

V&V Reference Report

L2 ASCDS Version : 8.5.1.1

Observation 6207 - L2 Version 5
Chandra X-Ray Center

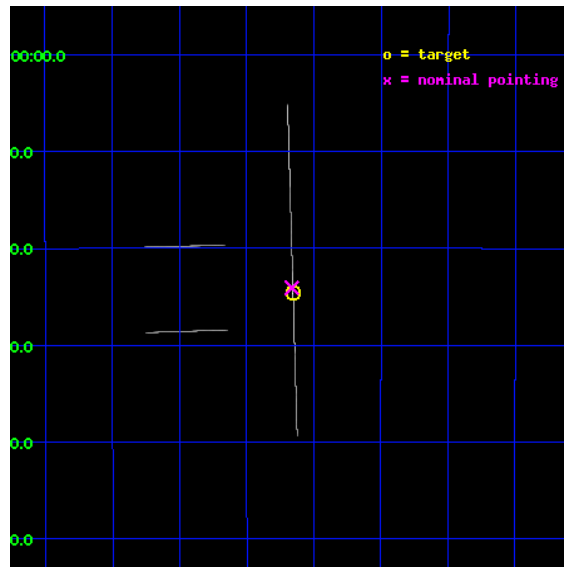
L2 Processing Date : Apr 30 2013

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1 Front

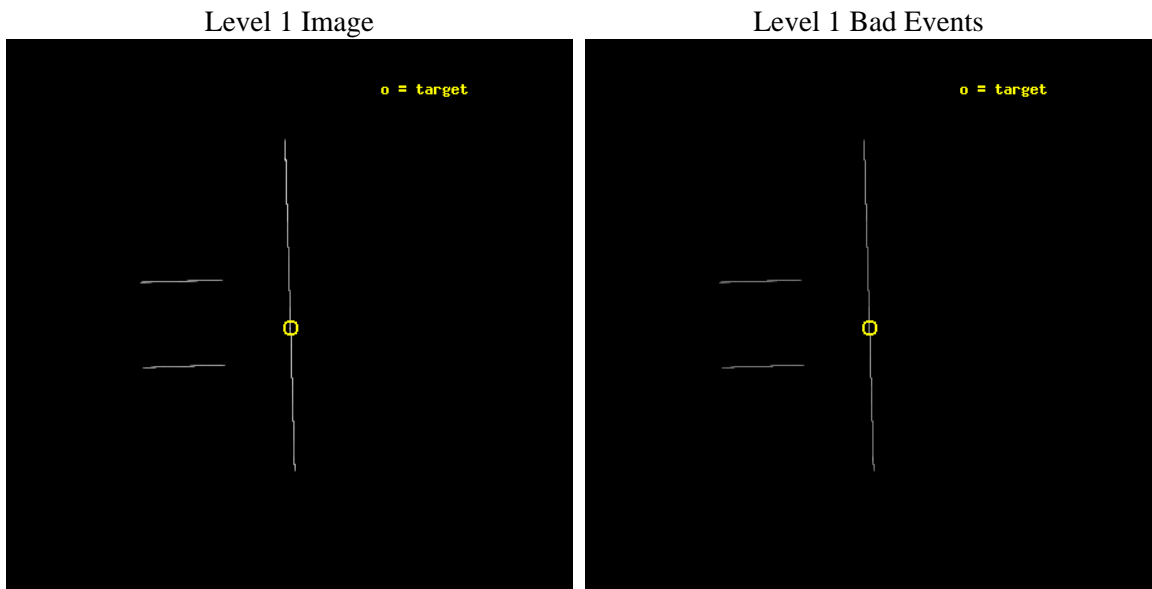
seq_num	500597	Sequence number
obs_id	6207	Observation id
title	Searching for atomic and/or cyclotron features in the Giant Flares decay of SGR 1806-20	Proposal title
observer	Dr. Nanda Rea	Principal investigator
object	SGR 1806-20	Source name
ra_targ	272.16375	Observer's specified target RA [deg]
dec_targ	-20.411028	Observer's specified target Dec [deg]
ra_nom	272.16584811045	Nominal RA [deg]
dec_nom	-20.401545751563	Nominal Dec [deg]
roll_nom	88.28934060487	Nominal Roll [deg]
revision	5	Processing version of data
ontime	29100.5	Sum of GTIs [s]
livetime	28986.826171875	Livetime [s]
ontime2	29100.5	Sum of GTIs [s]
ontime3	29100.5	Sum of GTIs [s]
ontime5	29100.5	Sum of GTIs [s]
ontime6	29100.5	Sum of GTIs [s]
ontime7	29100.5	Sum of GTIs [s]
ontime8	29100.5	Sum of GTIs [s]
l2events	434386	Number of level 2 events



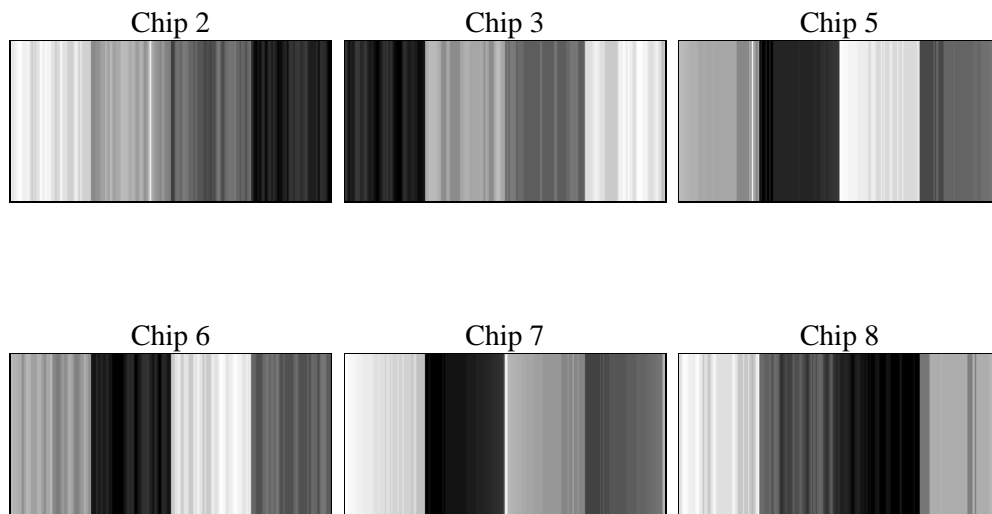
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	29000.000000	[s] Scheduled observation exposure time
ascdsver	8.5.1.1	Processing system revision	ontime	29100.5	Sum of GTIs [s]
caldbver	4.5.6	 	ontime2	29100.5	Sum of GTIs [s]
date	2013-04-30T20:12:01	Date and time of file creation	ontime3	29100.5	Sum of GTIs [s]
revision	5	Processing version of data	ontime5	29100.5	Sum of GTIs [s]
			ontime6	29100.5	Sum of GTIs [s]
			ontime7	29100.5	Sum of GTIs [s]
			ontime8	29100.5	Sum of GTIs [s]
			l1events	632171	Number of level 1 events

