V&V Reference Report
L2 ASCDS Version : 8.4.4

Observation 8544 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Apr 22 2012

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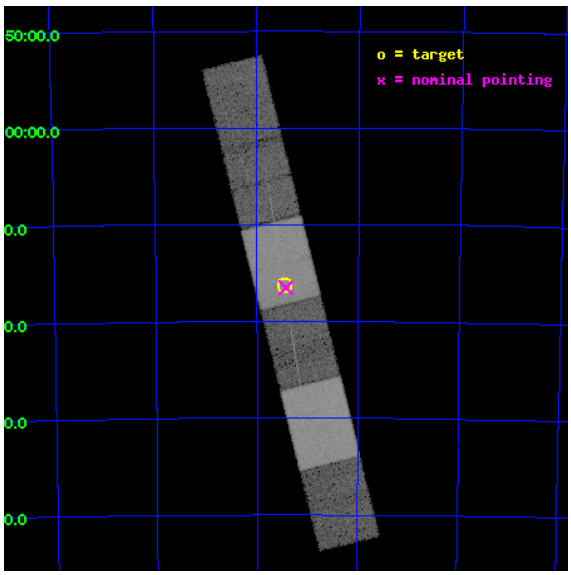
1 Front

seq_num	500720	Sequence number
obs_id	8544	Observation id
title	High resolution spectral imaging of SN 1987A at 20 years: HETG observation	Proposal title
observer	Prof Claude Canizares	Principal investigator
object	Sn 1987A	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.866667	Observer's specified target RA [deg]
dec_targ	-69.269722	Observer's specified target Dec [deg]
ra_nom	83.857900549093	Nominal RA [deg]
dec_nom	-69.275383430969	Nominal Dec [deg]
roll_nom	256.04841101957	Nominal Roll [deg]
revision	3	Processing version of data
ontime	19430.0	Sum of GTIs [s]
livetime	19116.188647168	Livetime [s]
ontime4	19427.458999753	Sum of GTIs [s]
ontime5	19430.0	Sum of GTIs [s]
ontime6	19430.0	Sum of GTIs [s]
ontime7	19430.0	Sum of GTIs [s]
ontime8	19424.906702816	Sum of GTIs [s]
ontime9	19429.947653353	Sum of GTIs [s]
l2events	241331	Number of level 2 events

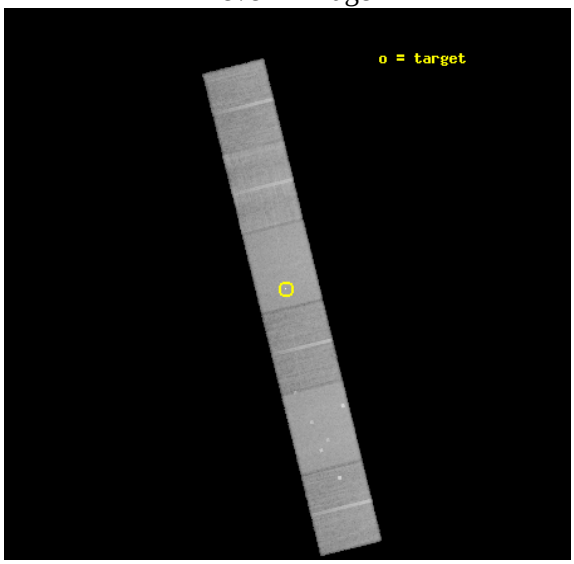


2 OBI

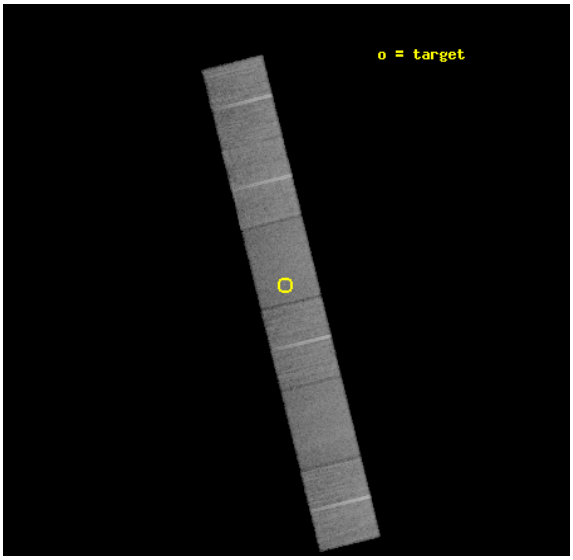
2.1 OBI

2.1.1 Images

Level 1 Image

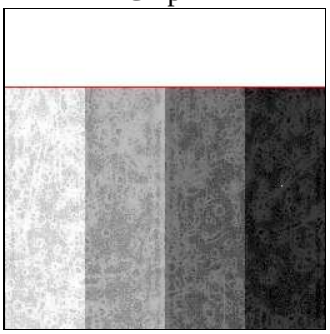


Level 1 Bad Events

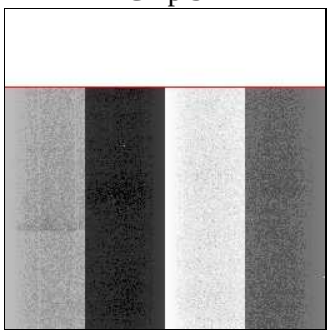


2.1.2 Bias

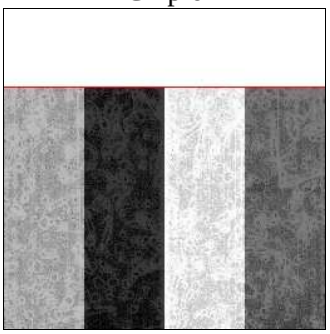
Chip 4



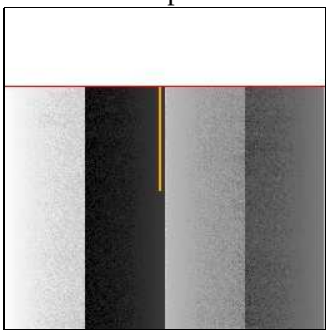
Chip 5



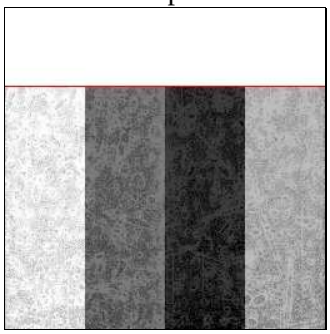
Chip 6



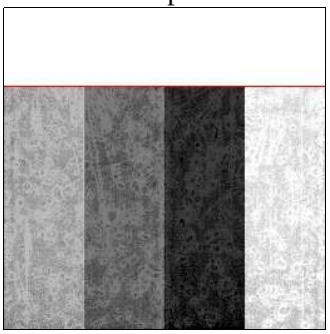
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	8.4.4	Processing system revision
caldbver	4.4.9	
date	2012-04-22T06:00:26	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	19380.440000	[s] Scheduled observation exposure time
ontime	19430.0	Sum of GTIs [s]
ontime4	19427.458999753	Sum of GTIs [s]
ontime5	19430.0	Sum of GTIs [s]
ontime6	19430.0	Sum of GTIs [s]
ontime7	19430.0	Sum of GTIs [s]
ontime8	19424.906702816	Sum of GTIs [s]
ontime9	19429.947653353	Sum of GTIs [s]
l1events	1021860	Number of level 1 events

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	157377	214554	143122	191621	177111	138075
rejected events	135684	113725	124074	108855	134271	119375
rejected %	86%	53%	86%	56%	75%	86%

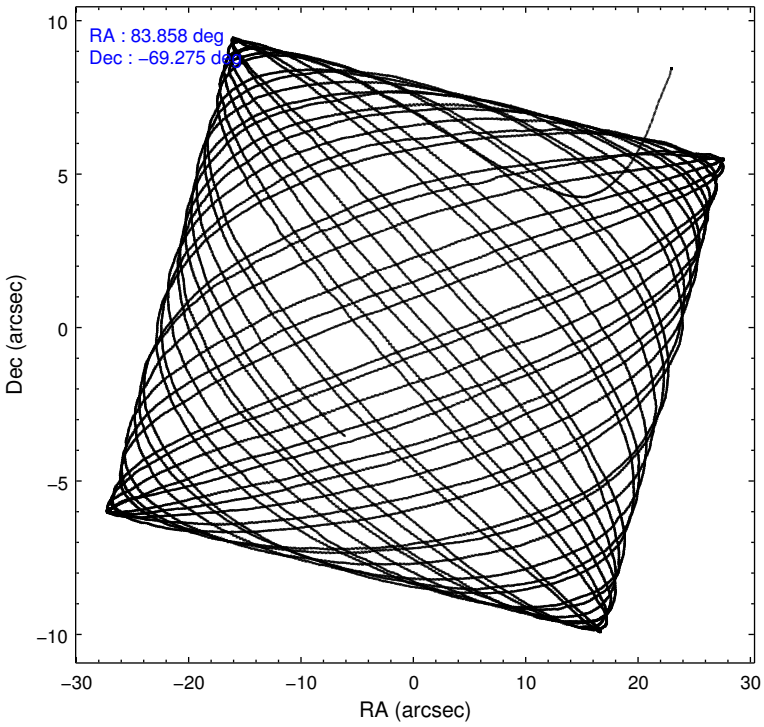
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	10928	11537	7985	7722	14120	7857
	6%	5%	5%	4%	7%	5%
grade 1 events	143	400	77	198	136	82
	0%	0%	0%	0%	0%	0%
grade 2 events	4076	29206	3920	16883	9154	3645
	2%	13%	2%	8%	5%	2%
grade 3 events	1875	4424	1806	7328	4583	1778
	1%	2%	1%	3%	2%	1%
grade 4 events	1863	4190	1698	7307	4290	1785
	1%	1%	1%	3%	2%	1%
grade 5 events	6144	15910	6359	17549	8457	6619
	3%	7%	4%	9%	4%	4%
grade 6 events	2952	51492	3639	43536	10704	3641
	1%	23%	2%	22%	6%	2%
grade 7 events	129396	97395	117638	91098	125667	112668
	82%	45%	82%	47%	70%	81%

