

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 5554 - L2 Version 4  
Chandra X-Ray Center

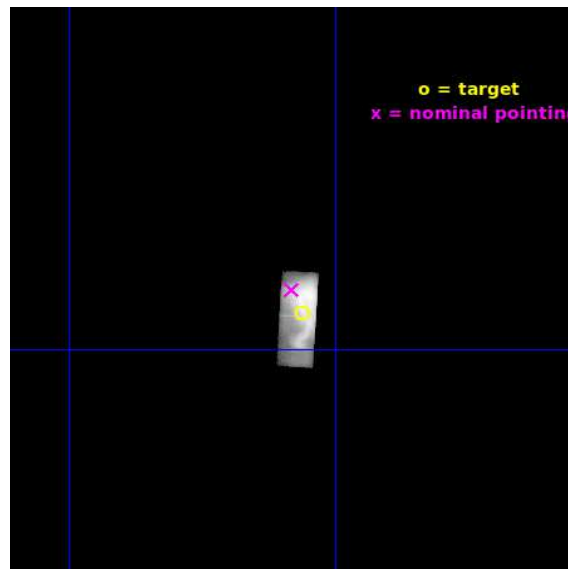
L2 Processing Date : Oct 9 2020

## Contents

<b>1</b>	<b>Front</b>	<b>2</b>
<b>2</b>	<b>OBI</b>	<b>3</b>
2.1	OBI . . . . .	3
2.1.1	Images . . . . .	3
2.1.2	Parameters . . . . .	4
2.1.3	Events . . . . .	4
2.2	Compared Parameters . . . . .	5
2.3	Aspect . . . . .	6
2.4	Star Slots . . . . .	9
2.4.1	Slot 3 . . . . .	9
2.4.2	Slot 4 . . . . .	10
2.4.3	Slot 5 . . . . .	11
2.4.4	Slot 6 . . . . .	12
2.4.5	Slot 7 . . . . .	13
2.5	FID Slots . . . . .	14
2.5.1	Slot 0 . . . . .	14
2.5.2	Slot 1 . . . . .	15
2.5.3	Slot 2 . . . . .	16
<b>3</b>	<b>Gratings</b>	<b>17</b>
3.1	HEG Arm . . . . .	17
3.2	MEG Arm . . . . .	19
<b>A</b>	<b>Summary</b>	<b>21</b>
A.1	Status . . . . .	21
A.2	Comments . . . . .	21

# 1 Front

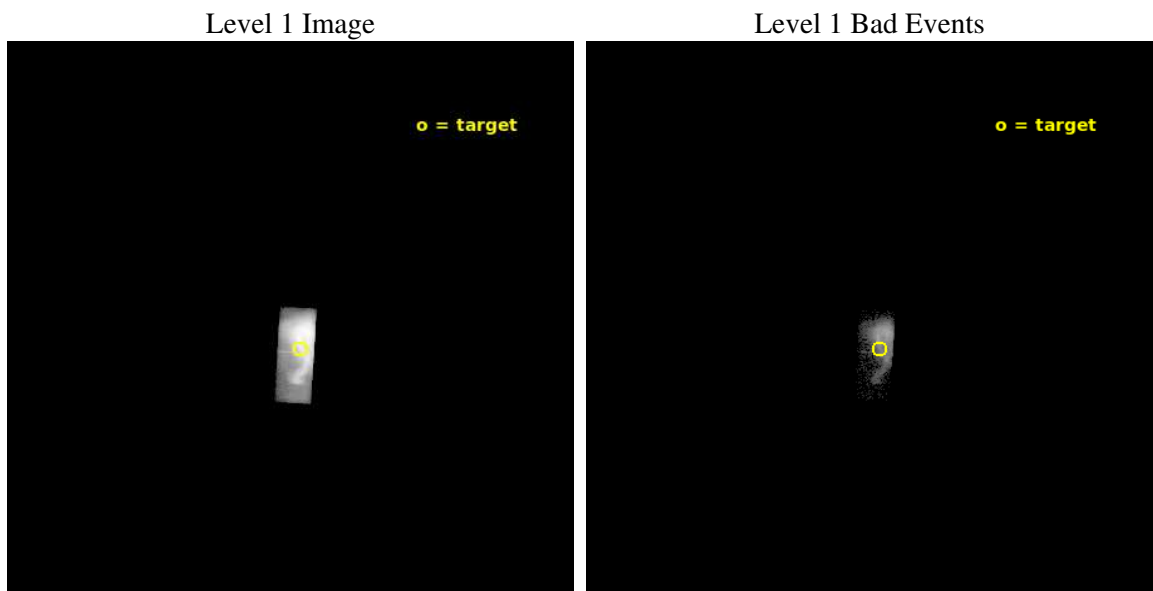
seq_num	500543	Sequence number
obs_id	5554	Observation id
title	Monitoring of the Relativistic Magnetohydrodynamic Shock in the Crab Nebula	Proposal title
observer	Dr Koji Mori	Principal investigator
object	Crab Nebula	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.640417	Observer's specified target RA [deg]
dec_targ	22.016472	Observer's specified target Dec [deg]
ra_nom	83.645475186749	Nominal RA [deg]
dec_nom	22.026945050121	Nominal Dec [deg]
roll_nom	93.280068960638	Nominal Roll [deg]
revision	4	Processing version of data
ontime	10181.400404572	Sum of GTIs [s]
livetime	8956.1931778435	Livetime [s]
ontime7	10181.400404572	Sum of GTIs [s]
l2events	1118217	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	10000.000000	[s] Scheduled observation exposure time
ascdsver	10.9.1	Processing system revision	ontime	10181.400404572	Sum of GTIs [s]
caldbver	4.9.2	&#160	ontime7	10181.400404572	Sum of GTIs [s]
date	2020-10-09T23:09:02	Date and time of file creation	l1events	1170185	Number of level 1 events
revision	4	Processing version of data	tgmethod	FINDZO	Method used to create src1a file
			zo_pos	(4146.46, 4027.26)	src1a sky pixel position
			zo_pos_tgd	(4127.26, 4042.96)	src1a sky pixel position via tgdetect

### 2.1.3 Events

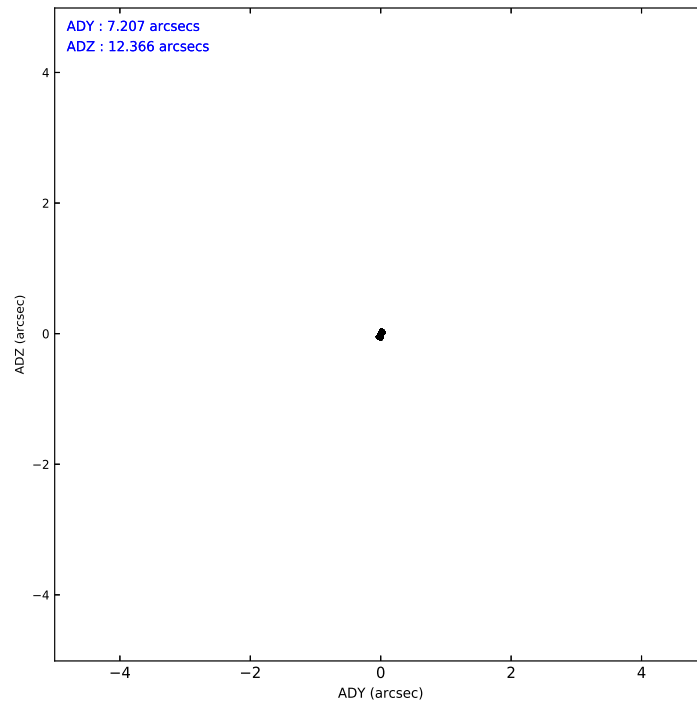
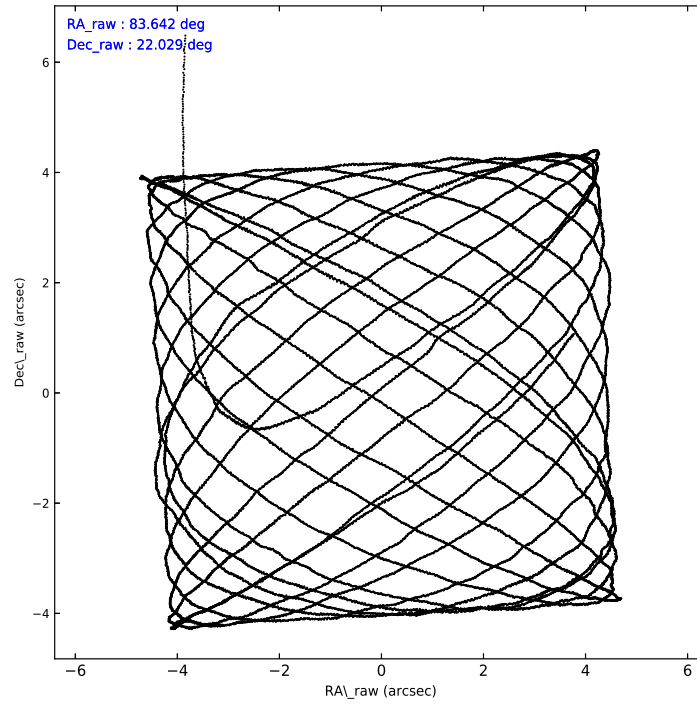
	<b>ccd 7</b>
level 1 events	1170185
rejected events	31584
rejected %	2%

