

# V&V Reference Report

## L2 ASCDS Version : 10.2.4

Observation 16209 - L2 Version 1  
Chandra X-Ray Center

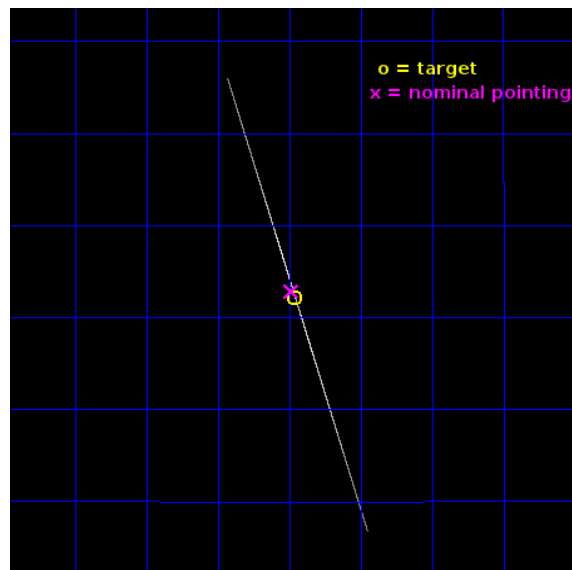
L2 Processing Date : Aug 27 2014

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# 1 Front

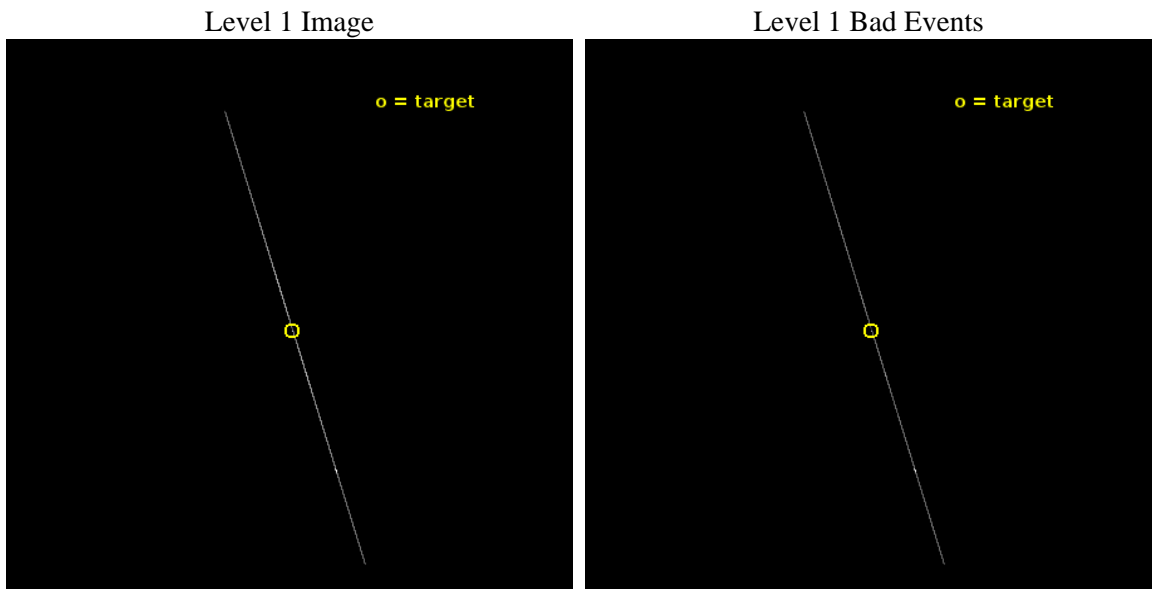
seq_num	401603	Sequence number
obs_id	16209	Observation id
title	A Definitive Test of Relativistic Disk Lines in Neutron Stars	Prop
observer	Dr. Edward Cackett	Principal investigator
object	Serpens X-1	Source name
ra_targ	279.99	Observer's specified target RA [deg]
dec_targ	5.036	Observer's specified target Dec [deg]
ra_nom	279.99610897119	Nominal RA [deg]
dec_nom	5.0471767091961	Nominal Dec [deg]
roll_nom	253.38182067121	Nominal Roll [deg]
revision	1	Processing version of data
ontime	157157.75	Sum of GTIs [s]
livetime	156543.85253906	Livetime [s]
ontime4	157157.75	Sum of GTIs [s]
ontime5	157157.75	Sum of GTIs [s]
ontime6	157157.75	Sum of GTIs [s]
ontime7	157157.75	Sum of GTIs [s]
ontime8	157157.75	Sum of GTIs [s]
ontime9	157157.75	Sum of GTIs [s]
l2events	18107472	Number of level 2 events



## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



### 2.1.2 Parameters

obi_num	0	Obi number	sched_exp_time	157084.621000	[s] Scheduled observation exposure time
ascdsver	10.2.4	Processing system revision	ontime	157157.75	Sum of GTIs [s]
caldbver	4.6.2	&#160	ontime4	157157.75	Sum of GTIs [s]
date	2014-08-27T13:13:44	Date and time of file creation	ontime5	157157.75	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	157157.75	Sum of GTIs [s]
			ontime7	157157.75	Sum of GTIs [s]
			ontime8	157157.75	Sum of GTIs [s]
			ontime9	157157.75	Sum of GTIs [s]
			l1events	39288489	Number of level 1 events
			tgmethod	TGDETECT	Method used to create src1a file

### 2.1.3 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	1878749	13644580	8227464	9355654	4234831	1947211	grade 0 events	114889	1387256	636844	1188941	1138163	1187211
rejected events	1415112	6896472	1816883	1828734	2001588	1426543		6%	10%	7%	12%	26%	6%
rejected %	75%	50%	22%	19%	47%	73%	grade 1 events	667	1528	1698	5970	3072	921
								0%	0%	0%	0%	0%	0%
							grade 2 events	250146	4398990	5032182	2540226	759811	2945111
								13%	32%	61%	27%	17%	15%
							grade 3 events	22376	60520	46993	557410	81133	2077111
								1%	0%	0%	5%	1%	1%
							grade 4 events	22815	59588	45854	552752	79813	2201111
								1%	0%	0%	5%	1%	1%
							grade 5 events	37412	94288	69471	165223	66769	4582111
								1%	0%	0%	1%	1%	2%
							grade 6 events	53419	841833	648814	2687755	174369	6420111
								2%	6%	7%	28%	4%	3%
							grade 7 events	1377025	6800577	1745608	1657377	1931701	1375111
								73%	49%	21%	17%	45%	70%

## 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	CC33_GRADED	CC33_GRADED	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	279.989372	279.9961089711933	CCD I2 on	N	N
[deg] Pointing Dec	5.073785	5.047176709196058	CCD I3 on	N	N
[deg] Pointing Roll	253.225791	253.3818206712133	CCD S0 on	O1	Y
[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	-183.9900508222561	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-6.14	-6.142471760751675	CCD S4 on	Y	Y
[s] Observation start time (MET)	525327151.184000	525326408.74537	CCD S5 on	Y	Y
Observation start date	2014-08-25T04:11:24	2014-08-25T04:00:08	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	525484236.184000	525484460.16664	On-chip summing requested	N	N
Observation end date	2014-08-26T23:49:29	2014-08-26T23:54:20	Subarray requested	NONE	NONE
Read mode	CONTINUOUS	CONTINUOUS	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0