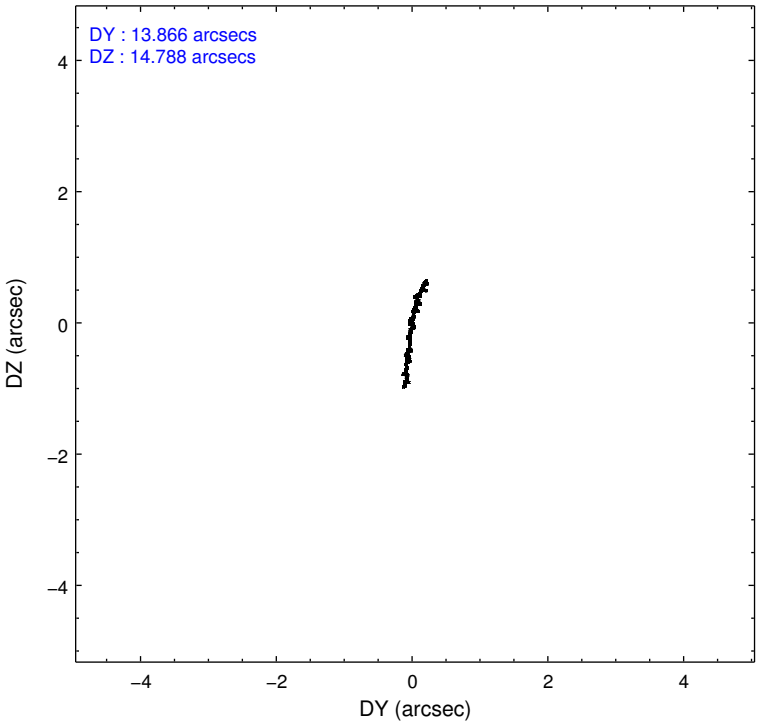
2.2 Compared Parameters

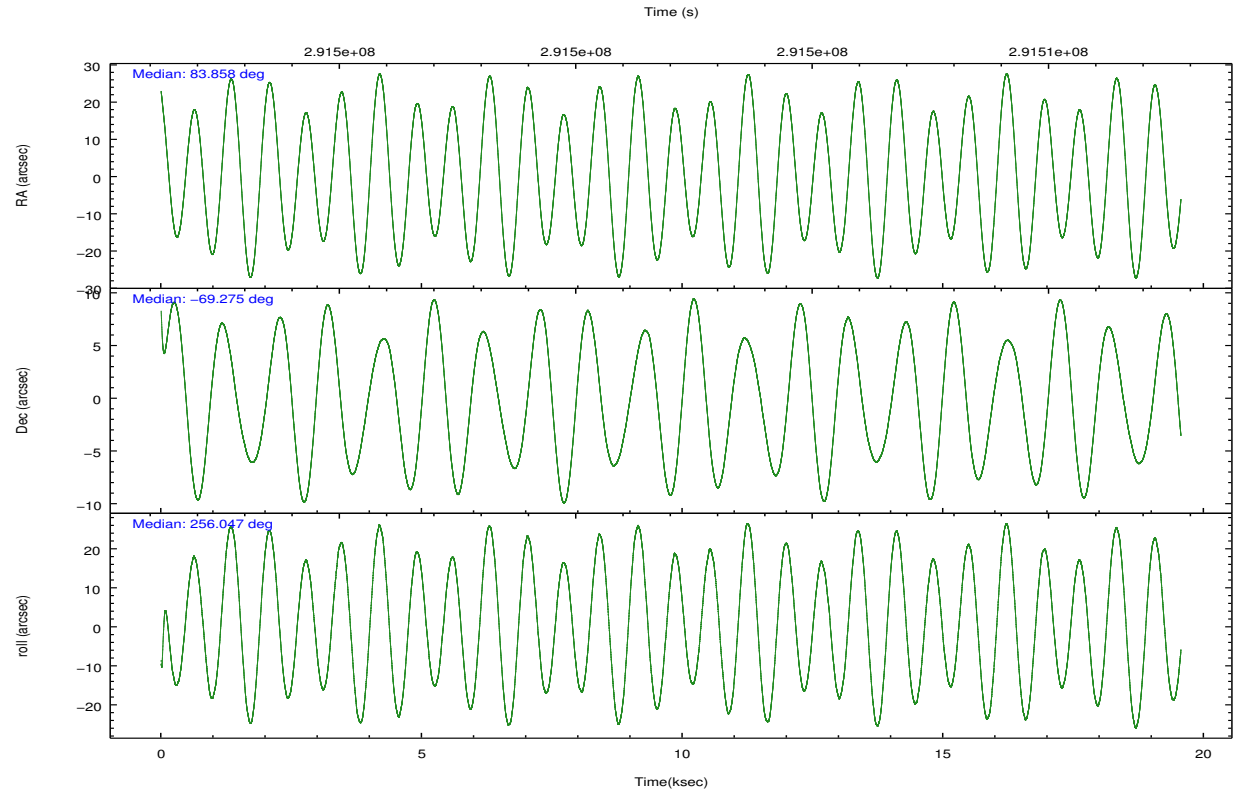
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	83.835586	83.85790054909339
[deg] Pointing Dec	-69.249242	-69.27538343096887
[deg] Pointing Roll	255.870938	256.048411019574
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-187.132523	-187.1254020033014
[mm] SIM translation stage offset	-3	-3.007120579706367
[s] Observation start time (MET)	291492414.184000	291491451.12347
Observation start date	2007-03-28T18:05:49	2007-03-28T17:50:51
[s] Observation end time (MET)	291511795.184000	291512014.16195
Observation end date	2007-03-28T23:28:50	2007-03-28T23:33:34
Read mode	TIMED	TIMED

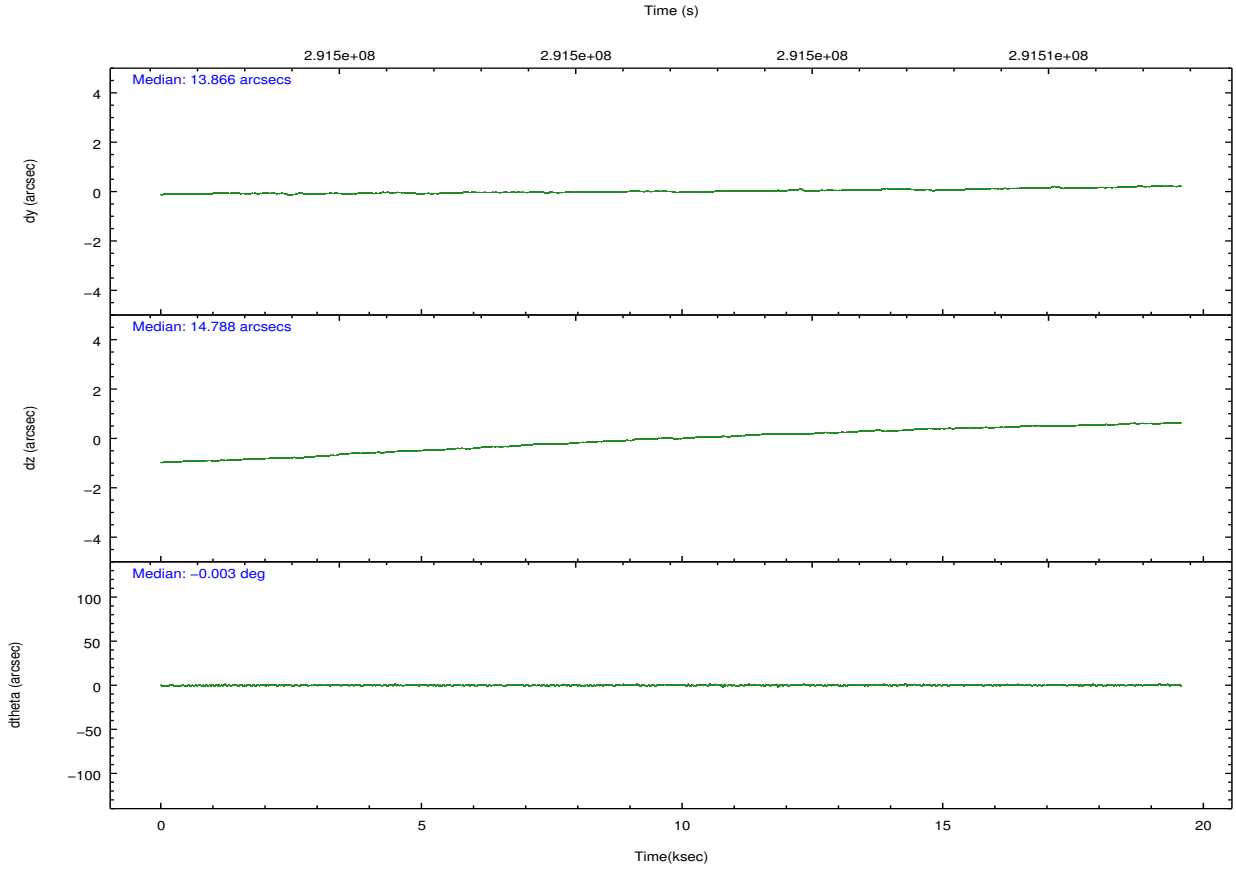
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	1	1
Subarray row count	774	774
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	2.5

2.3 Aspect


RA : 83.858 deg
Dec : −69.275 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−30
−20
−10
0
10
20
30


DY : 13.866 arcsecs
DZ : 14.788 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: 83.858 deg
RA (arcsec)
Median: −69.275 deg
Dec (arcsec)
Median: 256.047 deg
roll (arcsec)
Time(ksec)

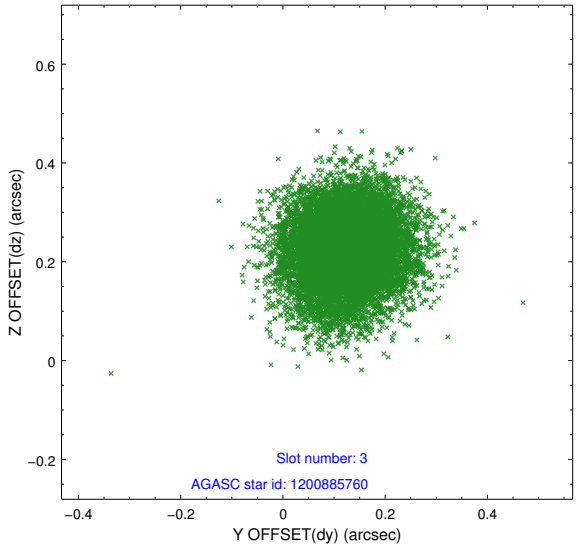

Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: 13.866 arcsecs
dy (arcsec)
Median: 14.788 arcsecs
dz (arcsec)
Median: −0.003 deg
dtheta (arcsec)
Time(ksec)