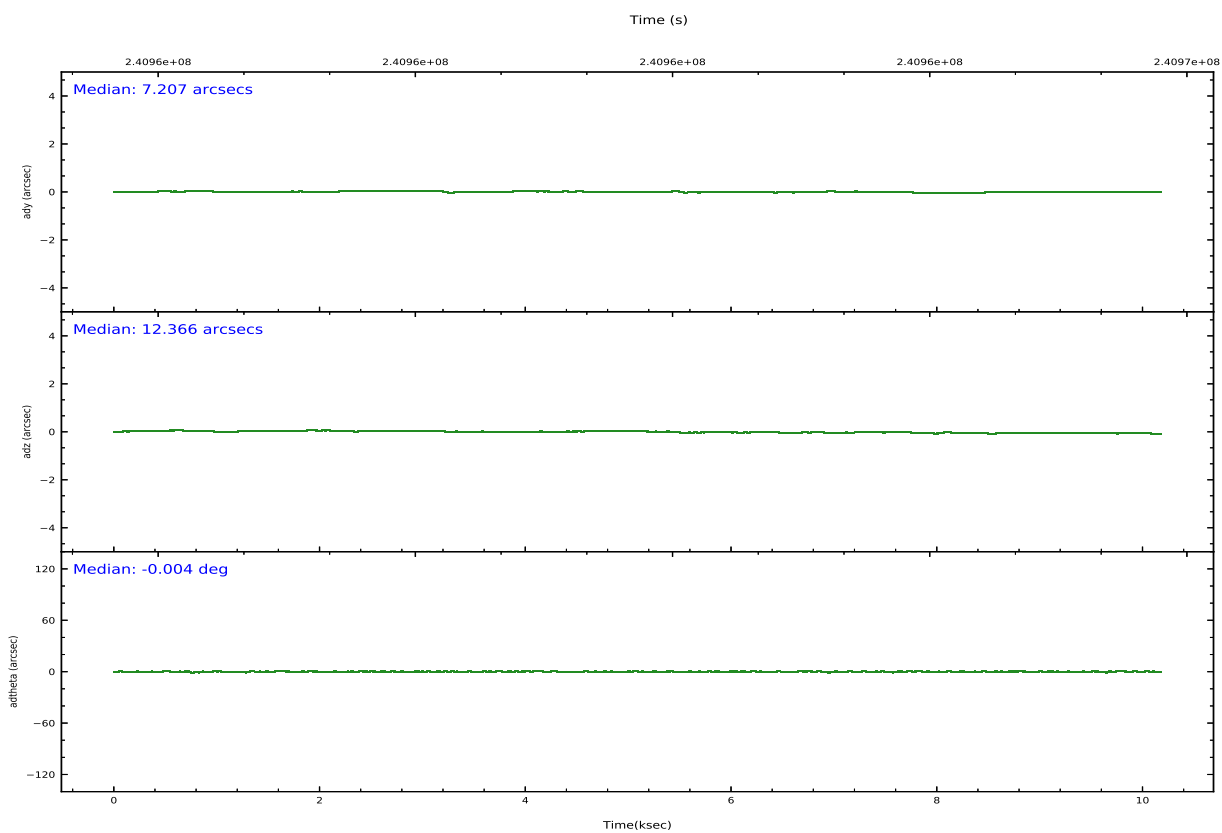
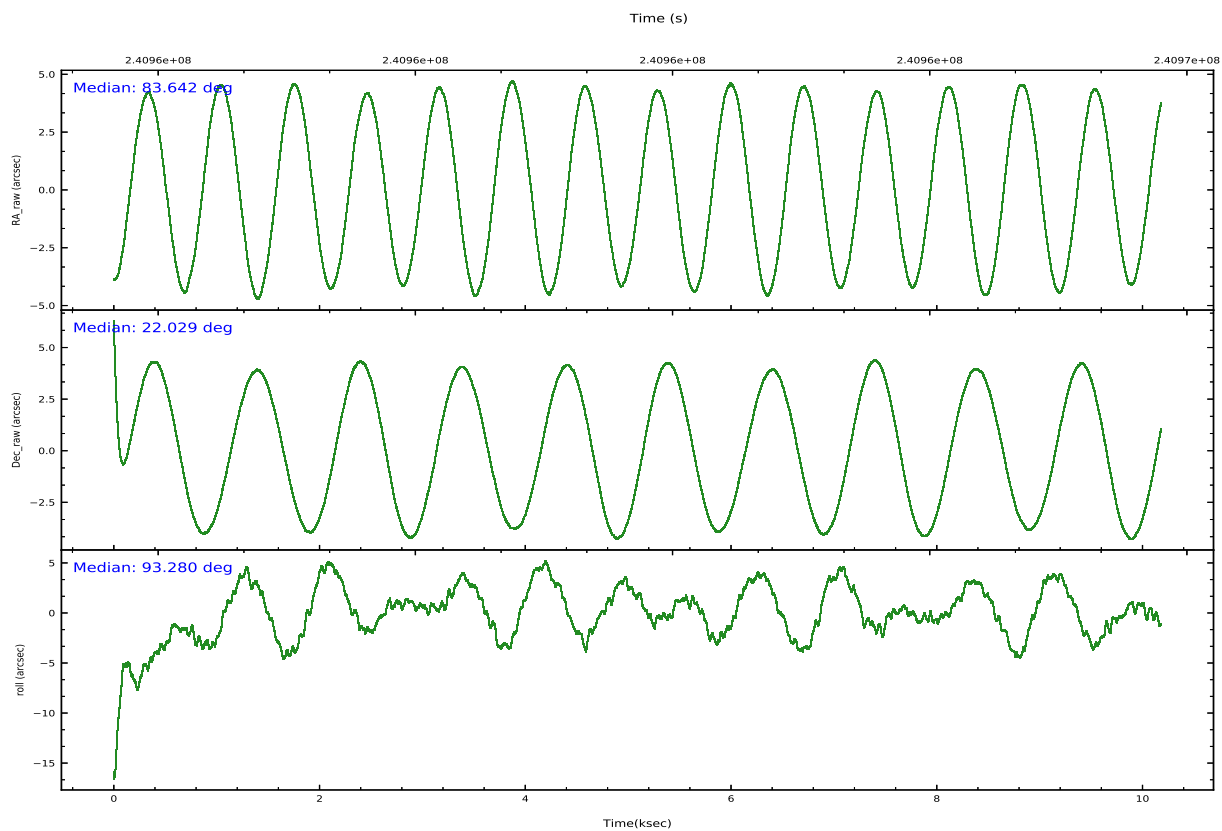
	<b>ccd 7</b>
grade 0 events	224876
	19%
grade 1 events	2685
	0%
grade 2 events	288467
	24%
grade 3 events	128651
	10%
grade 4 events	124554
	10%
grade 5 events	13284
	1%
grade 6 events	373117
	31%
grade 7 events	14551
	1%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
Detector	ACIS-7	ACIS-7	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	83.657933	83.645475186749	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	22.006341	22.026945050121	Subarray start row	127	127
[deg] Pointing Roll	93.116642	93.280068960638	Subarray row count	101	101
[s] Window start time (MET)	240451264.184000	240451264.184000	Alternating exposures requested	N	N
[s] Window stop time (MET)	241056064.184000	241056064.184000	[s] Primary exposure time	0.000000	0.3
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-182.132523	-182.1370004450064			
[mm] SIM translation stage offset	-8	-7.995522138001405			
[s] Observation start time (MET)	240957249.184000	240956479.53565			
Observation start date	2005-08-20T20:33:05	2005-08-20T20:21:19			
[s] Observation end time (MET)	240967249.184000	240968267.54869			
Observation end date	2005-08-20T23:19:45	2005-08-20T23:37:47			
Read mode	TIMED	TIMED			

## 2.3 Aspect



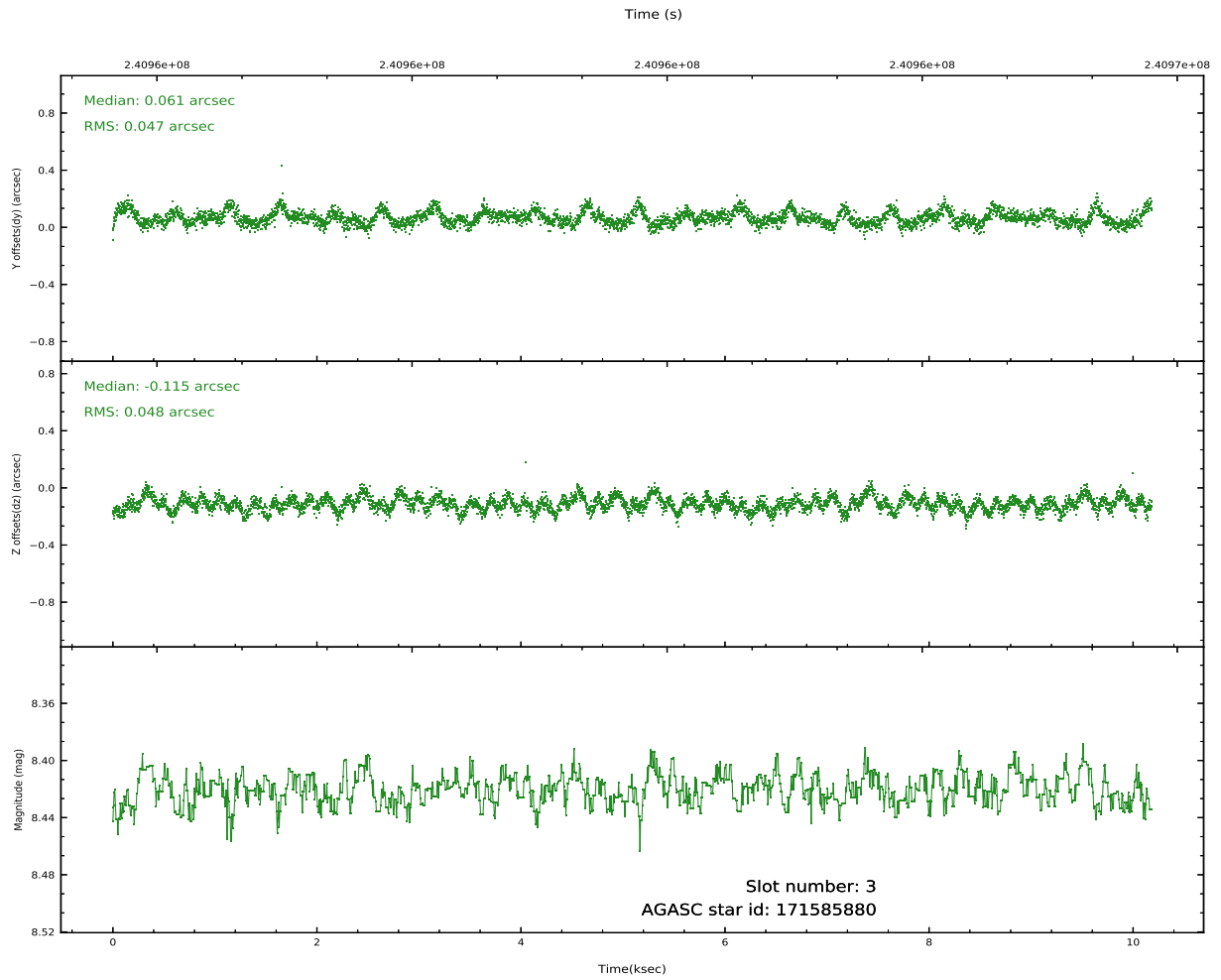
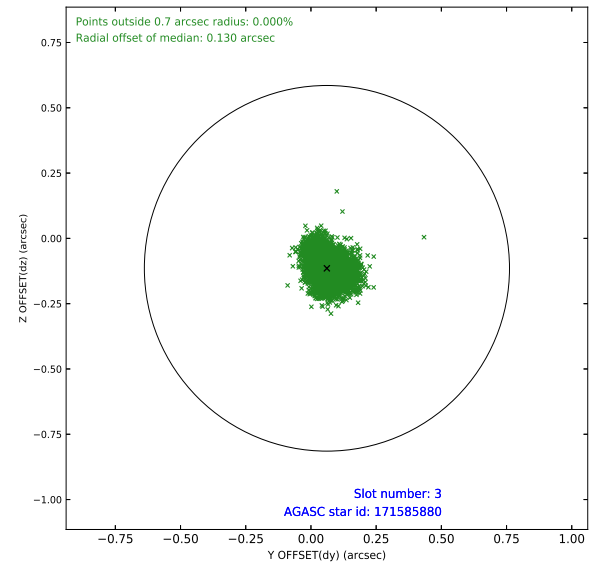
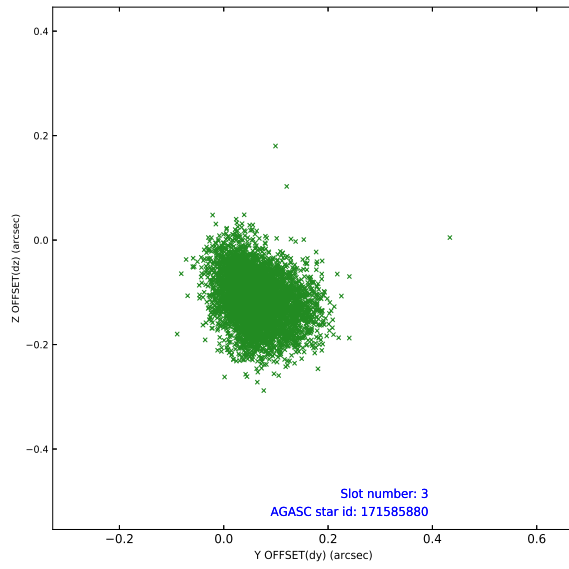


