

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 1793 - L2 Version 10  
Chandra X-Ray Center

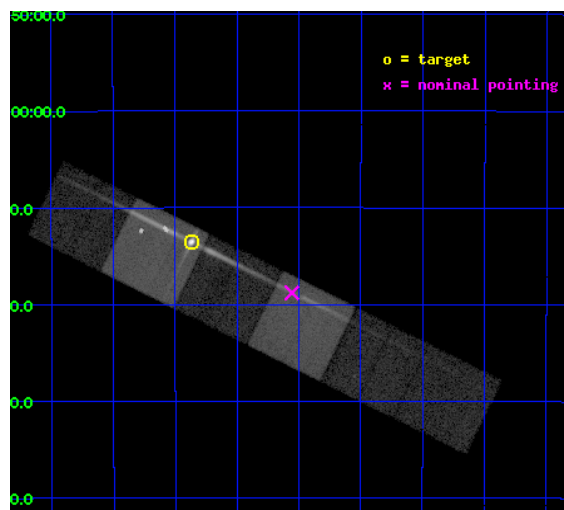
L2 Processing Date : Dec 27 2012

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# 1 Front

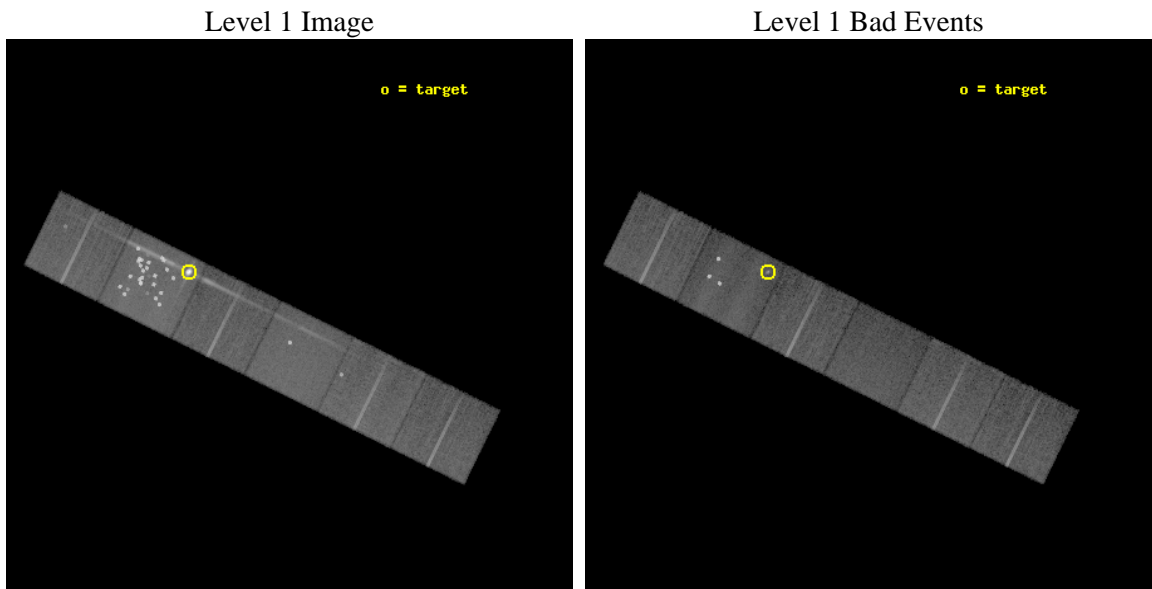
seq_num	390011	Sequence number
obs_id	1793	Observation id
title	GRATINGS CALIBRATION OBSERVATIONS OF PKS2155-304	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	PKS2155-304	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	329.716667	Observer's specified target RA [deg]
dec_targ	-30.225556	Observer's specified target Dec [deg]
ra_nom	329.514151618	Nominal RA [deg]
dec_nom	-30.313392343199	Nominal Dec [deg]
roll_nom	26.244106104089	Nominal Roll [deg]
revision	10	Processing version of data
ontime	21160.155836657	Sum of GTIs [s]
livetime	20892.213202337	Livetime [s]
ontime4	21160.237886757	Sum of GTIs [s]
ontime5	21160.155836657	Sum of GTIs [s]
ontime6	21160.114796668	Sum of GTIs [s]
ontime7	21160.196846753	Sum of GTIs [s]
ontime8	21160.073756665	Sum of GTIs [s]
ontime9	21160.032686755	Sum of GTIs [s]
l2events	292266	Number of level 2 events



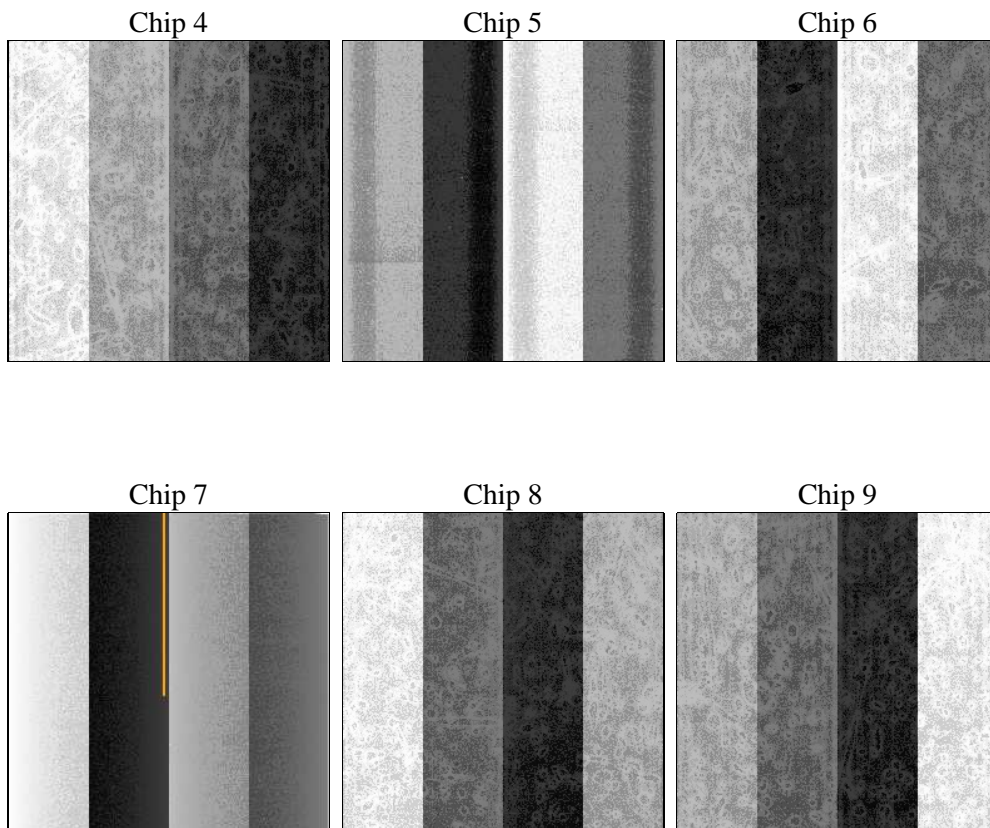
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	21400.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	21160.155836657	Sum of GTIs [s]
caldbver	4.5.1.1	&#160	ontime4	21160.237886757	Sum of GTIs [s]
date	2012-08-31T14:30:09	Date and time of file creation	ontime5	21160.155836657	Sum of GTIs [s]
revision	5	Processing version of data	ontime6	21160.114796668	Sum of GTIs [s]
			ontime7	21160.196846753	Sum of GTIs [s]
			ontime8	21160.073756665	Sum of GTIs [s]
			ontime9	21160.032686755	Sum of GTIs [s]
			l1events	1115400	Number of level 1 events

