

V&V Reference Report

L2 ASCDS Version : 10.6.4

Observation 20158 - L2 Version 1
Chandra X-Ray Center

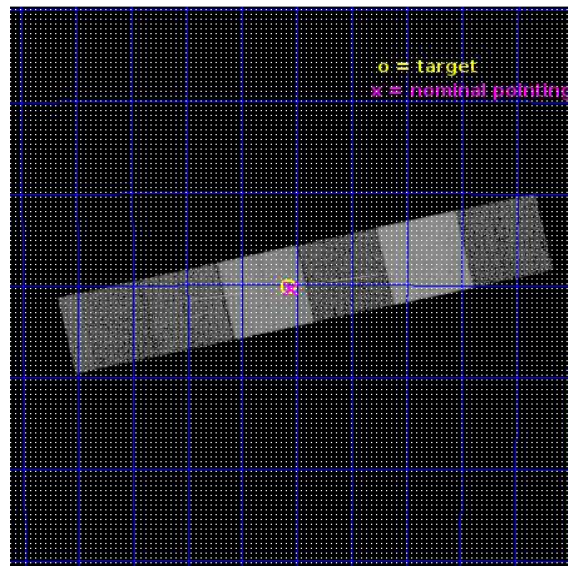
L2 Processing Date : Jul 31 2018

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	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
3	Gratings	17
3.1	HEG Arm	17
3.2	MEG Arm	19
A	Summary	21
A.1	Status	21
A.2	Comments	21

1 Front

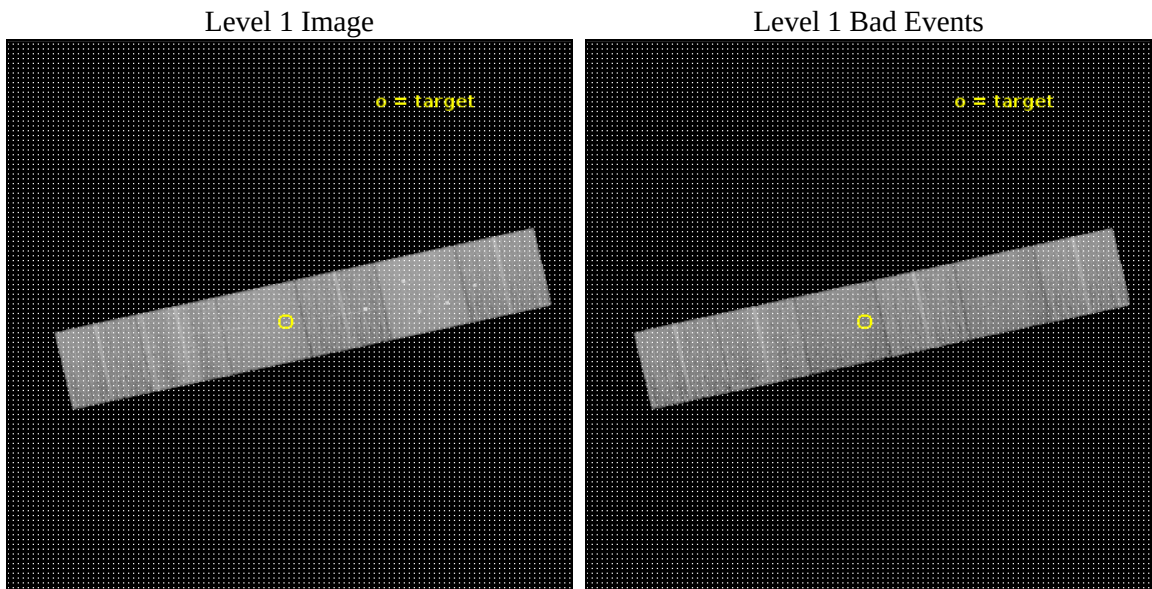
seq_num	201176	Sequence number
obs_id	20158	Observation id
title	Legacy HETG Spectrum of a Massive Star: zeta Pup	Proposal title
observer	Wayne Waldron	Principal investigator
object	zeta Pup	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	120.895833	Observer's specified target RA [deg]
dec_targ	-40.003139	Observer's specified target Dec [deg]
ra_nom	120.88783170895	Nominal RA [deg]
dec_nom	-40.006879629024	Nominal Dec [deg]
roll_nom	167.15147056906	Nominal Roll [deg]
revision	1	Processing version of data
ontime	18646.400277853	Sum of GTIs [s]
livetime	18410.288330021	Livetime [s]
ontime4	18646.400277853	Sum of GTIs [s]
ontime5	18646.400277853	Sum of GTIs [s]
ontime6	18646.400277853	Sum of GTIs [s]
ontime7	18646.400277853	Sum of GTIs [s]
ontime8	18646.400277853	Sum of GTIs [s]
ontime9	18646.400277853	Sum of GTIs [s]
l2events	245308	Number of level 2 events



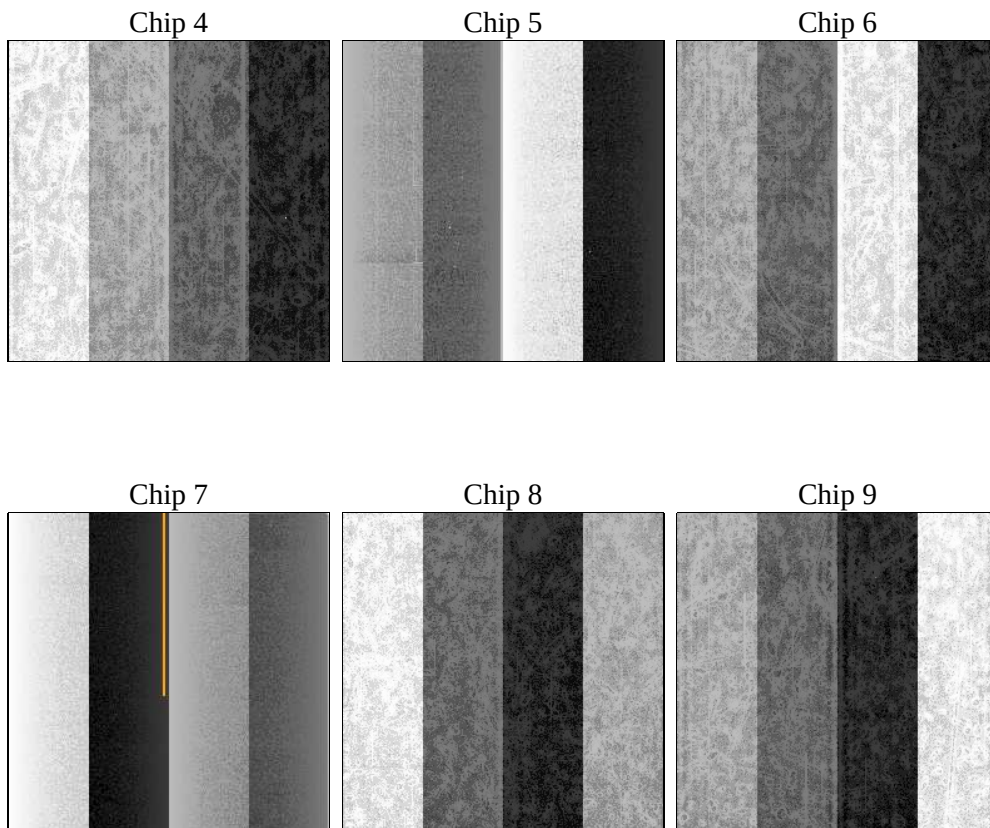
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	18700.000000	[s] Scheduled observation exposure time
ascdsver	10.6.4	Processing system revision	ontime	18646.400277853	Sum of GTIs [s]
caldsver	4.7.8	 	ontime4	18646.400277853	Sum of GTIs [s]
date	2018-07-31T15:12:57	Date and time of file creation	ontime5	18646.400277853	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	18646.400277853	Sum of GTIs [s]
			ontime7	18646.400277853	Sum of GTIs [s]
			ontime8	18646.400277853	Sum of GTIs [s]
			ontime9	18646.400277853	Sum of GTIs [s]
			l1events	1057170	Number of level 1 events
			tgmethod	TGDETECT	Method used to create src1a file
			src1a_pos	(4051.27, 4125.08)	src1a sky pixel position

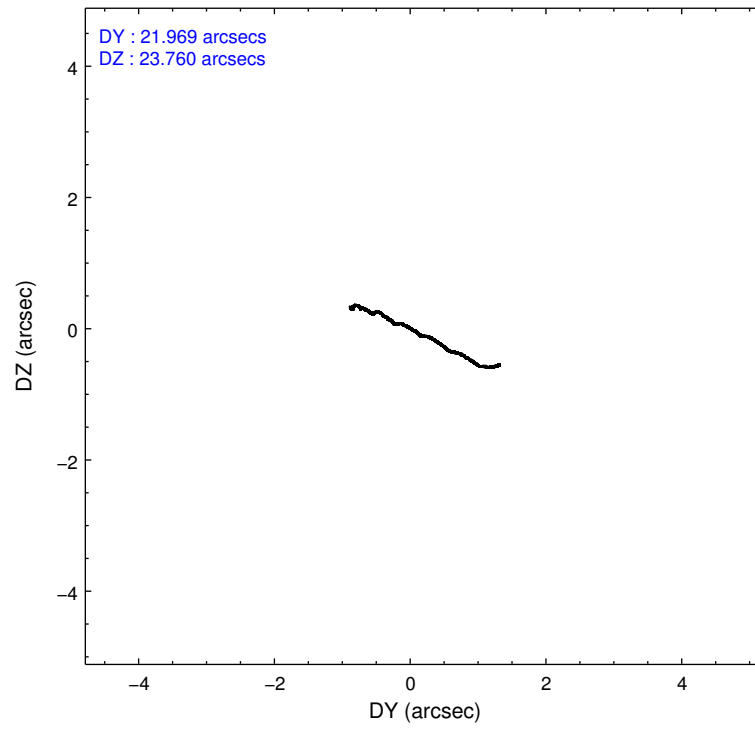
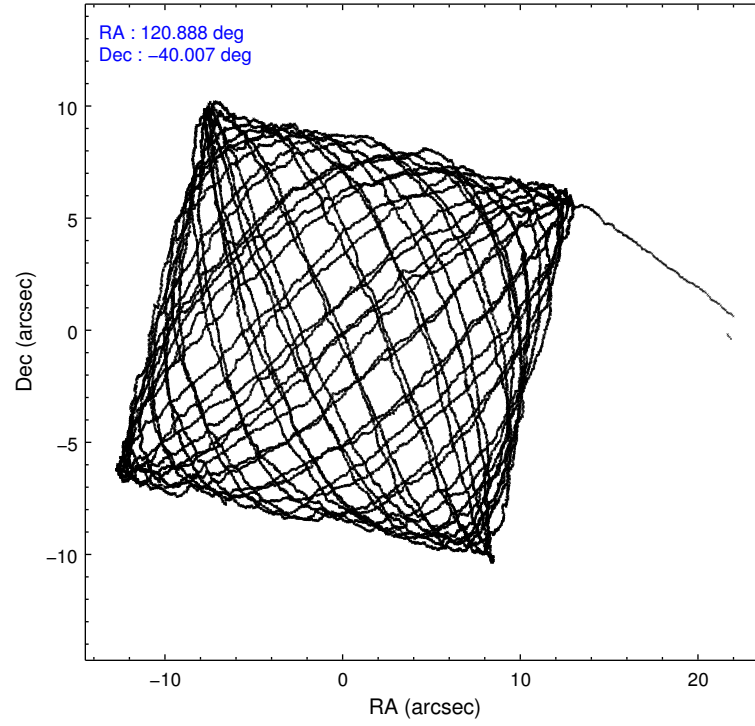
2.1.4 Events