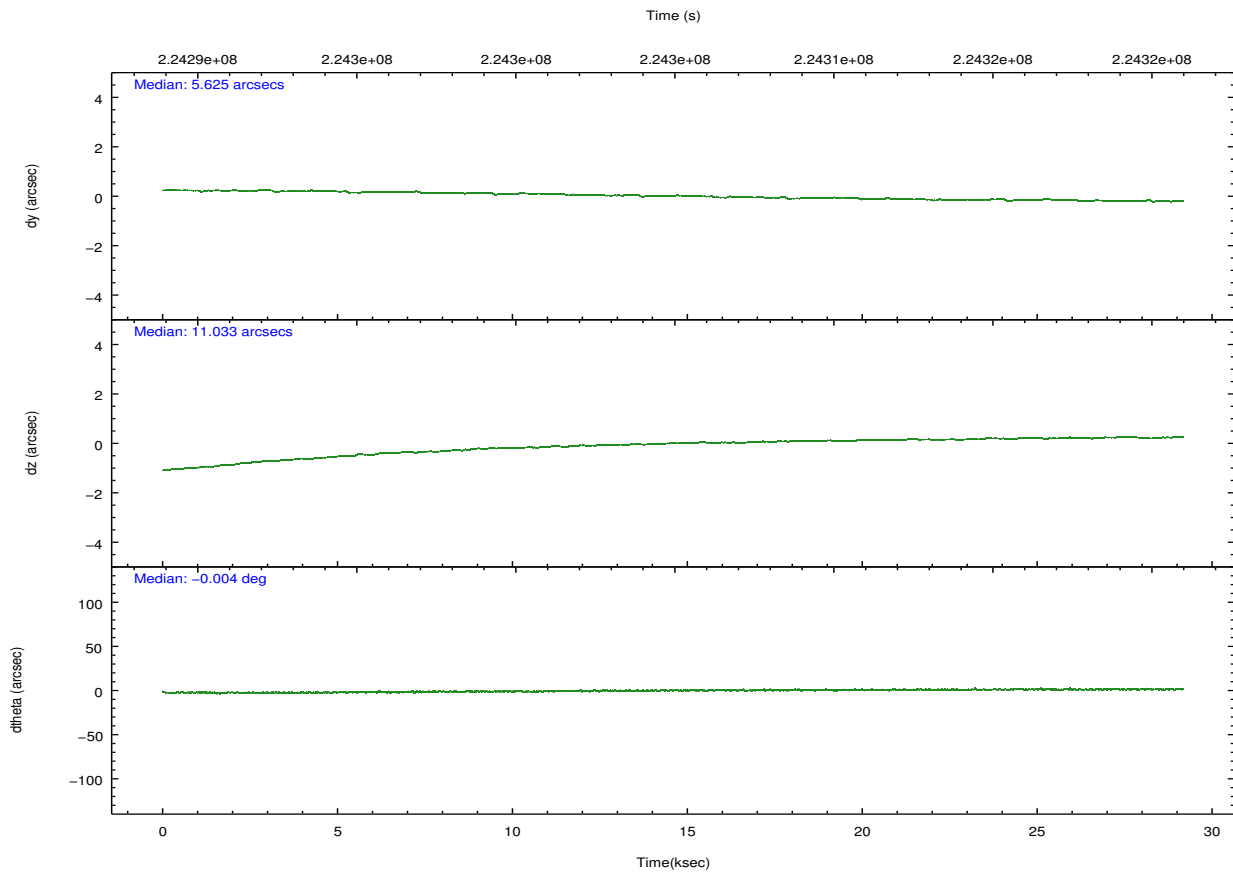
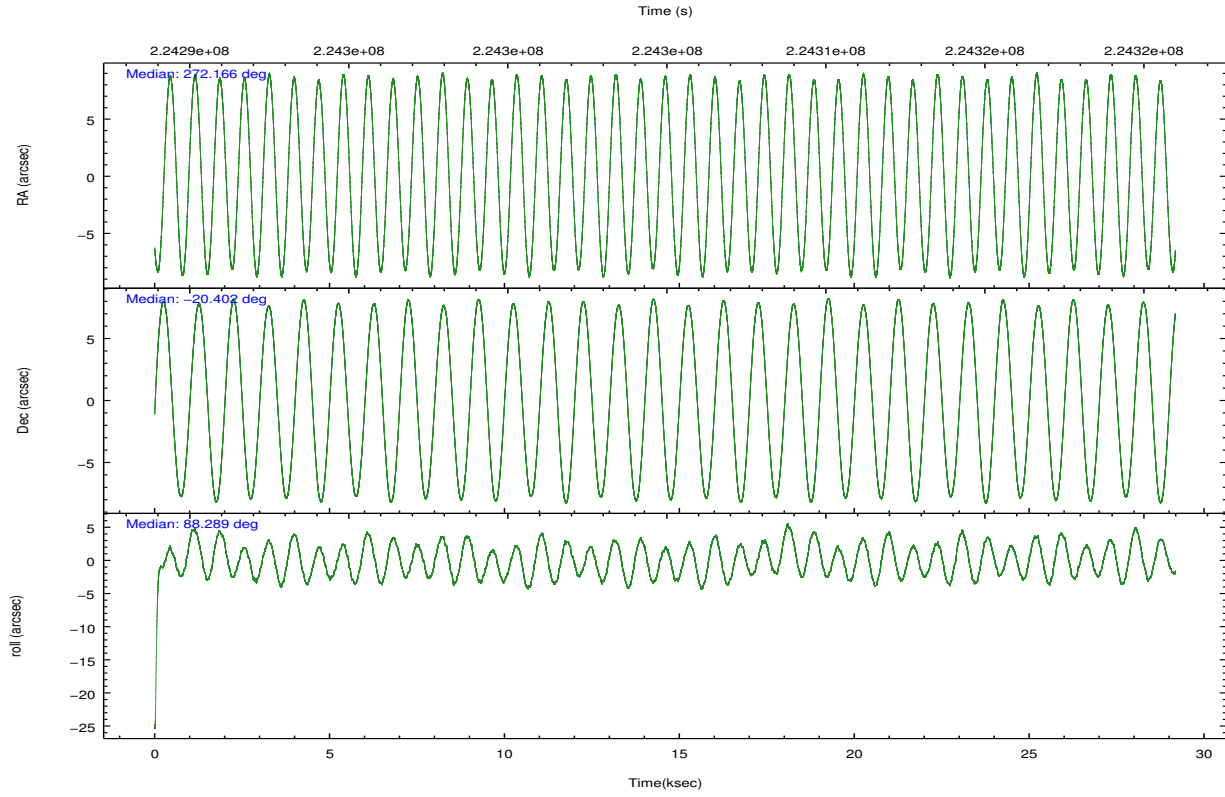
2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8		ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	42621	46385	221364	48109	180507	93185	grade 0 events	5040	5239	47511	4587	17920	14803
rejected events	7879	8453	19719	9171	24500	15214		11%	11%	21%	9%	9%	15%
rejected %	18%	18%	8%	19%	13%	16%	grade 1 events	168	178	295	158	362	300
								0%	0%	0%	0%	0%	0%
							grade 2 events	14279	15311	56570	16614	38651	25732
								33%	33%	25%	34%	21%	27%
							grade 3 events	4048	4973	4478	4334	12126	8662
								9%	10%	2%	9%	6%	9%
							grade 4 events	4150	4314	4259	4255	11928	8158
								9%	9%	1%	8%	6%	8%
							grade 5 events	7708	8271	19399	9012	24116	12440
								18%	17%	8%	18%	13%	13%
							grade 6 events	7228	8099	88852	9149	75404	20624
								16%	17%	40%	19%	41%	22%
							grade 7 events	0	0	0	0	0	2466
								0%	0%	0%	0%	0%	2%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-235678	ACIS-235678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	CC33_FAINT	CC33_FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	272.179974	272.1658481104532	Subarray requested	NONE	NONE
[deg] Pointing Dec	-20.425365	-20.401545751563	Alternating exposures requested	N	N
[deg] Pointing Roll	88.137646	88.28934060487038	[s] Primary exposure time	0.000000	0
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	224290536.184000	224290054.62641			
Observation start date	2005-02-08T22:54:32	2005-02-08T22:47:34			
[s] Observation end time (MET)	224319536.184000	224319669.95275			
Observation end date	2005-02-09T06:57:52	2005-02-09T07:01:09			
Read mode	CONTINUOUS	CONTINUOUS			

