V&V Reference Report
L2 ASCDS Version : 8.5.1.1

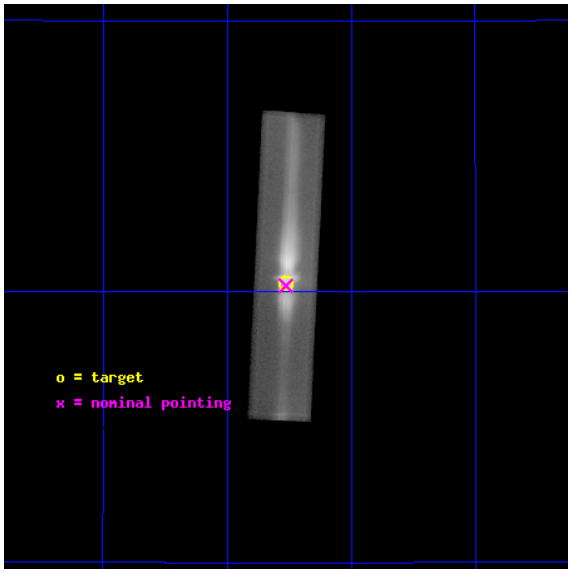
Observation 14686 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Mar 12 2013

Contents

1 Front

seq_num	501820	Sequence number
obs_id	14686	Observation id
title	Pre-planned Target of Opportunity Observations of the Crab Nebula upon the Occurrence of a Gamma-Ray Flare	Proposal title
observer	Dr. Martin Weisskopf	Principal investigator
object	Crab	Source name
ra_targ	83.631667	Observer's specified target RA [deg]
dec_targ	22.015667	Observer's specified target Dec [deg]
ra_nom	83.631812318204	Nominal RA [deg]
dec_nom	22.01089492967	Nominal Dec [deg]
roll_nom	272.72933463917	Nominal Roll [deg]
revision	2	Processing version of data
ontime	20180.969842374	[s]
livetime	20005.18712186	Ontime multiplied by DTCOR
l2events	2367228	Number of level 2 events

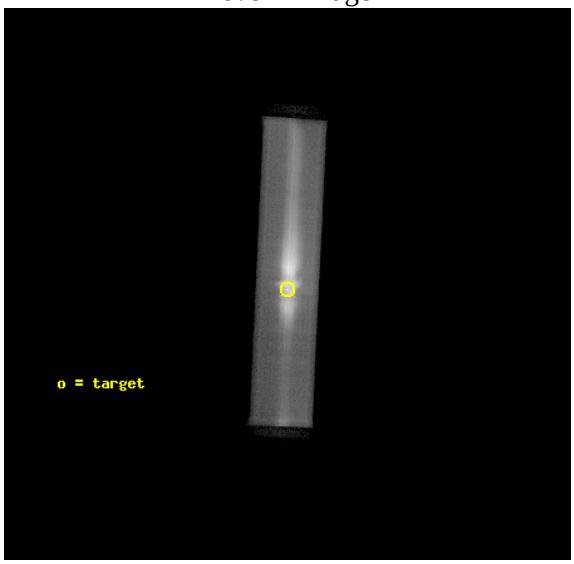


2 OBI

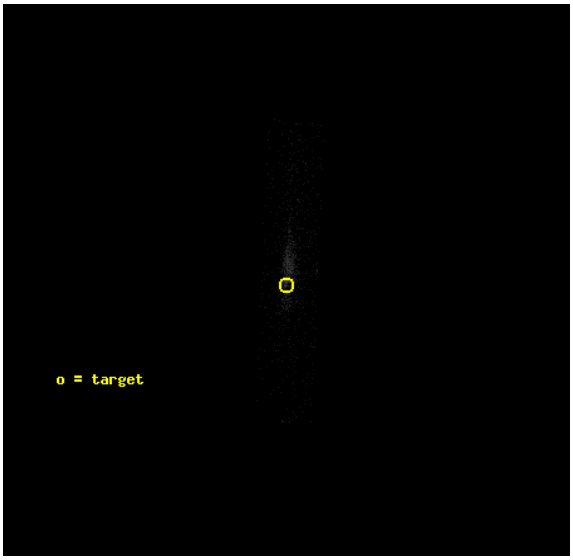
2.1 OBI

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	4.5.6	
date	2013-03-11T20:21:05	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	20000.000000	[s] Scheduled observation exposure time
ontime	20180.969842374	[s]
l1events	2609085	Number of level 1 events

2.1.3 Events

Level 1 Events

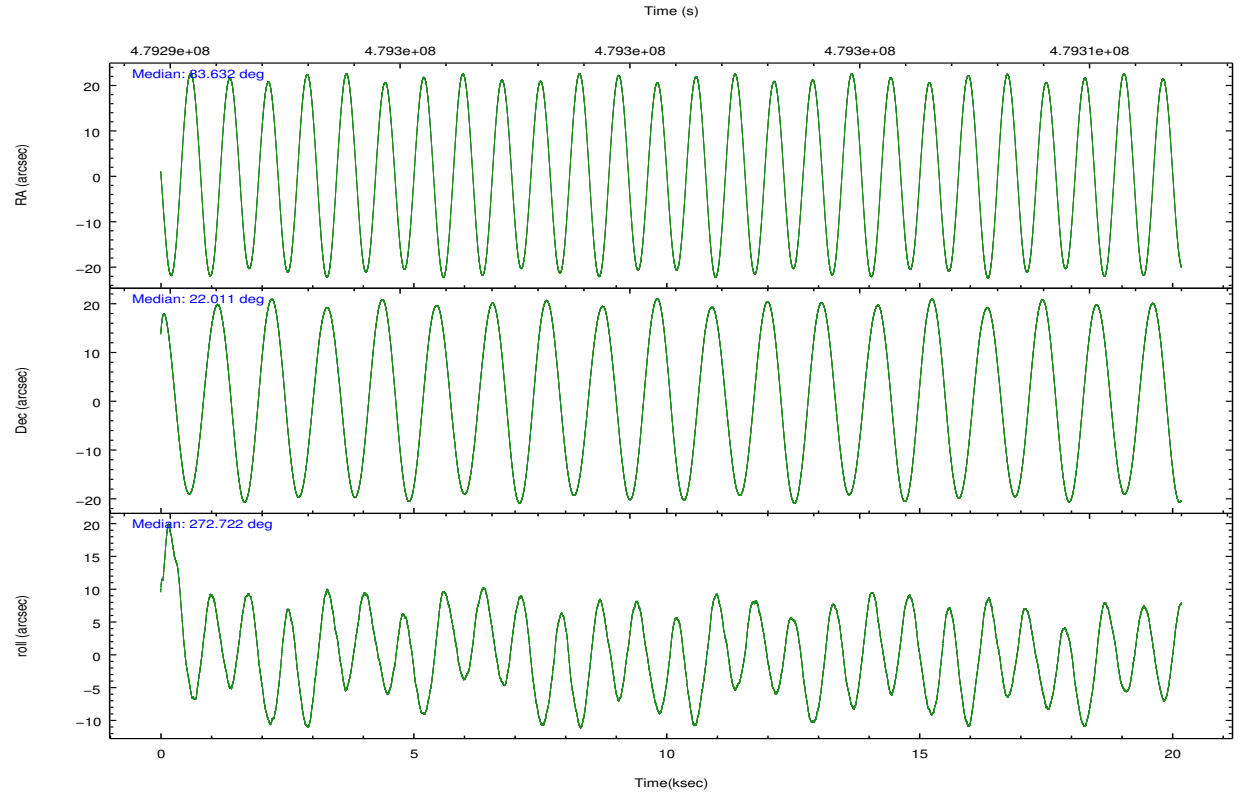
	segment 1	**segment 2**	**segment 3**
level 1 events	432	2608645	8
rejected events	22	42904	6
rejected %	5%	1%	75%

