V&V Reference Report
L2 ASCDS Version : 8.5.1.1

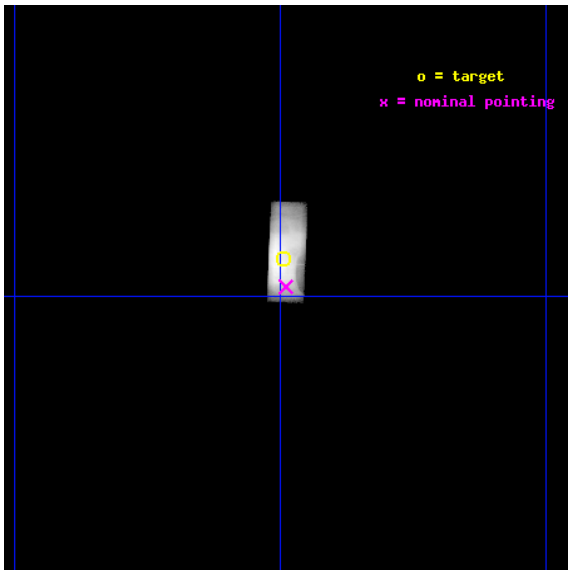
Observation 6140 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Dec 21 2012

Contents

1 Front

seq_num	500593	Sequence number
obs_id	6140	Observation id
title	Monitoring of the Relativistic Magnetohydrodynamic Shock in the Crab Nebula	Proposal title
observer	Dr Koji Mori	Principal investigator
object	The Crab Nebula	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.62375	Observer's specified target RA [deg]
dec_targ	22.016472	Observer's specified target Dec [deg]
ra_nom	83.622415141706	Nominal RA [deg]
dec_nom	22.004045482217	Nominal Dec [deg]
roll_nom	272.23623407689	Nominal Roll [deg]
revision	3	Processing version of data
ontime	9853.8003915548	Sum of GTIs [s]
livetime	8668.0158264909	Livetime [s]
ontime7	9853.8003915548	Sum of GTIs [s]
l2events	1841407	Number of level 2 events

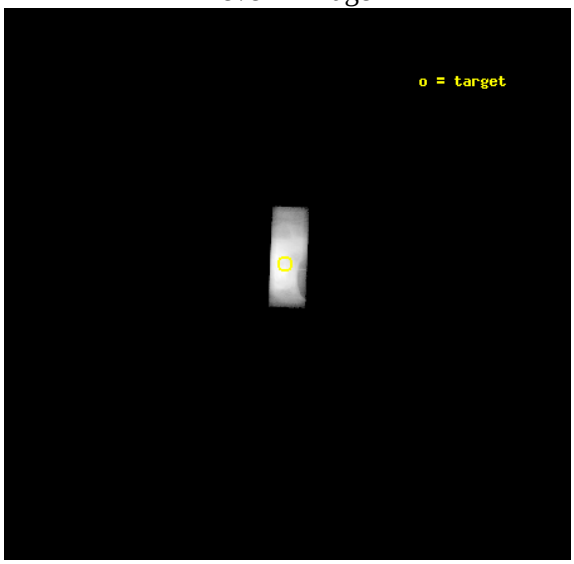


2 OBI

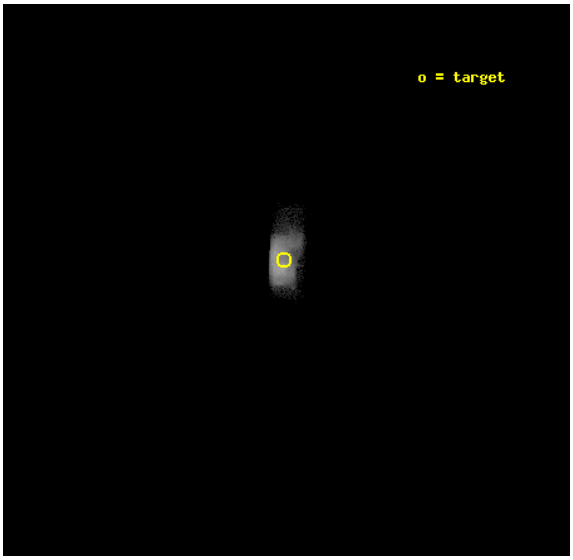
2.1 OBI

2.1.1 Images

Level 1 Image



Level 1 Bad Events



2.1.2 Parameters

obi_num	0	Obi number
ascdsver	8.5.1.1	Processing system revision
caldbver	4.5.5	
date	2012-12-21T17:17:31	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ontime	9853.8003915548	Sum of GTIs [s]
ontime7	9853.8003915548	Sum of GTIs [s]
l1events	1922677	Number of level 1 events

2.1.3 Events

	ccd 7
level 1 events	1922677
rejected events	56925
rejected %	2%

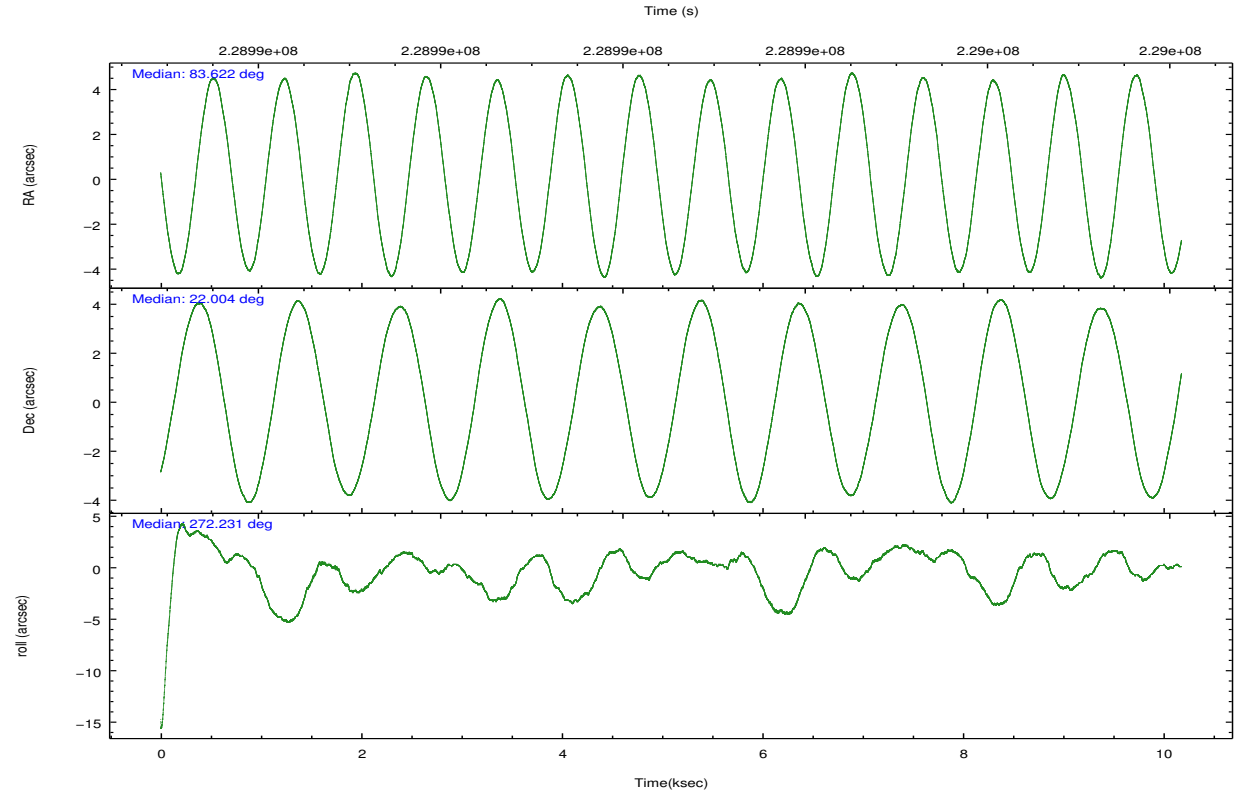
	ccd 7
grade 0 events	376599
	19%
grade 1 events	5538
	0%
grade 2 events	474924
	24%
grade 3 events	213152
	11%
grade 4 events	205048
	10%
grade 5 events	24283
	1%
grade 6 events	596146
	31%
grade 7 events	26987
	1%

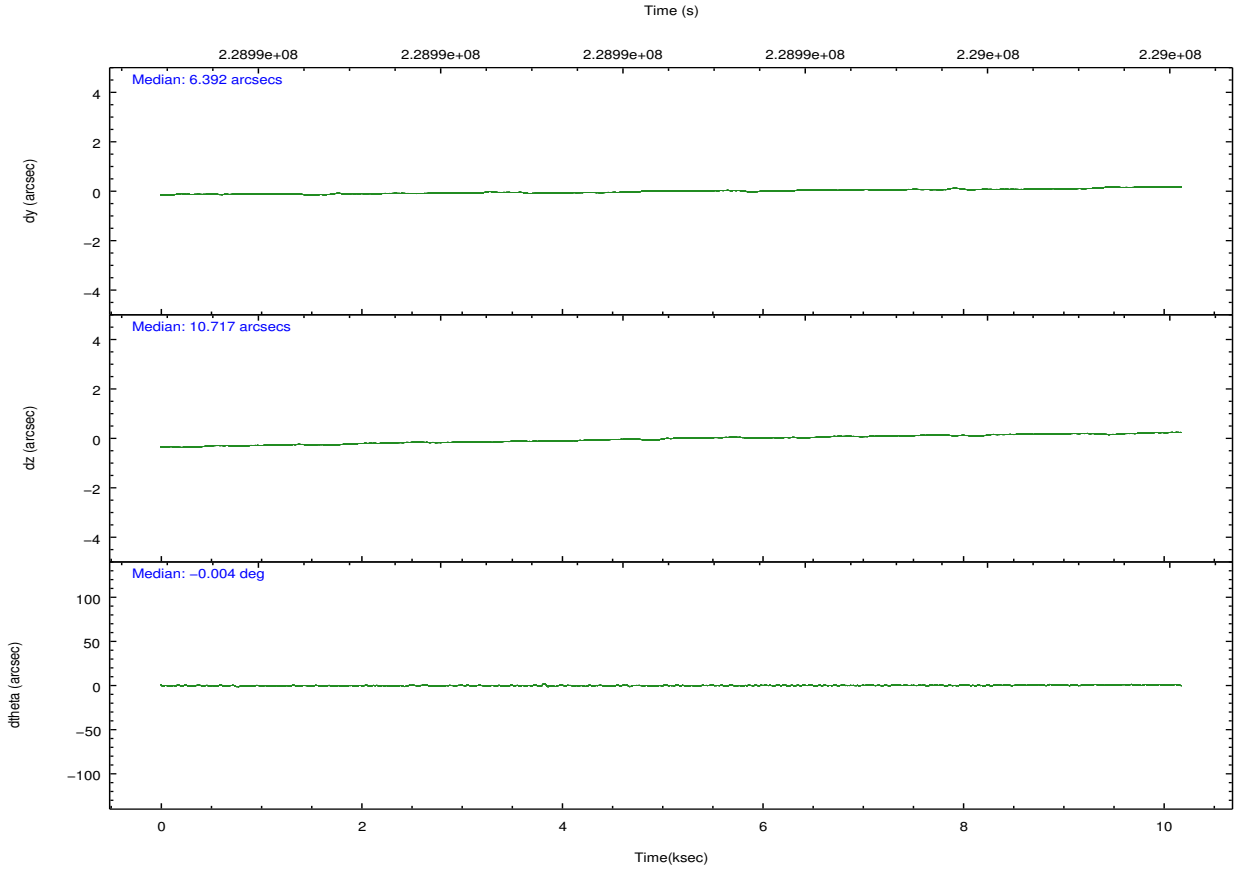
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-7	ACIS-7
Grating	HETG	HETG
Data mode	GRADED	GRADED
Observation mode	POINTING	POINTING
[deg] Pointing RA	83.606433	83.62241514170611
[deg] Pointing Dec	22.026899	22.00404548221713
[deg] Pointing Roll	272.085598	272.2362340768874
[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)	228987613.184000	228987237.26428
Observation start date	2005-04-04T07:39:09	2005-04-04T07:33:57
[s] Observation end time (MET)	228997613.184000	228997747.61476
Observation end date	2005-04-04T10:25:49	2005-04-04T10:29:07
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	127	127
Subarray row count	101	101
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	0.3