## 2.3 Aspect

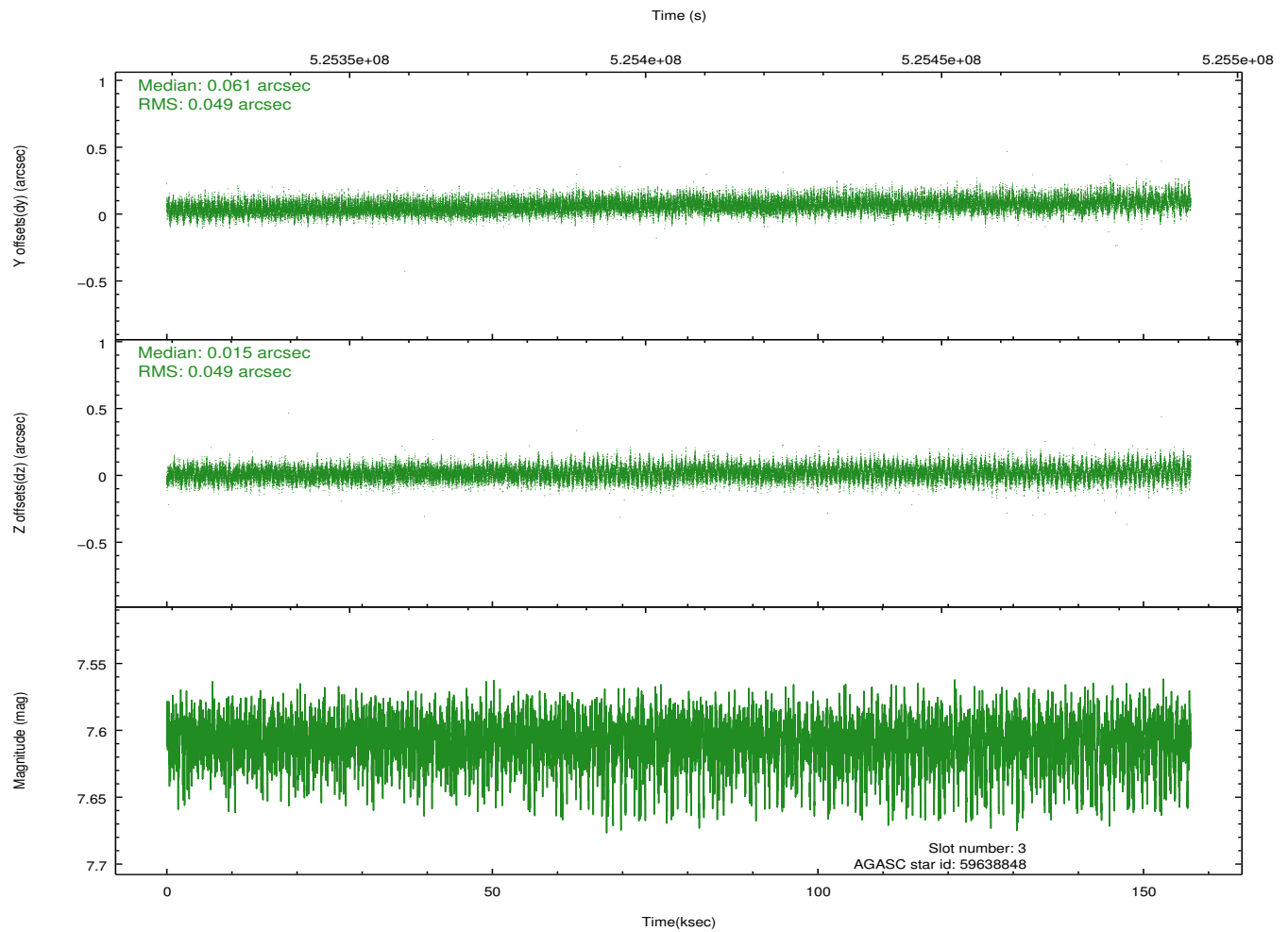


### Slot Statistics

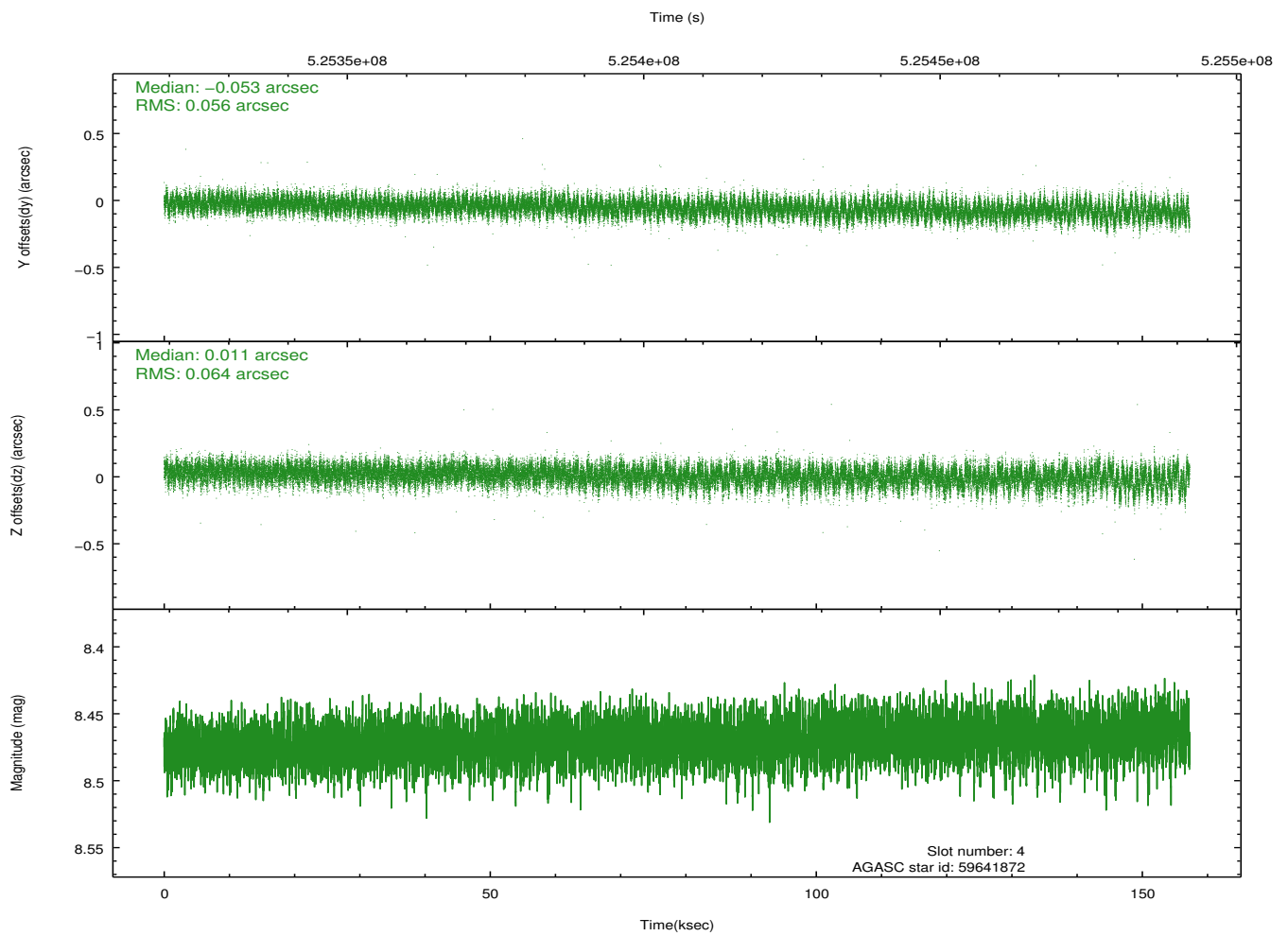
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.02	38357	-0.138	-0.131	0.056	0.072	0.000000	0.000000	-774.00	-1866.57
1	FID	ACIS-S-4	7.11	38358	0.330	0.092	0.086	0.107	0.000000	0.000000	2139.84	42.18
2	FID	ACIS-S-5	7.16	38356	-0.227	0.031	0.048	0.065	0.000000	0.000000	-1827.04	35.72
3	GUIDE	59638848	7.61	76704	0.061	0.015	0.073	0.121	279.399276	5.260505	-33.29	-2219.35
4	GUIDE	59641872	8.47	76631	-0.053	0.011	0.089	0.149	279.855622	4.834479	963.94	-210.51
5	GUIDE	59645536	9.24	76612	-0.002	0.057	0.194	0.292	279.764458	5.458660	-1093.42	-1171.28
6	GUIDE	59648496	8.08	76697	-0.144	-0.064	0.098	0.149	279.571897	4.964470	809.49	-1320.10
7	GUIDE	59639696	8.77	76682	0.131	-0.011	0.098	0.155	279.720542	5.337930	-631.73	-1196.81