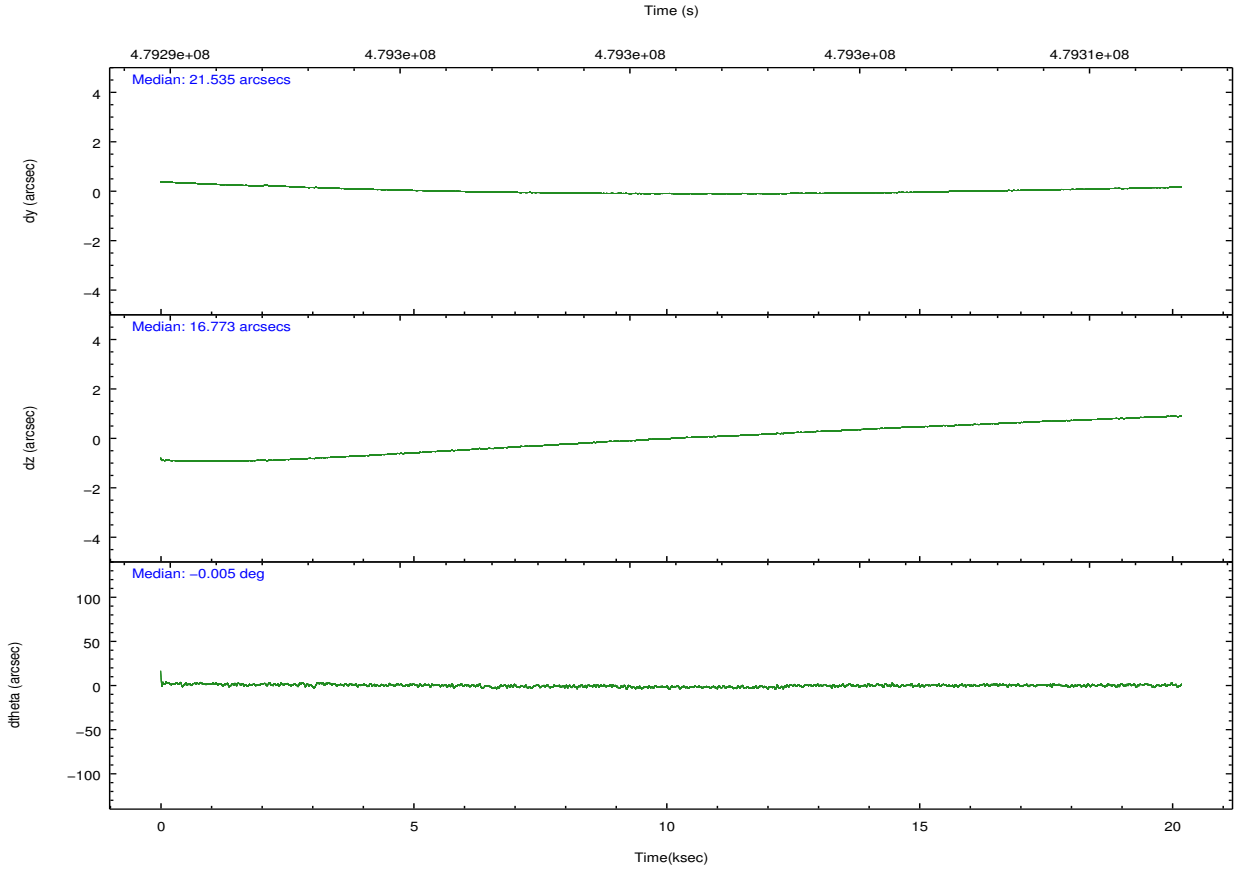
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	HRC	HRC
Detector	HRC-S	HRC-S
Grating	LETG	LETG
Data mode	OBSERVING	OBSERVING
Observation mode	POINTING	POINTING
[deg] Pointing RA	83.613818	83.63181231820427
[deg] Pointing Dec	22.034254	22.01089492966999
[deg] Pointing Roll	272.668746	272.7293346391689
[mm] SIM focus pos	-1.429586	-1.428180813131781
[mm] SIM defocus	0.1037507710433287	0.1051558262725154
[mm] SIM translation stage pos	250.455976	250.466033080201
[mm] SIM translation stage offset	0	-0.01005468664627074
[s] Observation start time (MET)	479290992.184000	479290038.9976
Observation start date	2013-03-10T08:22:05	2013-03-10T08:07:18
[s] Observation end time (MET)	479310992.184000	479311858.68628
Observation end date	2013-03-10T13:55:25	2013-03-10T14:10:58

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED

2.3 Aspect


Time (s)
4.7929e+08
4.793e+08
4.793e+08
4.793e+08
4.7931e+08
Median: 83.632 deg
RA (arcsec)
Median: 22.011 deg
Dec (arcsec)
Median: 272.722 deg
roll (arcsec)
Time(ksec)

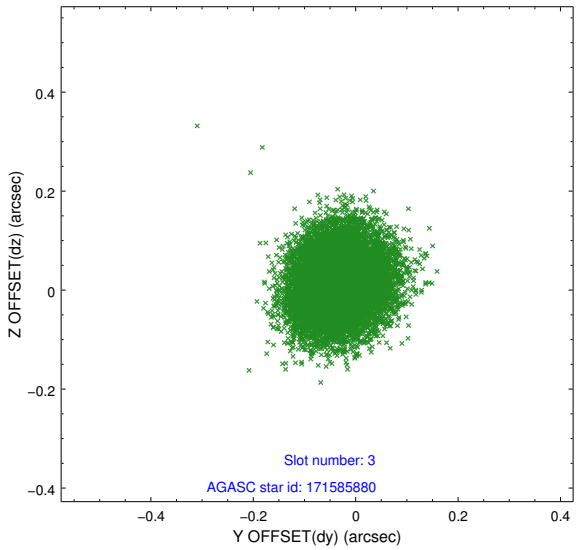

Time (s)
4.7929e+08
4.793e+08
4.793e+08
4.793e+08
4.7931e+08
Median: 21.535 arcsecs
dy (arcsec)
Median: 16.773 arcsecs
dz (arcsec)
Median: −0.005 deg
dtheta (arcsec)
Time(ksec)

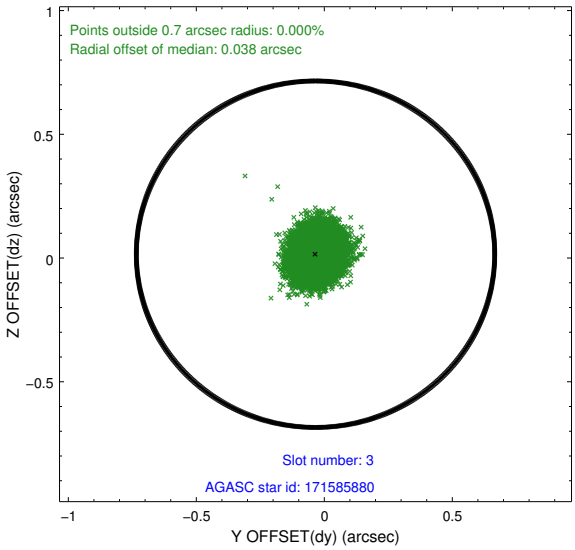
Slot Statistics

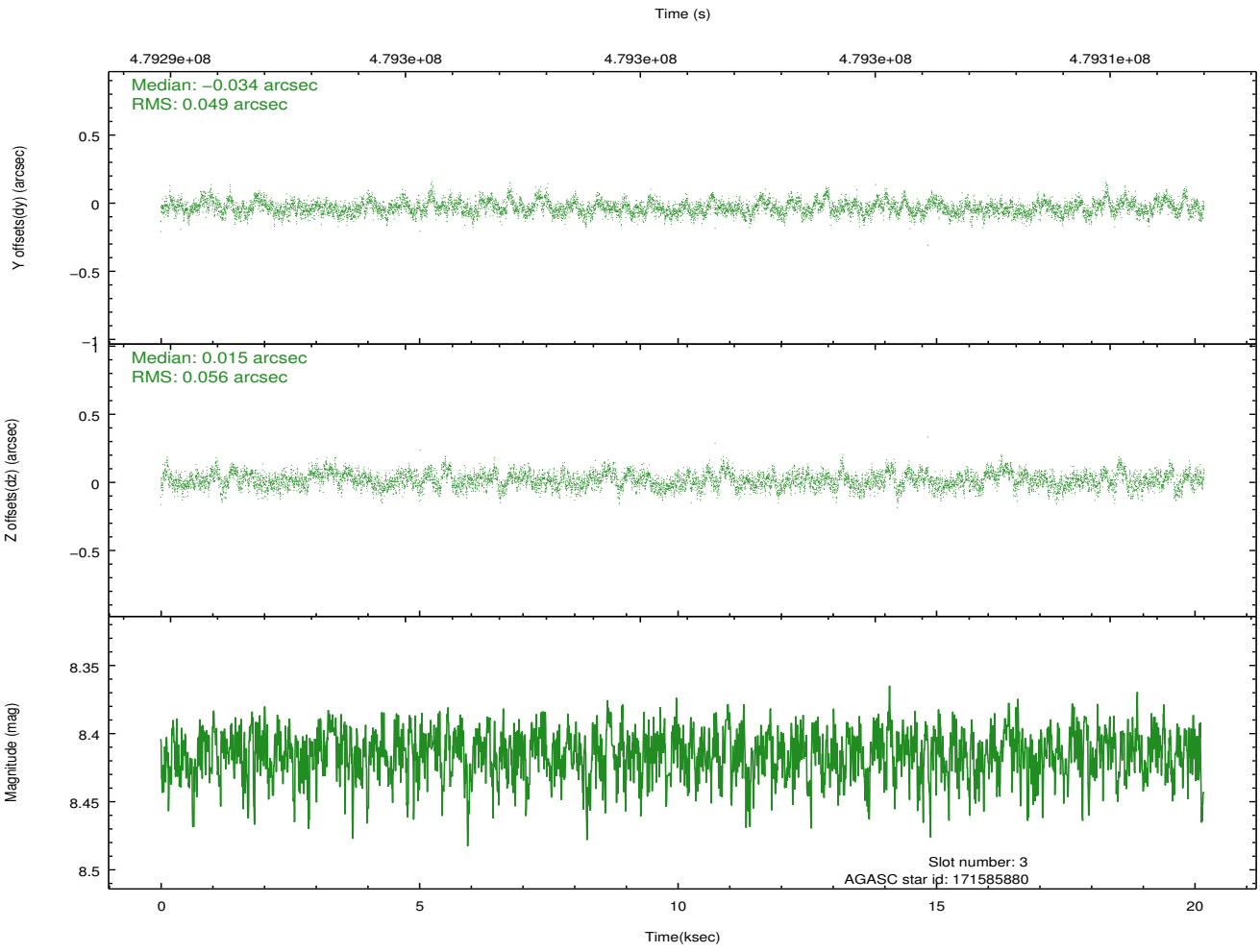
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	HRC-S-1	7.01	4922	-0.038	-0.186	0.019	0.040	0.000000	0.000000	-1176.25	-465.74
1	FID	HRC-S-3	7.02	4923	0.065	-0.084	0.018	0.042	0.000000	0.000000	-1179.14	563.81
2	FID	HRC-S-4	6.94	4923	0.361	-0.028	0.006	0.010	0.000000	0.000000	1222.13	566.72
3	GUIDE	171585880	8.41	9842	-0.034	0.015	0.081	0.127	83.676260	22.176319	-500.92	232.05
4	GUIDE	171586032	8.93	9837	0.131	-0.021	0.110	0.172	83.950197	22.083225	-124.78	1129.50
5	GUIDE	171721904	9.21	9824	-0.020	0.047	0.121	0.195	84.272676	22.116922	-199.65	2209.52
6	GUIDE	243941560	8.28	9835	-0.284	0.054	0.084	0.133	83.733264	22.568598	-1903.00	486.43
7	GUIDE	171597832	9.15	9810	0.202	-0.099	0.123	0.202	83.183230	21.366702	2332.01	-1553.31

