

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 4584 - L2 Version 4  
Chandra X-Ray Center

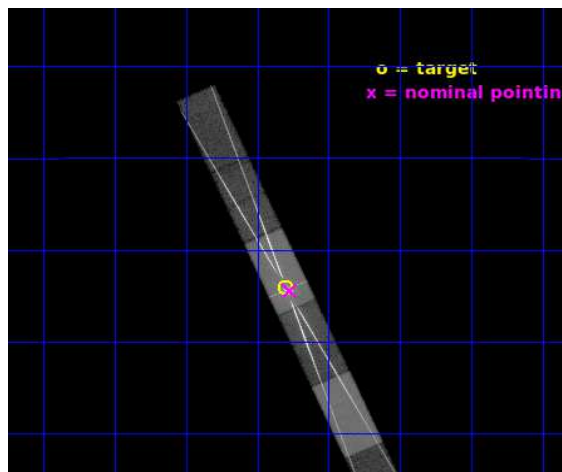
L2 Processing Date : Sep 28 2020

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# 1 Front

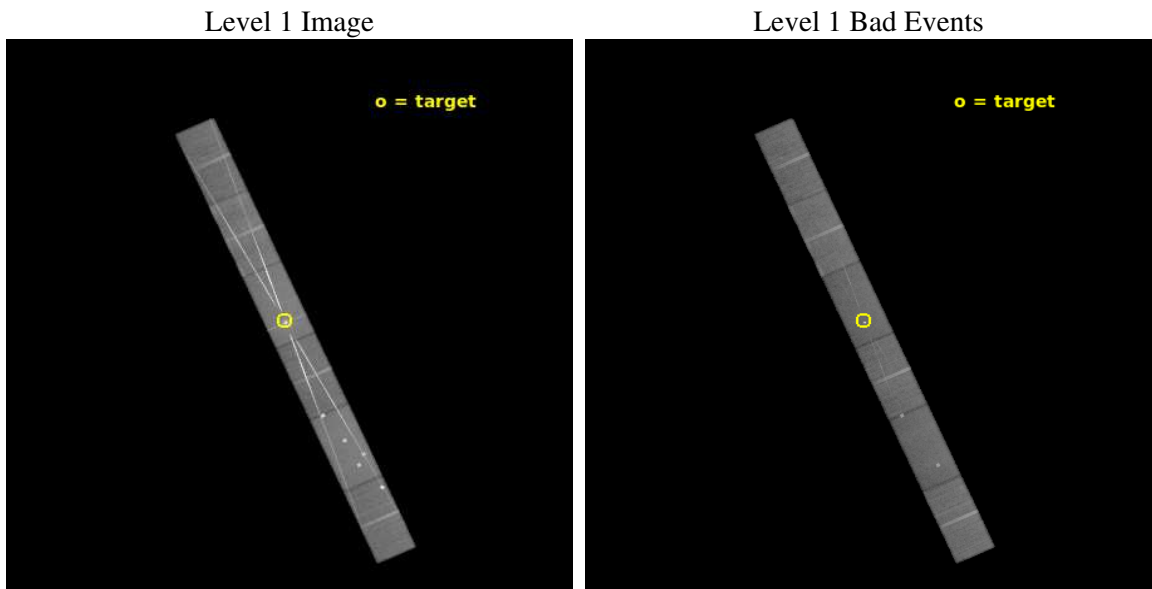
seq_num	400366	Sequence number
obs_id	4584	Observation id
title	HETGS Spectroscopy of the Ultracompact X-ray Dipper 4U 1916-05	Pro
observer	Deepto Chakrabarty	Principal investigator
object	4U 1916-05	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	289.7	Observer's specified target RA [deg]
dec_targ	-5.235722	Observer's specified target Dec [deg]
ra_nom	289.69296397884	Nominal RA [deg]
dec_nom	-5.2406760941824	Nominal Dec [deg]
roll_nom	245.62401962627	Nominal Roll [deg]
revision	4	Processing version of data
ontime	47174.999669194	Sum of GTIs [s]
livetime	46062.985019086	Livetime [s]
ontime4	47174.999669194	Sum of GTIs [s]
ontime5	47174.999669194	Sum of GTIs [s]
ontime6	47173.258629173	Sum of GTIs [s]
ontime7	47174.999669194	Sum of GTIs [s]
ontime8	47174.999669194	Sum of GTIs [s]
ontime9	47174.999669194	Sum of GTIs [s]
l2events	911772	Number of level 2 events



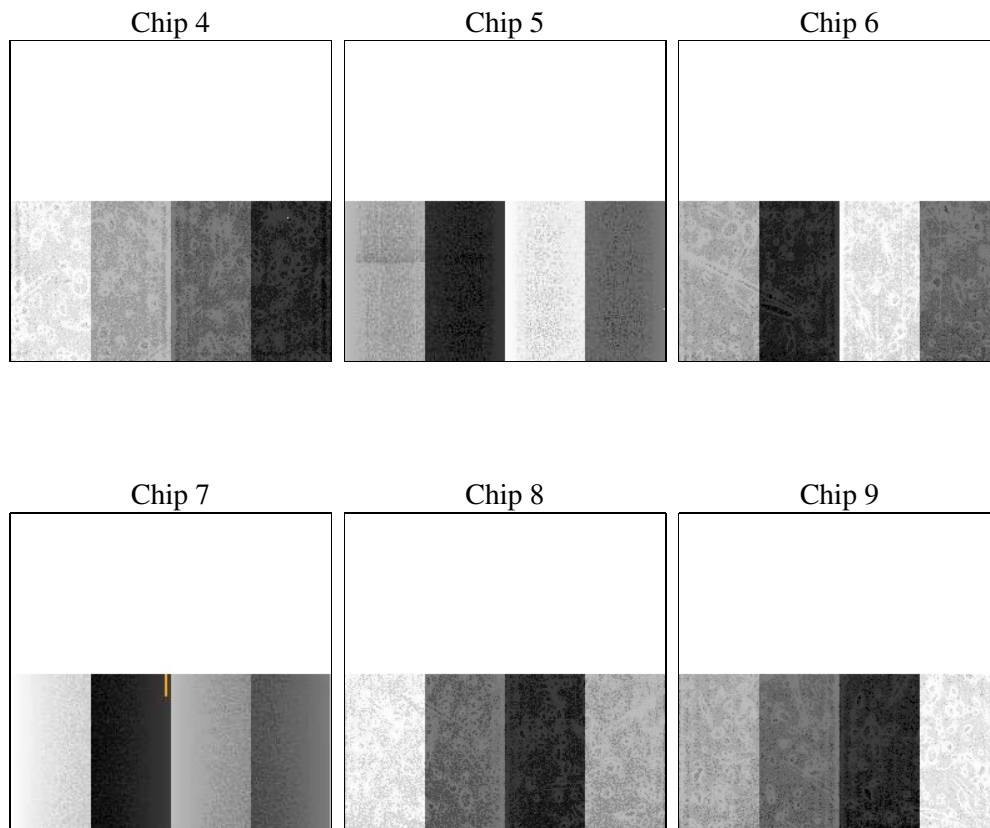
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	2	Obi number	sched_exp_time	47000.000000	[s] Scheduled observation exposure time
ascdsver	10.9.1	Processing system revision	ontime	47174.999669194	Sum of GTIs [s]
caldbver	4.9.2	&#160	ontime4	47174.999669194	Sum of GTIs [s]
date	2020-09-28T09:51:53	Date and time of file creation	ontime5	47174.999669194	Sum of GTIs [s]
revision	4	Processing version of data	ontime6	47173.258629173	Sum of GTIs [s]
			ontime7	47174.999669194	Sum of GTIs [s]
			ontime8	47174.999669194	Sum of GTIs [s]
			ontime9	47174.999669194	Sum of GTIs [s]
			l1events	2026835	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			z0_pos	(4040.26, 4115.23)	src1a sky central position

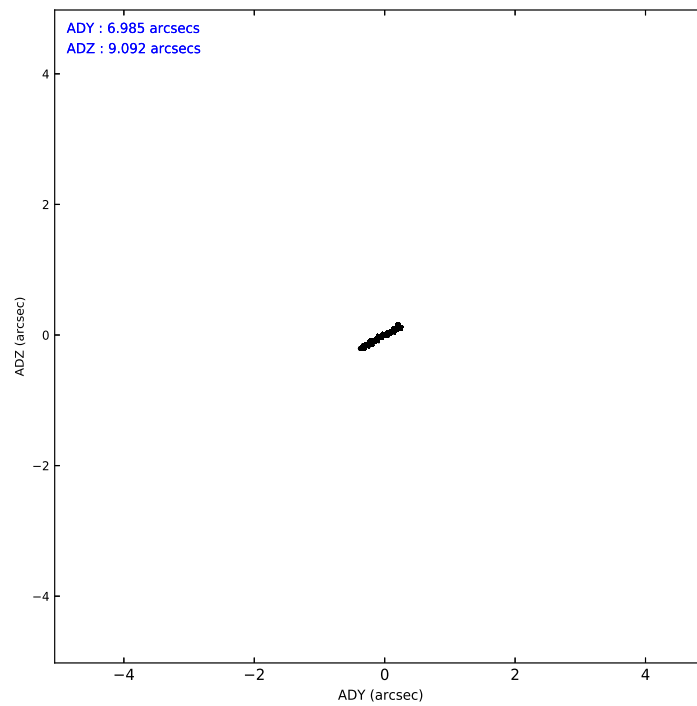
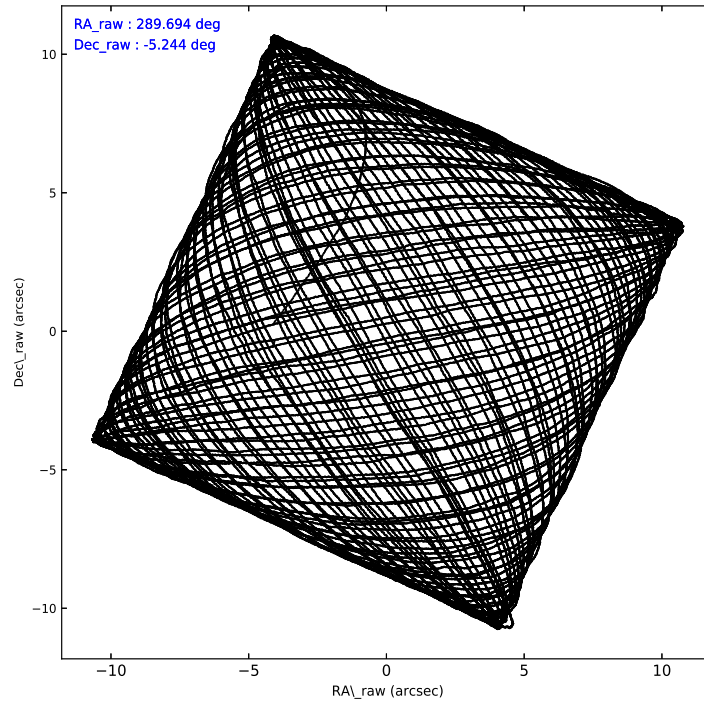
### 2.1.4 Events

