

# V&V Reference Report

## L2 ASCDS Version : 10.6

Observation 20730 - L2 Version 2  
Chandra X-Ray Center

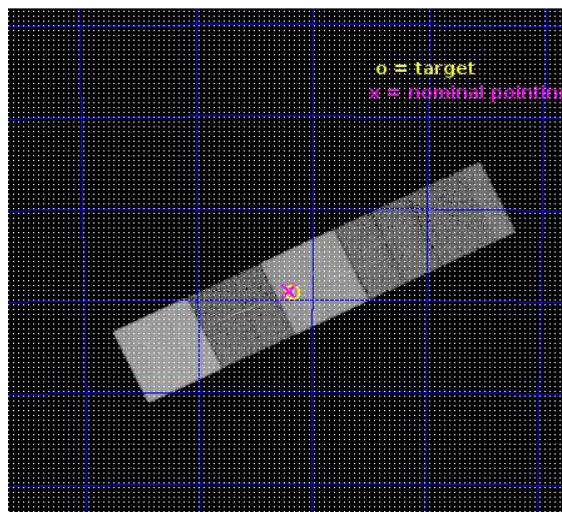
L2 Processing Date : Dec 18 2017

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# 1 Front

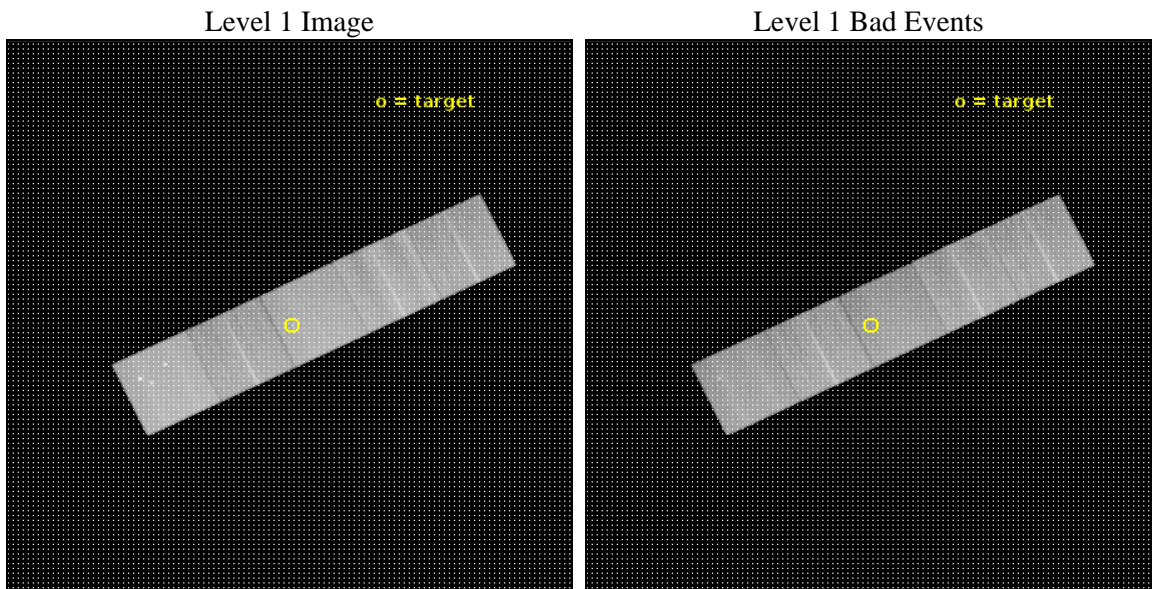
seq_num	401882	Sequence number
obs_id	20730	Observation id
title	HETG Spectroscopy of the Ultra-Luminous X-ray Source NGC 1313 X-1	&#160
observer	Claude Canizares	Principal investigator
object	NGC 1313 X-1	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	49.583333	Observer's specified target RA [deg]
dec_targ	-66.486389	Observer's specified target Dec [deg]
ra_nom	49.598864955093	Nominal RA [deg]
dec_nom	-66.484132051096	Nominal Dec [deg]
roll_nom	334.17085731579	Nominal Roll [deg]
revision	2	Processing version of data
ontime	29040.80022347	Sum of GTIs [s]
livetime	28661.360789024	Livetime [s]
ontime5	29040.80022347	Sum of GTIs [s]
ontime6	29040.80022347	Sum of GTIs [s]
ontime7	29040.80022347	Sum of GTIs [s]
ontime8	29040.80022347	Sum of GTIs [s]
ontime9	29040.80022347	Sum of GTIs [s]
l2events	332483	Number of level 2 events



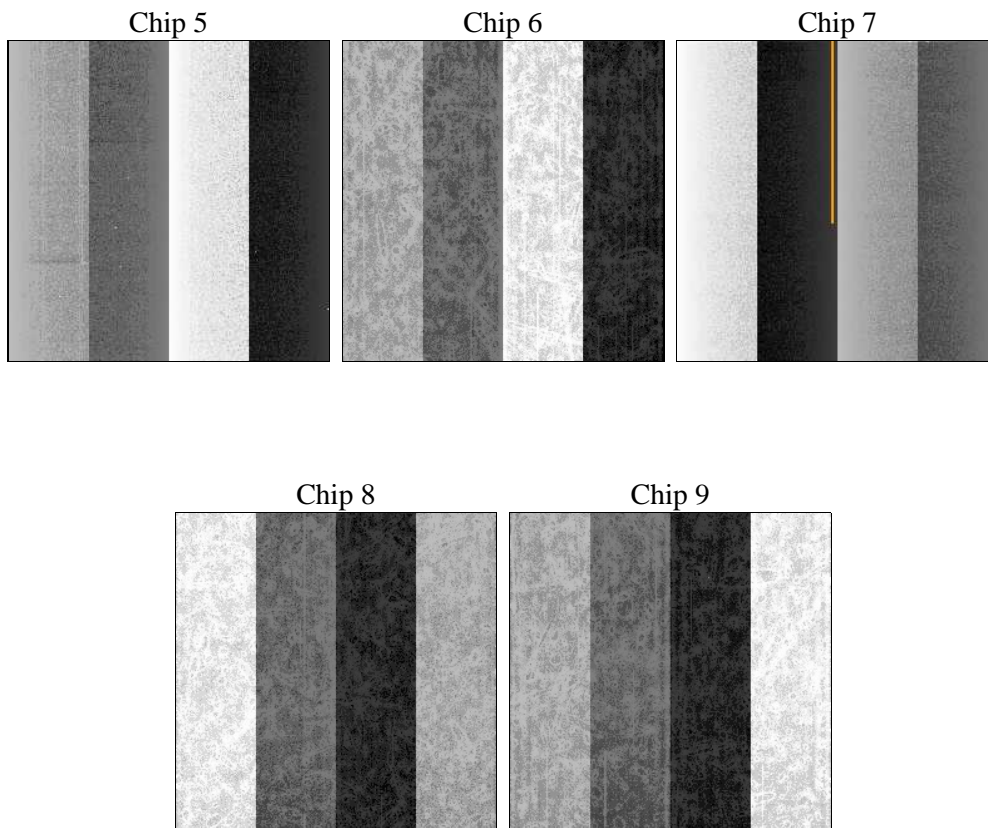
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	29000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	29040.80022347	Sum of GTIs [s]
caldbver	4.7.7	&#160	ontime5	29040.80022347	Sum of GTIs [s]
date	2017-12-18T17:53:38	Date and time of file creation	ontime6	29040.80022347	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	29040.80022347	Sum of GTIs [s]
			ontime8	29040.80022347	Sum of GTIs [s]
			ontime9	29040.80022347	Sum of GTIs [s]
			l1events	1320402	Number of level 1 events
			tgmethod	TGDETECT	Method used to create src1a file
			zo_pos	(4142.67, 4080 10)	src1a sky pixel position

### 2.1.4 Events

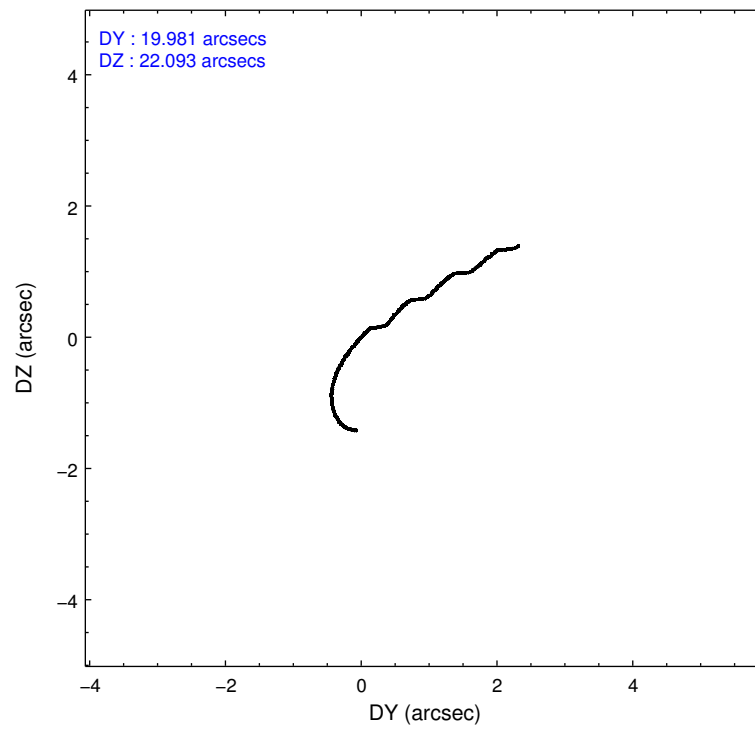
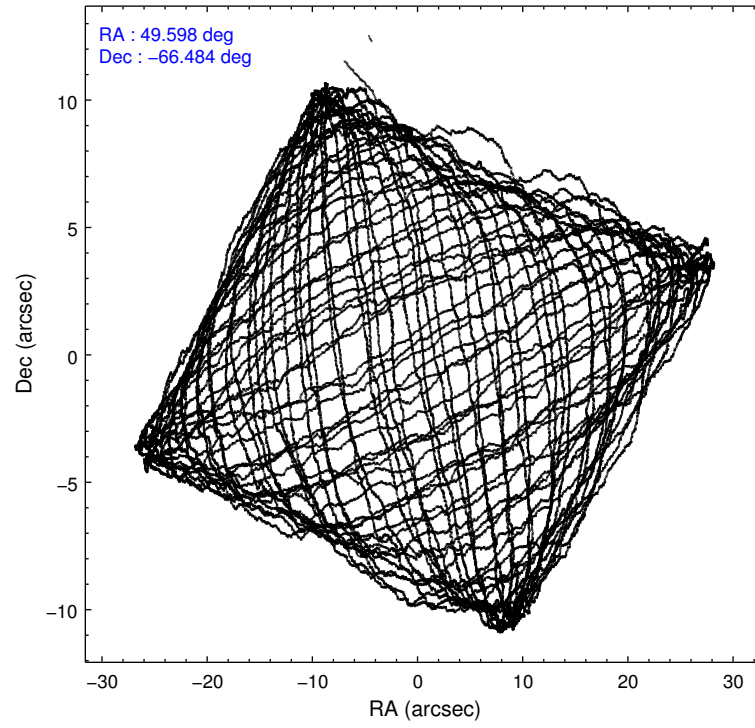
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	336665	219534	269835	279276	215092
rejected events	173636	195040	152756	207191	189829
rejected %	51%	88%	56%	74%	88%