2.4 Star Slots

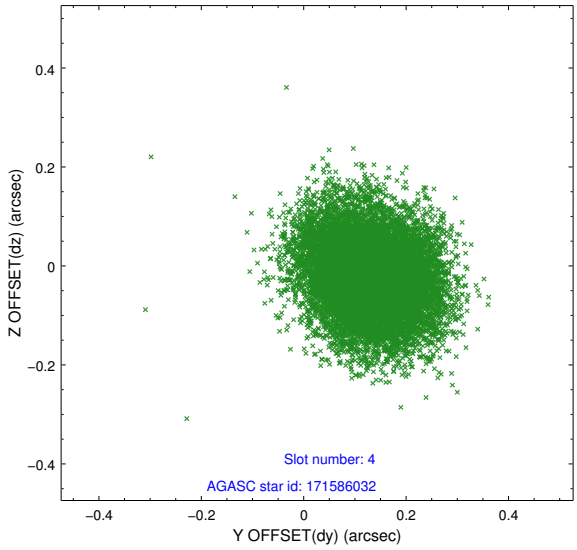
2.4.1 Slot 3

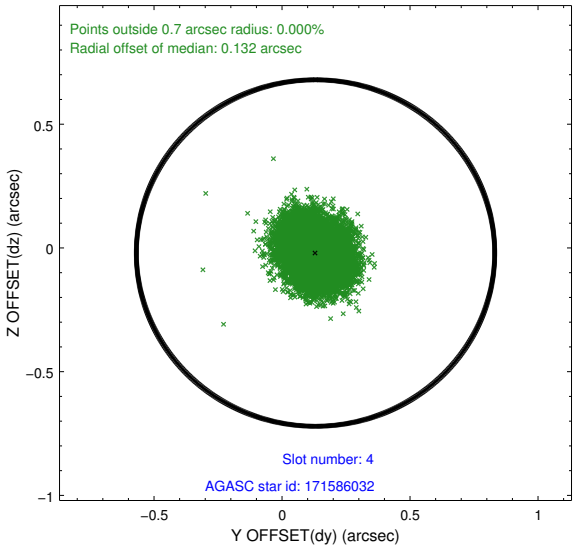


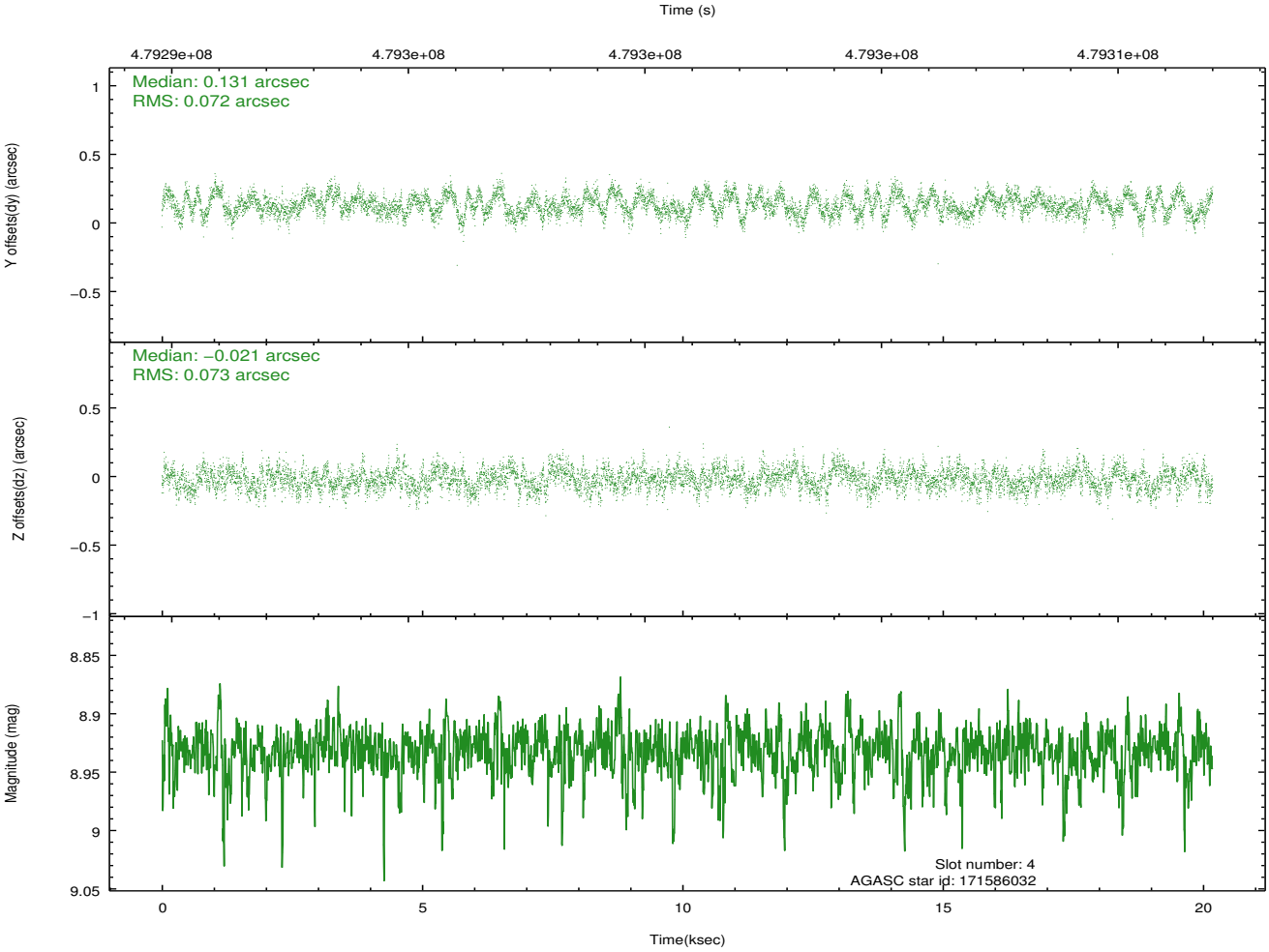




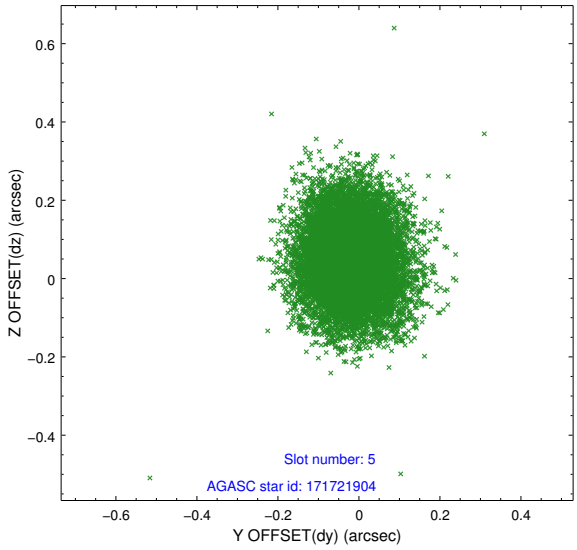
2.4.2 Slot 4

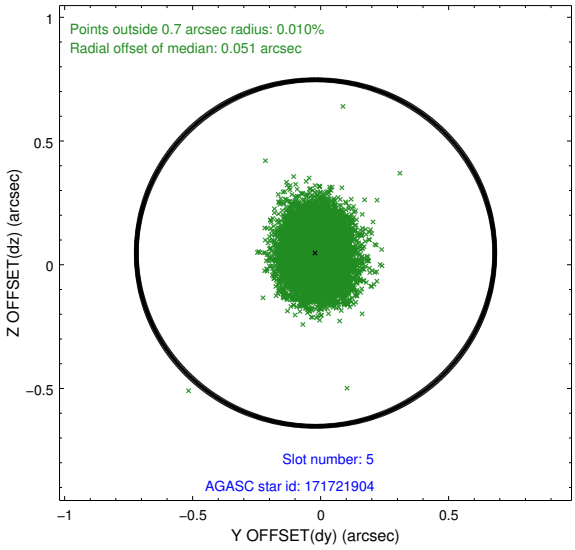

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032

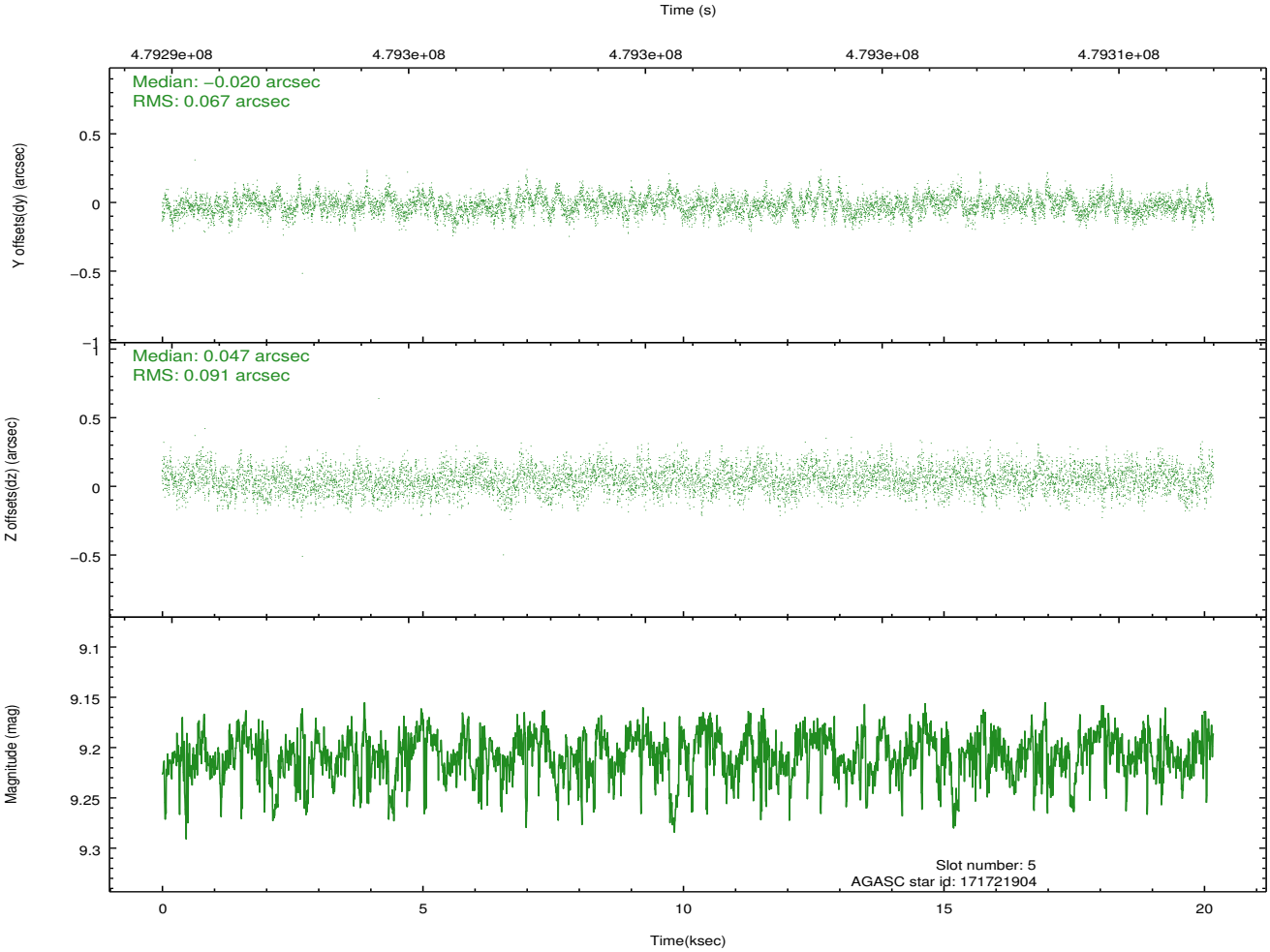

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.132 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032


Time (s)
4.7929e+08
4.793e+08
4.793e+08
4.793e+08
4.7931e+08
Median: 0.131 arcsec
RMS: 0.072 arcsec
Y offsets(dy) (arcsec)
Median: −0.021 arcsec
RMS: 0.073 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 171586032
Time(ksec)