2.3 Aspect

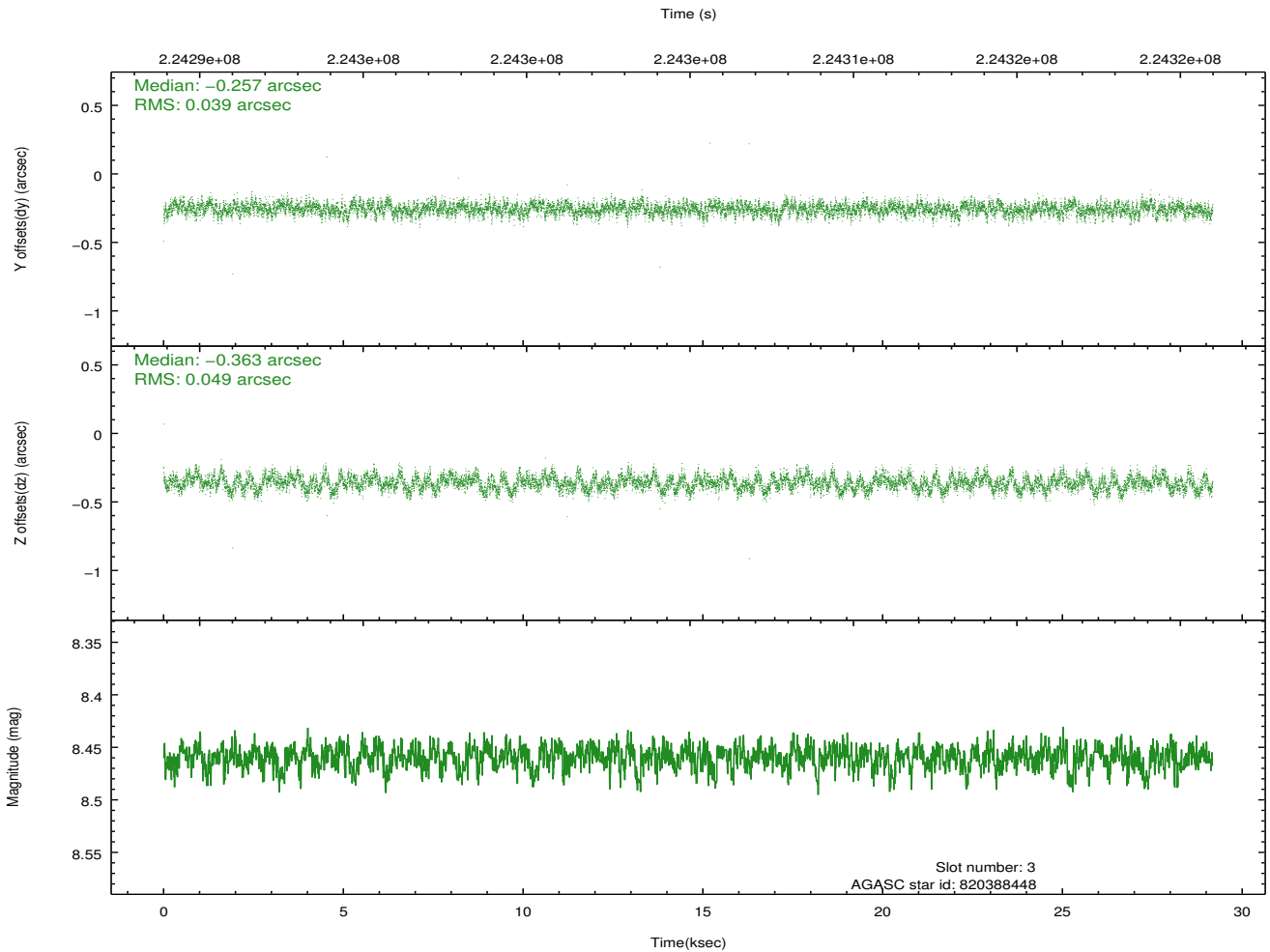
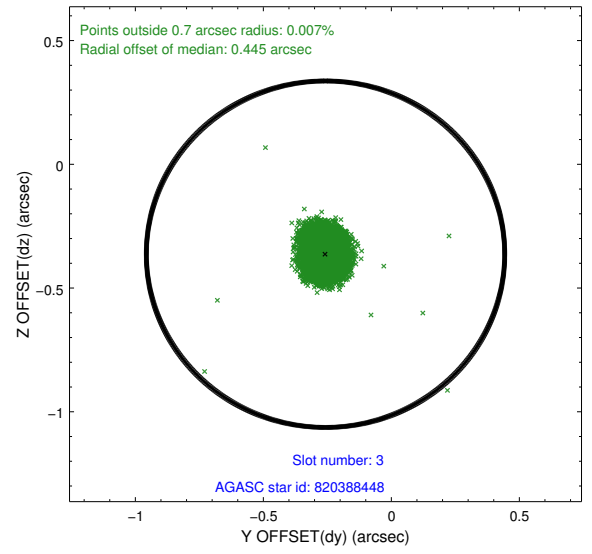
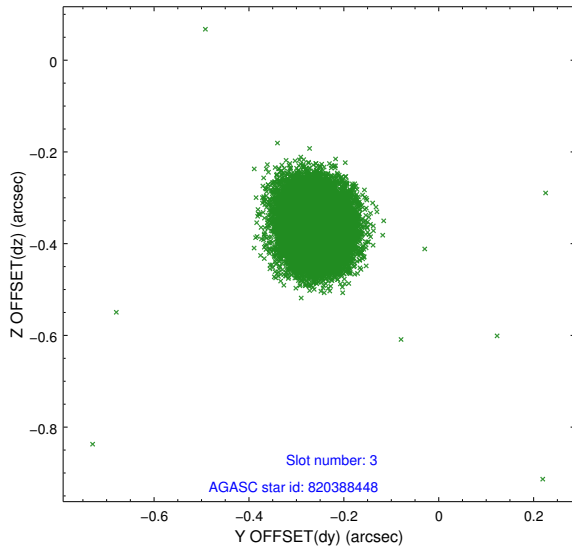