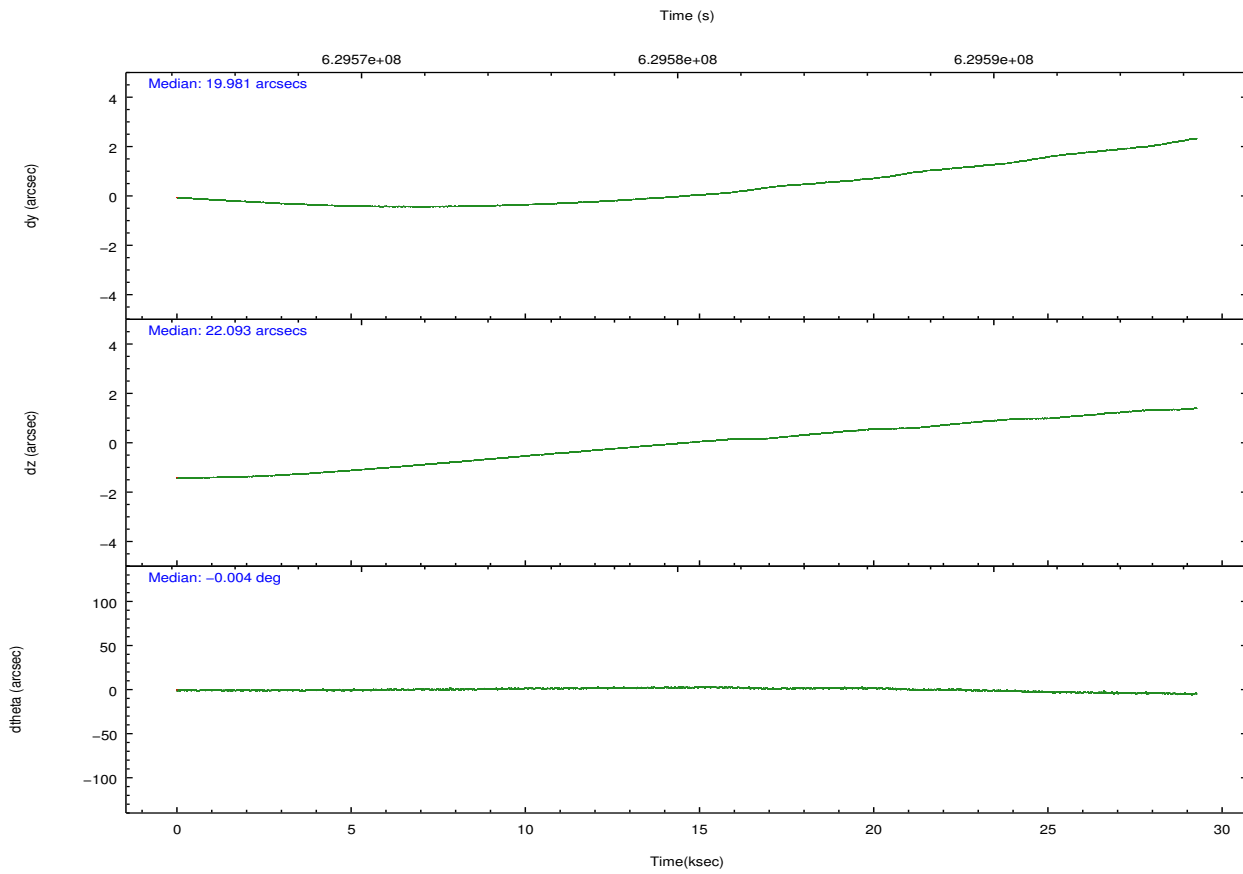
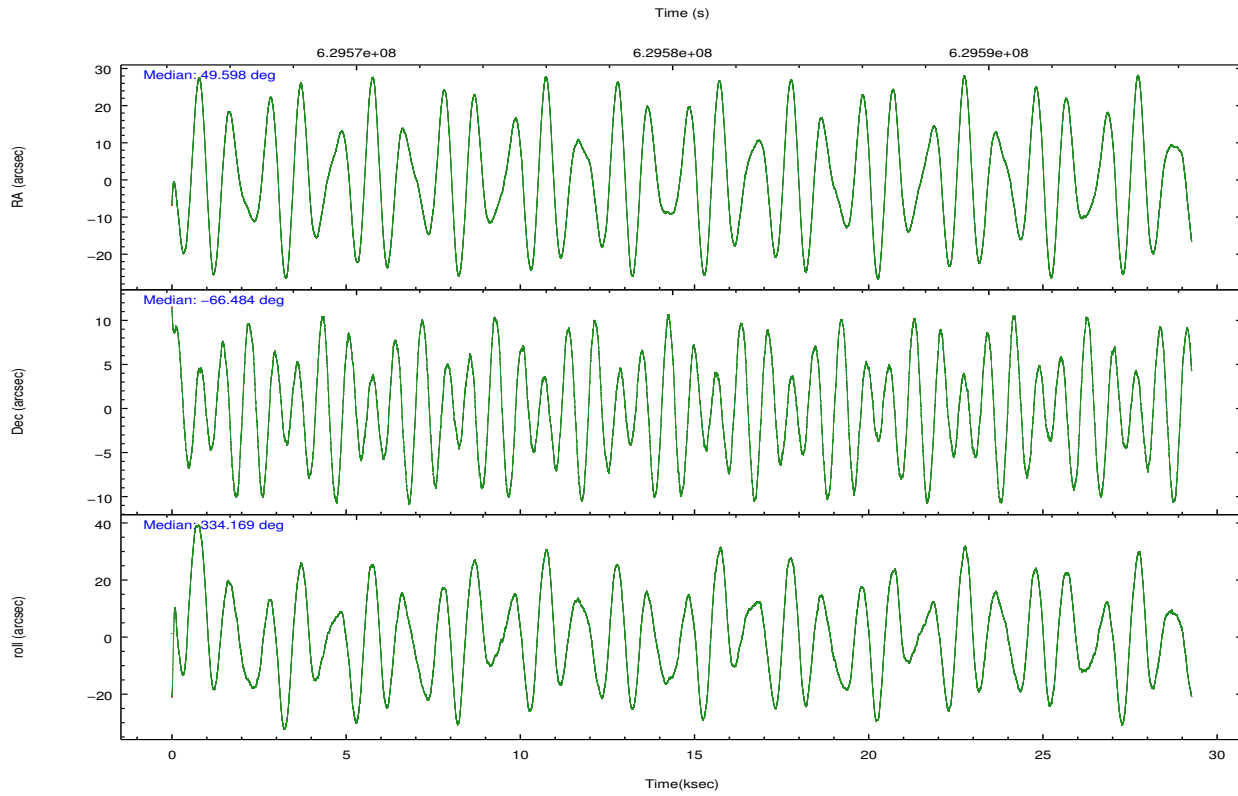
	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	14381	8120	10092	20221	8495
	4%	3%	3%	7%	3%
grade 1 events	1440	113	403	229	128
	0%	0%	0%	0%	0%
grade 2 events	49729	6031	24657	17690	6050
	14%	2%	9%	6%	2%
grade 3 events	5522	2192	9316	7340	2612
	1%	0%	3%	2%	1%
grade 4 events	4906	2153	9349	6793	2417
	1%	0%	3%	2%	1%
grade 5 events	22601	9063	26527	14497	10892
	6%	4%	9%	5%	5%
grade 6 events	88535	6004	63704	20053	5703
	26%	2%	23%	7%	2%
grade 7 events	149551	185858	125787	192453	178795
	44%	84%	46%	68%	83%

## 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	49.530343	49.59886495509302	CCD I2 on	N	N
[deg] Pointing Dec	-66.486490	-66.48413205109561	CCD I3 on	N	N
[deg] Pointing Roll	333.951411	334.1708573157866	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	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	629565923.184000	629564781.08375	CCD S5 on	Y	Y
Observation start date	2017-12-13T15:24:14	2017-12-13T15:06:21	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	629594923.184000	629595877.02307	On-chip summing requested	N	N
Observation end date	2017-12-13T23:27:34	2017-12-13T23:44:37	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect