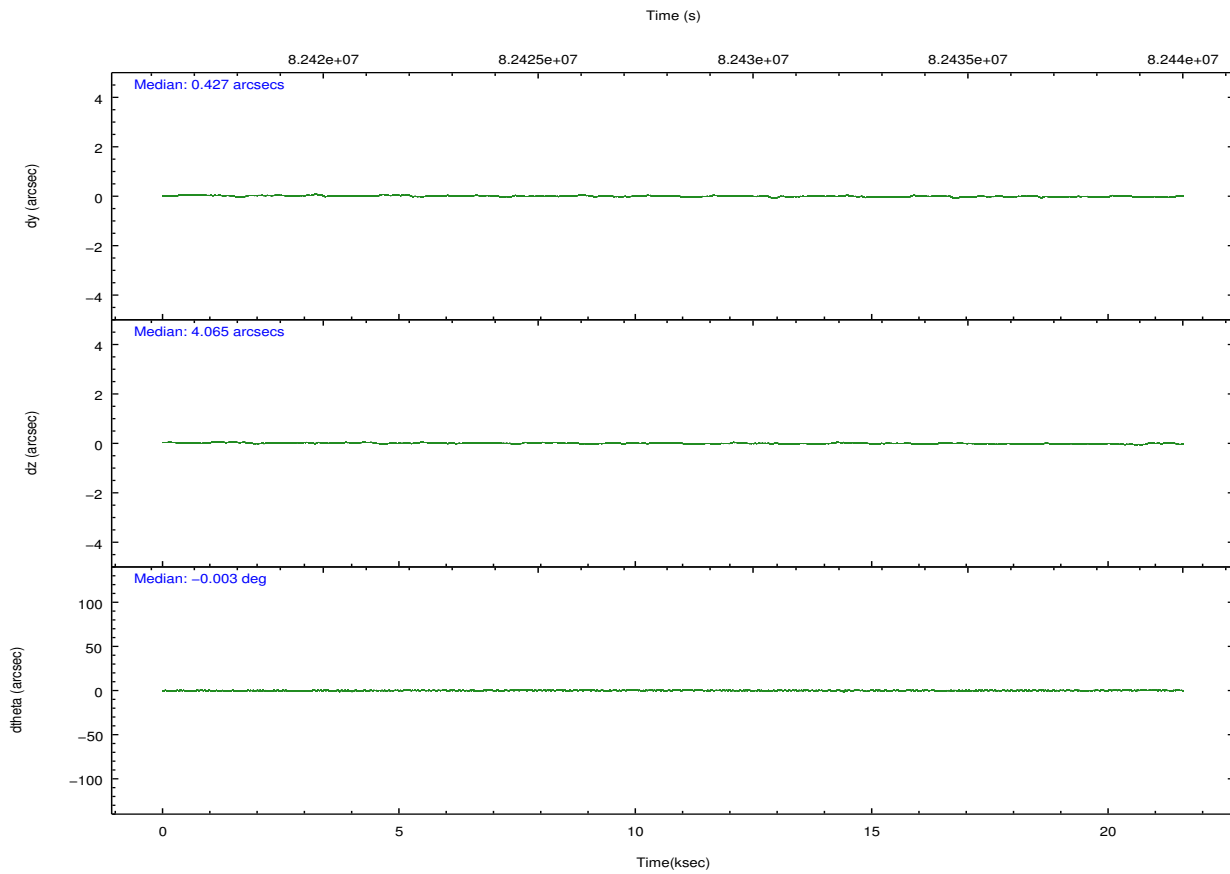
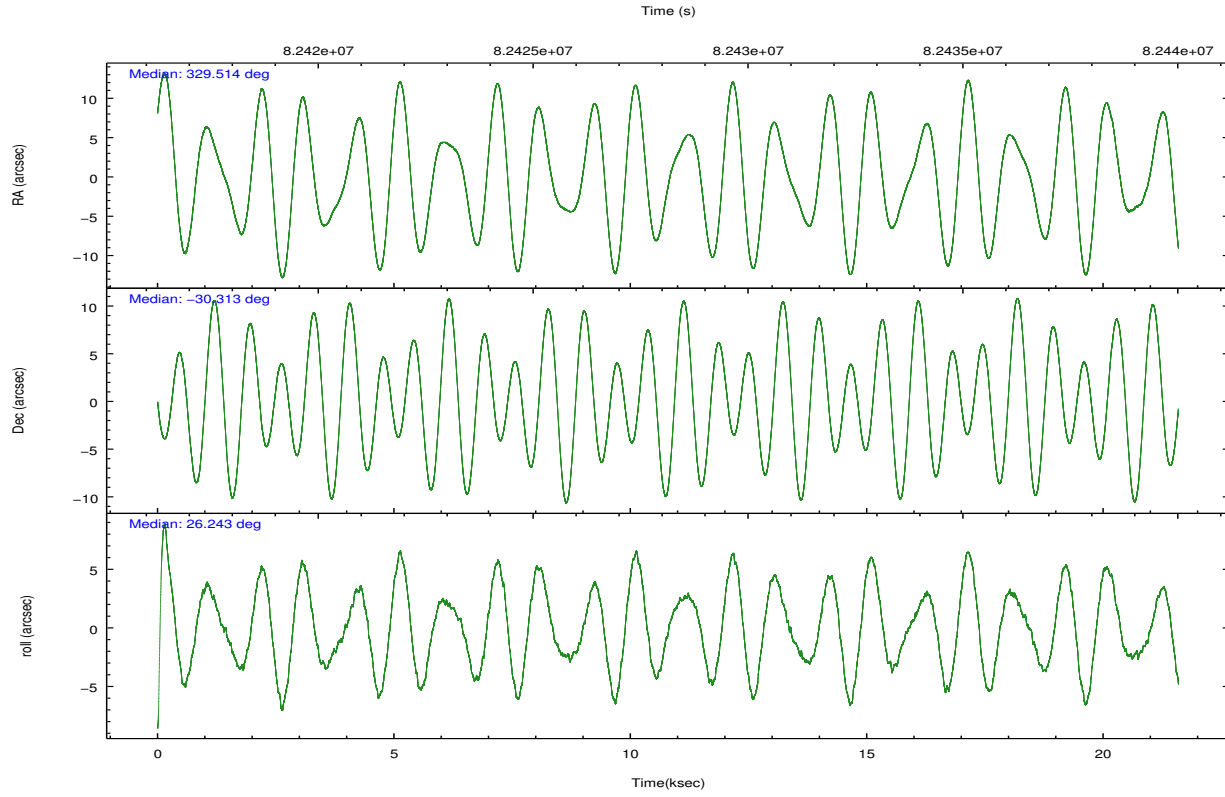
### 2.1.4 Events

	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	140696	396220	138322	165502	153550	121110	grade 0 events	4780	156992	13817	14233	9709	2974
rejected events	123333	117987	110779	89787	122836	106185		3%	39%	9%	8%	6%	2%
rejected %	87%	29%	80%	54%	79%	87%	grade 1 events	49	324	56	86	76	17
								0%	0%	0%	0%	0%	0%
							grade 2 events	7505	40923	7415	14316	9585	6548
								5%	10%	5%	8%	6%	5%
							grade 3 events	734	12014	1109	4200	2133	786
								0%	3%	0%	2%	1%	0%
							grade 4 events	666	8799	1106	3787	2035	718
								0%	2%	0%	2%	1%	0%
							grade 5 events	2416	17289	2975	8698	3959	2928
								1%	4%	2%	5%	2%	2%
							grade 6 events	3679	59540	4102	39190	7255	3901
								2%	15%	2%	23%	4%	3%
							grade 7 events	120867	100339	107742	80992	118798	103238
								85%	25%	77%	48%	77%	85%

## 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	LETG	LETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	329.496641	329.5141516179977	Subarray requested	NONE	NONE
[deg] Pointing Dec	-30.336238	-30.31339234319869	Alternating exposures requested	N	N
[deg] Pointing Roll	26.078633	26.24410610408854	[s] Primary exposure time	0.000000	3.2
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-182.131972	-182.1344861297048			
[mm] SIM translation stage offset	-8.000551	-7.998036453302973			
[s] Observation start time (MET)	82417540.184000	82417161.92399301			
Observation start date	2000-08-11T21:44:36	2000-08-11T21:39:21			
[s] Observation end time (MET)	82438940.184000	82439076.93731301			
Observation end date	2000-08-12T03:41:16	2000-08-12T03:44:36			
Read mode	TIMED	TIMED			