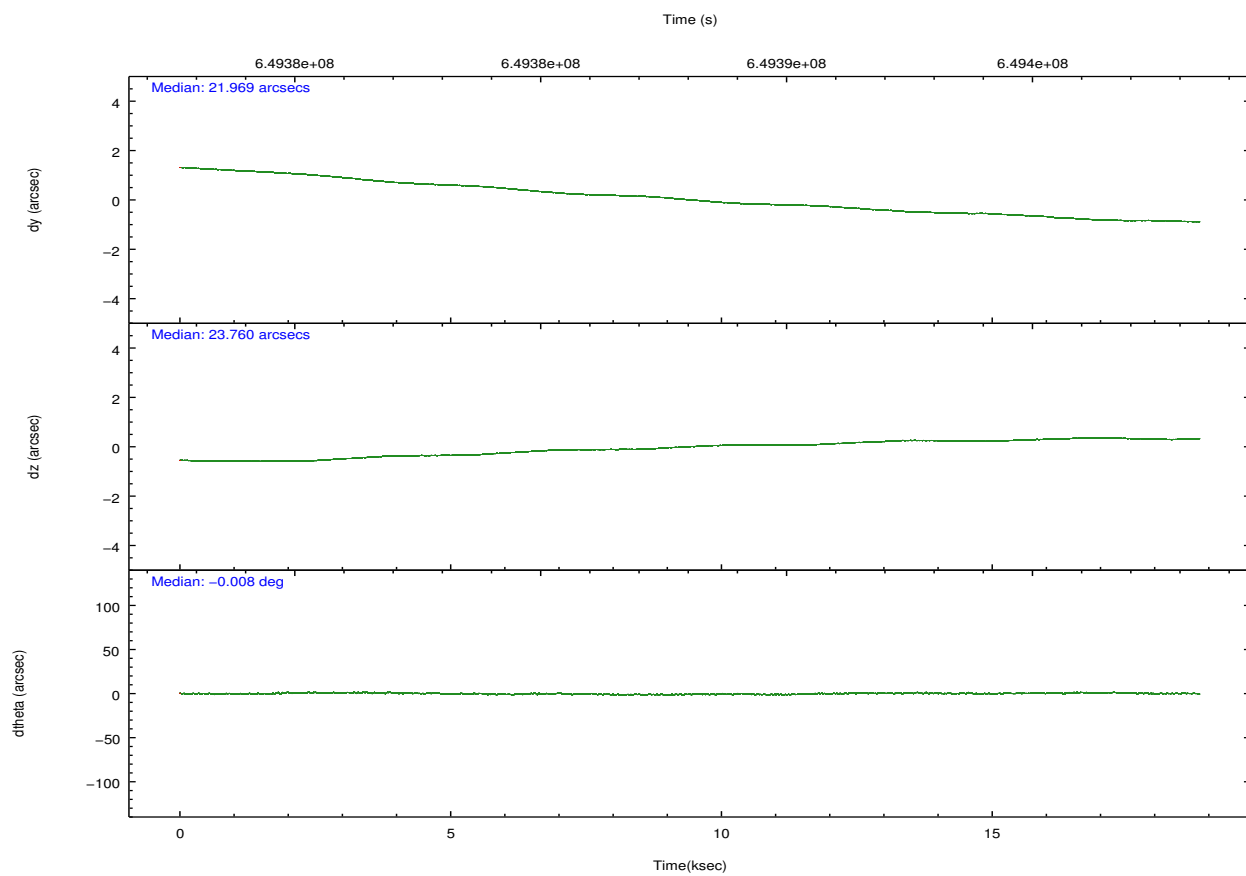
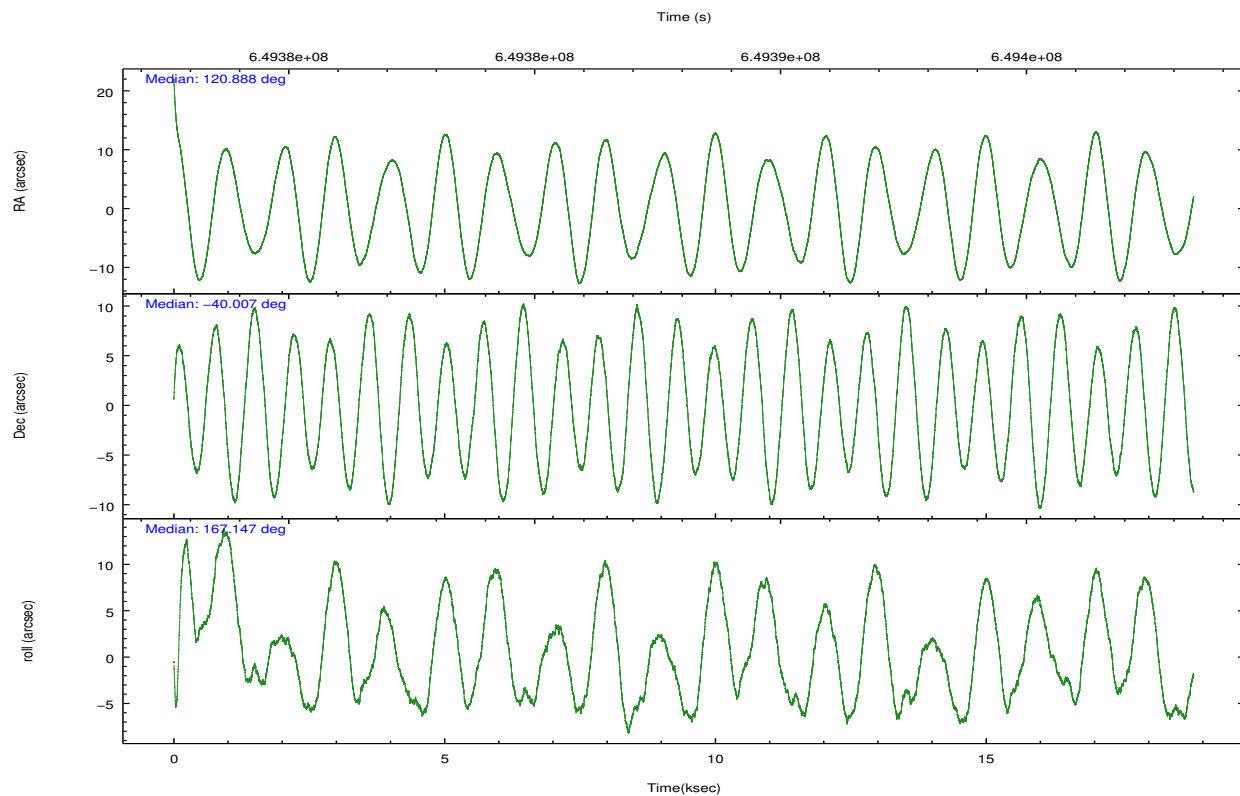
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	164758	228222	149506	184179	185983	144522	grade 0 events	8214	12082	6291	7340	15510	6156
rejected events	145579	114559	128511	102489	133913	127269		4%	5%	4%	3%	8%	4%
rejected %	88%	50%	85%	55%	72%	88%	grade 1 events	169	498	82	277	159	76
								0%	0%	0%	0%	0%	0%
							grade 2 events	4355	35297	7767	17770	12547	3937
								2%	15%	5%	9%	6%	2%
							grade 3 events	1847	3692	1519	6676	5211	1751
								1%	1%	1%	3%	2%	1%
							grade 4 events	1779	3483	1599	6505	4914	1707
								1%	1%	1%	3%	2%	1%
							grade 5 events	6876	16232	6610	18344	9797	7346
								4%	7%	4%	9%	5%	5%
							grade 6 events	2987	59124	3820	43414	13891	3707
								1%	25%	2%	23%	7%	2%
							grade 7 events	138531	97814	121818	83853	123954	119842
								84%	42%	81%	45%	66%	82%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-456789	ACIS-456789	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	120.921941	120.8878317089497	CCD I2 on	N	N
[deg] Pointing Dec	-39.998449	-40.00687962902418	CCD I3 on	N	N
[deg] Pointing Roll	167.016780	167.151470569059	CCD S0 on	O2	Y
[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	-190.1400660498719	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.00754346686406393	CCD S4 on	Y	Y
[s] Observation start time (MET)	649378741.184000	649377400.34057	CCD S5 on	O1	Y
Observation start date	2018-07-30T22:57:52	2018-07-30T22:36:40	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	649397441.184000	649398782.35434	On-chip summing requested	N	N
Observation end date	2018-07-31T04:09:32	2018-07-31T04:33:02	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.2