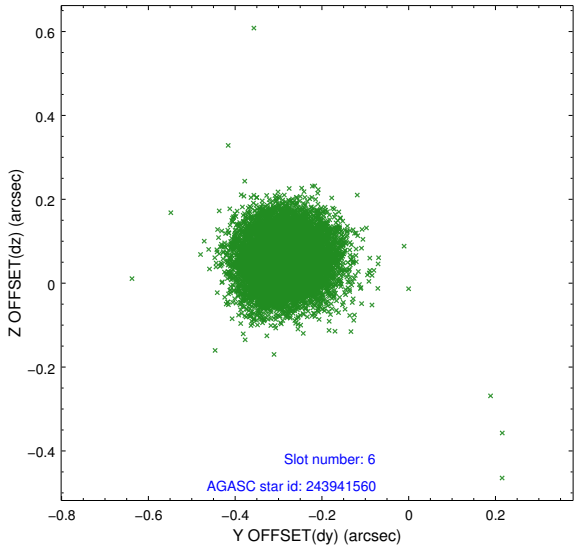
2.4.3 Slot 5

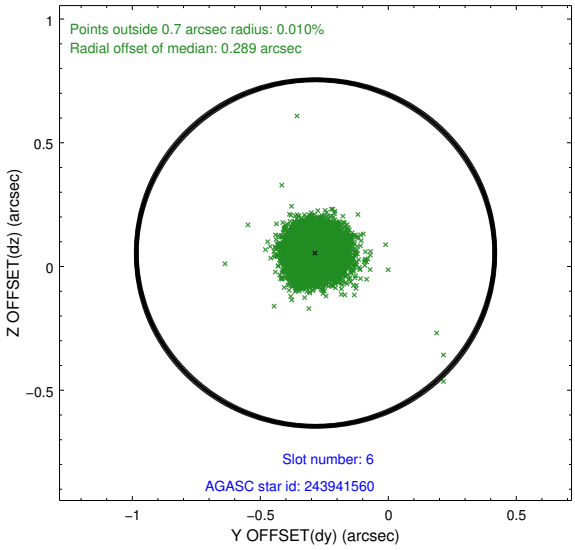

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904

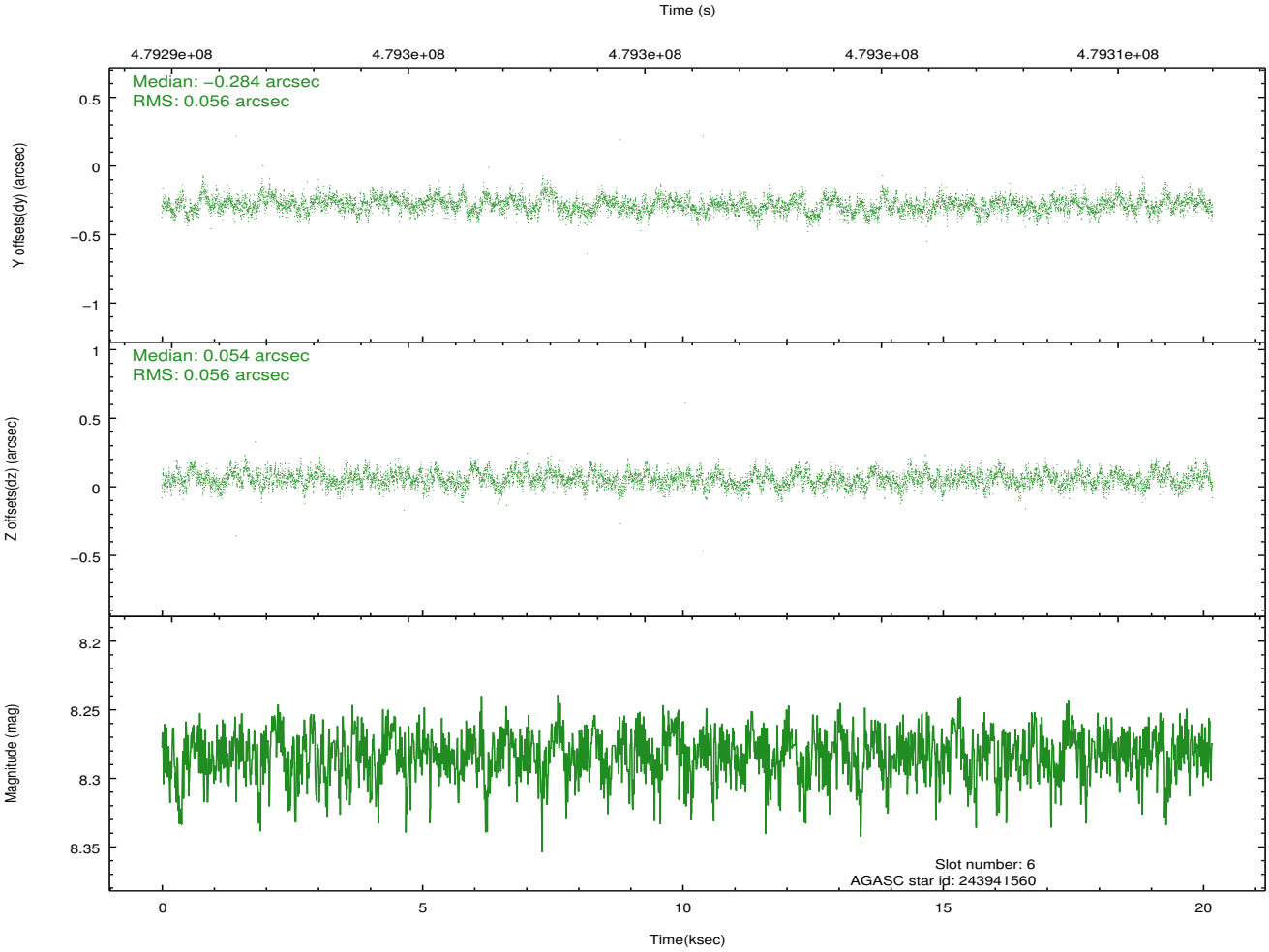

Points outside 0.7 arcsec radius: 0.010%
Radial offset of median: 0.051 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904


Time (s)
Median: −0.020 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: 0.047 arcsec
RMS: 0.091 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 171721904
Time(ksec)