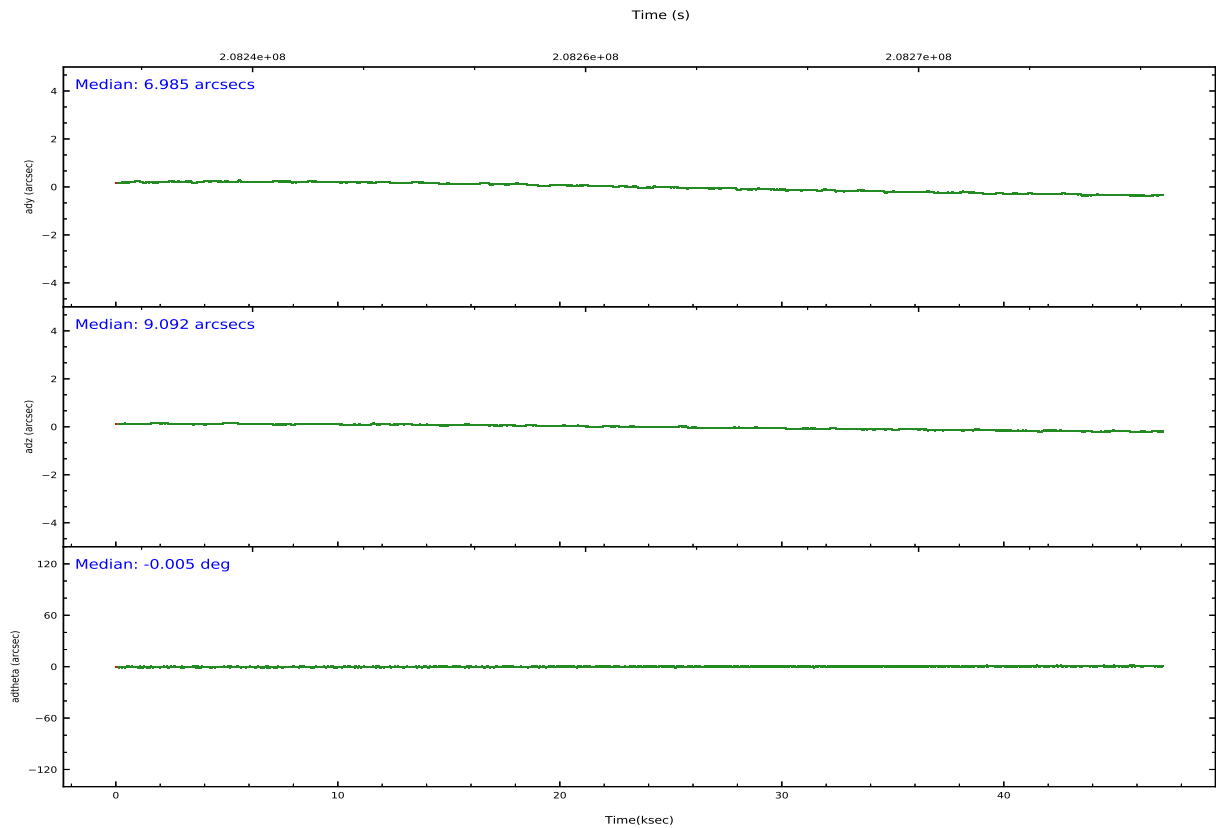
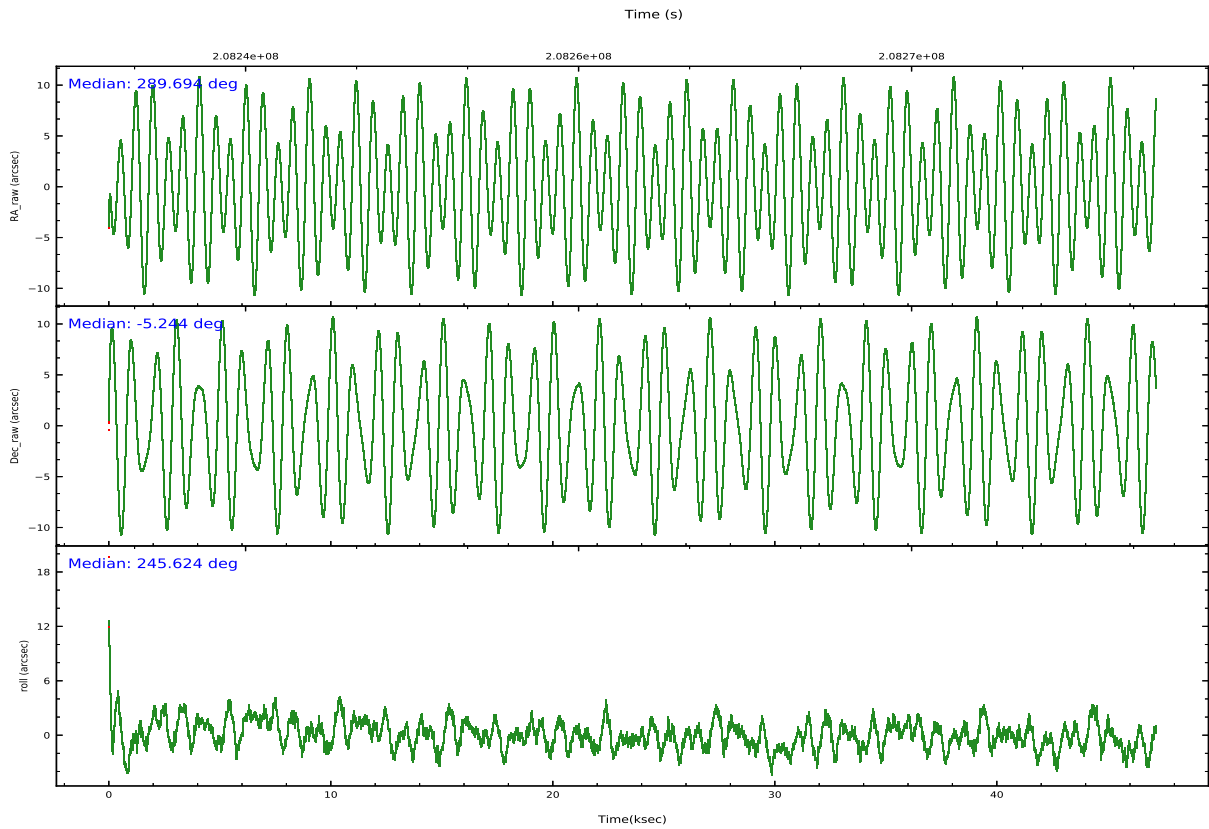
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	233631	353264	416441	501179	331683	190637	grade 0 events	41364	65807	186671	65839	97496	22741
rejected events	177673	142176	162360	144248	182064	151513		17%	18%	44%	13%	29%	11%
rejected %	76%	40%	38%	28%	54%	79%	grade 1 events	199	4388	1098	1101	437	108
								0%	1%	0%	0%	0%	0%
							grade 2 events	5565	49085	32110	84644	20749	5953
								2%	13%	7%	16%	6%	3%
							grade 3 events	2922	15792	11433	38068	8866	3107
								1%	4%	2%	7%	2%	1%
							grade 4 events	2723	13593	11461	37675	8365	3088
								1%	3%	2%	7%	2%	1%
							grade 5 events	6968	21399	8396	25920	9988	7772
								2%	6%	2%	5%	3%	4%
							grade 6 events	3781	68040	13336	132629	15095	4502
								1%	19%	3%	26%	4%	2%
							grade 7 events	170109	115160	151936	115303	170687	143366
								72%	32%	36%	23%	51%	75%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
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	289.691455	289.69296397884	Subarray requested	CUSTOM	1/2
[deg] Pointing Dec	-5.216635	-5.2406760941824	Subarray start row	1	1
[deg] Pointing Roll	245.467513	245.62401962627	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			
[s] Observation start time (MET)	208234016.184000	208232842.6063			
Observation start date	2004-08-07T02:45:52	2004-08-07T02:27:22			
[s] Observation end time (MET)	208281016.184000	208282051.83349			
Observation end date	2004-08-07T15:49:12	2004-08-07T16:07:31			
Read mode	TIMED	TIMED			

## 2.3 Aspect





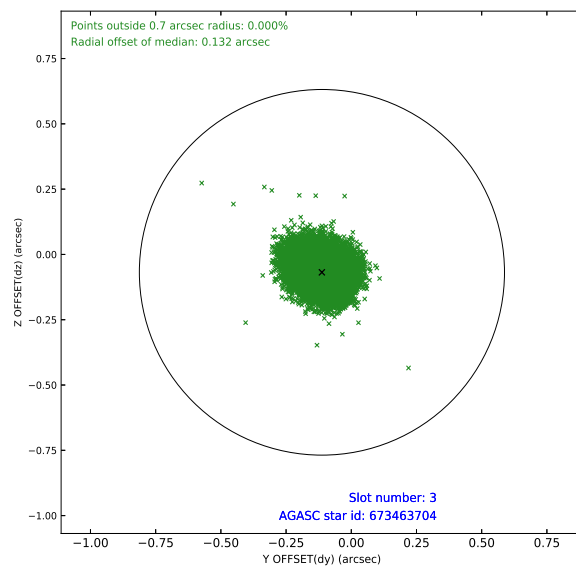
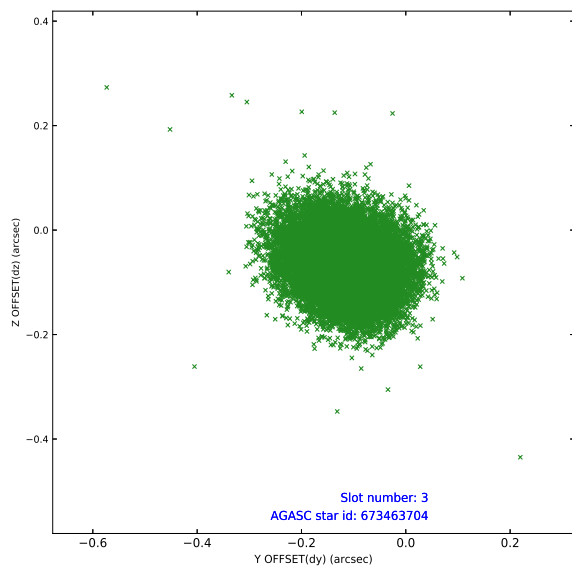
### Slot Statistics

slot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_x
0	FID		ACIS-S-2	7.08	11505	1.000	-0.114	-0.101	0.009	0.015	0.000000	0.000000	-759.35	-1856
1	FID		ACIS-S-4	7.19	11506	1.000	0.177	0.082	0.008	0.015	0.000000	0.000000	2154.18	52
2	FID		ACIS-S-5	7.22	11507	1.000	-0.094	0.027	0.007	0.012	0.000000	0.000000	-1812.23	45
3	GUIDE	used	673463704	8.97	22995	1.000	-0.113	-0.068	0.081	0.133	289.894494	-4.869892	-1437.44	144
4	GUIDE	used	673466464	9.25	23004	1.000	0.082	0.125	0.081	0.135	289.850458	-5.613937	1065.09	1112
5	GUIDE	used	673466472	9.61	22862	1.000	0.029	-0.046	0.136	0.214	288.954848	-5.311739	1410.09	-2258
6	GUIDE	used	673461944	9.78	22884	1.000	0.115	-0.067	0.129	0.214	288.963170	-5.480160	1949.04	-1979
7	GUIDE	used	673455744	9.60	22993	1.000	-0.117	0.054	0.102	0.166	289.673010	-4.488976	-2355.04	-1147

