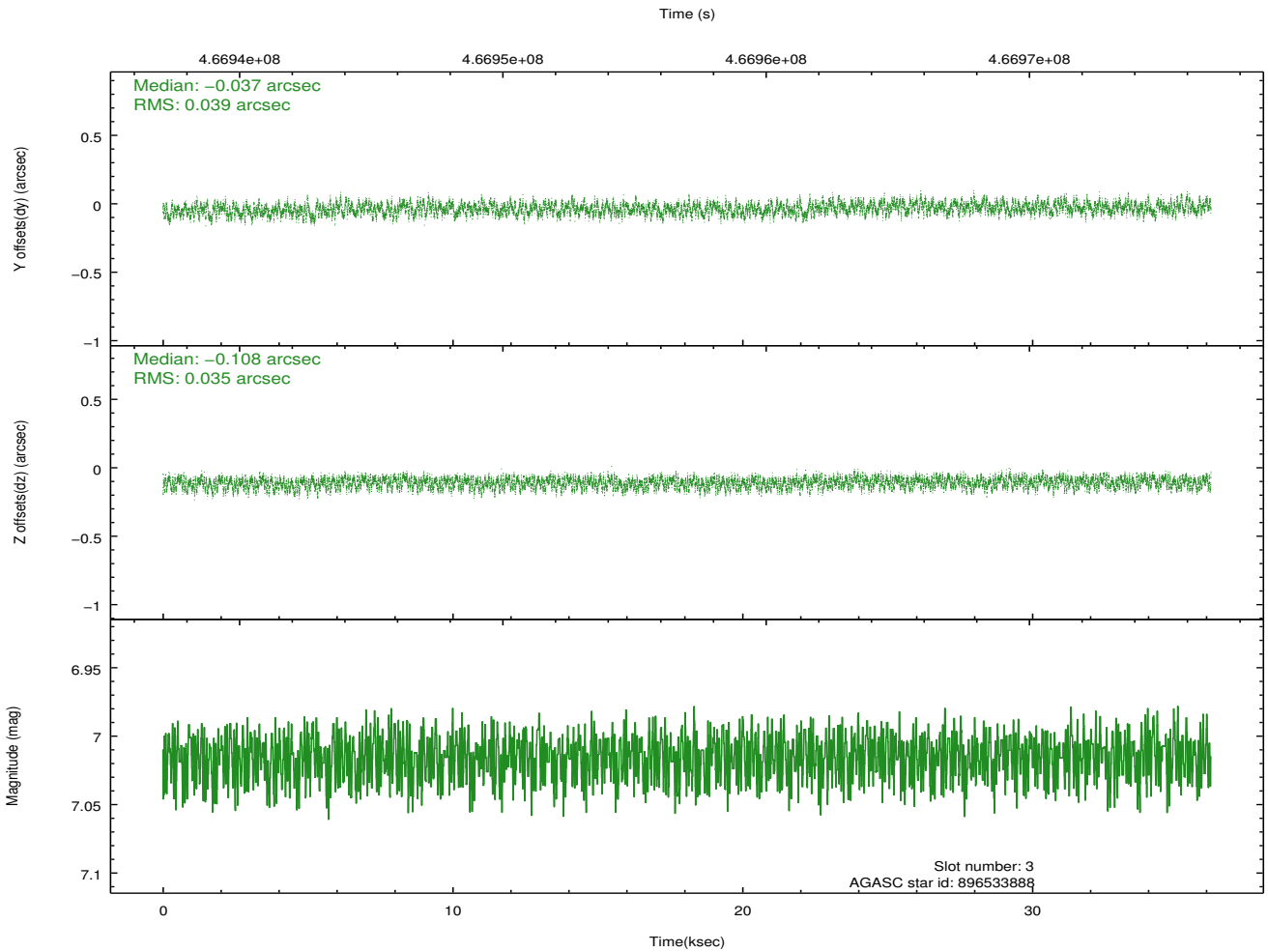
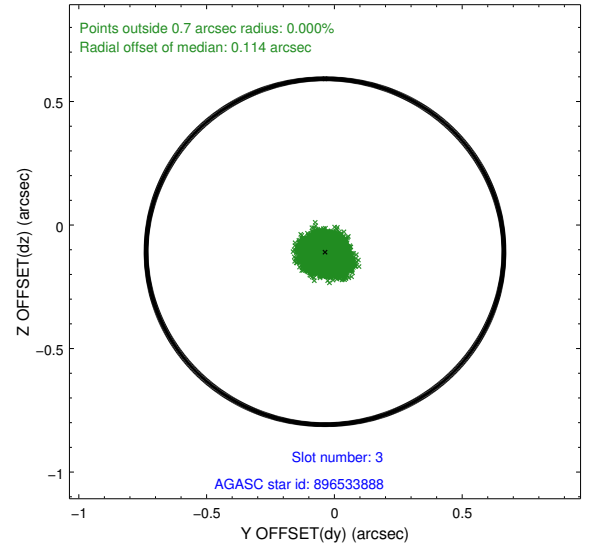
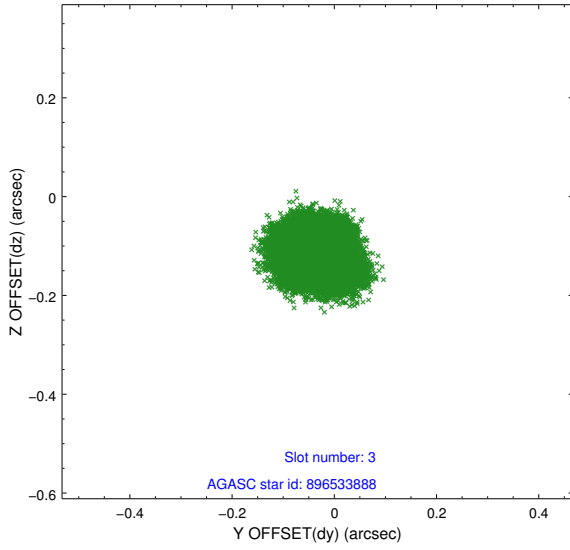
### Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.97	8821	-0.128	-0.053	0.012	0.021	0.000000	0.000000	-772.92	-1740.49
1	FID		ACIS-S-4	7.05	8820	0.281	0.076	0.010	0.029	0.000000	0.000000	2140.77	168.05
2	FID		ACIS-S-5	7.08	8820	-0.182	-0.014	0.014	0.022	0.000000	0.000000	-1825.75	161.71
3	GUIDE	used	896533888	7.01	17640	-0.037	-0.108	0.056	0.089	266.666434	-29.392757	1444.45	860.80
4	GUIDE	used	896541360	7.71	17639	-0.019	-0.109	0.060	0.097	266.684478	-29.453744	1662.68	922.68
5	GUIDE	used	896404568	7.86	17639	0.171	0.018	0.060	0.095	265.687293	-28.431080	-1928.99	-2321.00
6	GUIDE	used	896538696	6.83	17641	-0.035	0.128	0.044	0.070	266.298470	-28.325572	-2366.56	-397.30
7	GUIDE	used	896537776	7.54	17637	-0.080	0.074	0.057	0.091	266.655684	-29.665673	2427.30	850.99