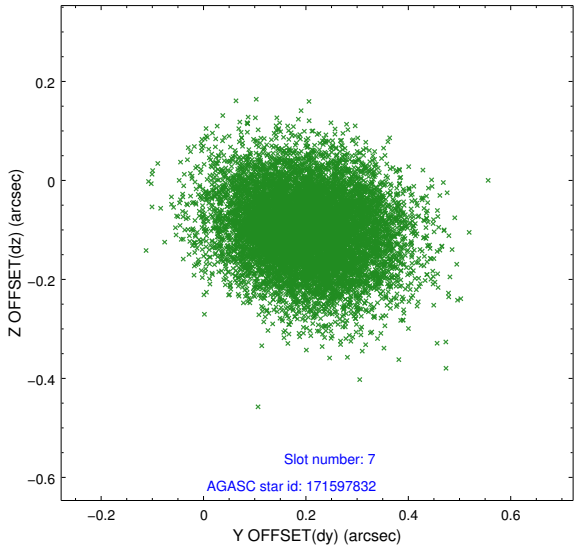
2.4.4 Slot 6

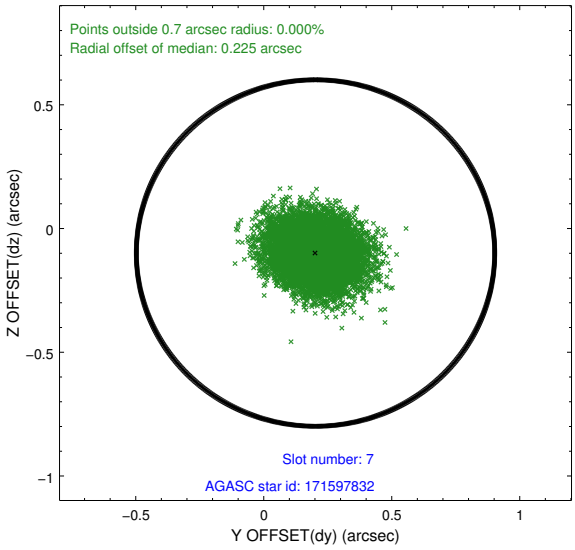

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560

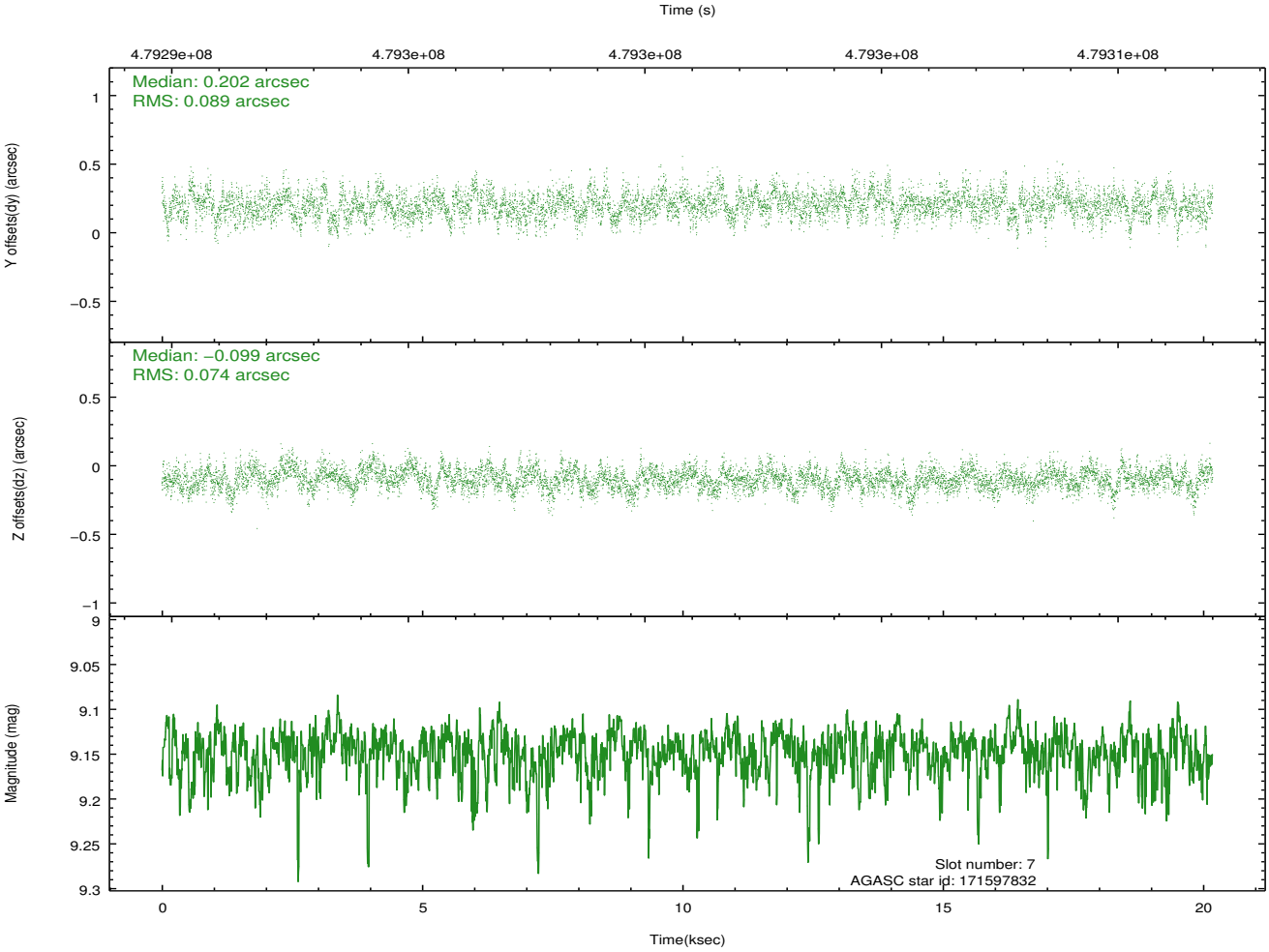

Points outside 0.7 arcsec radius: 0.010%
Radial offset of median: 0.289 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560


Time (s)
Median: −0.284 arcsec
RMS: 0.056 arcsec
Y offsets(dy) (arcsec)
Median: 0.054 arcsec
RMS: 0.056 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 243941560
Time(ksec)