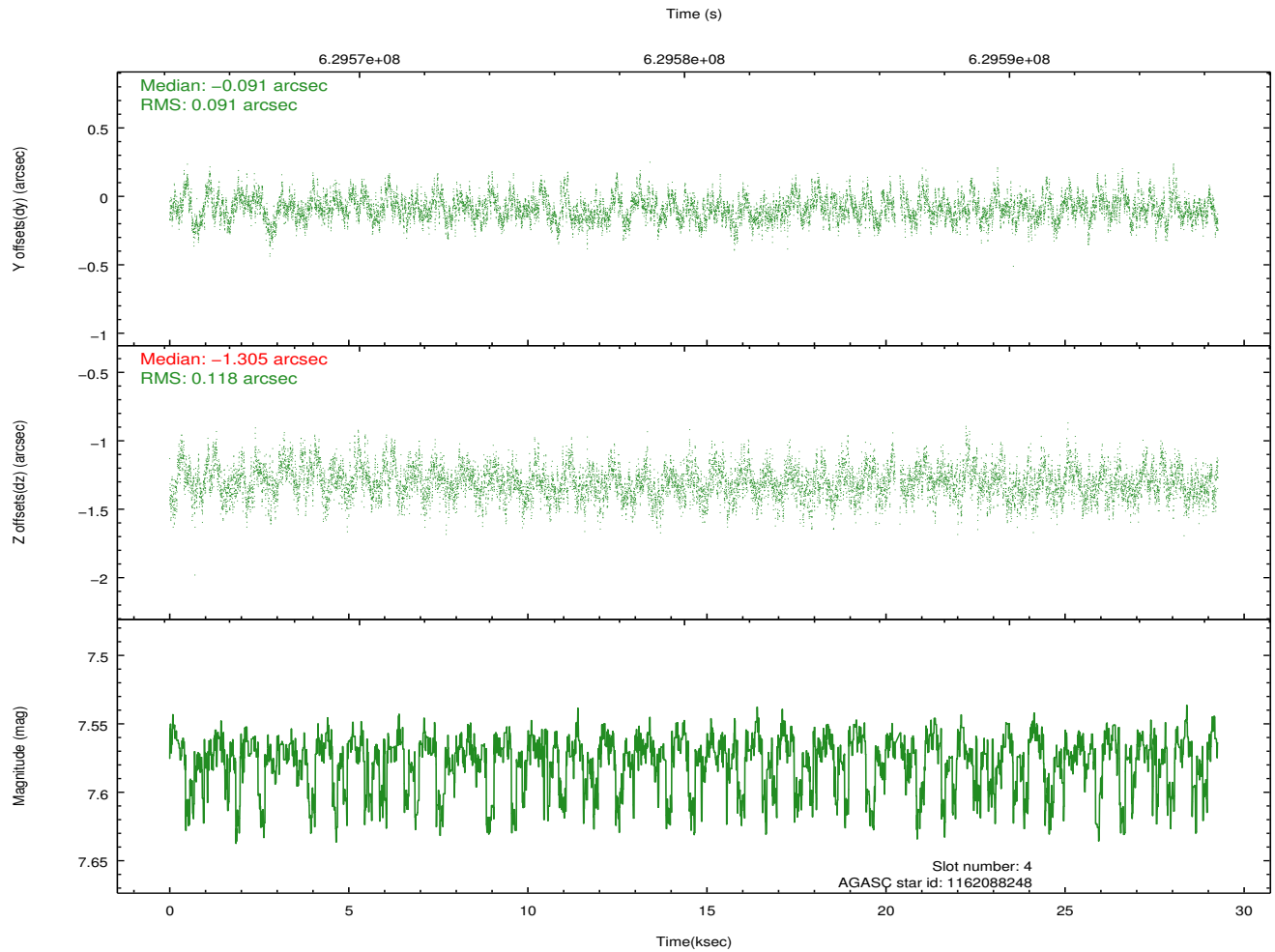
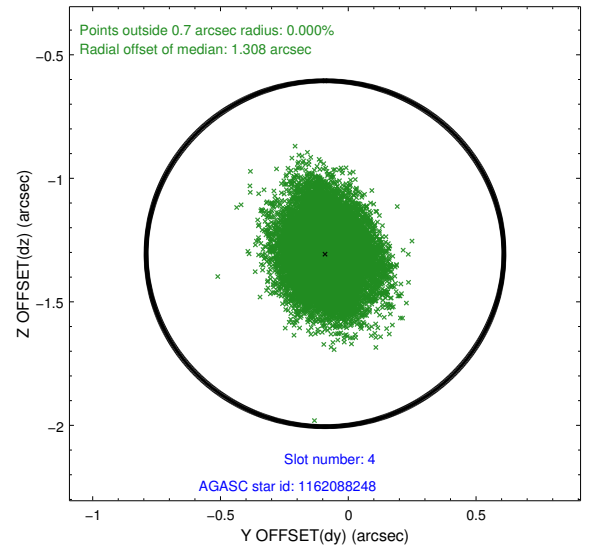
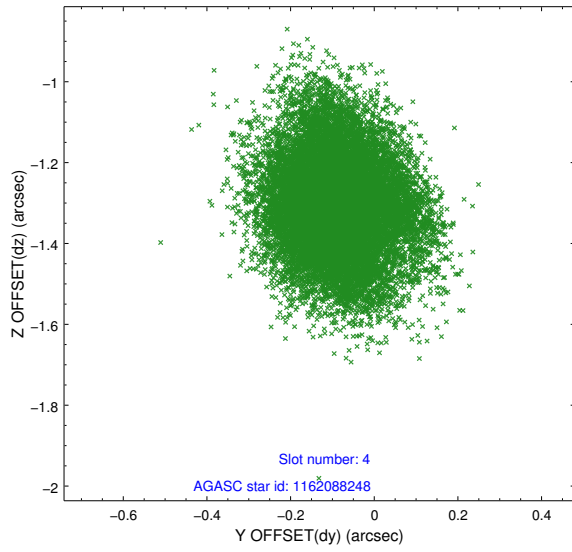


### Slot Statistics

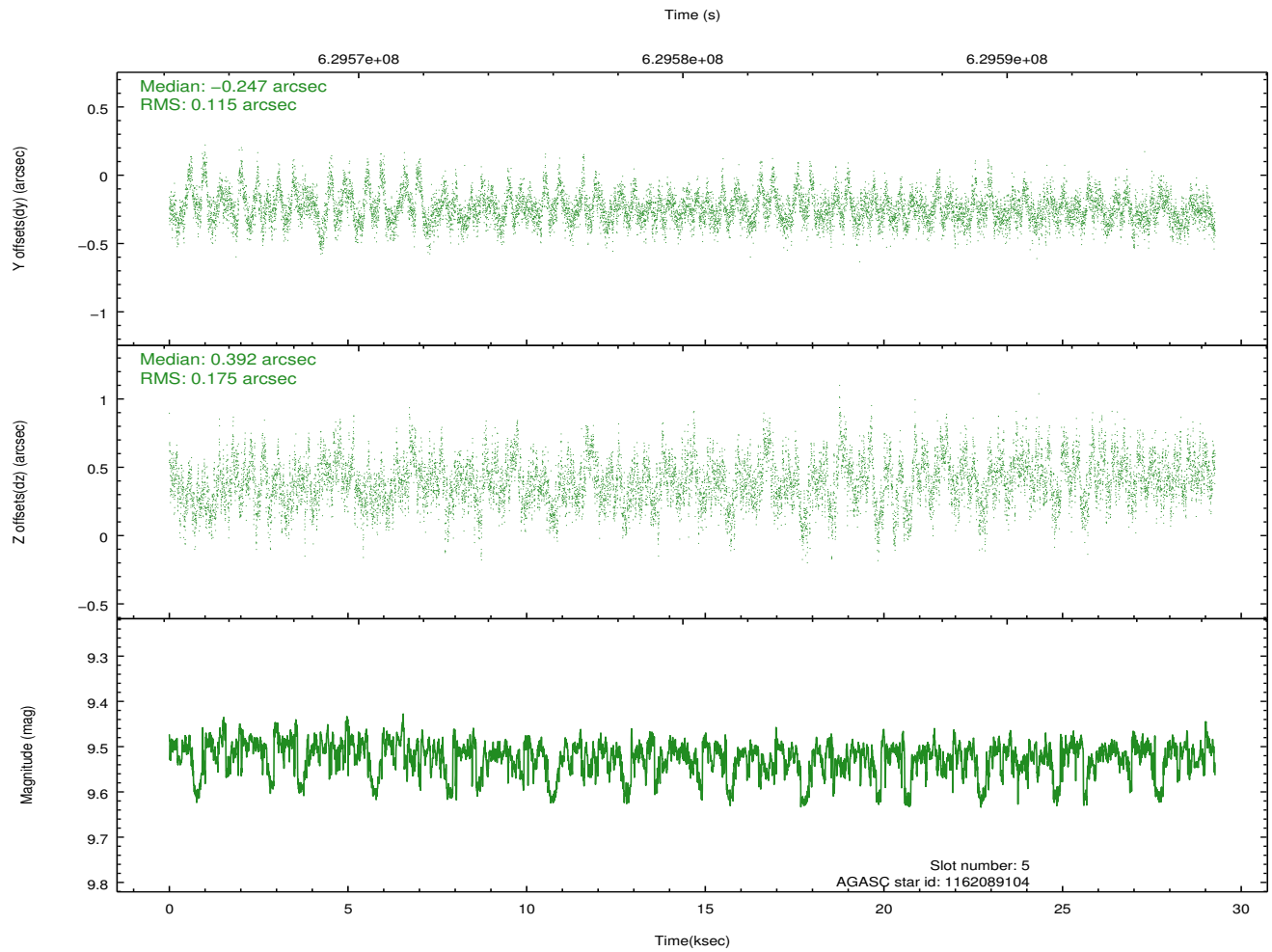
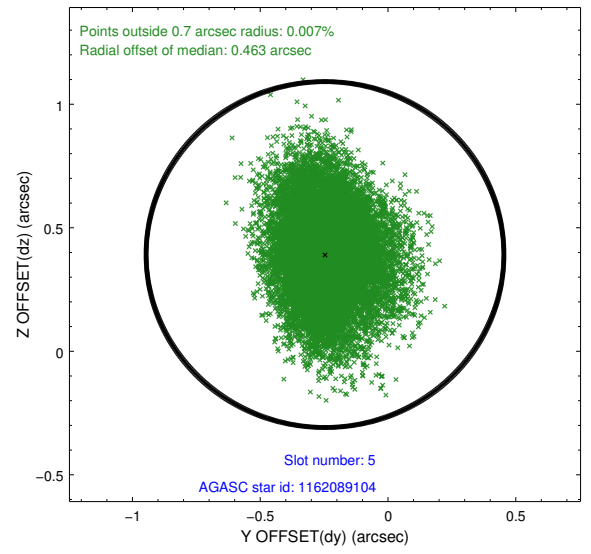
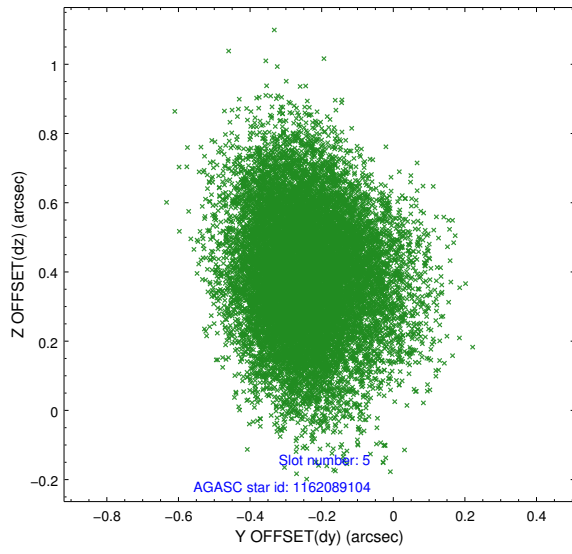
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	7.11	7139	-0.256	-0.166	0.023	0.031	0.000000	0.000000	-773.74	-1743.73
1	FID		ACIS-S-4	7.23	7138	0.552	0.170	0.023	0.032	0.000000	0.000000	2140.30	165.02
2	FID		ACIS-S-5	7.22	7140	-0.329	0.009	0.020	0.030	0.000000	0.000000	-1826.56	158.60
3	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00
4	GUIDE	used	1162088248	7.57	14211	-0.091	-1.305	0.159	0.254	49.751966	-65.888113	-652.40	2076.49
5	GUIDE	used	1162089104	9.52	14258	-0.247	0.392	0.222	0.368	48.422126	-66.410699	-1547.50	-468.27
6	GUIDE	used	1162090824	9.23	14269	0.186	0.555	0.238	0.386	48.677982	-66.885202	-447.50	-1825.54
7	GUIDE	used	1162095520	9.87	13579	0.151	0.370	0.338	0.524	47.993238	-66.636141	-1722.20	-1472.09