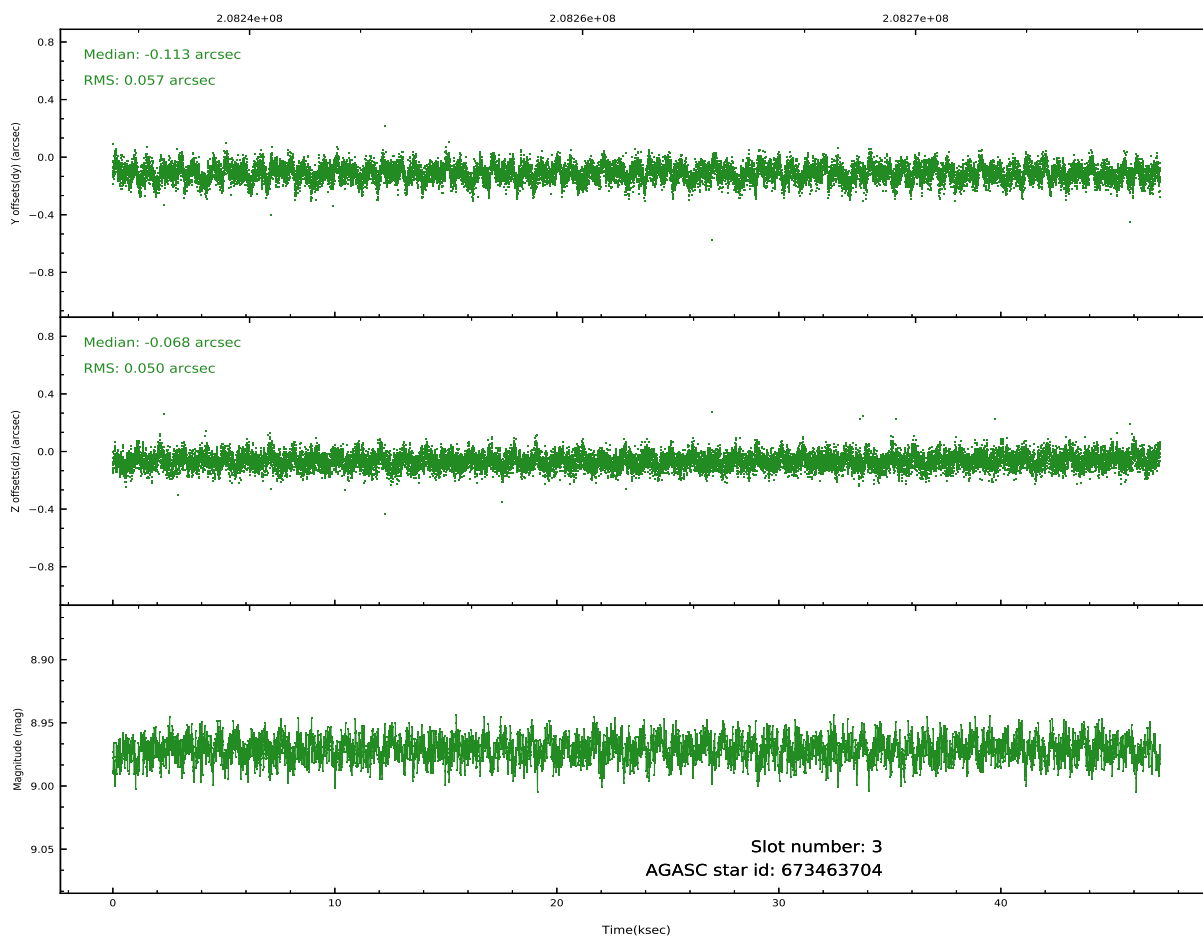
∞

## 2.4 Star Slots

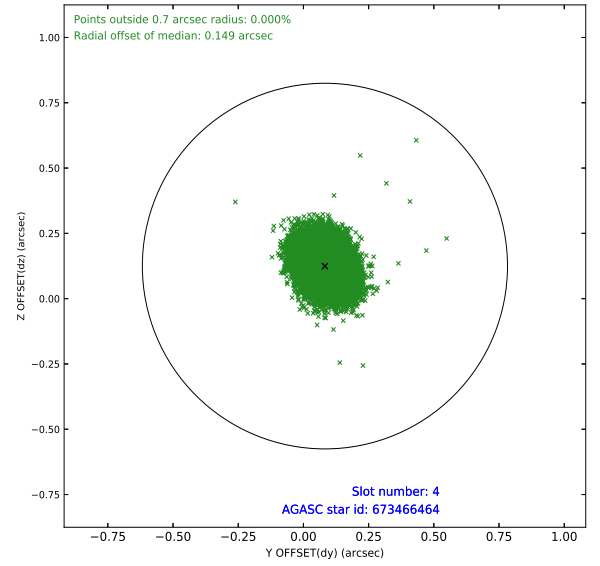
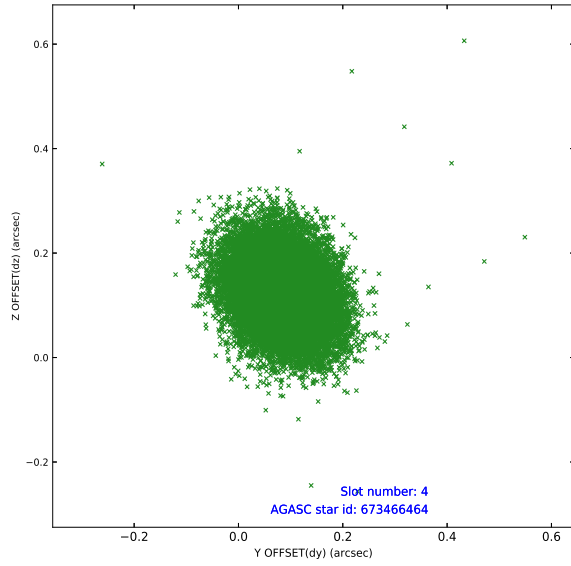
### 2.4.1 Slot 3



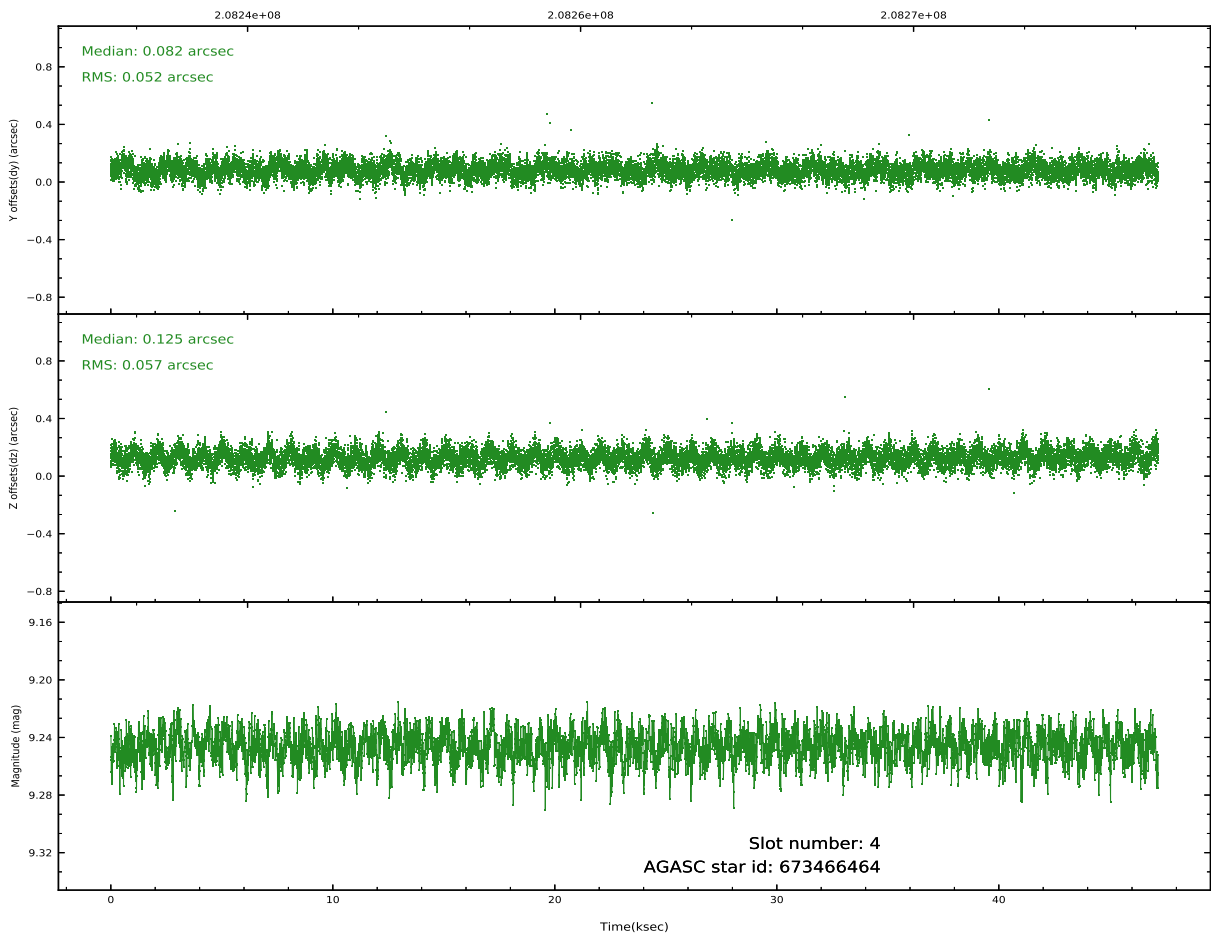
Time (s)



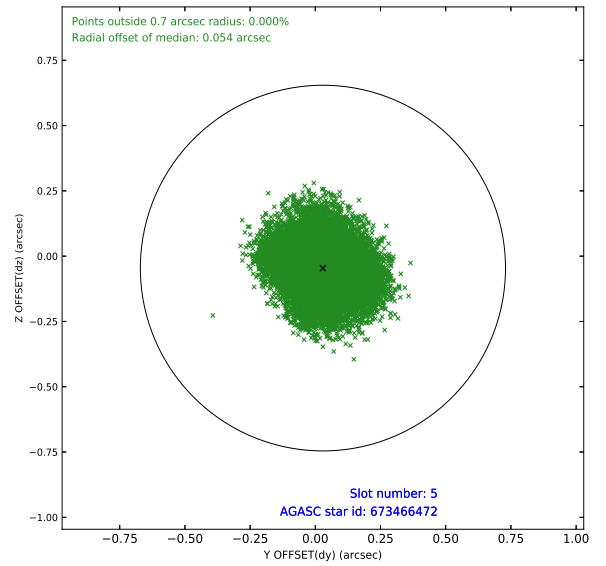
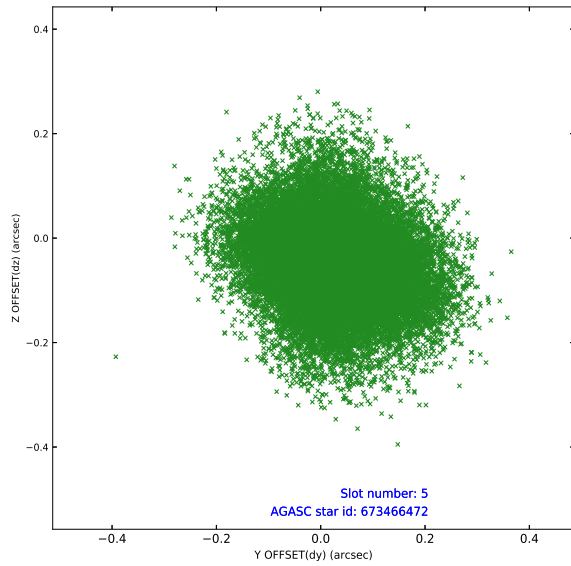
## 2.4.2 Slot 4