2.3 Aspect


Time (s)
2.2899e+08
2.2899e+08
2.2899e+08
2.2899e+08
2.29e+08
2.29e+08
Median: 83.622 deg
RA (arcsec)
Median: 22.004 deg
Dec (arcsec)
Median: 272.231 deg
roll (arcsec)
Time(ksec)

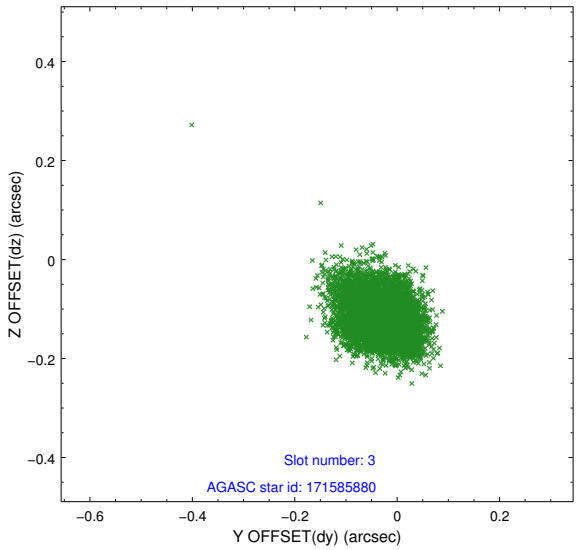

Time (s)
2.2899e+08
2.2899e+08
2.2899e+08
2.2899e+08
2.29e+08
2.29e+08
Median: 6.392 arcsecs
dy (arcsec)
Median: 10.717 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

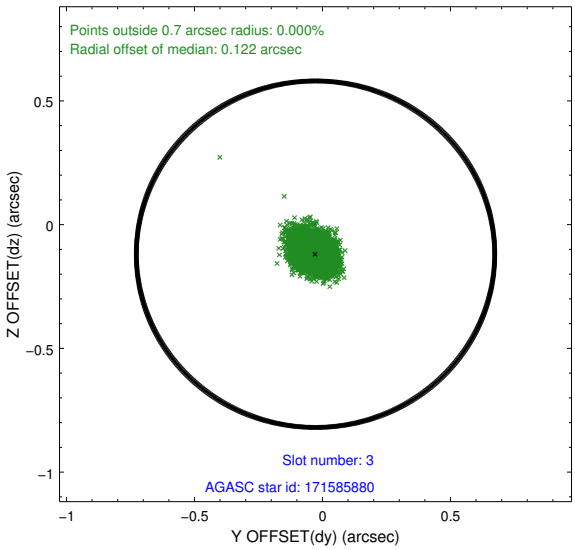
Slot Statistics

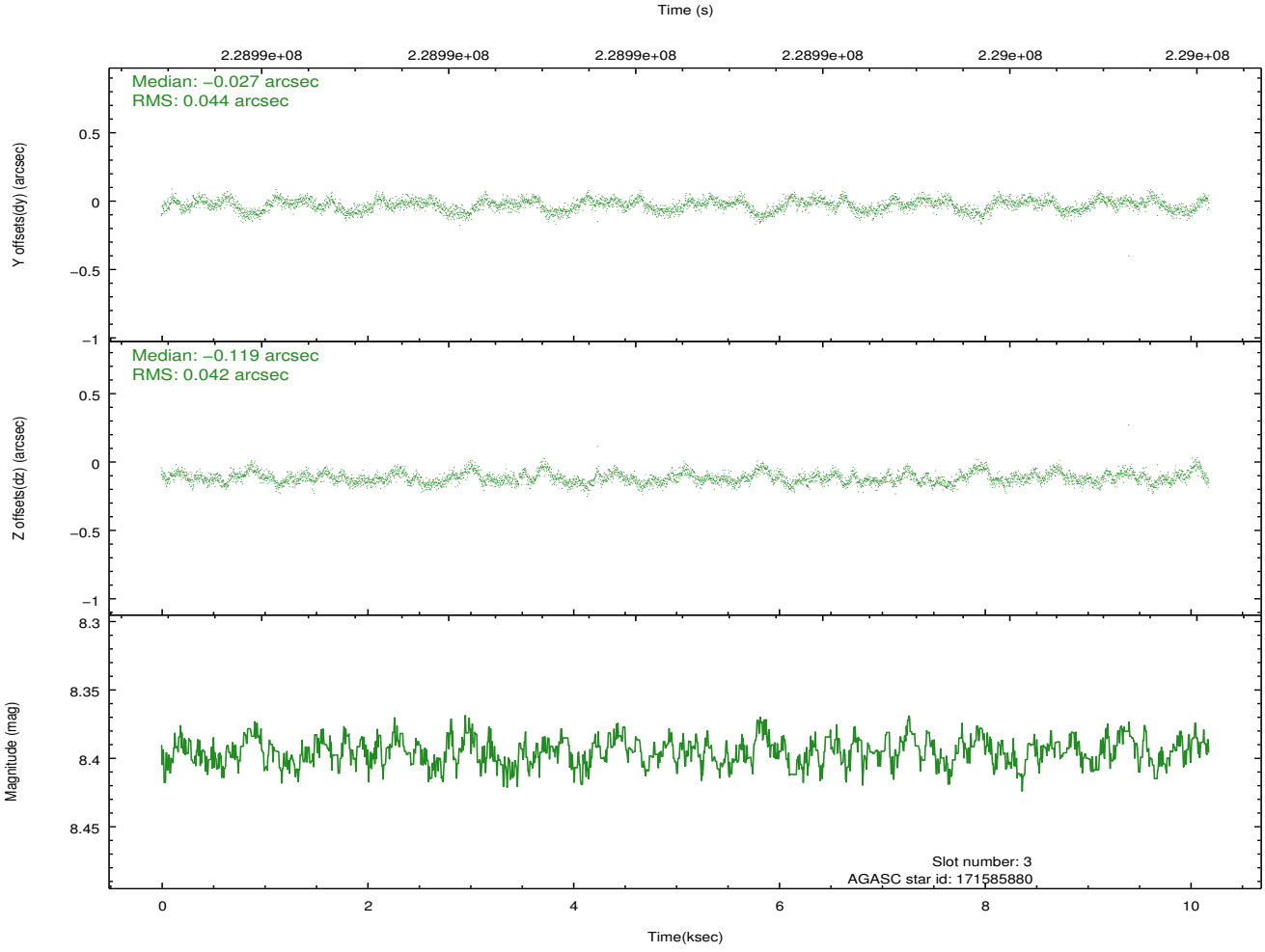
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	2483	-0.091	-0.119	0.012	0.018	0.000000	0.000000	-758.63	-1896.78
1	FID	ACIS-S-4	7.18	2483	0.159	0.076	0.011	0.042	0.000000	0.000000	2154.65	11.29
2	FID	ACIS-S-5	7.23	2483	-0.098	0.053	0.012	0.027	0.000000	0.000000	-1810.81	5.52
3	GUIDE	171585880	8.40	4967	-0.027	-0.119	0.064	0.104	83.676260	22.176319	-528.89	252.11
4	GUIDE	171586032	8.96	4962	0.078	0.053	0.069	0.110	83.950197	22.083225	-162.04	1153.59
5	GUIDE	171597832	9.17	4965	0.144	-0.087	0.102	0.159	83.183230	21.366702	2322.16	-1503.95
6	GUIDE	171721904	9.21	4966	0.026	0.153	0.101	0.156	84.272676	22.116922	-247.29	2232.38
7	GUIDE	243941560	8.30	4963	-0.218	-0.001	0.048	0.080	83.733264	22.568598	-1933.58	492.60