## 2.4 Star Slots

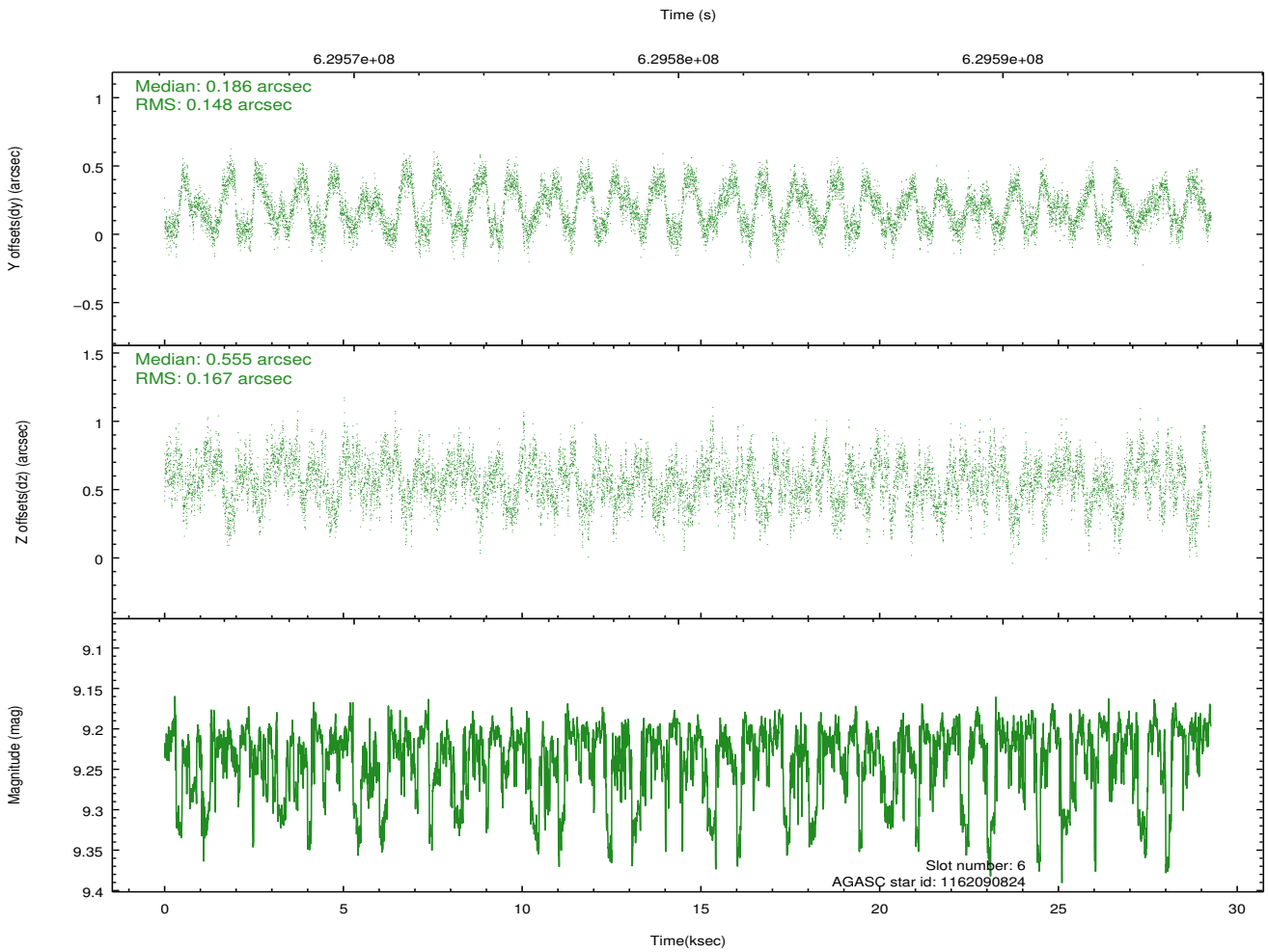
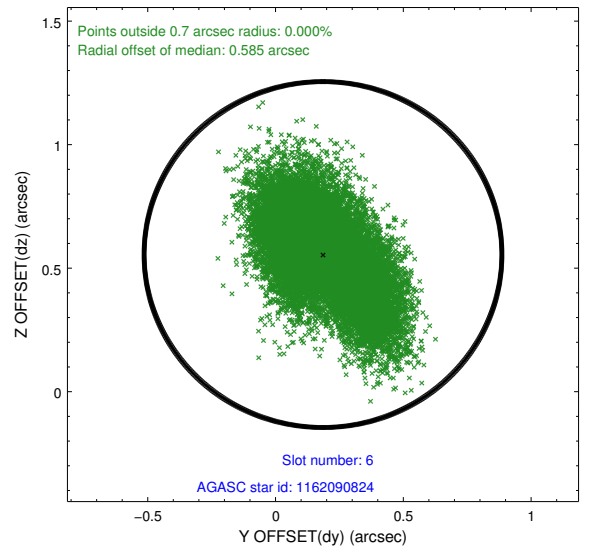
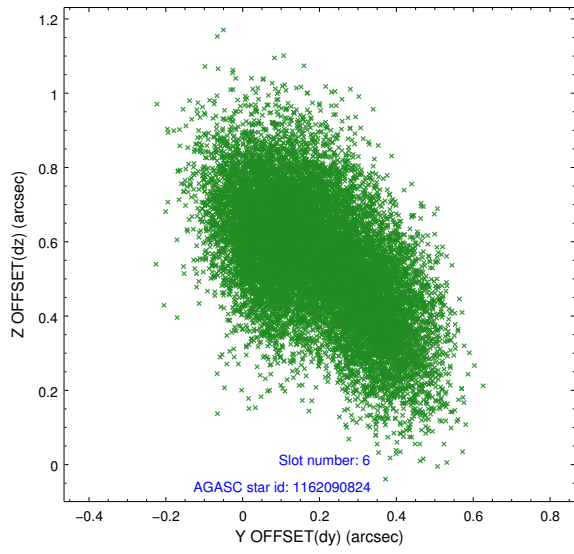
### 2.4.1 Slot 4



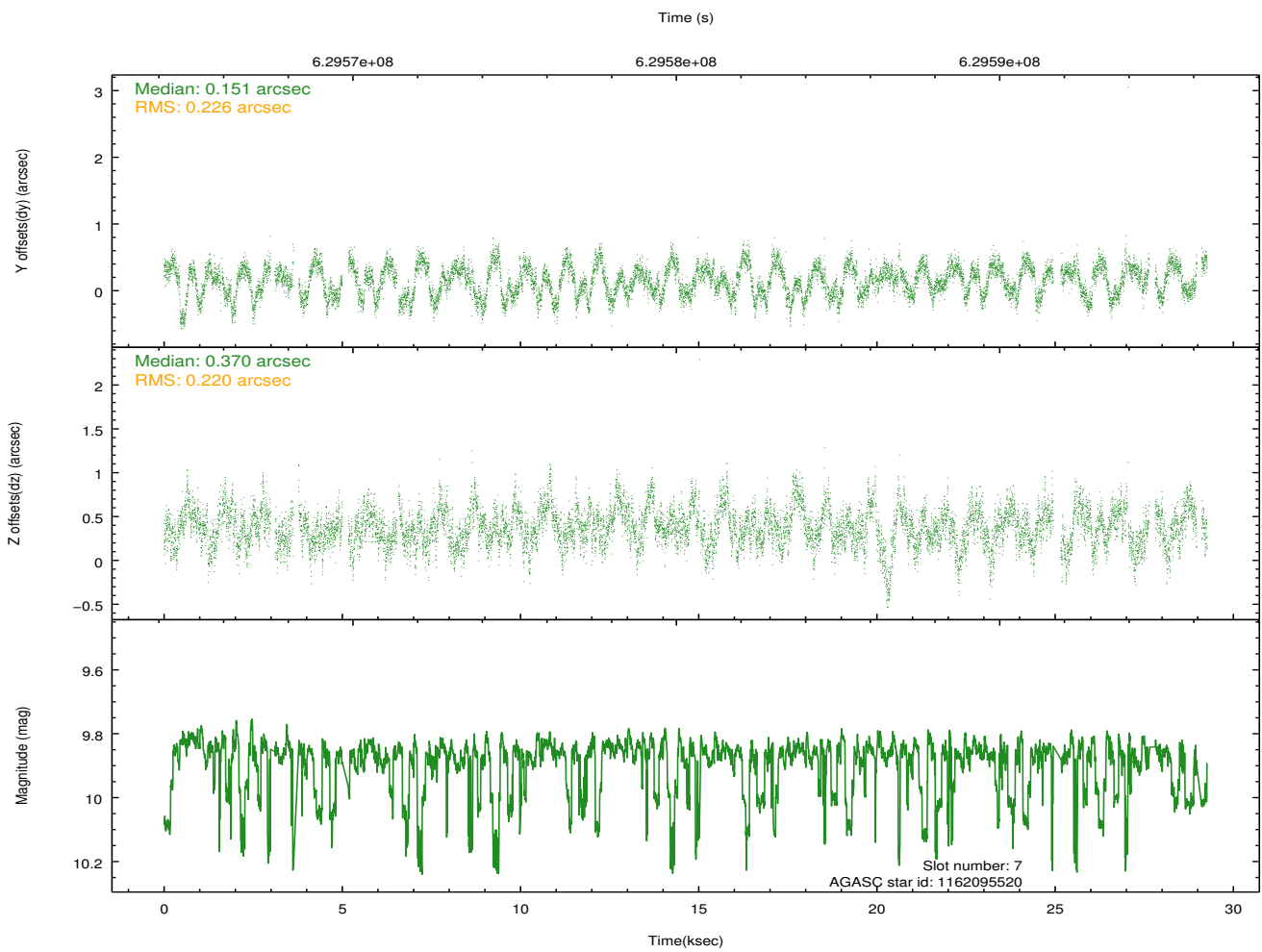
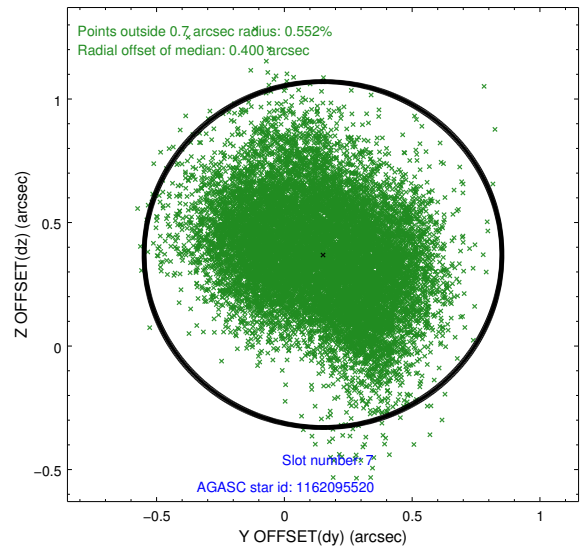
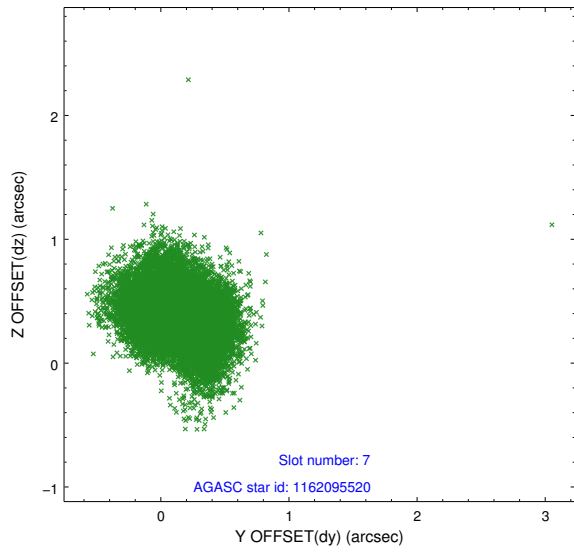
## 2.4.2 Slot 5