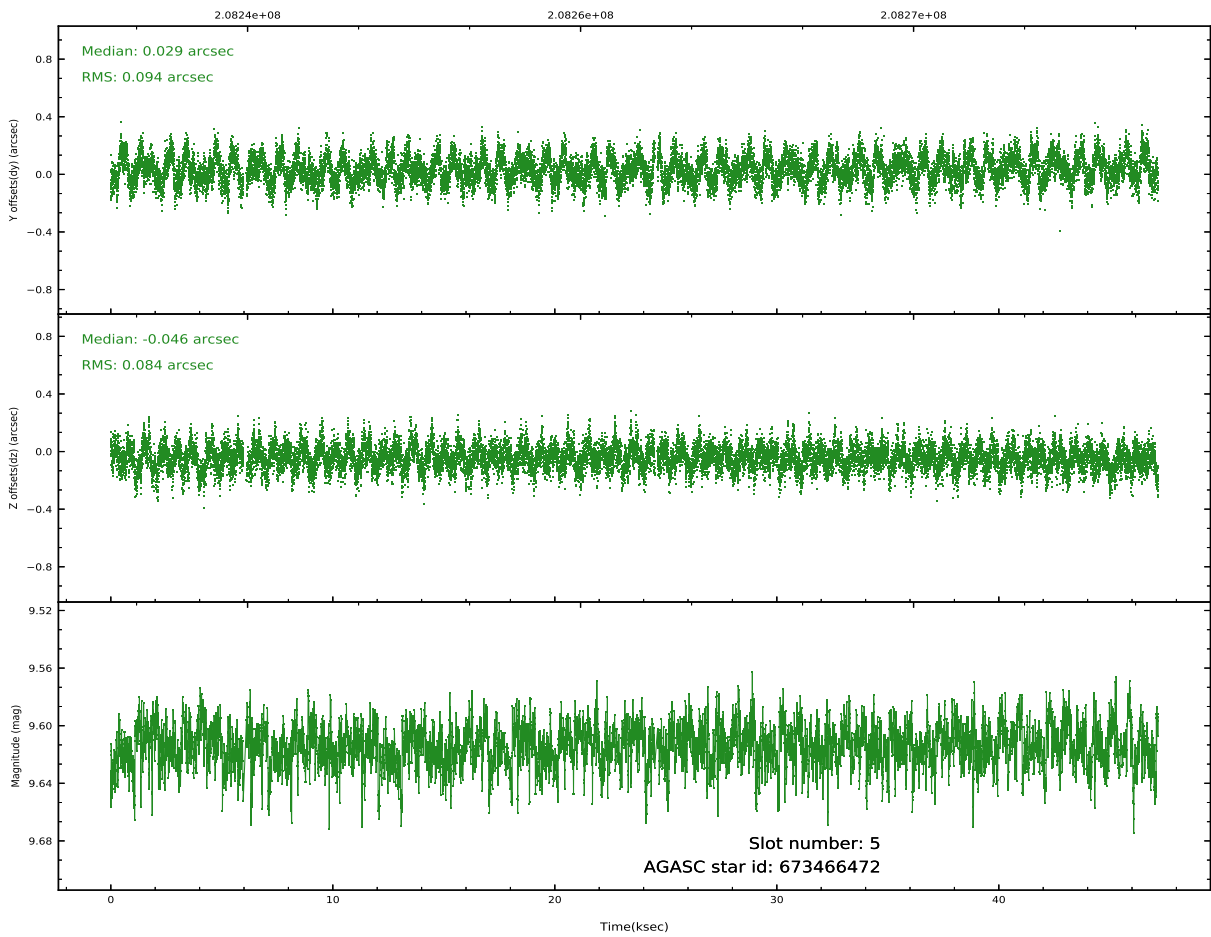
Time (s)



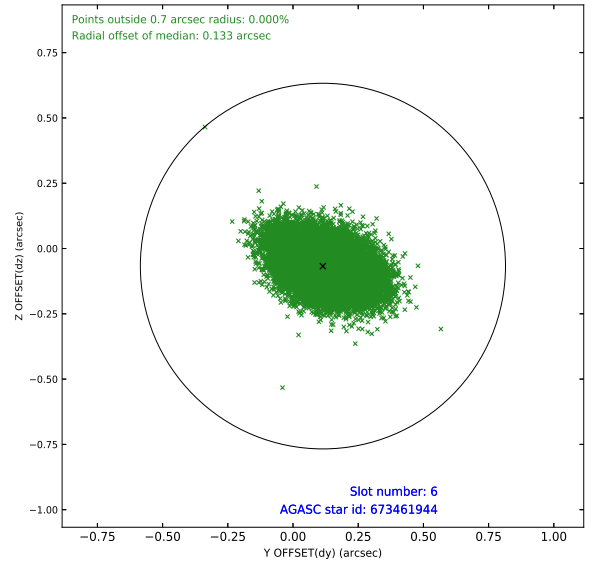
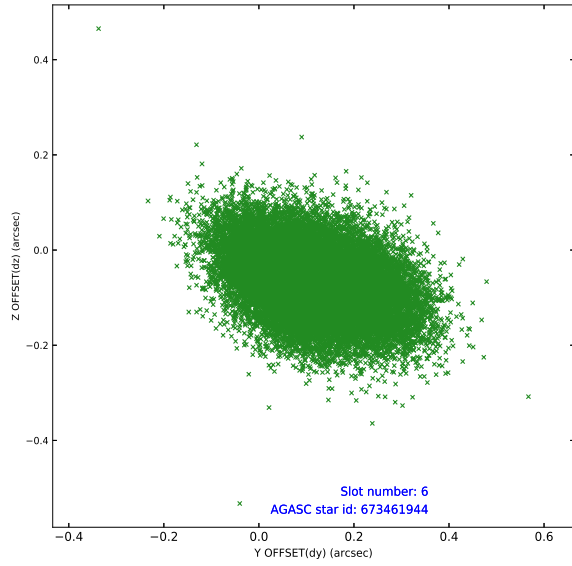
### 2.4.3 Slot 5



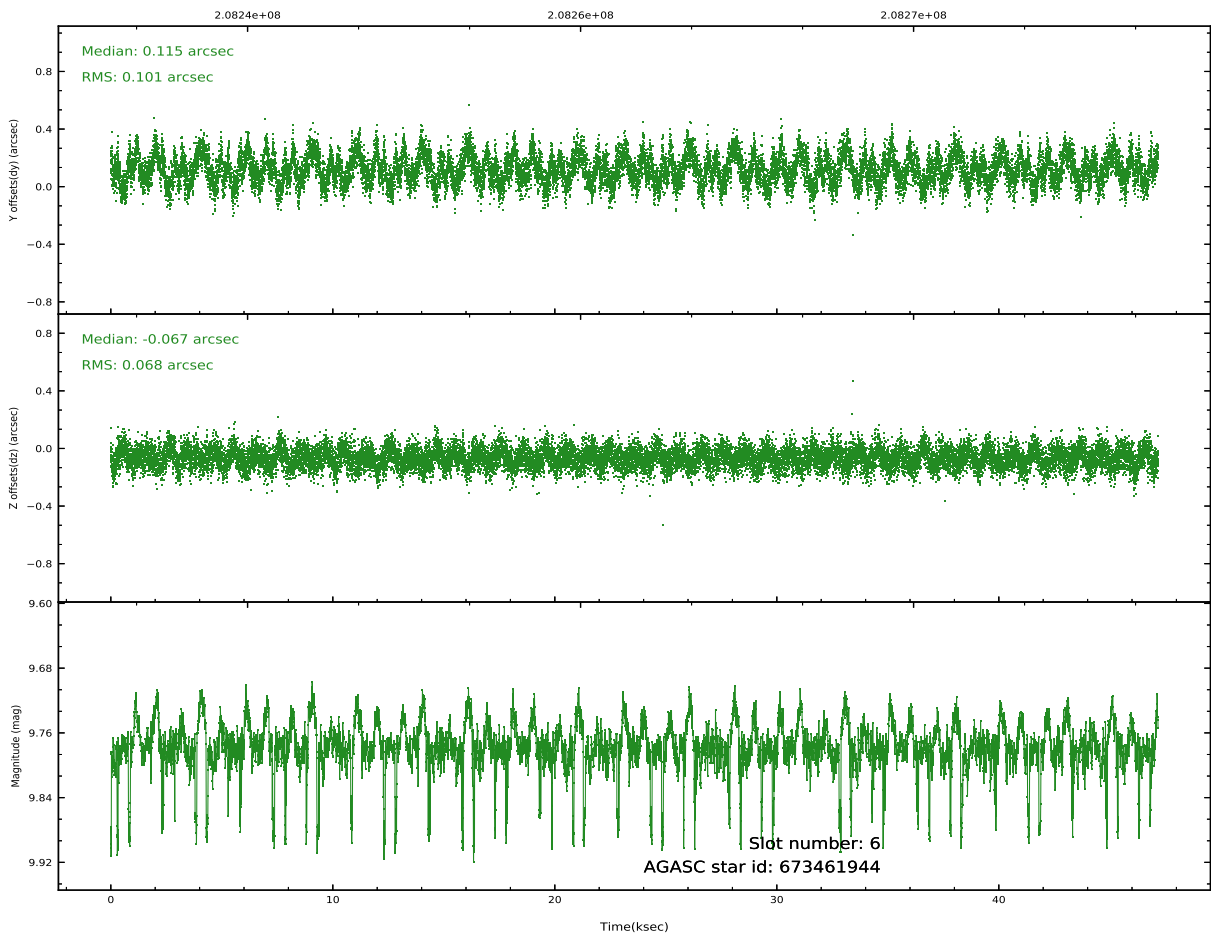
Time (s)



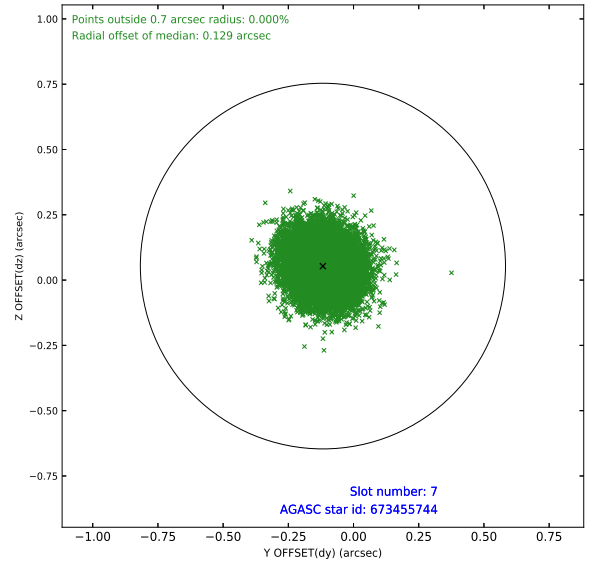
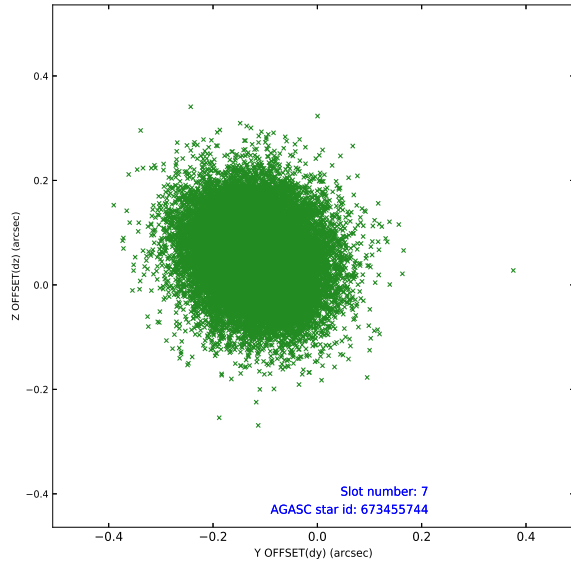
## 2.4.4 Slot 6