2.3 Aspect



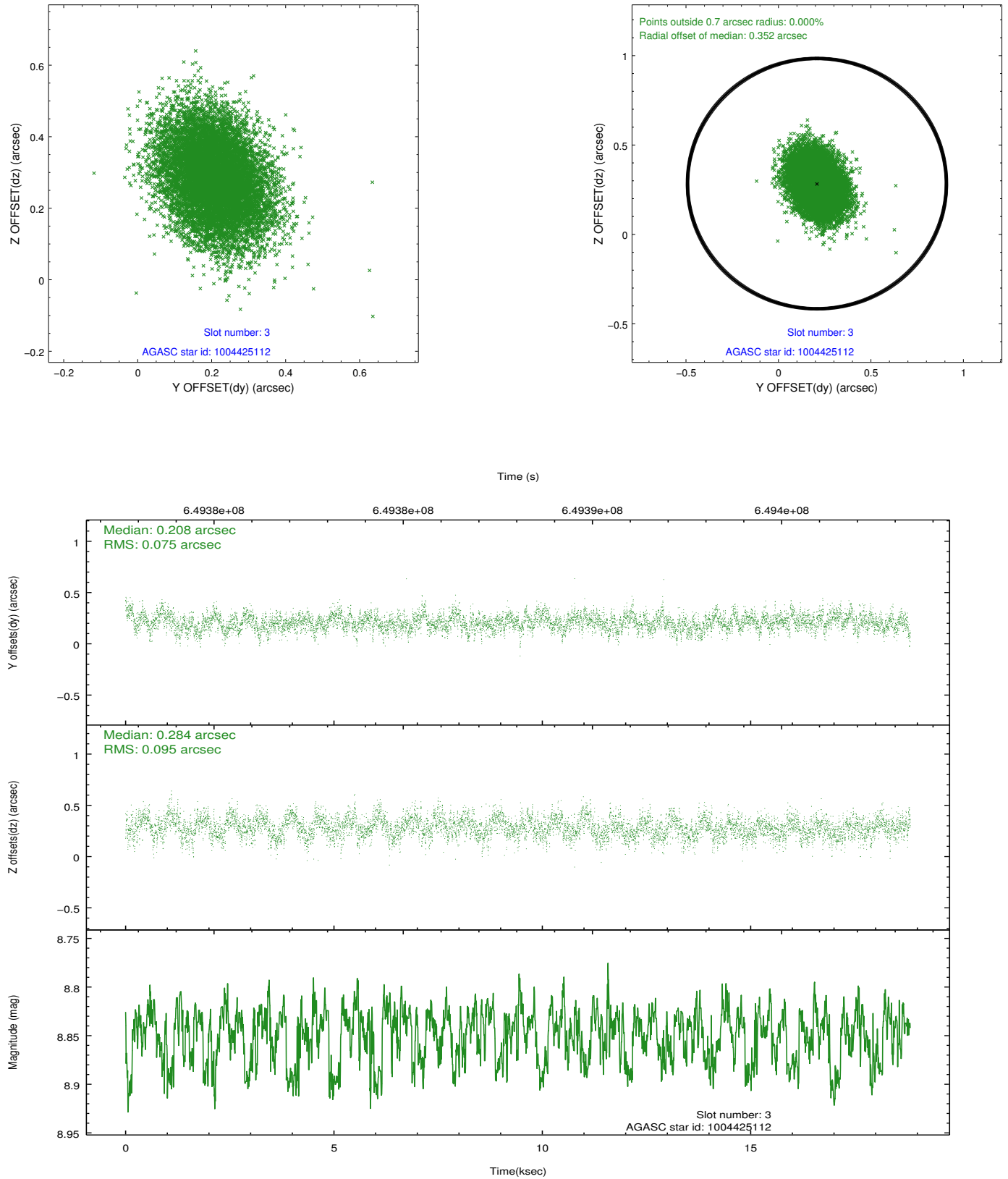


Slot Statistics

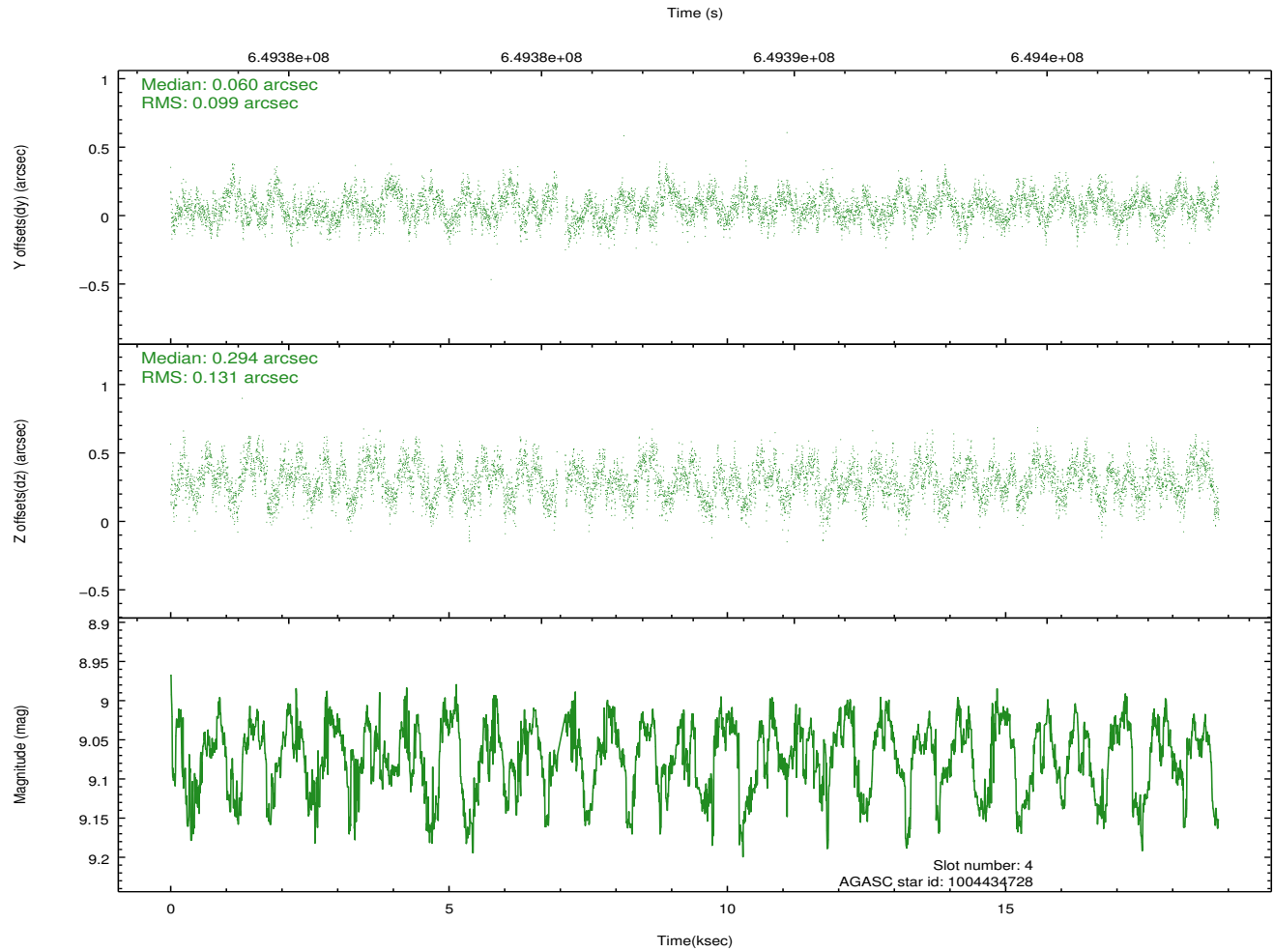
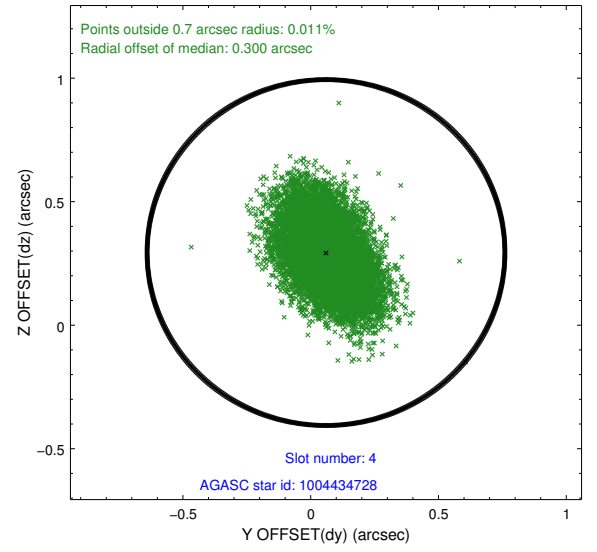
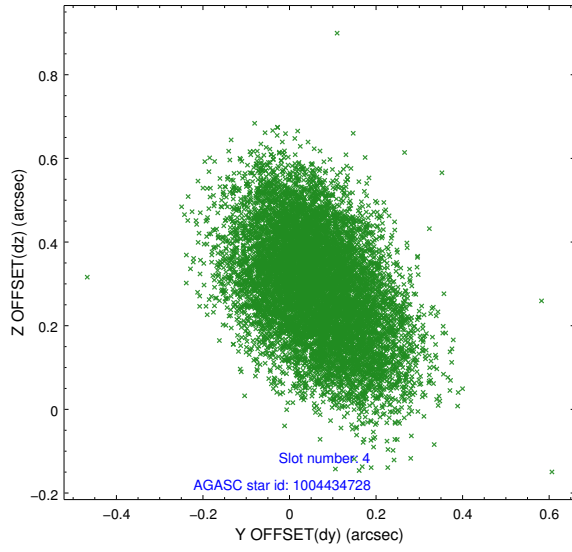
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-1	7.03	4594	1.000	-0.007	-0.006	0.022	0.033	0.000000	0.000000	920.91	-1740
1	FID		ACIS-S-4	7.06	4594	1.000	0.437	0.011	0.017	0.044	0.000000	0.000000	2138.77	163
2	FID		ACIS-S-5	7.07	4593	1.000	-0.454	0.006	0.037	0.064	0.000000	0.000000	-1828.25	156
3	GUIDE	used	1004425112	8.85	9182	1.000	0.208	0.284	0.128	0.209	121.364029	-39.923076	-1128.43	-535
4	GUIDE	used	1004434728	9.07	9110	1.000	0.060	0.294	0.175	0.283	120.620626	-39.873298	912.39	-250
5	GUIDE	used	1004435080	8.96	9179	1.000	0.376	0.499	0.157	0.260	121.357562	-39.510372	-784.08	-1980
6	GUIDE	used	1002701128	8.53	9185	1.000	-0.168	-0.437	0.174	0.268	119.920741	-40.492086	2268.20	2362
7	GUIDE	used	1004406496	7.41	9185	1.000	-0.470	-0.635	0.128	0.203	120.210035	-40.527356	1468.41	2300