Slot Statistics

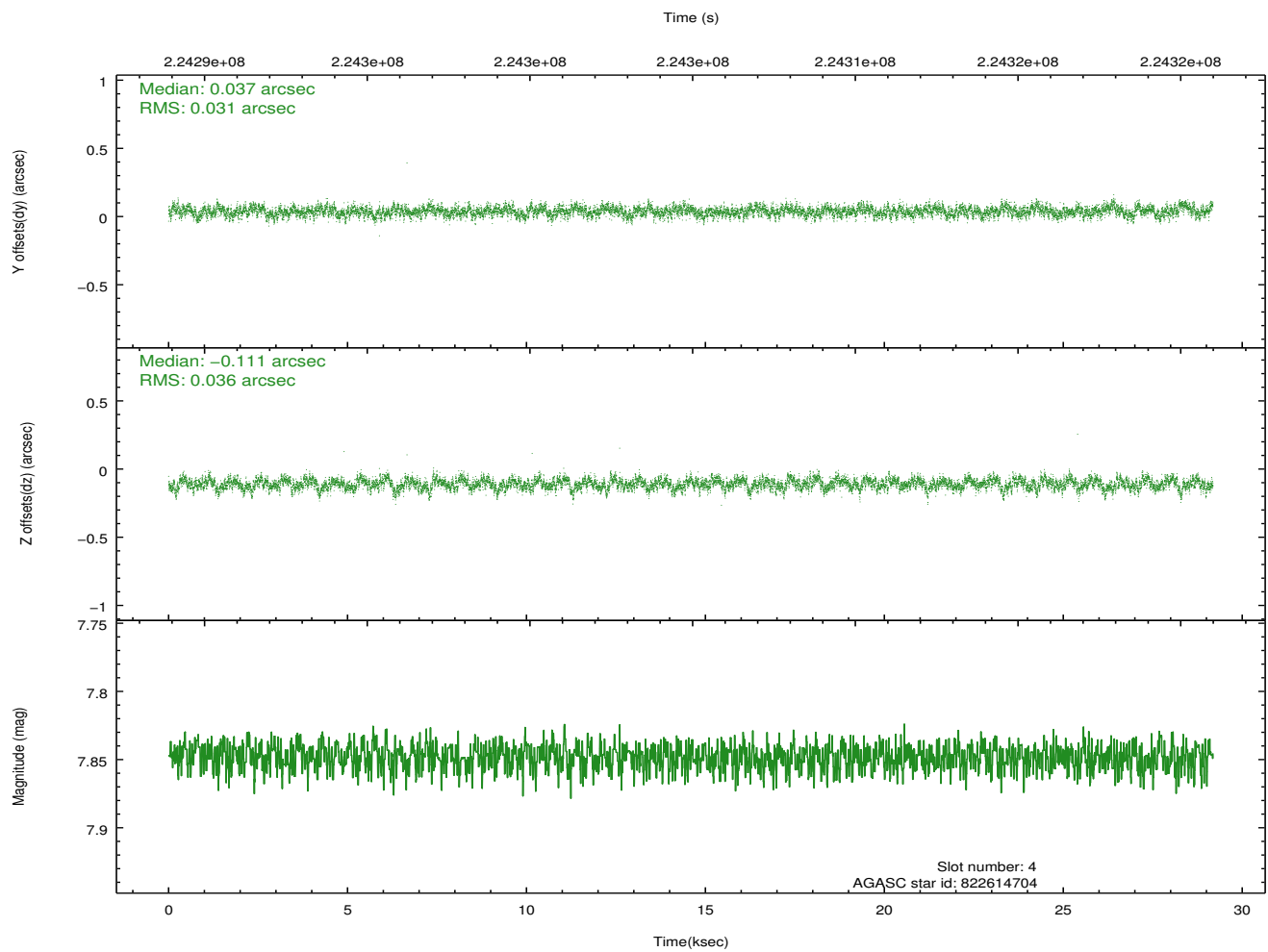
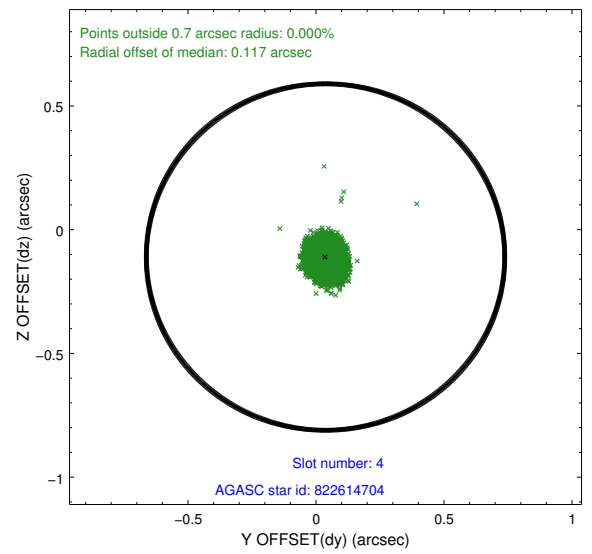
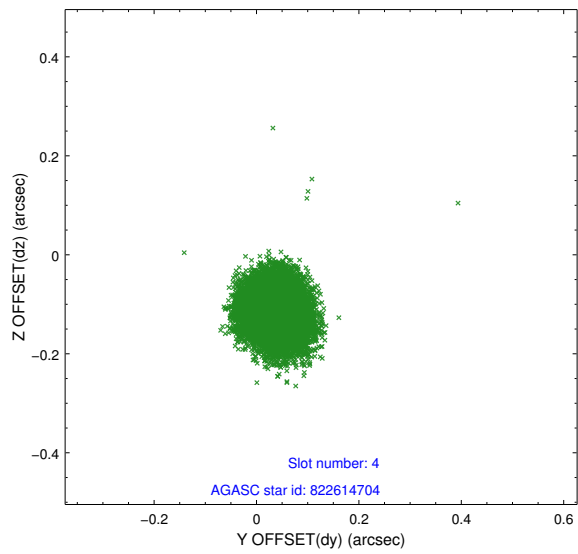
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.18	7118	0.023	-0.059	0.011	0.031	0.000000	0.000000	937.68	-1727.87
1	FID	ACIS-S-5	7.23	7118	-0.078	0.004	0.007	0.011	0.000000	0.000000	-1811.34	169.72
2	FID	ACIS-S-6	7.35	7118	0.033	0.066	0.010	0.028	0.000000	0.000000	403.20	813.78
3	GUIDE	820388448	8.46	14229	-0.257	-0.363	0.066	0.106	271.630569	-19.882892	1888.22	1922.14
4	GUIDE	822614704	7.85	14235	0.037	-0.111	0.050	0.082	272.076243	-20.843493	-1515.66	300.00
5	GUIDE	822617304	8.98	14155	0.081	0.131	0.065	0.105	272.421826	-20.831304	-1434.68	-860.64
6	GUIDE	822098736	8.51	14234	-0.068	0.195	0.061	0.098	272.269355	-19.875225	1989.13	-237.88
7	GUIDE	822616024	8.42	14233	0.206	0.149	0.062	0.100	272.218514	-20.919122	-1772.09	-187.30

2.4 Star Slots

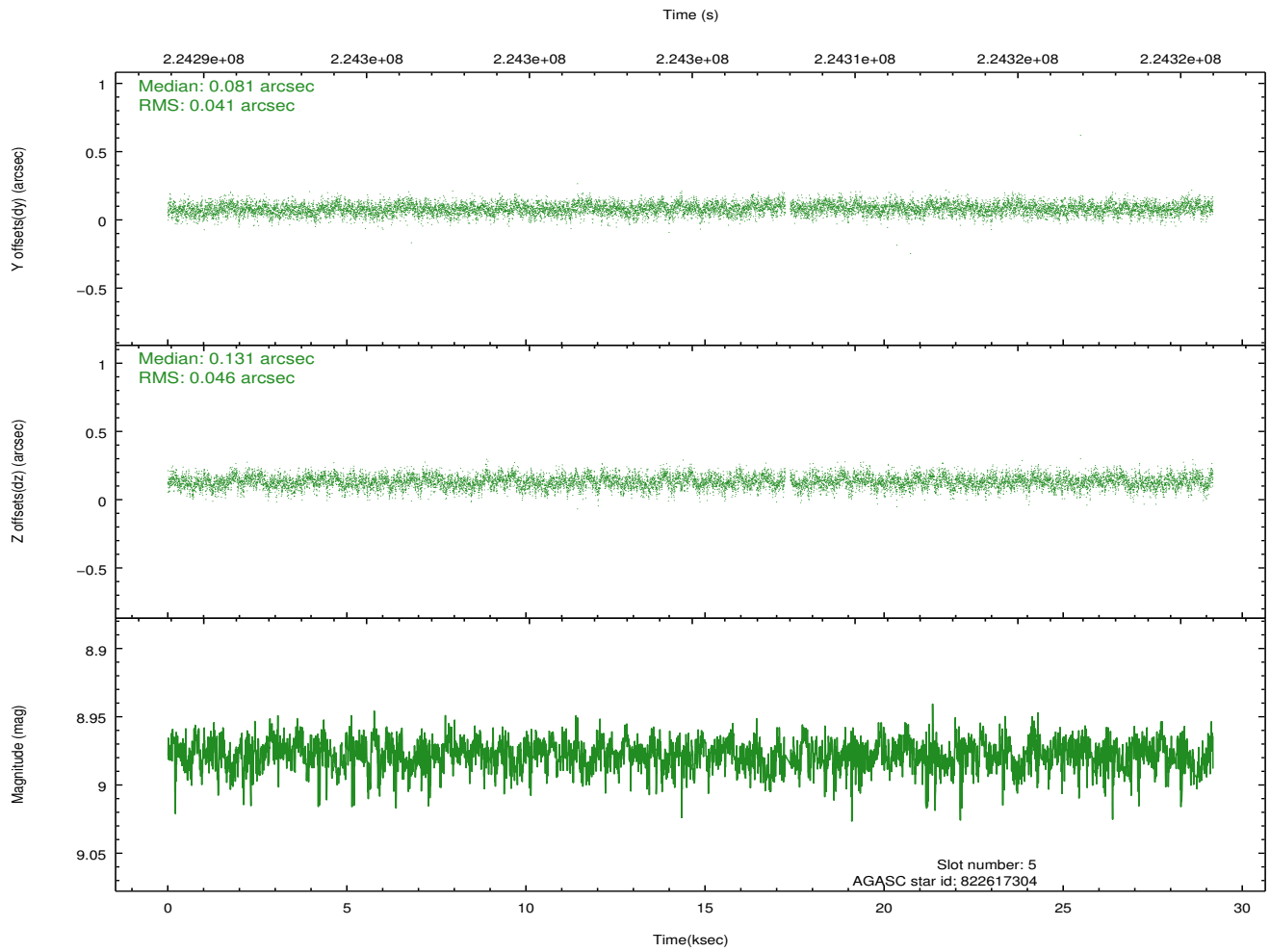
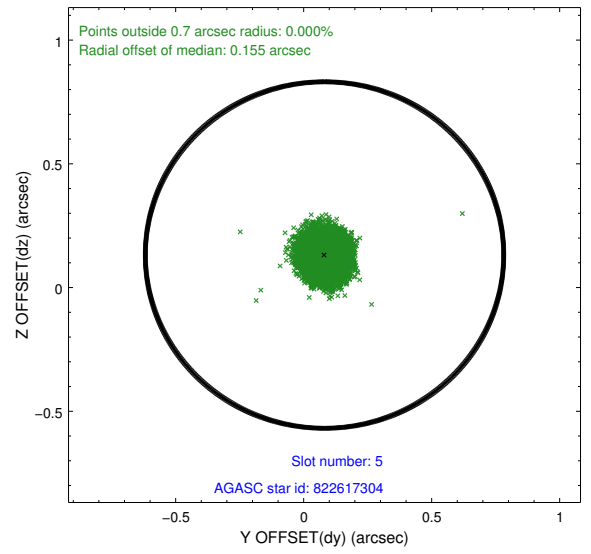
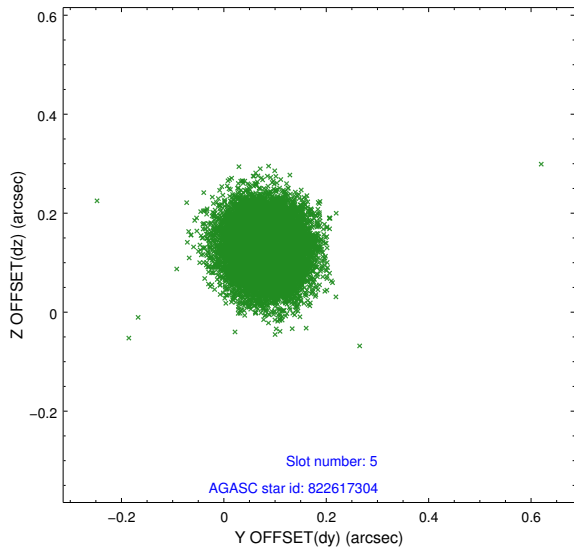
2.4.1 Slot 3