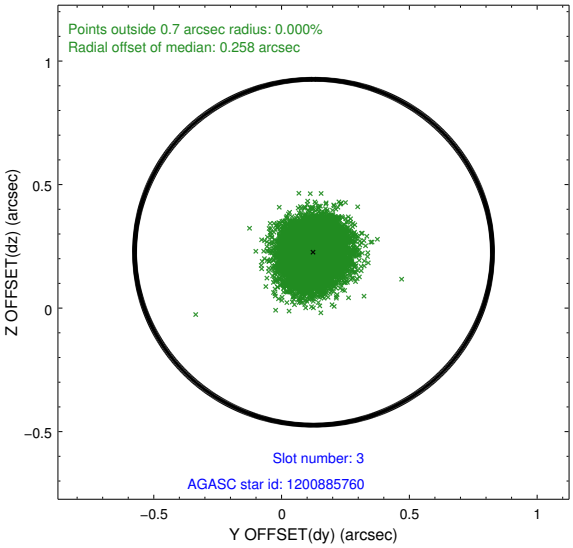
Slot Statistics

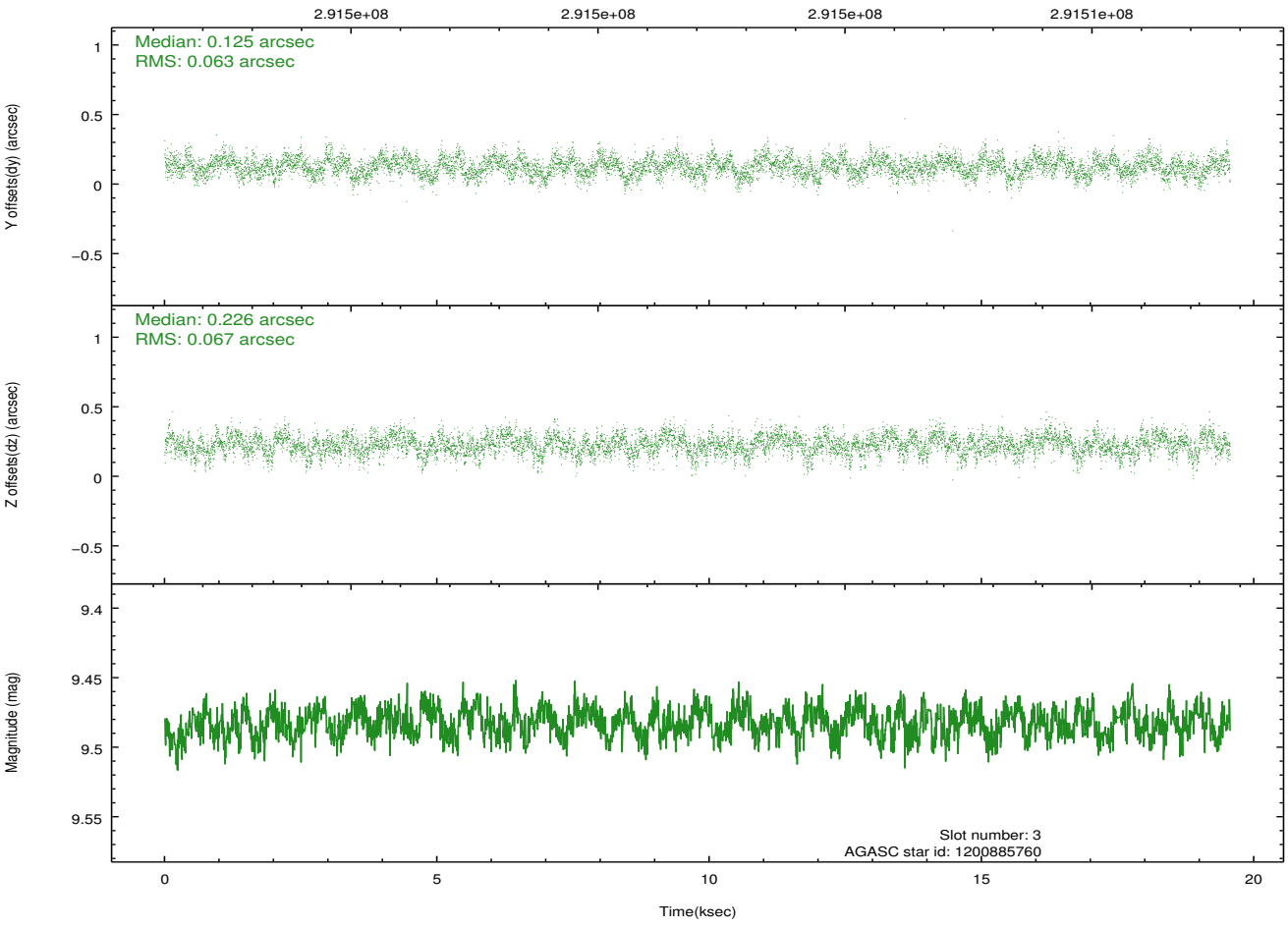
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	4772	-0.149	-0.114	0.009	0.015	0.000000	0.000000	-766.80	-1798.26
1	FID	ACIS-S-4	7.18	4772	0.148	0.077	0.007	0.011	0.000000	0.000000	2146.72	110.13
2	FID	ACIS-S-6	7.36	4771	-0.026	0.045	0.009	0.016	0.000000	0.000000	395.61	747.75
3	GUIDE	1200885760	9.48	9535	0.125	0.226	0.099	0.157	83.723637	-68.777667	-1610.15	-555.30
4	GUIDE	1201020040	8.59	9535	0.136	-0.115	0.054	0.090	85.379163	-68.879396	-1755.35	1622.82
5	GUIDE	1201410616	9.33	9537	-0.077	0.056	0.105	0.168	82.516808	-69.784406	2285.90	-1115.67
6	GUIDE	1201542672	8.20	9544	-0.117	-0.080	0.054	0.087	84.492488	-69.957531	2278.14	1409.76
7	GUIDE	1201019672	6.82	9542	-0.065	-0.086	0.059	0.095	85.312192	-68.770187	-2119.48	1451.54