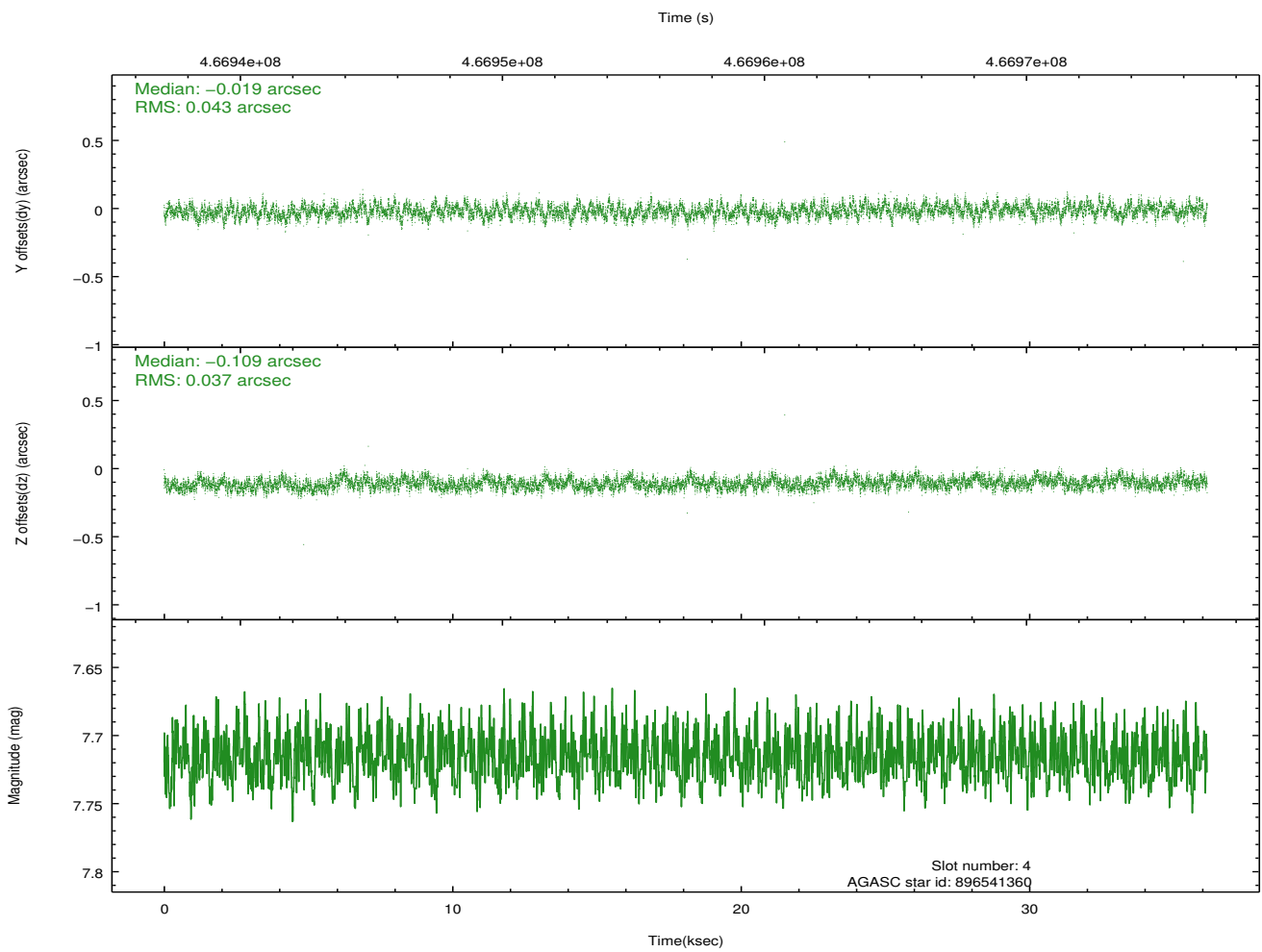
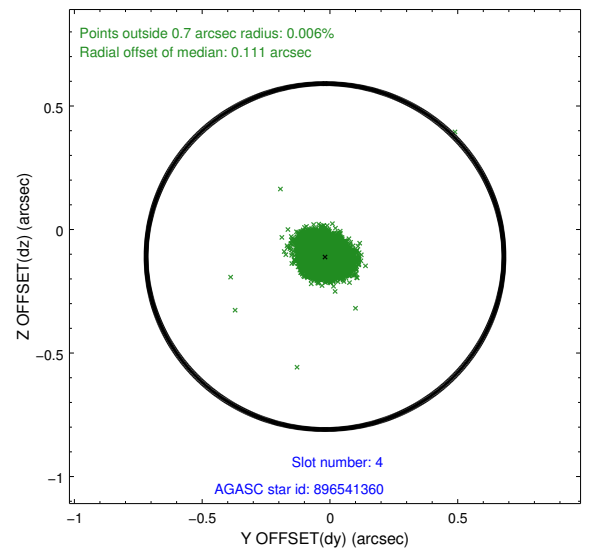
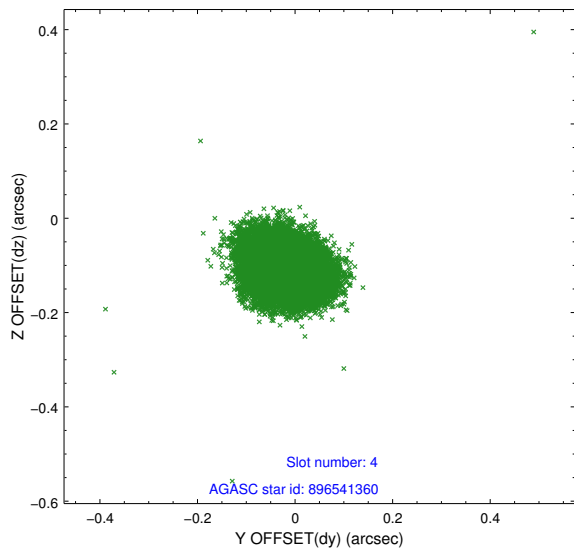
∞

## 2.4 Star Slots

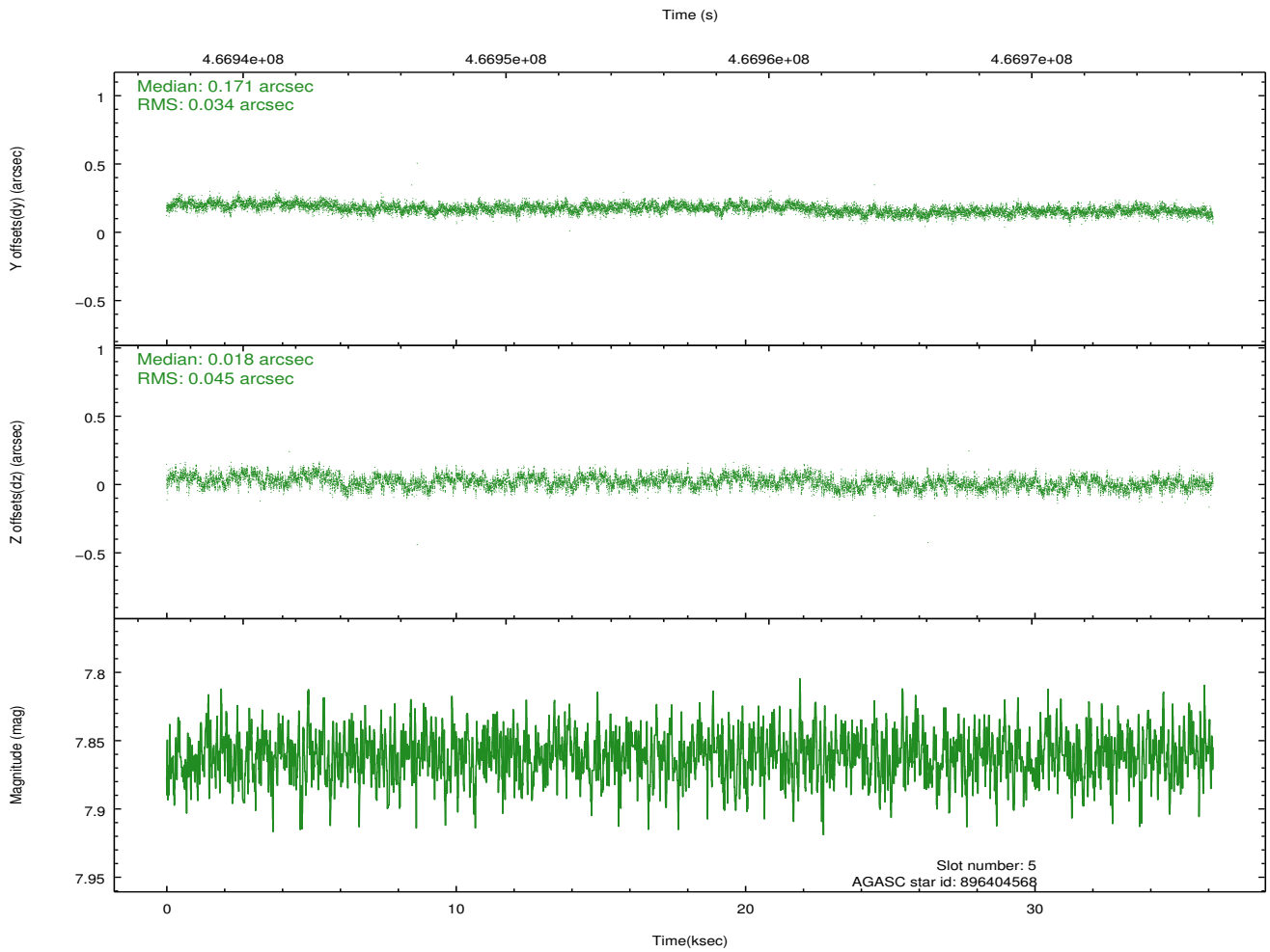
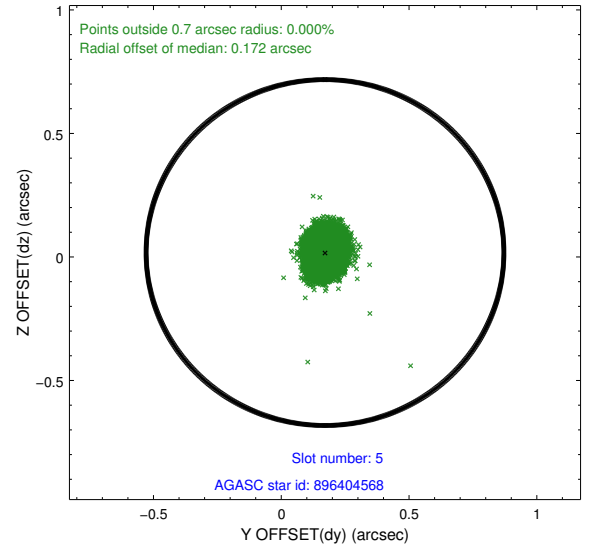
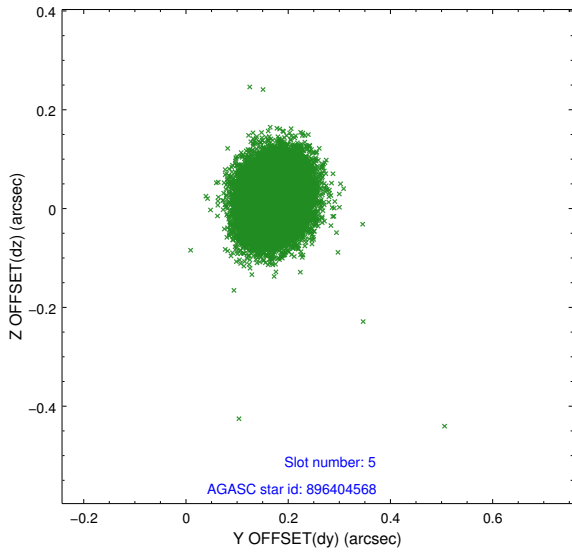
### 2.4.1 Slot 3