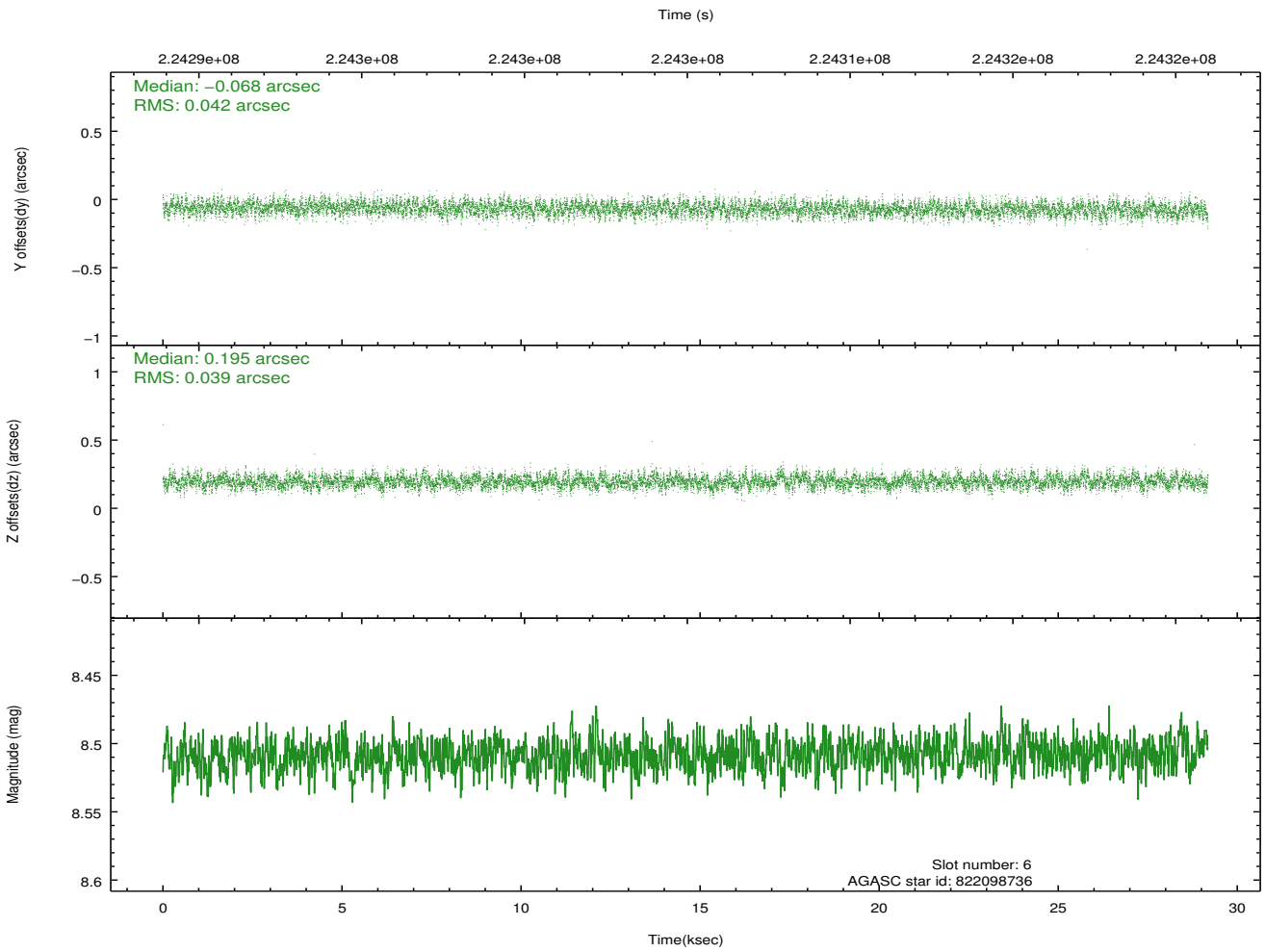
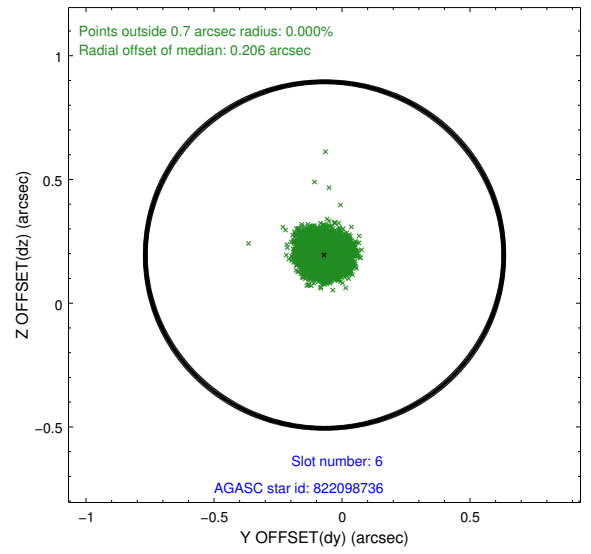
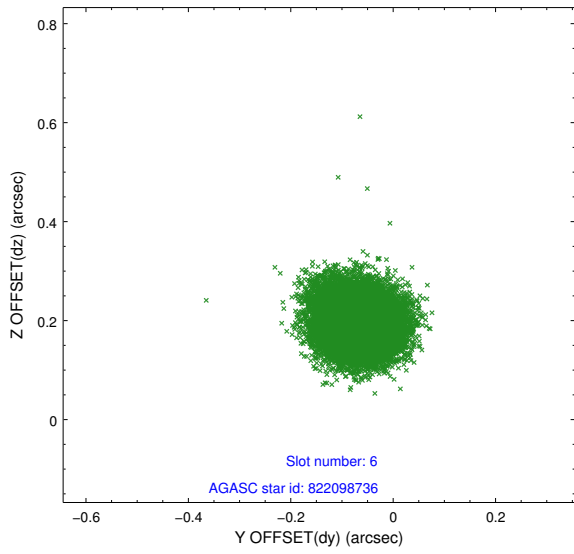
2.4.2 Slot 4