2.4 Star Slots

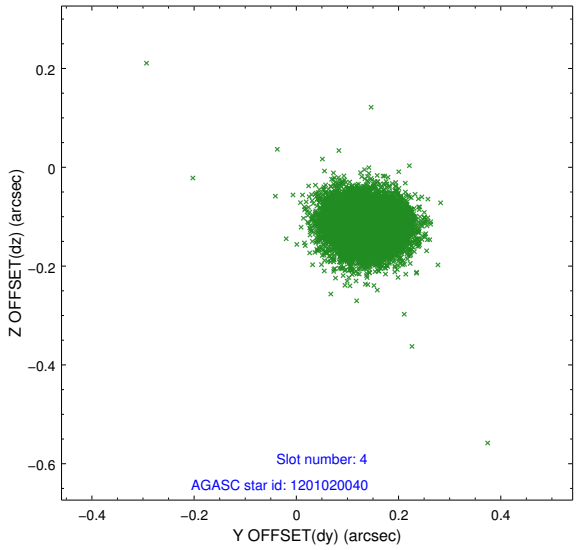
2.4.1 Slot 3

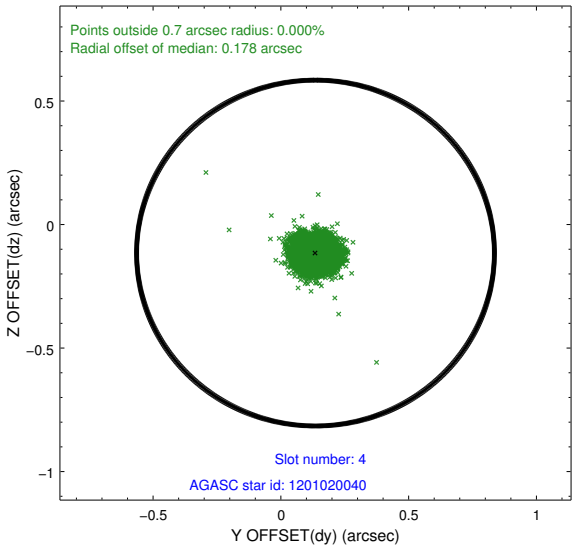


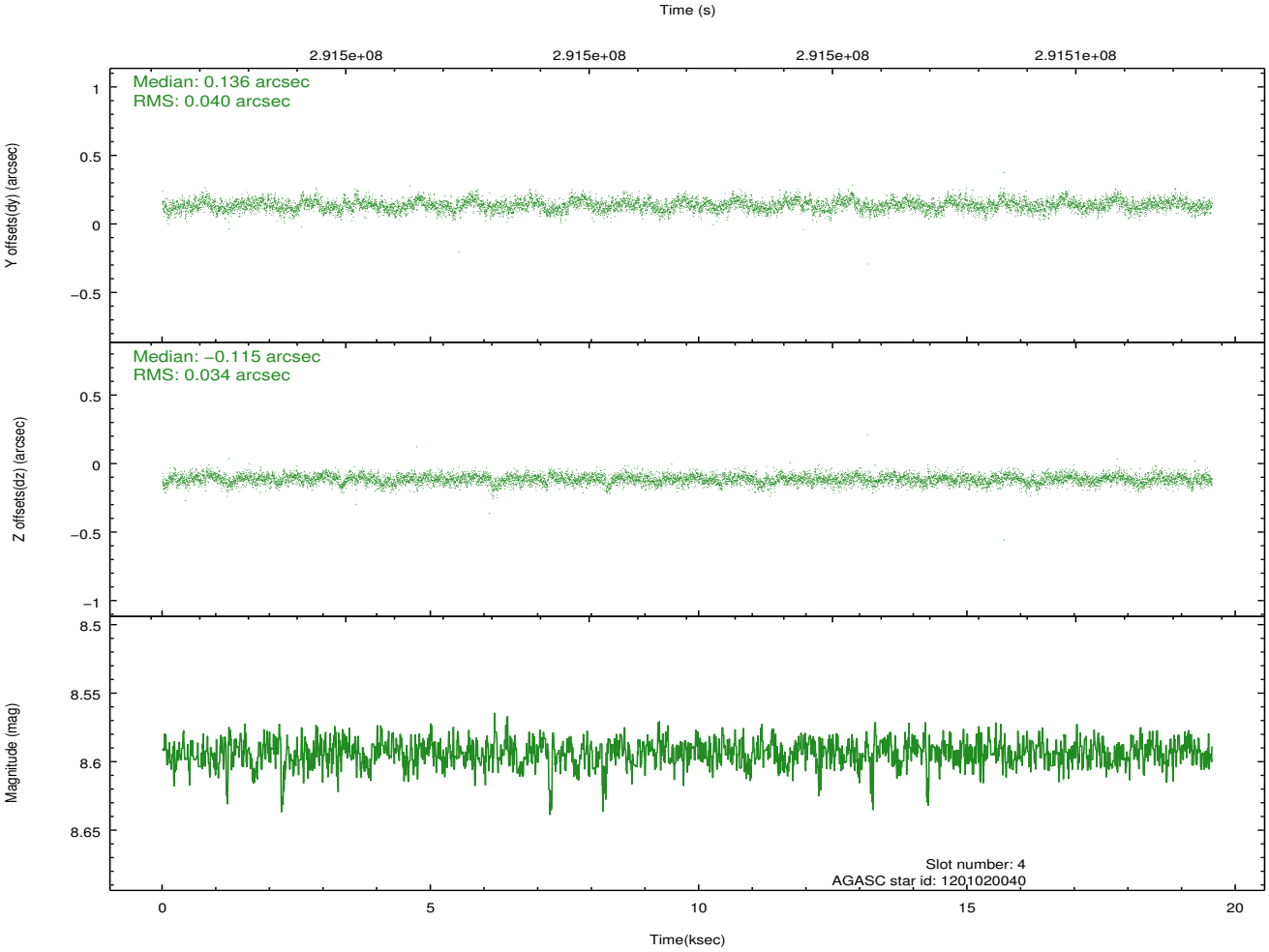




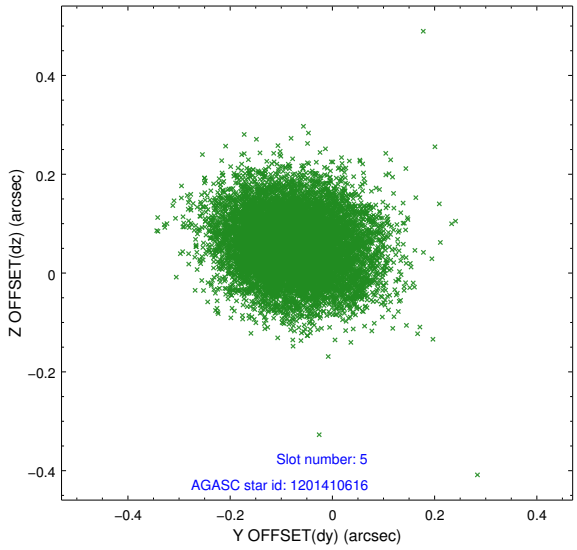
2.4.2 Slot 4

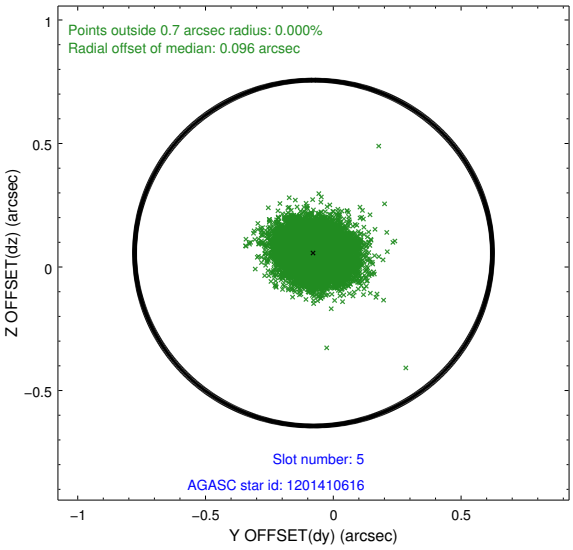

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1201020040

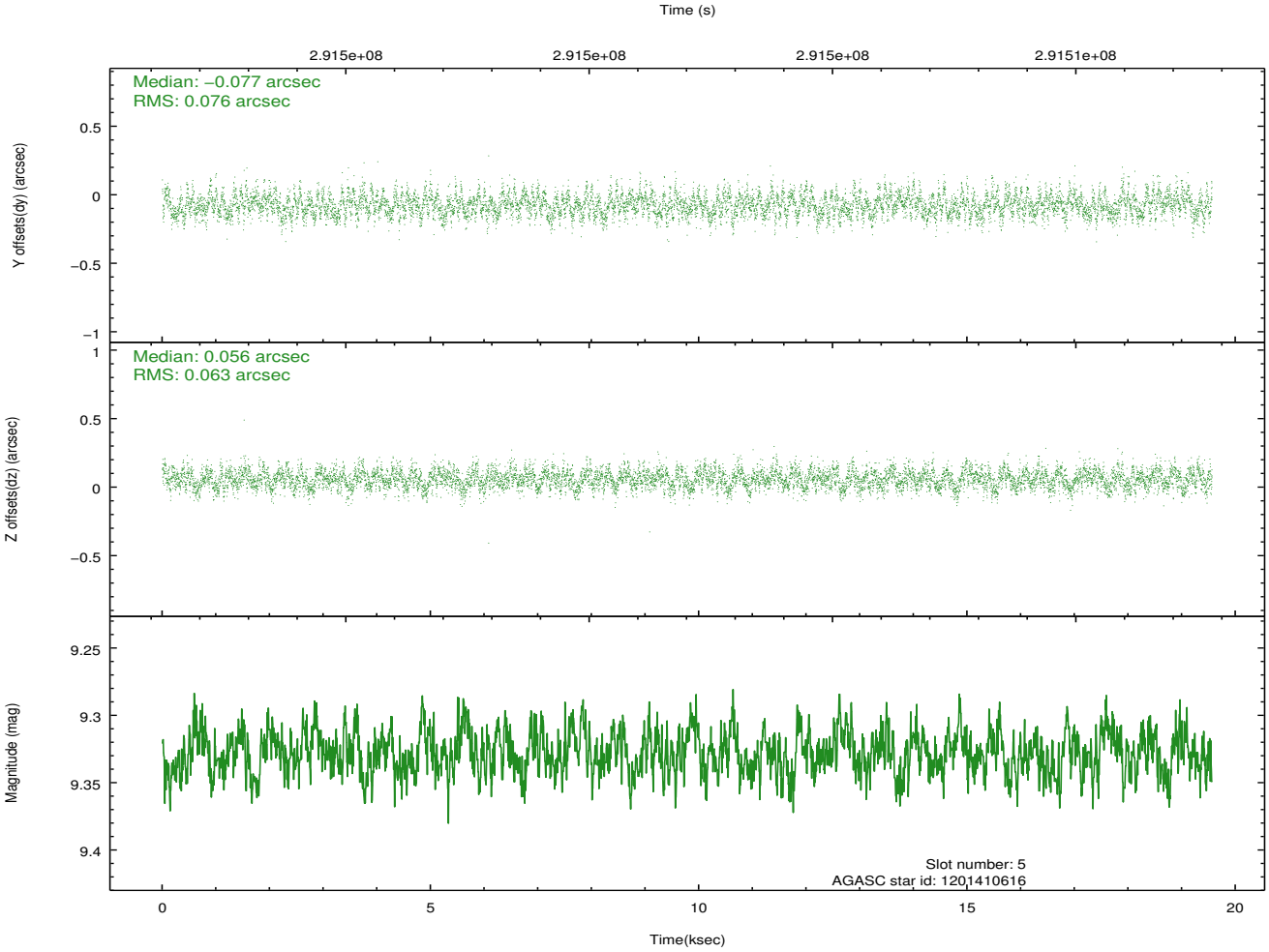

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.178 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1201020040


Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: 0.136 arcsec
RMS: 0.040 arcsec
Y offsets(dy) (arcsec)
Median: −0.115 arcsec
RMS: 0.034 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 1201020040
Time(ksec)

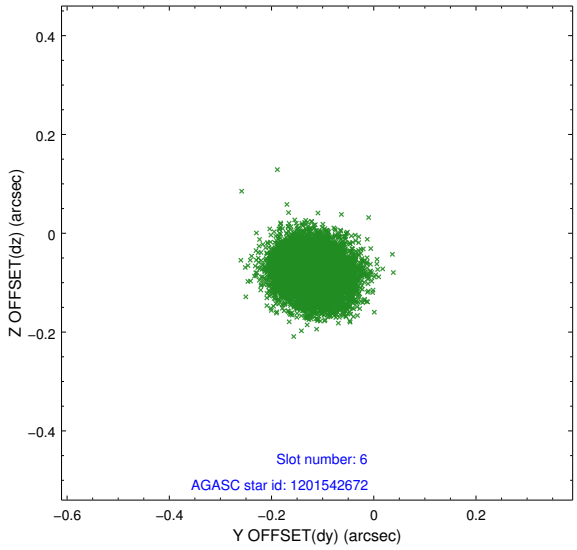
2.4.3 Slot 5

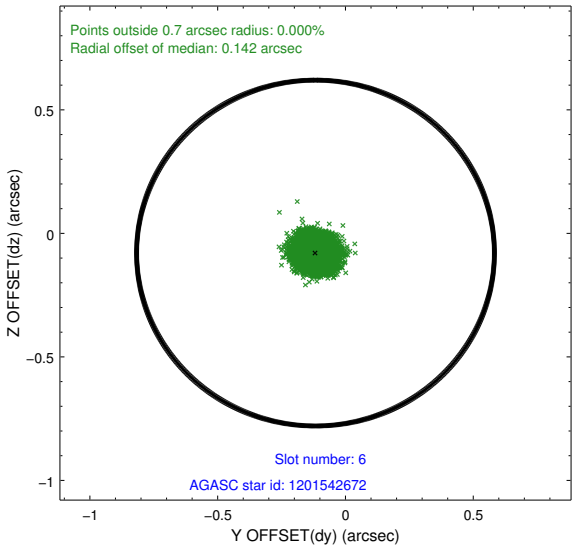

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1201410616

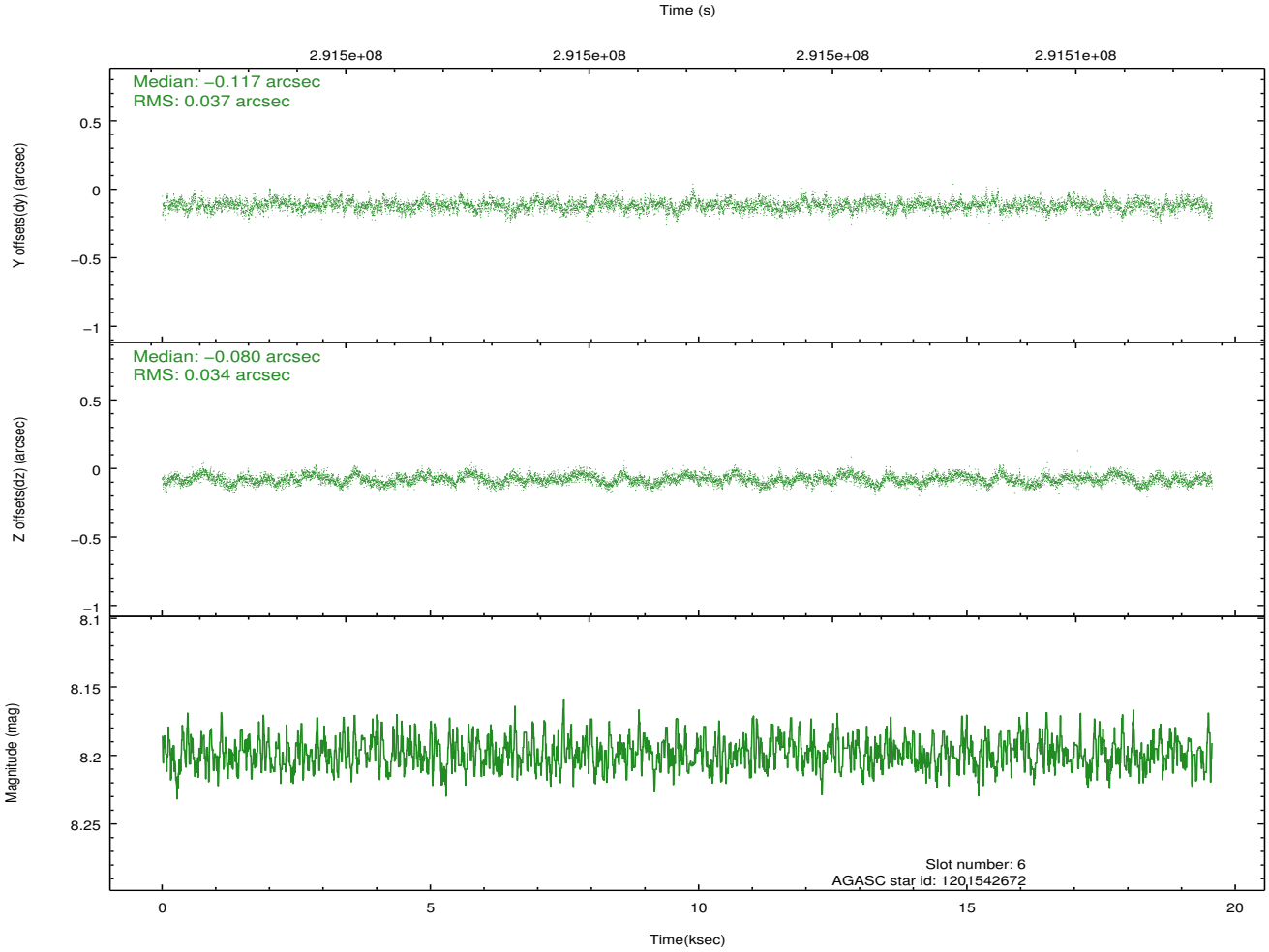

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.096 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1201410616


Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: −0.077 arcsec
RMS: 0.076 arcsec
Y offsets(dy) (arcsec)
Median: 0.056 arcsec
RMS: 0.063 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 1201410616
Time(ksec)