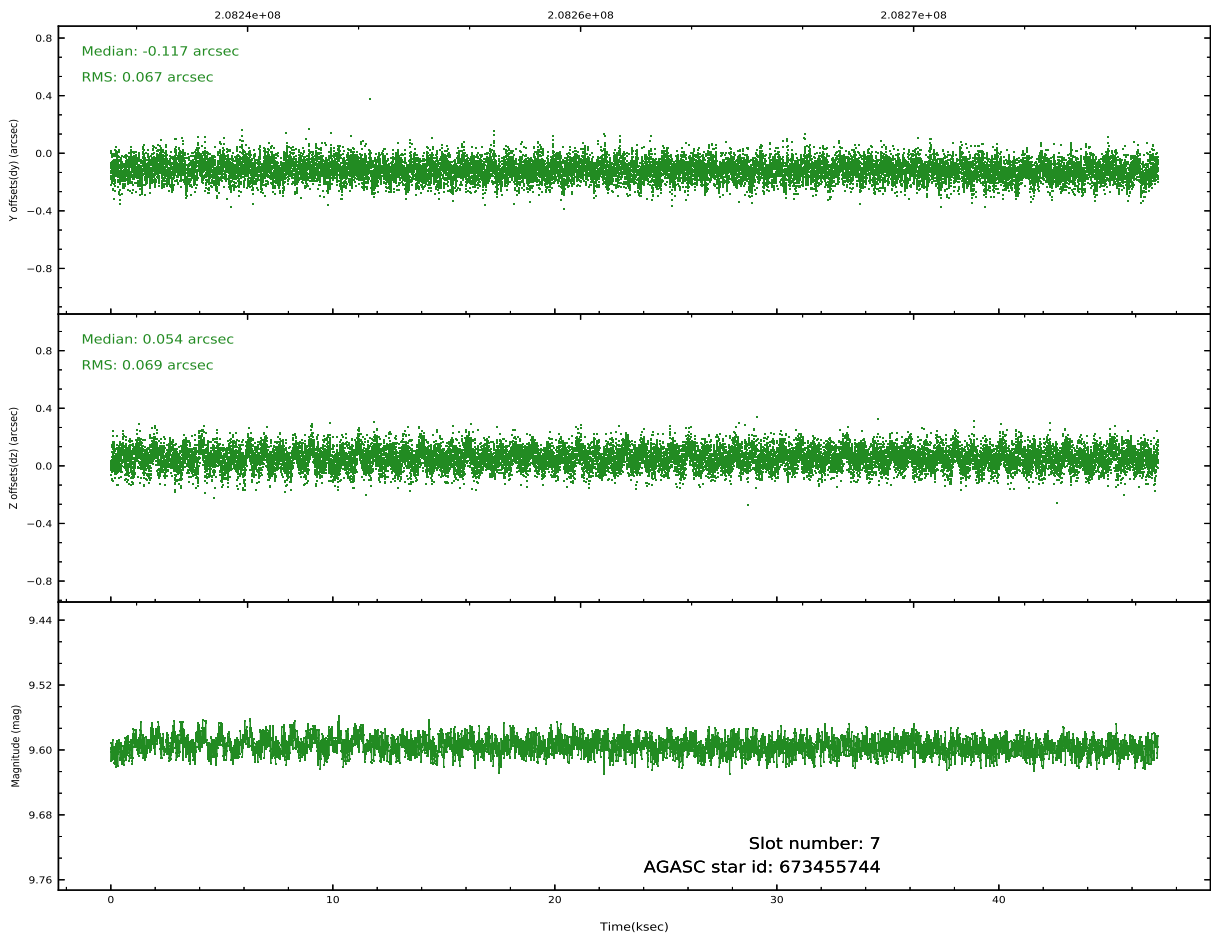
Time (s)



## 2.4.5 Slot 7

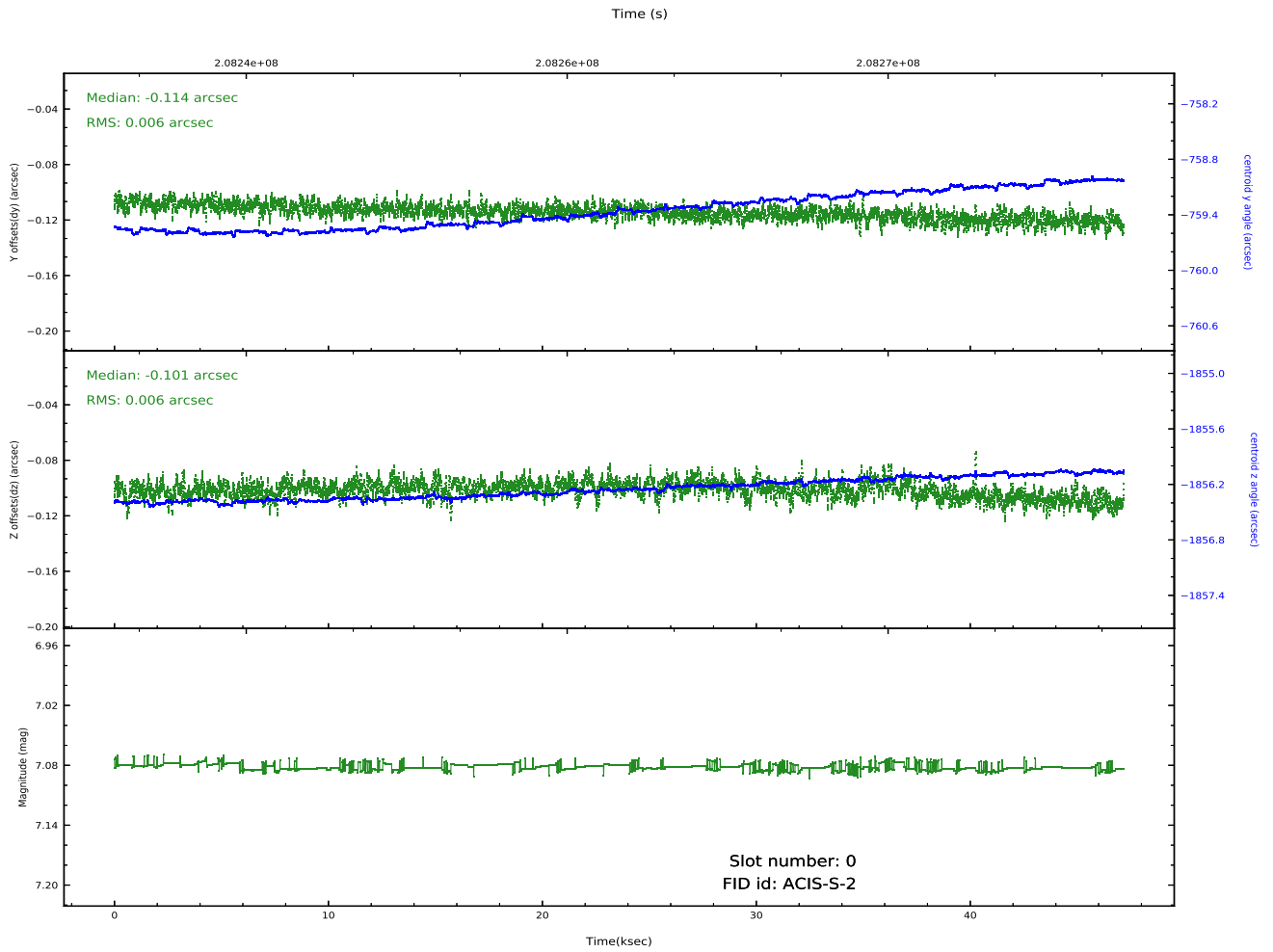
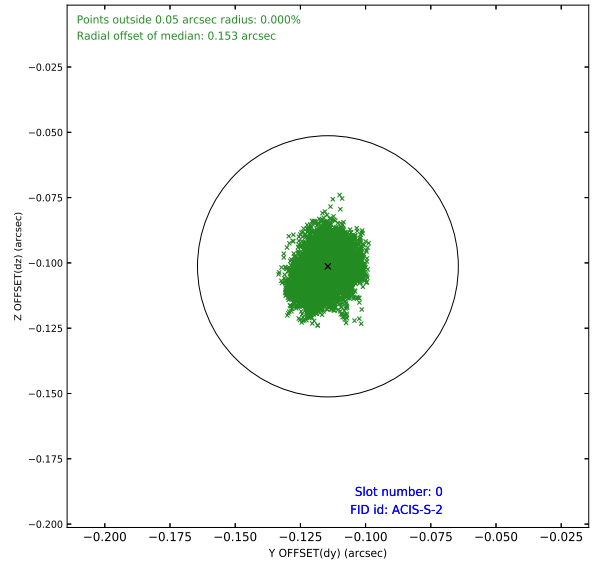
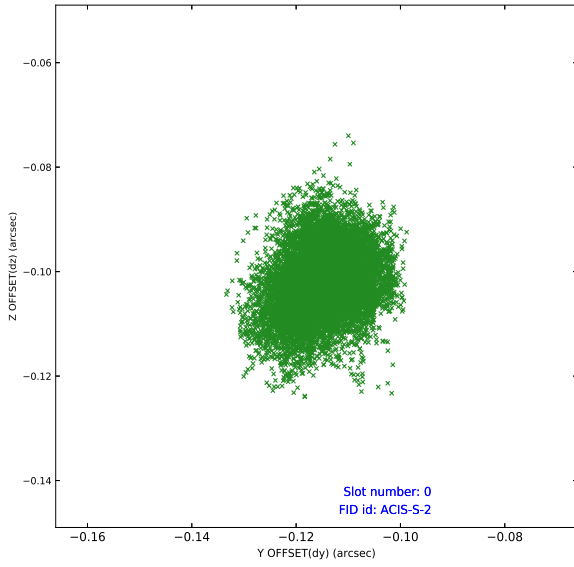


Time (s)

