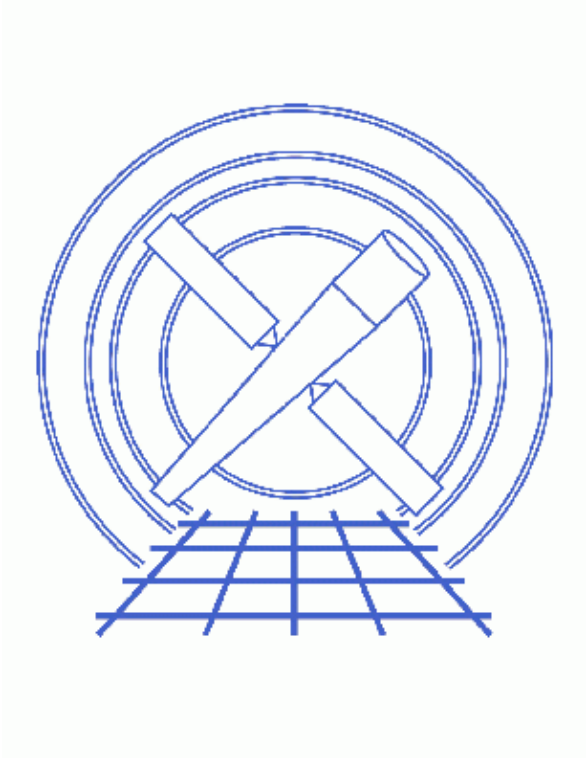
A Note on HRC Spectra



CIAO 3.4 Science Threads

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A Note on HRC Spectra

CIAO 3.4 Science Threads

A question about the High Resolution Camera

There are several threads that deal with imaging spectroscopy of ACIS observations, for both point and extended sources. Why are there no equivalent threads for HRC observations?

The energy resolution of the High Resolution Camera (HRC) is extremely limited. Only when coupled with the Low Energy Transmission Grating (LETG) is it possible to get meaningful energy and order-sorting information. This also allows some discrimination between X-ray and background events.

For LETG spectra, background reduction of more than 50% can be achieved with negligible X-ray event loss; see the Obtain Grating Spectra from LETG/HRC-S Data thread for more information. Background filtering in the HRC-S is based on PI values, which, like ACIS PI values, are derived from PHA values using a gain map to correct for gain variations across the detector. The first gain map for the HRC-I was made available in CALDB 3.2.0 (21 November 2005).

The intrinsic energy resolution of the HRC is poor compared with the ACIS, but it does have some ability to discriminate between hard and soft spectra. Using observations of HR1099 carried out with the HRC-I/LETG at various locations on the detector, the calibration team has constructed a response matrix for the HRC-I. This HRC-I RMF was released in CALDB 3.2.1 (15 December 2005). For details on the file, refer to the why topic and the HRC-I RMF calibration page.

Details on calibration and analysis of the HRC are available from the HRC Calibration Products webpage. There is also a summary of HRC-S pulse height distributions, gain variations, and background filtering.

History

14 Dec 2004	reviewed for CIAO 3.2: no changes
20 Dec 2005	reviewed for CIAO 3.3
01 Dec 2006	reviewed for CIAO 3.4: no changes

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