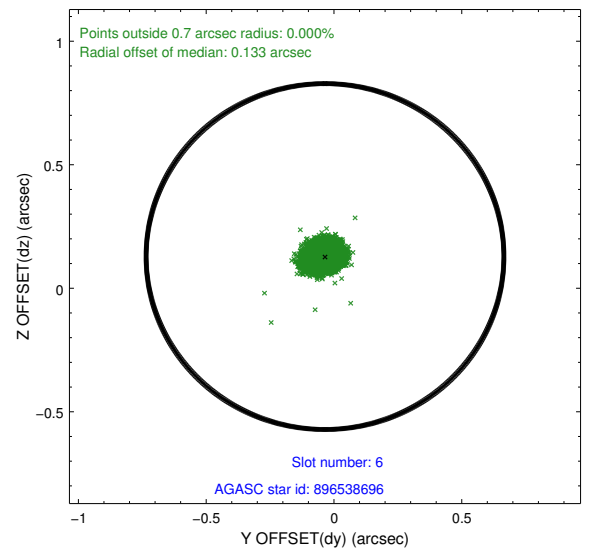
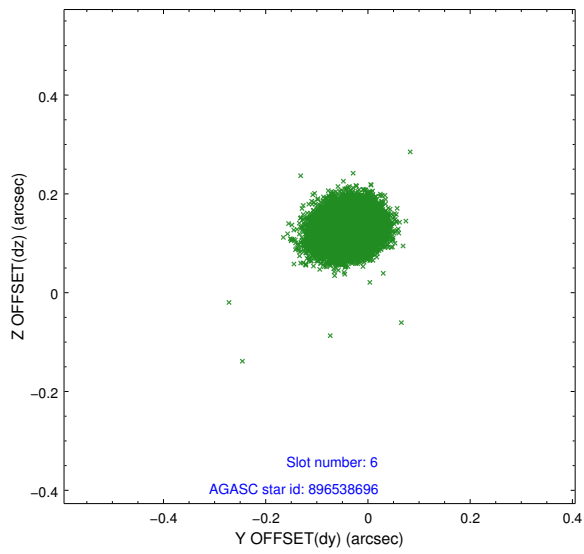
## 2.4.2 Slot 4