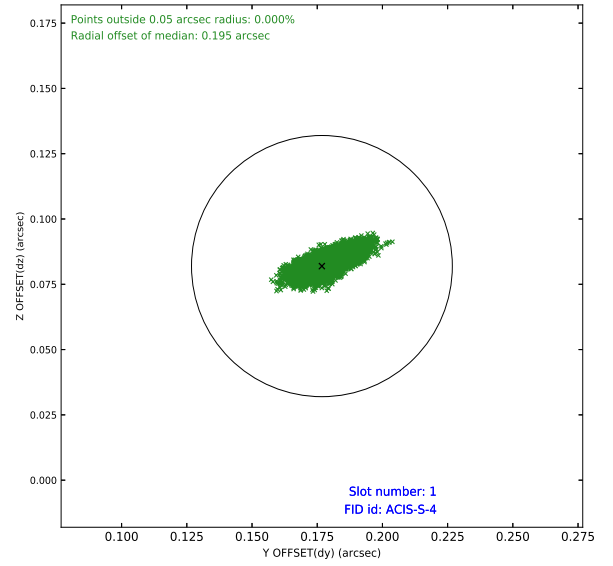
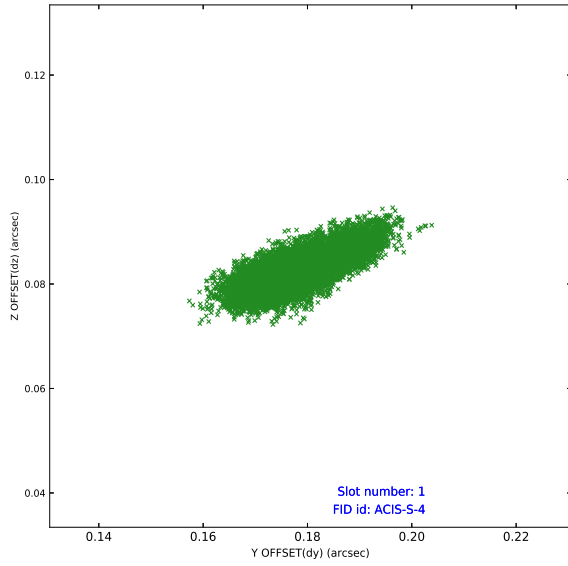


## 2.5 FID Slots

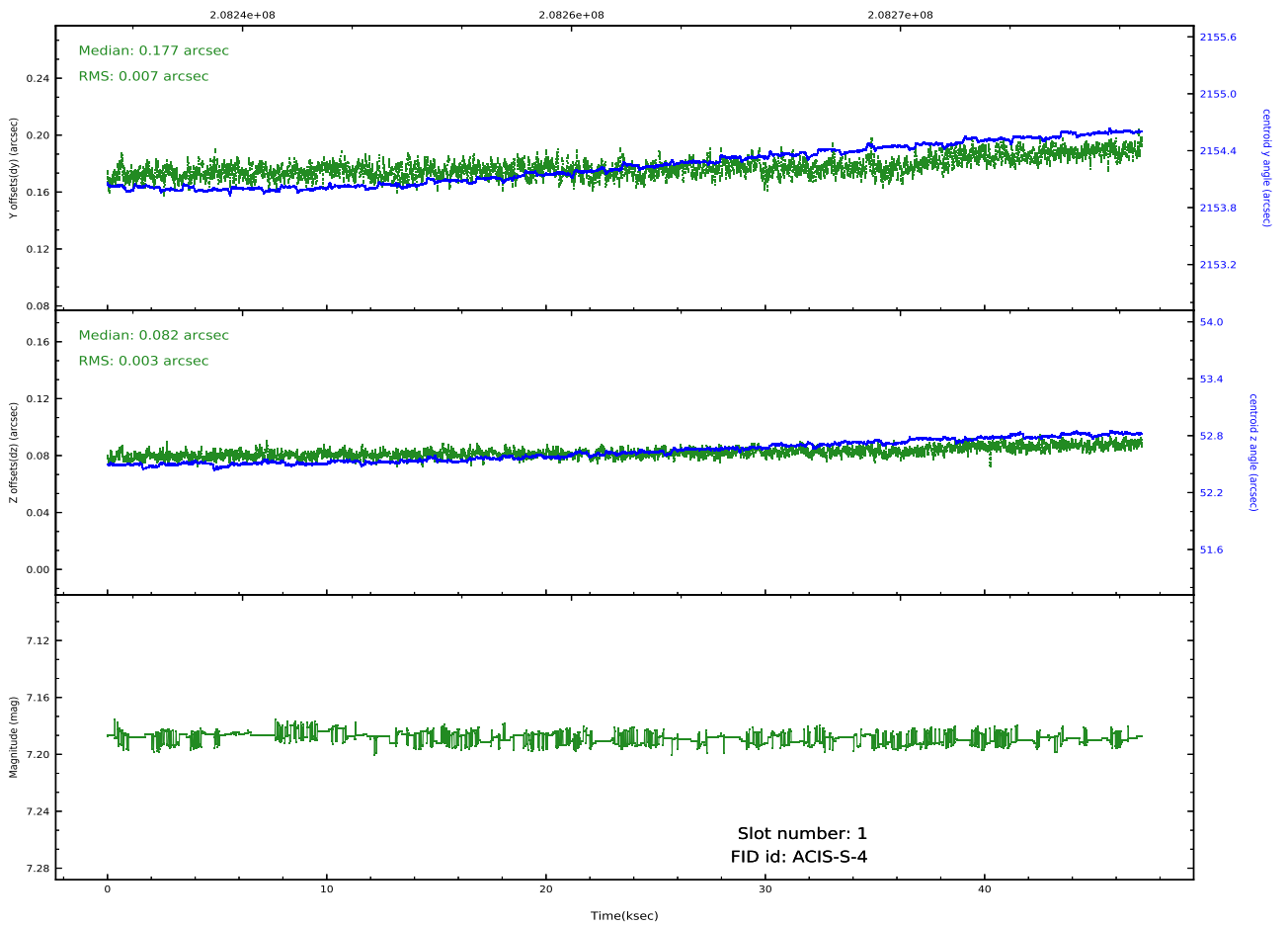
### 2.5.1 Slot 0



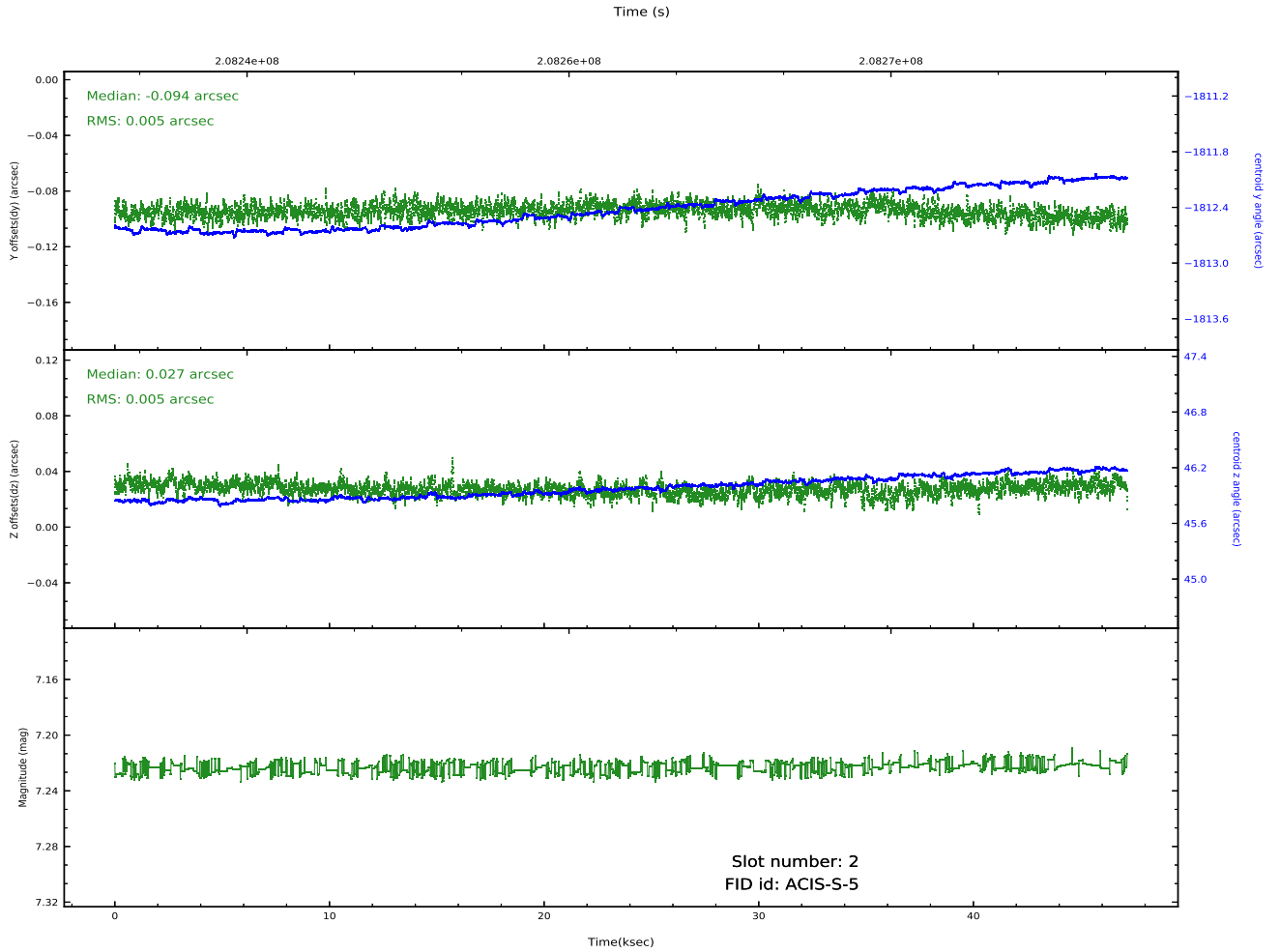
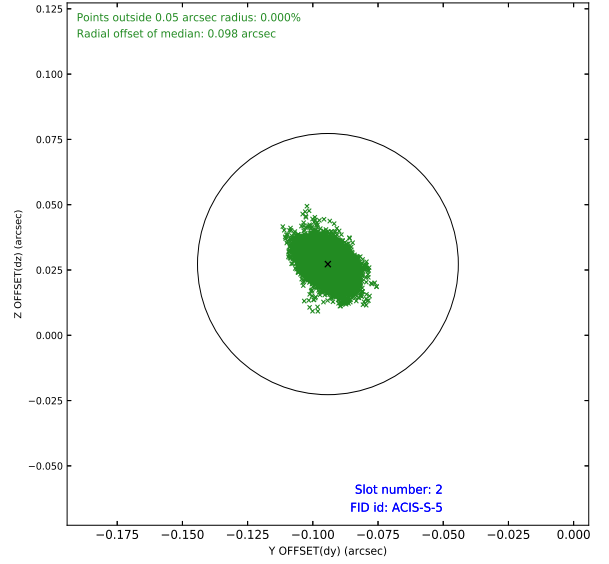
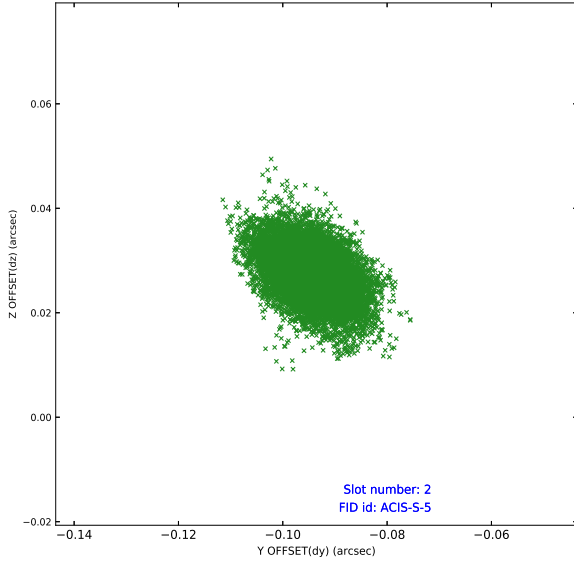
## 2.5.2 Slot 1



Time (s)