Slot Statistics

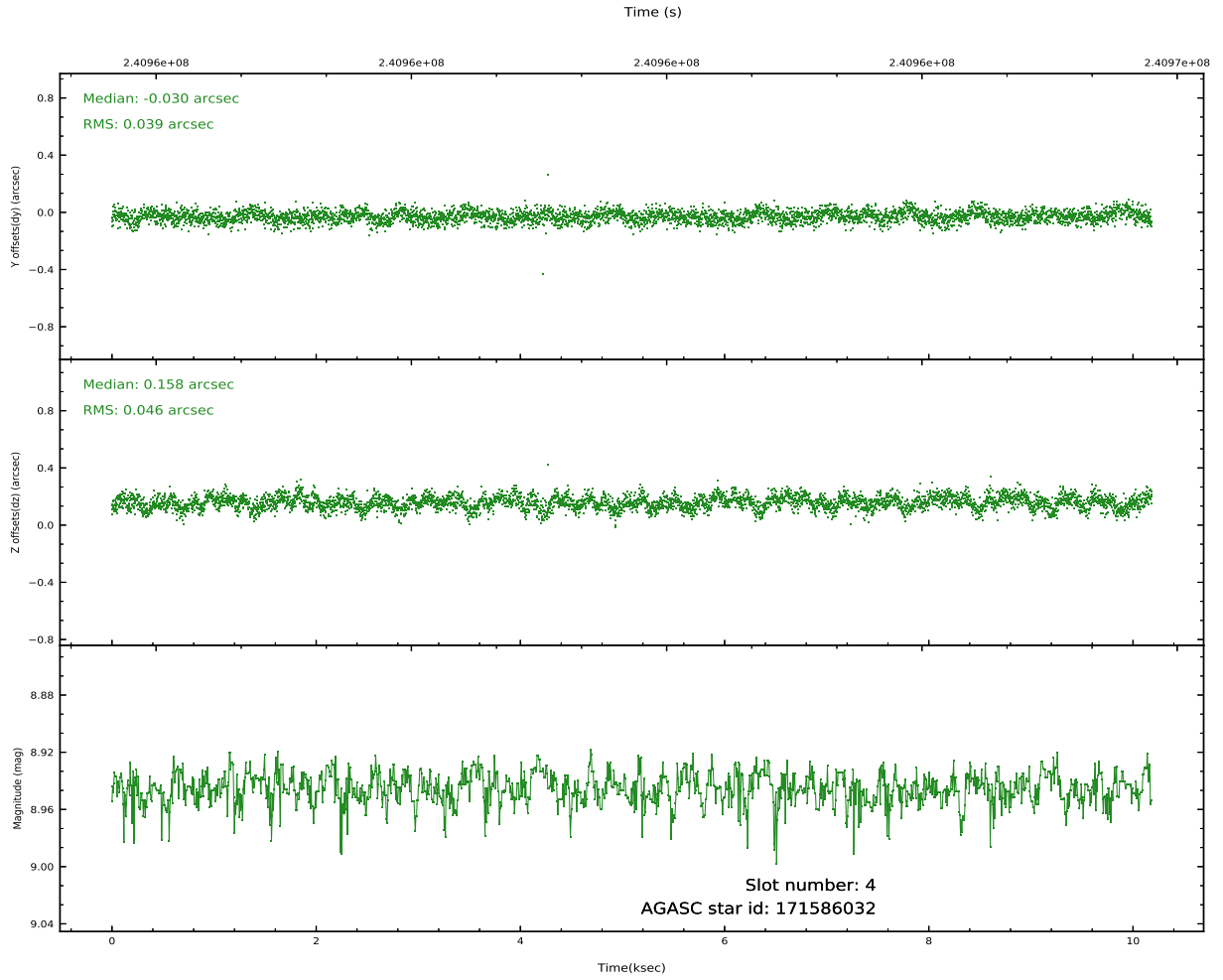
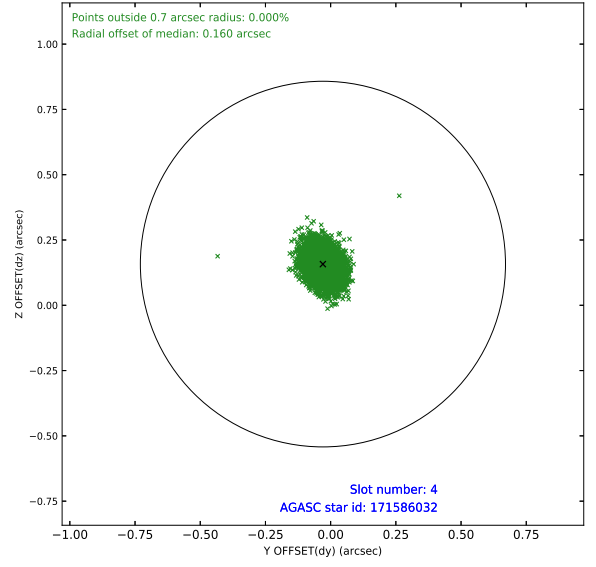
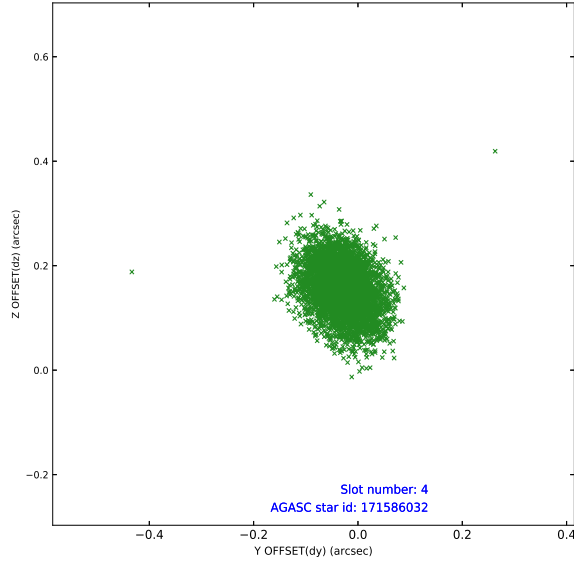
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.08	2484	1.000	-0.084	-0.213	0.006	0.010	0.000000	0.000000	-759.46	-1898
1	FID		ACIS-S-4	7.18	2484	1.000	0.166	0.097	0.006	0.010	0.000000	0.000000	2153.82	9
2	FID		ACIS-S-5	7.22	2484	1.000	-0.114	0.124	0.007	0.011	0.000000	0.000000	-1811.68	3
3	GUIDE	used	171585880	8.42	4967	1.000	0.061	-0.115	0.072	0.117	83.676260	22.176319	608.15	-94
4	GUIDE	used	171586032	8.95	4966	1.000	-0.030	0.158	0.063	0.104	83.950197	22.083225	224.83	-988
5	GUIDE	used	171597832	9.16	4967	1.000	0.160	-0.202	0.087	0.143	83.183230	21.366702	-2209.87	1713
6	GUIDE	used	171721904	9.20	4961	1.000	-0.117	0.088	0.088	0.138	84.272676	22.116922	290.18	-2068
7	GUIDE	used	243941560	8.32	4962	1.000	-0.081	0.069	0.052	0.086	83.733264	22.568598	2007.94	-360

