

SWIFT-UVOT-CALDB-##

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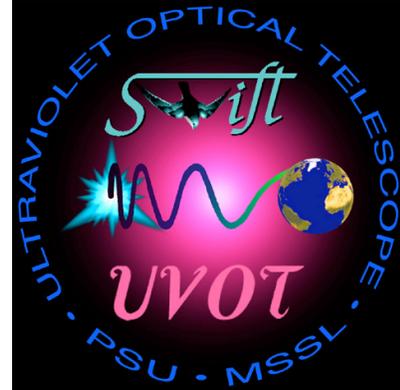
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Revised by: n/a

Pages Changed: n/a

Comments: First version



SWIFT UVOT CALDB RELEASE NOTE

SWIFT-UVOT-CALDB-##: Bad pixels

0. Summary:

This CALDB product gives the locations of UVOT bad pixels.

1. Component Files:

FILE NAME	VALID DATE	RELEASE DATE	VERSION

2. Scope of Document:

This document describes changes from the pre-launch product, reason for update, expected future updates, warnings for the user, a list of data the product is based on and finally the analysis methods used to create the product.

3. Changes:

First on-orbit calibration for this product. The number and location of bad pixels has not changed significantly since launch.

4. Reason For Update:

First on-orbit calibration for this product.

5. Expected Updates:

The numbers and locations of bad pixels will be monitored on a six-monthly basis, with updates made to the CALDB product if they are observed to change over time.

6. Caveat Emptor:

None.

7. Data Used:

This product is derived from a total of 408586 s of exposure taken with the blocked filter with LED, from Jan-Mar 2005 (Epoch 1: 264021 s) and Jan-Apr 2006 (Epoch 2: 144565 s). The obs-IDs used are listed in Table 2.

<i>Epoch</i>	<i>OBS-ID</i>	<i>Date/time range</i>
1	00067006001	2005-01-05 16:21:36 to 2005-03-29 23:34:38
	00058094002	
	00058329001	
	00058322001	
	00058321001	
	00058064002	
	00050750001	
	00050500003	
	00050050004	
	00051050011	
	00050500007	
	00050150012	
	00051750006	
	00050050001	
	00058720001	
	00058729001	
	00050302001	
	00058914001	
	00058904002	
	00058916001	
00058902001		

<i>Epoch</i>	<i>OBS-ID</i>	<i>Date/time range</i>
	00058907001	
	00058901002	
	00058909001	
	00050700006	
	00050702003	
	00058915001	
	00050702004	
	00058910001	
	00058902002	
2	00066004010	2006-01-11 11:17:13 to 2006-04-20 18:56:01
	00030356001	
	00052100010	
	00053560009	
	00053550011	
	00177533006	
	00178750017	
	00179968010	
	00045002028	
	00043005018	
	00041002019	
	00044002027	
	00043005019	
	00035534001	
	00035534002	
	00044002028	
	00202442002	
	00202442003	

<i>Epoch</i>	<i>OBS-ID</i>	<i>Date/time range</i>
	00035459001	
	00035393001	
	00035534003	
	00035534004	
	00035459002	
	00050204003	
	00035459003	
	00050204004	
	00053402004	
	00053402005	
	00053402006	

Table 2: the data used for the bad pixel analysis

8. Description of Analysis:

Exposures were taken with the blocked filter and LED illumination. These exposures were coadded into two separate unbinned (2048x2048) images representing two epochs; Jan-Mar 2005 (total exposure 264021 s) and Jan-Apr 2006 (total exposure 144565 s). The OBS-IDs, total exposure times and start and stop times of the epochs are listed in Table 2.

A combined image was produced from all the data, and was used (appropriately scaled) to divide out the lamp signature from the individual images. Histograms were produced of the pixel counts in each smoothed image; these are plotted in Figure 1. Low pixels were defined to be those below 0.24 counts per sub-pixel (i.e. the minimum of the histogram before the upturn at the lowest count rates) and high pixels were defined to be those with counts per pixel above 2.5. The smoothed images were filtered to contain only the high or low pixels, and these filtered images were used to generate lists of the bad pixels.

Figure 1: histograms for the combined images at the two epochs showing the distribution of pixel deviations from the average (black: epoch 1, red: epoch 2).

There was no significant difference between the numbers and locations of bad pixels at the two epochs (there were some minor changes in the arrangements and numbers of subpixels in known bad areas), so the images for each epoch were coadded (for the high and low pixels separately) and used to produce combined pixel lists for the low and high pixels respectively. Figs. 2 and 3 show the locations of the low and high pixels. The pixel lists were used to create the CALDB product.

Figure 2: low sub-pixels (in black)

Figure 3: high sub-pixels (in black)