## 2.4 Star Slots

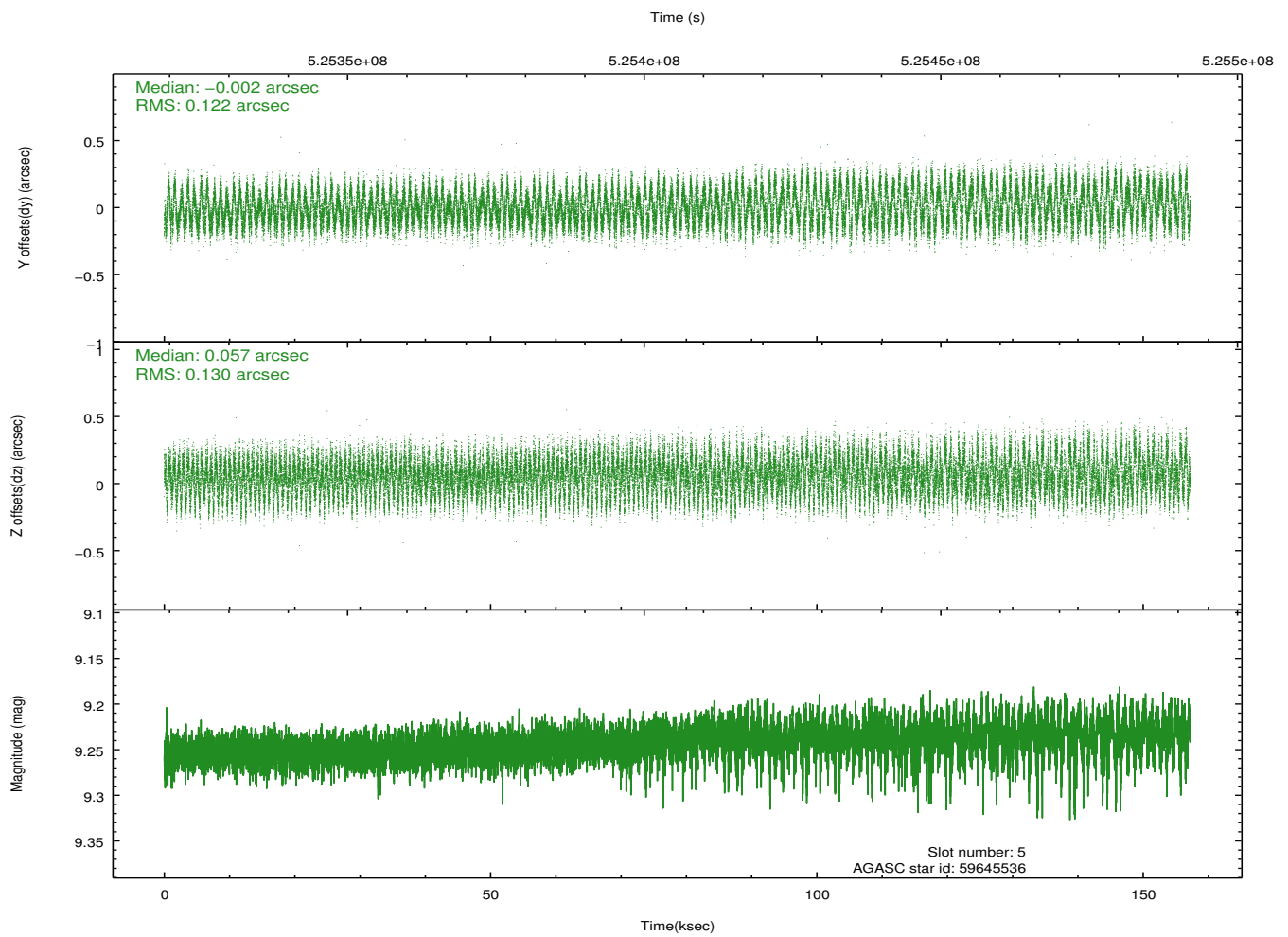
### 2.4.1 Slot 3



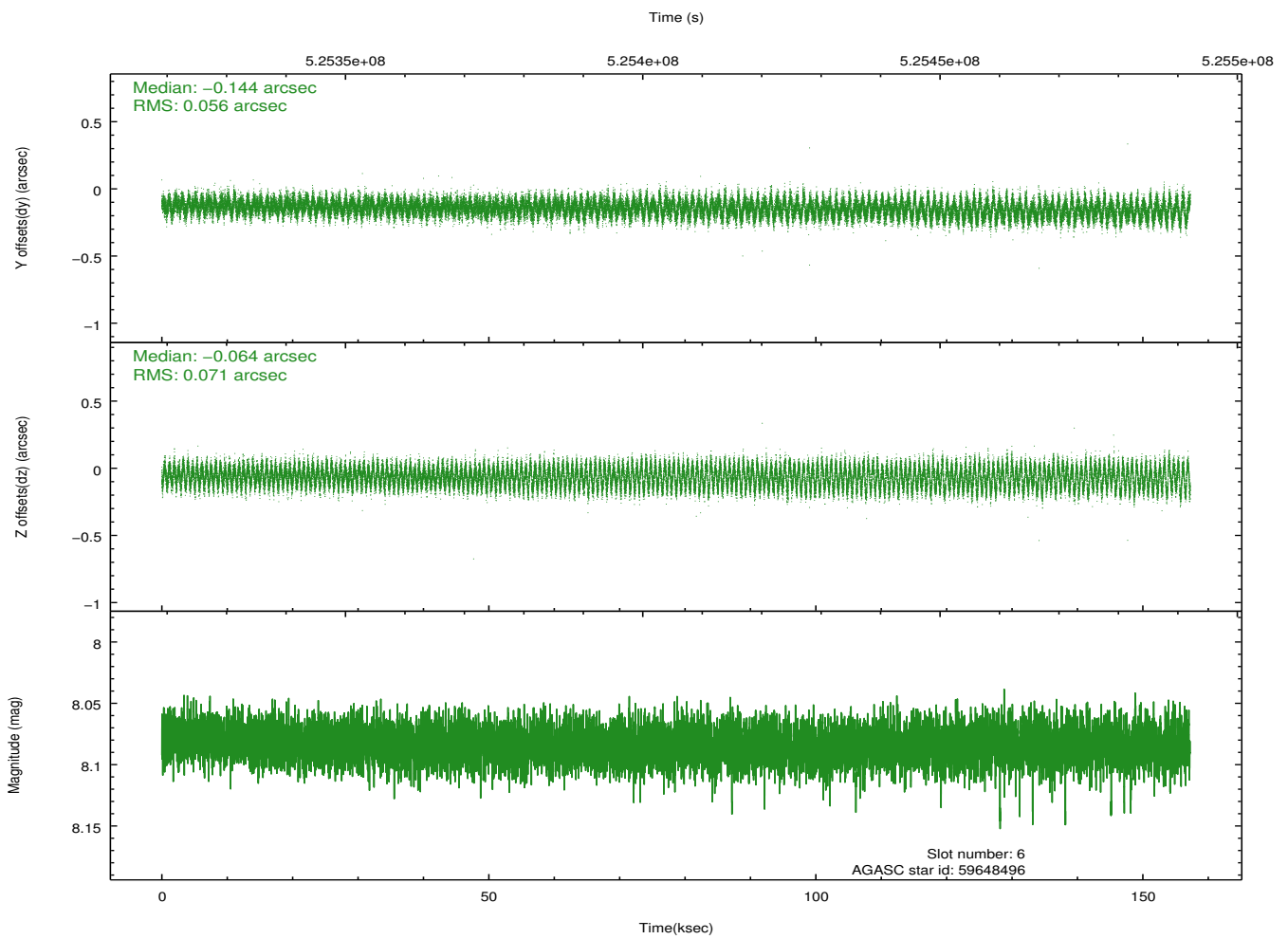
## 2.4.2 Slot 4



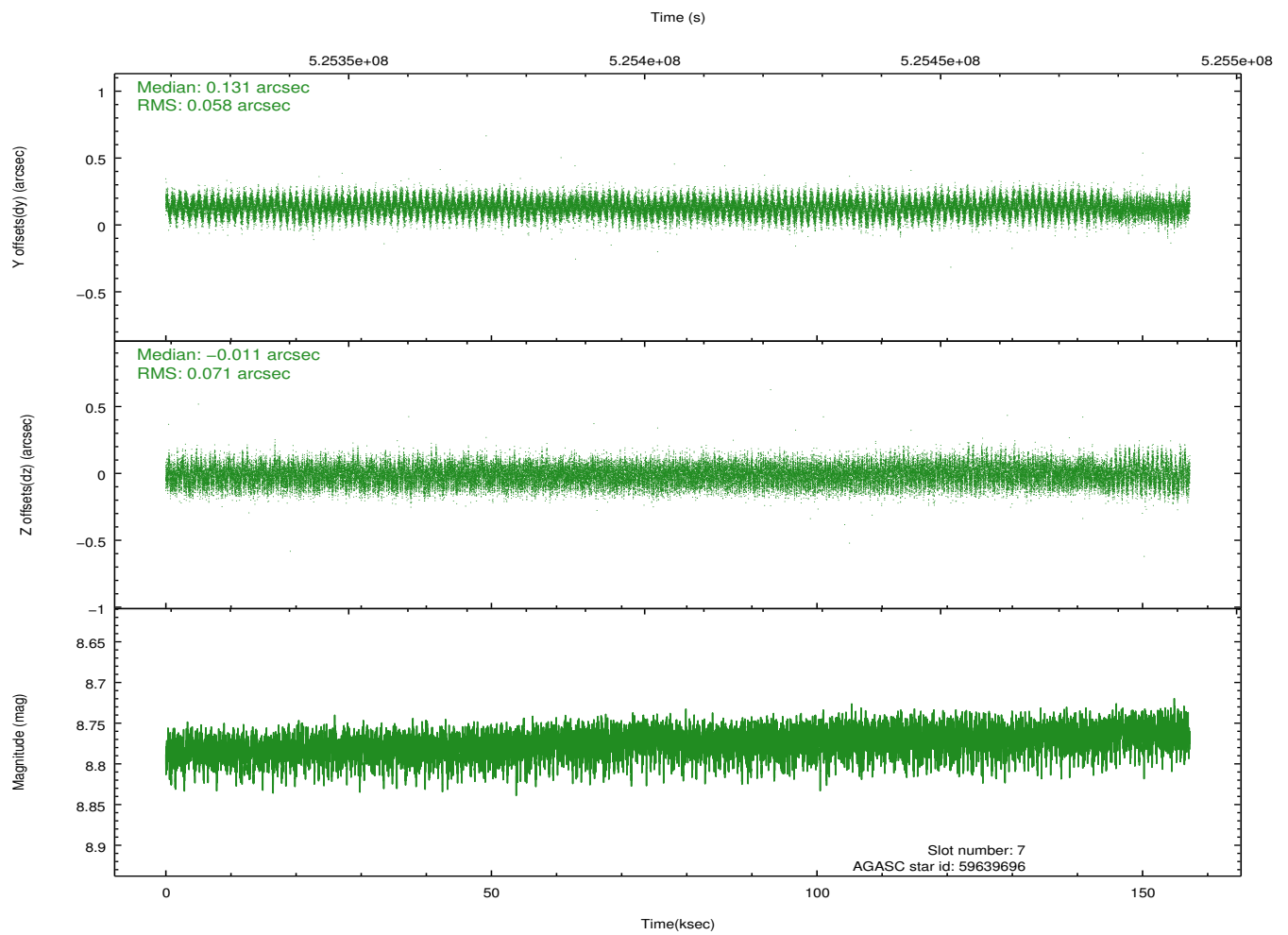