2.4 Star Slots

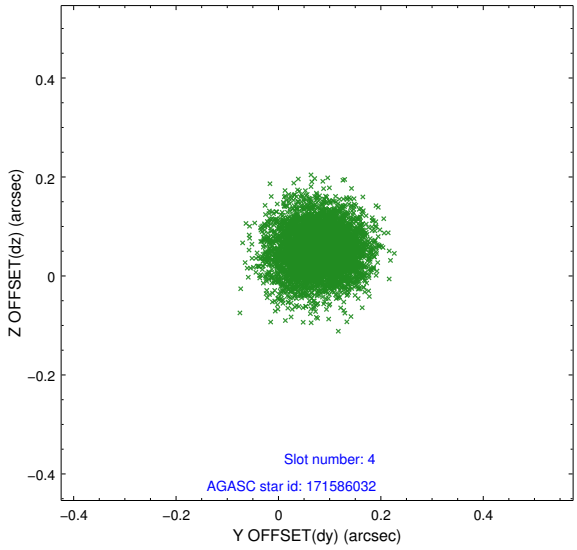
2.4.1 Slot 3

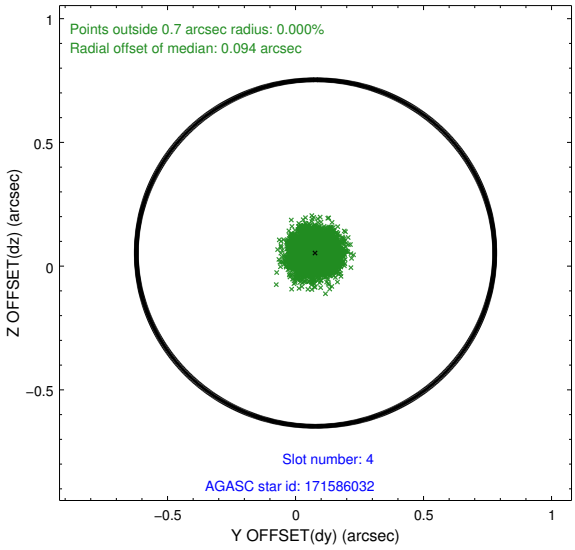


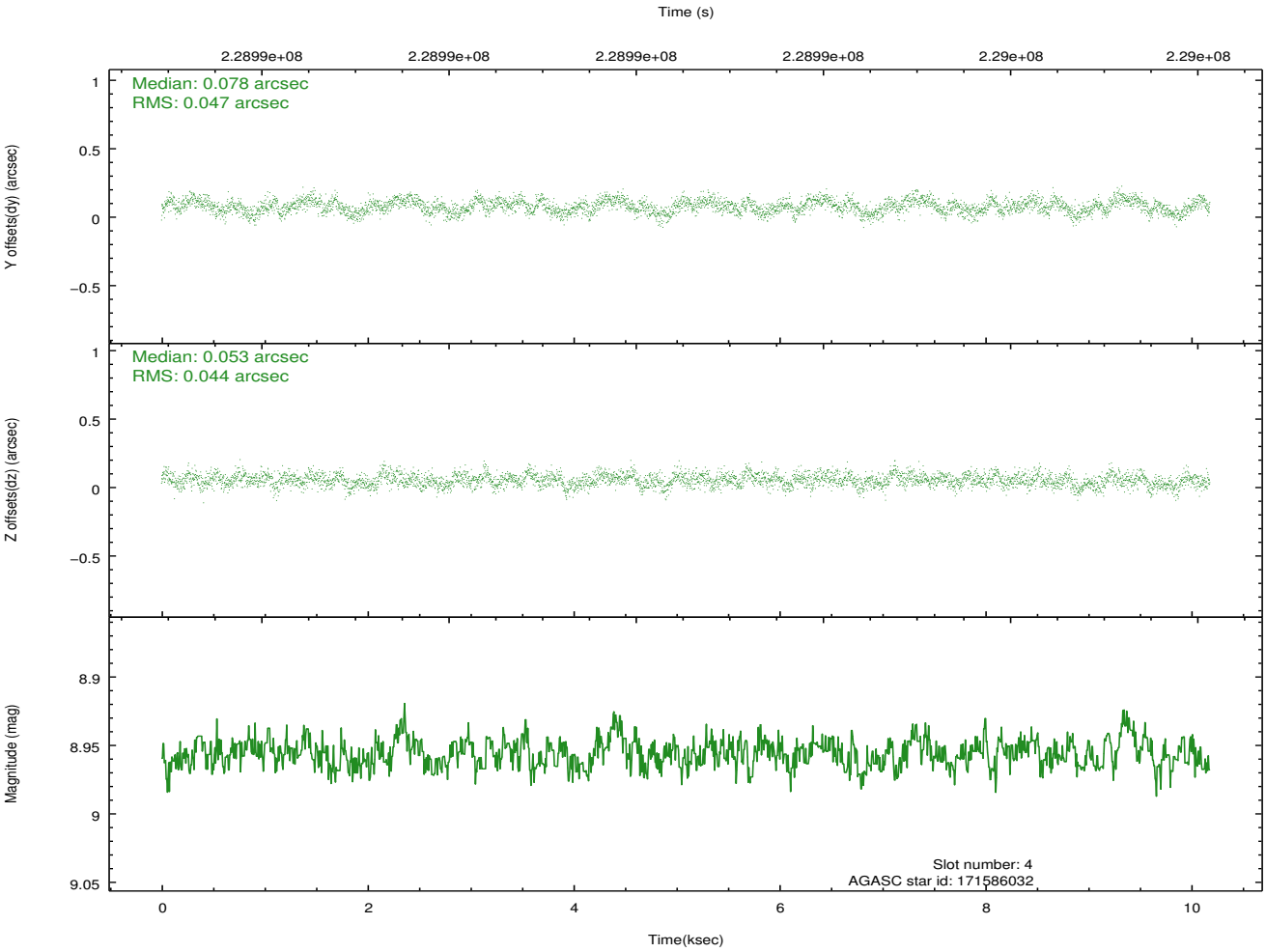




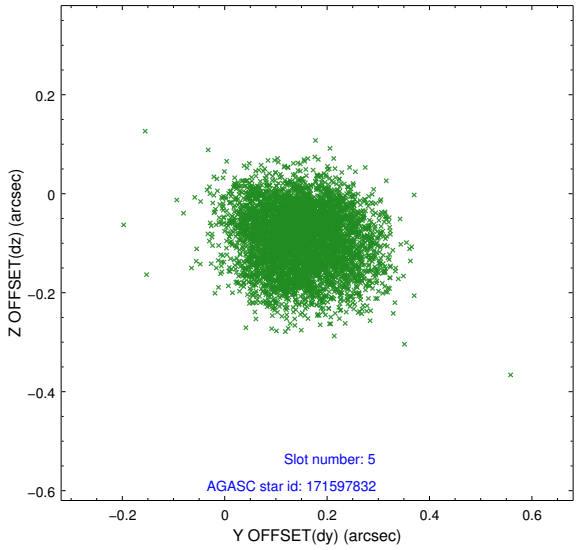
2.4.2 Slot 4

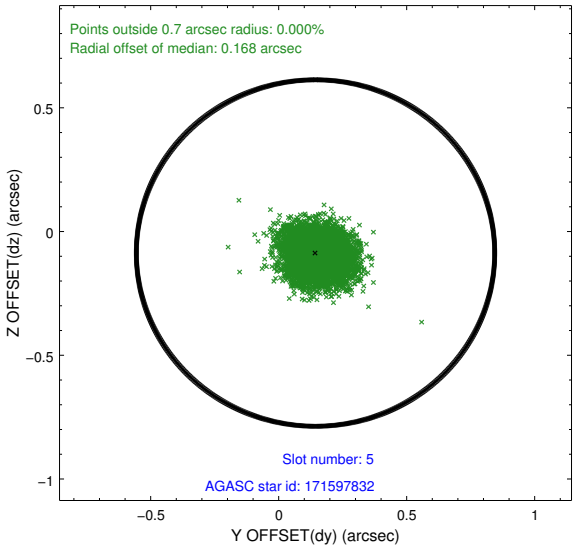

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032

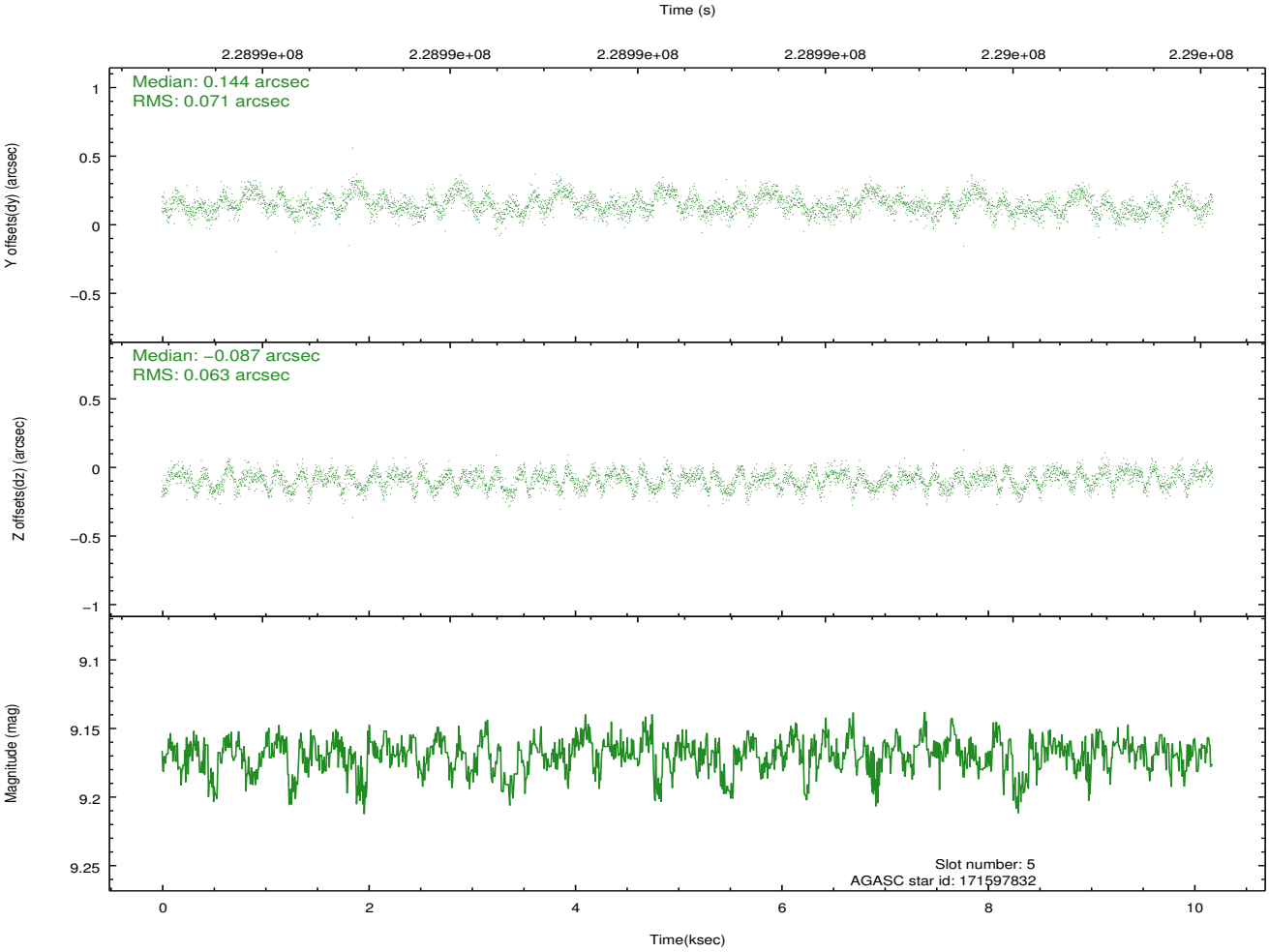

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.094 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032