2.4 Star Slots

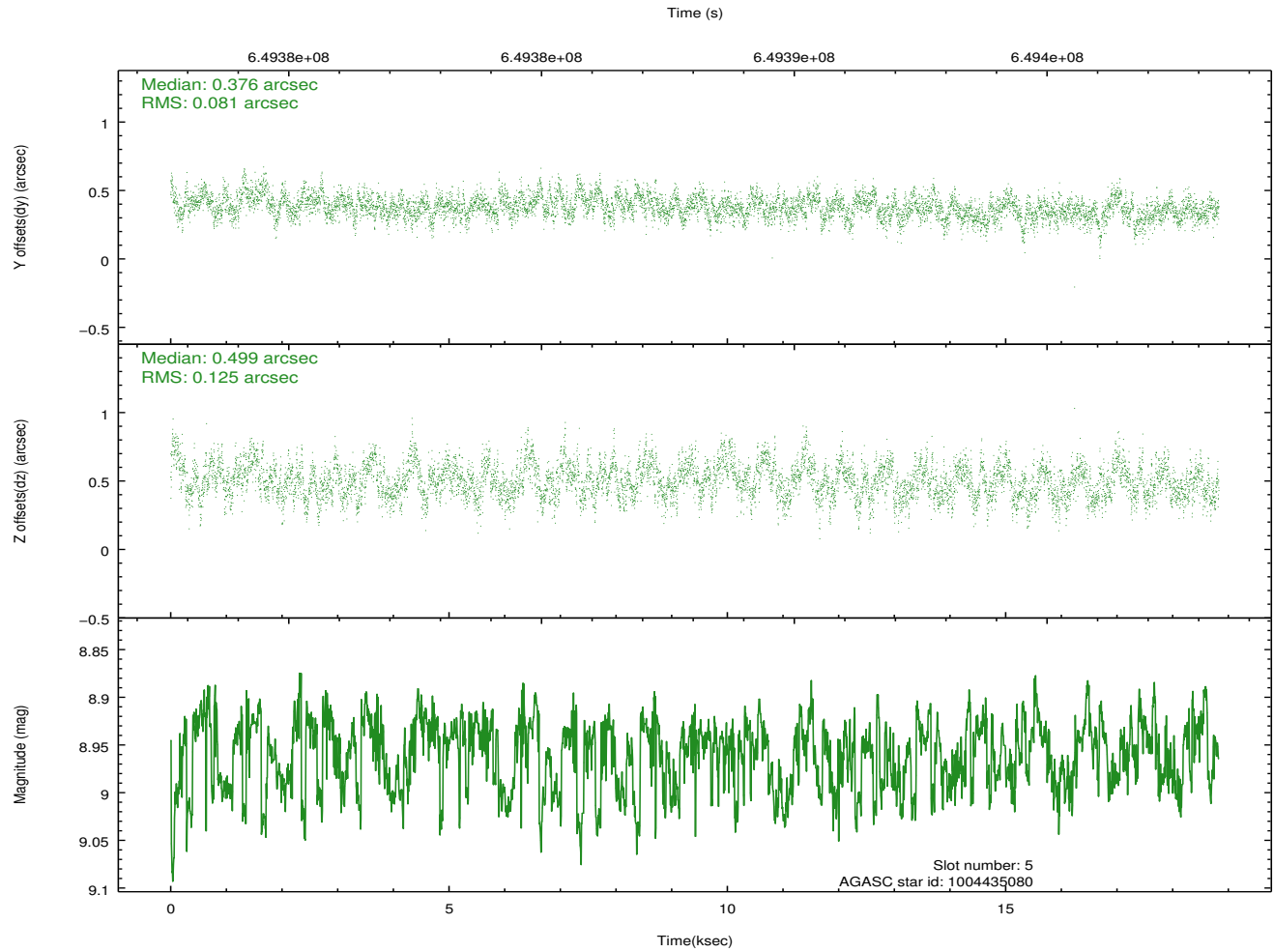
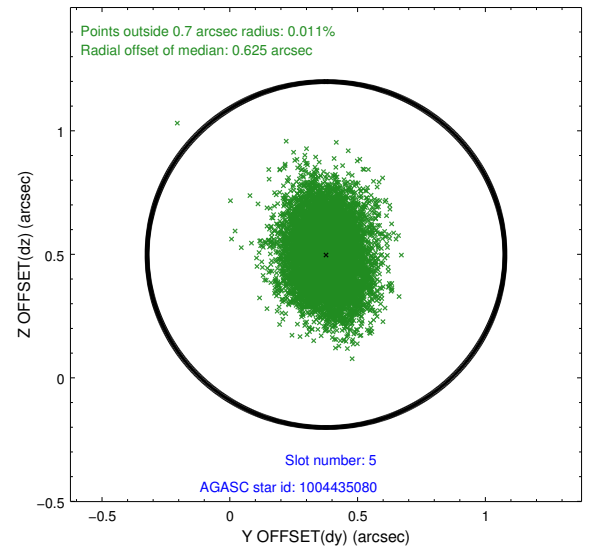
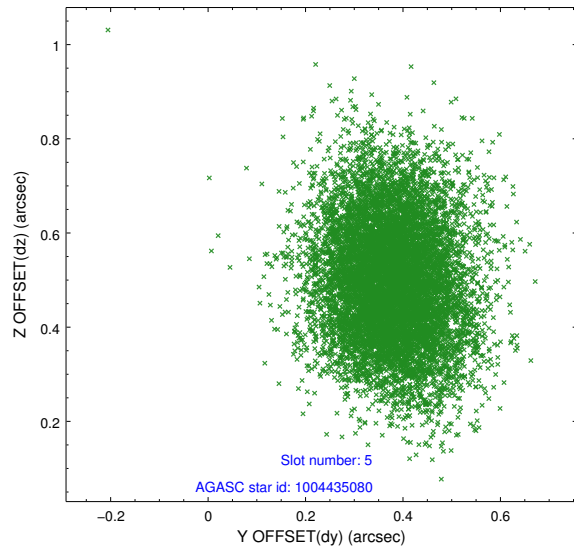
2.4.1 Slot 3



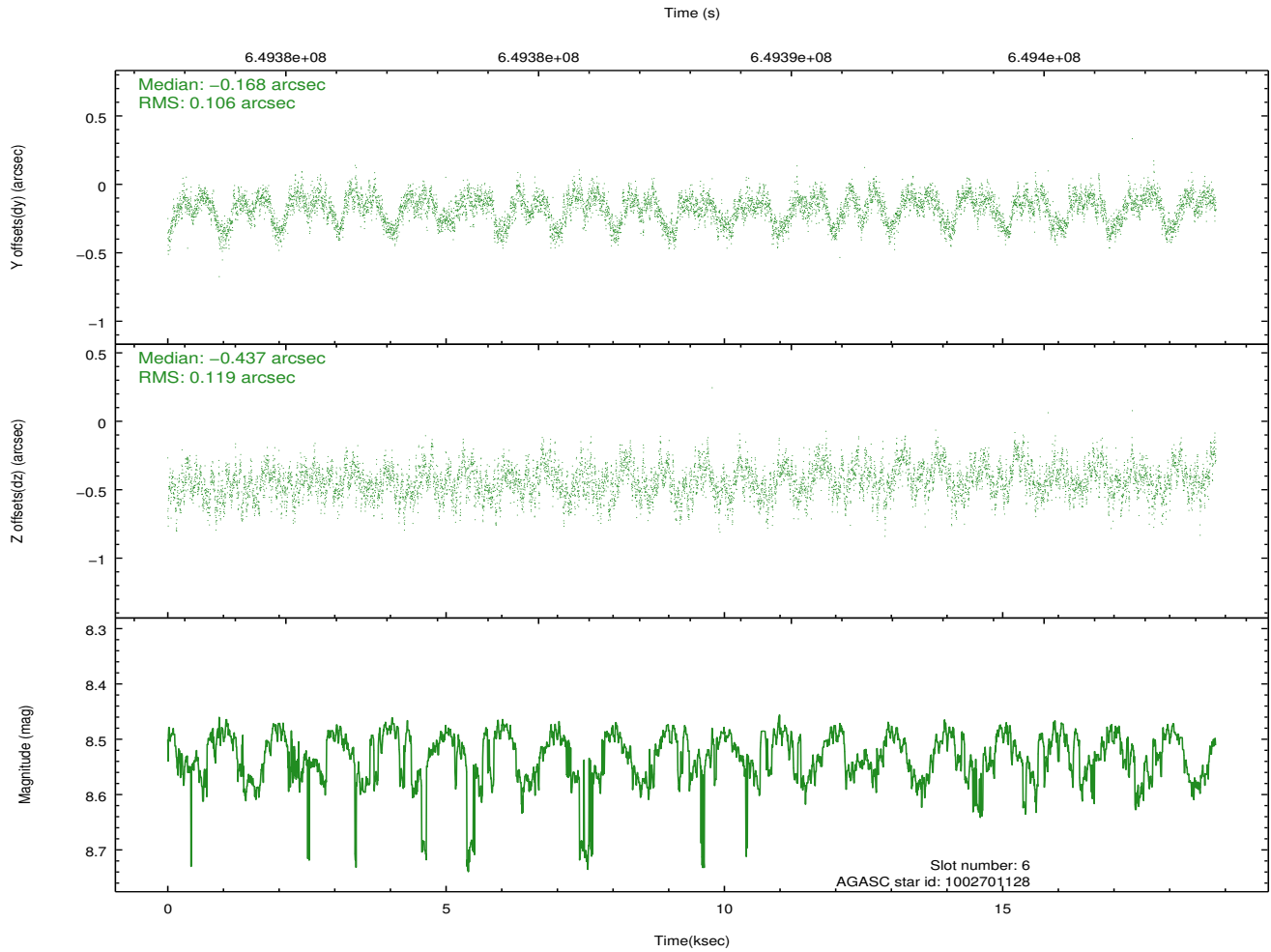
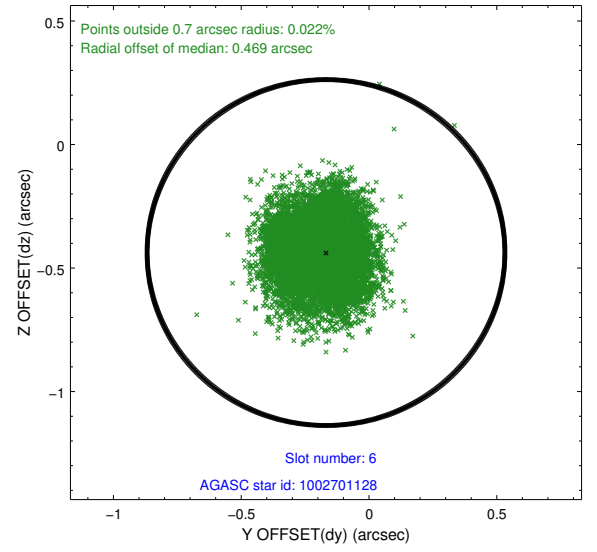
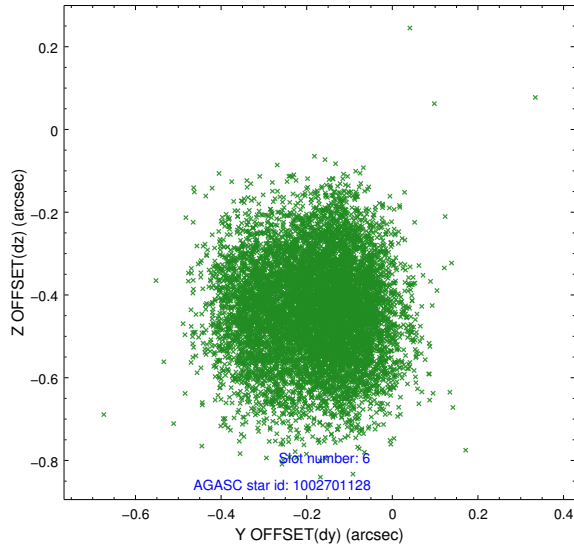
2.4.2 Slot 4