### 2.4.3 Slot 6

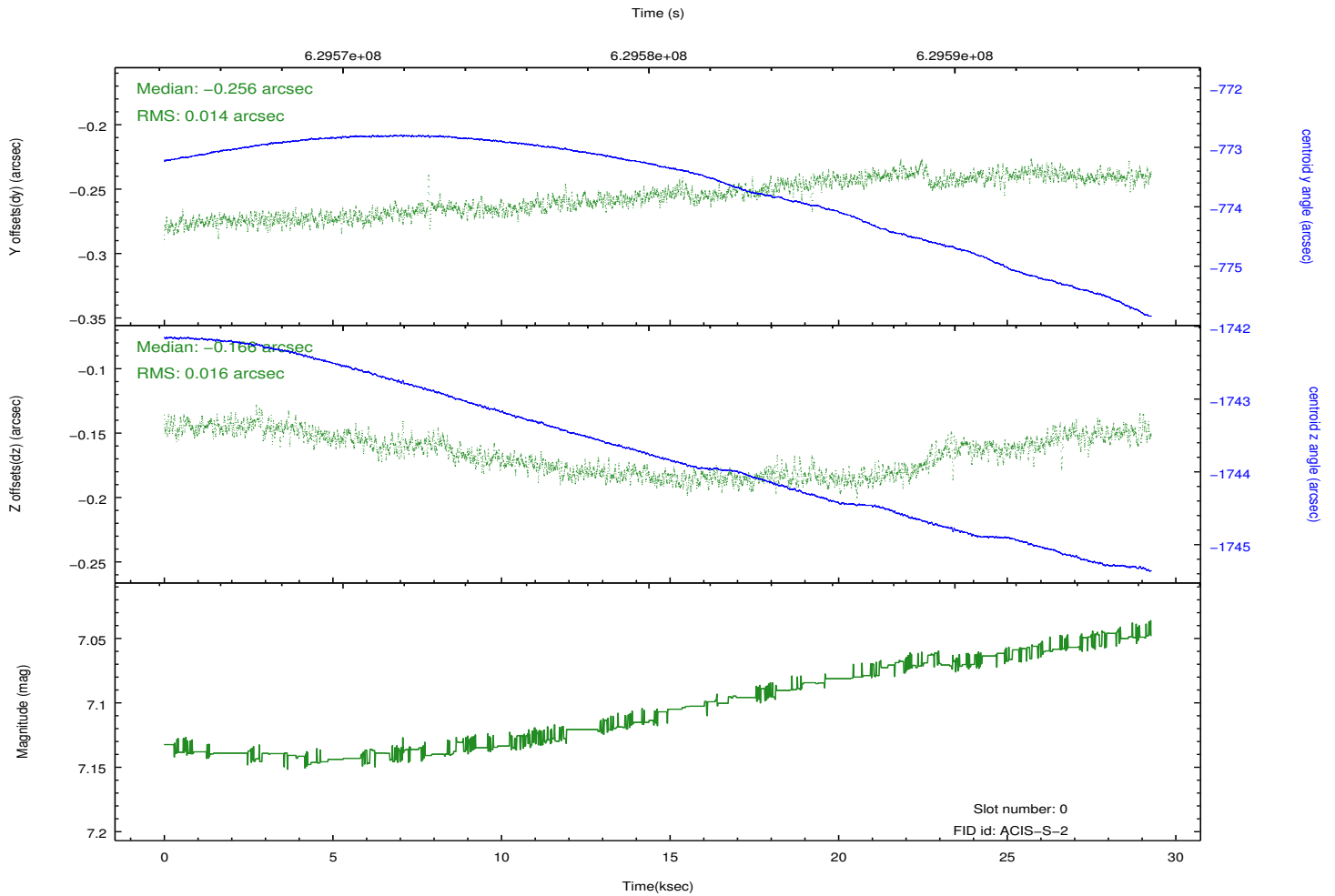
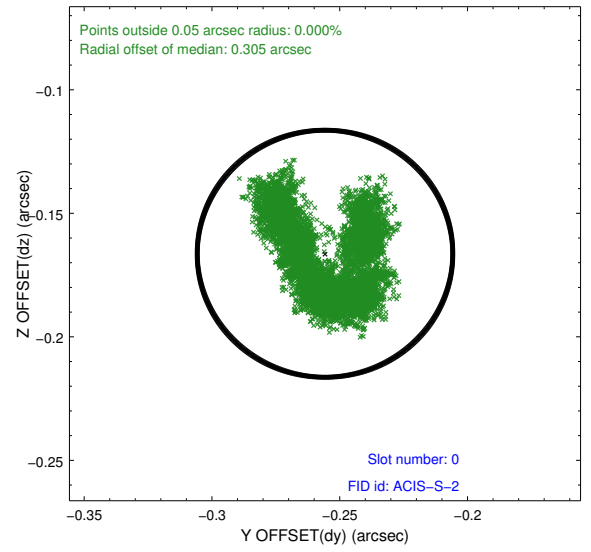
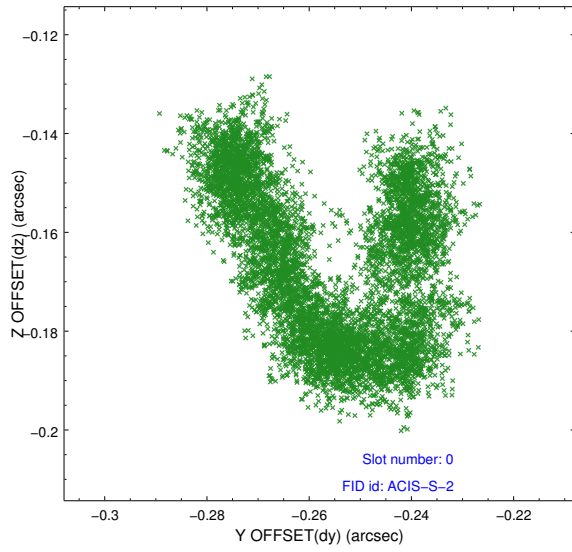


## 2.4.4 Slot 7

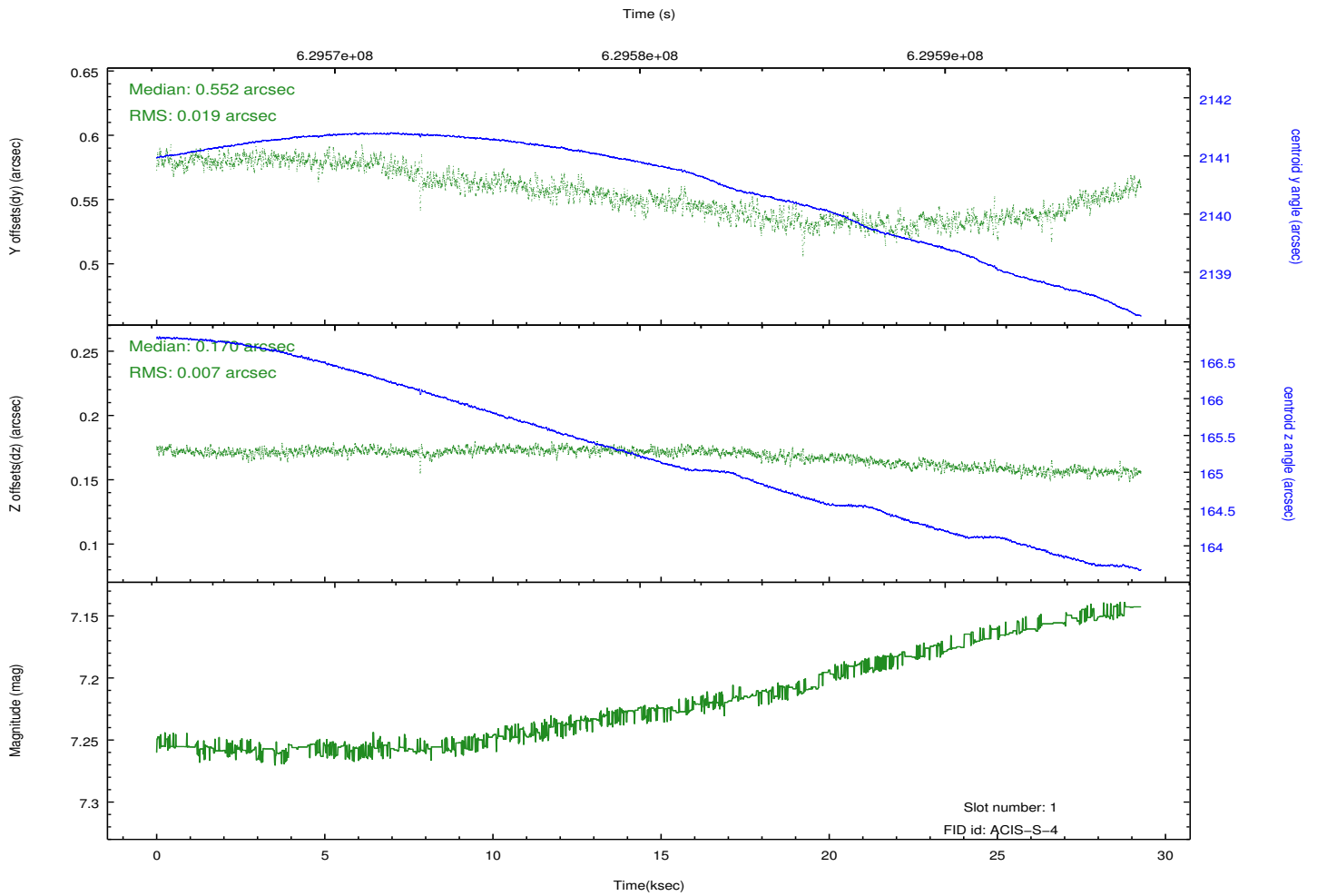
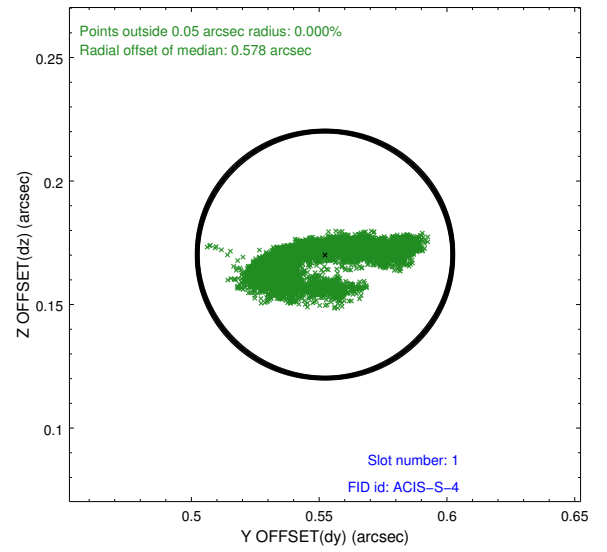
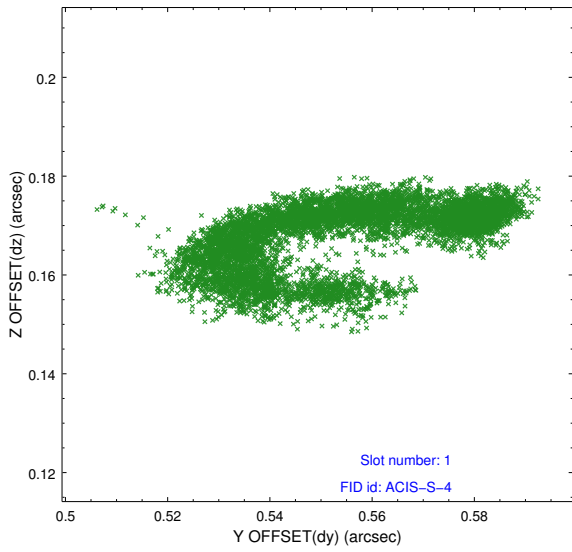