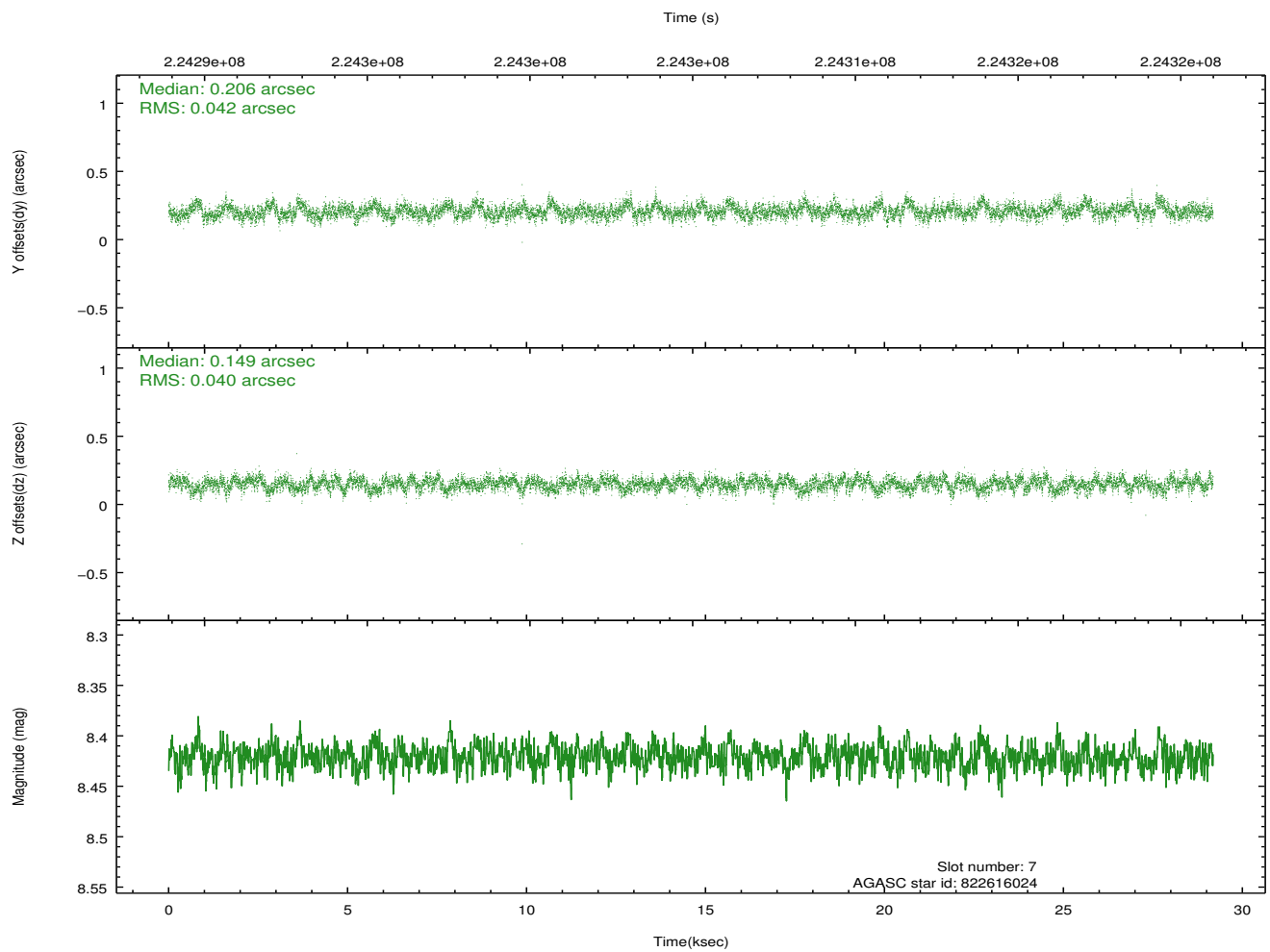
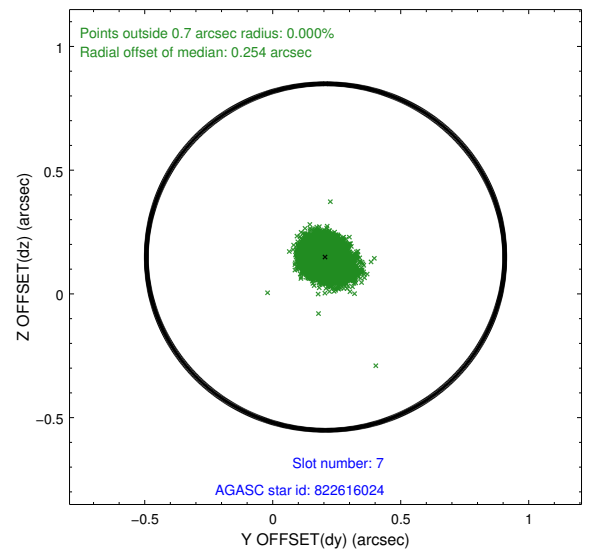
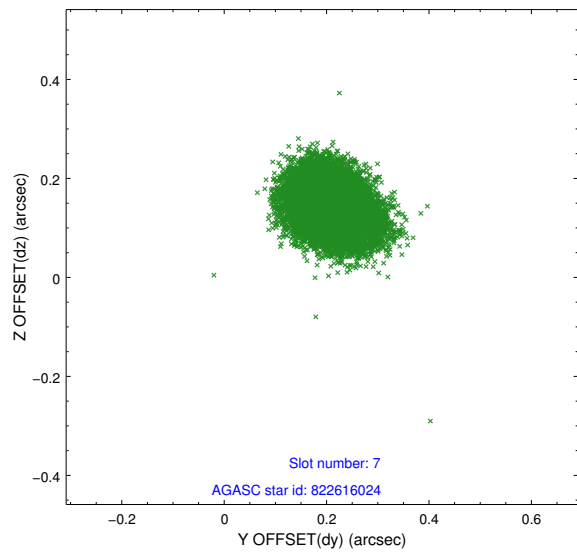
2.4.3 Slot 5