## 2.4 Star Slots

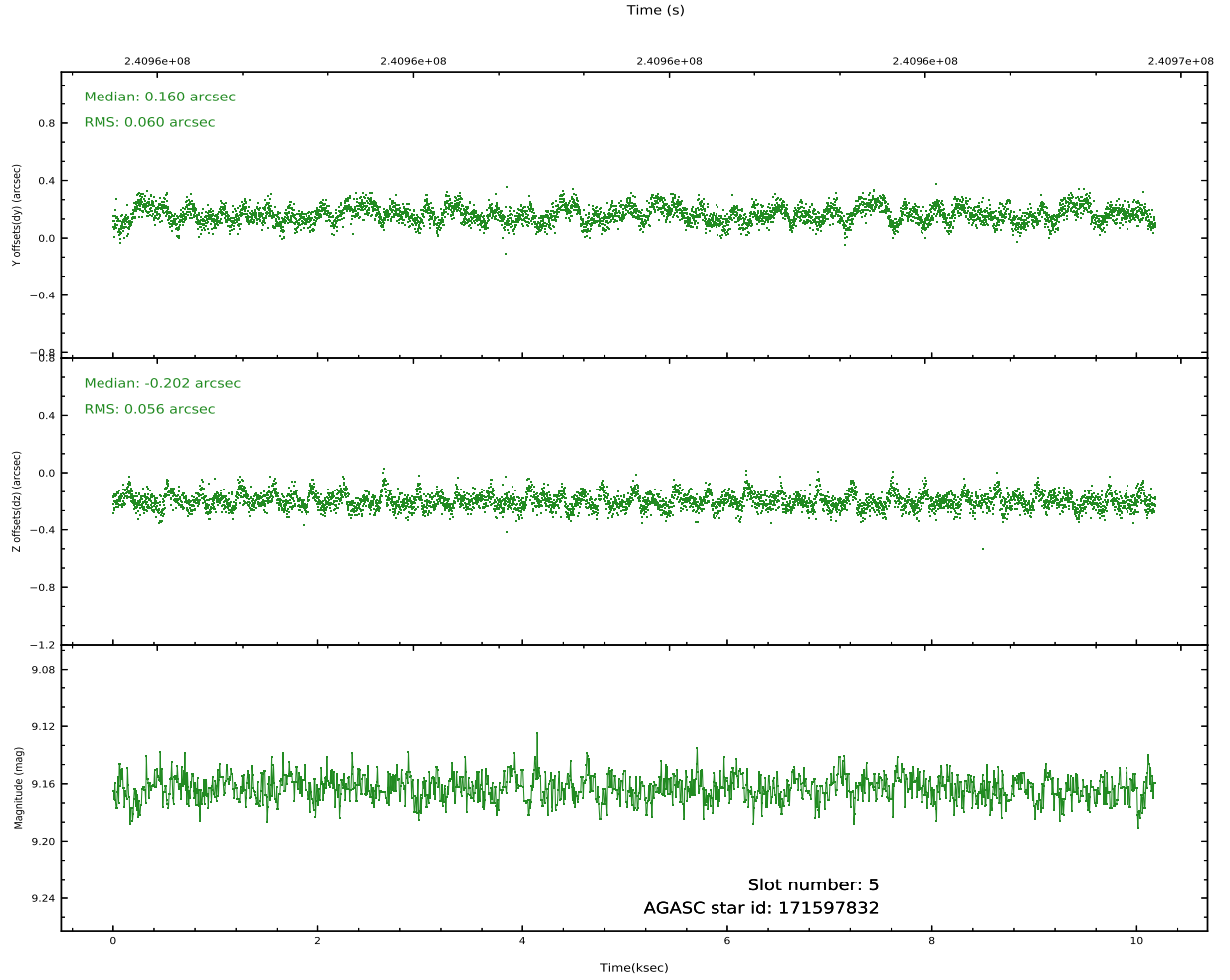
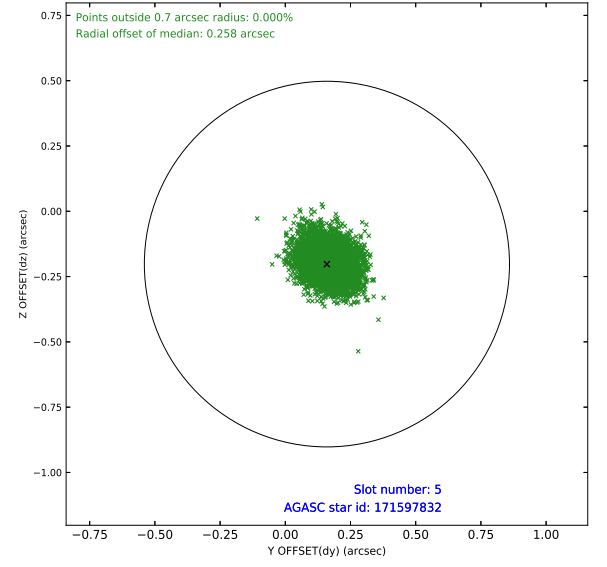
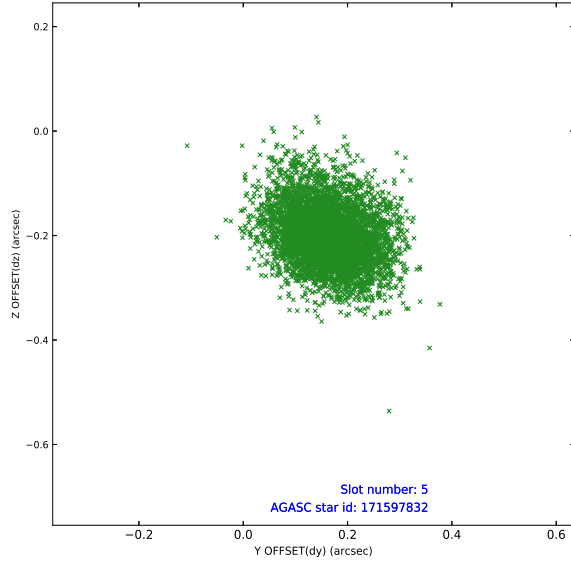
### 2.4.1 Slot 3



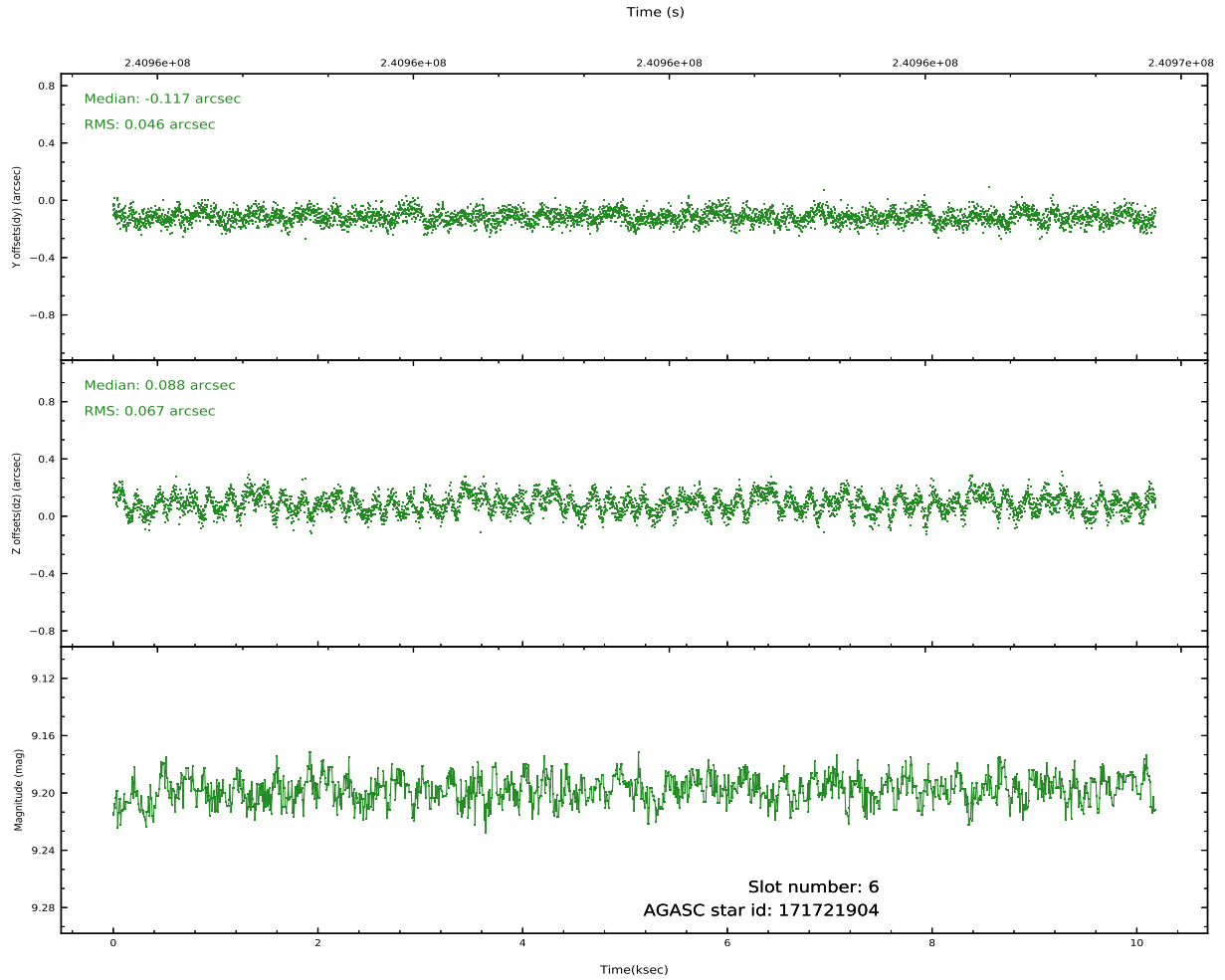
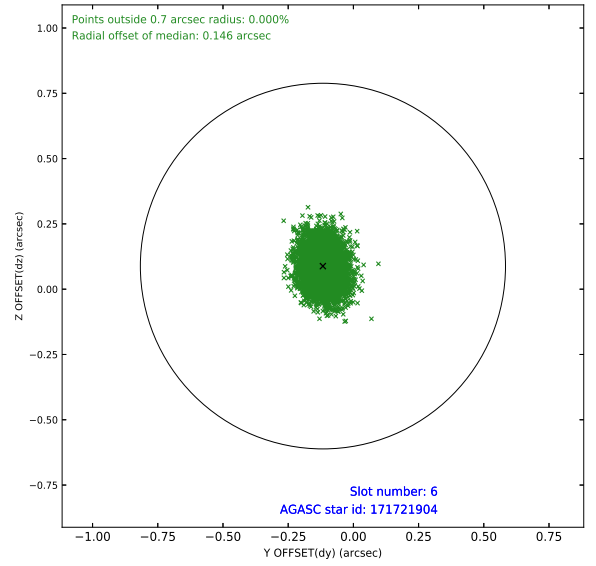
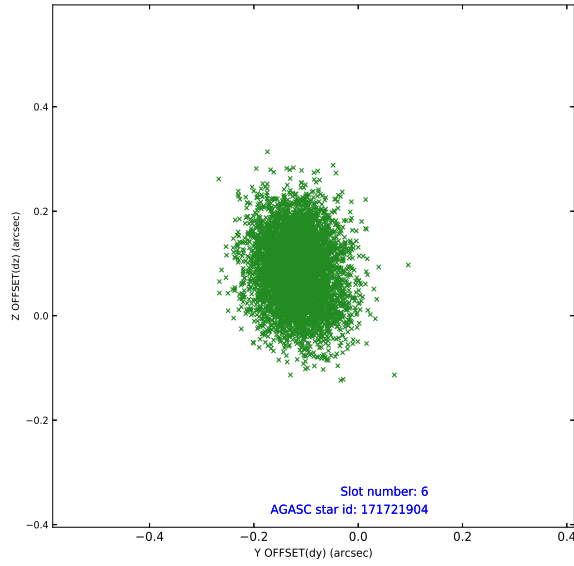
## 2.4.2 Slot 4