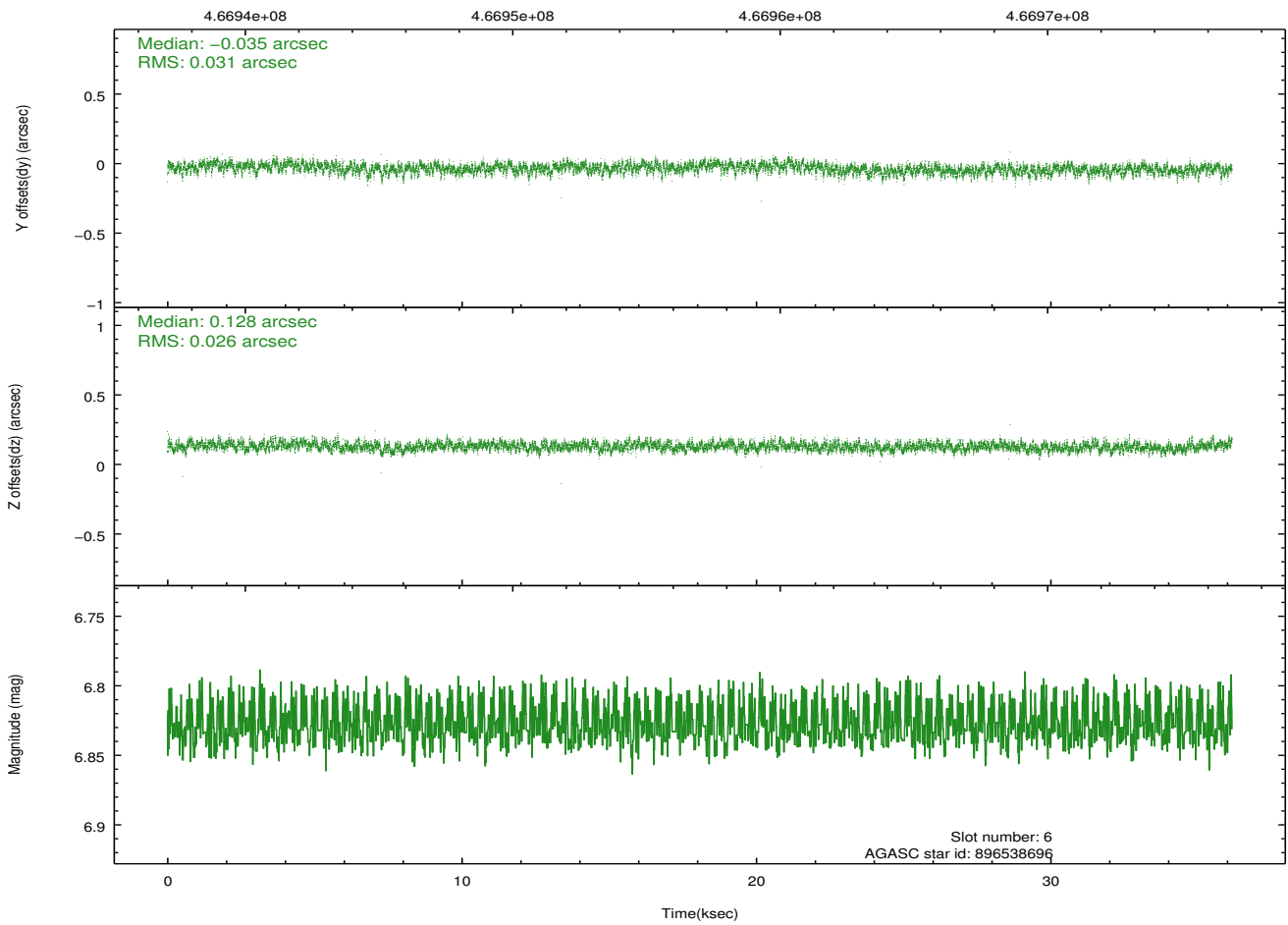
### 2.4.3 Slot 5



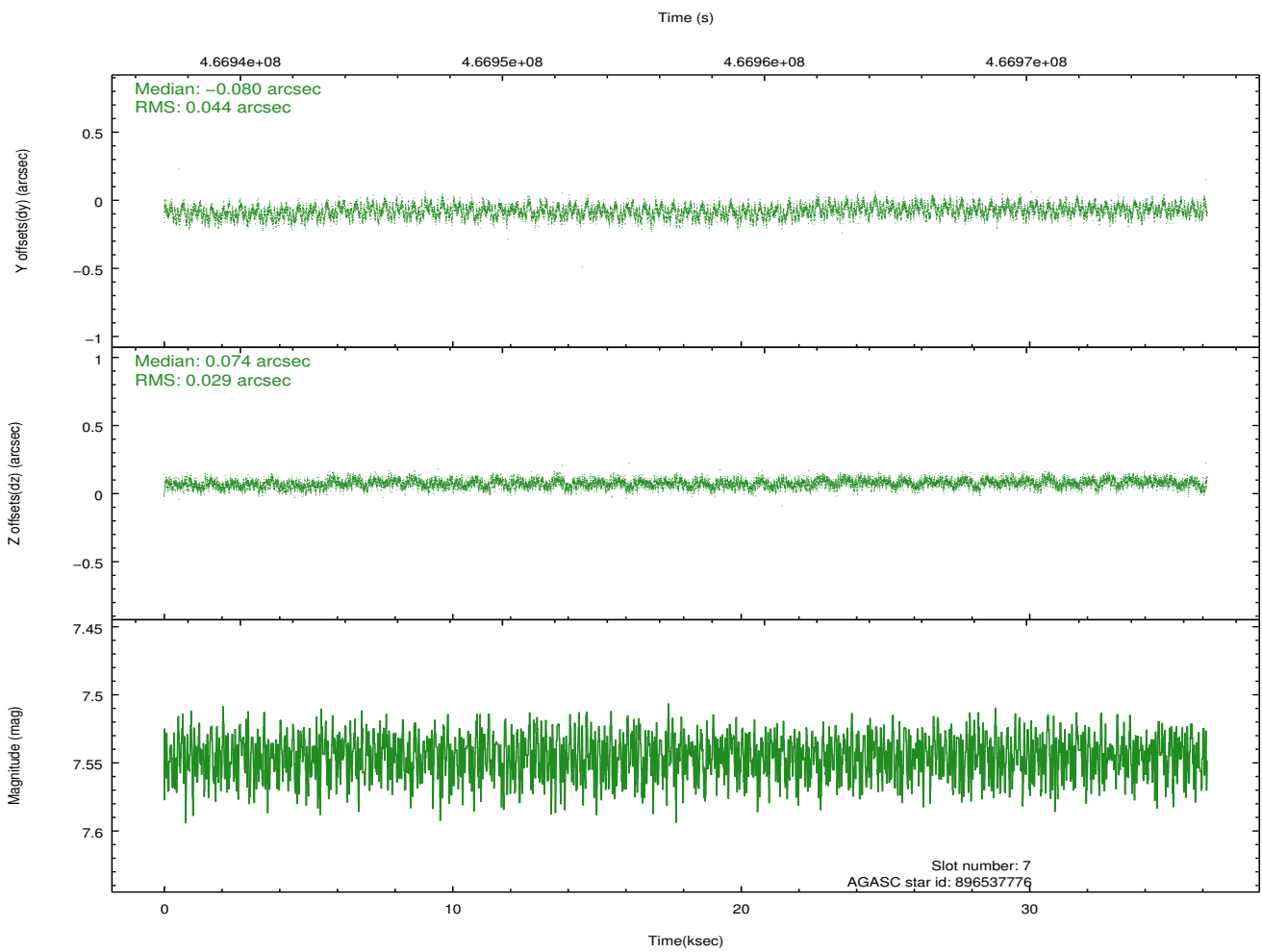
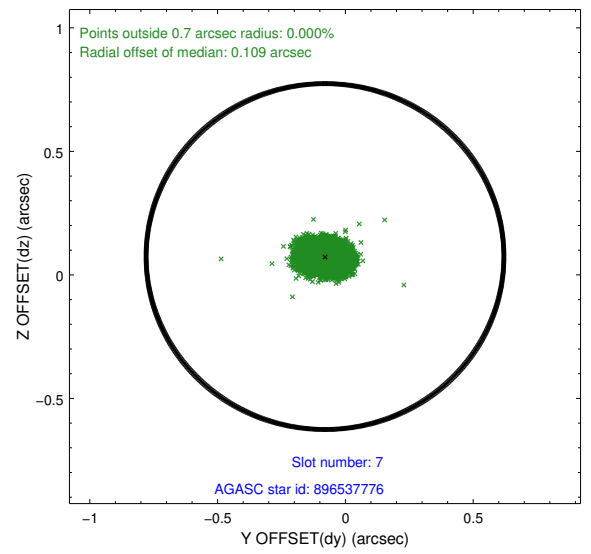
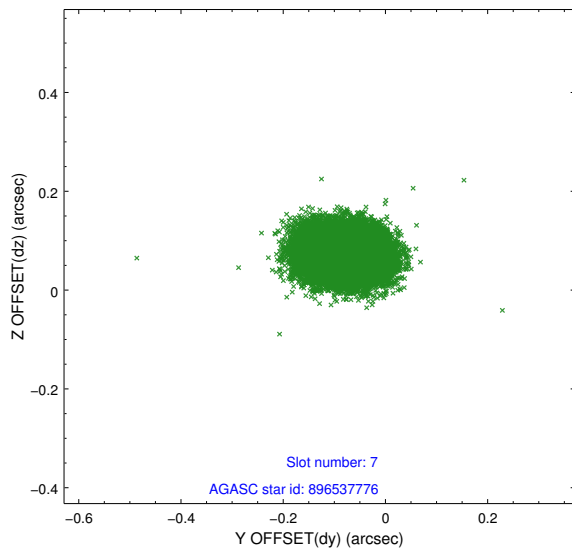
## 2.4.4 Slot 6



Time (s)

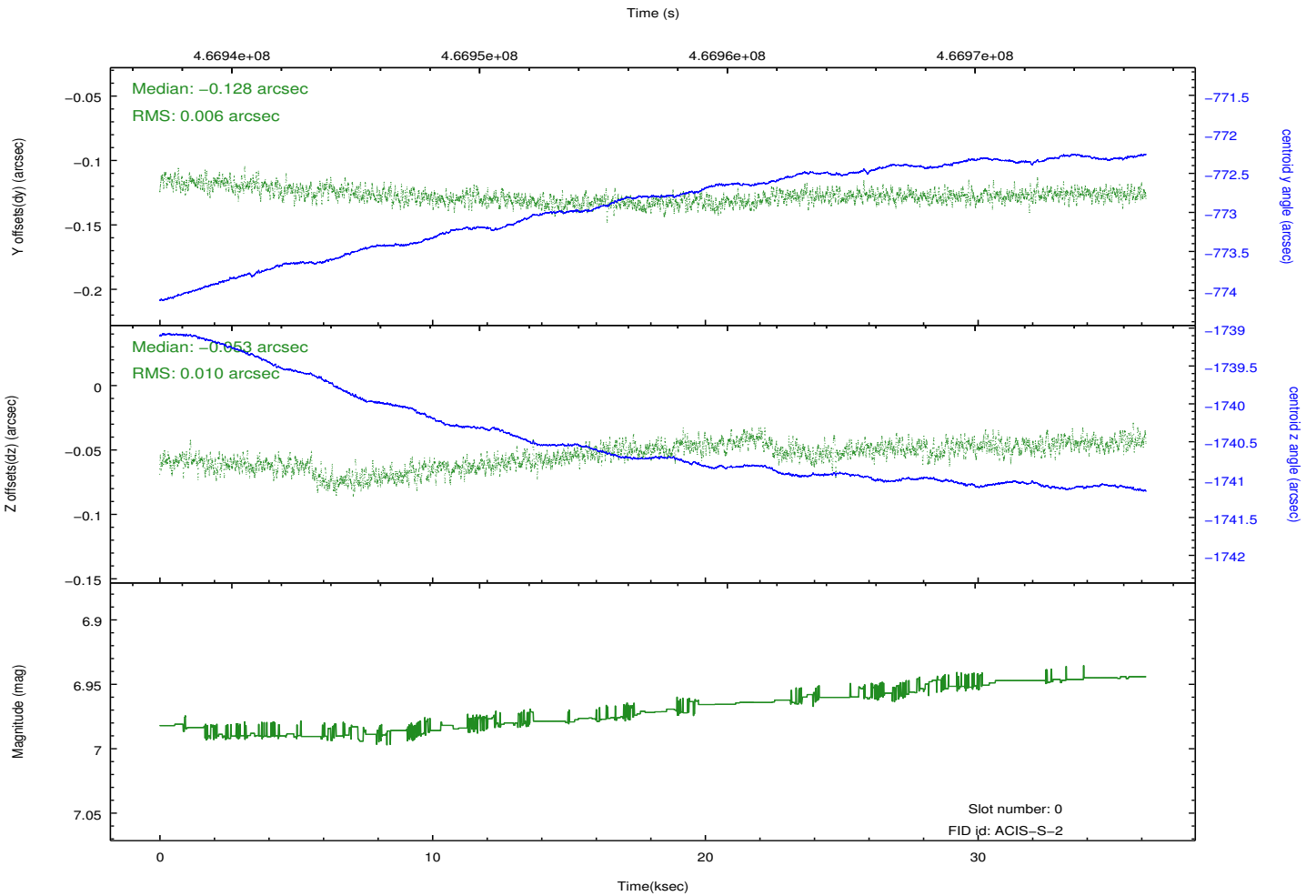
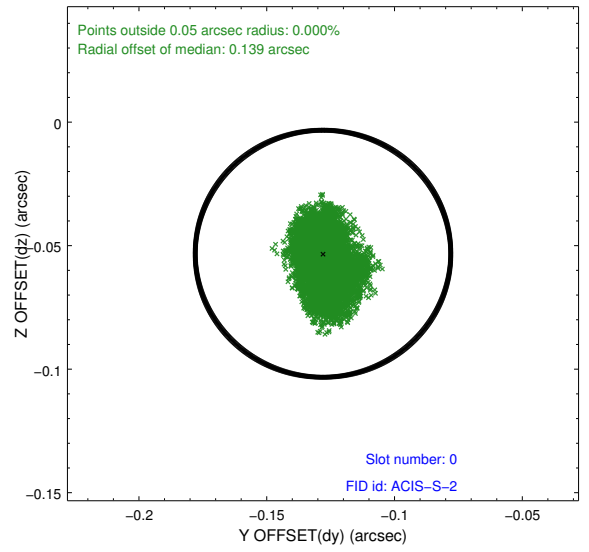
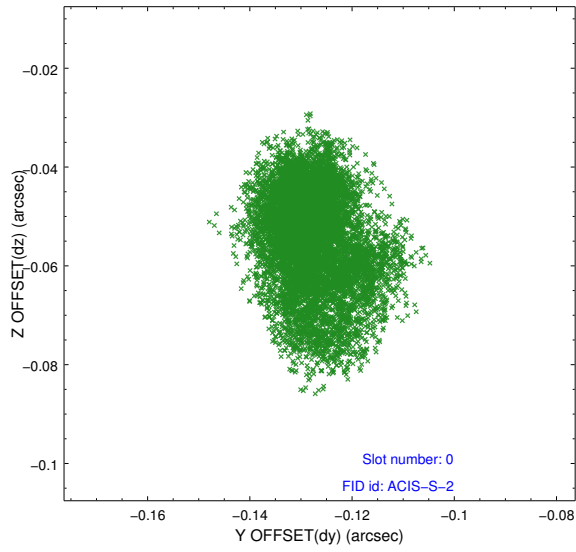