Time (s)
Median: 0.078 arcsec
RMS: 0.047 arcsec
Y offsets(dy) (arcsec)
Median: 0.053 arcsec
RMS: 0.044 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 171586032
Time(ksec)

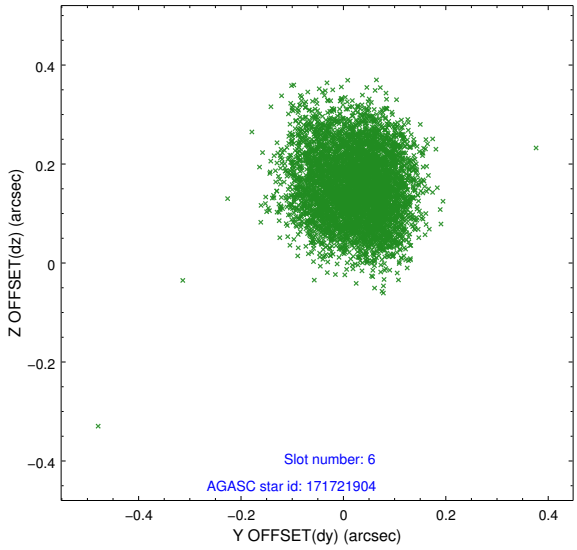
2.4.3 Slot 5

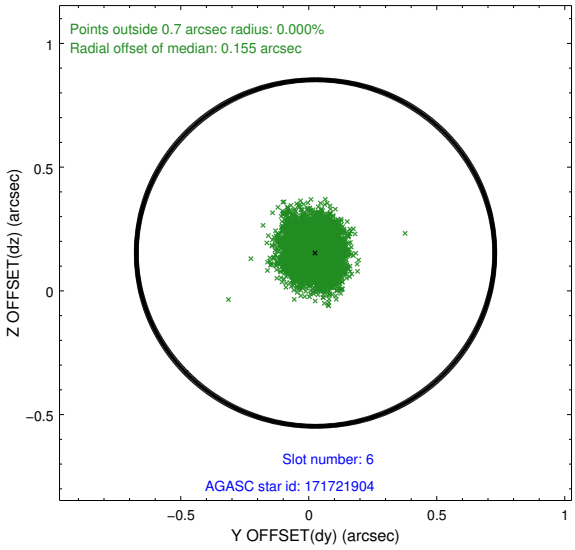

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171597832

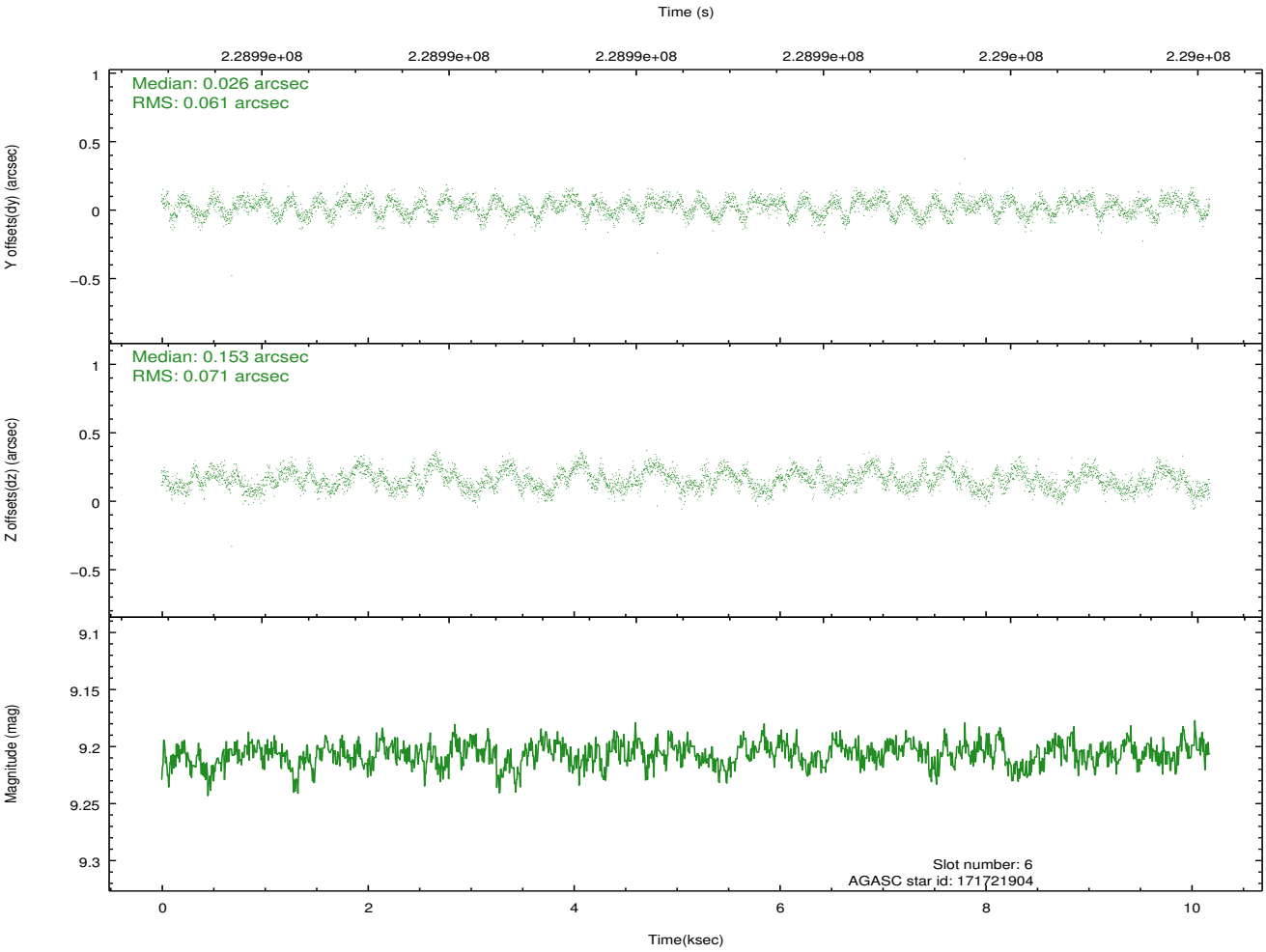

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.168 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171597832


Time (s)
Median: 0.144 arcsec
RMS: 0.071 arcsec
Y offsets(dy) (arcsec)
Median: −0.087 arcsec
RMS: 0.063 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 171597832
Time(ksec)