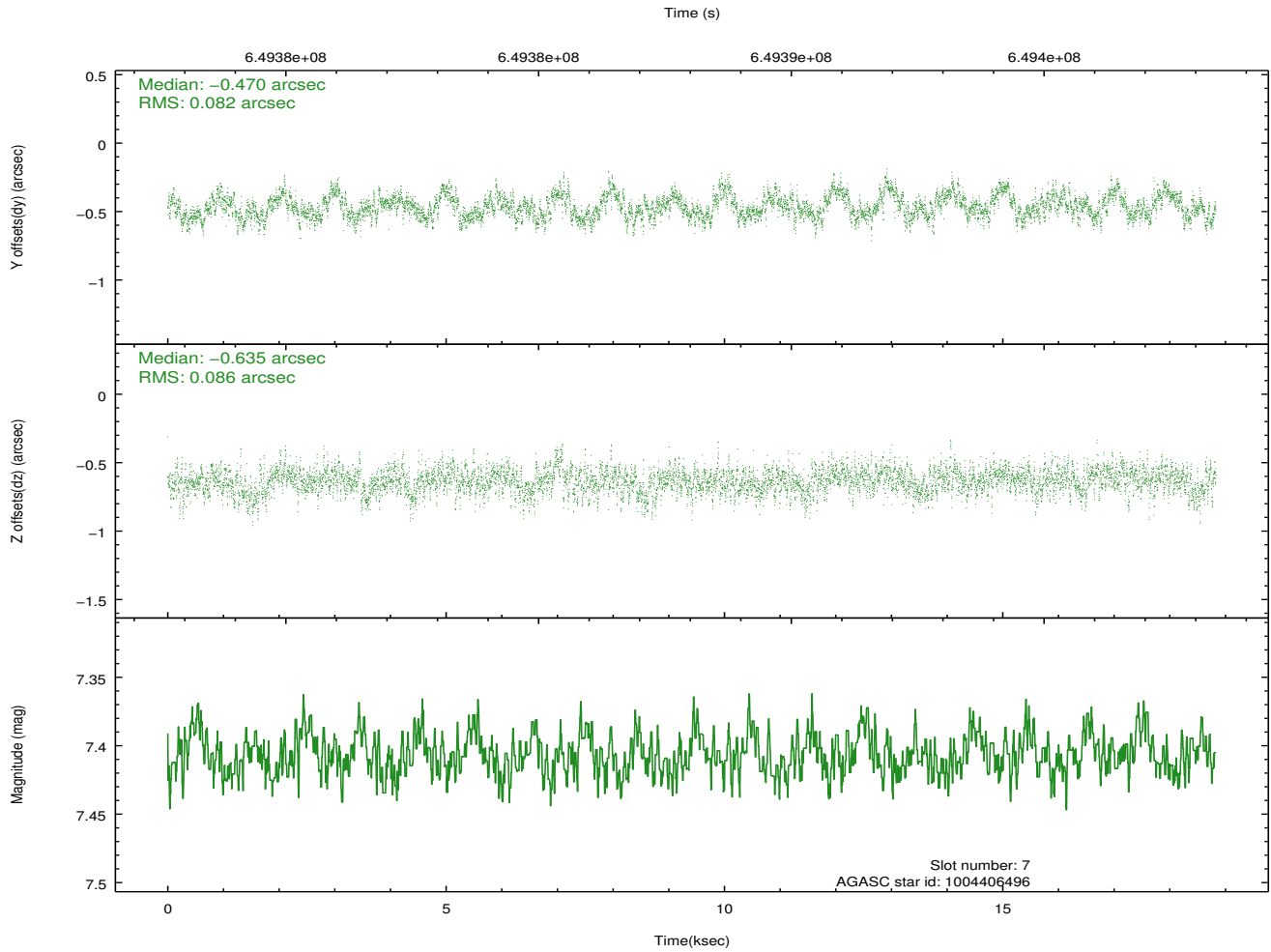
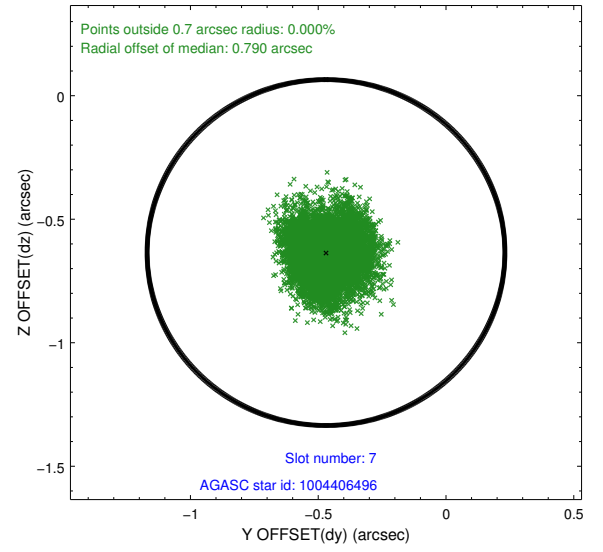
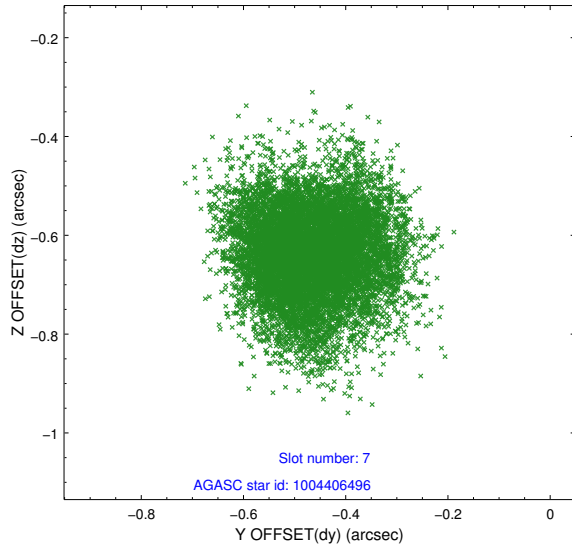
2.4.3 Slot 5