## 2.3 Aspect

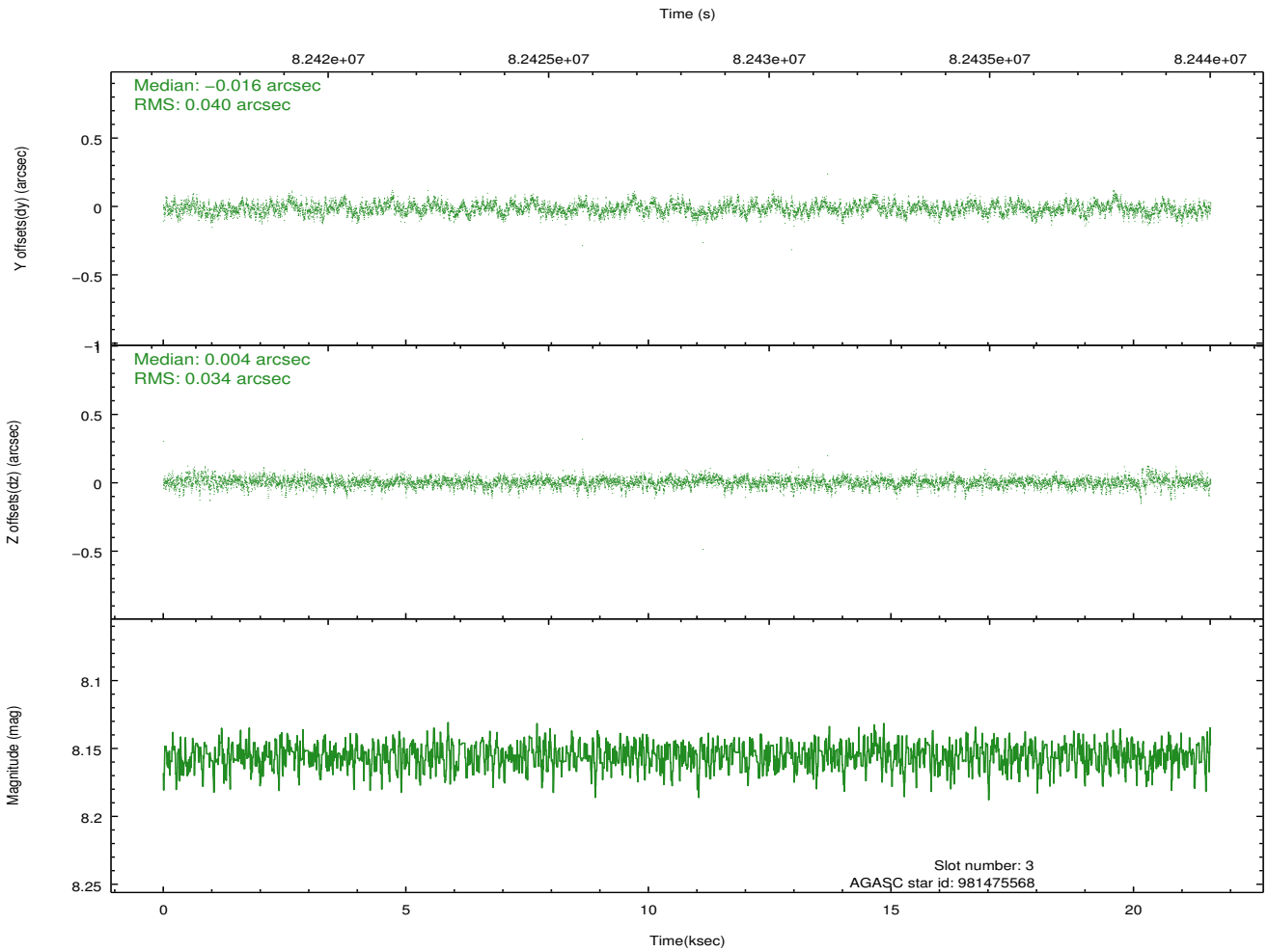
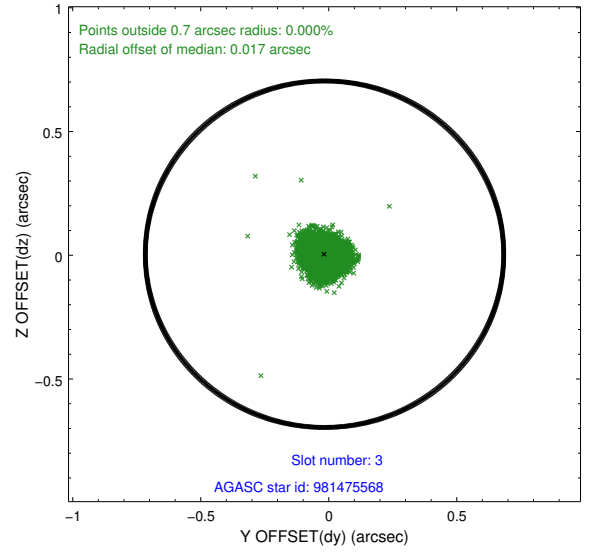
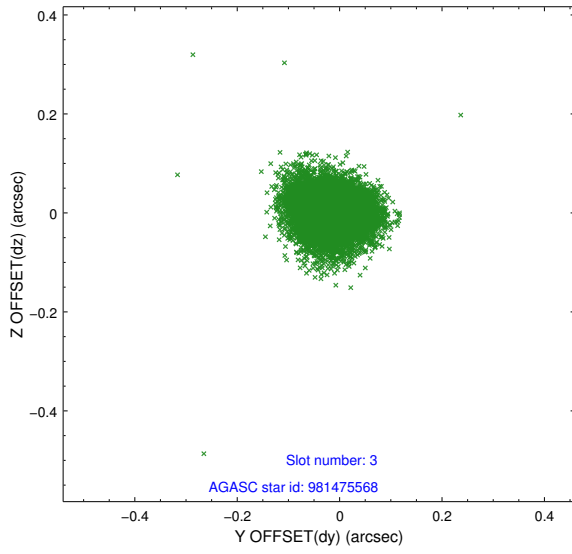


### Slot Statistics

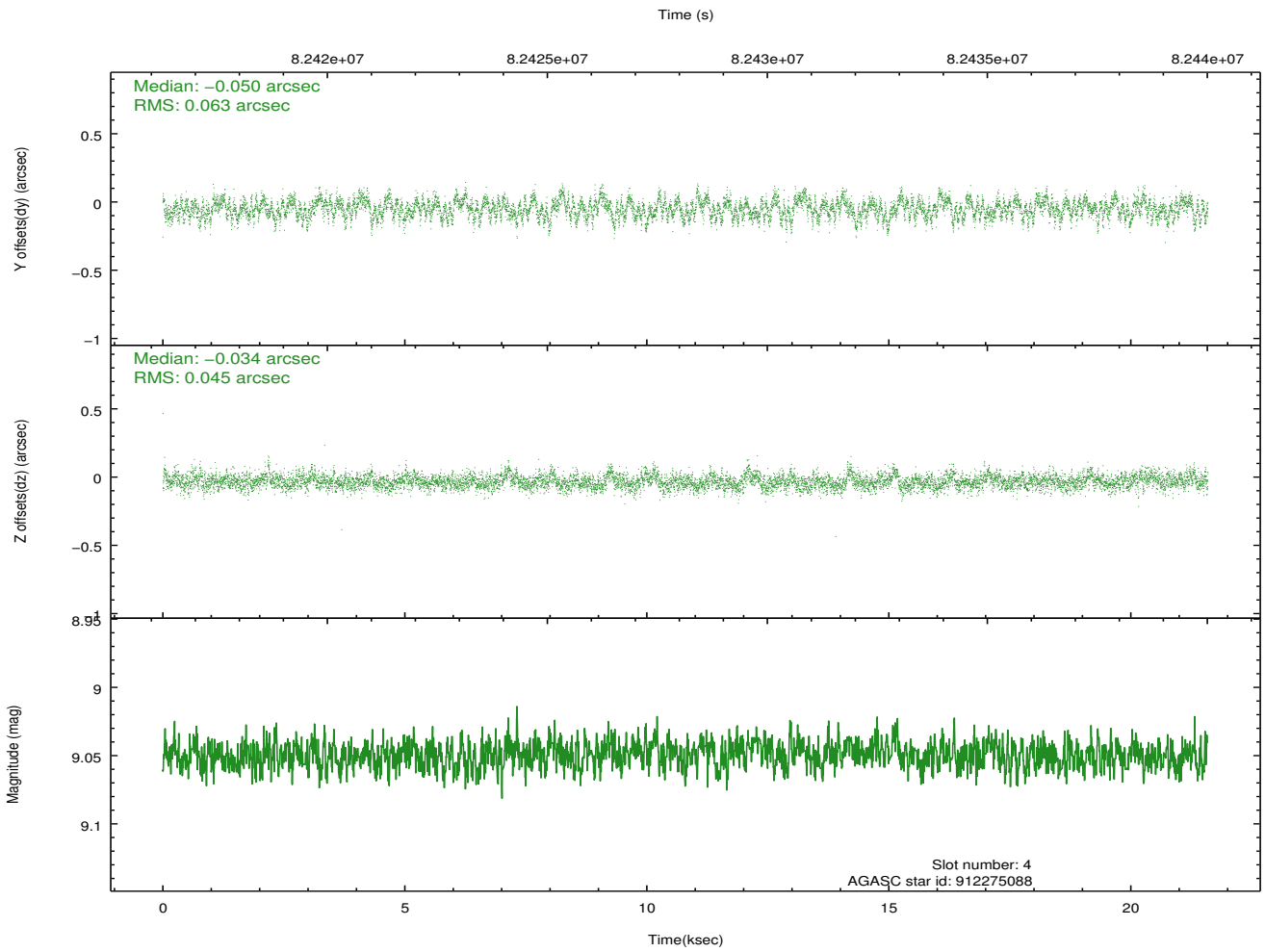
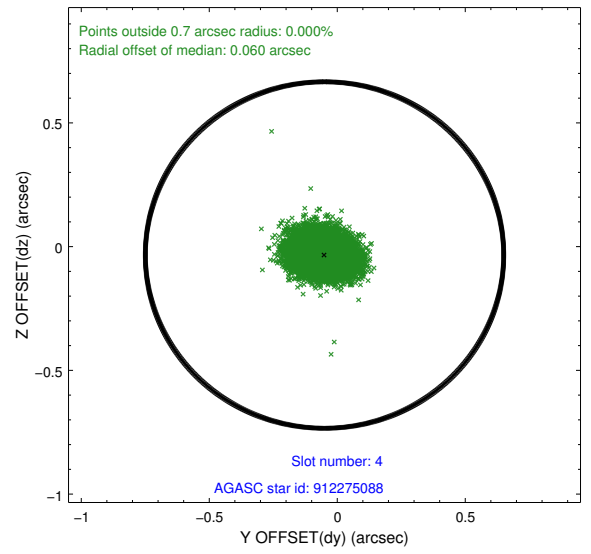
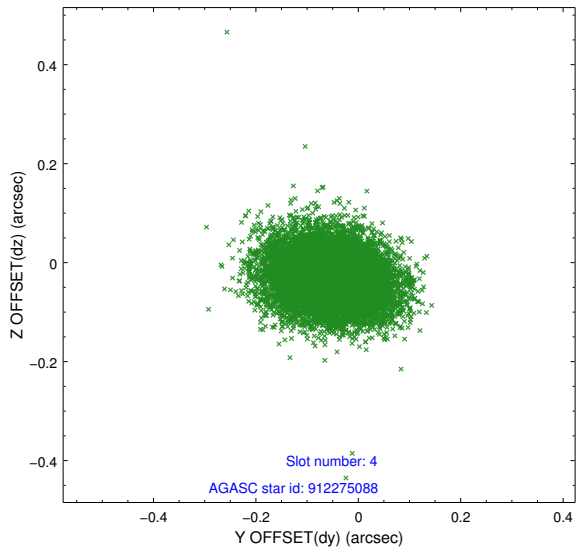
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	5266	-0.061	-0.110	0.008	0.012	0.000000	0.000000	-752.51	-1890.01
1	FID	ACIS-S-4	7.18	5266	0.091	0.059	0.006	0.011	0.000000	0.000000	2160.87	18.38
2	FID	ACIS-S-5	7.22	5267	-0.062	0.059	0.008	0.013	0.000000	0.000000	-1805.12	12.30
3	GUIDE	981475568	8.16	10533	-0.016	0.004	0.055	0.091	328.999408	-30.923402	-2309.63	-1227.27
4	GUIDE	912275088	9.05	10531	-0.050	-0.034	0.082	0.135	329.619228	-29.738698	1289.86	1762.75
5	GUIDE	981478152	9.41	10528	-0.029	0.025	0.074	0.120	329.415589	-30.057192	215.19	1012.79
6	GUIDE	981468128	9.36	10528	0.099	-0.033	0.071	0.116	329.756350	-30.158334	1007.75	218.47
7	GUIDE	981469488	9.60	10531	-0.005	0.036	0.083	0.136	329.261199	-30.045155	-198.23	1262.49