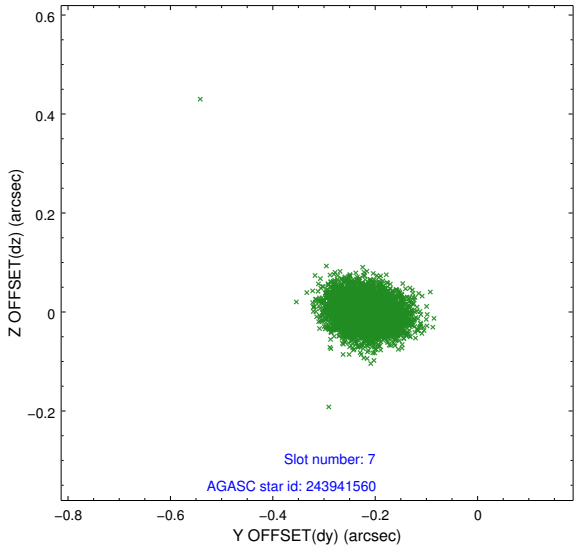
2.4.4 Slot 6

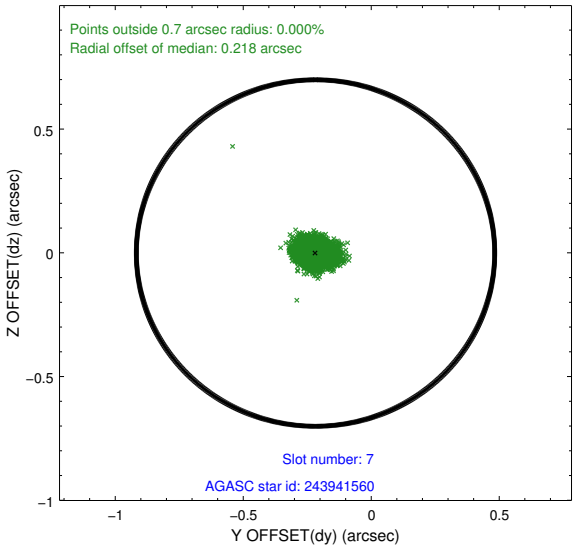

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 171721904

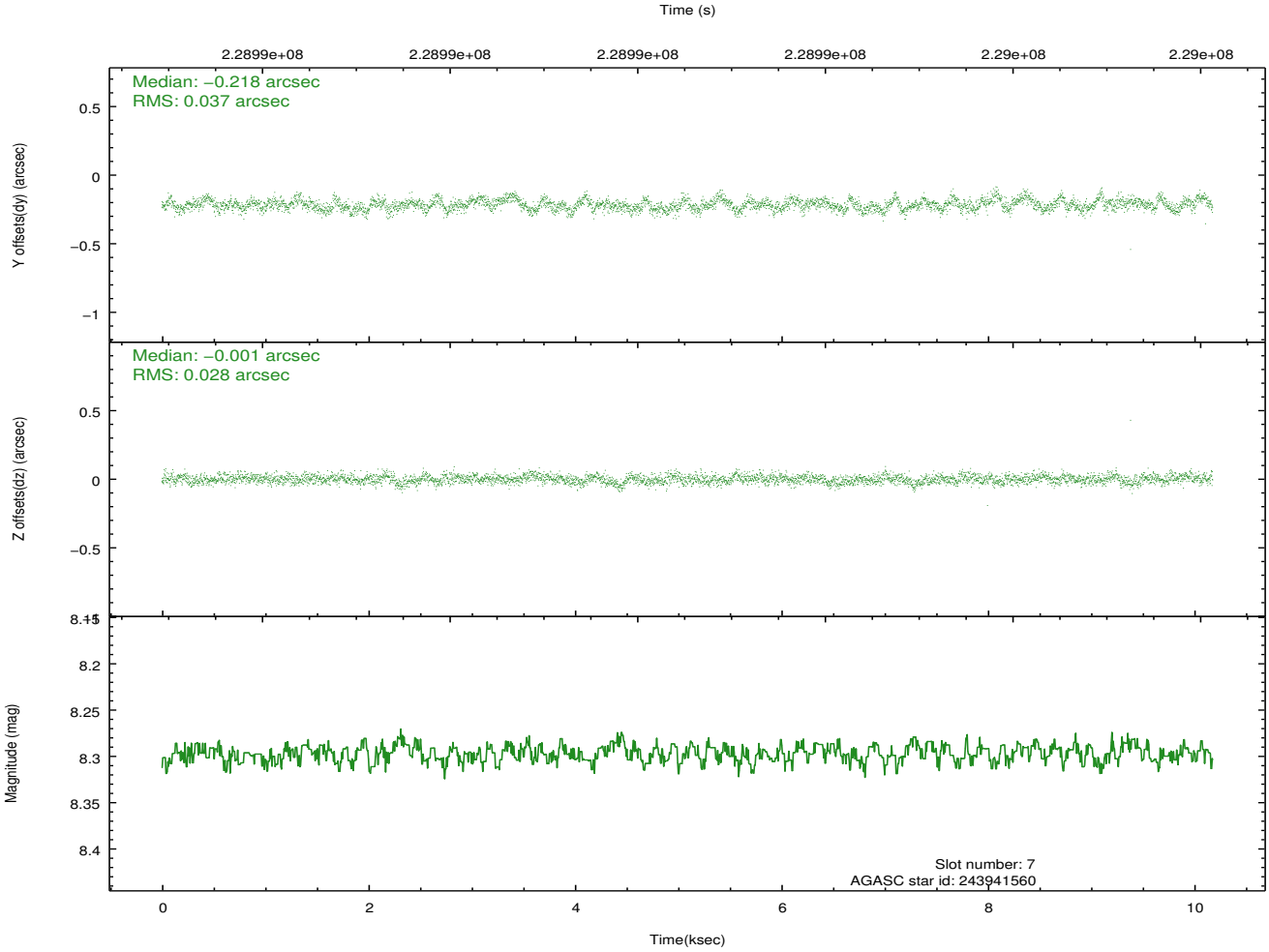

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.155 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 171721904


Time (s)
Median: 0.026 arcsec
RMS: 0.061 arcsec
Y offsets(dy) (arcsec)
Median: 0.153 arcsec
RMS: 0.071 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 171721904
Time(ksec)

2.4.5 Slot 7

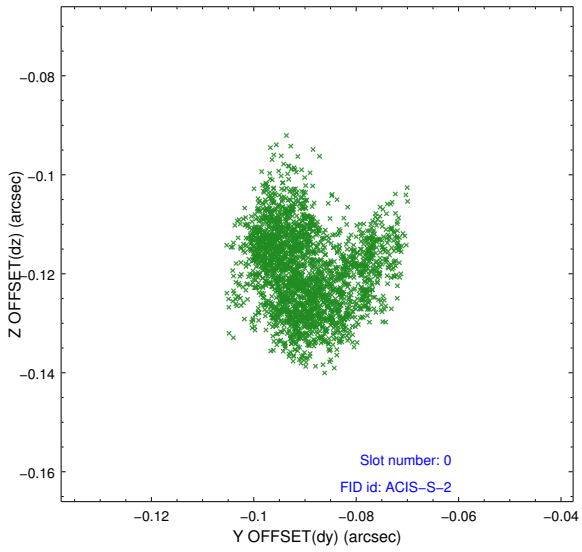

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 243941560

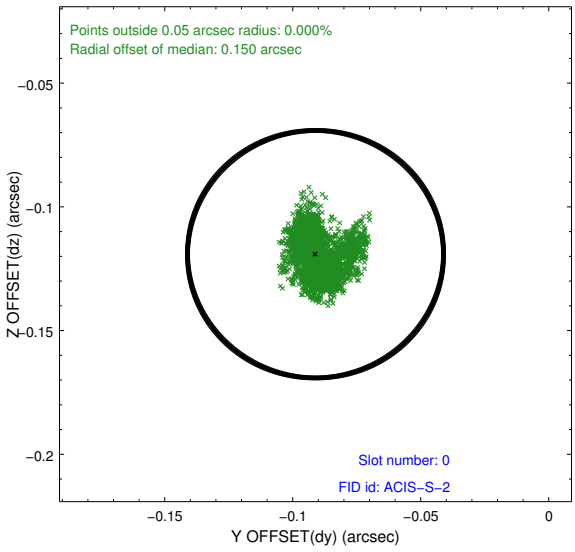

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.218 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 243941560

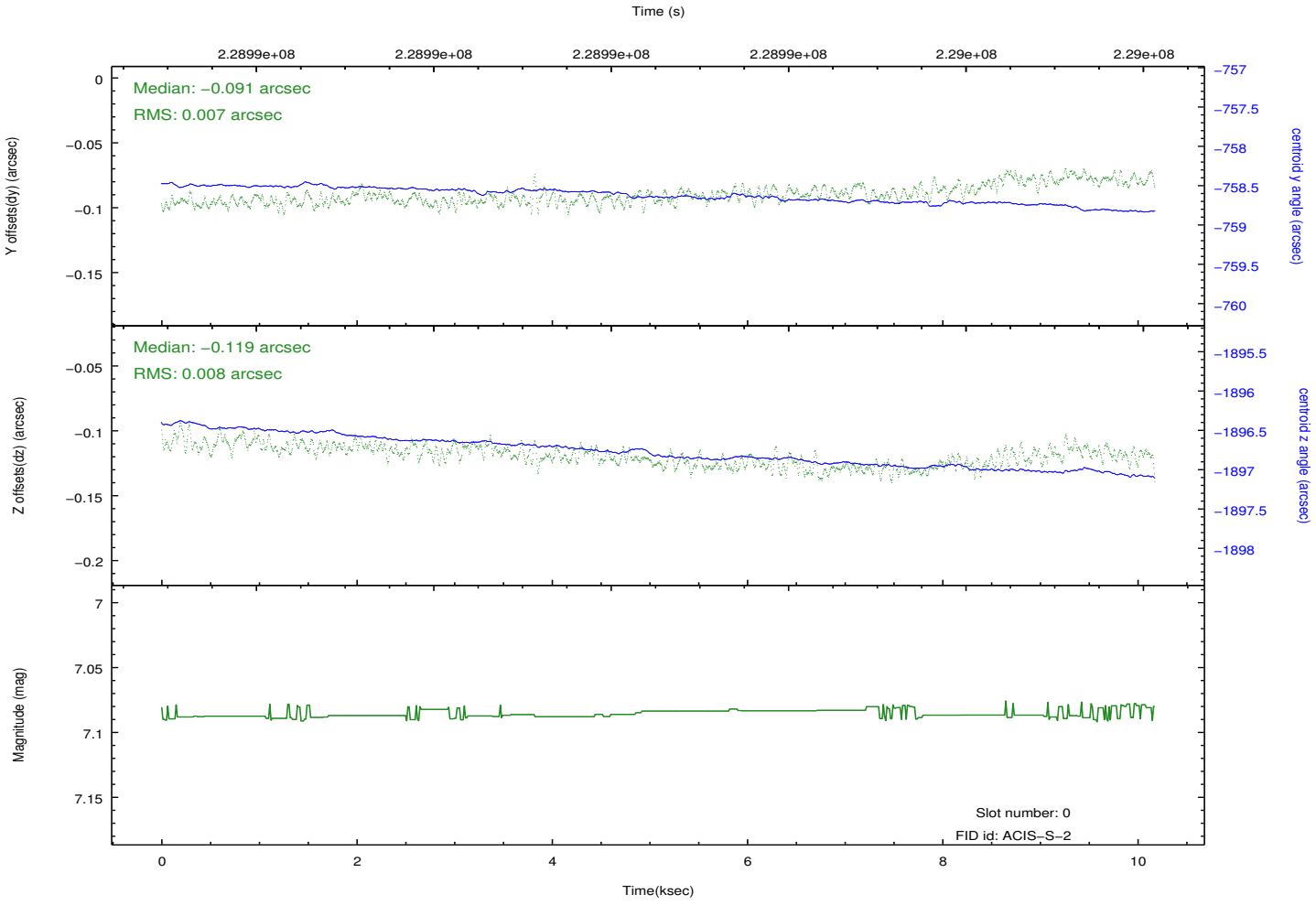

Time (s)
Median: −0.218 arcsec
RMS: 0.037 arcsec
Y offsets(dy) (arcsec)
Median: −0.001 arcsec
RMS: 0.028 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 243941560
Time(ksec)