### 2.4.3 Slot 5



## 2.4.4 Slot 6

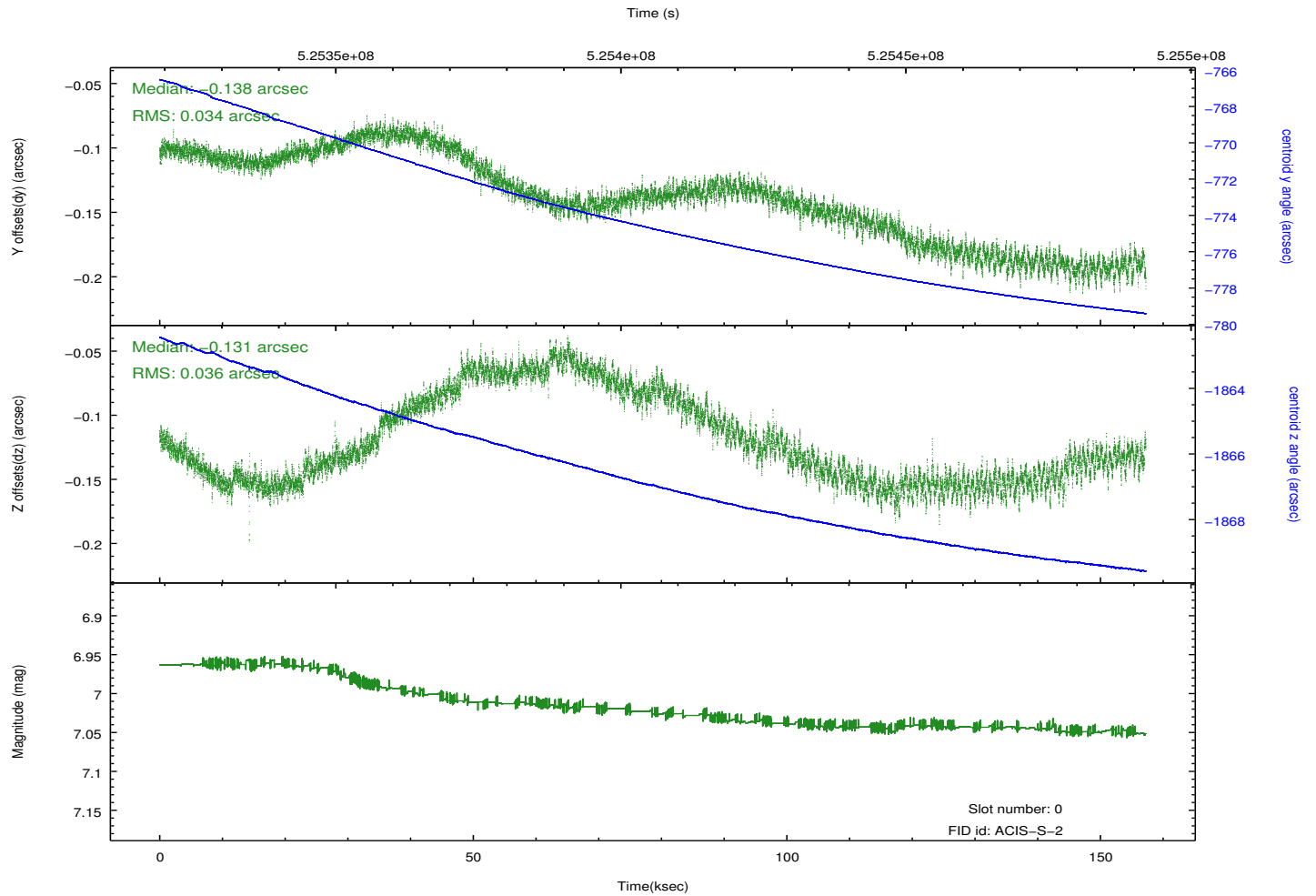
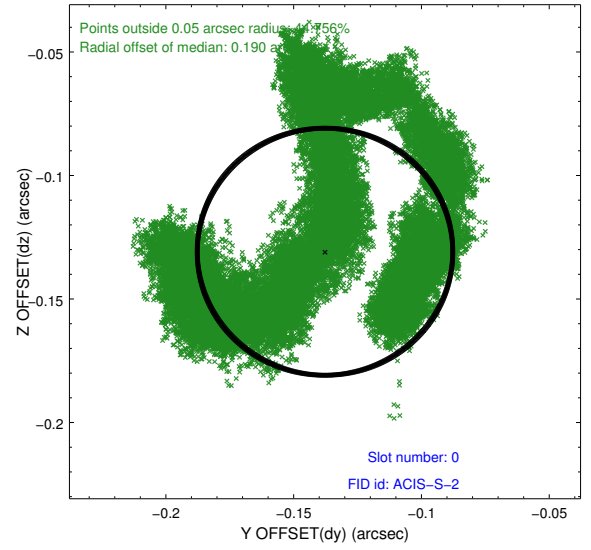
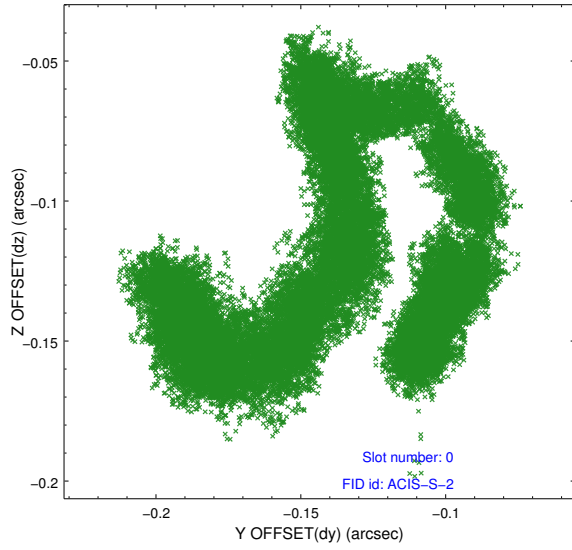