## 2.5 FID Slots

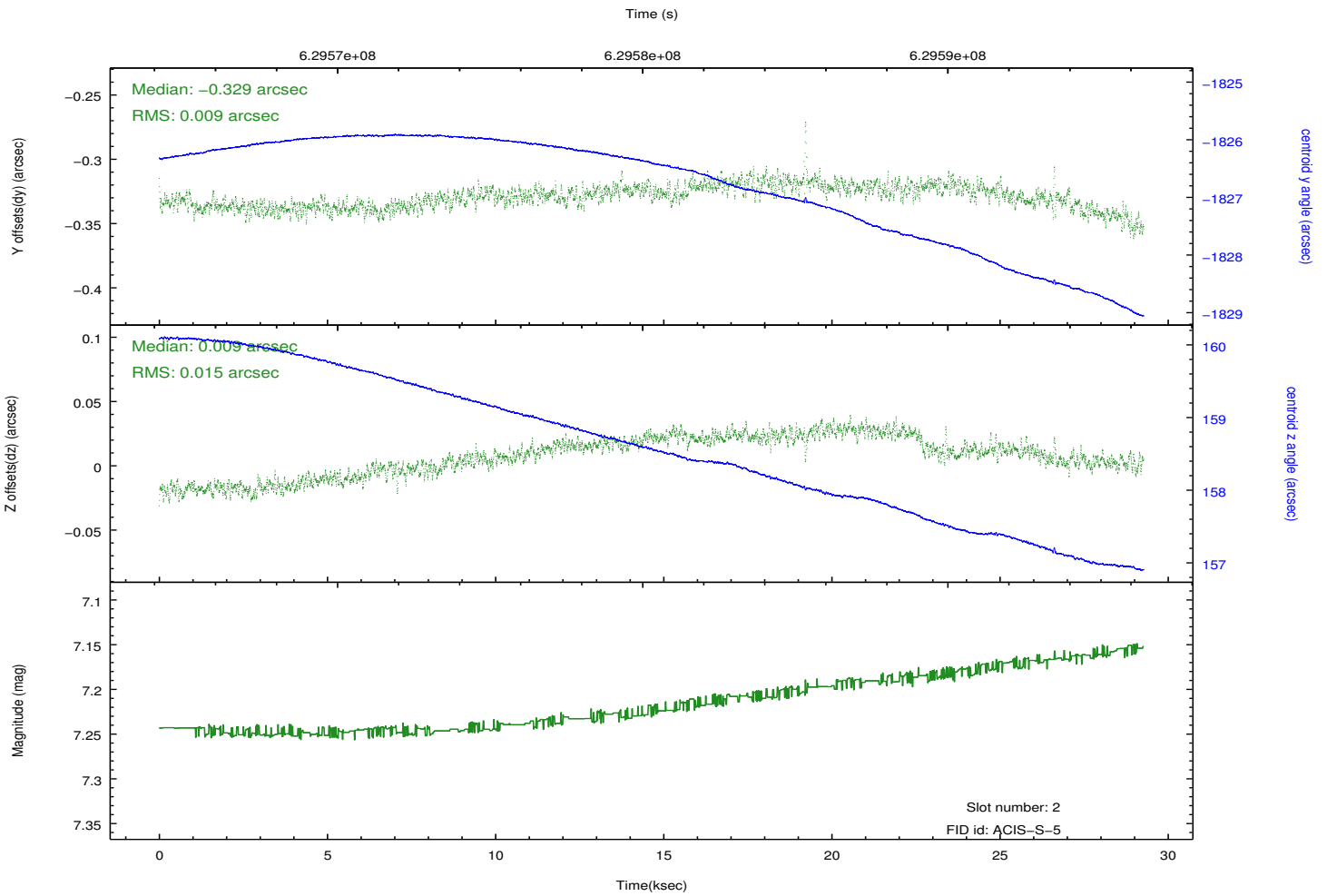
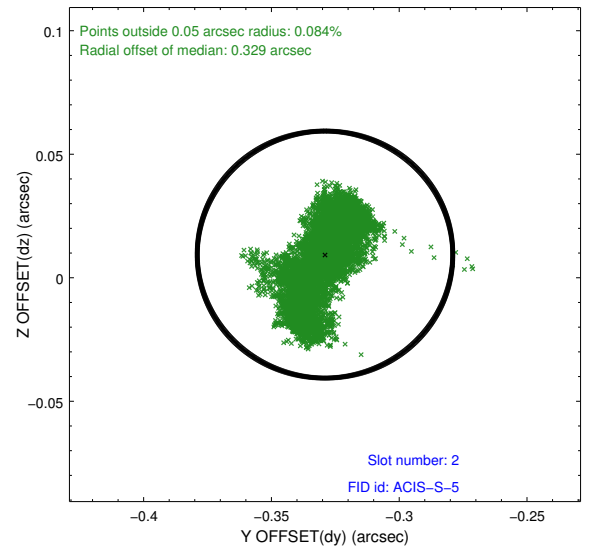
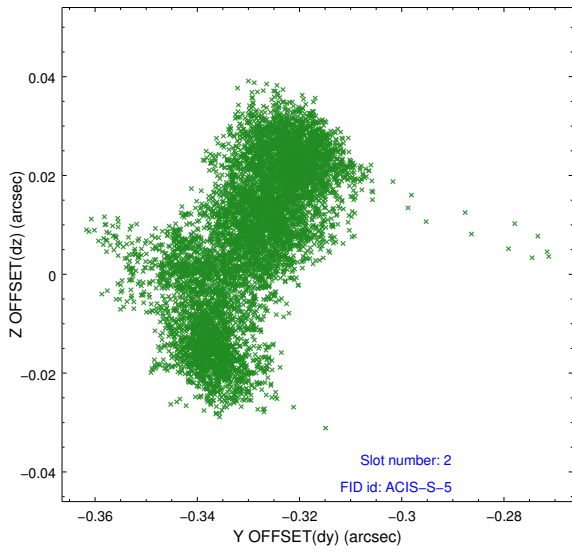
### 2.5.1 Slot 0