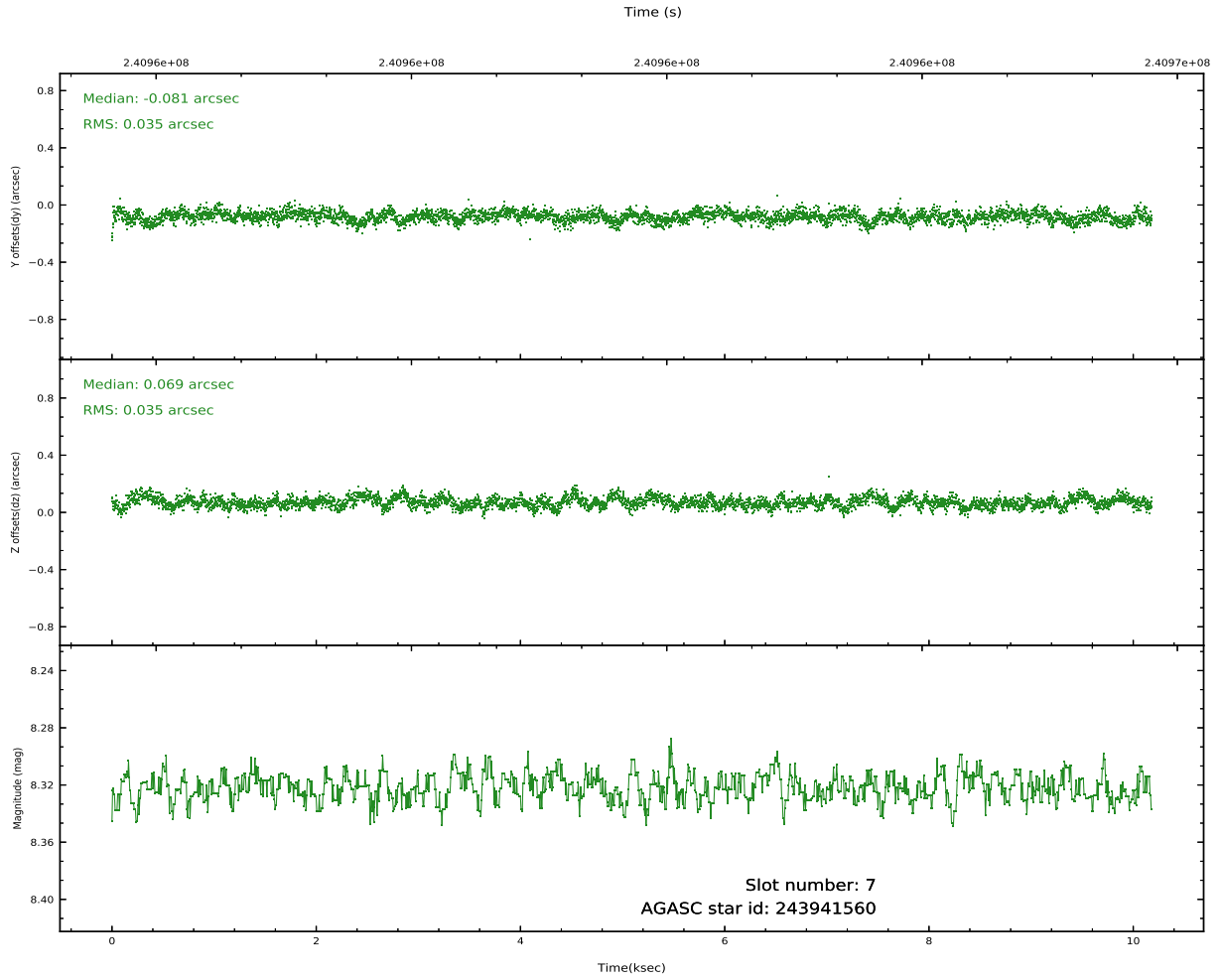
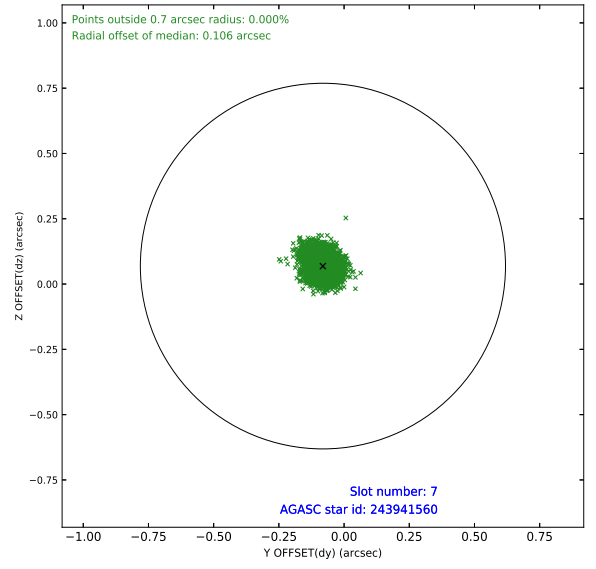
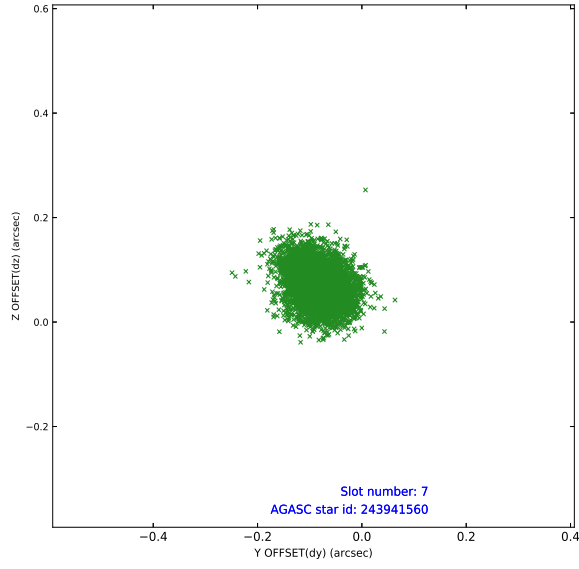
### 2.4.3 Slot 5



