URL: http://cxc.harvard.edu/ciao3.4/dictionary/afterglow.html
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Afterglow

An "afterglow" is produced when a large amount of charge is deposited on a CCD by a cosmic ray. Most of the charge is clocked off of the CCD immediately. However, a small amount can be captured in charge traps, which release the charge relatively slowly. As a result, a sequence of events can appear in a single pixel over a few to a few dozen frames as the trapped charge is released. The events need not occur in consecutive frames. There can be gaps of a few frames with no events for the pixel. The amount of charge released per frame appears to decay exponentially with time.

Prior to version DS 7.4.0, standard data processing (SDP, aka "the pipeline") used the tool `acis_detect_afterglow` to flag possible cosmic ray events in the level 1 event file; these are then filtered out in the level 2 event file. It was determined that 3-5 % of the valid source photons may be rejected from diffracted spectra. These rejections, though a small fraction of the total events, are systematic and non-uniform. A significant fraction of the X-ray events from a source in imaging mode may also be removed. Instructions on how to remove this correction are available in the Remove the acis_detect_afterglow Correction thread.

A new, more precise method for identifying afterglow events was introduced to SDP at version DS 7.4.0, and released to the users in CIAO 3.2, namely the ACIS hot pixel tools. The Create a New ACIS Bad Pixel File: Identify ACIS Hot Pixels and Cosmic Ray Afterglows thread describes how to use the new tools. The help file for `acis_build_badpix` describes the reasons why a pixel is identified as bad and which status bit is affected in each case.

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