## 2.5.2 Slot 1

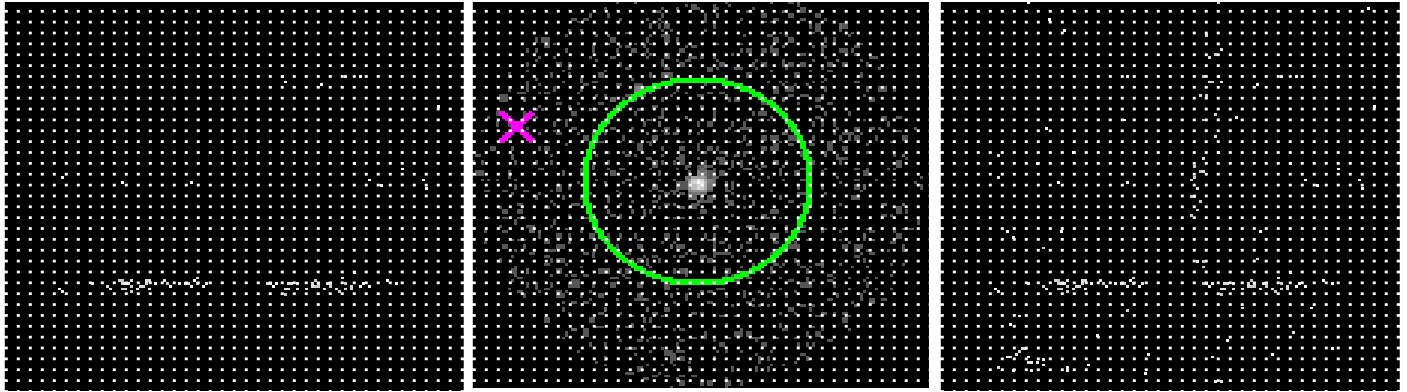


### 2.5.3 Slot 2



# 3 Gratings

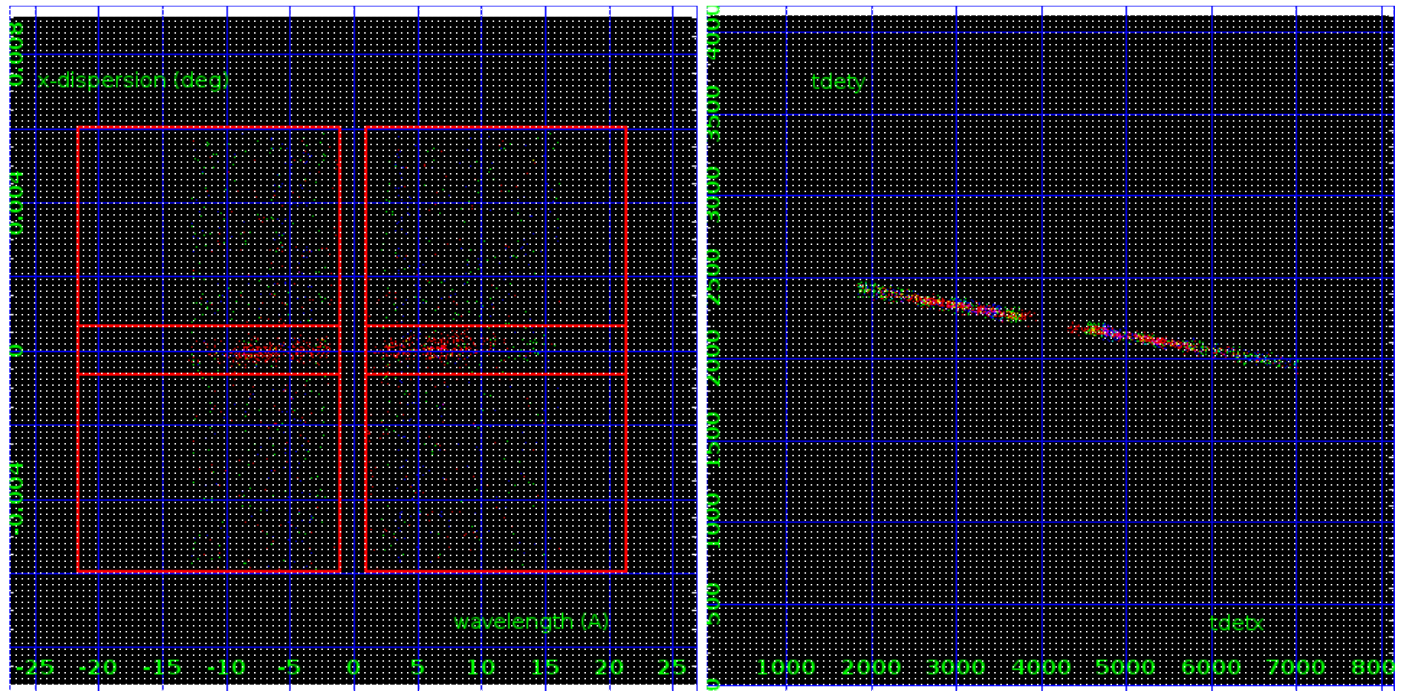
## 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

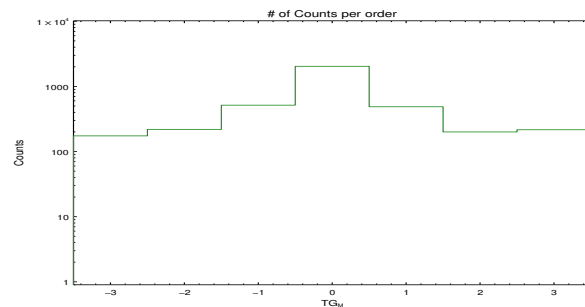
HEG Order Sort ALL

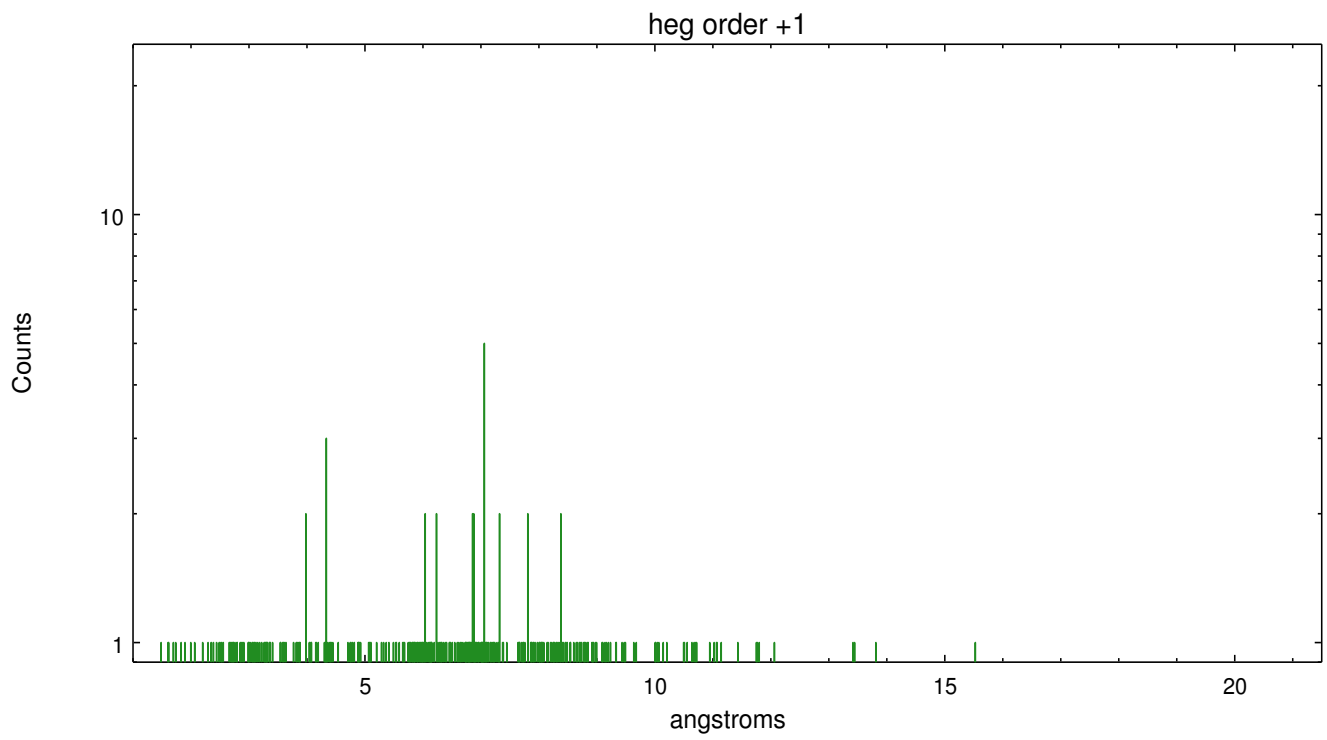
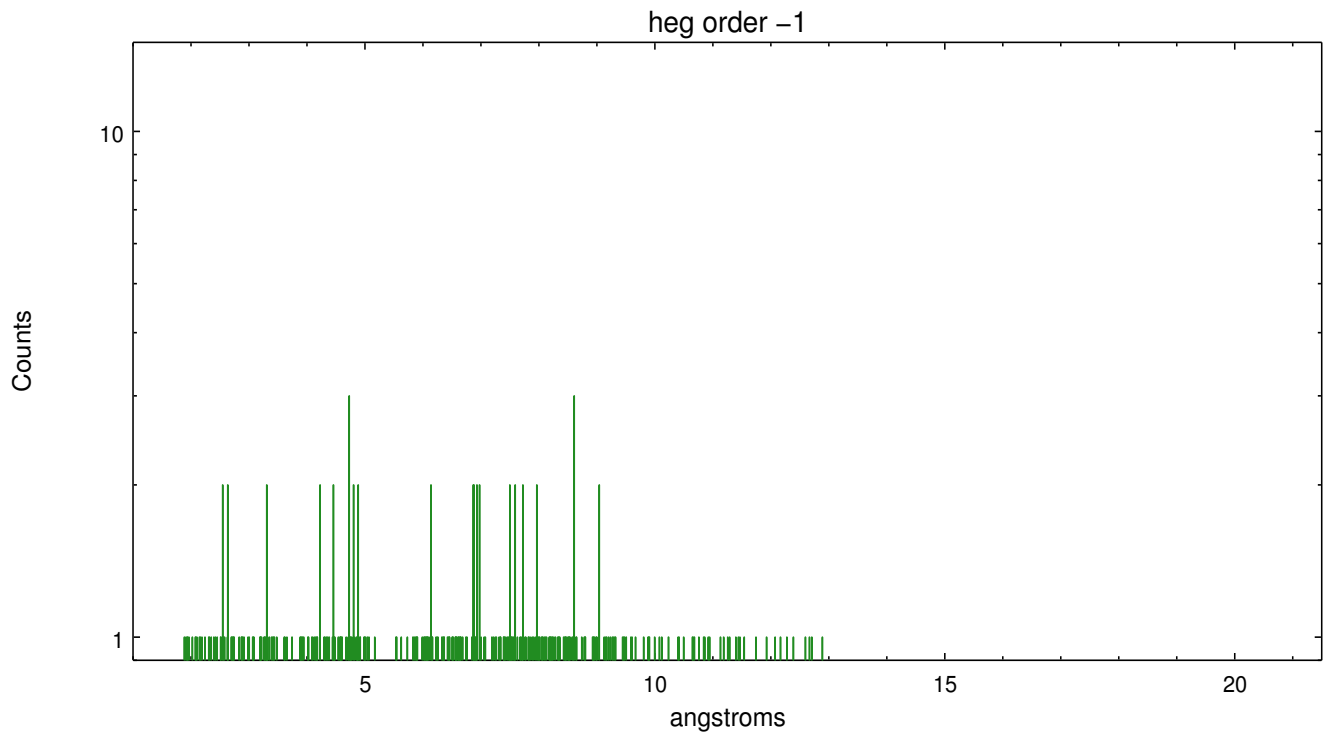


Spot Image HEG

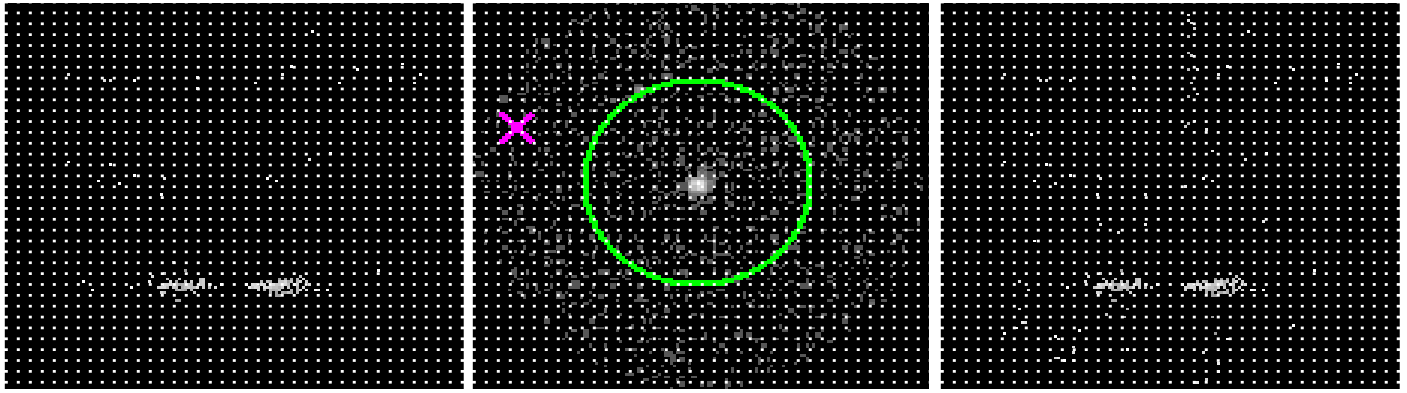
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	174	219	515	2035	487	200	216