2.4.5 Slot 7

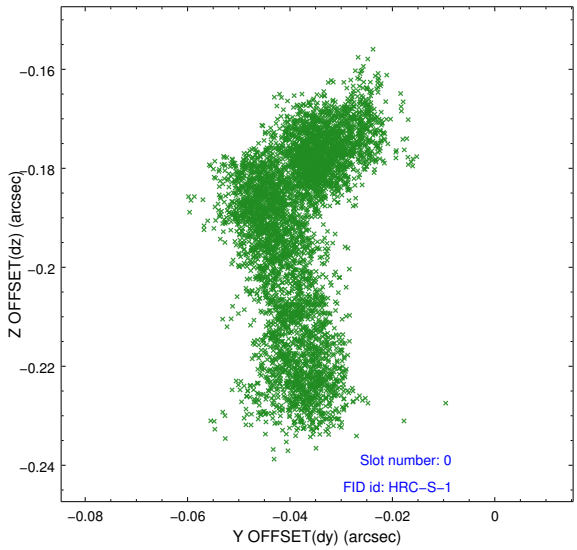

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

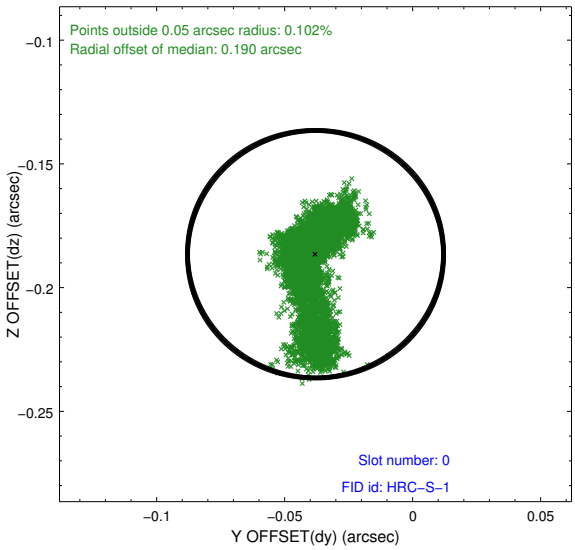

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.225 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

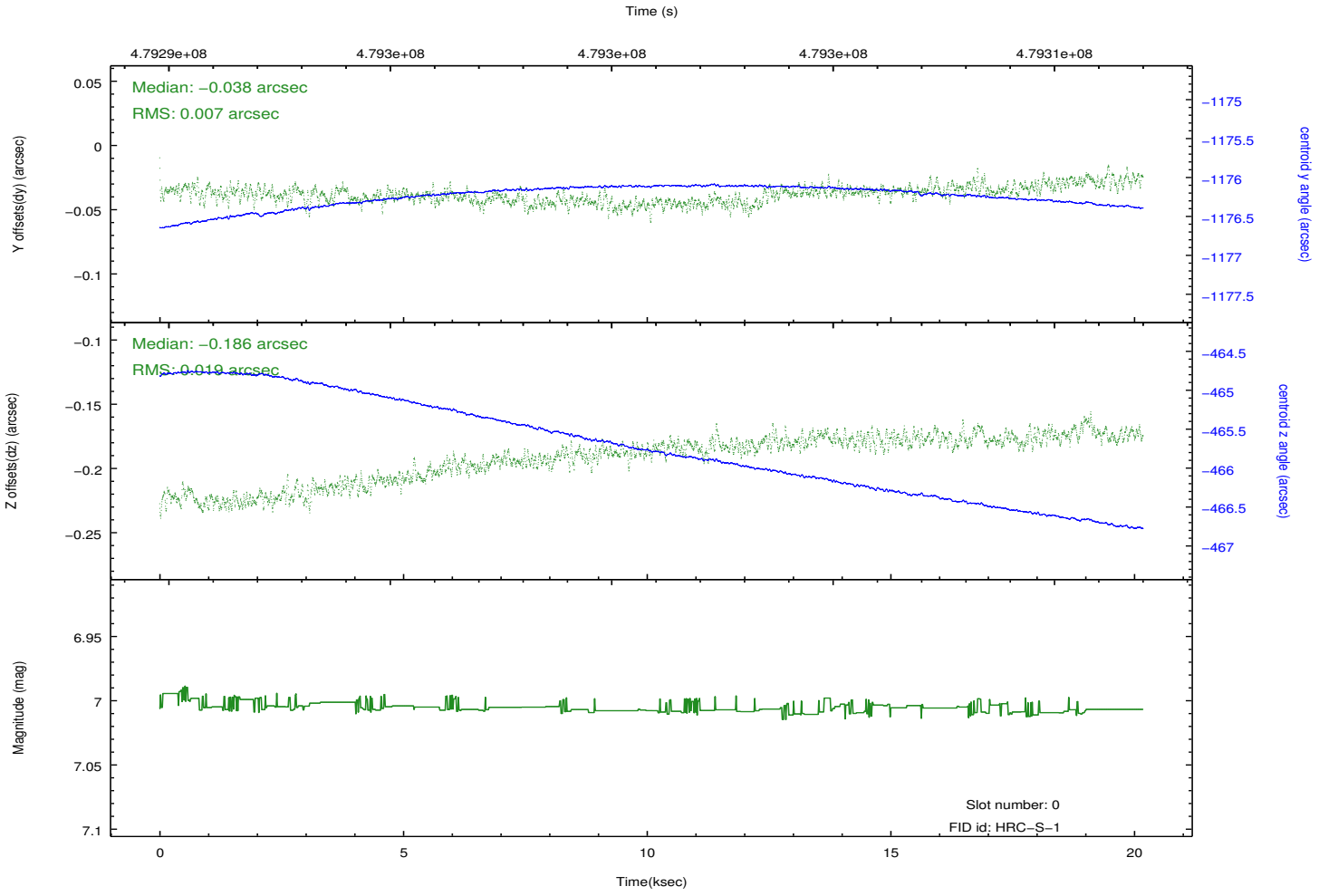

Time (s)
Median: 0.202 arcsec
RMS: 0.089 arcsec
Y offsets(dy) (arcsec)
Median: −0.099 arcsec
RMS: 0.074 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 171597832
Time(ksec)