2.4.4 Slot 6

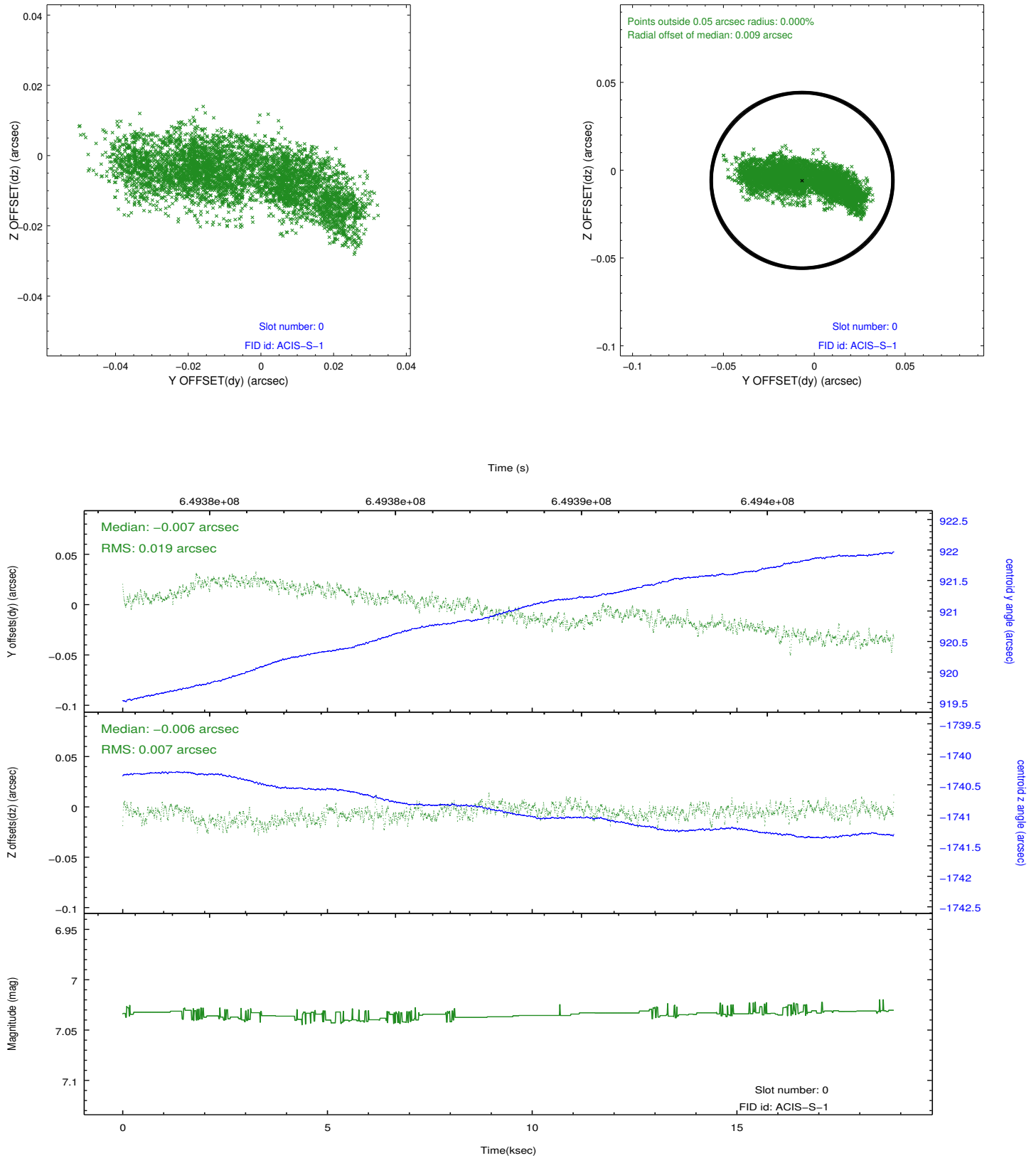


2.4.5 Slot 7

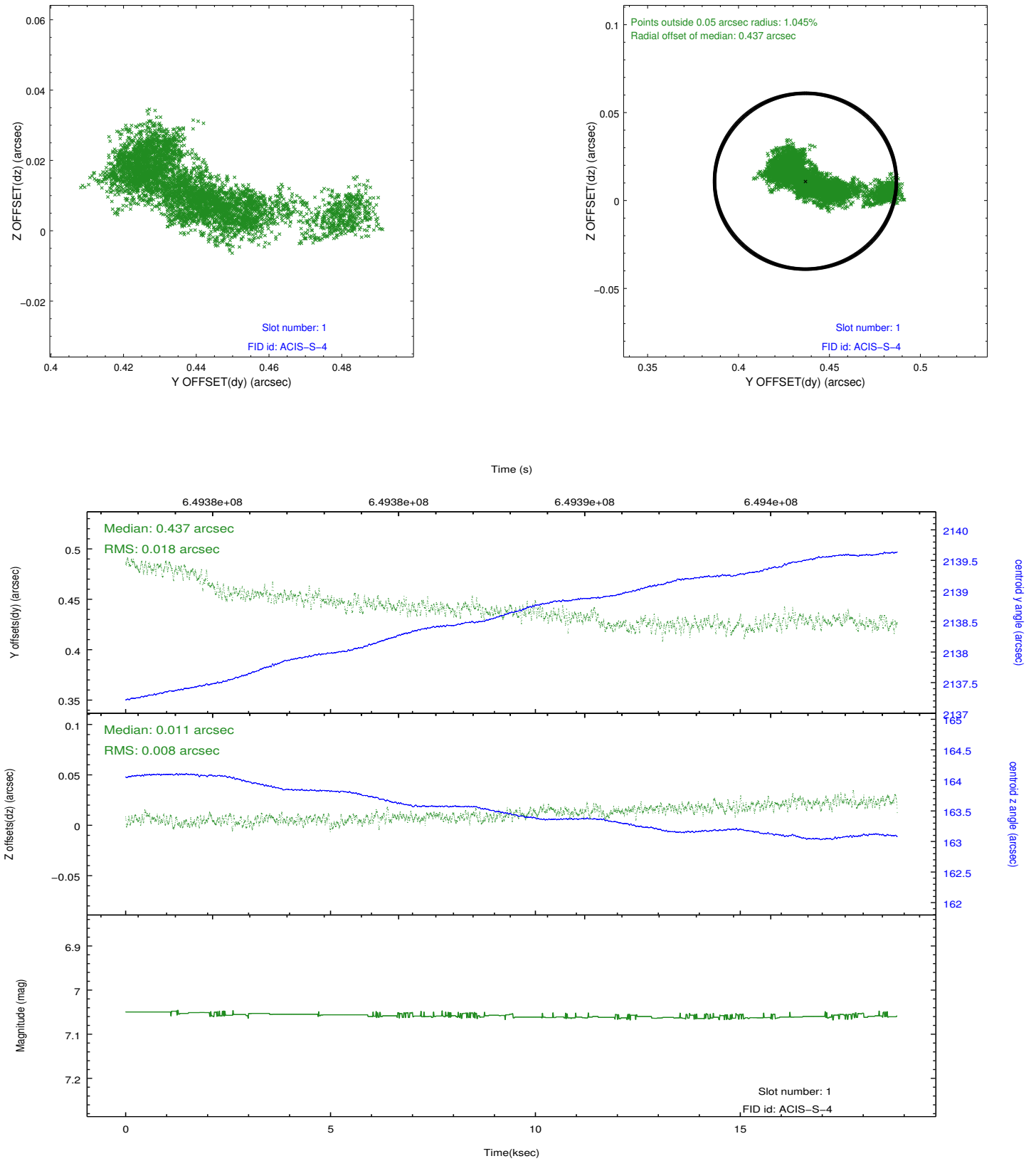


2.5 FID Slots

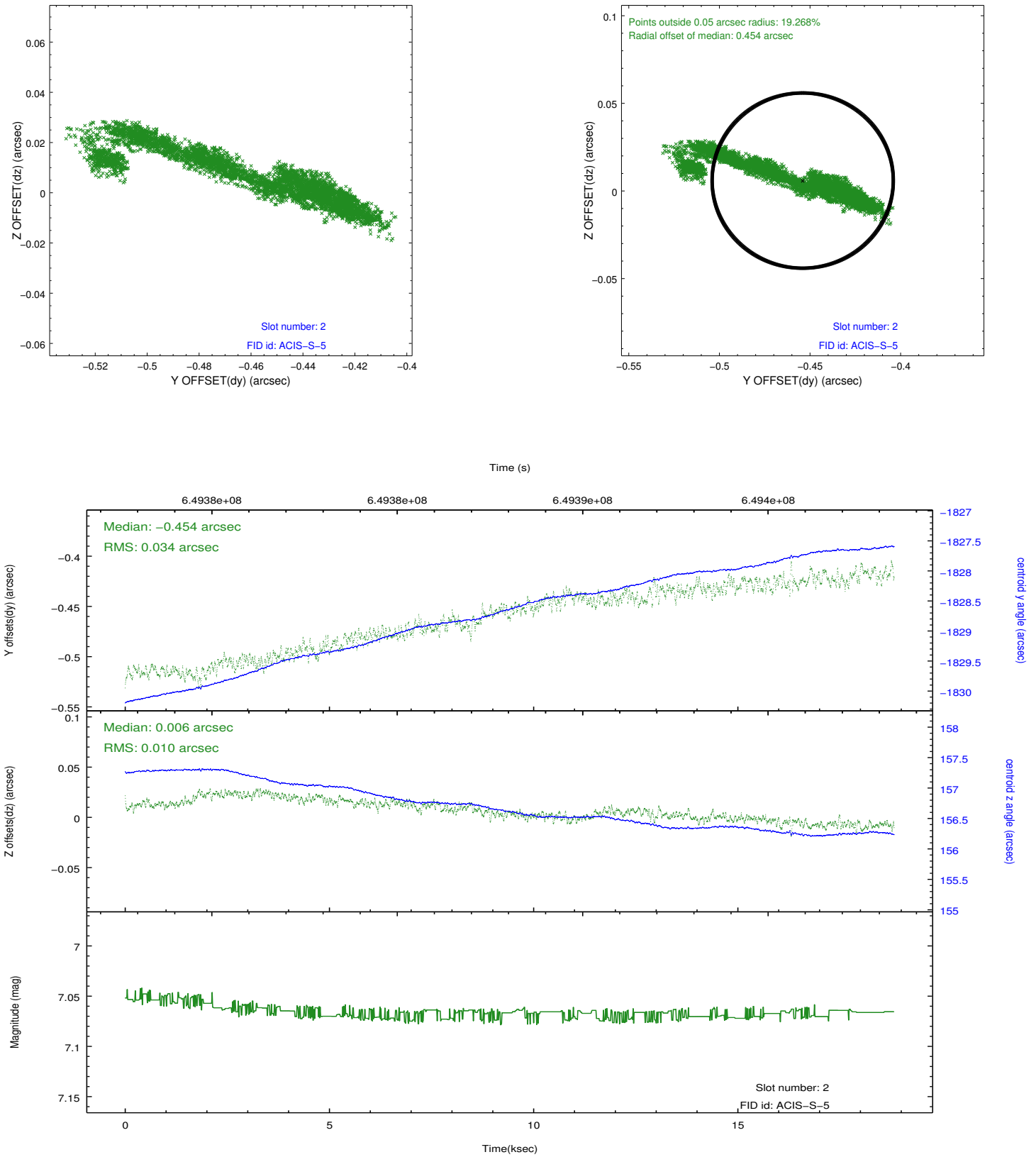
2.5.1 Slot 0



2.5.2 Slot 1

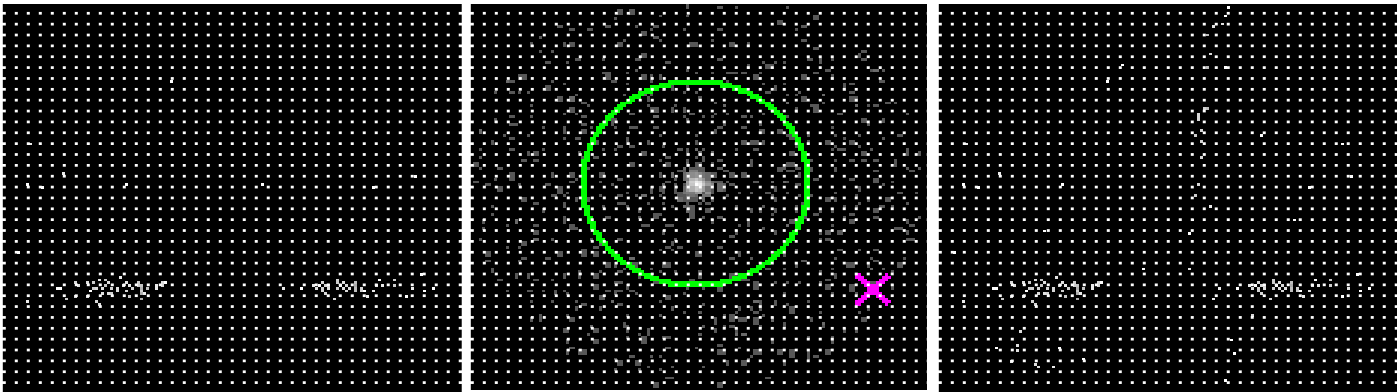


2.5.3 Slot 2



3 Gratings

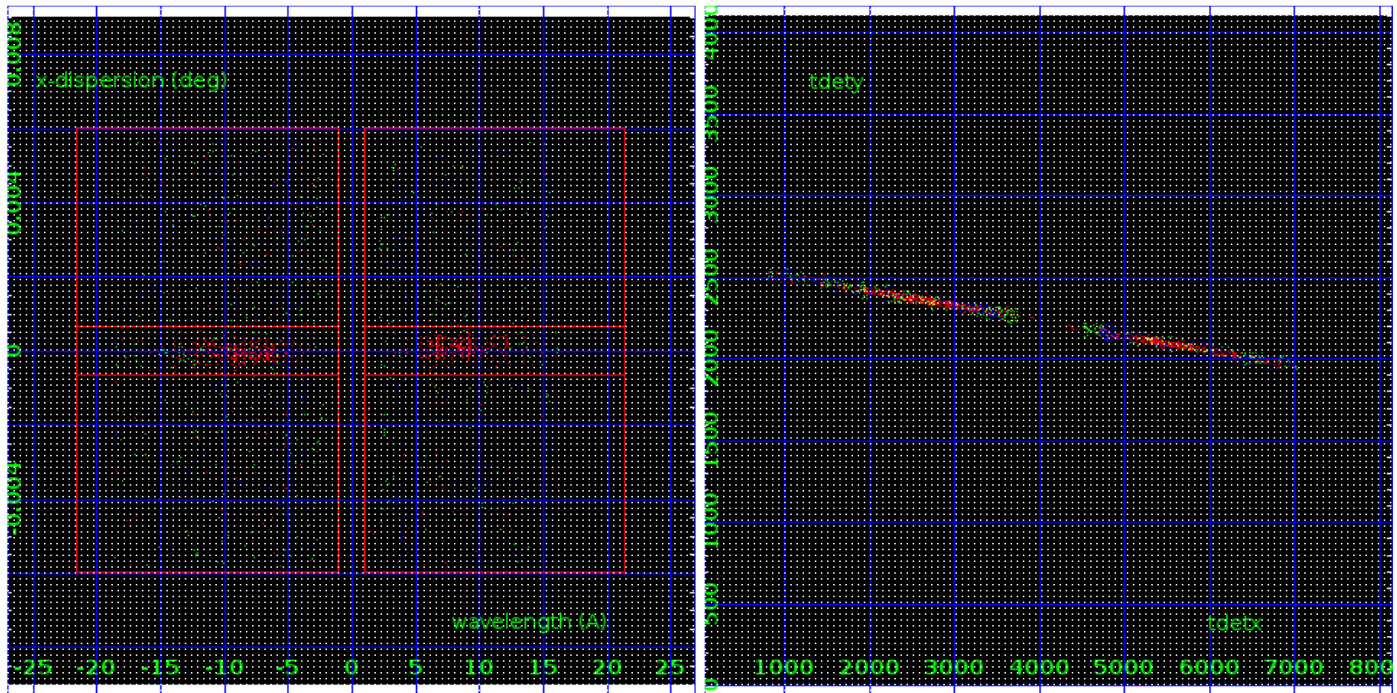