2.5 FID Slots

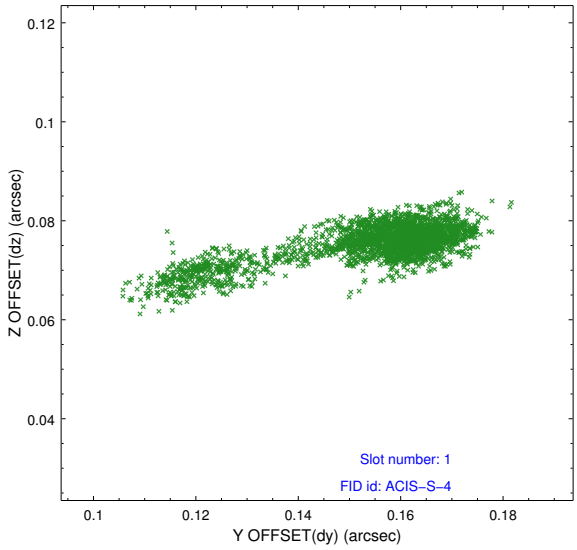
2.5.1 Slot 0

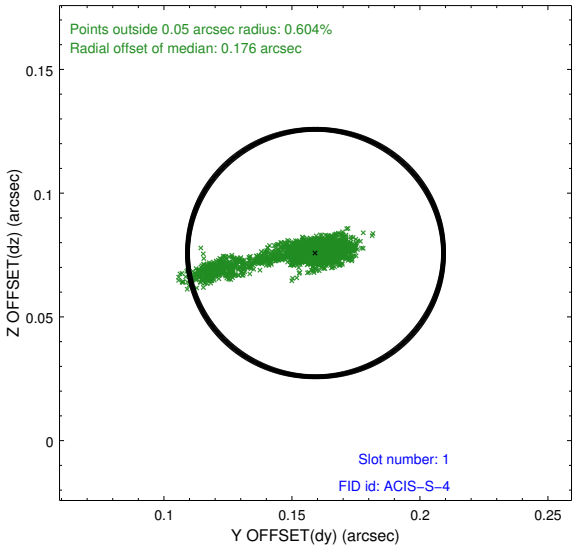


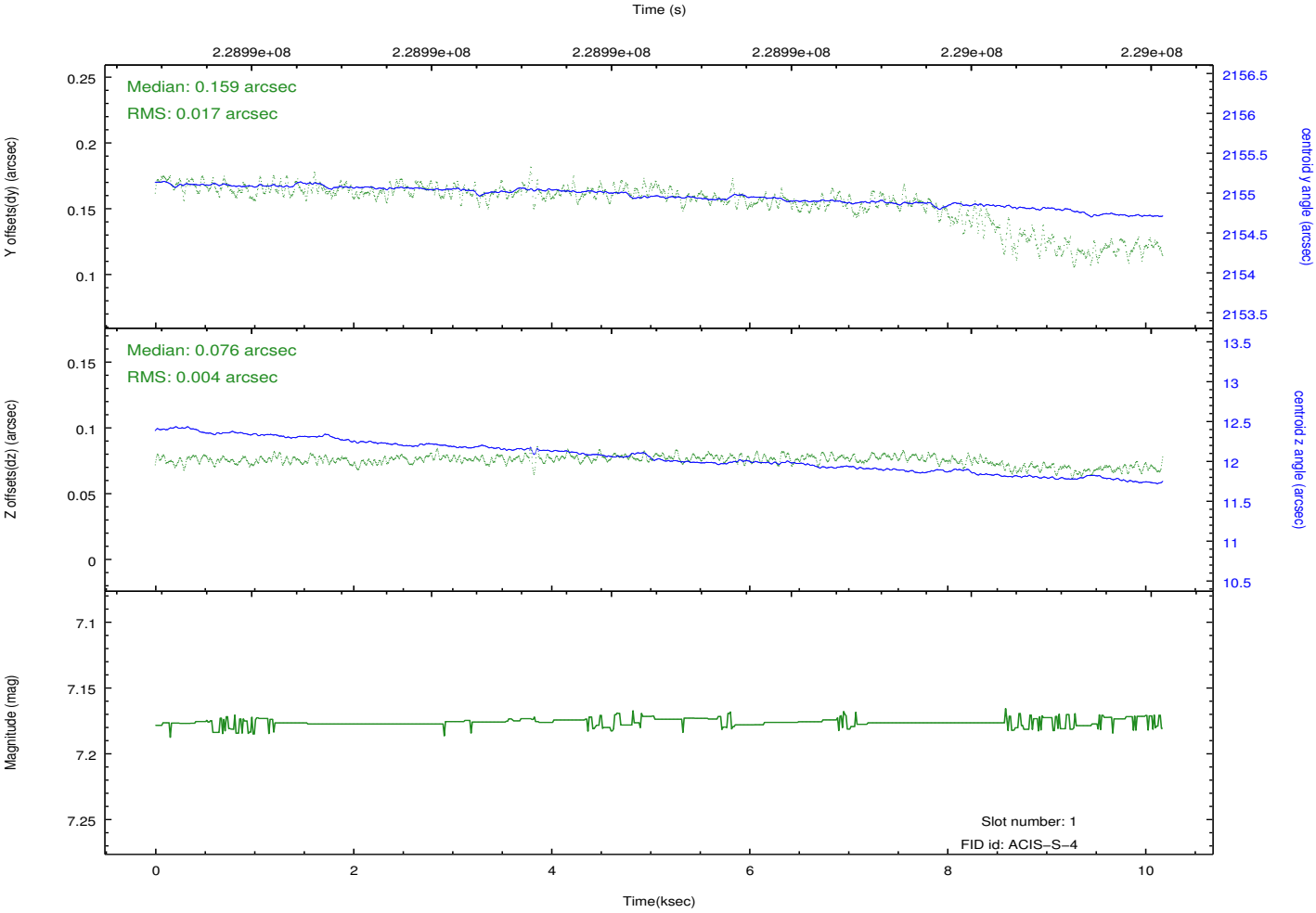




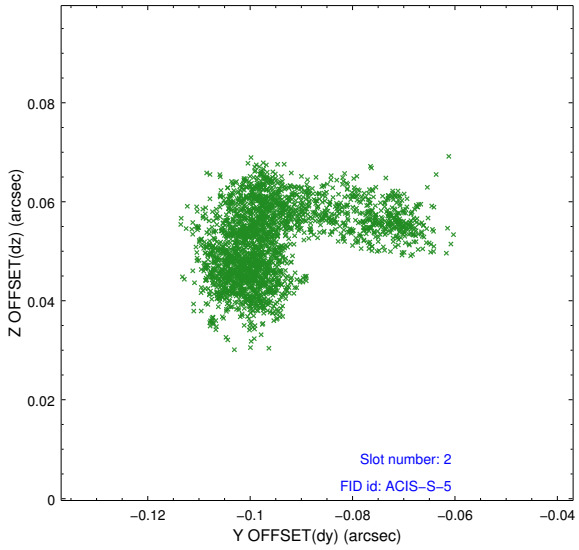
2.5.2 Slot 1

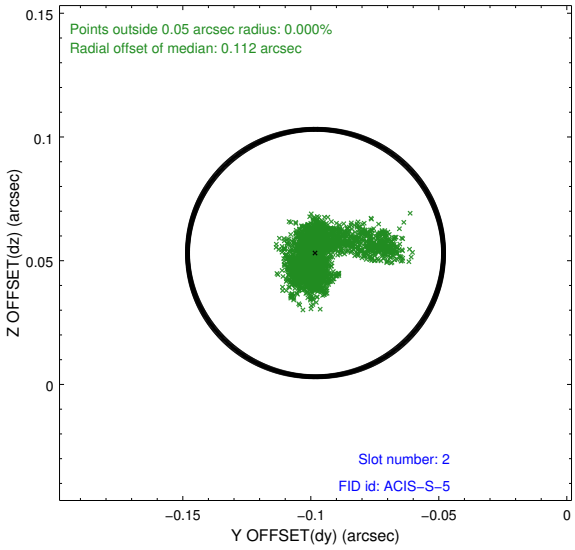

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

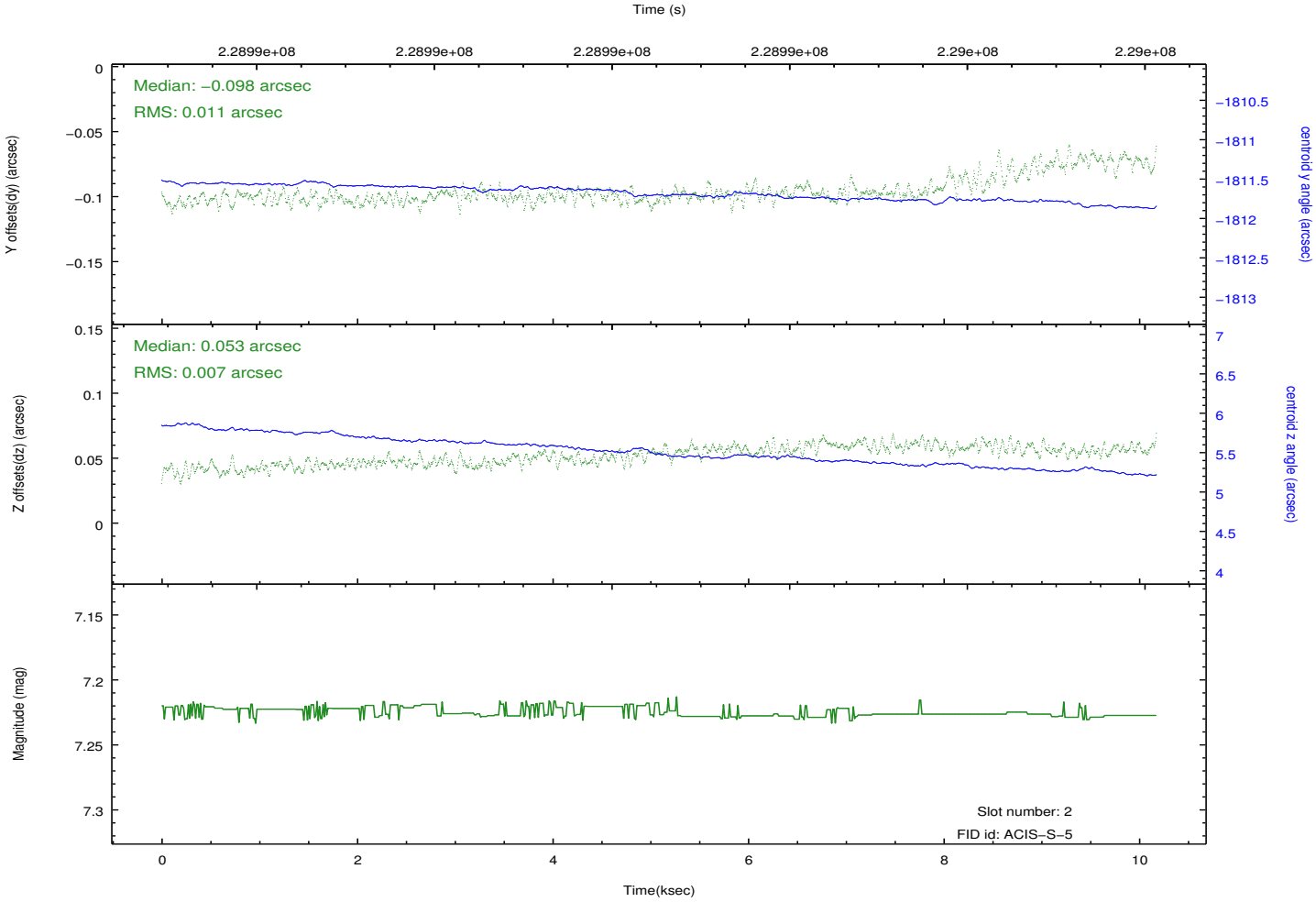

Points outside 0.05 arcsec radius: 0.604%
Radial offset of median: 0.176 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.159 arcsec
RMS: 0.017 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.076 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−S−4
Time(ksec)

2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5

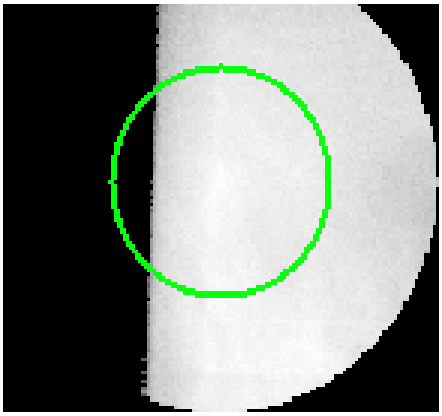

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.112 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.098 arcsec
RMS: 0.011 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.053 arcsec
RMS: 0.007 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−5
Time(ksec)