## 2.4.5 Slot 7

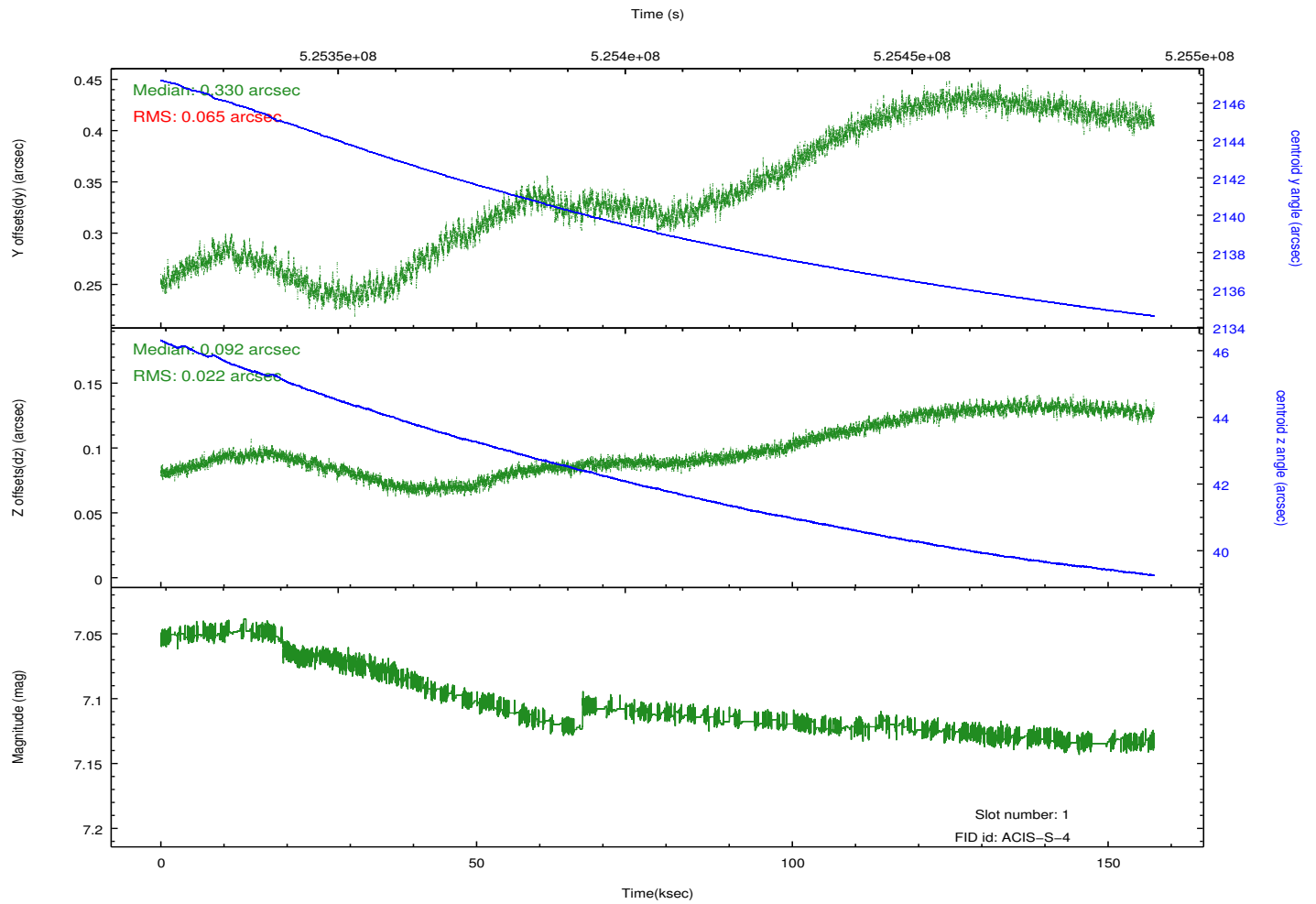
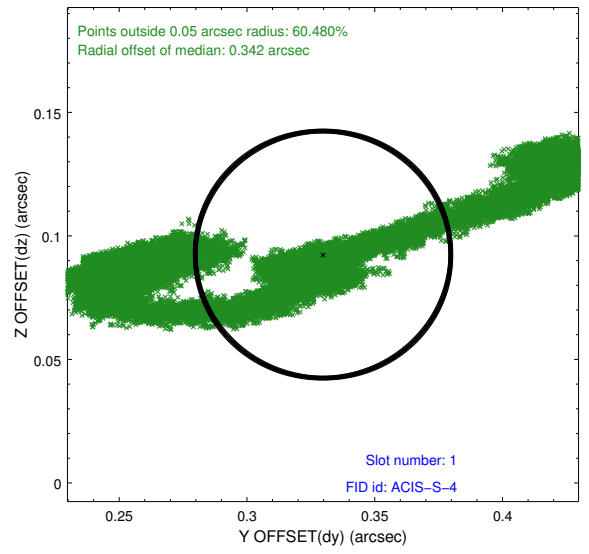
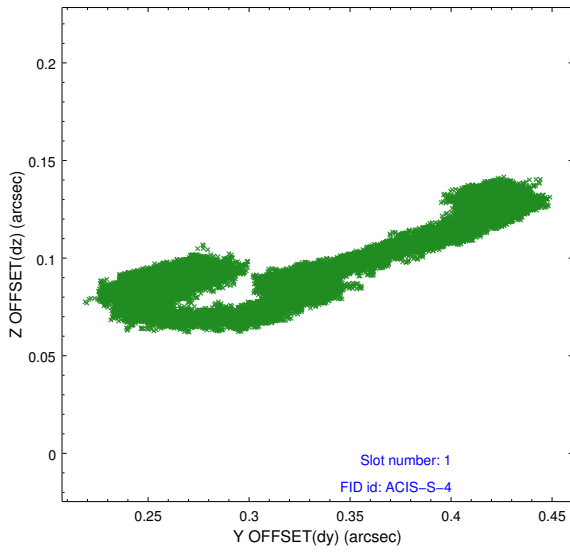


## 2.5 FID Slots

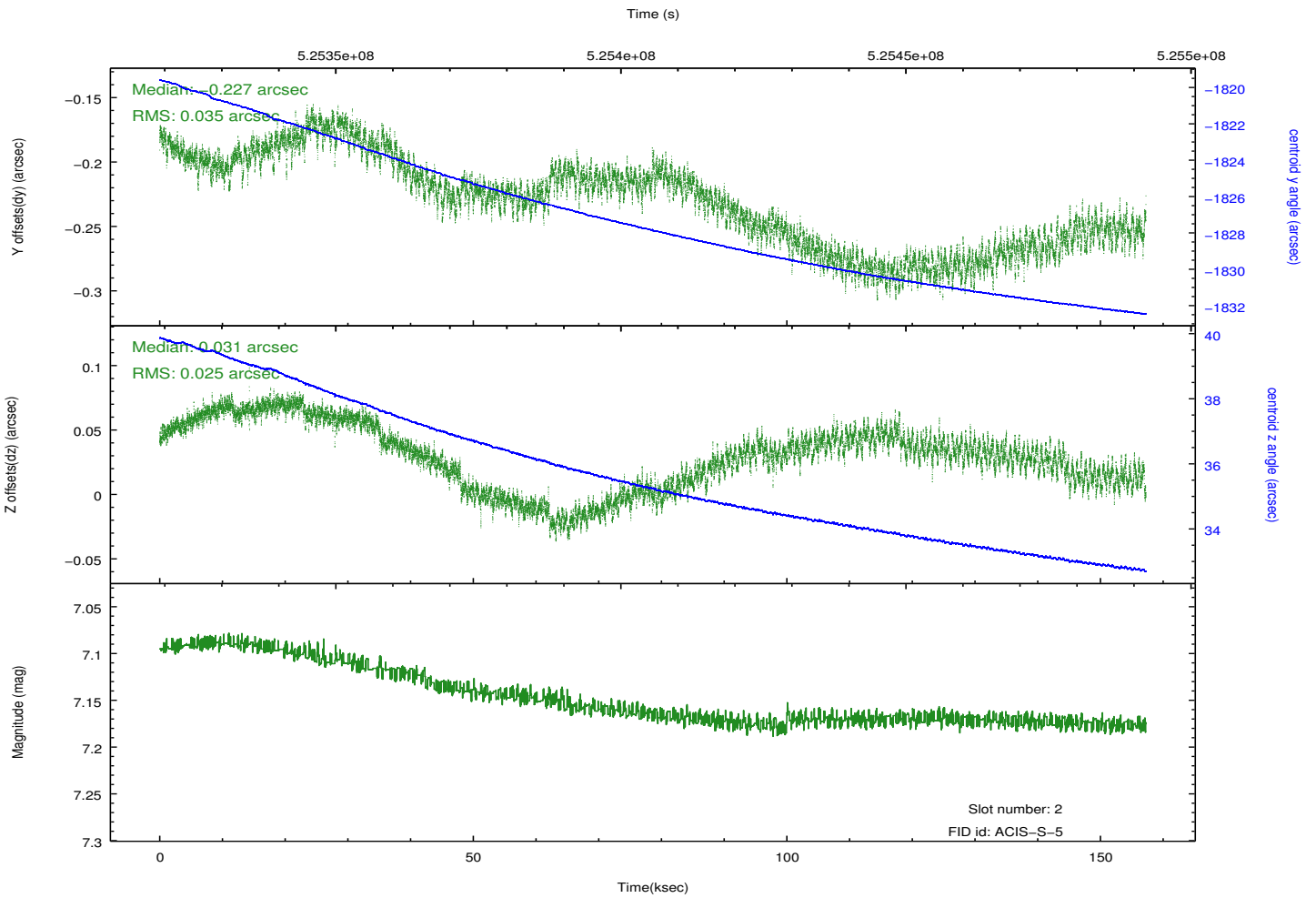
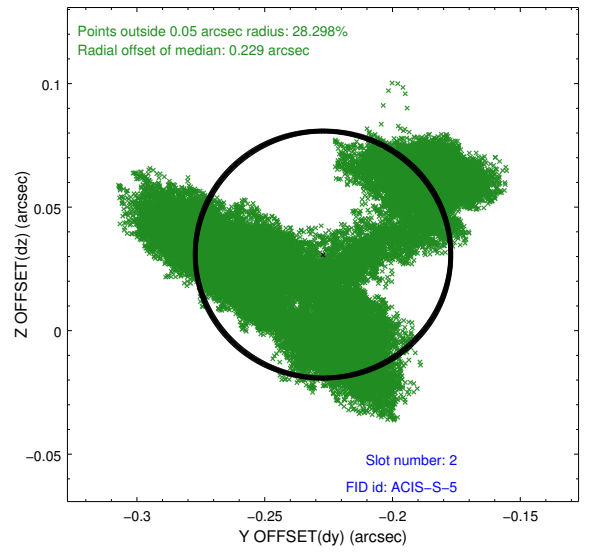
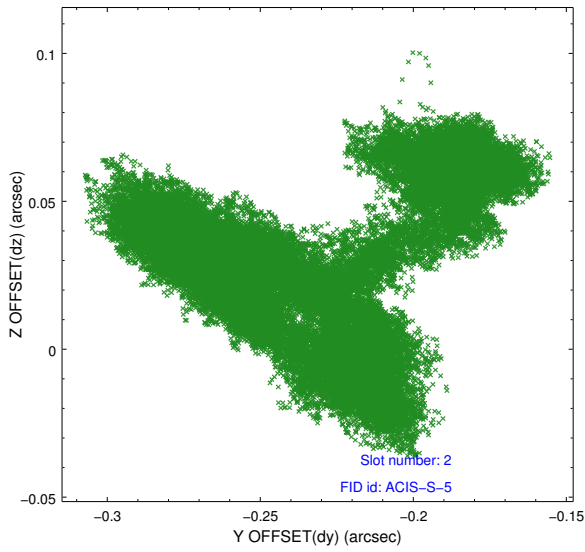
### 2.5.1 Slot 0