## 2.4 Star Slots

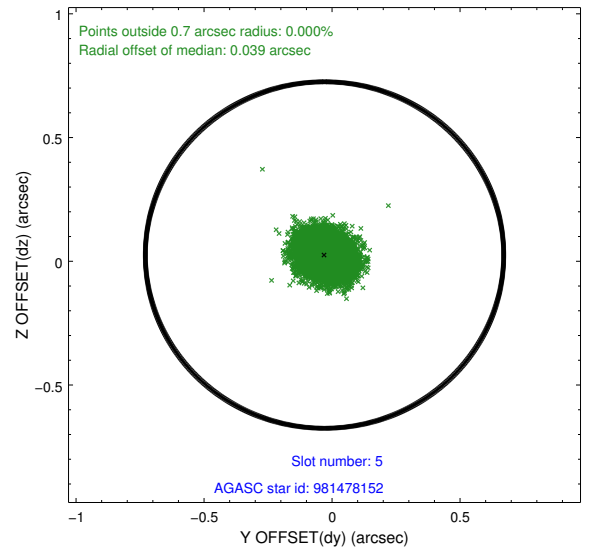
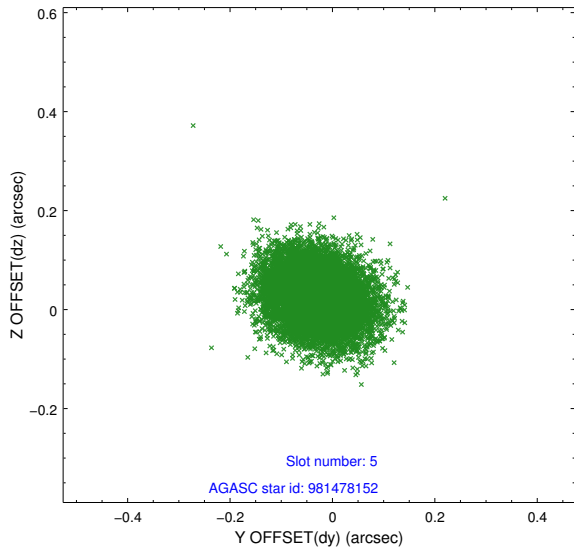
### 2.4.1 Slot 3