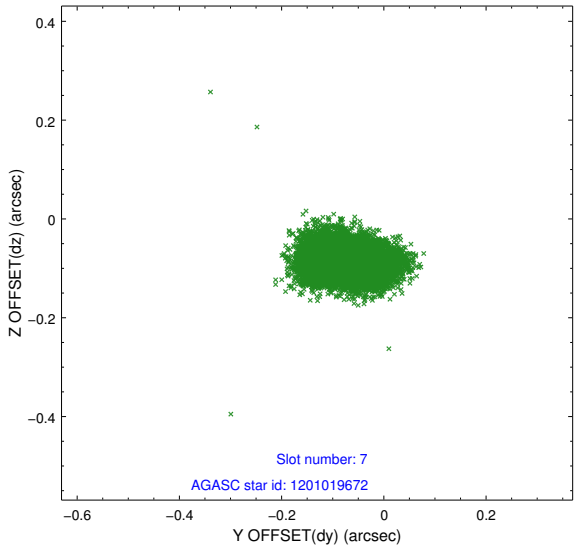
2.4.4 Slot 6

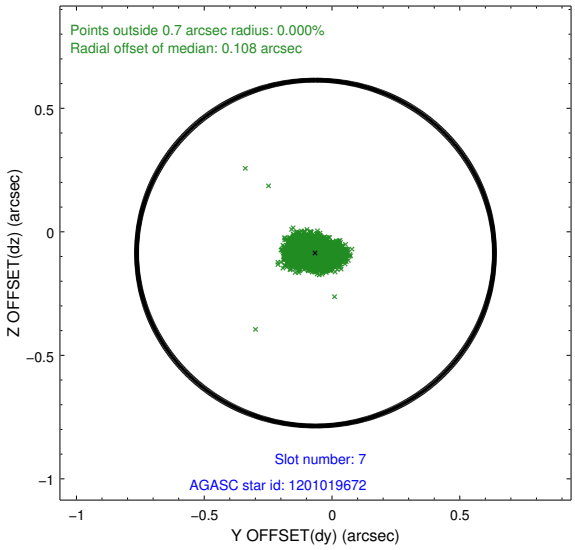

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1201542672

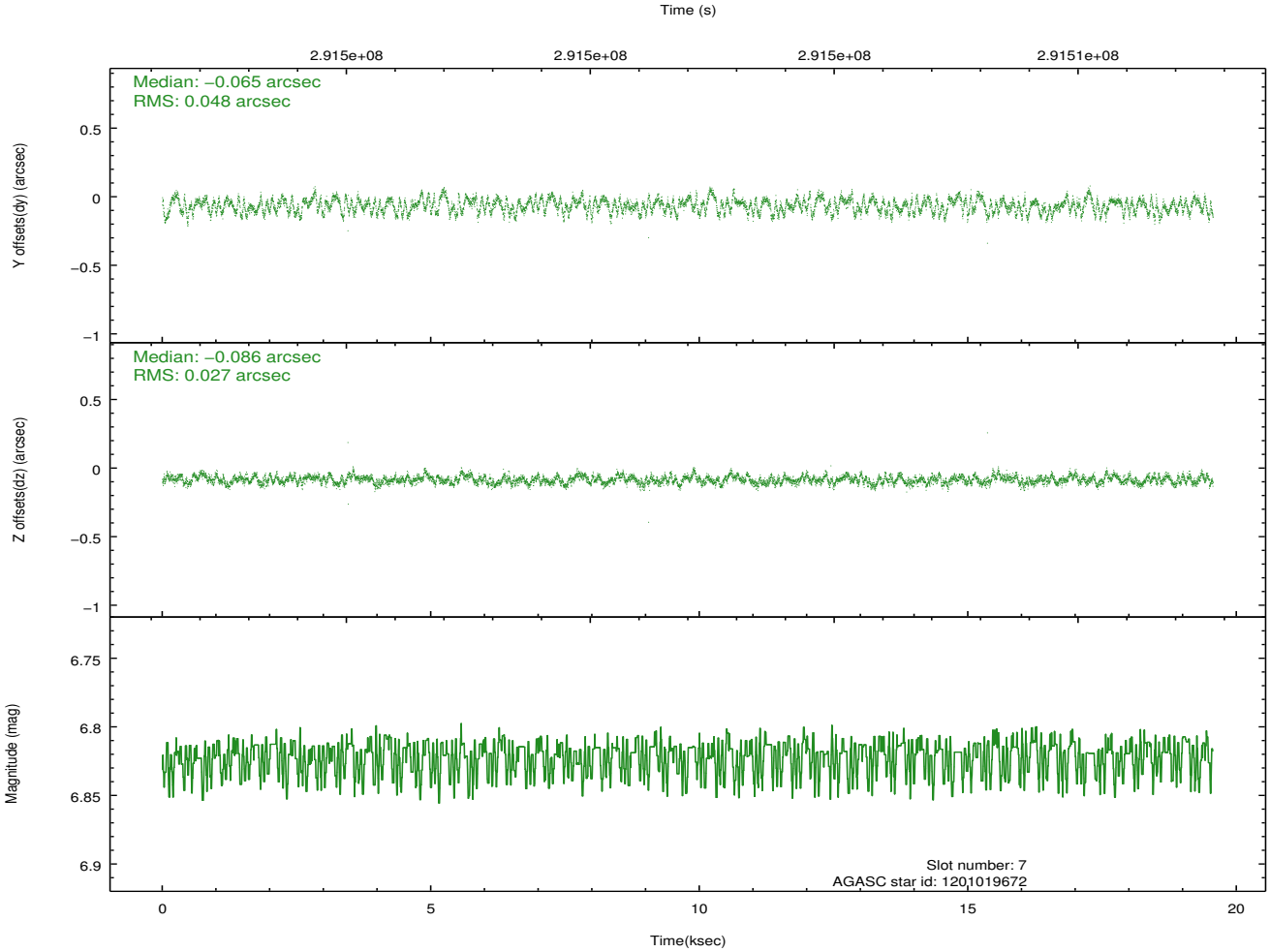

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.142 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1201542672


Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: −0.117 arcsec
RMS: 0.037 arcsec
Y offsets(dy) (arcsec)
Median: −0.080 arcsec
RMS: 0.034 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 1201542672
Time(ksec)

2.4.5 Slot 7

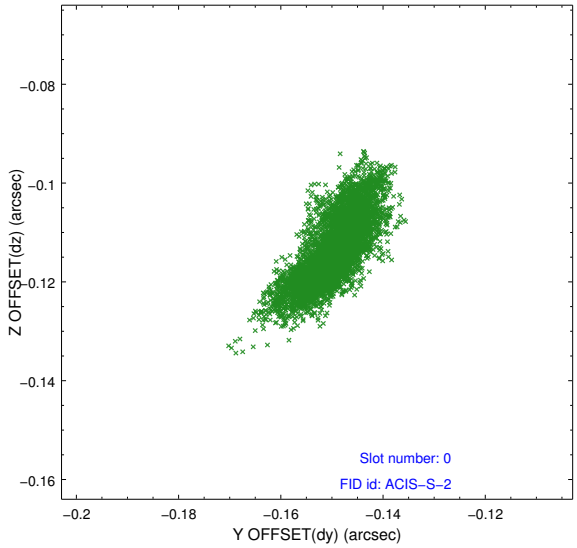

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1201019672

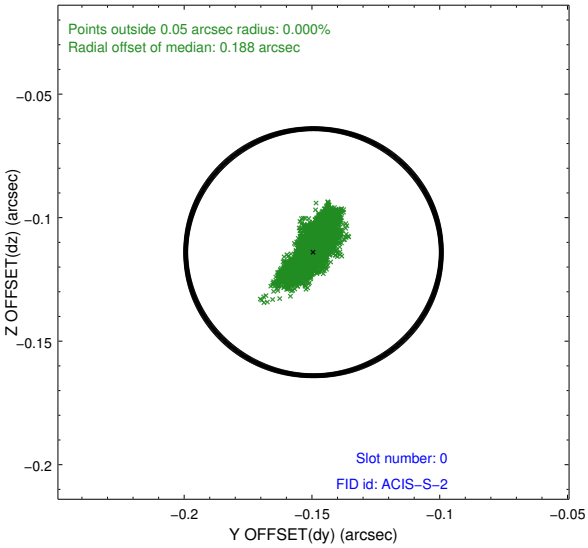

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.108 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1201019672

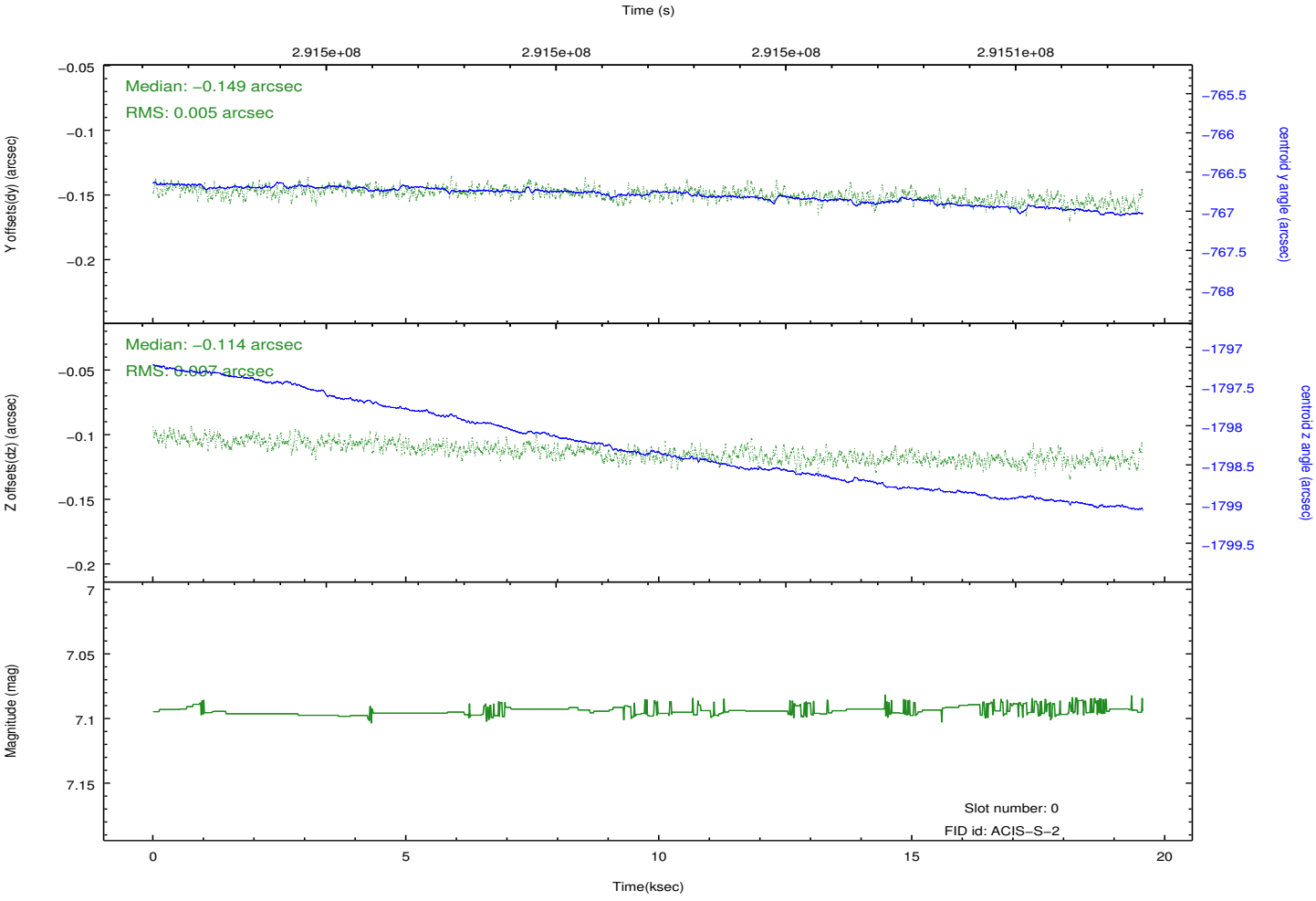

Time (s)
2.915e+08
2.915e+08
2.915e+08
2.9151e+08
Median: −0.065 arcsec
RMS: 0.048 arcsec
Y offsets(dy) (arcsec)
Median: −0.086 arcsec
RMS: 0.027 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 1201019672
Time(ksec)