2.4.4 Slot 6

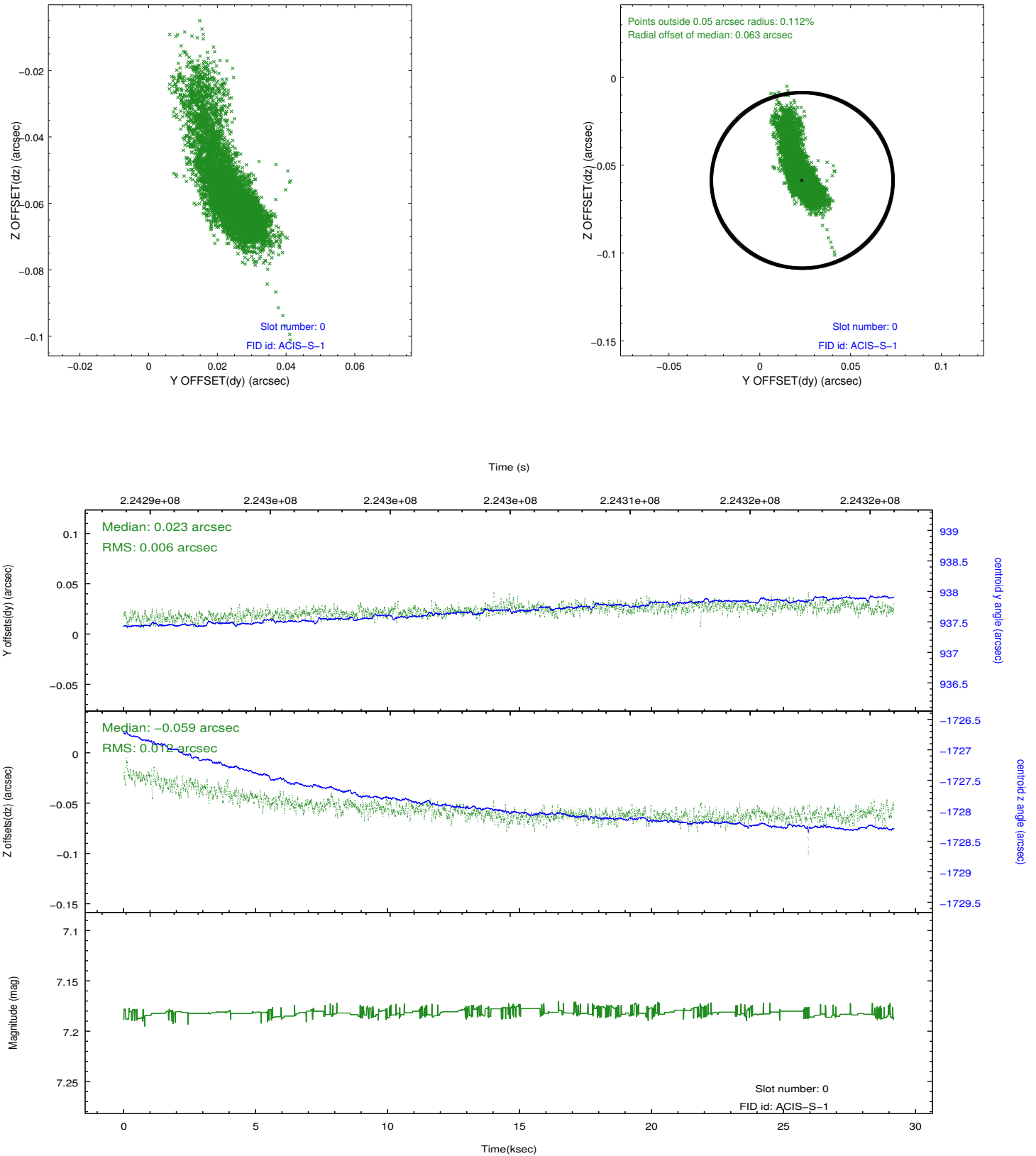


2.4.5 Slot 7

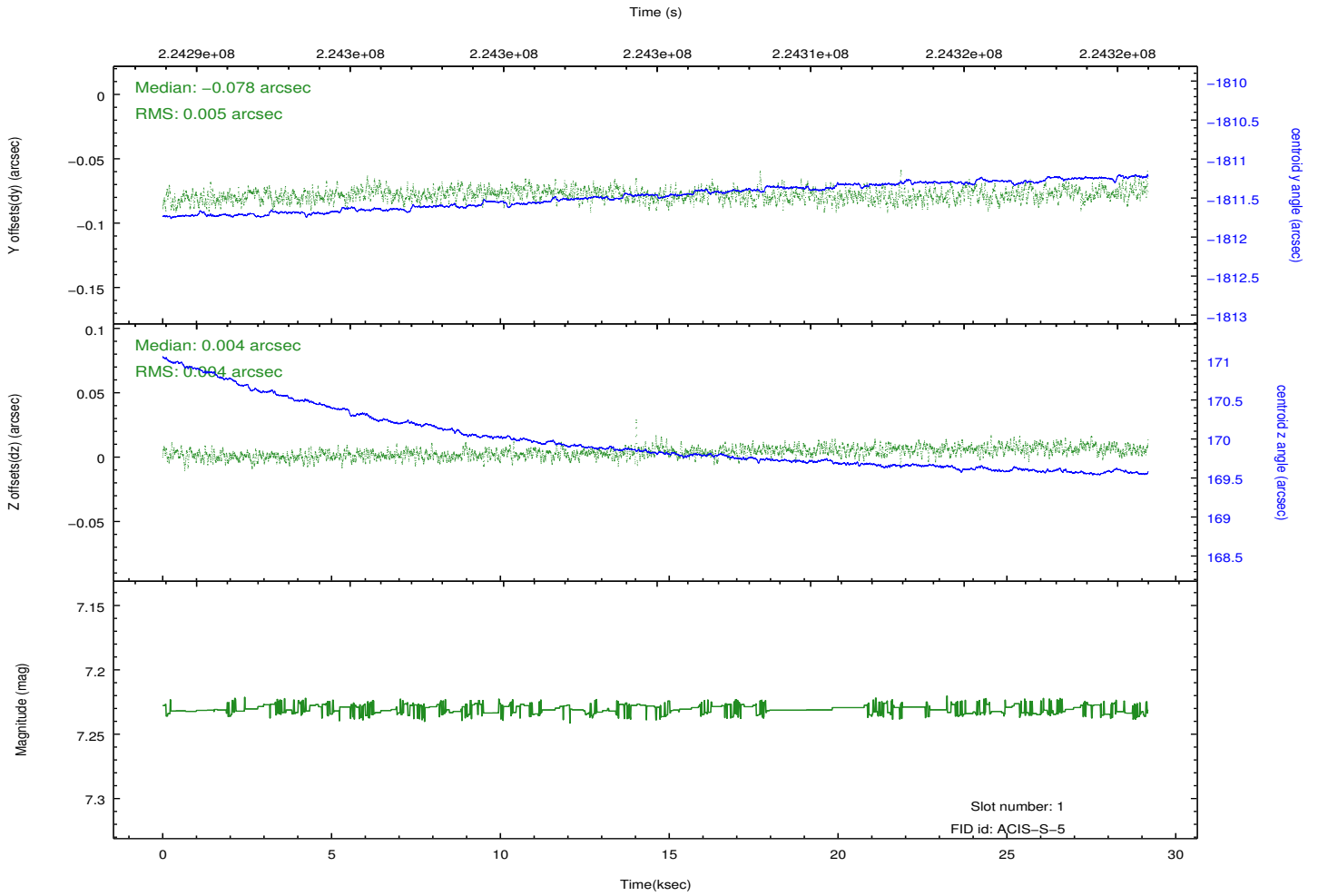
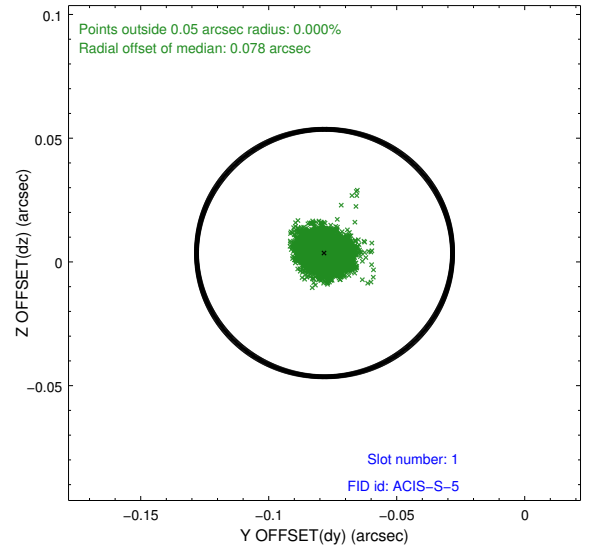
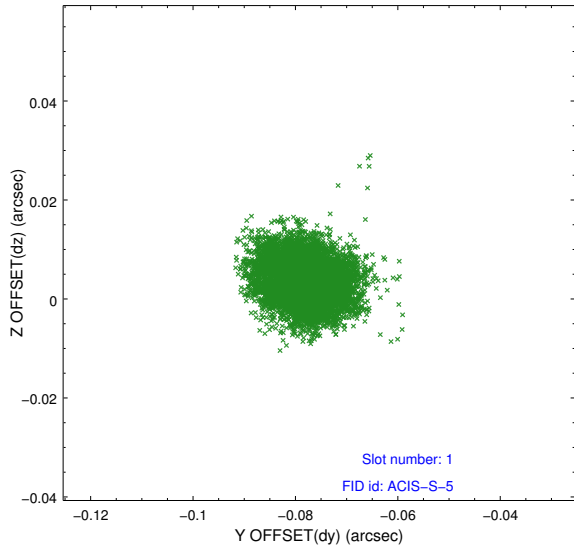