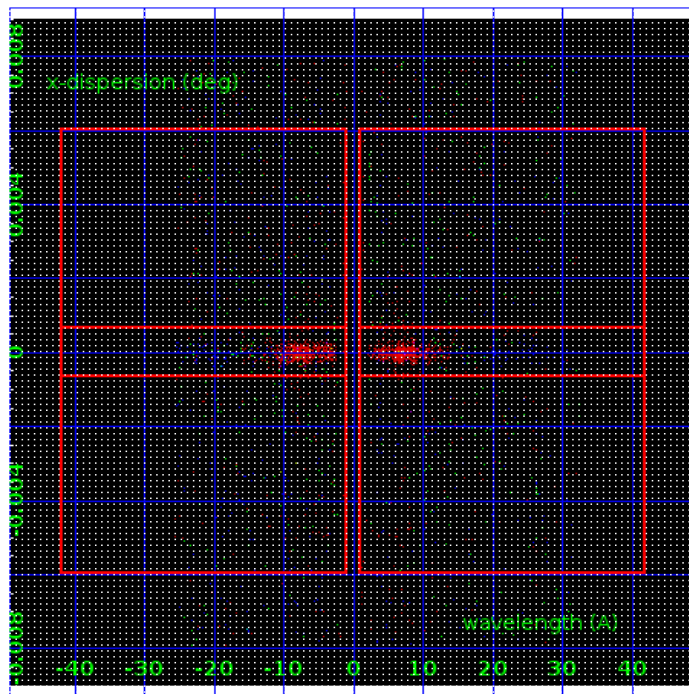
### 3.2 MEG Arm



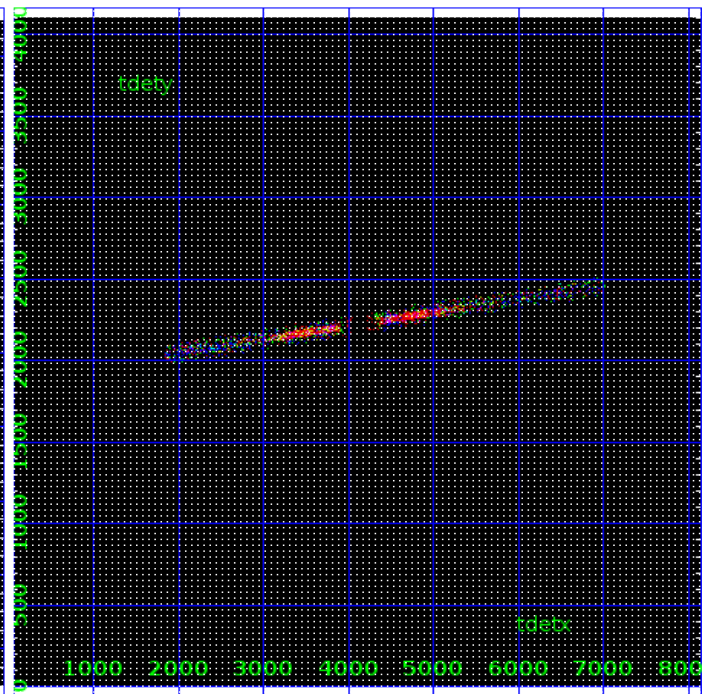
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

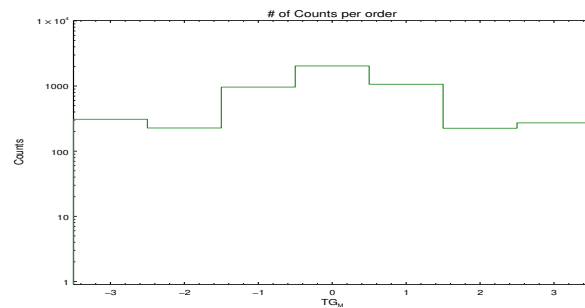


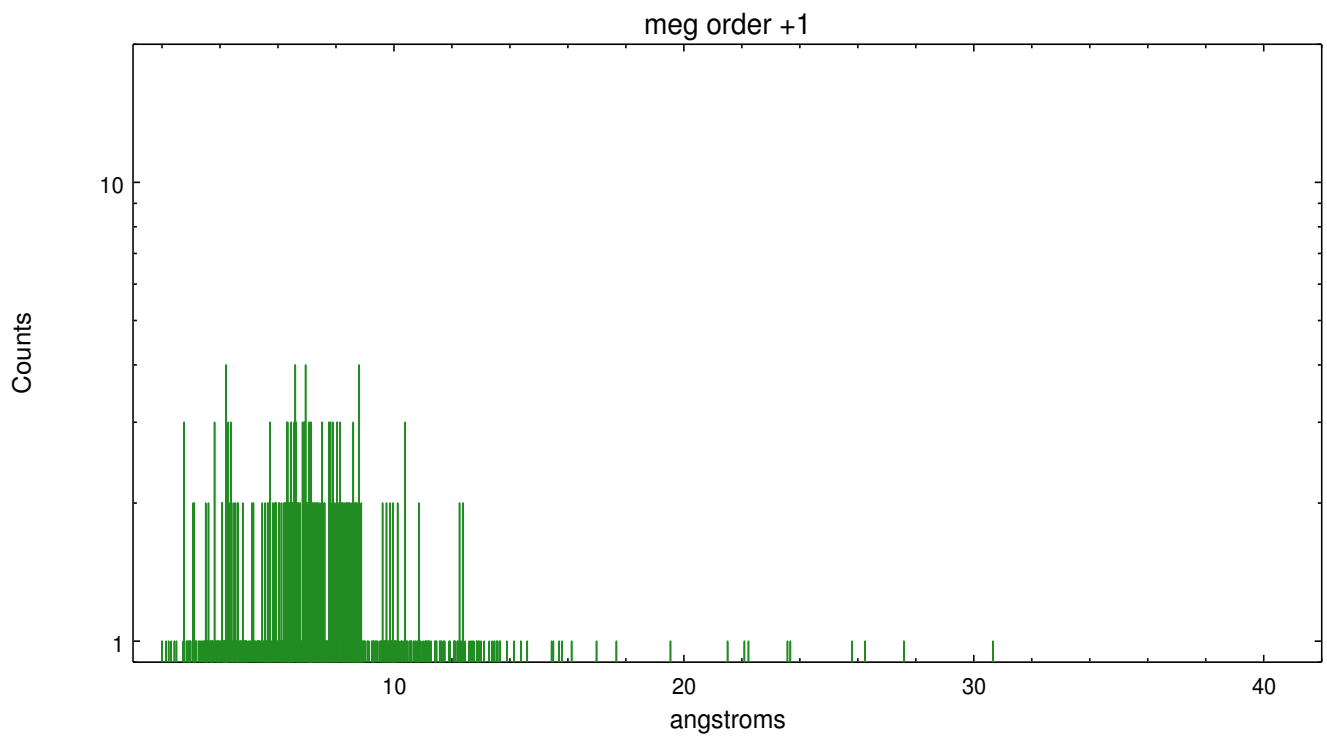
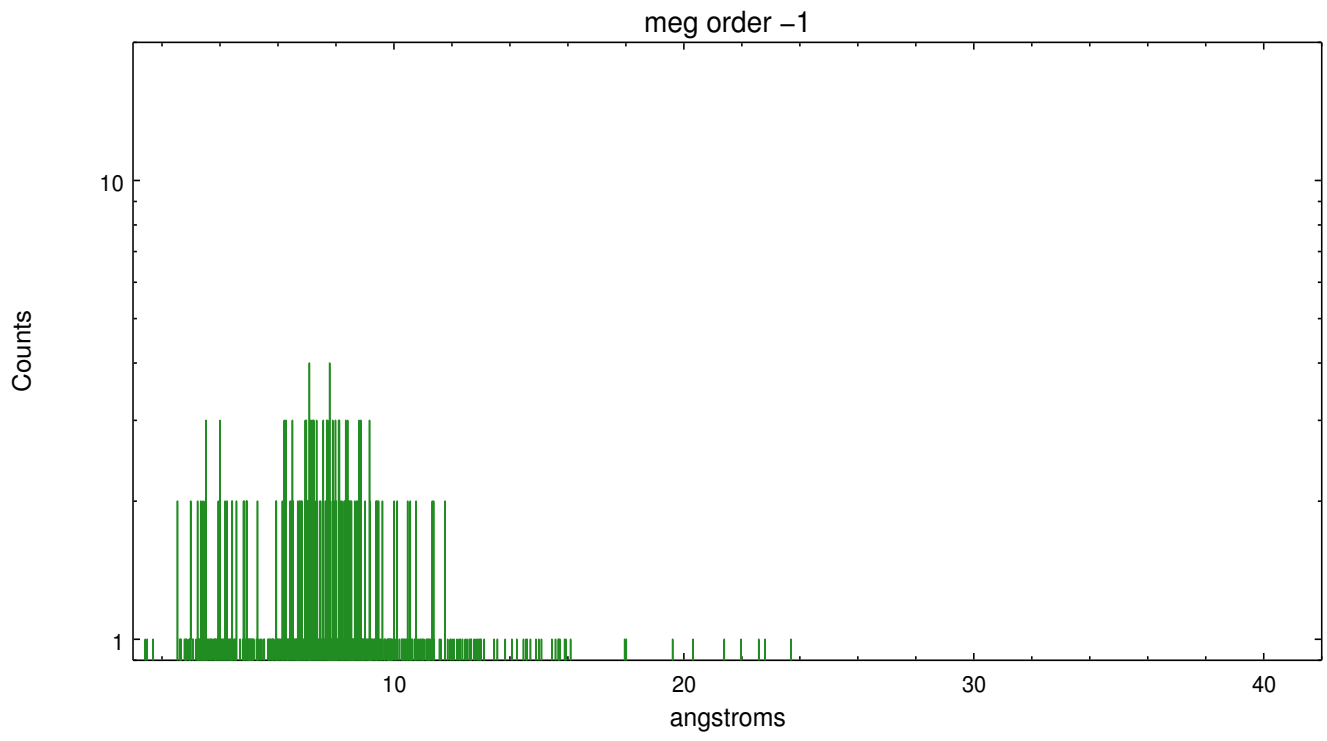
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	309	227	964	2035	1066	225	272





# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2017.12.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	29.04080022347

## A.2 Comments

Comments for Obi 1

Star in slot 7 has an RMS deviation  $> 0.200000$  arcsec

Fid in slot 1 radial offset  $> 0.550000$  arcsec

V&V Aspect review

Comments: The yellow-limit RMS deviation in slot 7 and the slot 1 fid radial offset of 0.578 arcsec are acceptable.