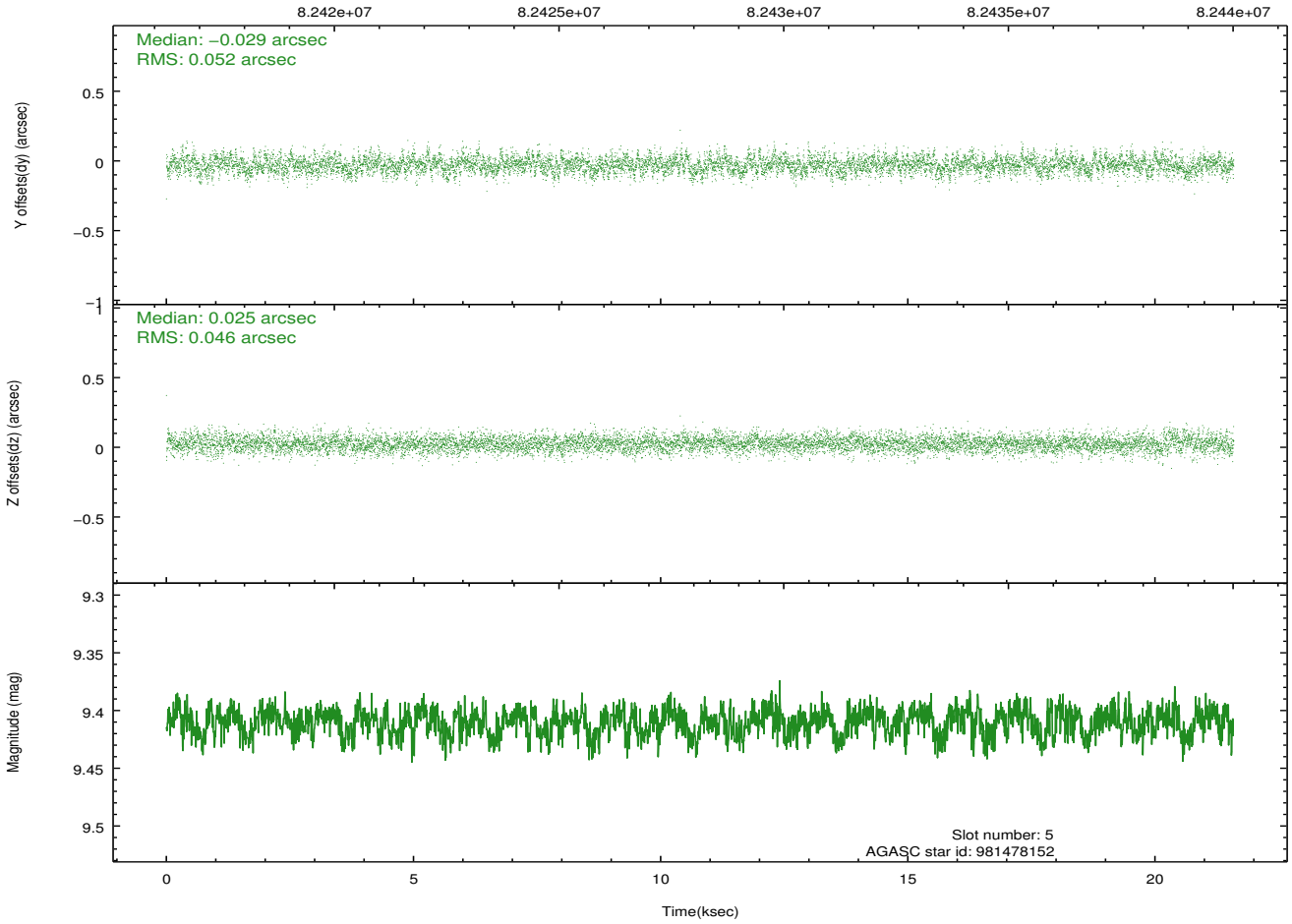
### 2.4.2 Slot 4



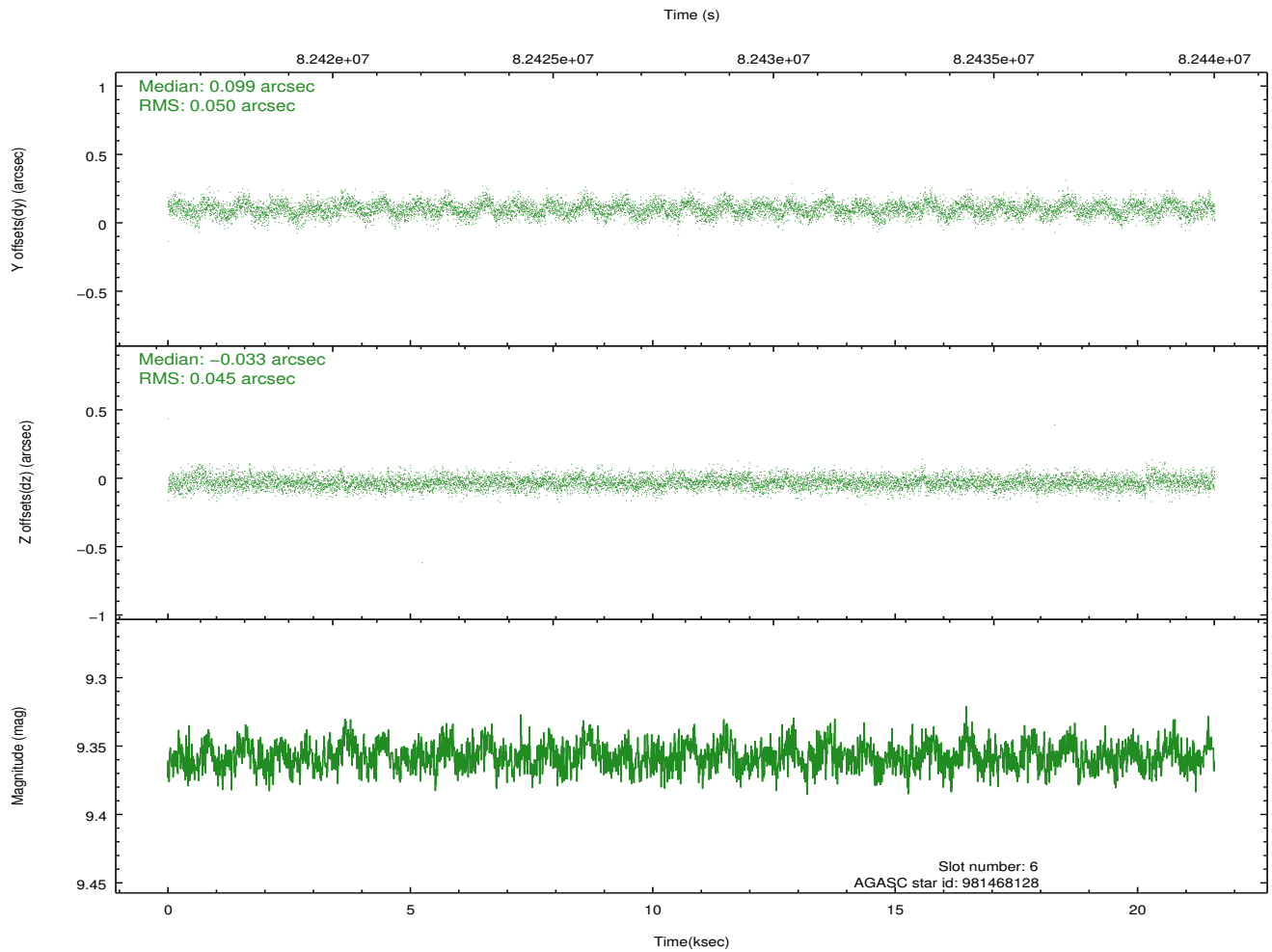
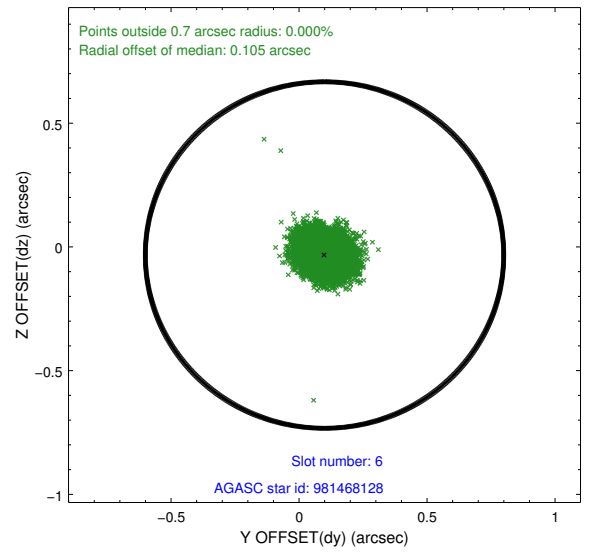
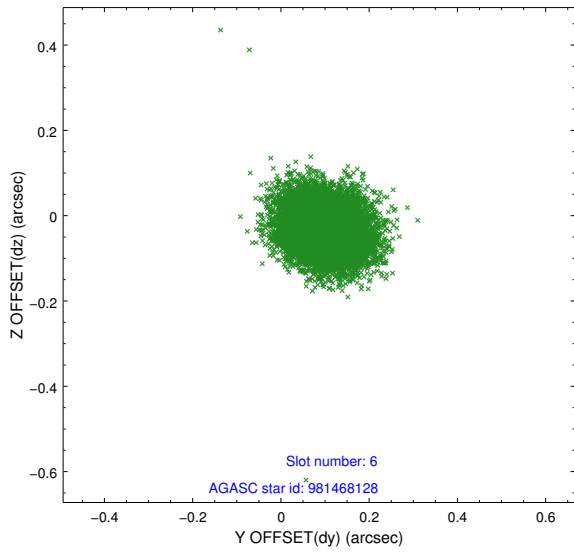
### 2.4.3 Slot 5



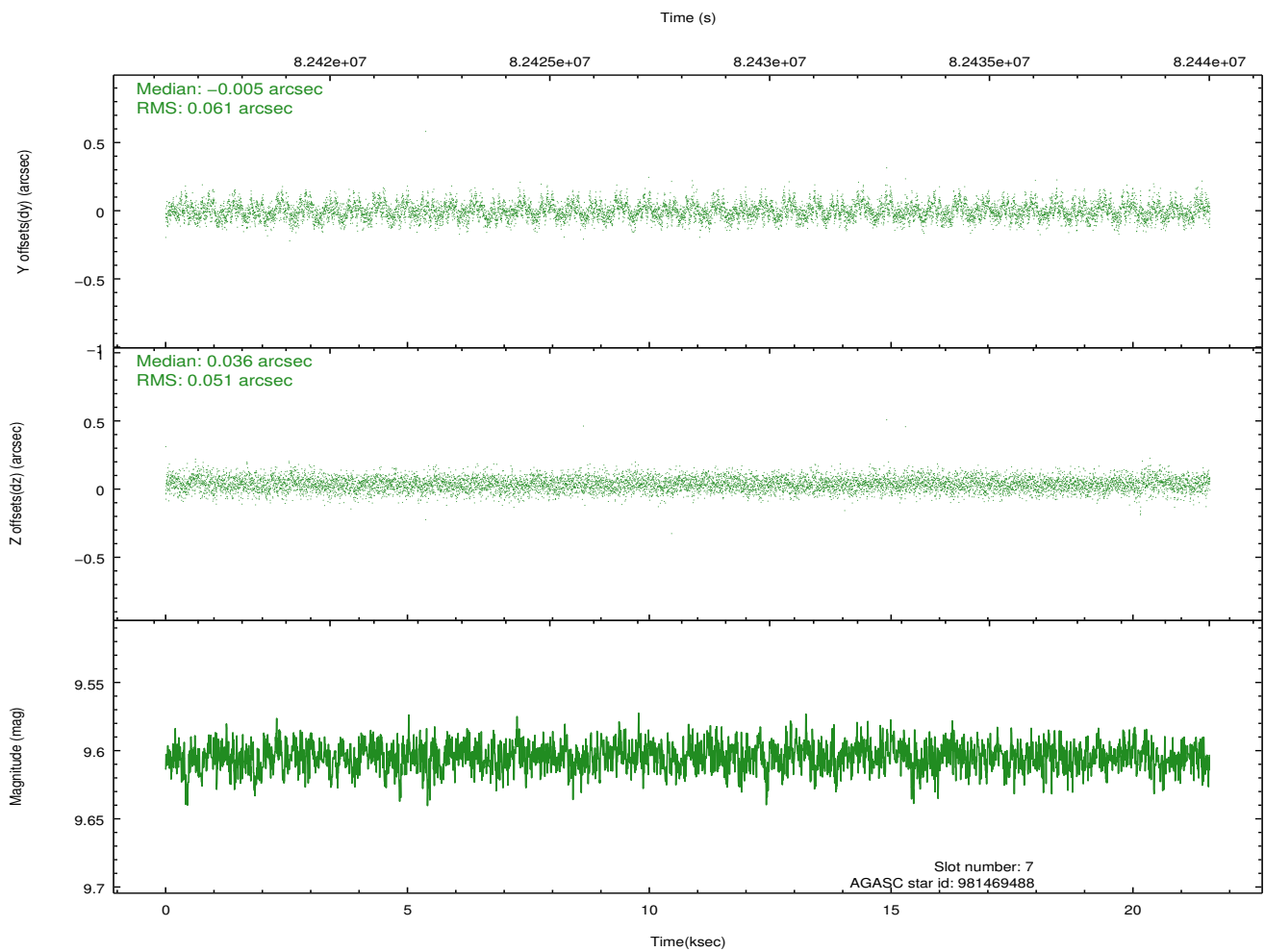
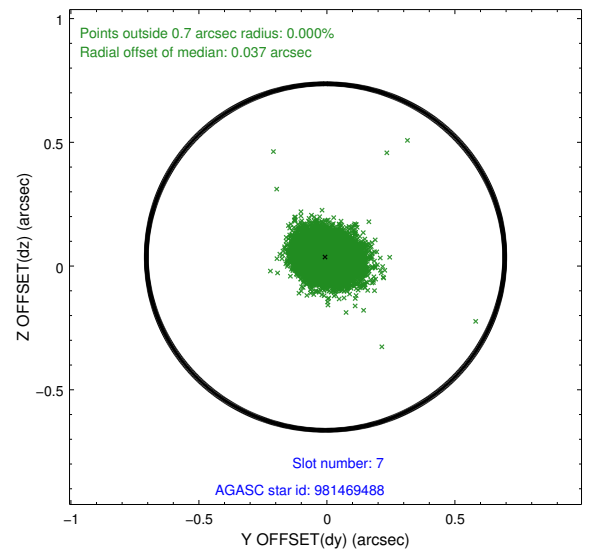
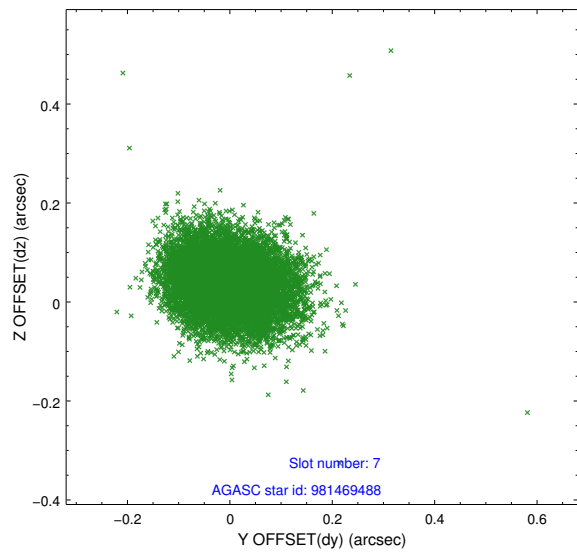
Time (s)