2.5 FID Slots

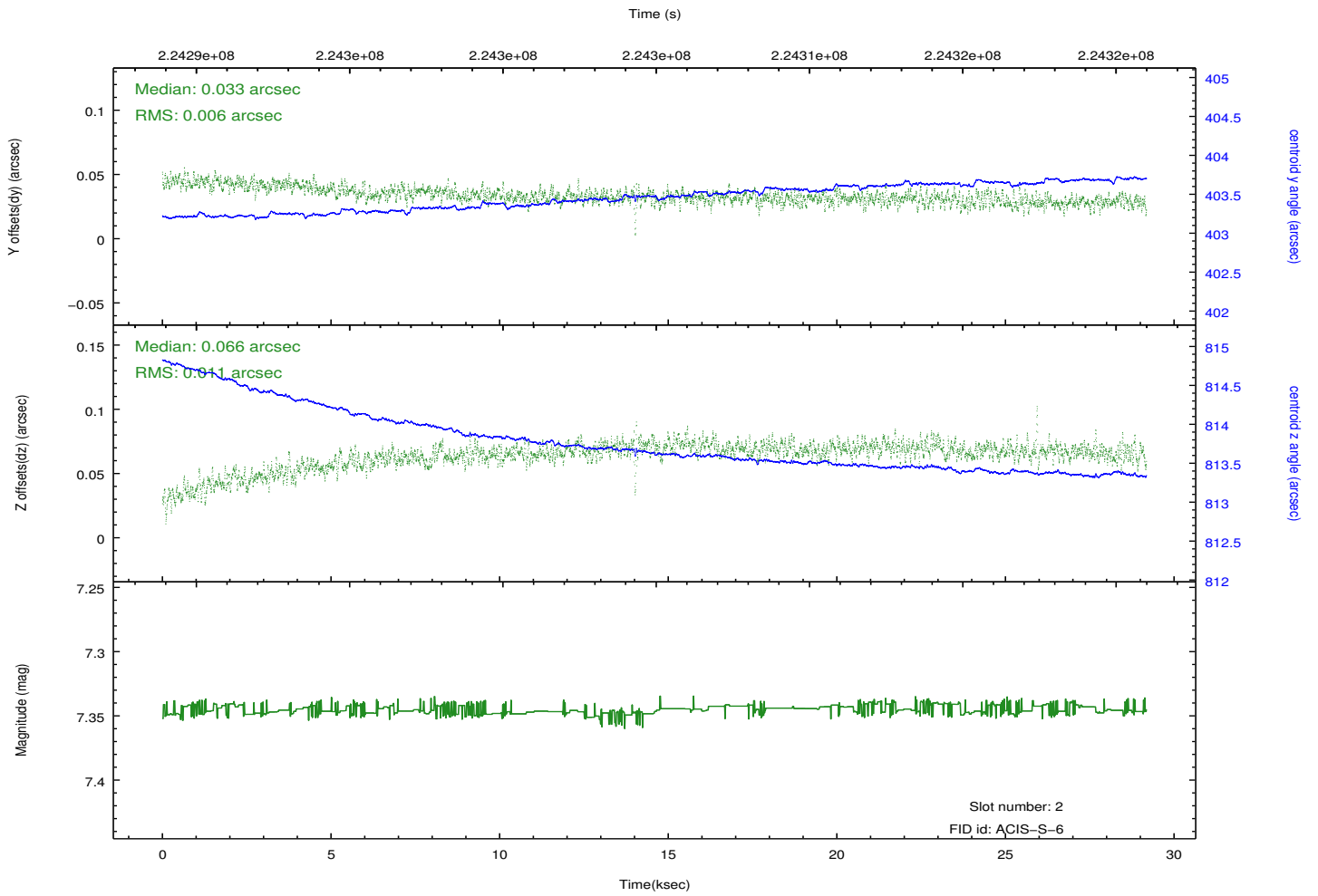
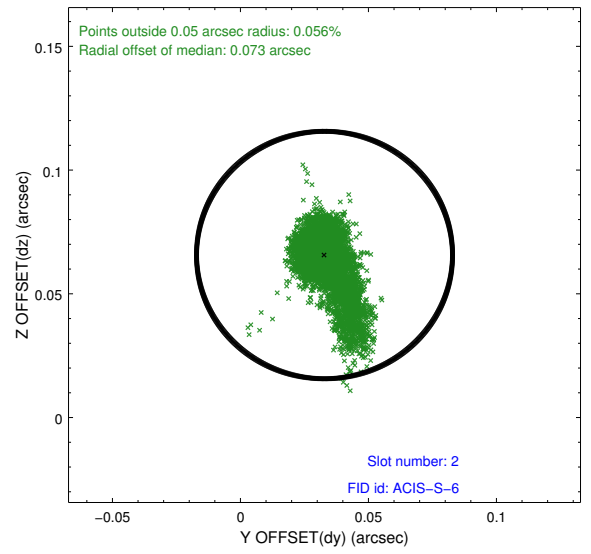
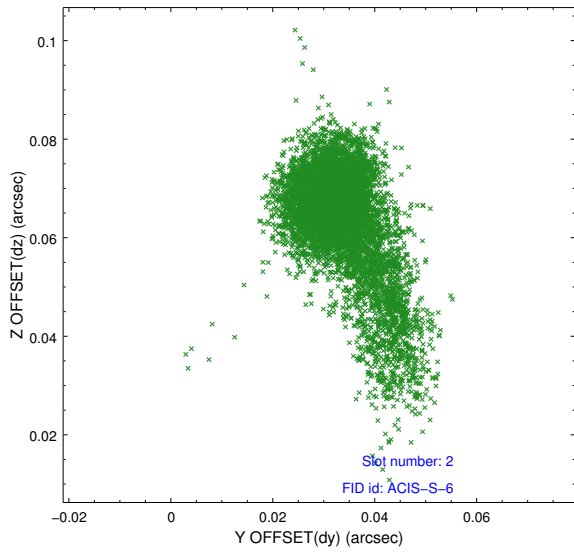
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.05.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	29.1005

A.2 Comments

Original bias file for chip 8 had anomalously high adu-value columns. The anomaly existed in columns 130-170 and 840-915 (details below). A replacement bias file was created using the Level 0 event and exposure data to model a reasonable bias map for chip 8.

Only the pixel values in the affected columns were replaced. === The technique uses the bias-less FEP event islands as the basic input. The event islands are corrected for overclocking, then arranged in an array according to their CCD columns, with the center pixel in each island excluded. The output bias value for each column is identified as the value for which 62.5% of all the pixels in the column have a higher value. The output is a one dimensional array of bias values, which is replicated to produce the 2-dimensional bias image.

====

Cosmic ray events have elevated bias values in a few columns in chips 5 and 8. Chip 8: There is a small excess (up to about 20 adu) between for $130 \leq \text{CHIPX} \leq 170$ and a large excess (up to about 160 adu) between $840 \leq \text{CHIPX} \leq 915$. I think these are due to cosmic rays. Data analysis issue: These problems do affect the analysis of data in these regions in two ways. 1. Since 1 adu is roughly 4 eV, an offset of 160 adu is about 0.6 keV! Any photons detected have energies that are systematically low by this amount. 2. The lowest energy events will not be detected because the bias is subtracted before the test to see if an event exceeds the minimum event threshold (21 or 38 adu). Therefore, the effective minimum threshold is not 21 or 38 adu (i.e. about 0.1 or 0.2 keV), but 181 or 198 adu (i.e. about 0.7 or 0.8 keV)! So the spectrum below this energy is simply cut off. The problem with the cosmic rays is a known one. We have some potential improvements that can be done with a special processing configuration.