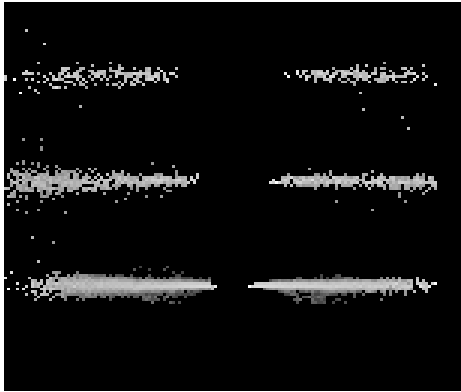


### 2.5.3 Slot 2

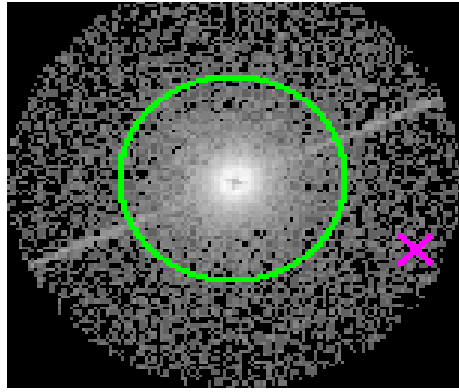


# 3 Gratings

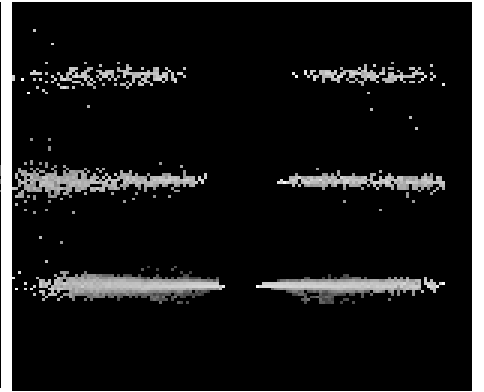
## 3.1 HEG Arm



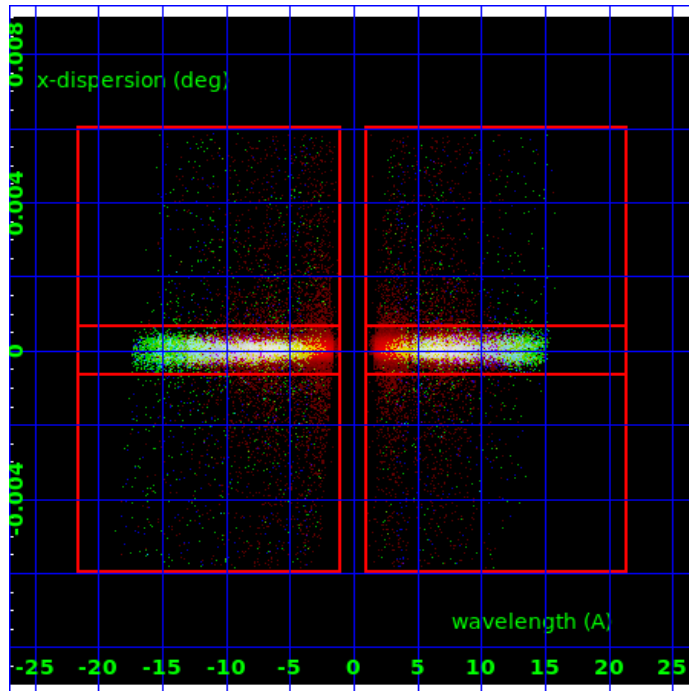
HEG Order Sort 123



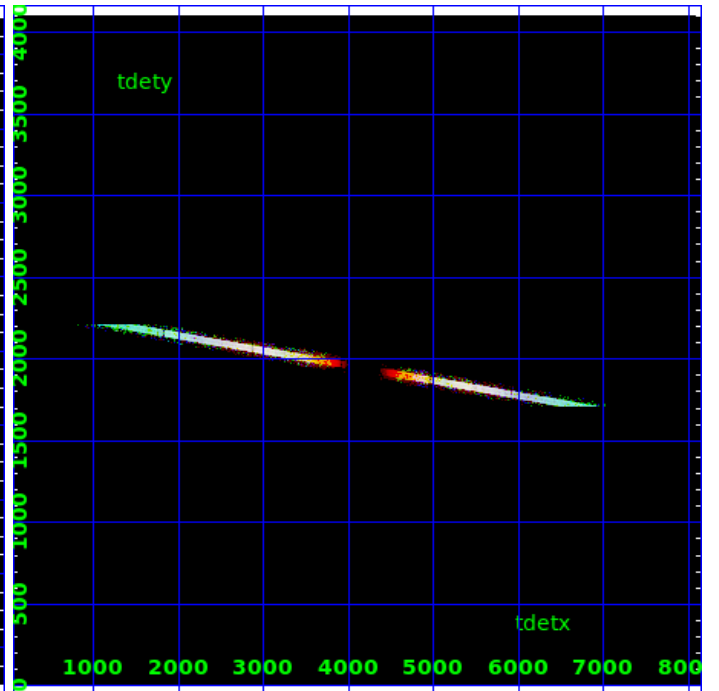
HEG Zero Order



HEG Order Sort ALL

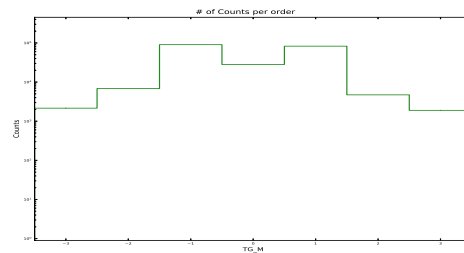


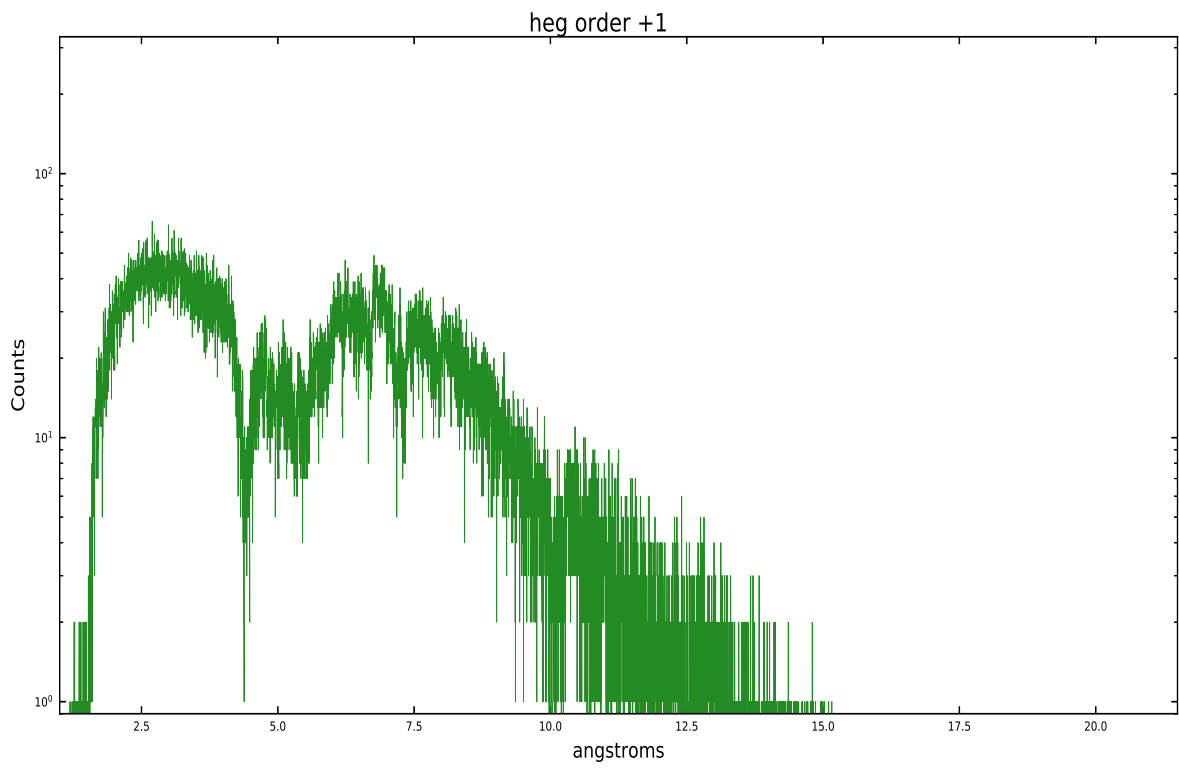
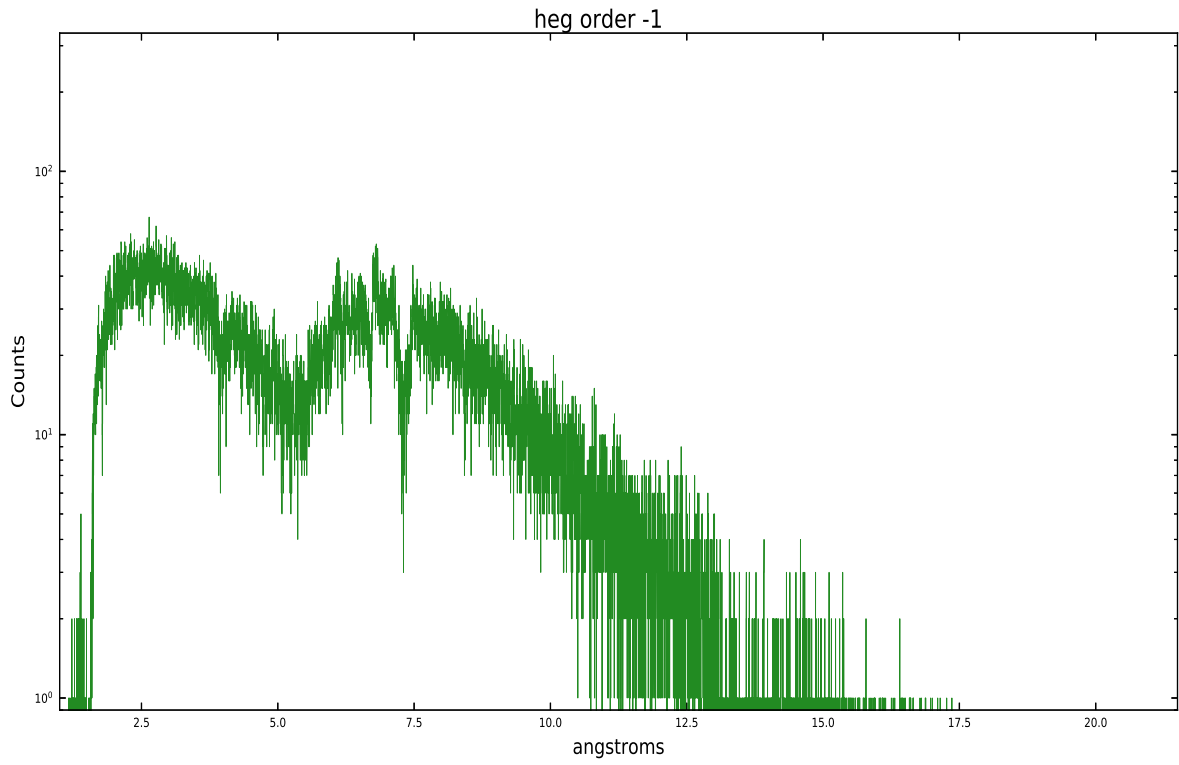
Spot Image HEG