## 2.4.4 Slot 6

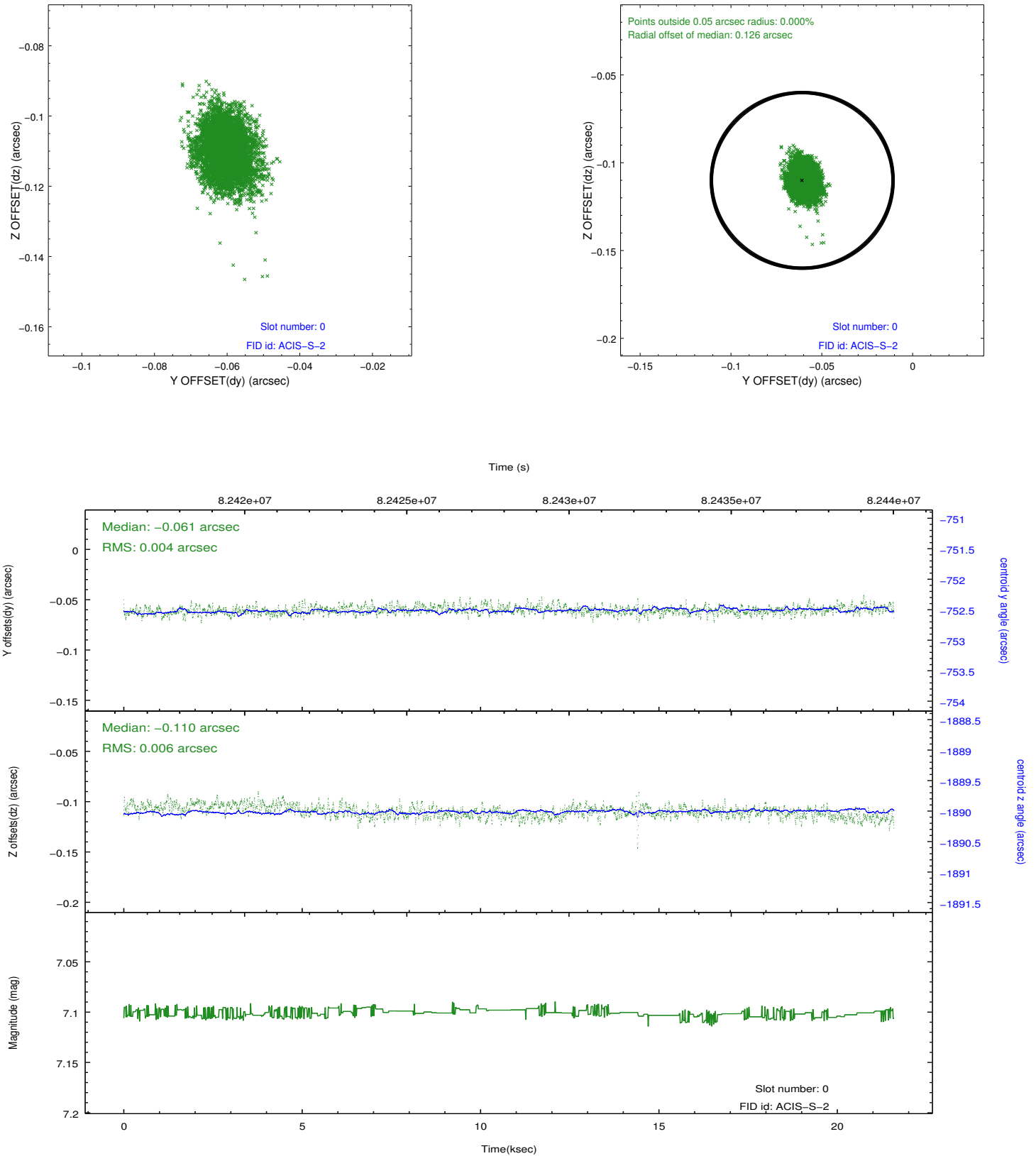


## 2.4.5 Slot 7

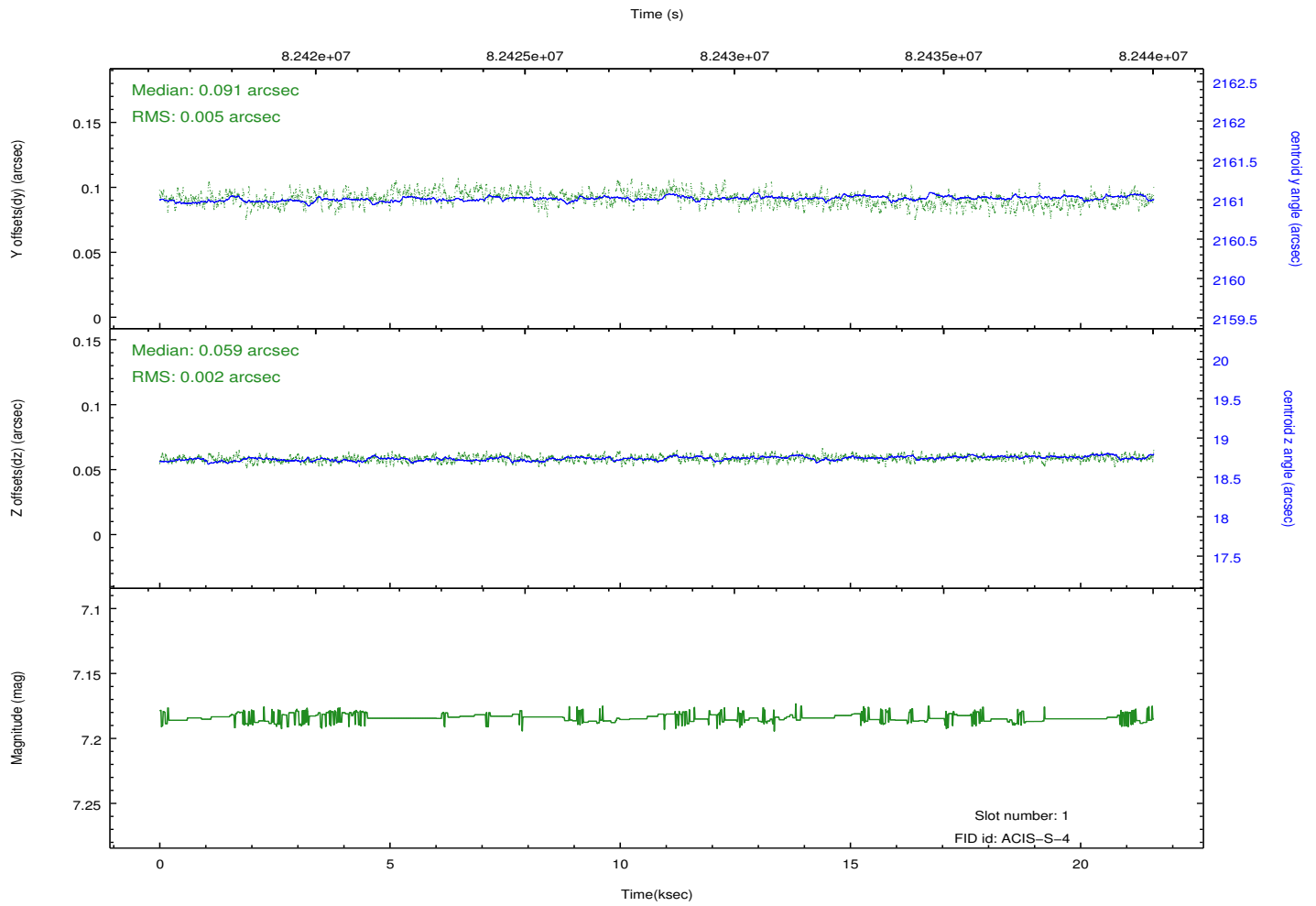
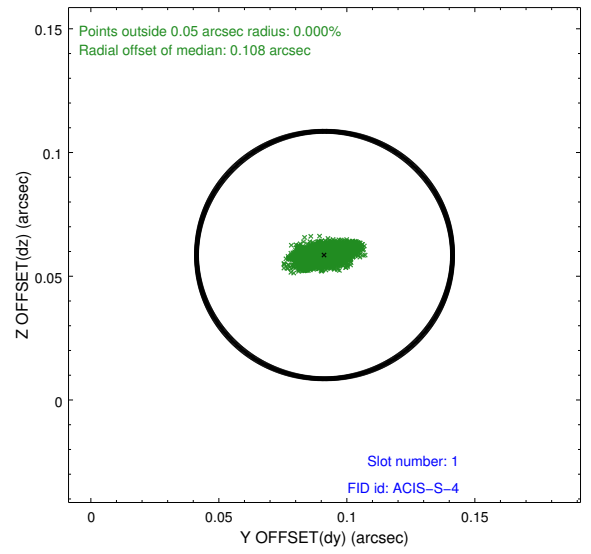
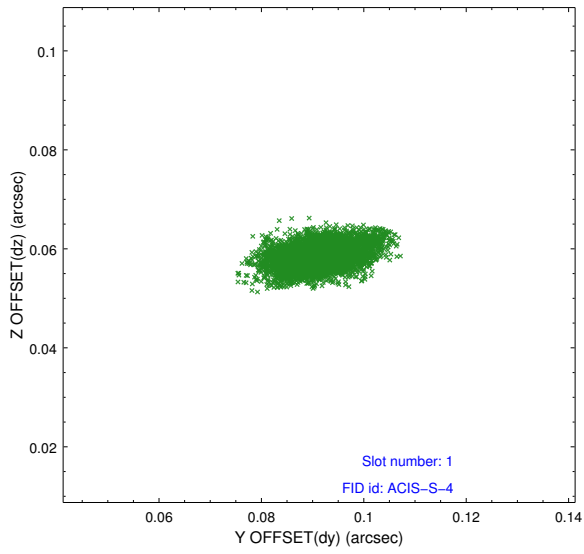