2.5 FID Slots

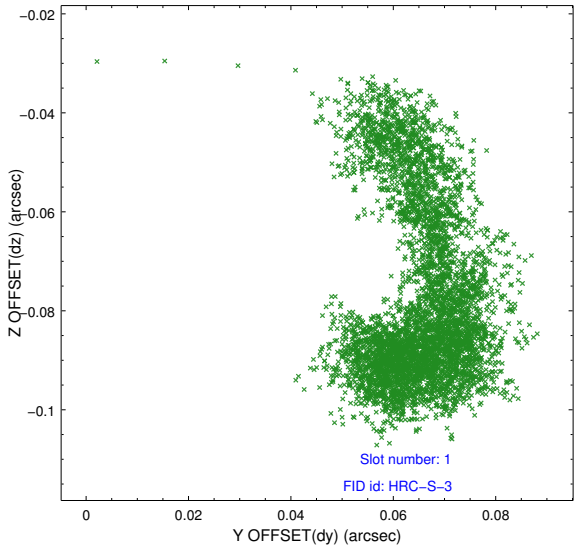
2.5.1 Slot 0

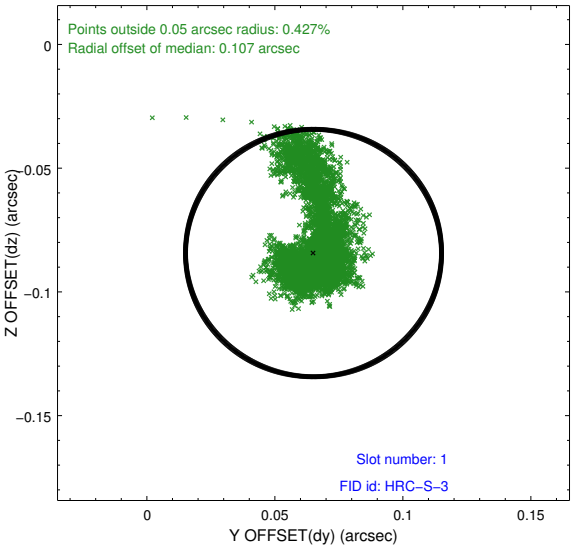


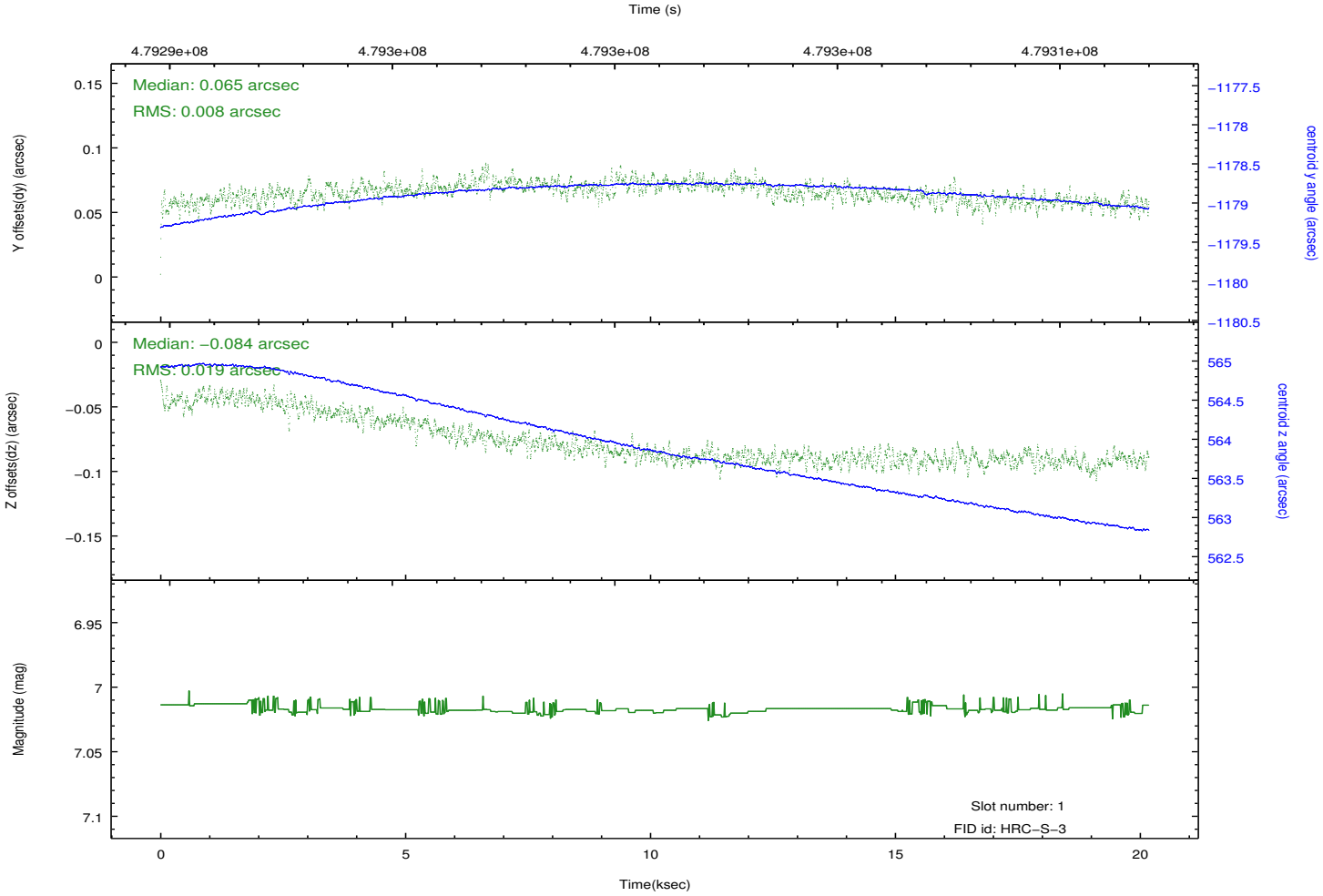




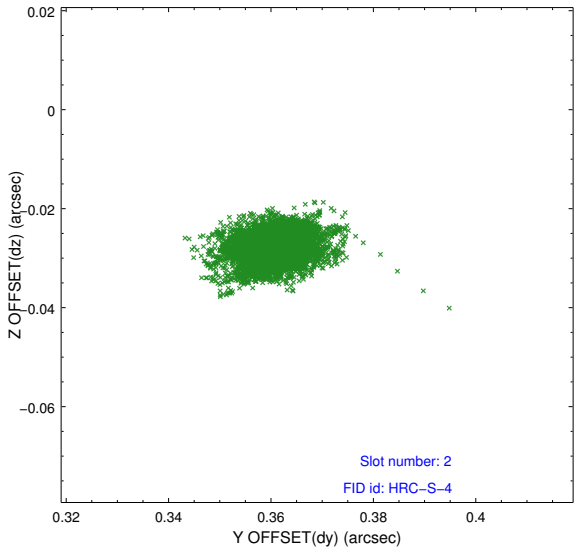
2.5.2 Slot 1

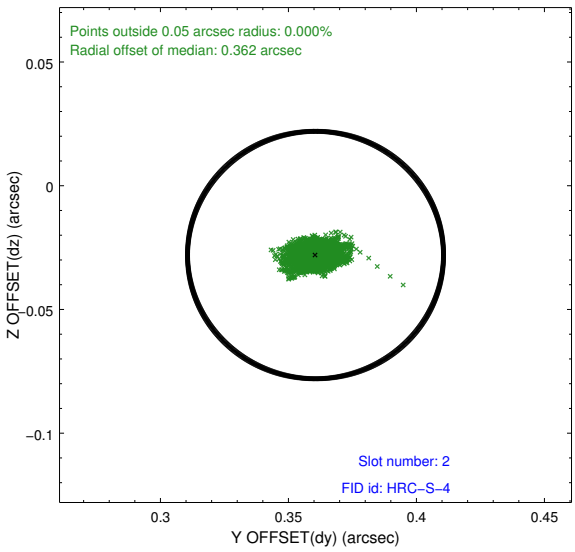

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: HRC−S−3

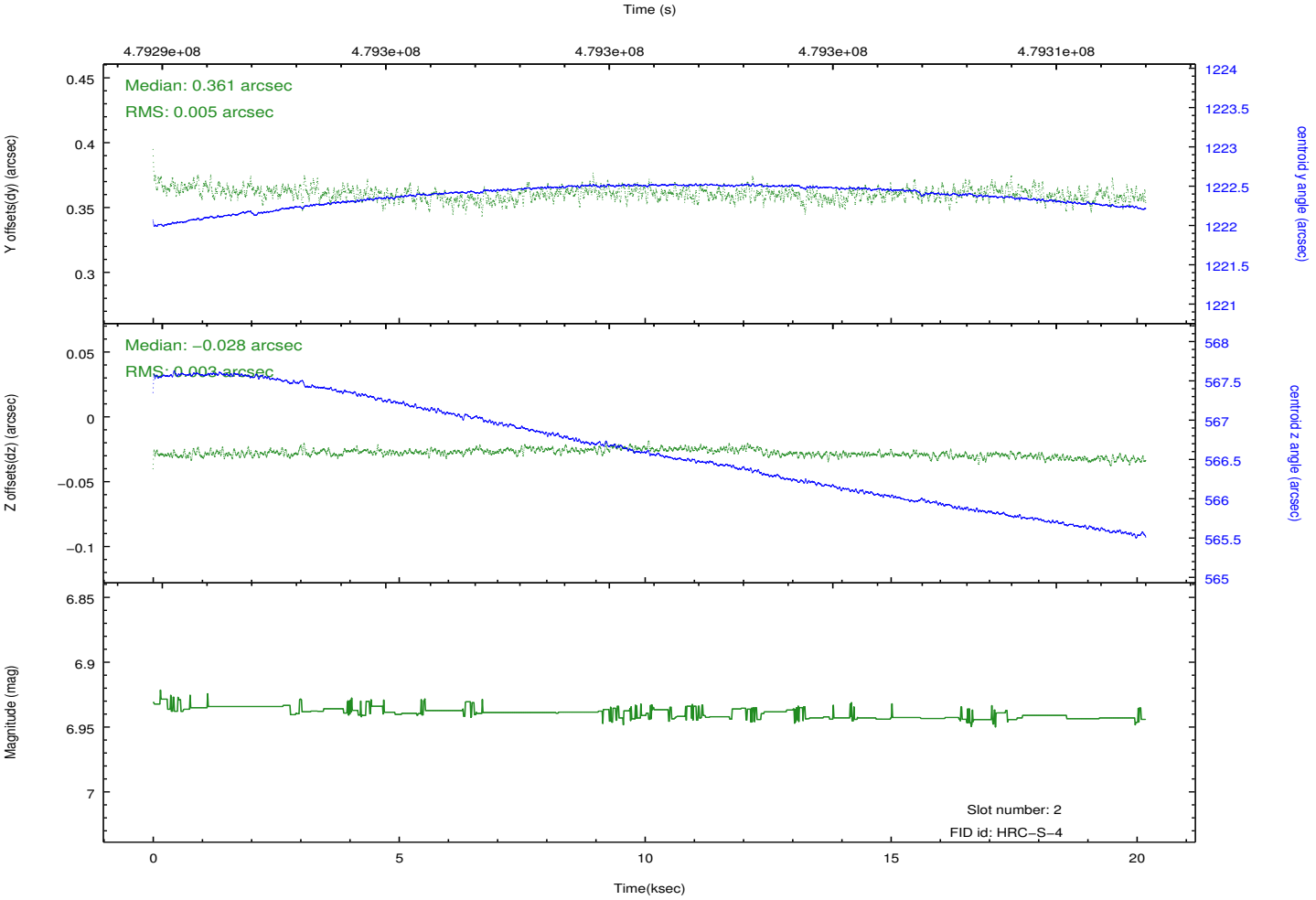

Points outside 0.05 arcsec radius: 0.427%
Radial offset of median: 0.107 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: HRC−S−3


