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## CALDB 3.2.1: HRC-I RMF

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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 [HRC-I RMF calibration page](#).

The RMF can be used to calibrate hardness ratios or quantile color-color diagrams (QCCD) to distinguish between gross differences in the spectra. We recommend the QCCD, as it is relatively less dependent on temporal variations in the gain that are known to exist, and are not yet accounted for, in the HRC gain maps. The [calibration page](#) contains several example QCCD.

We do not advocate using this RMF in spectral fits; the spectral response is not sufficiently constraining to achieve a good fit with reasonable errors. If unavoidable, work in channel space ("analysis channel" in *Sherpa*), not energy space ("analysis energy"). Because the correspondence between PI bins and energy values is not well-defined and is not monotonic, the energy grid in the EBOUNDS extension of the RMF has been deliberately set to be *meaningless*, which matters only when spectra are plotted or data are filtered in energy space.

To read the file into *Sherpa*:

```
sherpa> rsp[hrci](/data/CALDB/data/chandra/hrc/cpf/rmf/hrciD1999-07-22rmfN0001.fits,hrc_arf.fits
```

Change the path to match your CALDB installation. The ARF file is created by the tool [mkarf](#). For further details on fitting imaging data, see the [Sherpa Fitting threads](#).

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URL:  
[http://cxc.harvard.edu/ciao3.3/why/caldb3.2.1\\_hrci\\_rmf.html](http://cxc.harvard.edu/ciao3.3/why/caldb3.2.1_hrci_rmf.html)  
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