## 2.5 FID Slots

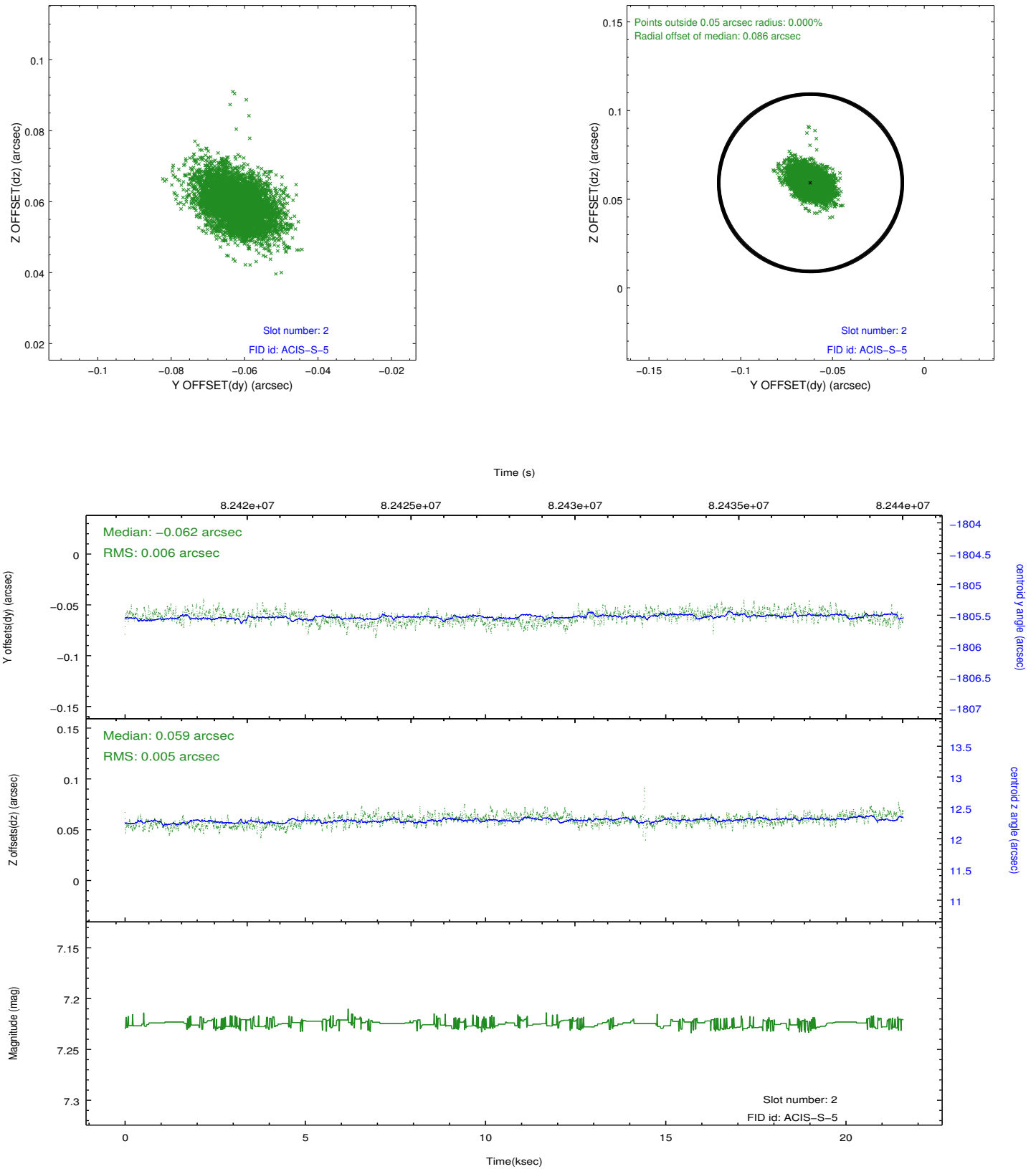
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