Time (s)
Median: 0.065 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.084 arcsec
RMS: 0.019 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: HRC−S−3
Time(ksec)

2.5.3 Slot 2

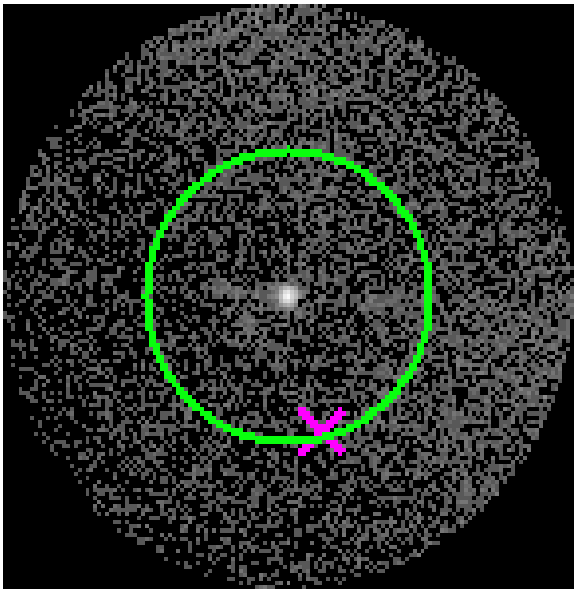

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: HRC−S−4


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.362 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: HRC−S−4

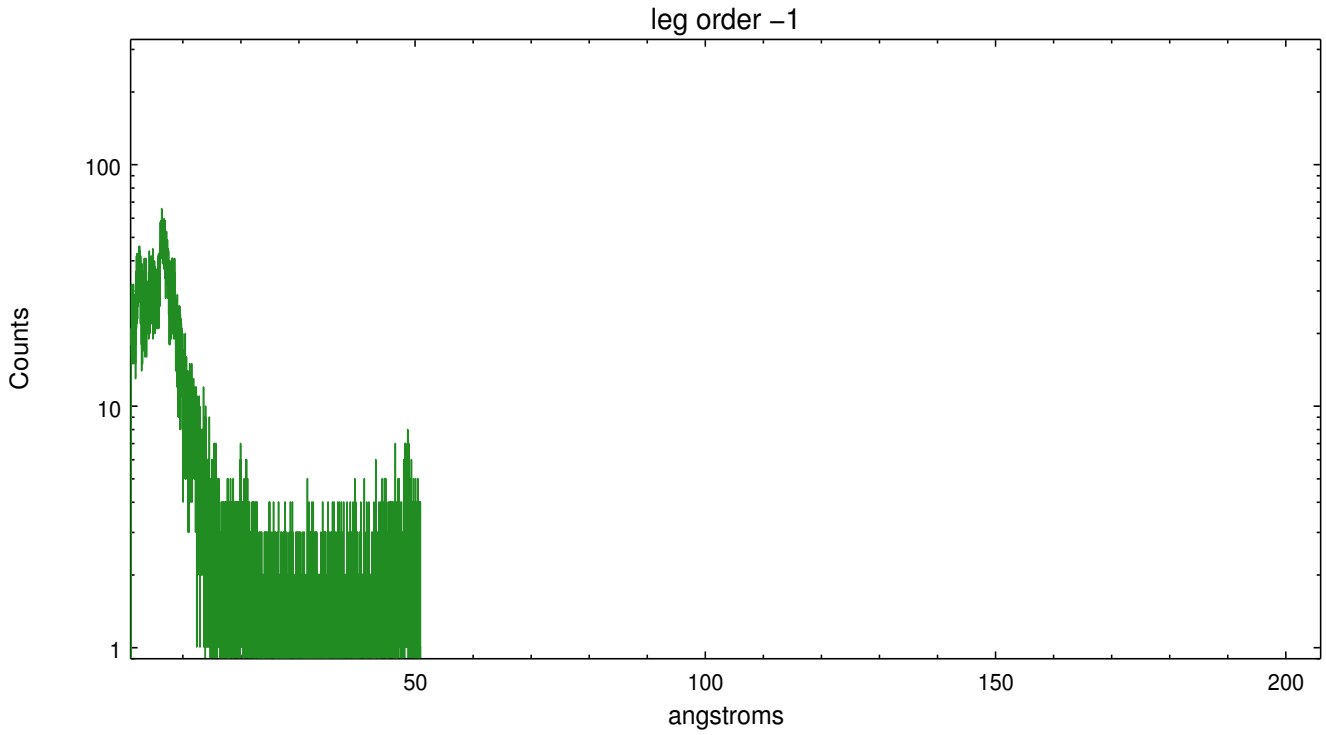

Time (s)
Median: 0.361 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.028 arcsec
RMS: 0.003 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: HRC−S−4
Time(ksec)

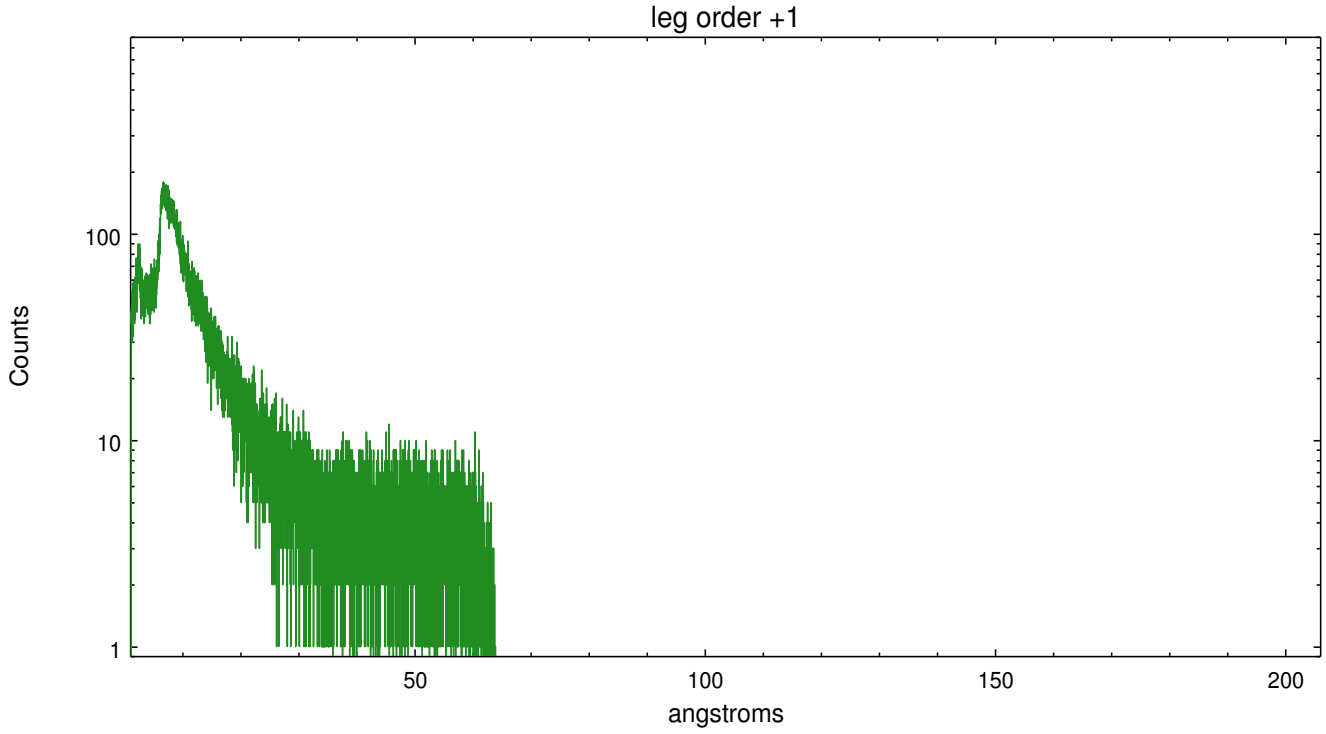
3 Gratings

3.1 LETG Arm



LETG Zero Order


leg order –1
Counts
100
10
1
50
100
150
200
angstroms


leg order +1
Counts
100
10
1
50
100
150
200
angstroms

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.03.12
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.180969842374

A.2 Comments

Non-standard MCP HV setting used for this observation. The setting used is top=91, bottom=103. This setting is intermediate between the original default HV setting for HRC and the 2012 revised default HV setting. THERE IS NO DETECTOR GAIN CALIBRATION FOR THIS HV SETTING. The default CALDB gain map has been applied, but is not known to be an appropriate calibration. This observation was processed with custom gti-limit parameters to allow events from non-standard voltages to be included in gti. LETG grating inserted as a filter only.