

V&V Summary Report

L2 ASCDS Version : 10.7.1

Observation 22171 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Apr 18 2019

See [axaff22171N002_VV001_vvref2.pdf](#) for the full report

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.04.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	40.048900308132

Comments

A spatial region of the original bias maps for CCD = 6 and CCD = 8 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original 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. The bias maps for CCD = 6 and CCD = 8 have been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels on CCD = 6 affected by the anomaly are bounded by sky coords:

(307.64245,44.42640), (307.63908,44.40607), (307.70984,44.40008),
(307.70716,44.42092).

The pixels on CCD = 8 affected by the anomaly are bounded by sky coords:

(307.58768,44.09432), (307.58648,44.08700), (307.77947,44.07050),
(307.78070,44.07782).

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The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
 - 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
 - 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
 - 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
 - 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.
- In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.

seq_num	502997	Sequence number
obs_id	22171	Observation id
title	PSR J2030+4415: A Breakthrough Target for Bowshock Studies	Proposa
observer	Roger Romani	Principal investigator
object	PSR J2030+4415	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	307.714167	Observer's specified target RA [deg]
dec_targ	44.260861	Observer's specified target Dec [deg]
ra_nom	307.70961682054	Nominal RA [deg]
dec_nom	44.263029246936	Nominal Dec [deg]
roll_nom	83.159813457868	Nominal Roll [deg]
revision	2	Processing version of data
ontime	40048.900308132	Sum of GTIs [s]
livetime	39525.631942035	Livetime [s]
ontime2	40048.900308132	Sum of GTIs [s]
ontime3	40042.618347645	Sum of GTIs [s]
ontime6	40048.900308132	Sum of GTIs [s]
ontime7	40048.900308132	Sum of GTIs [s]
ontime8	40033.195485592	Sum of GTIs [s]
l2events	287265	Number of level 2 events