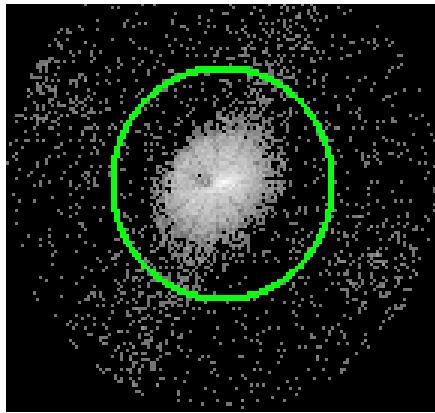


### 3 Gratings

#### 3.1 LETG Arm



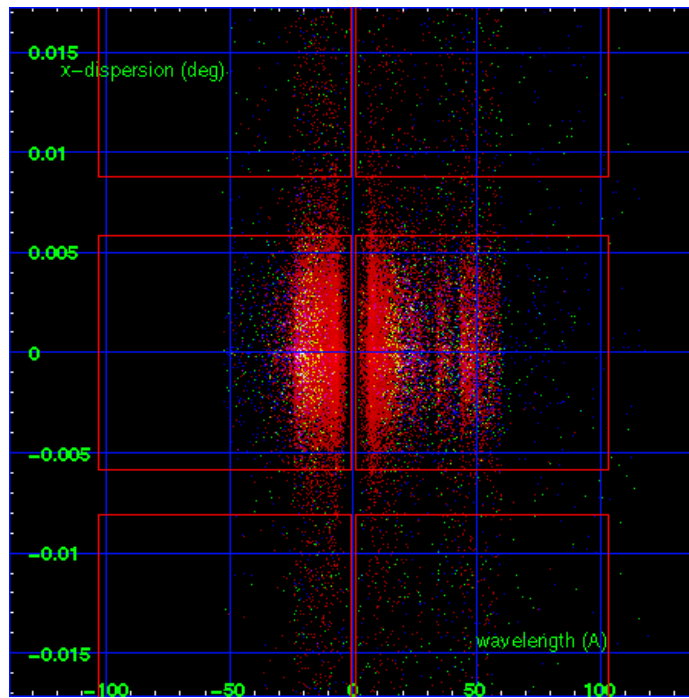
LETG Order Sort 123



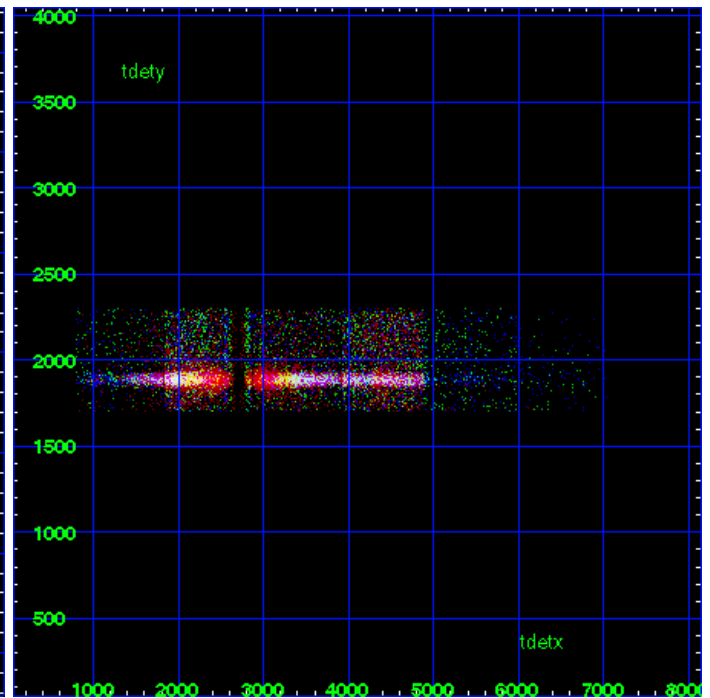
LETG Zero Order



LETG Order Sort ALL

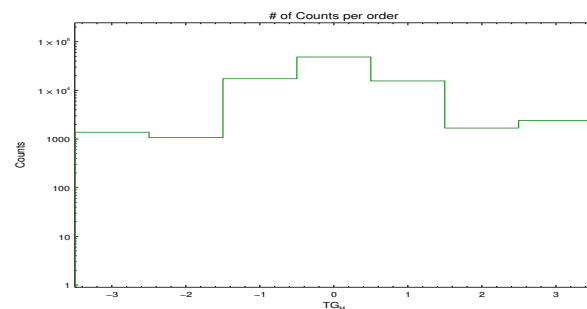


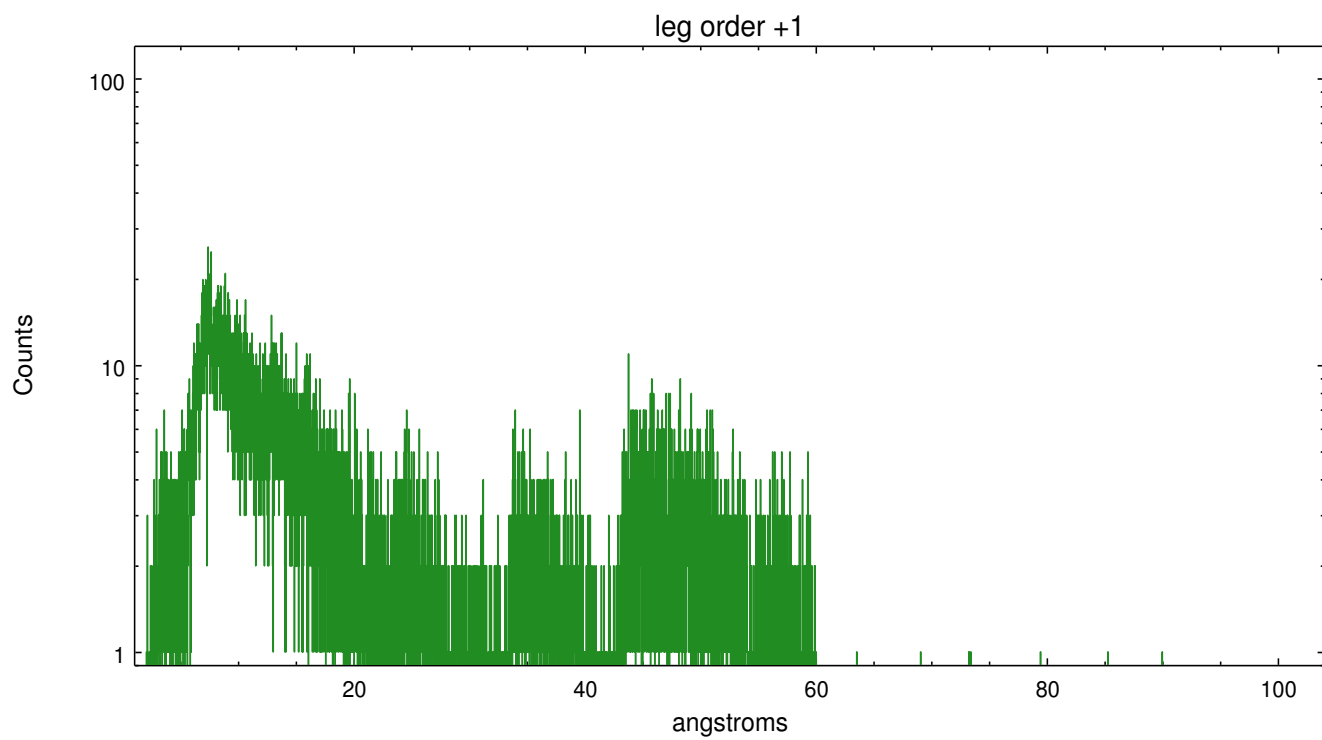
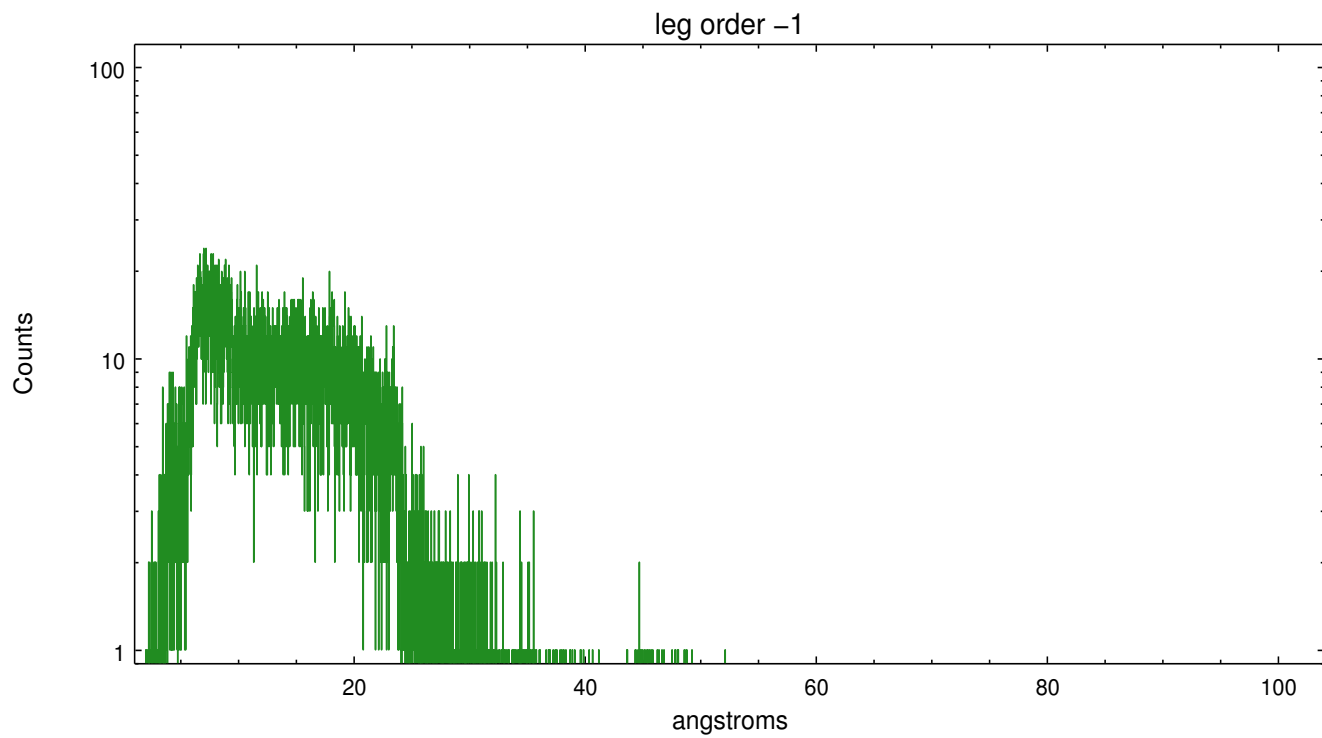
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1382	1076	17475	48881	15724	1684	2402





# A Summary

## A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2013.01.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	21.161

## A.2 Comments

far off-axis --- required custom region parameters (detailed below);

Warning: the grating line-spread-function is not calibrated off-axis;  
there is no valid grating RMF data for this observation.

Target very off-axis. In `tg_create_mask`, the zeroth order region needs to be decreased; off-axis, the default size is too large and causes short wavelengths to be omitted from grating region. In `tgextract`, the off-axis source extent

requires the `tg_d` range to be increased. === Reprocess using the following method: Columns `x`, `y`, `r`, `w` give parameters for `tg_create_mask` Columns `s1`, `s2`, `d1`, `d2`, `u1`, `u2` give paramters for `tgextract`. Customized parts of the usage are as follows: `tg_create_mask use_user_pars = yes`  
`sA_zero_x = $x sA_zero_y = $y sA_zero_rad = $r sA_width_heg = $w`  
`sA_width_meg = $w sA_width_leg = $w tgextract min_tg_d = $s1`  
`max_tg_d = $s2 min_downbkg_tg_d = $d1 max_downbkg_tg_d = $d2`  
`min_upbkg_tg_d = $u1 max_upbkg_tg_d = $u2` PKS 2155 series (LETG/ACIS):  
# obsid x y r w s1 s2 d1 d2 u1 u2 1791 3242.07 4497.14 47.96 598.78  
-3.401e-03 3.401e-03 -2.592e-02 -3.887e-03 3.887e-03 2.592e-02