2.5 FID Slots

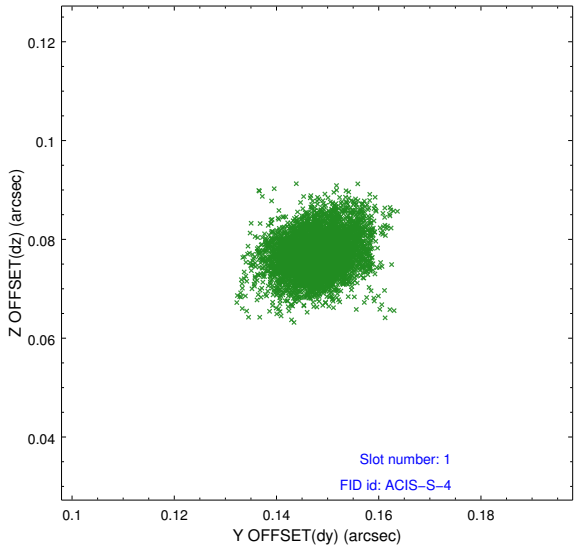
2.5.1 Slot 0

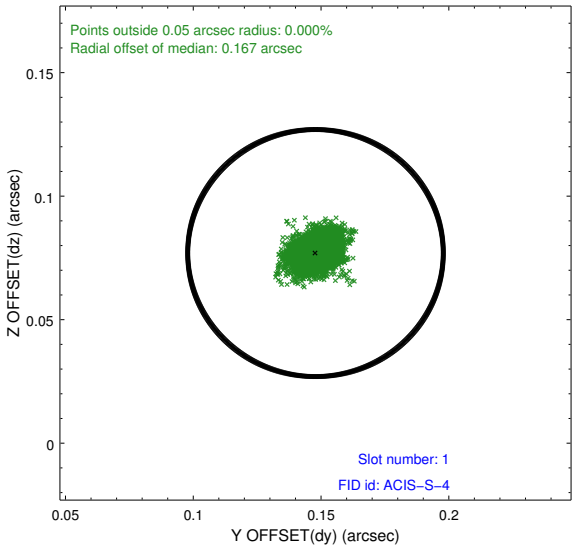


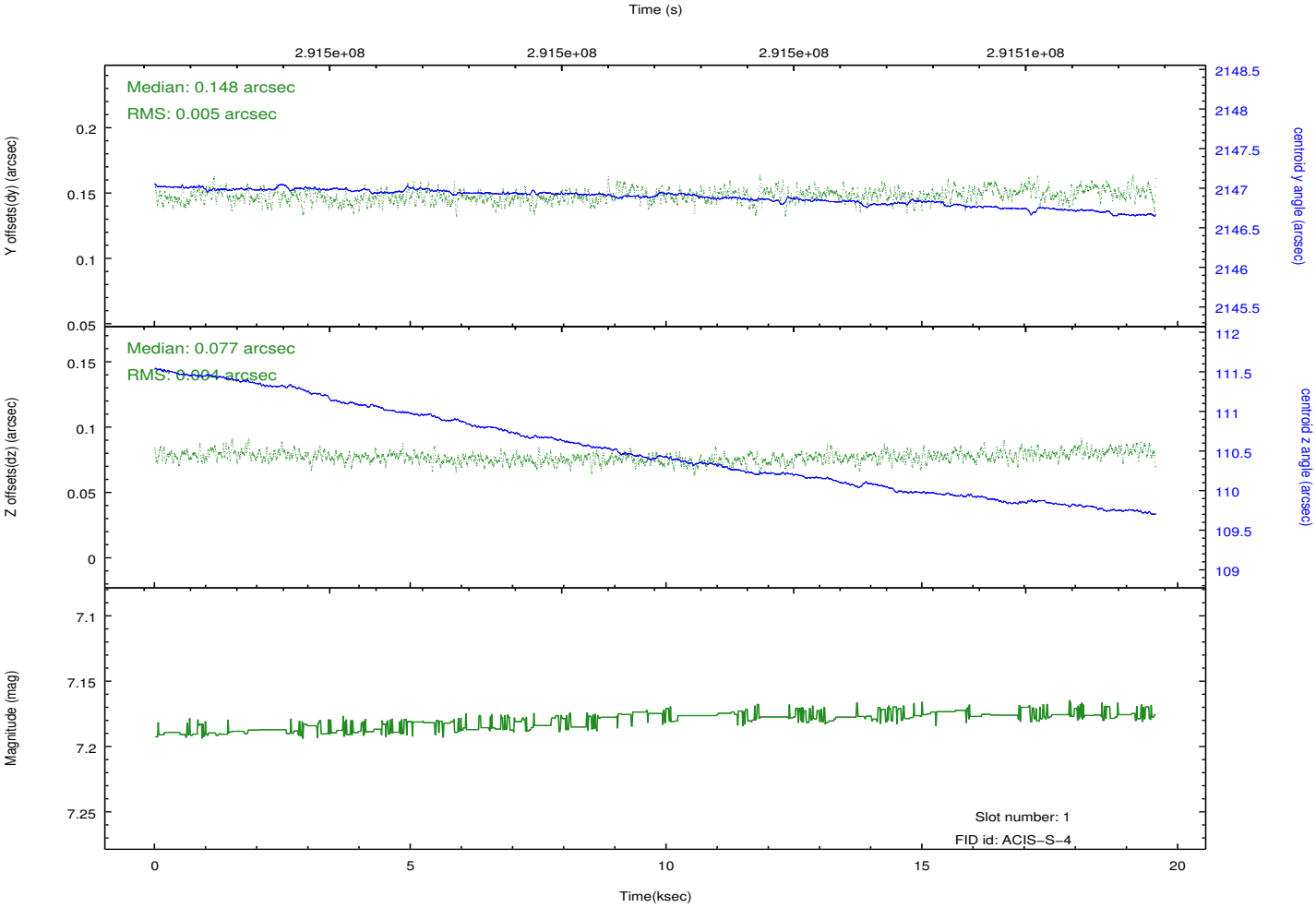




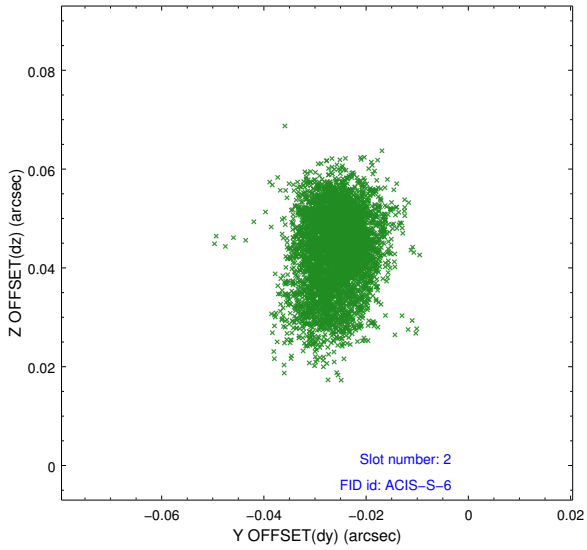
2.5.2 Slot 1

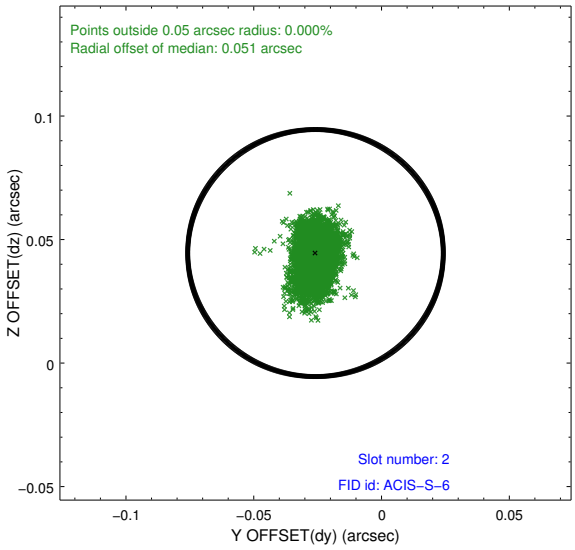

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

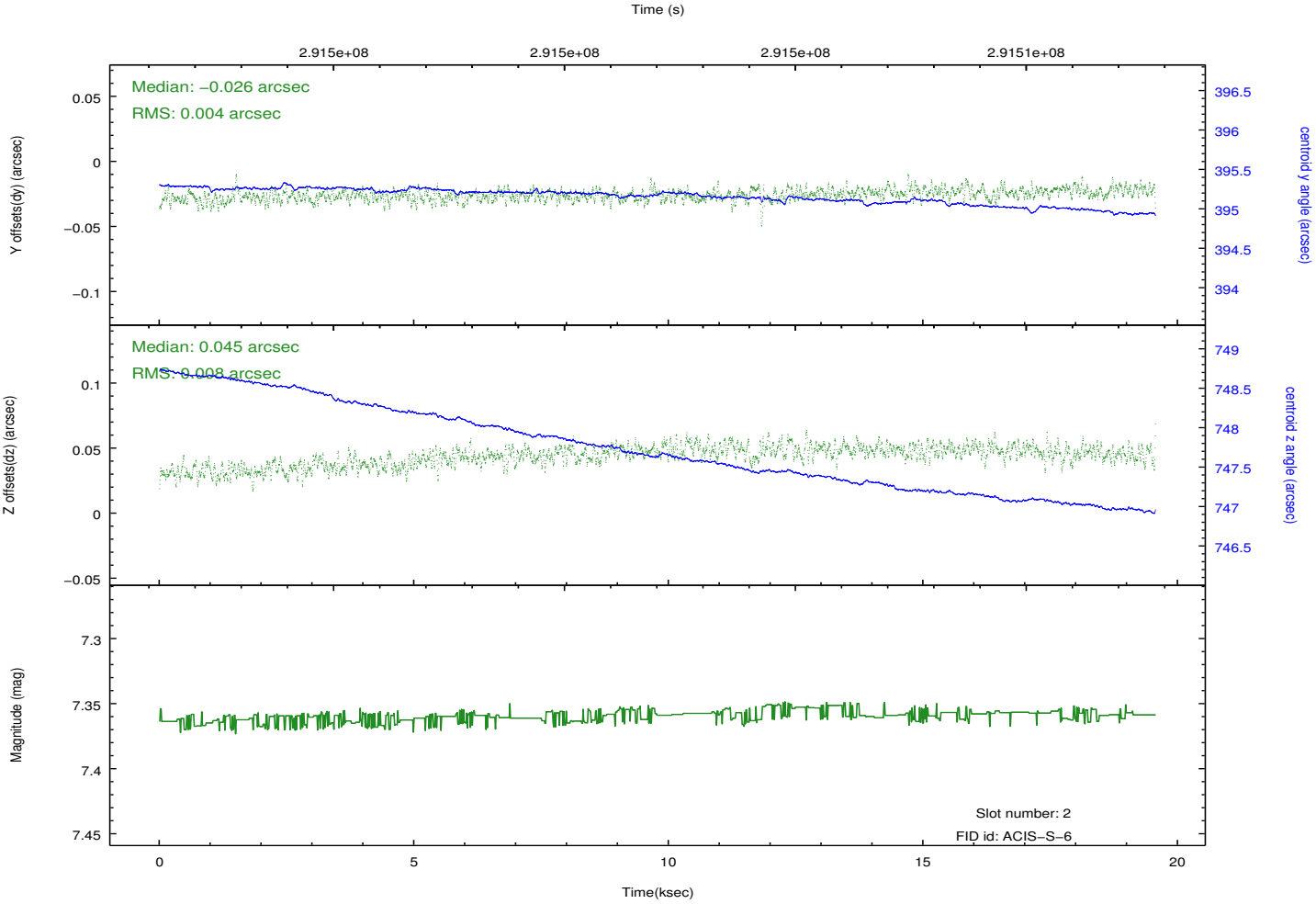

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.167 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.148 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.077 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−6