## 2.4.4 Slot 6

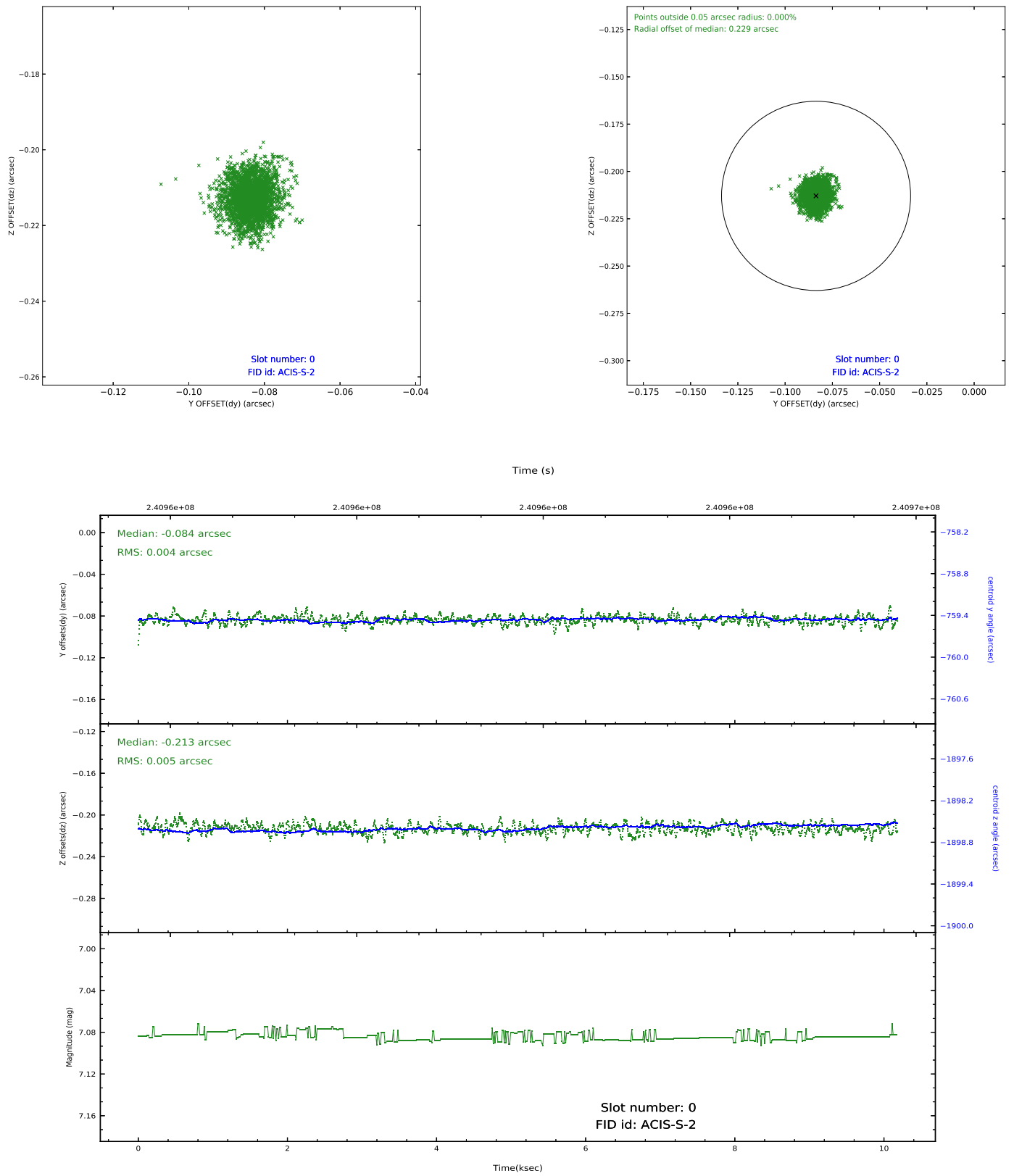


## 2.4.5 Slot 7

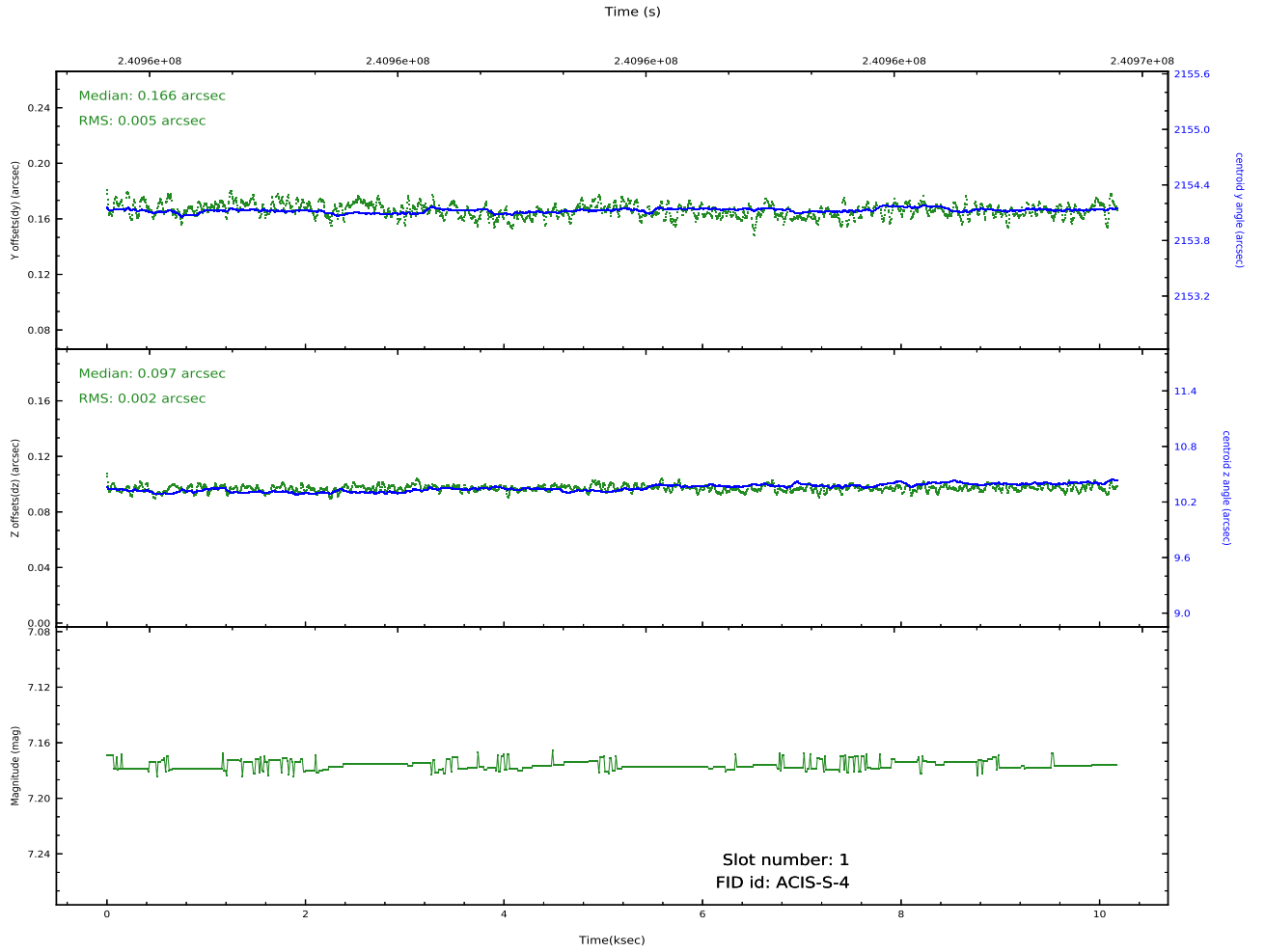
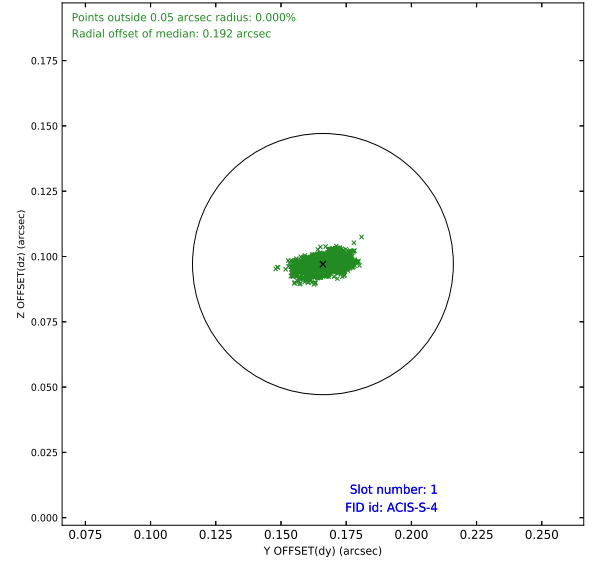
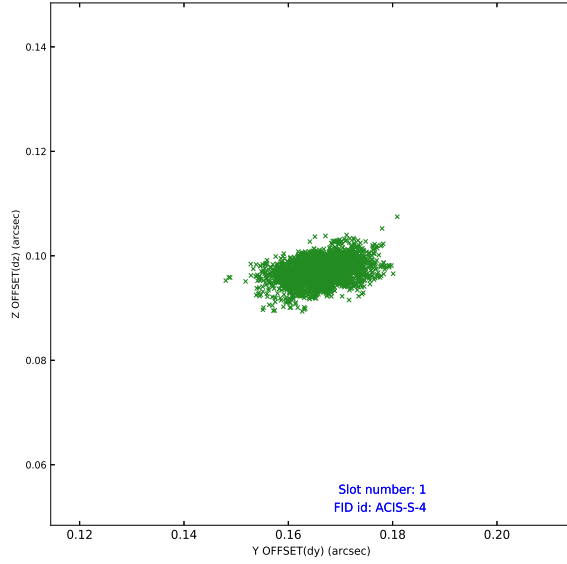


## 2.5 FID Slots

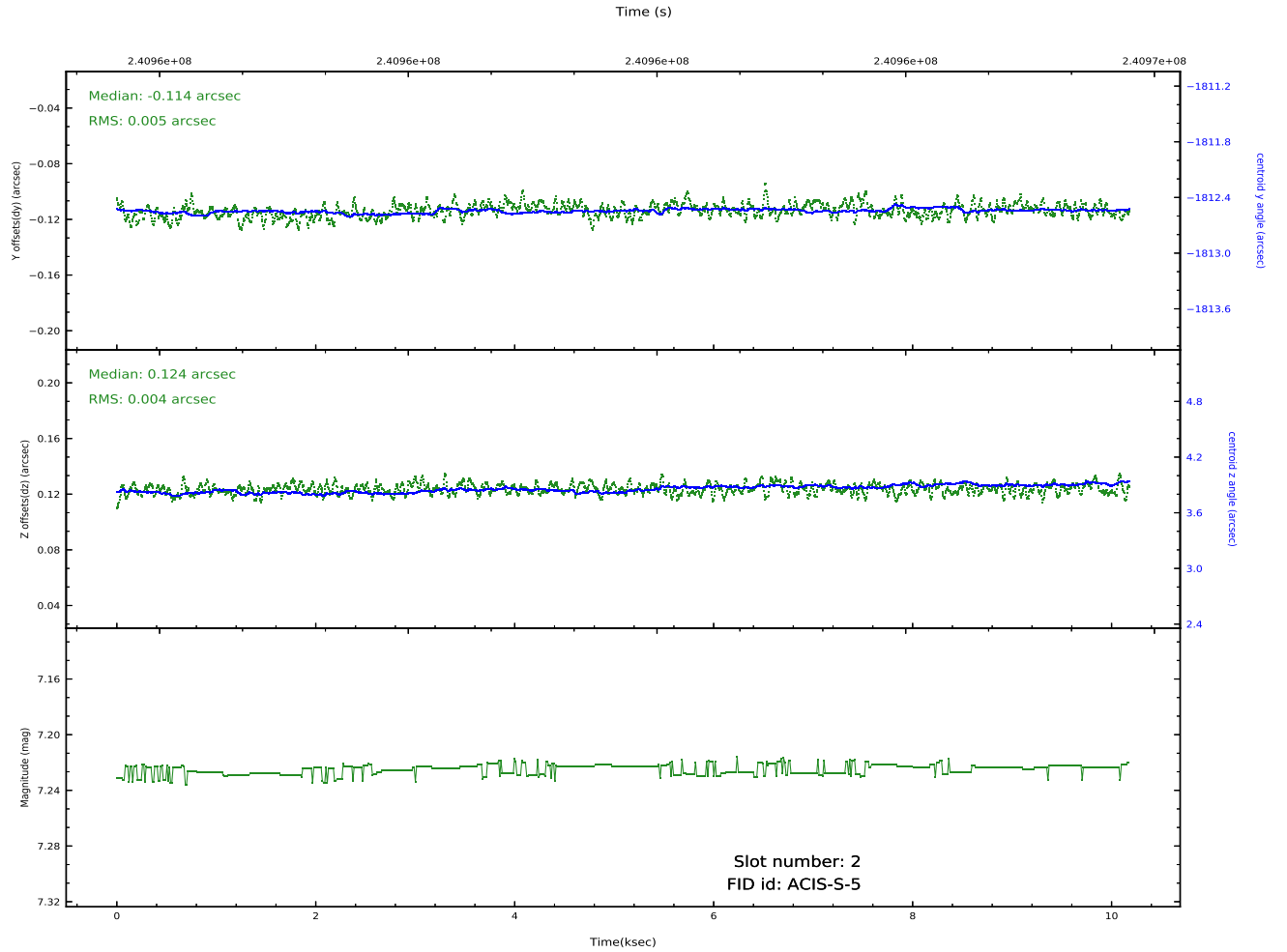
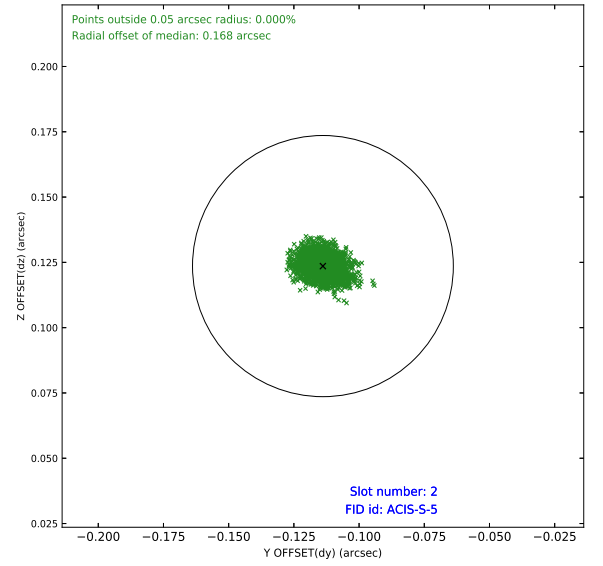
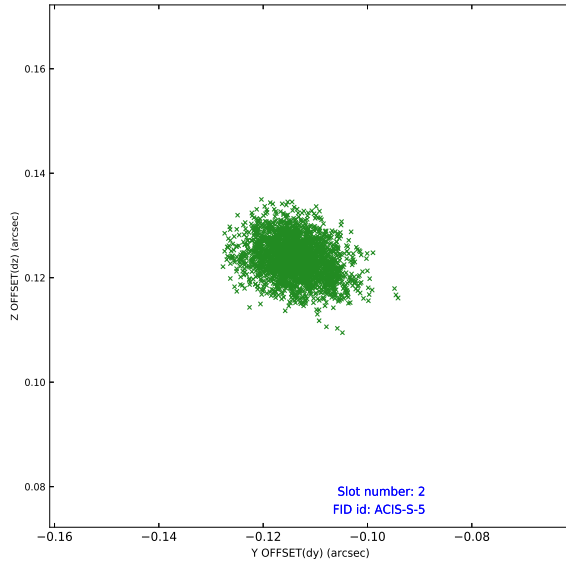
### 2.5.1 Slot 0