## 2.4.5 Slot 7

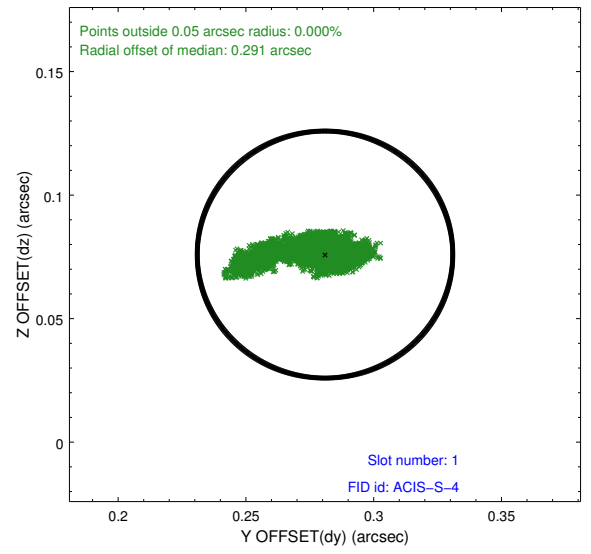
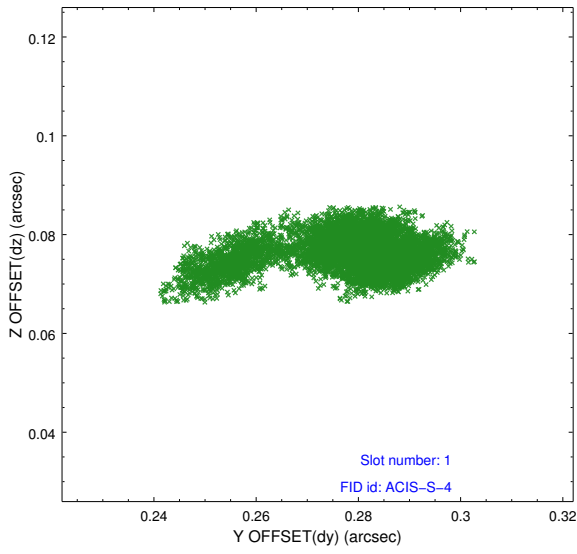