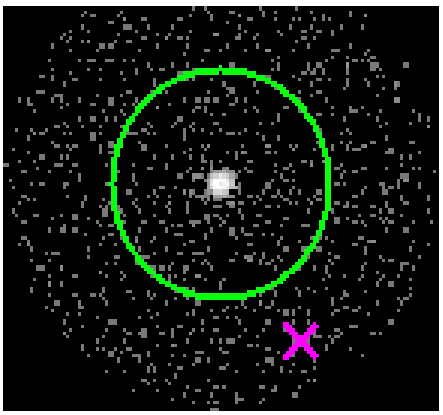

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.051 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−6


Time (s)
Median: −0.026 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.045 arcsec
RMS: 0.008 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−6
Time(ksec)

3 Gratings

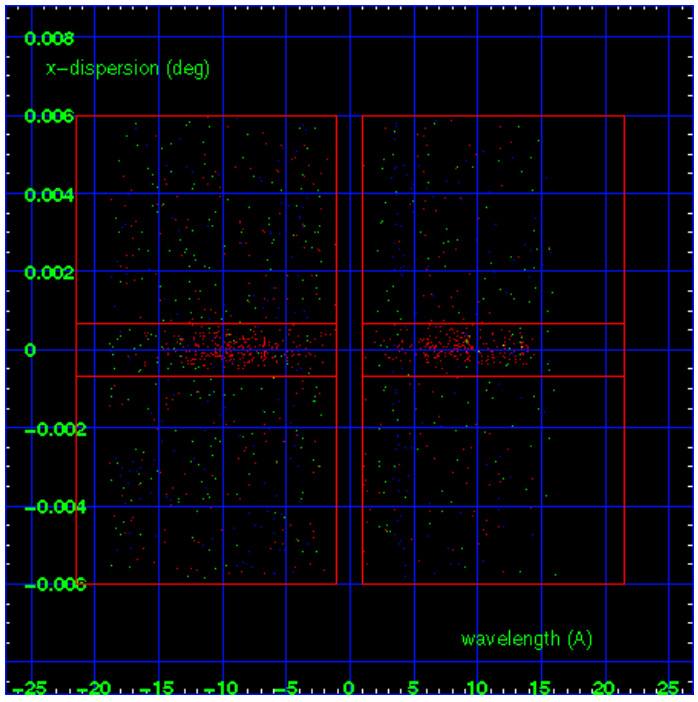
3.1 HEG Arm

HEG Order Sort 123

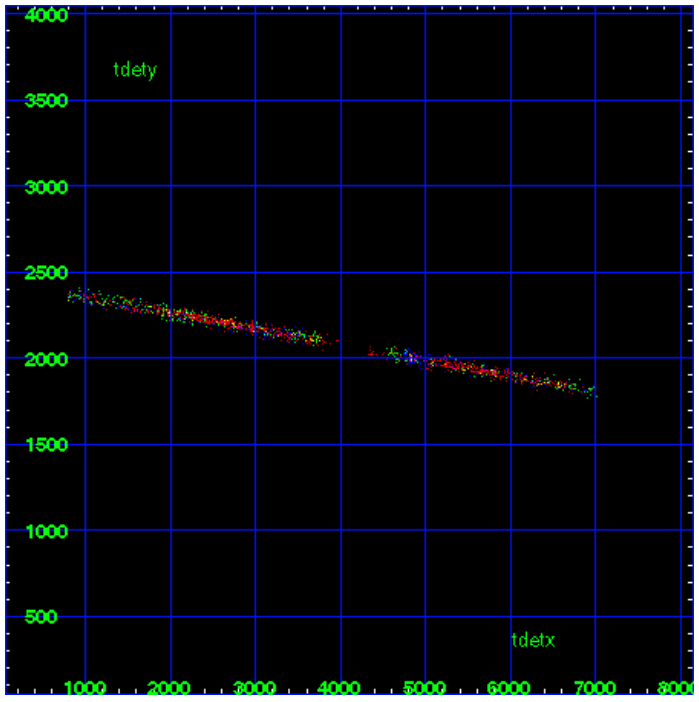


HEG Zero Order

HEG Order Sort ALL

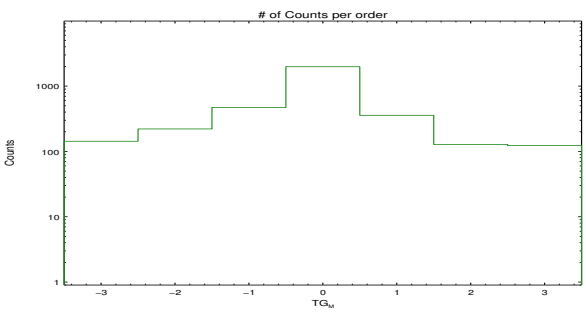


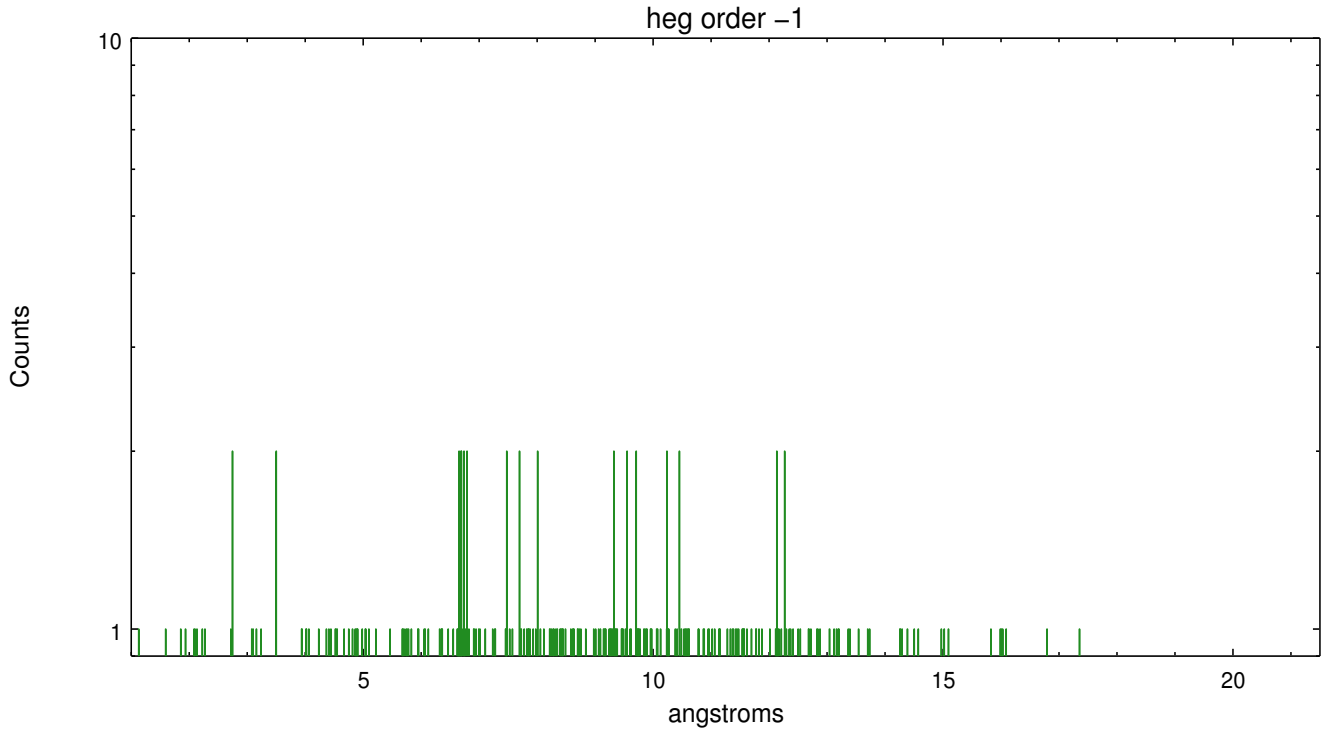
Spot Image HEG

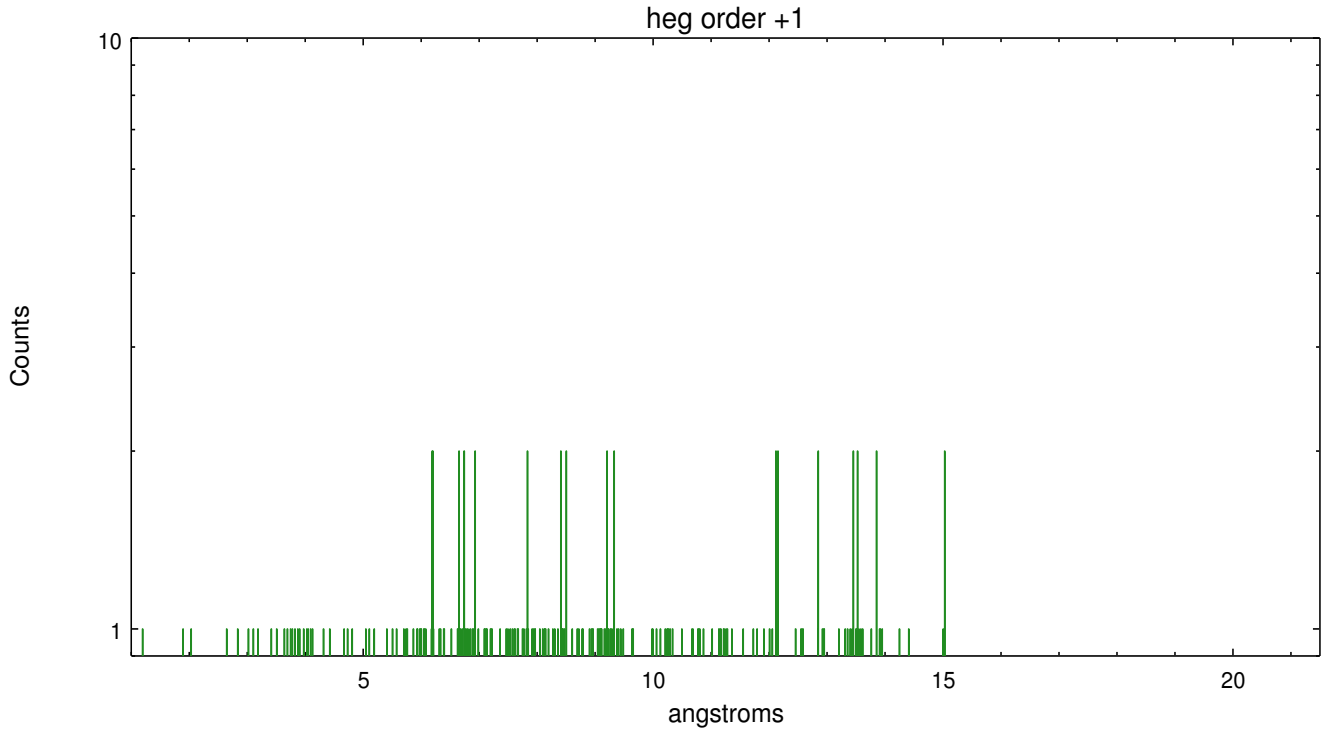


Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	143	221	471	1983	357	128	123