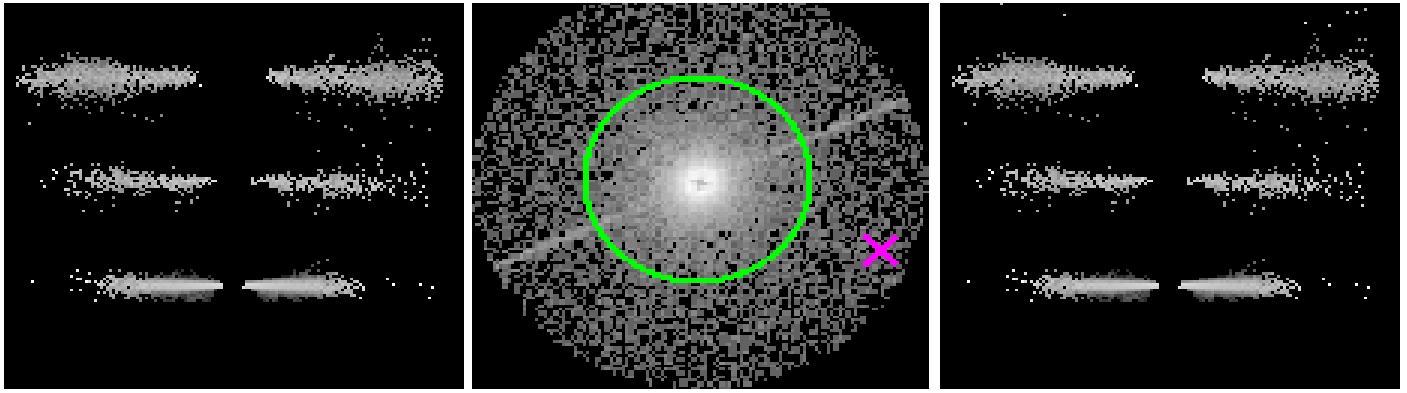
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	2154	6827	90488	28233	82746	4718	1895





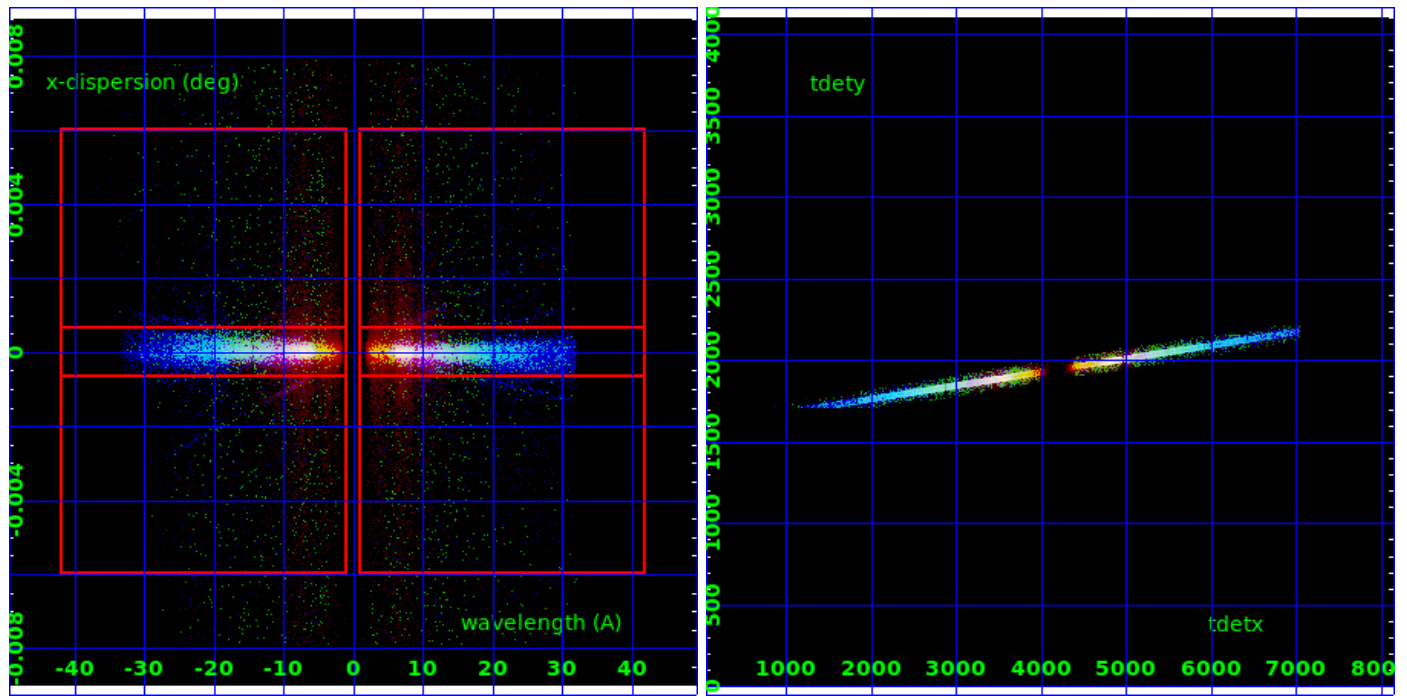
### 3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

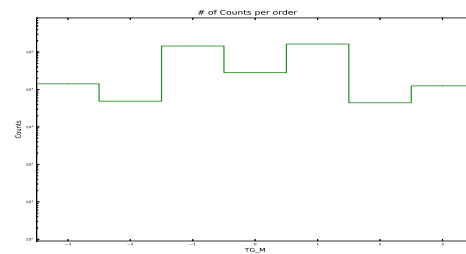
MEG Order Sort ALL

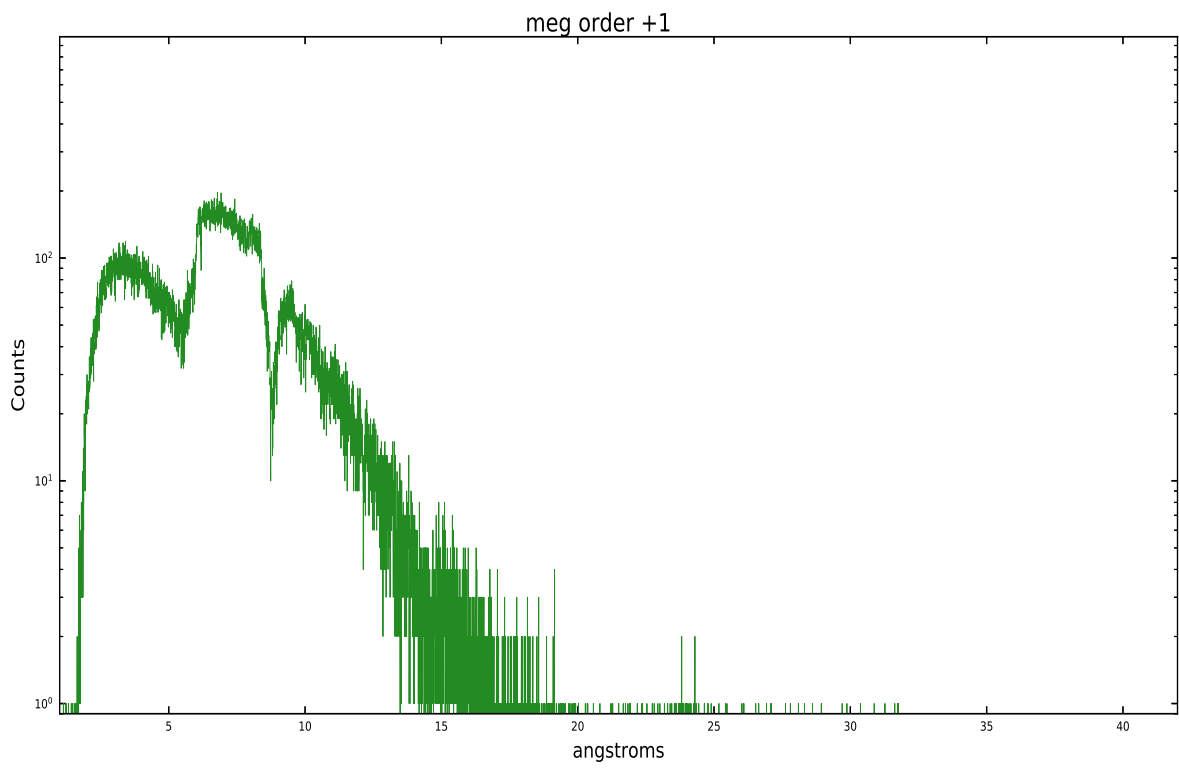
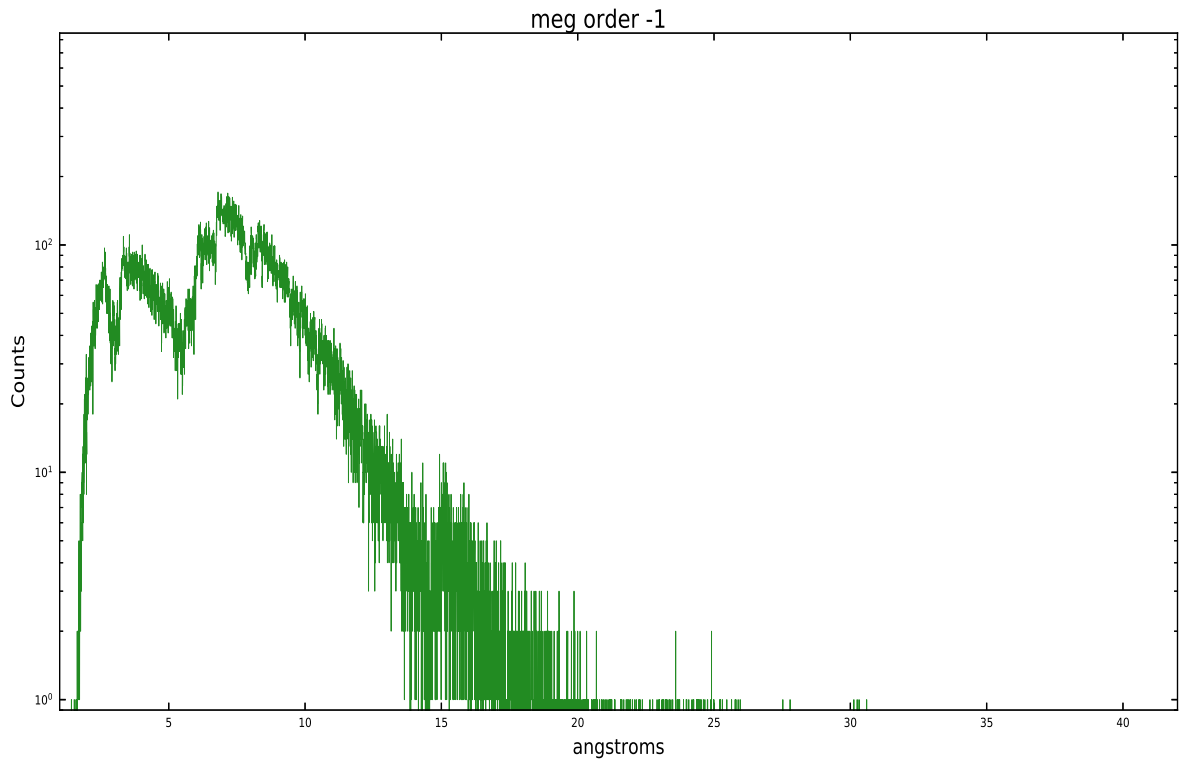


Spot Image MEG

Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	14182	4872	144894	28233	163537	4427	12526





# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2020.10.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	47.174

## A.2 Comments

Faint grating spectra can be seen in an image of bad events. This is probably due to pileup in the spectrum, causing migration to bad grades. This should be considered in analysis.