## 2.5.2 Slot 1

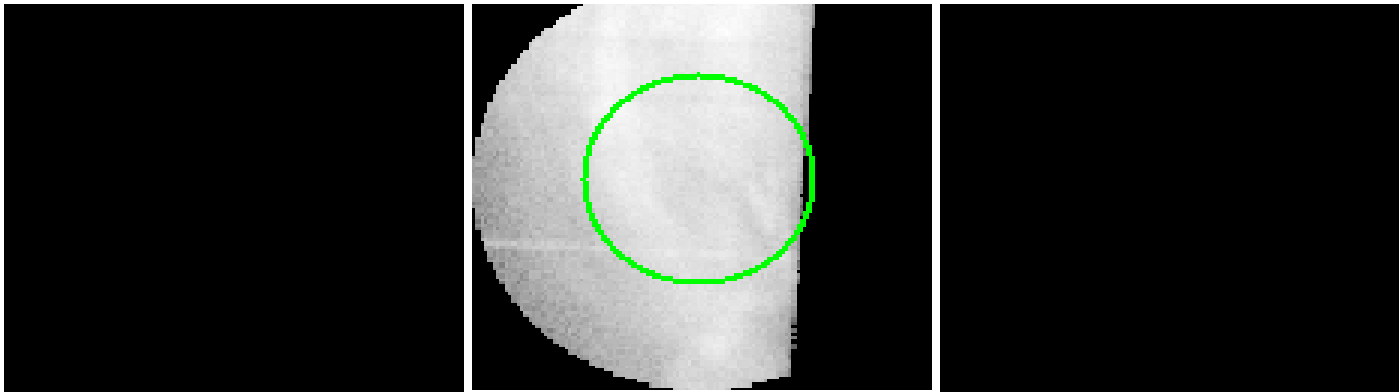


## 2.5.3 Slot 2



# 3 Gratings

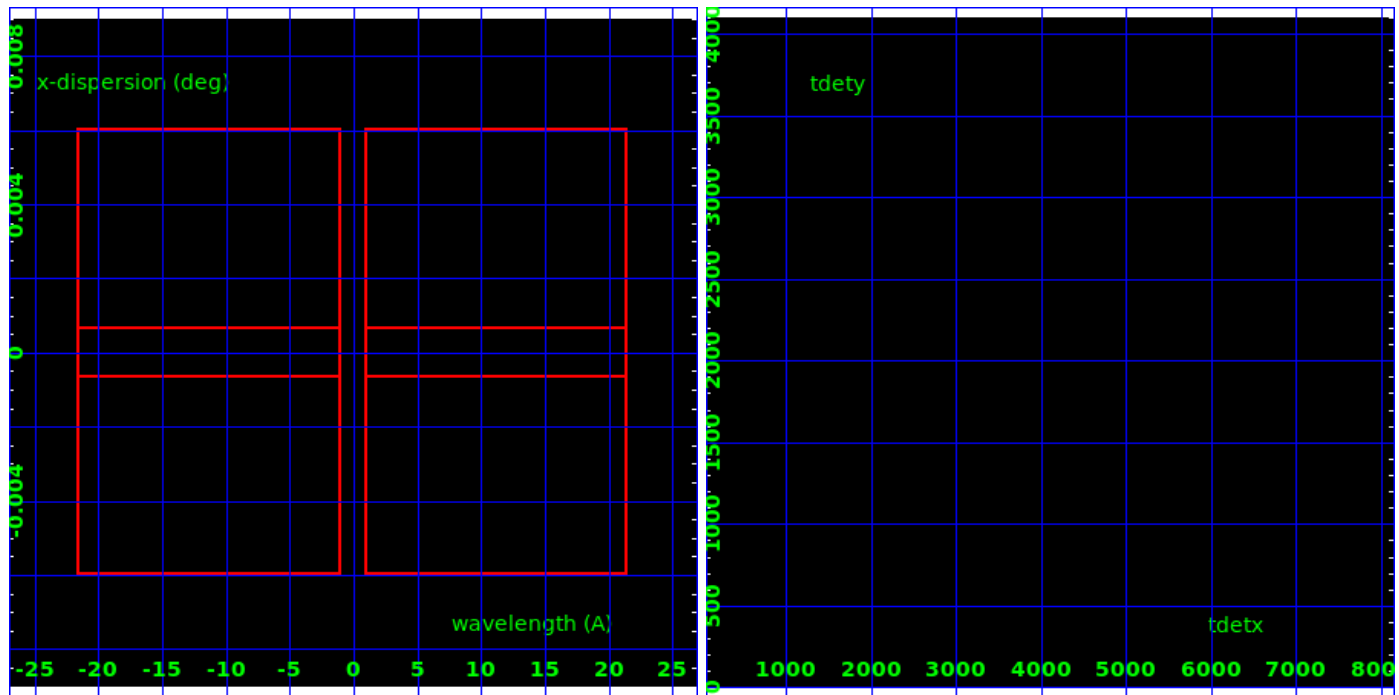
## 3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

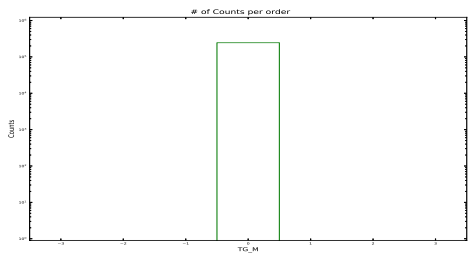
HEG Order Sort ALL

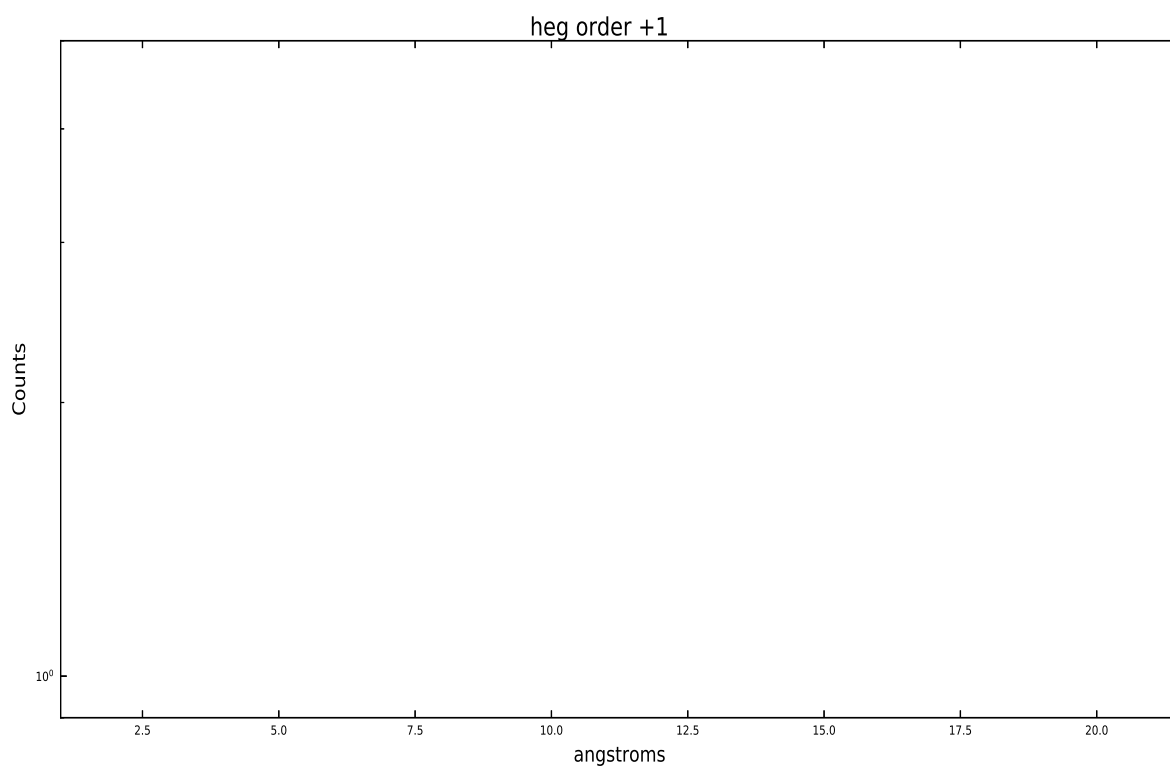
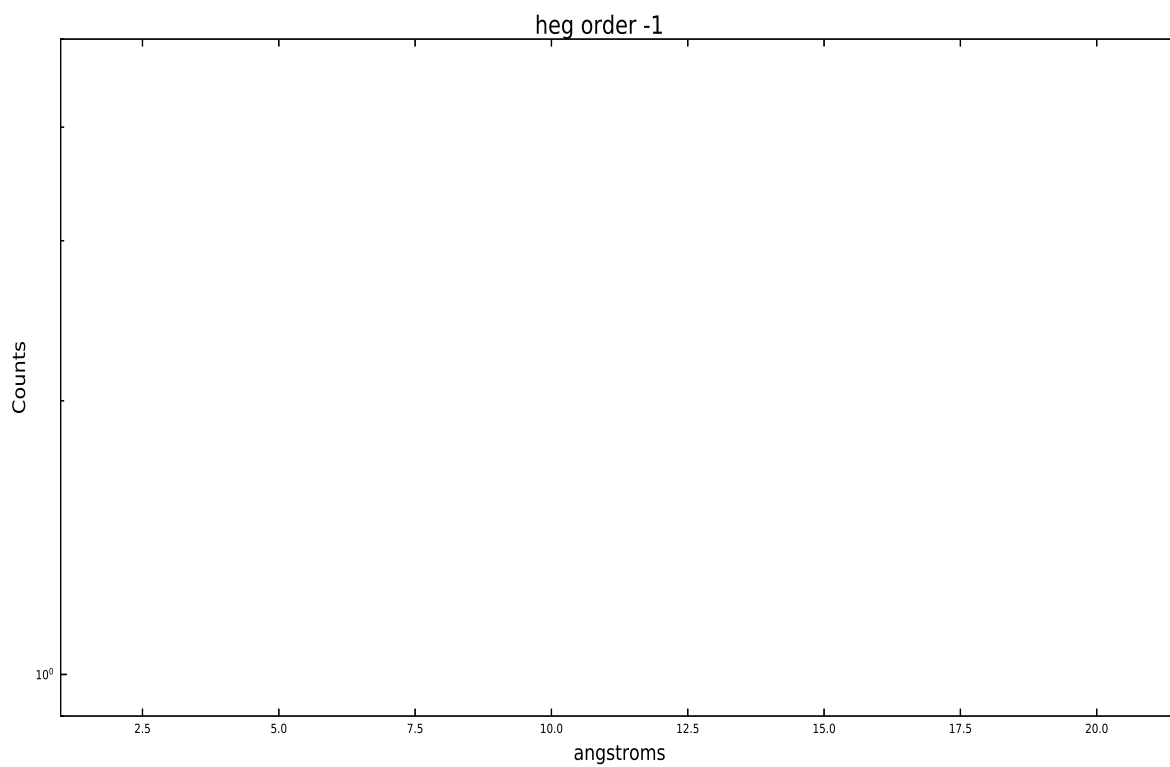