## 2.5 FID Slots

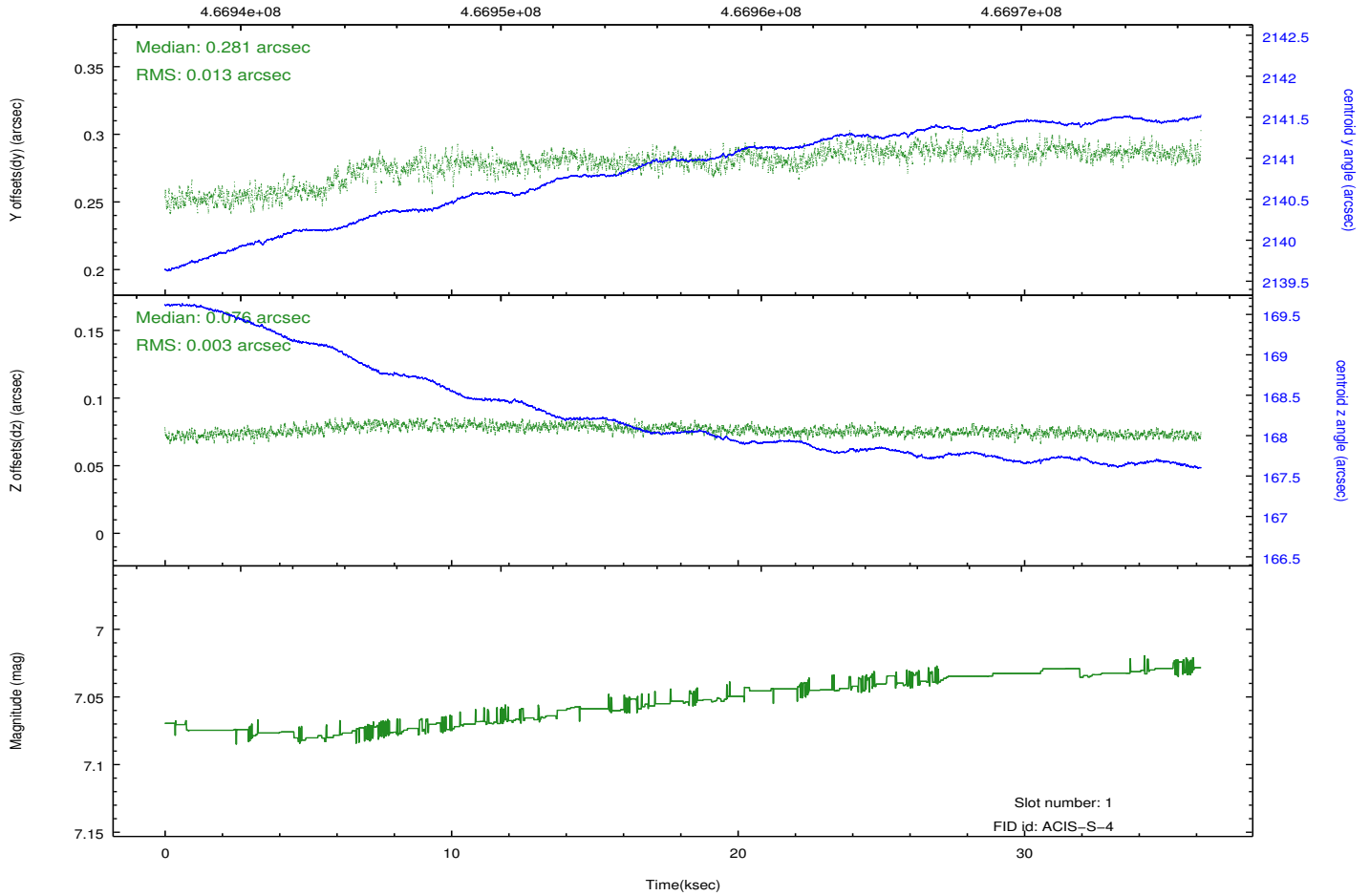
### 2.5.1 Slot 0



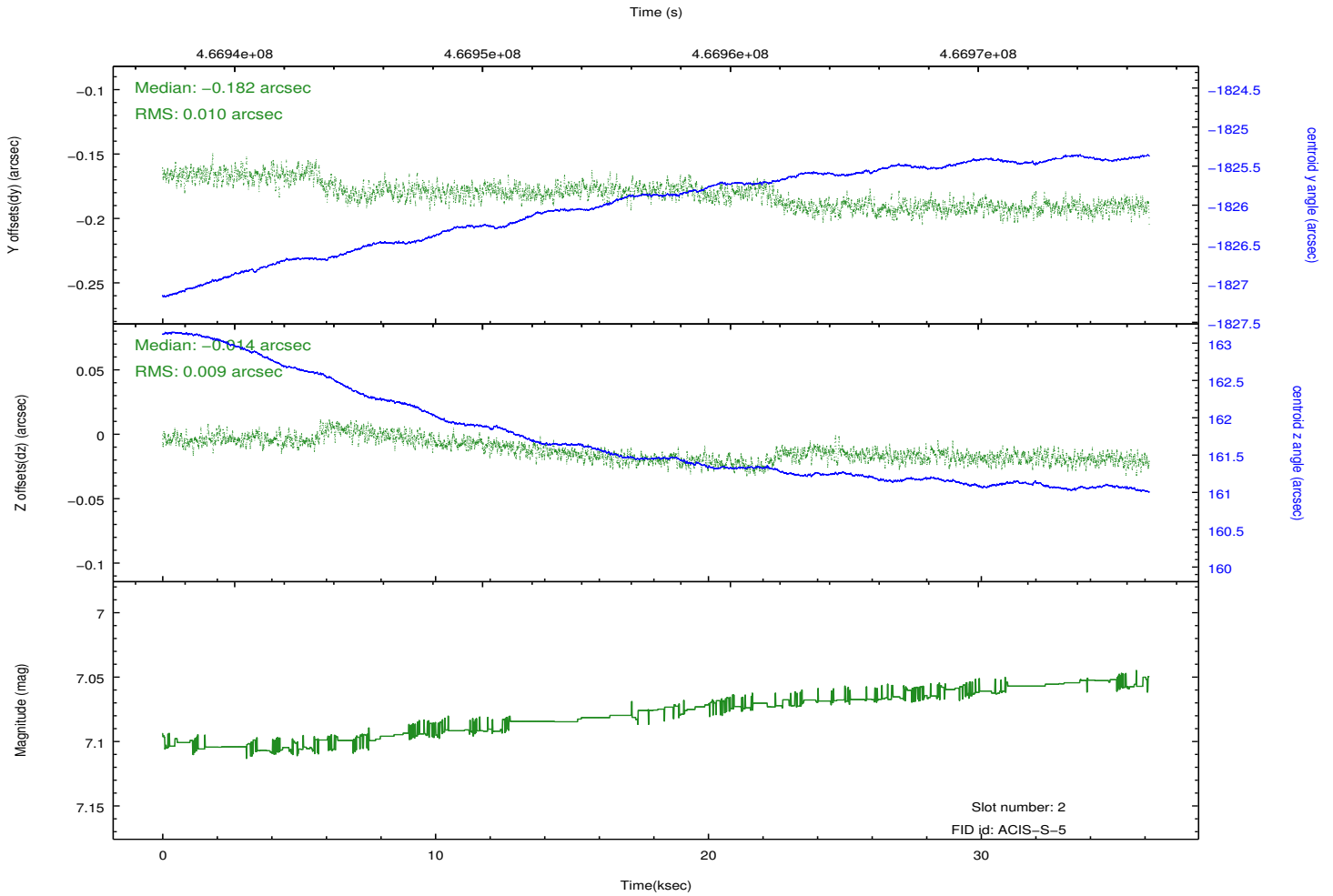
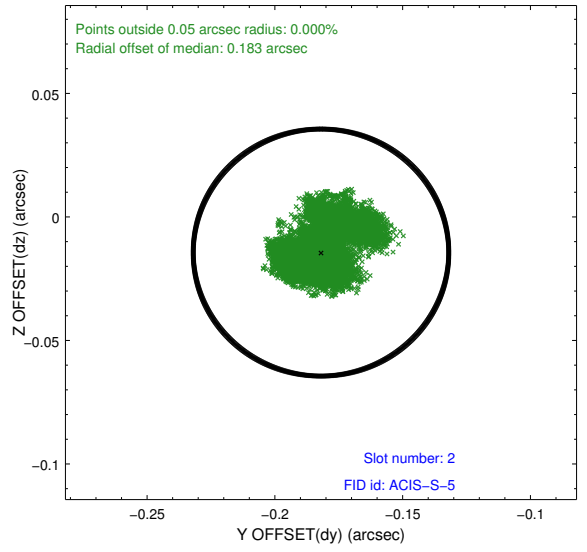
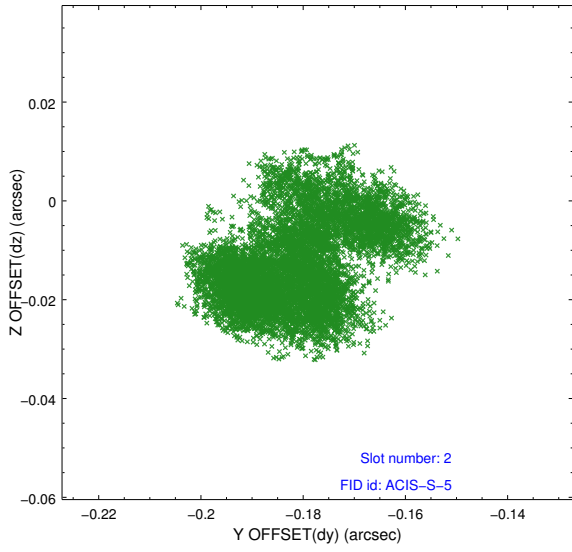
## 2.5.2 Slot 1



Time (s)