3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

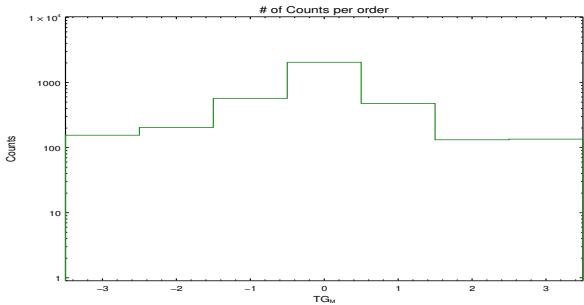
HEG Order Sort ALL

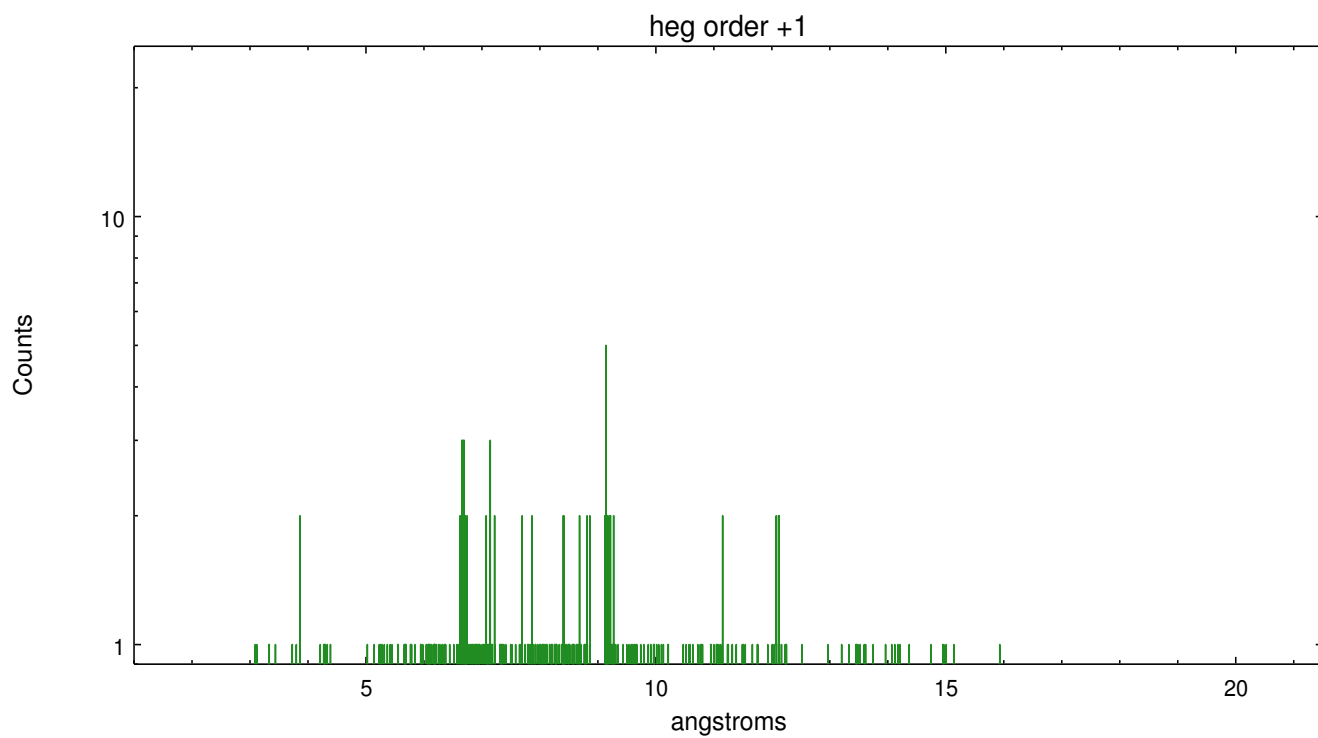
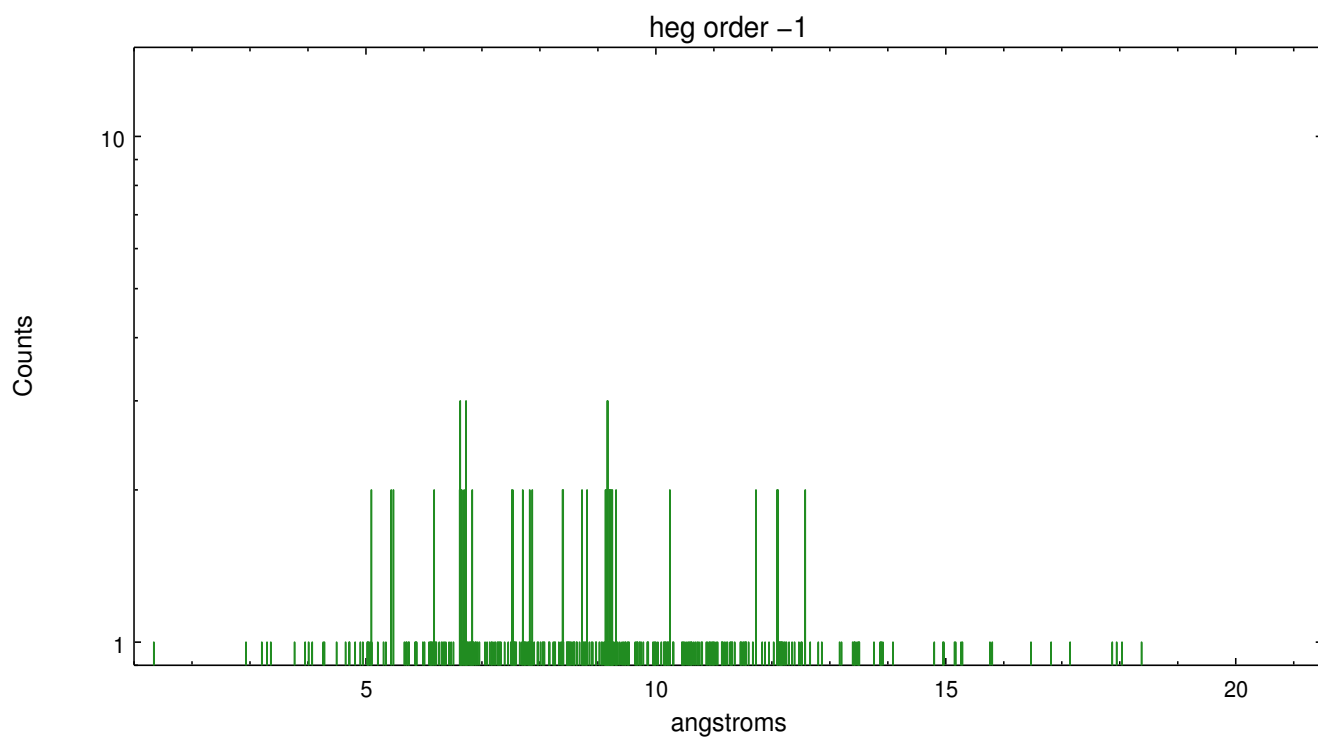


Spot Image HEG

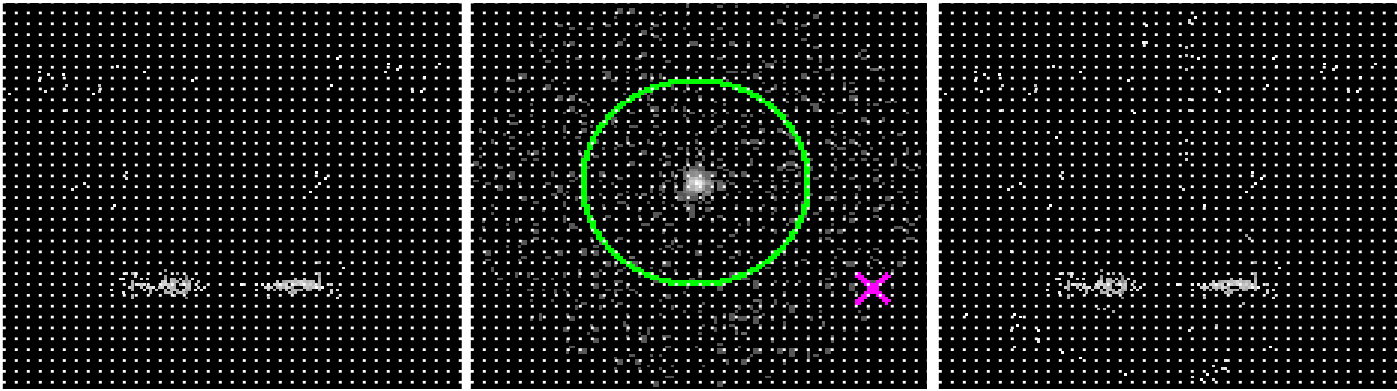
Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	155	204	571	2046	477	132	135