Spot Image HEG

Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	0	245215	0	0	0





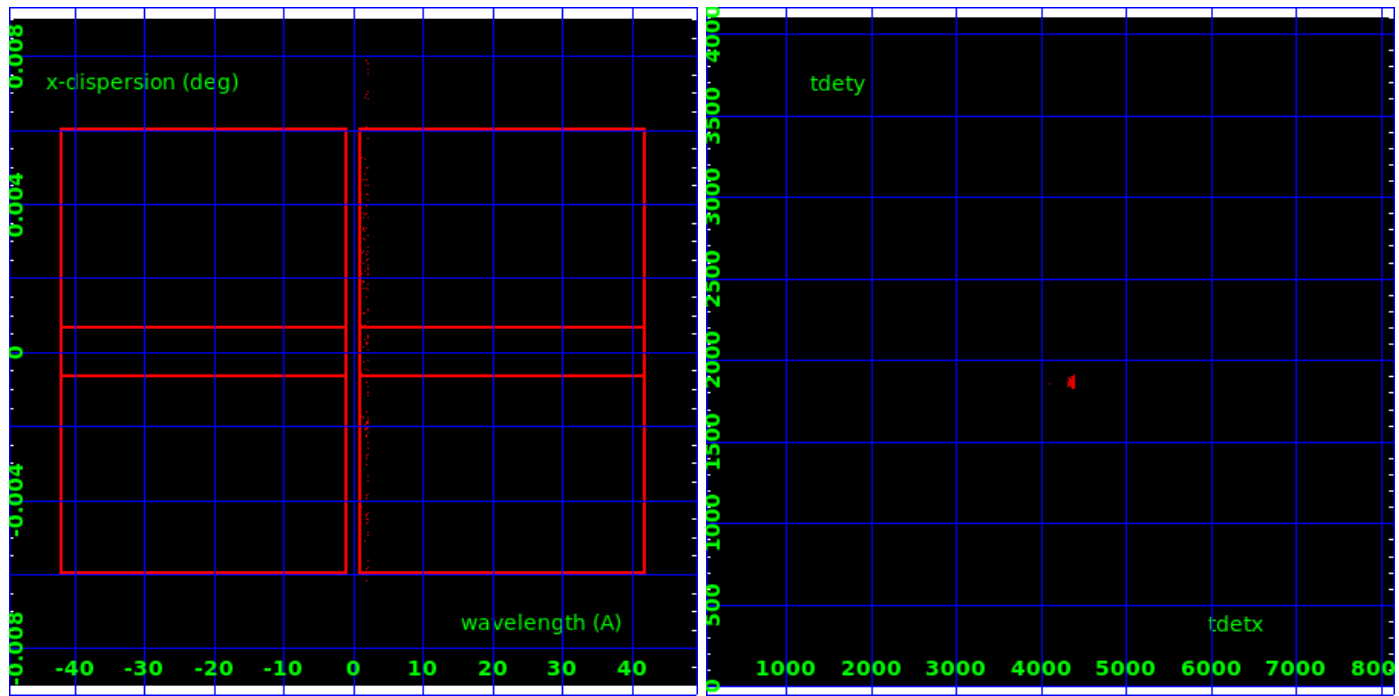
3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

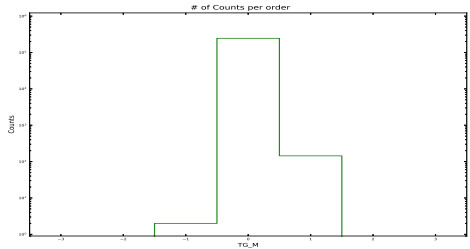
MEG Order Sort ALL

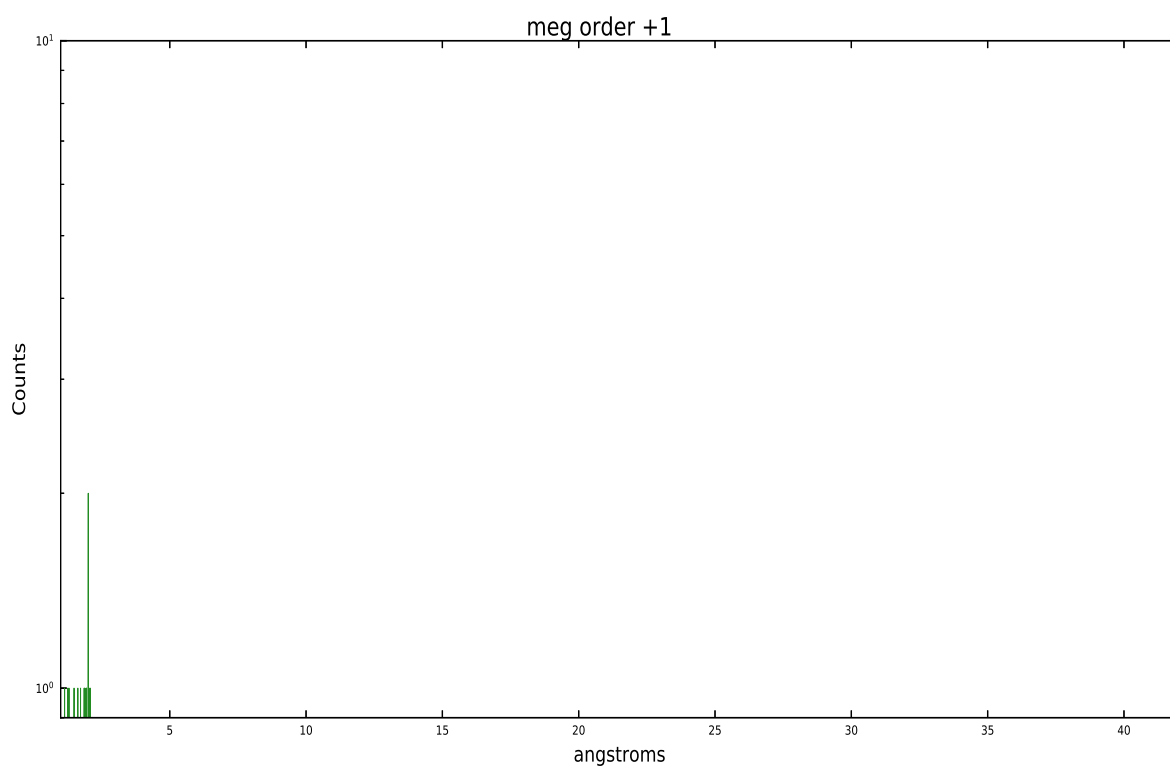
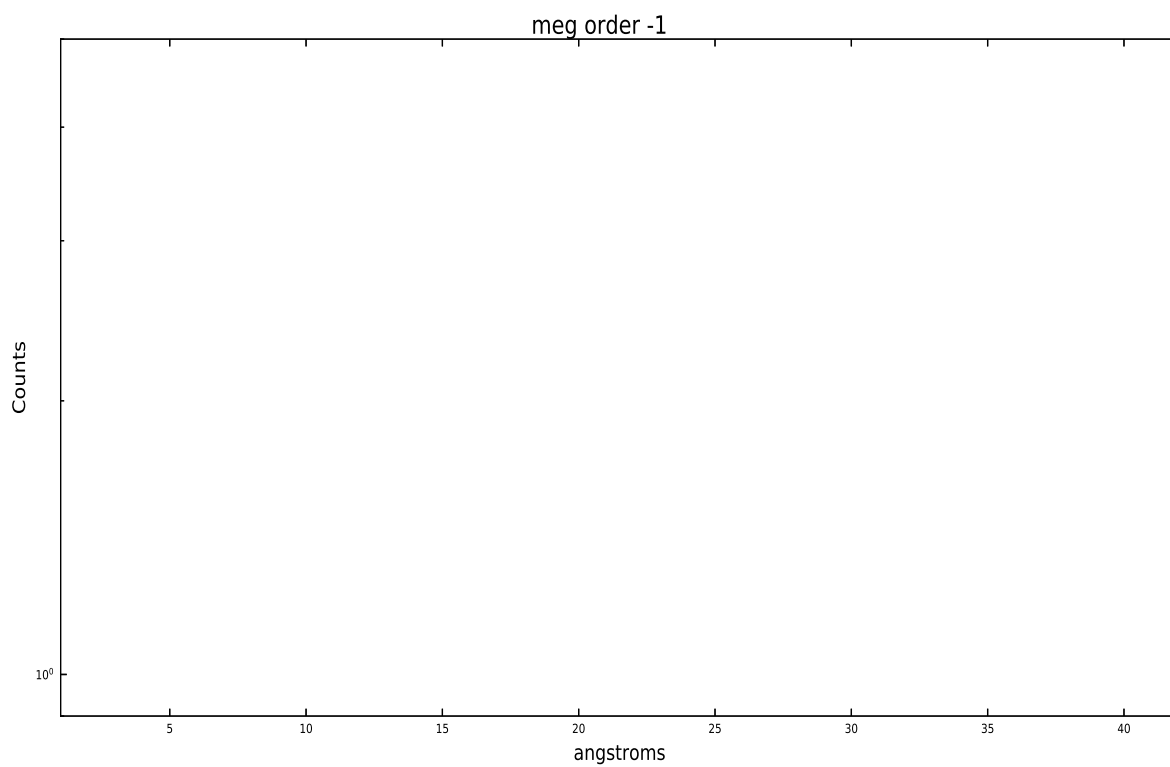


Spot Image MEG

Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	2	245215	144	0	0





# A Summary

## A.1 Status

V&V Scientist	David Principe
V&V Date (YYYY-MM-DD)	2020.10.23
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.1814004

## A.2 Comments

HETG is inserted as a filter; there is very little useful gratings information in the observation. The zeroth order position used in the grating extraction is NOT at the position of the pulsar, but is near a bright emission knot to the NE, on the outer ring circumscribing the pulsar. The dispersed spectrum only contains data for the meg +1 order between 1-2 Å. The pulsar is near the edge of the read portion of the detector. Broad east/west streak in Level 2 data is instrumental, due to the fact that the spacecraft dither during this observation was only 1 arcsec. Aim point located 30 arcsec east of the pulsar, as requested by the observer.