### 2.5.3 Slot 2



### 3 Gratings

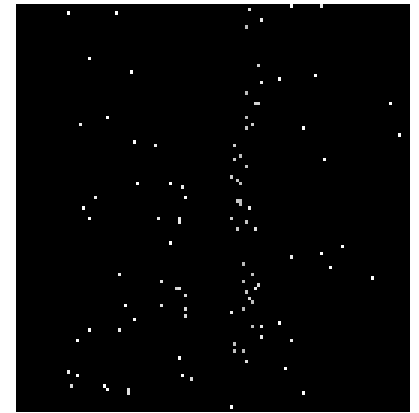
#### 3.1 HEG Arm



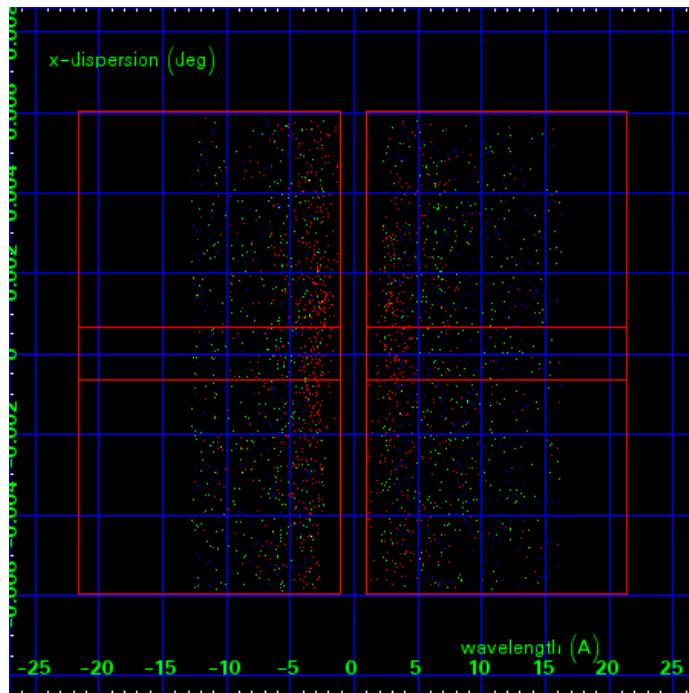
HEG Order Sort 123



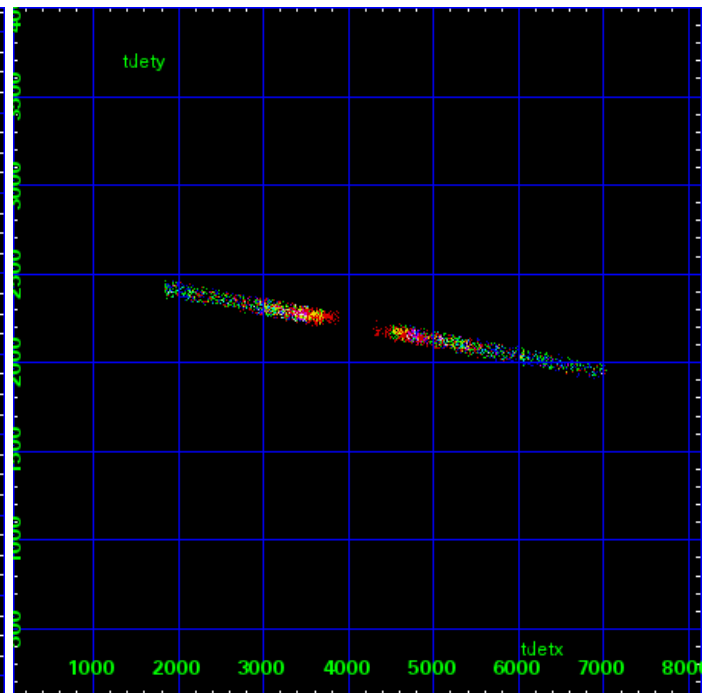
HEG Zero Order



HEG Order Sort ALL

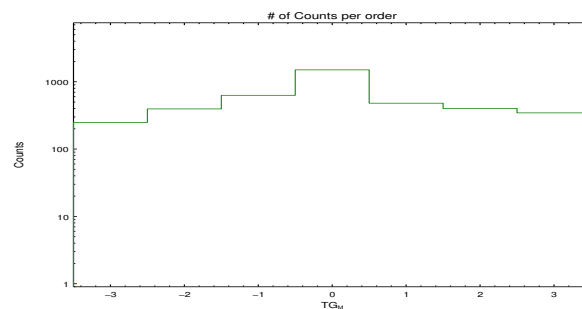


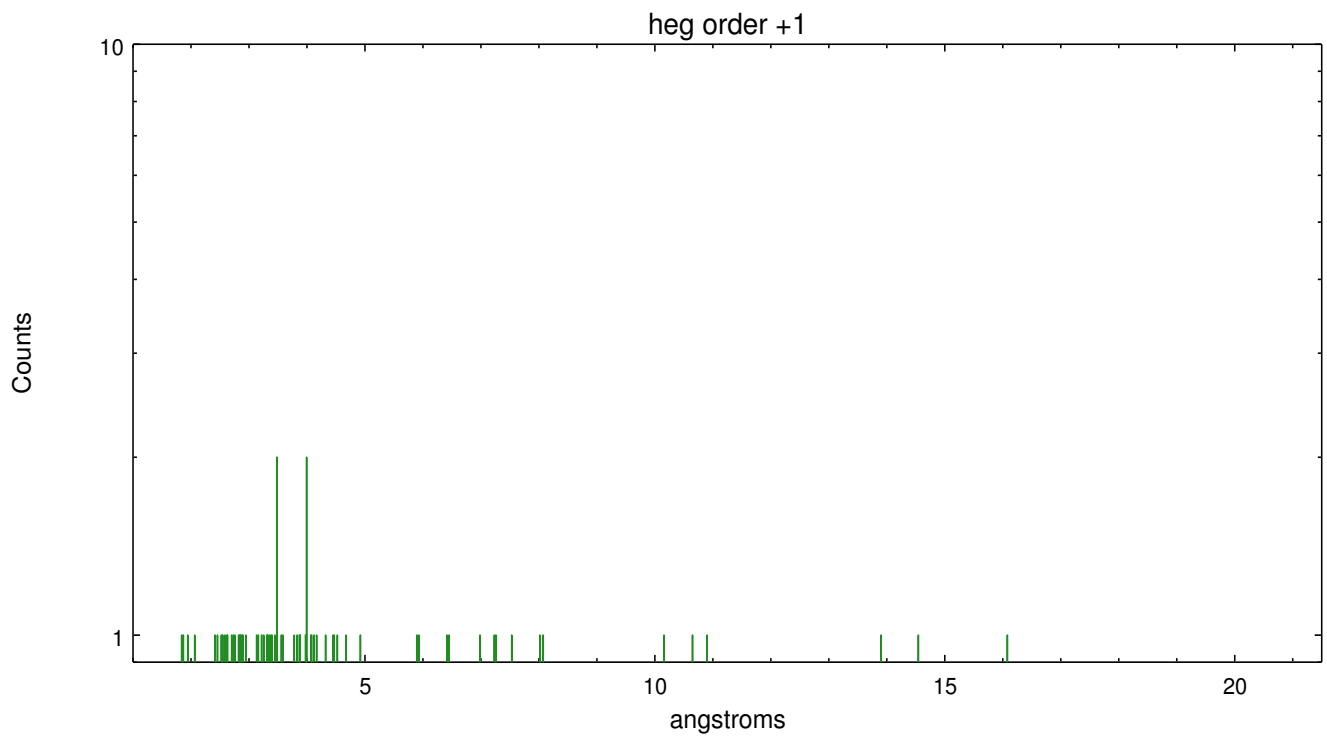
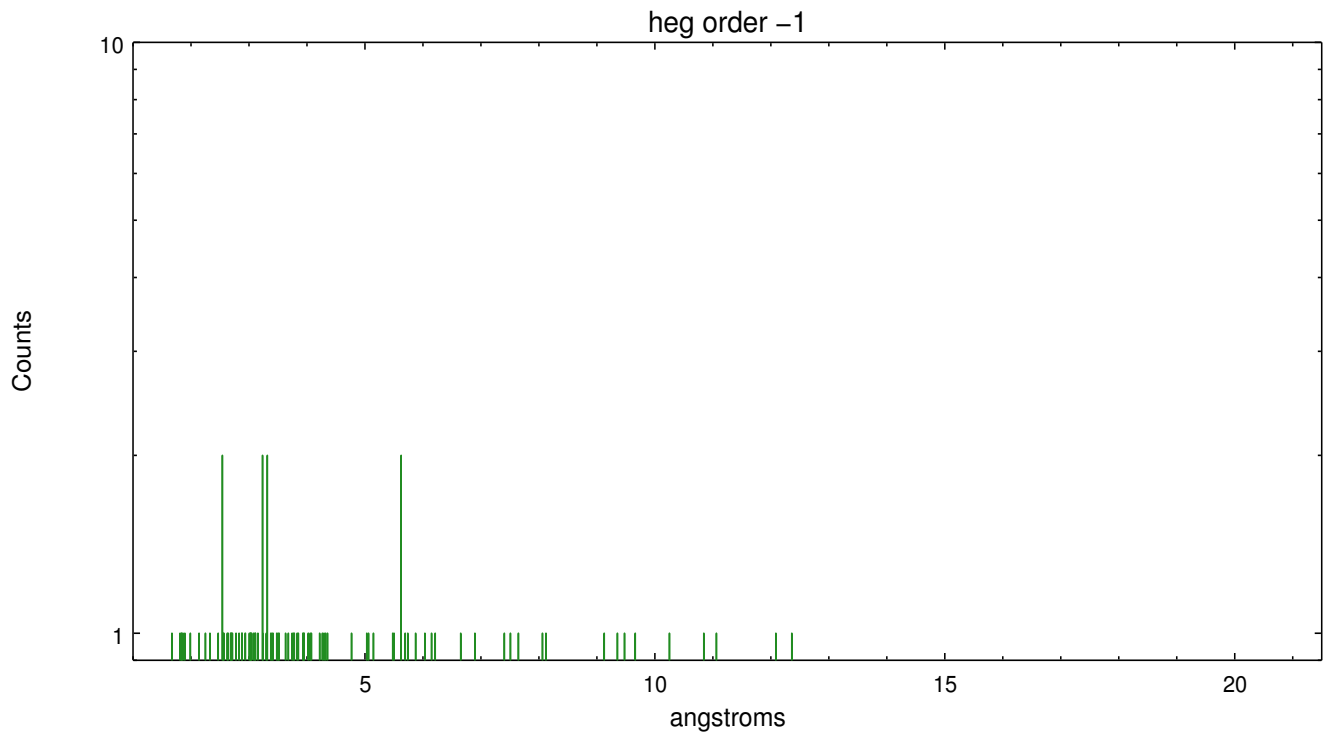
Spot Image HEG



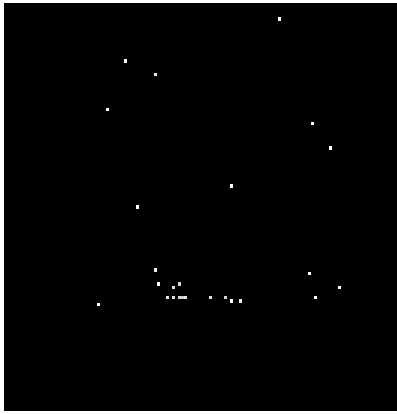
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	249	395	628	1503	480	401	345