3 Gratings

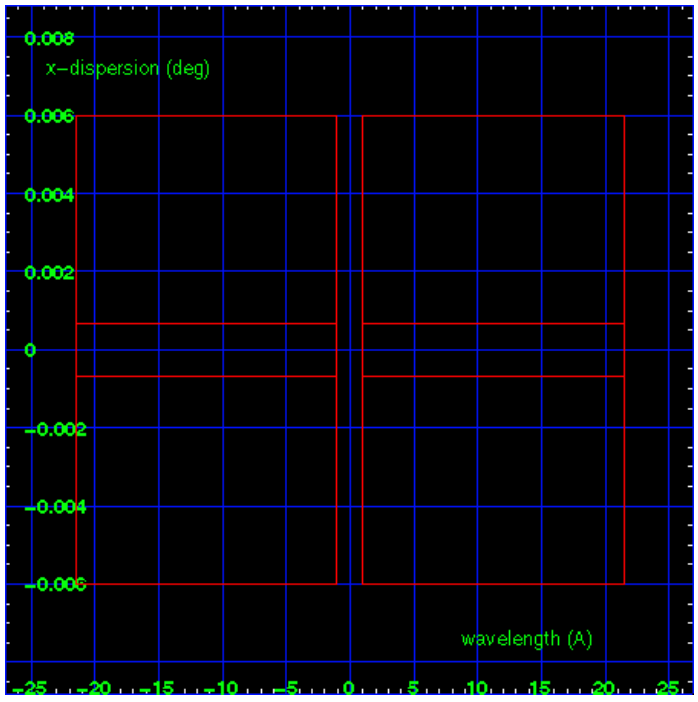
3.1 HEG Arm

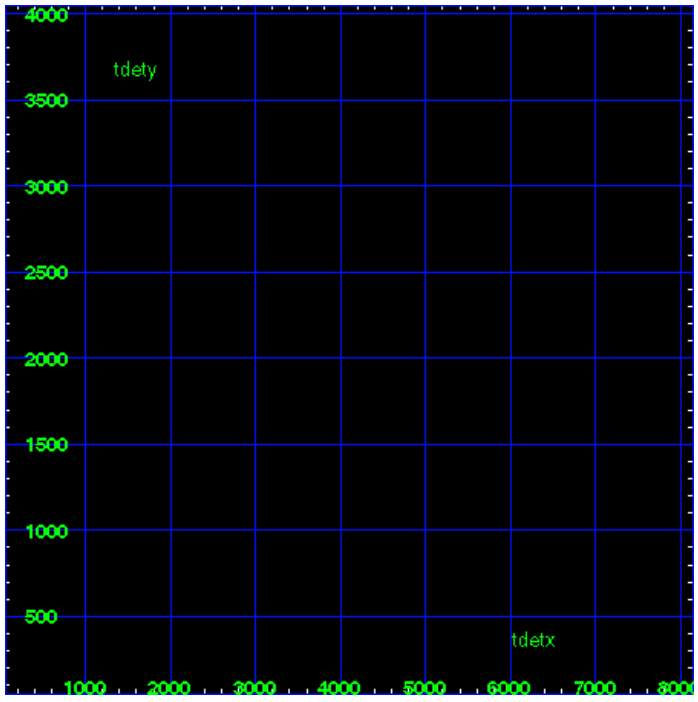
HEG Order Sort 123



HEG Zero Order

HEG Order Sort ALL

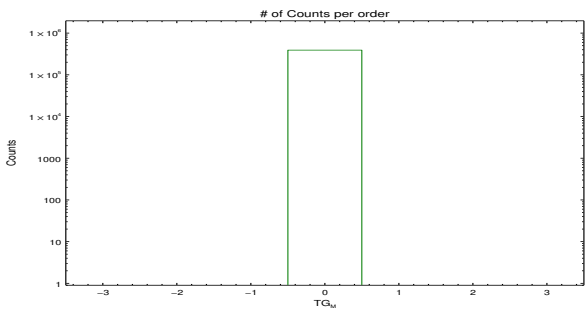


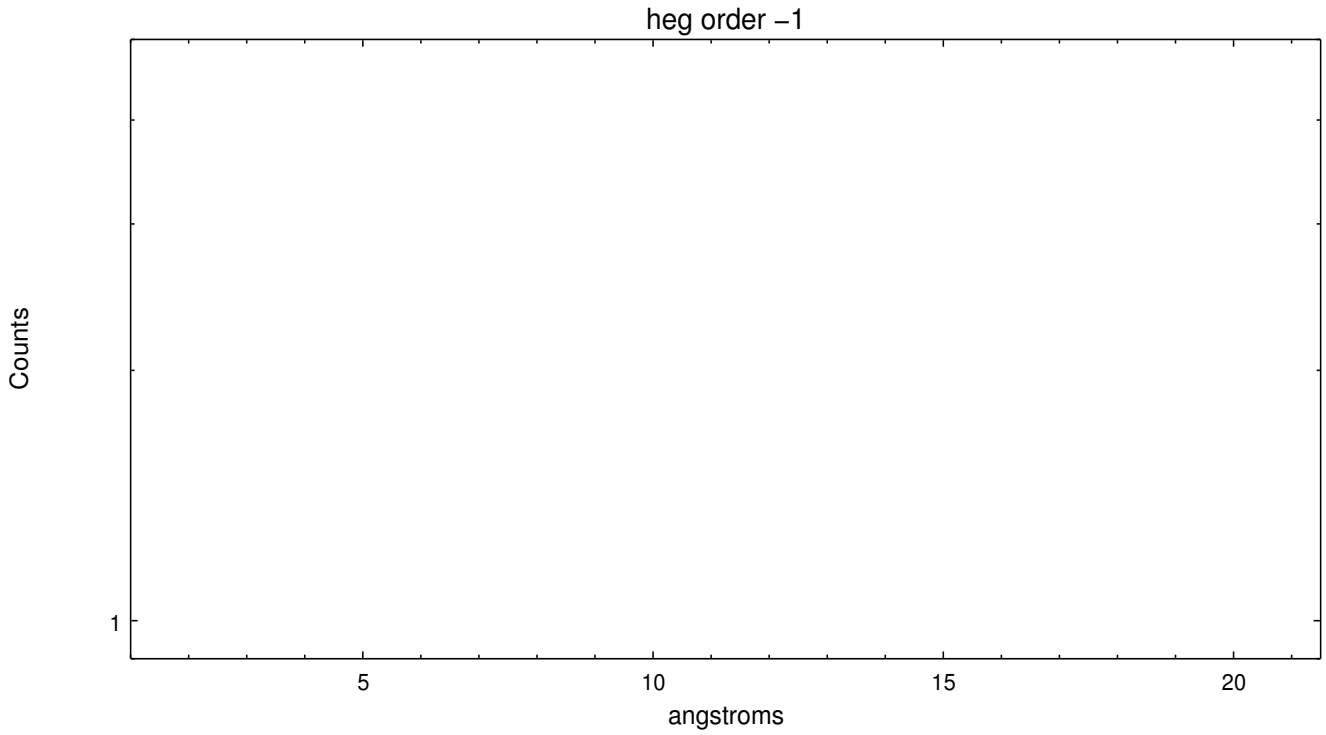


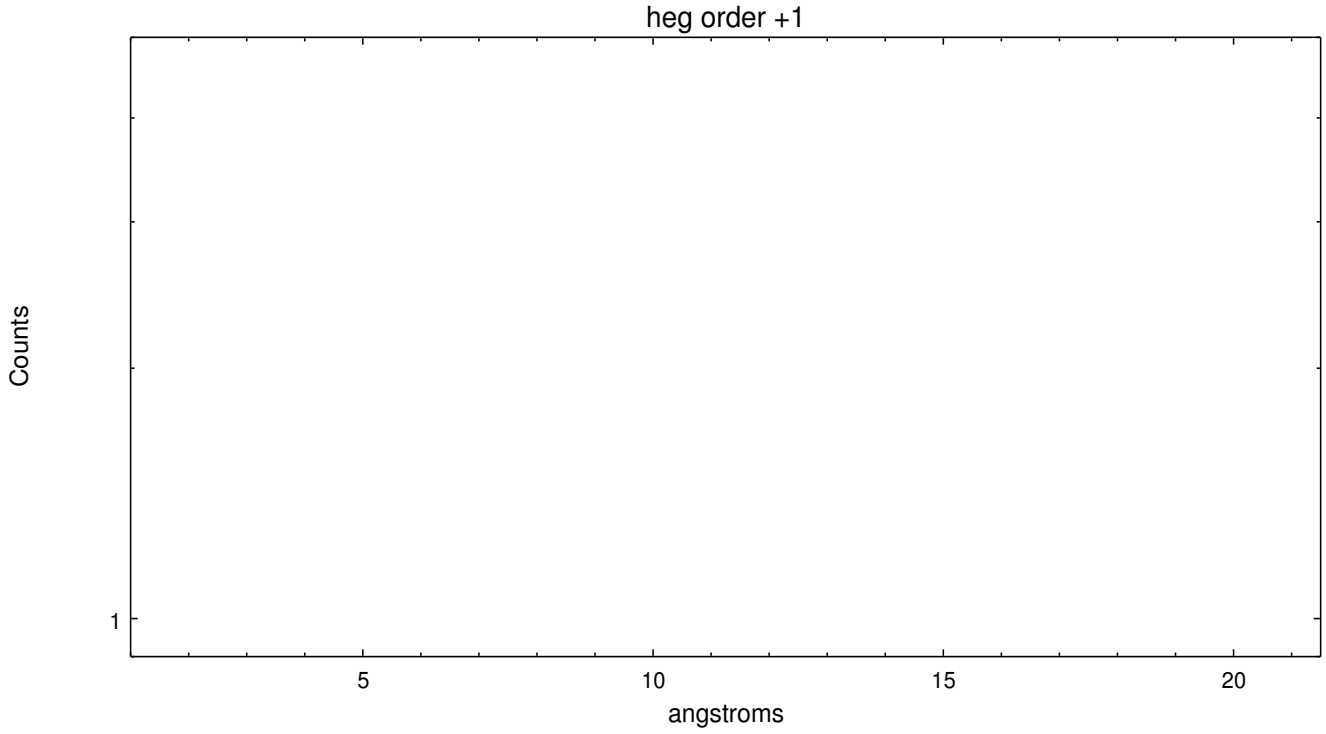
Spot Image HEG

Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	0	394427	0	0	0

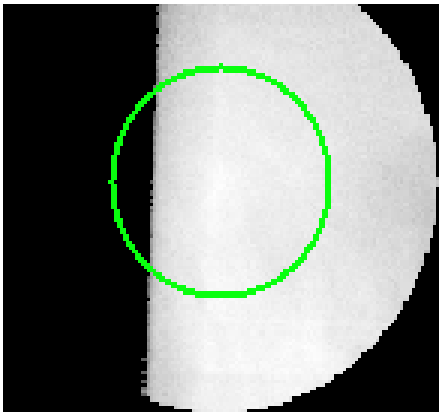



heg order −1
Counts
1
5
10
15
20
angstroms


heg order +1
Counts
1
5
10
15
20
angstroms

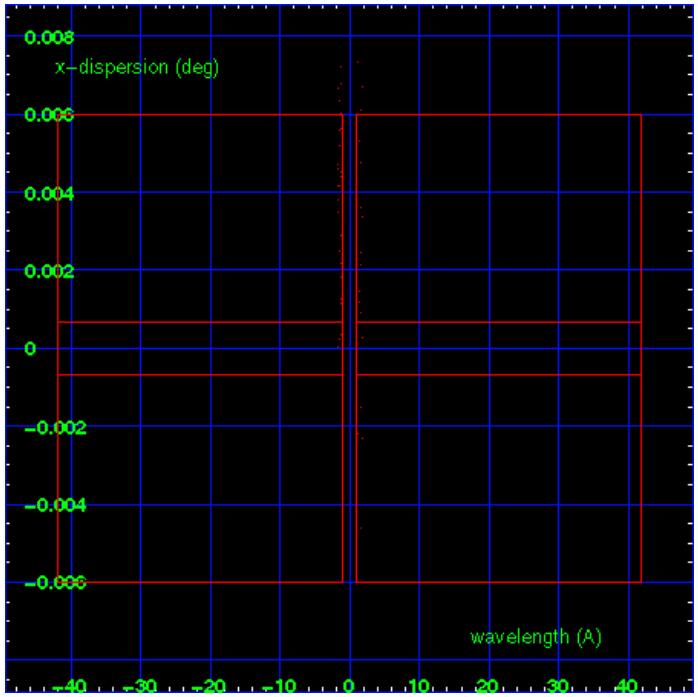
3.2 MEG Arm

MEG Order Sort 123

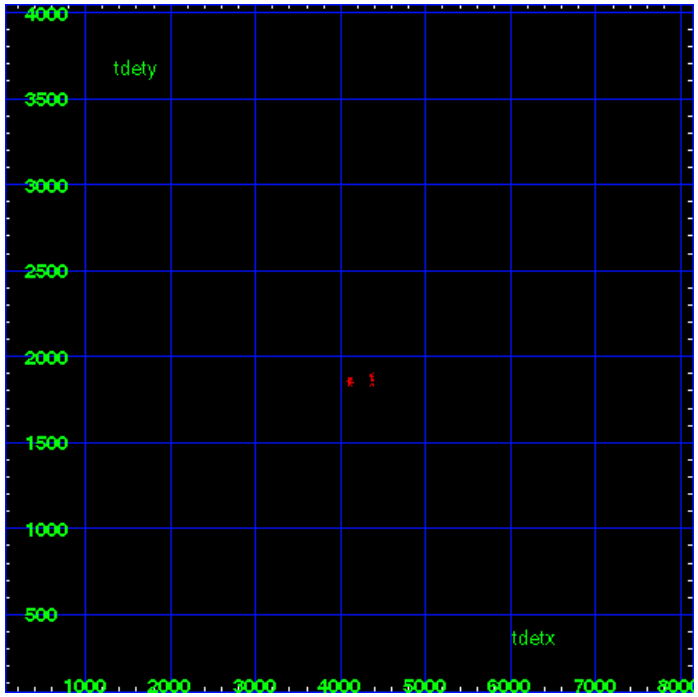


MEG Zero Order

MEG Order Sort ALL