## 2.5.2 Slot 1

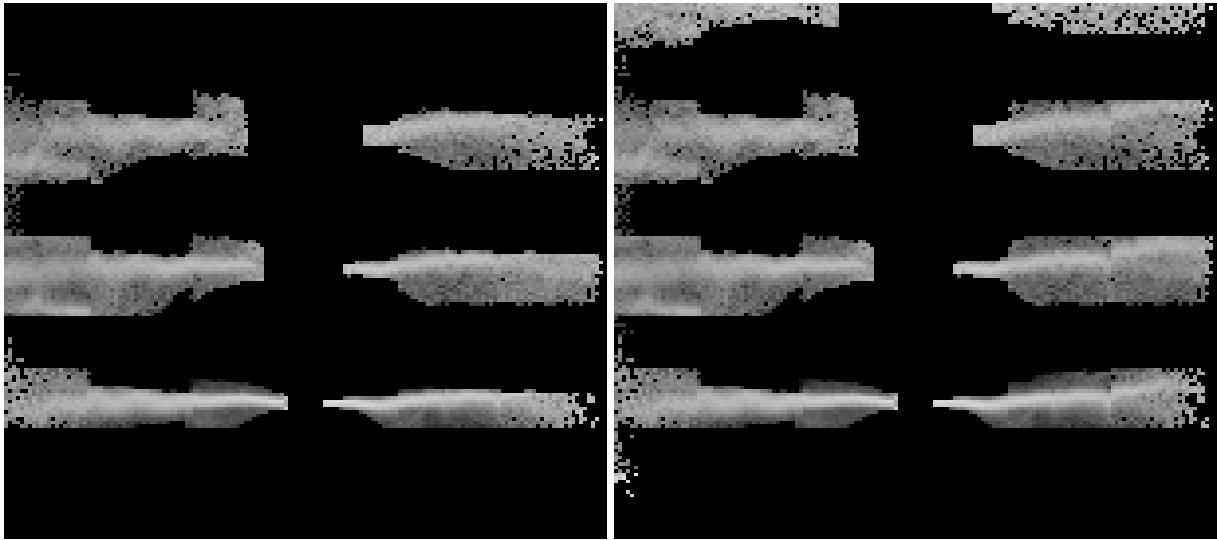


### 2.5.3 Slot 2



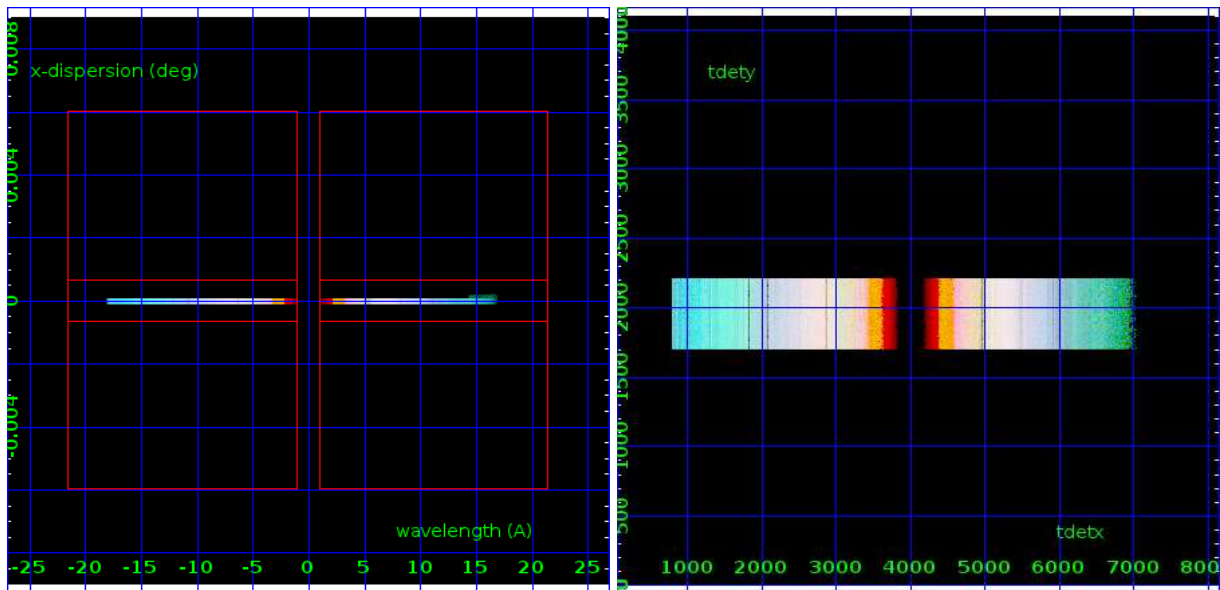
# 3 Gratings

## 3.1 HEG Arm



HEG Order Sort 123

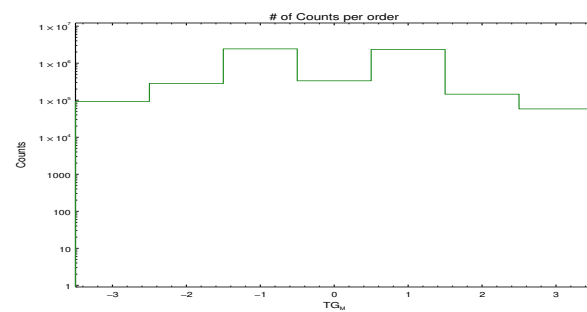
HEG Order Sort ALL



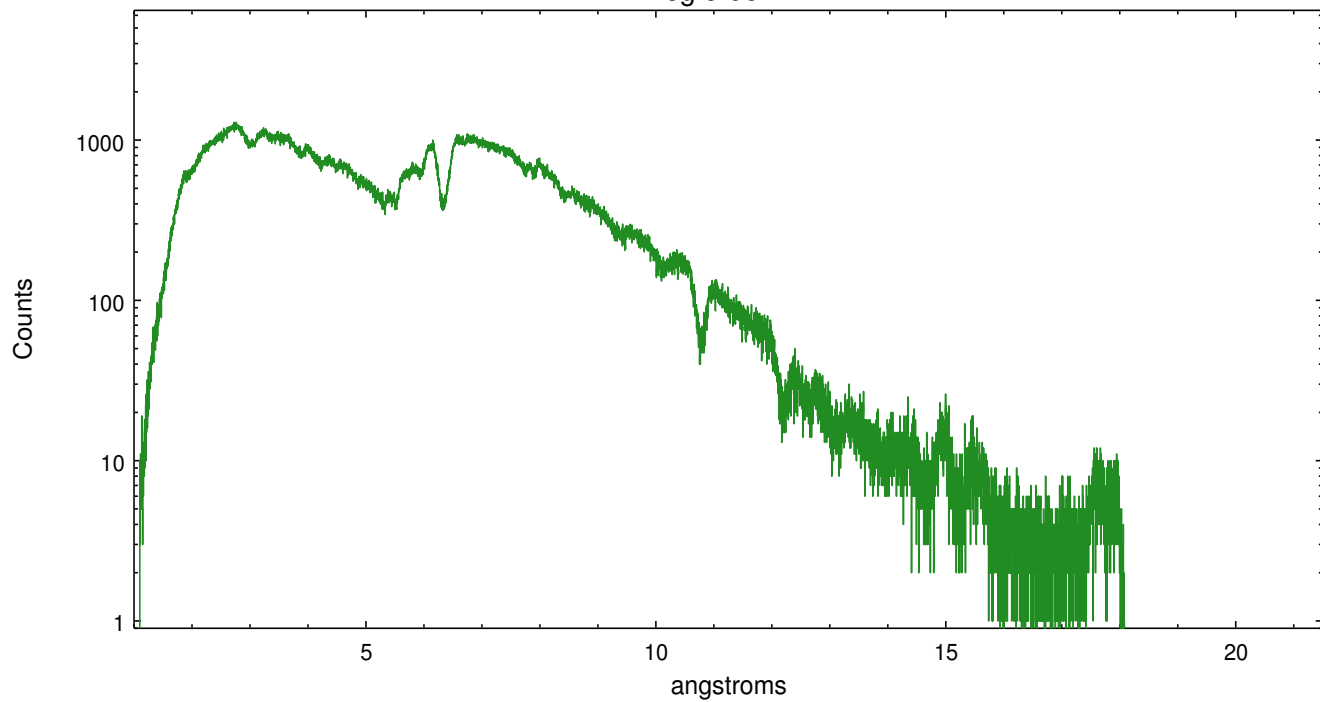
Spot Image HEG

Full Detector HEG

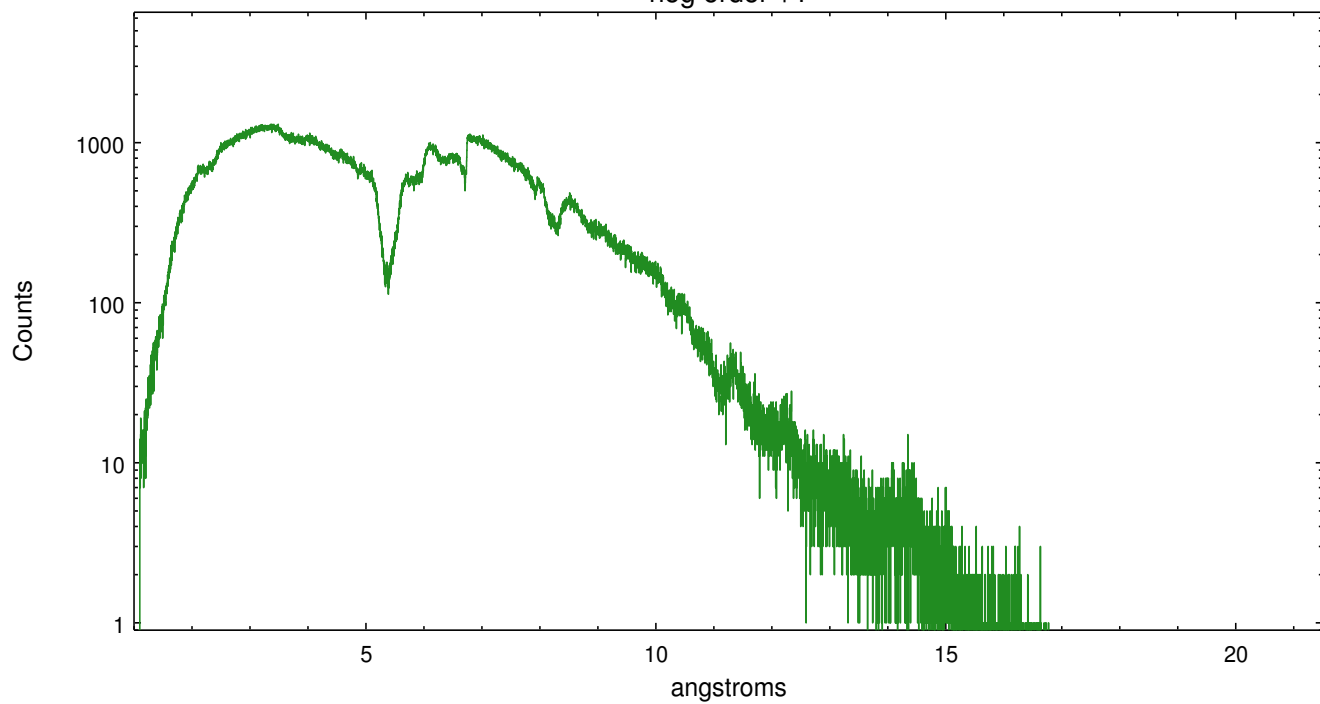
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	92326	282576	2435691	334603	2333923	145230	58223