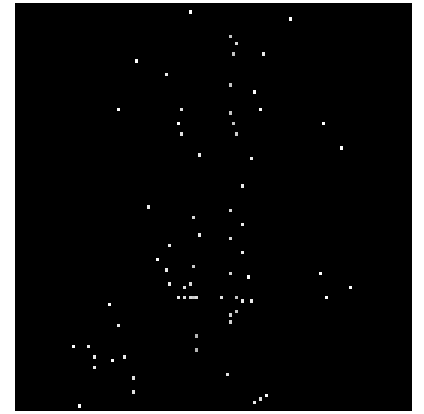
### 3.2 MEG Arm



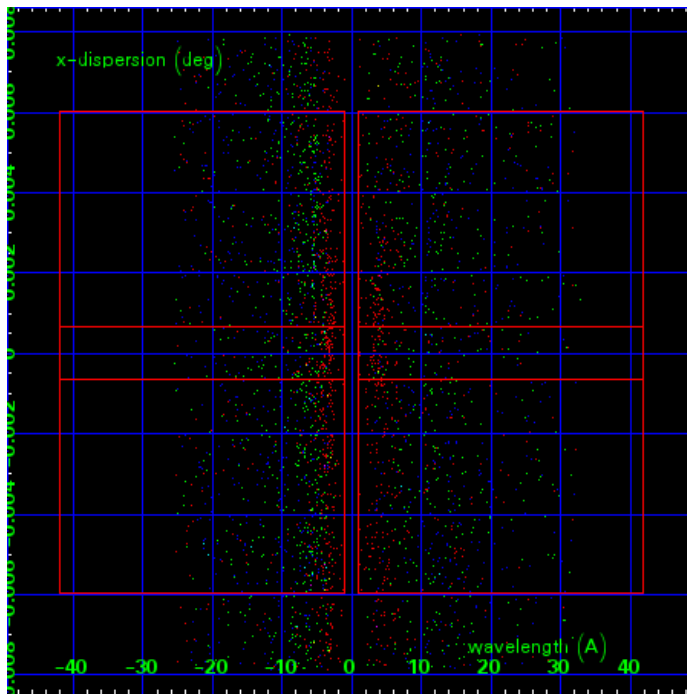
MEG Order Sort 123



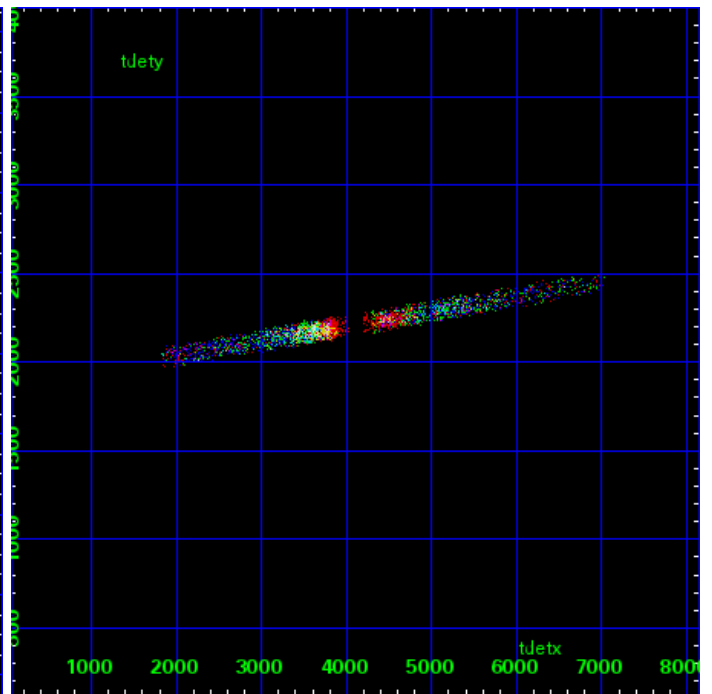
MEG Zero Order



MEG Order Sort ALL

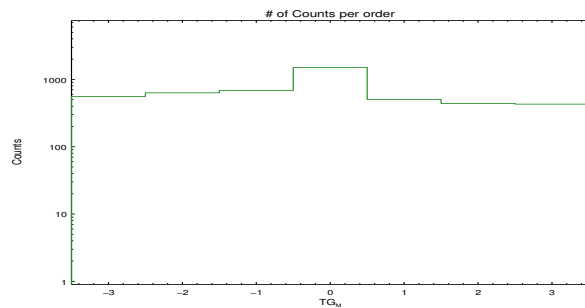


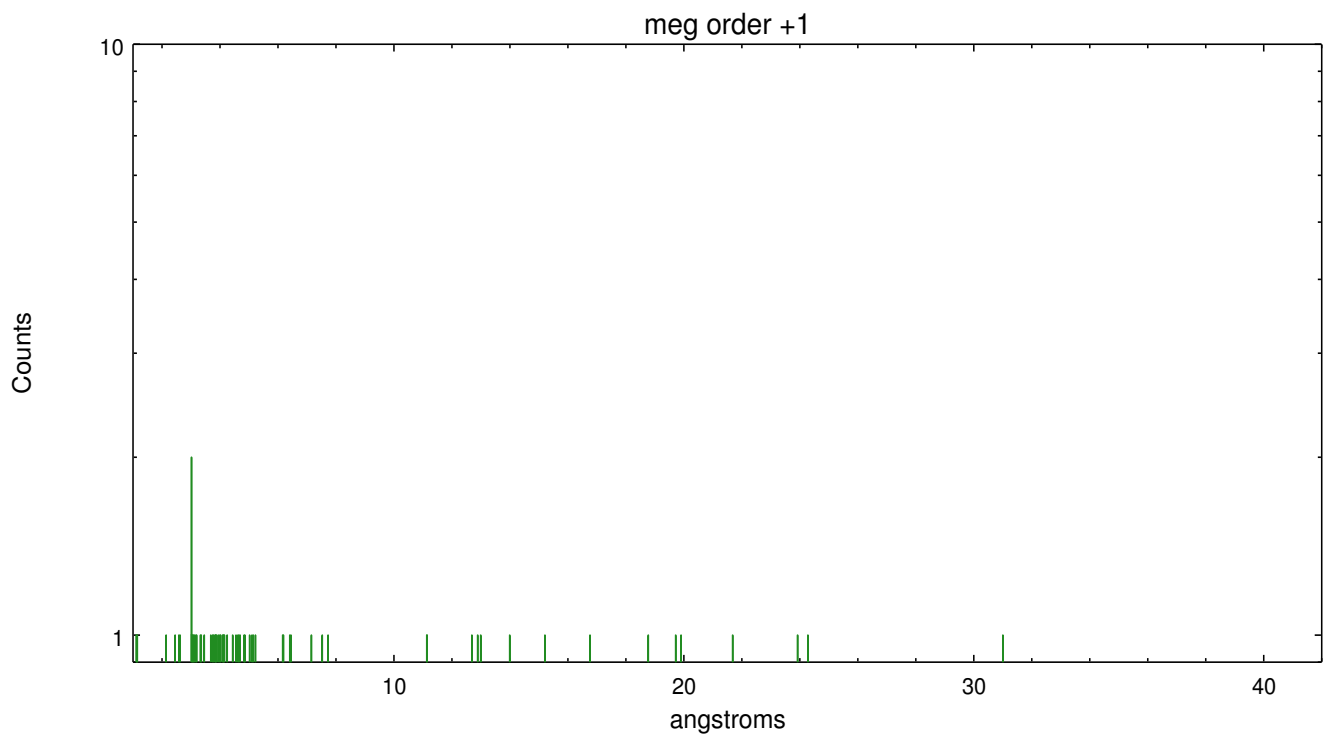
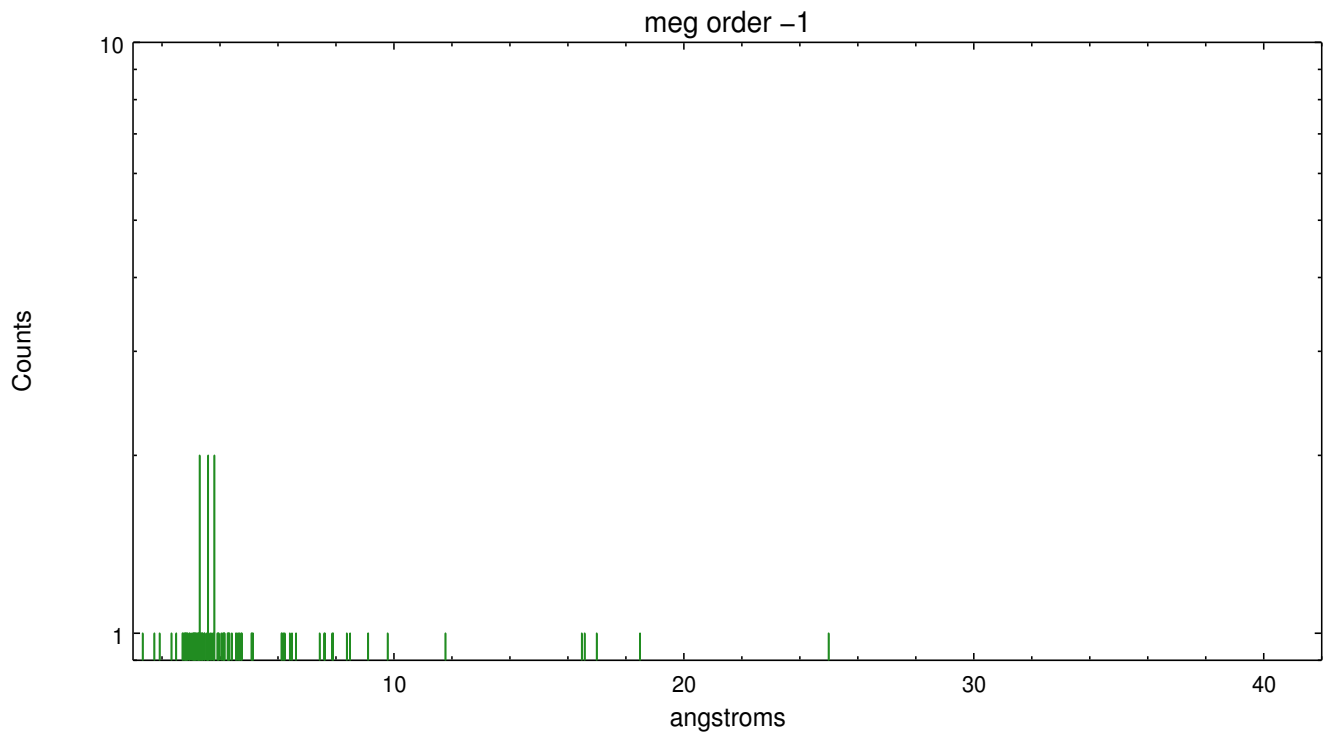
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	558	632	684	1503	503	439	429





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2015.10.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	36.062300277352

## A.2 Comments

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.

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Note: spatially complex region with multiple point sources and extended emission. The spectral extraction was manually centered on the nominal Sgr A\* coordinates: (RA, DEC) = (266.41667, -29.00780) [deg]