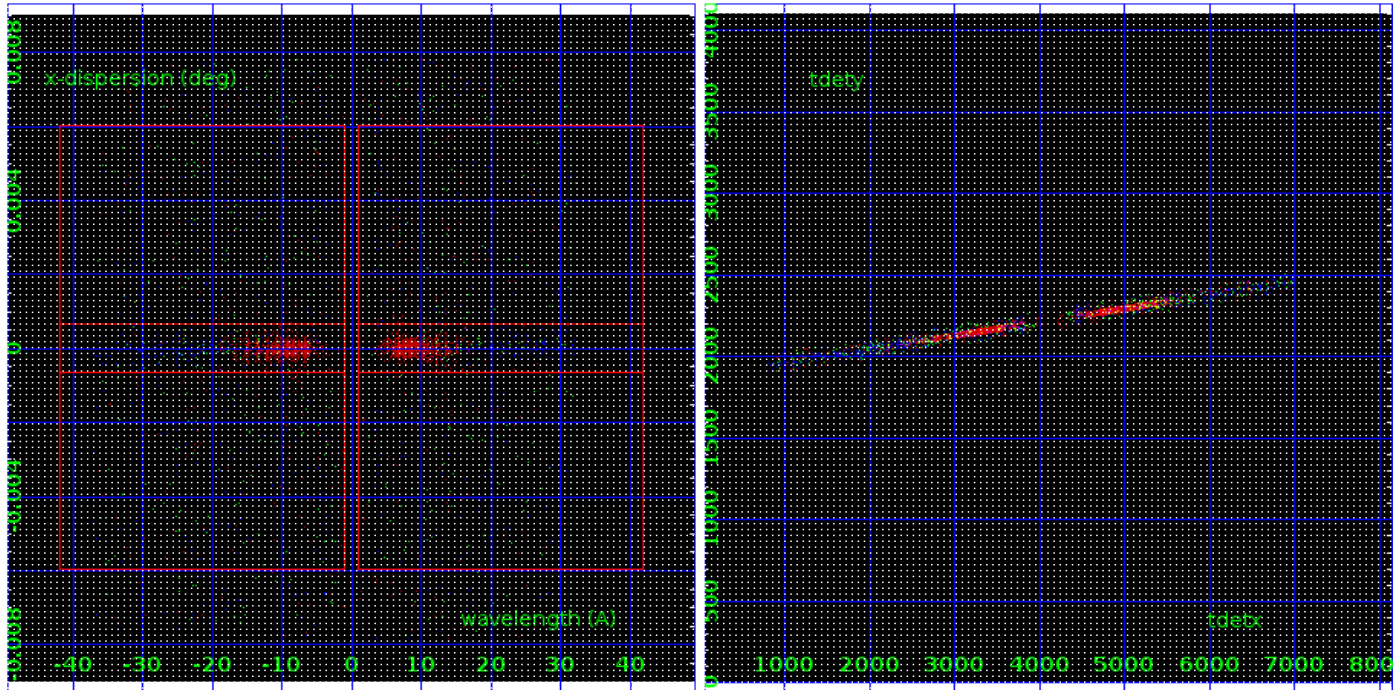
3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

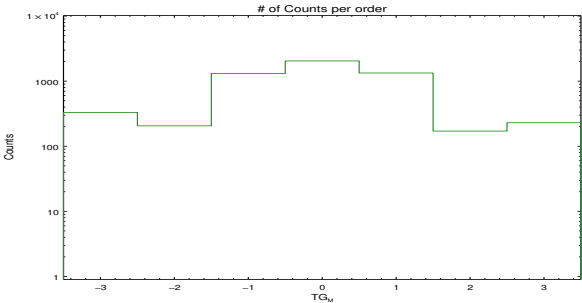
MEG Order Sort ALL

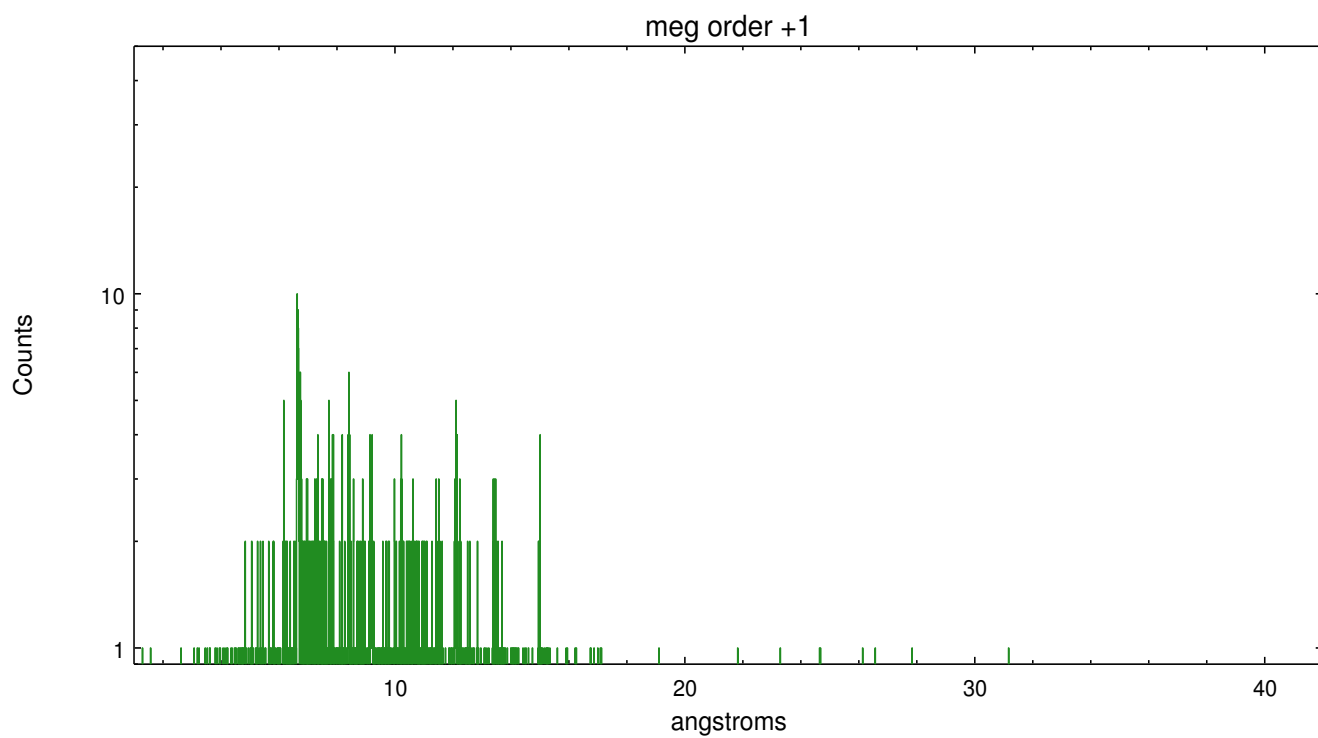
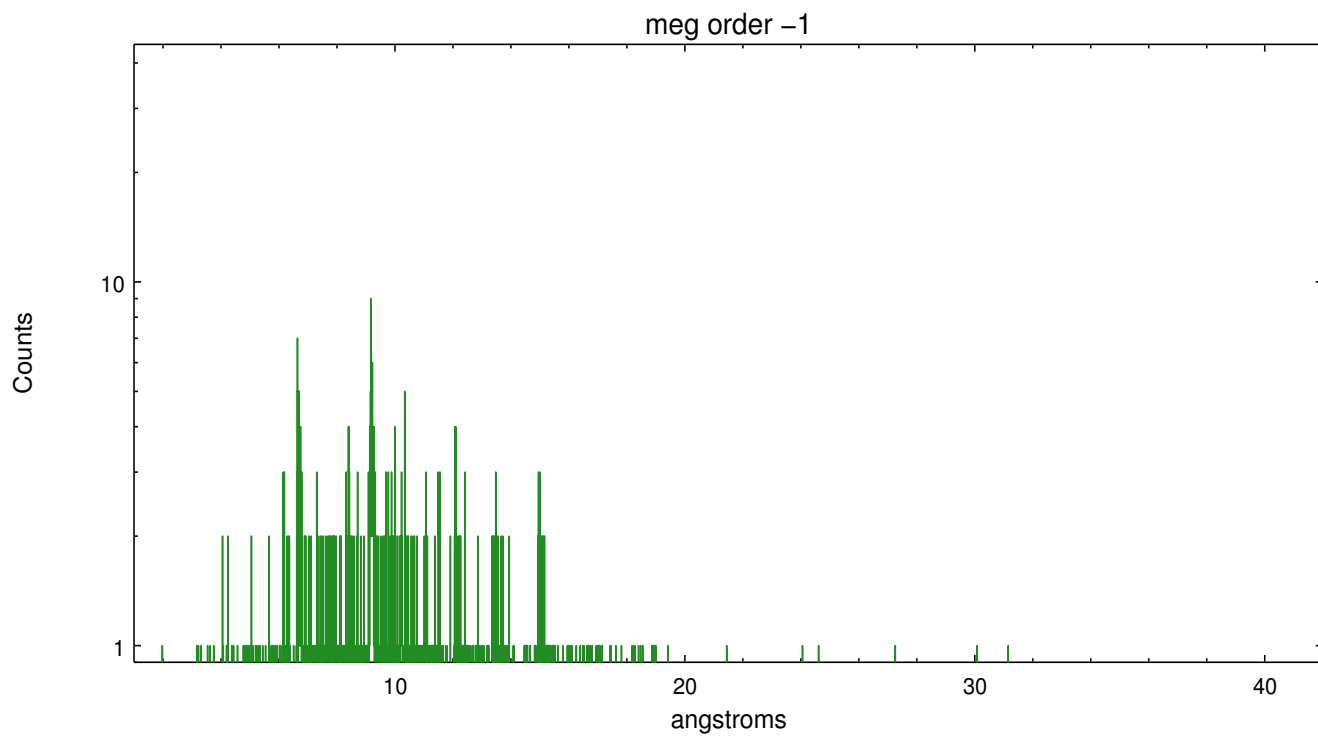


Spot Image MEG

Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	331	206	1311	2046	1335	171	230





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2018.07.31
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.646400277853

A.2 Comments

The bias map for CCD_ID = 4 suffers from anomalously high bias values in an 'exacto-knife'-shaped area of the bias file that is 10 pixels wide in the column direction. Pixels in the event data that have been bias-corrected by one of the affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. It is possible to correct this anomaly using scaled replacement values from another matching bias file, but this replacement is only done routinely for anomalies that are 20 pixels wide or more.