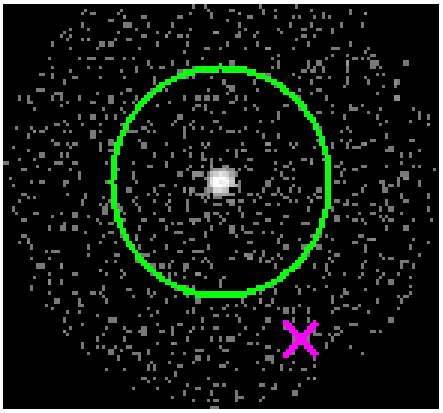



heg order −1
10
1
Counts
5
10
15
20
angstroms

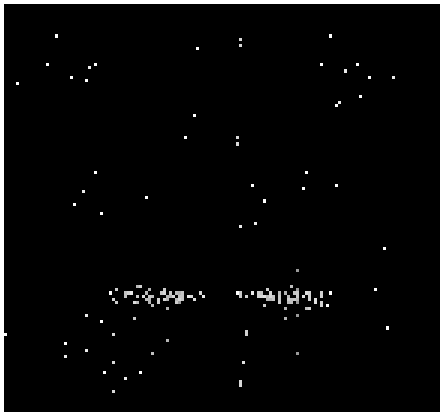

heg order +1
10
1
Counts
5
10
15
20
angstroms

3.2 MEG Arm

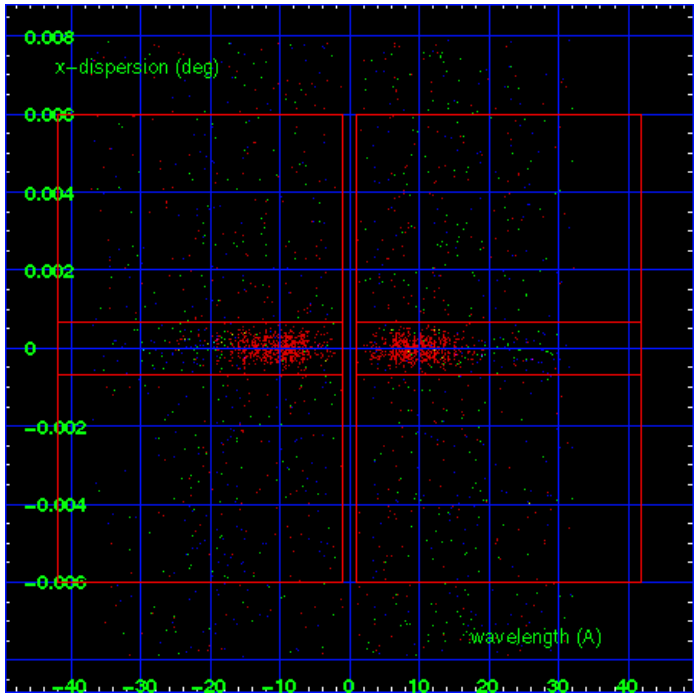
MEG Order Sort 123



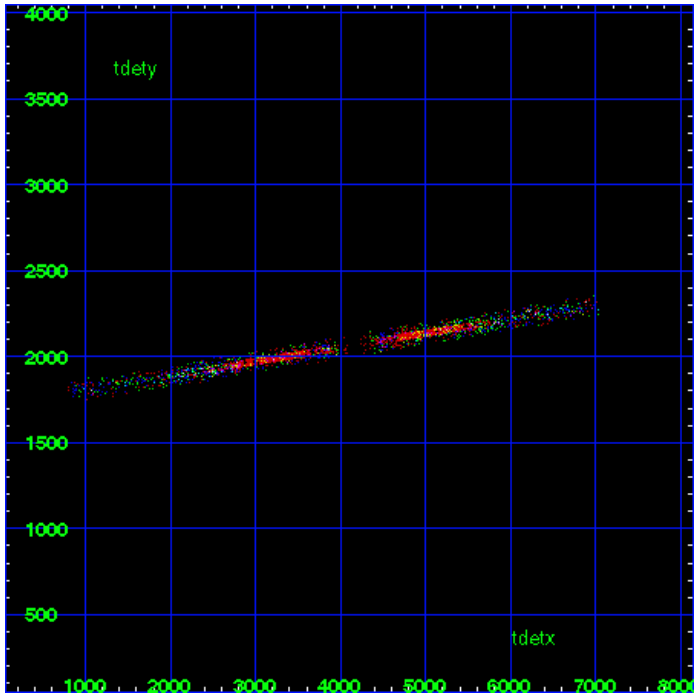
MEG Zero Order



MEG Order Sort ALL

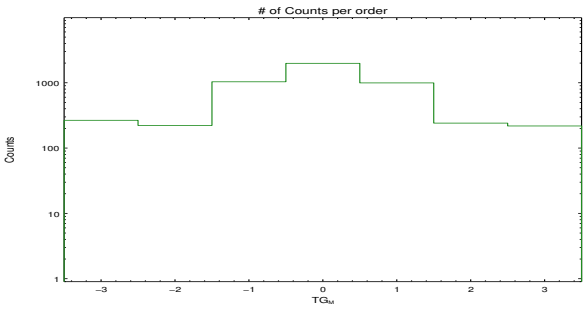


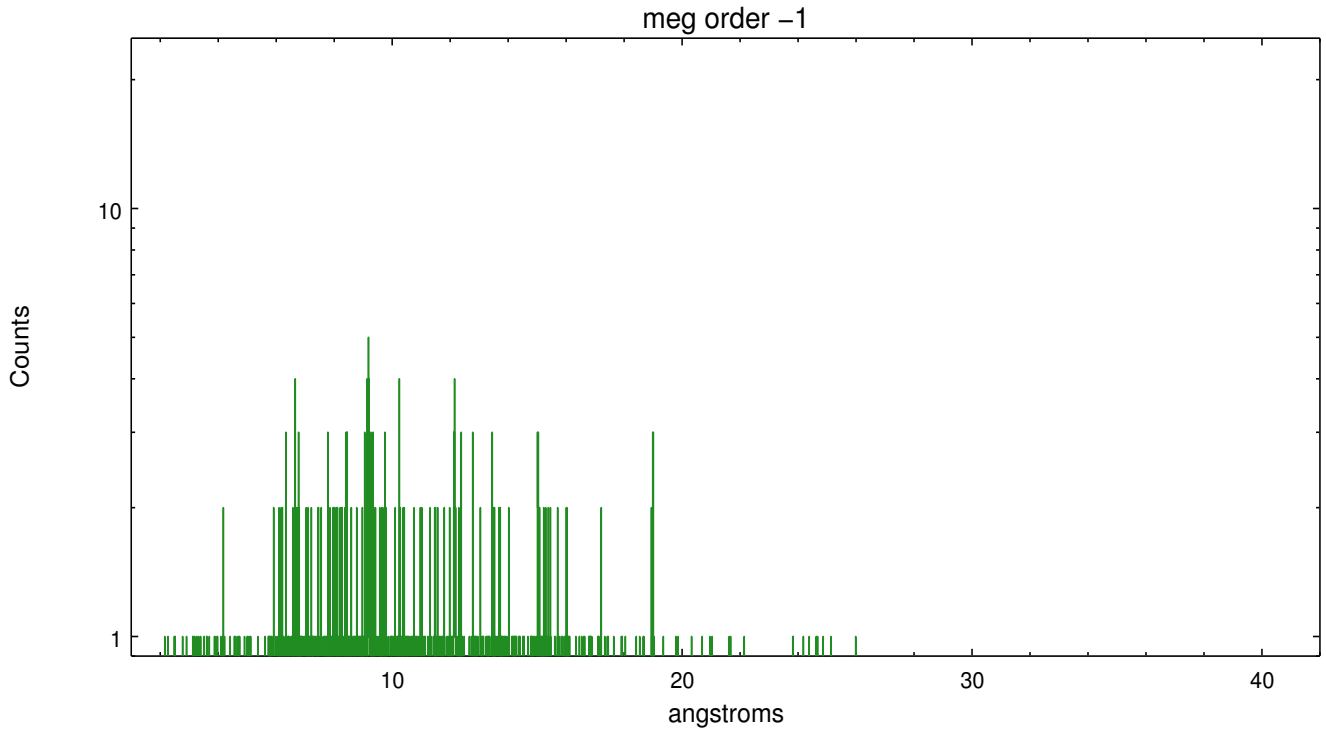
Spot Image MEG

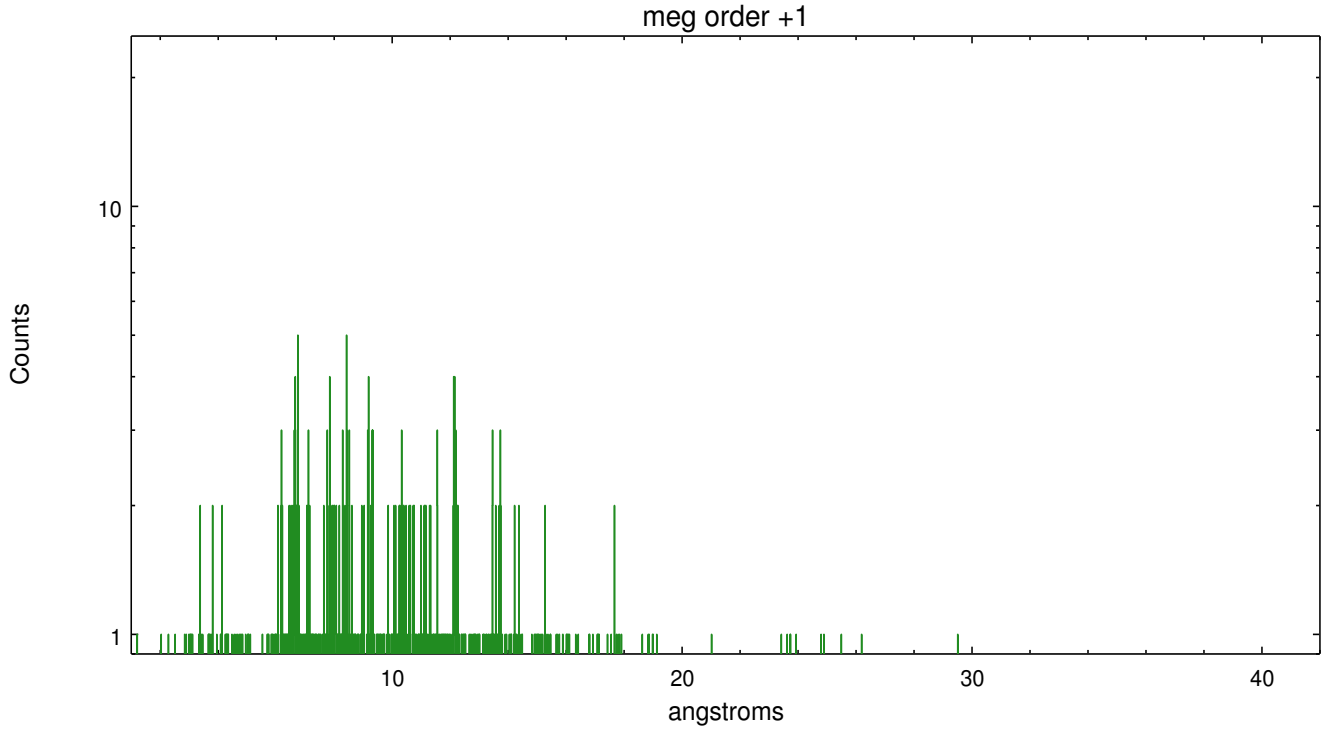


Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	266	222	1035	1983	995	241	218




meg order −1
Counts
10
1
10
20
30
40
angstroms


meg order +1
Counts
10
1
10
20
30
40
angstroms

A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2012.04.30
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	19.43

A.2 Comments