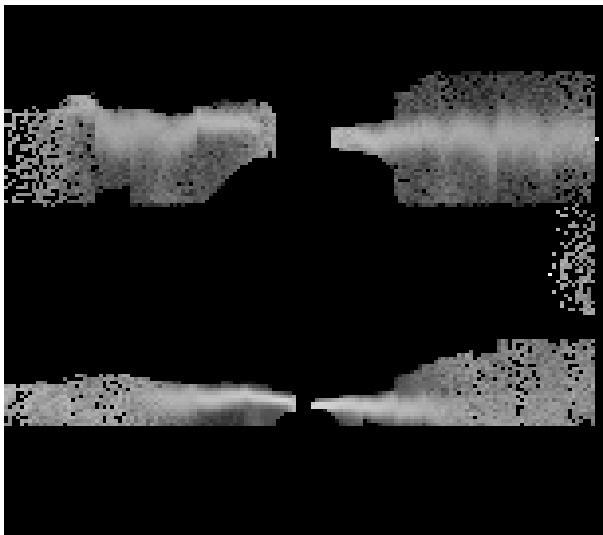
heg order -1



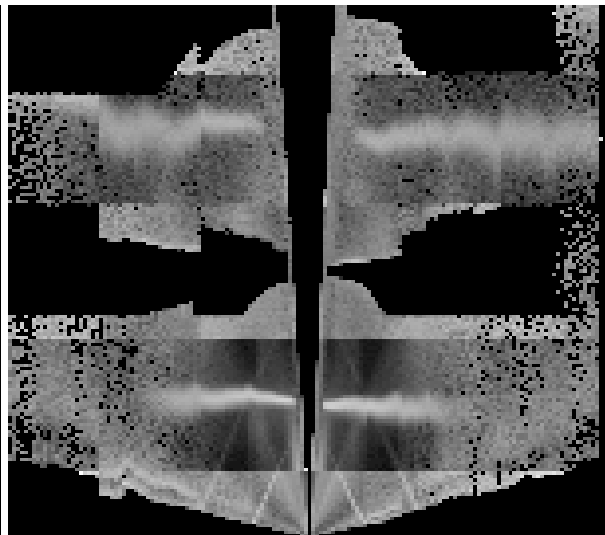
heg order +1



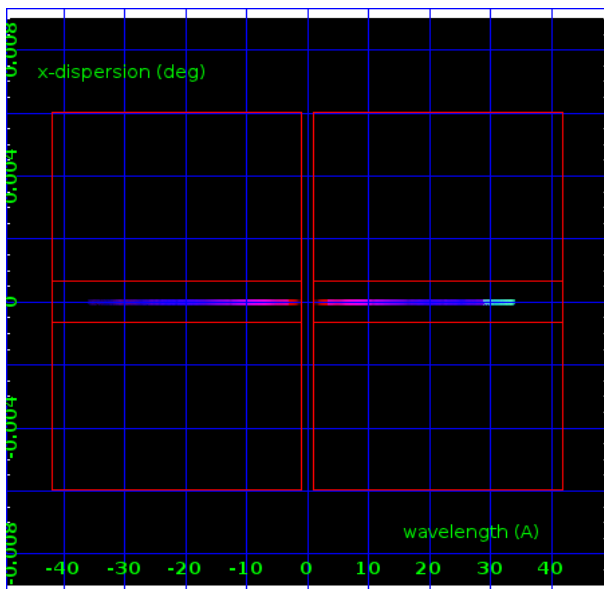
## 3.2 MEG Arm



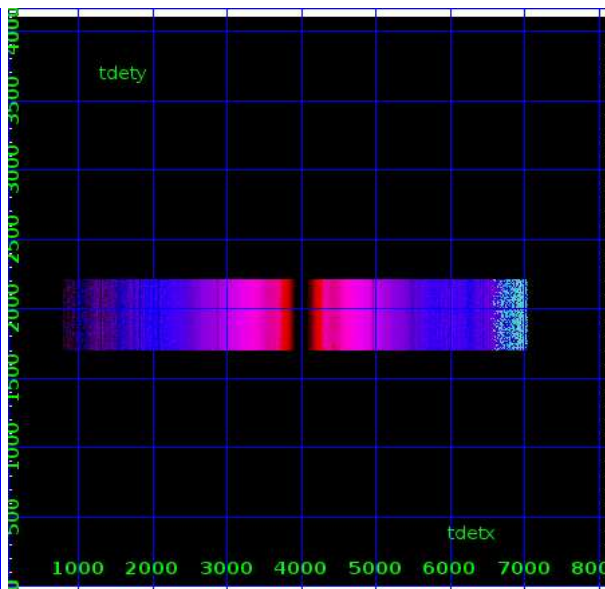
MEG Order Sort 123



MEG Order Sort ALL

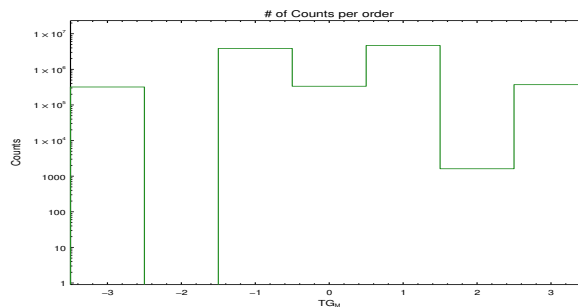


Spot Image MEG

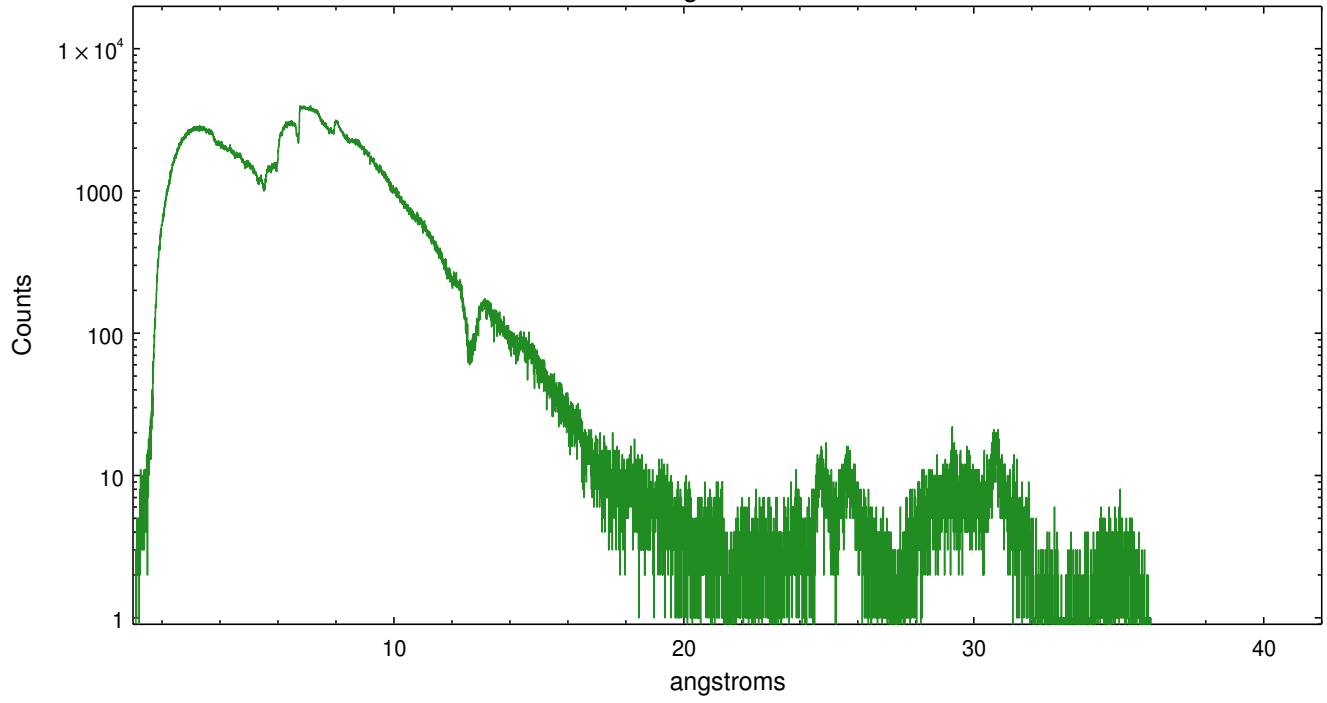


Full Detector MEG

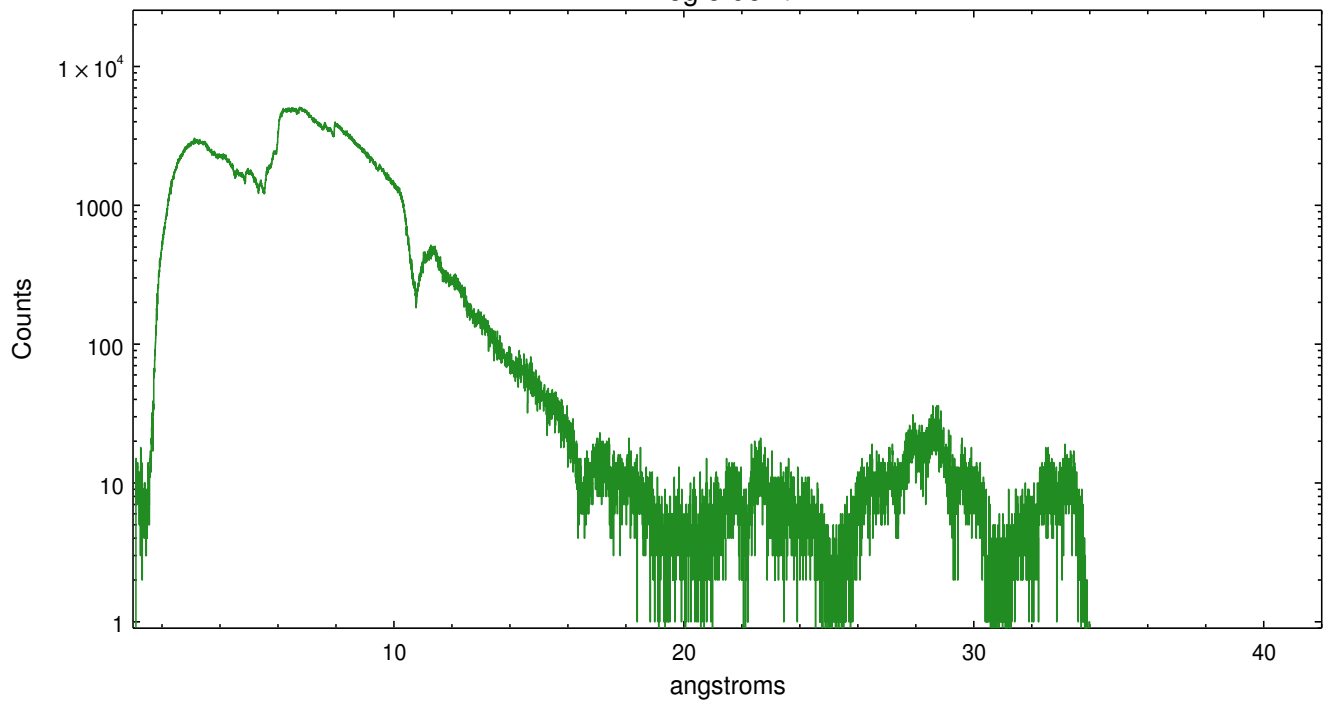
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	319332	0	3857804	334603	4665634	1616	371647



meg order -1



meg order +1



# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2014.08.29
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	157.15775

## A.2 Comments

Comments for Obi 0

SIM dy drift > 7.500 arcsec

Fid in slot 1 has an RMS deviation > 0.050000 arcsec

=====

Software status was HOLD; aspect review determined that sim drifts are acceptable.

=====

For ACIS/CC-mode w/ HETG, with no SIM-Z offset, there are no MEG even order counts. MEG even orders overlap with HEG orders in energy, but MEG even order efficiencies are very low. Since HEG and MEG cannot be spatially separated, events are preferentially assigned to HEG. (MEG odd orders can be resolved.) For observations with a SIM-Z offset, MEG negative and MEG positive orders will be missing (off the array), and remove some of the ambiguity.