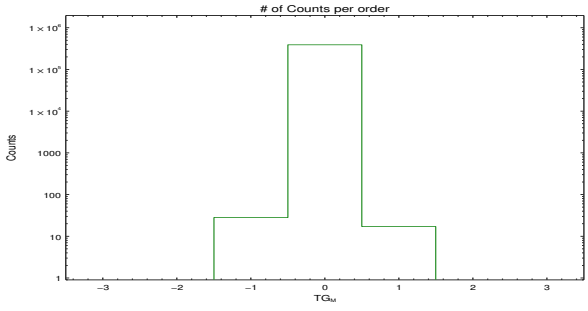


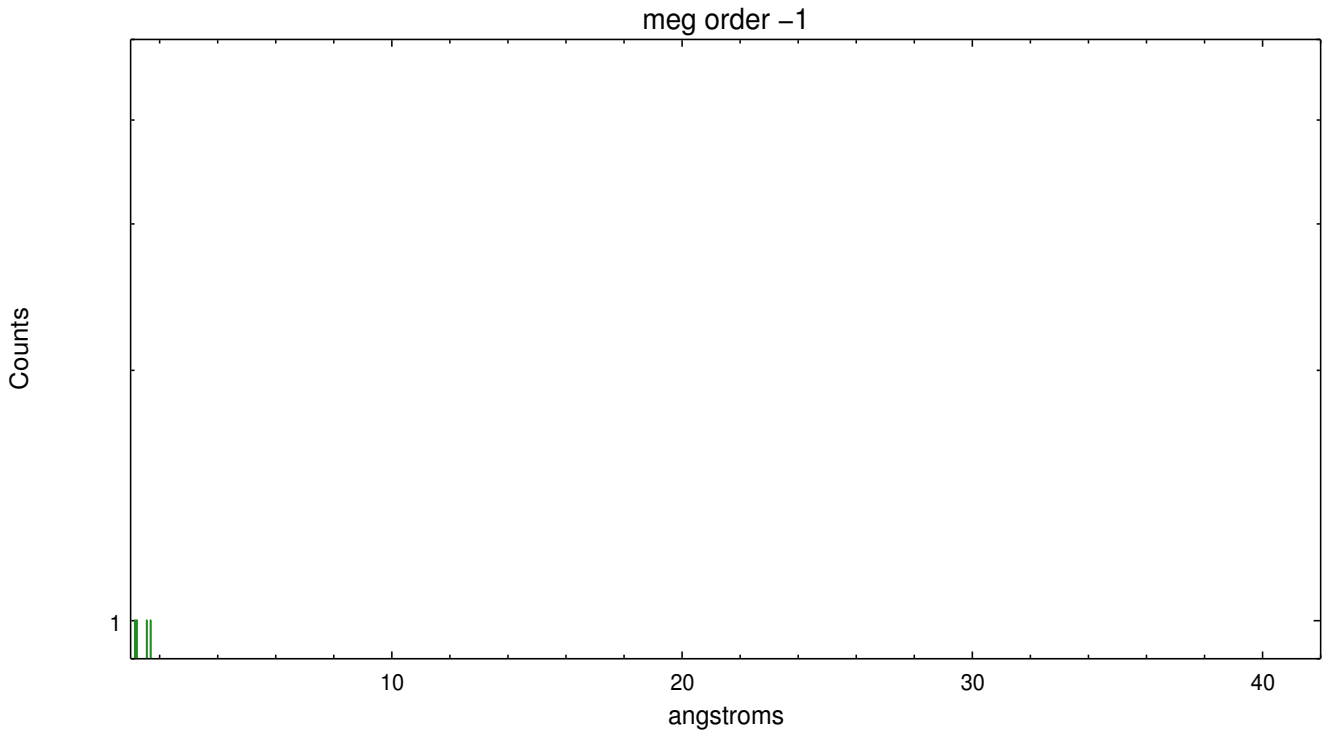
Spot Image MEG

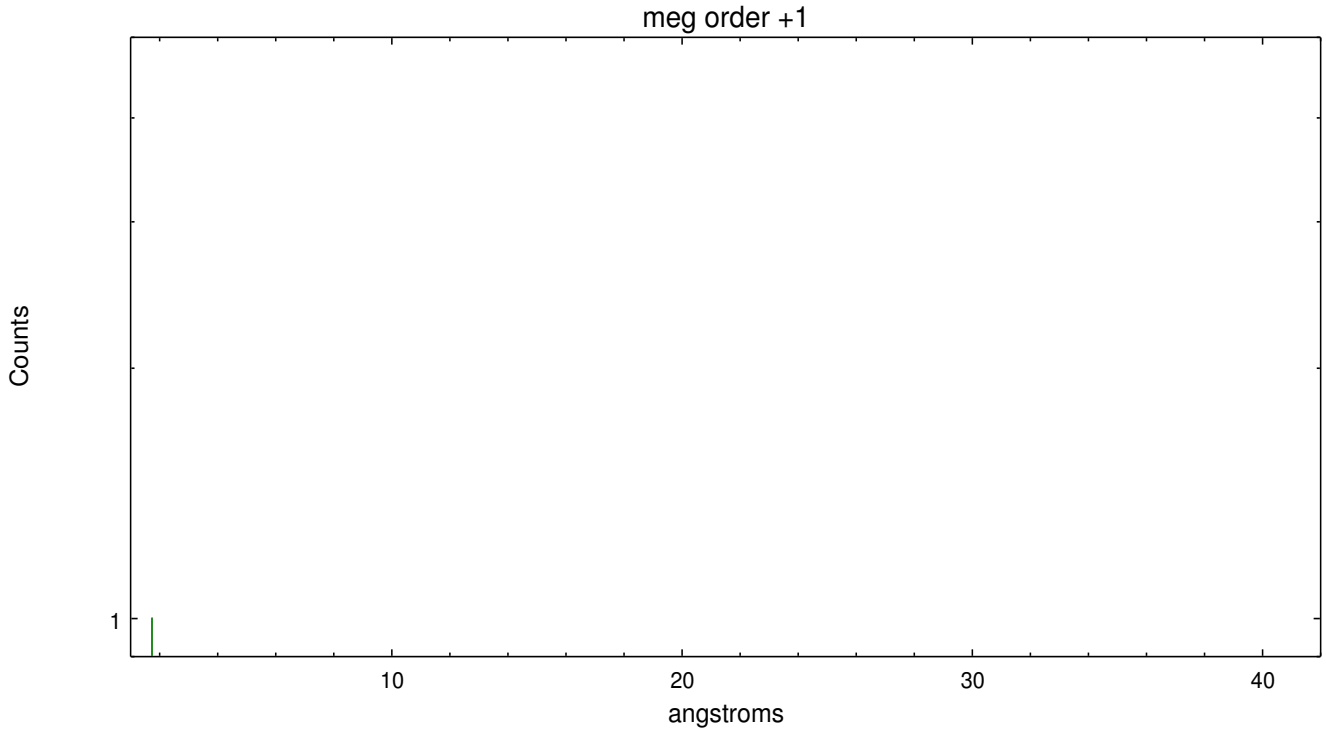


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	0	0	28	394427	17	0	0




meg order −1
Counts
1
10
20
30
40
angstroms


meg order +1
Counts
1
10
20
30
40
angstroms

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.01.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.8538

A.2 Comments

HETG is inserted as a filter; there is no useful gratings information in the observation. The zeroth order position used in the grating extraction is NOT at the position of the pulsar (which is not included in the pointing), but is near the edge of the subarray.