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## RMF: Redistribution Matrix File

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Maps from energy space into detector pulse height (or position) space. Since detectors are not perfect, this involves a spreading of the observed counts by the detector resolution, which is expressed as a matrix multiplication. In high resolution instruments (e.g. diffraction gratings, such as [HETG](#) and [LETG](#)) the matrix is almost diagonal. In proportional counters the matrix elements are non-zero over a large area. CCD detectors, such as [ACIS](#), are an intermediate case, with most of the response being almost diagonal, but escape peaks and low energy tails adding significant contributions.

The CIAO tool [mkrmf](#) can be used to generate RMFs for Chandra, as discussed in the [Step by Step](#) and [Weighted Response](#) threads. An [ARF](#) is needed with the RMF to produce the input spectrum weighted by telescope area and detector efficiencies vs. energy.

An RMF is a [standard OGIP file format](#) that is compressed to save space (much of the matrix is zero). Although it cannot be directly handled with standard image handling tools, such as [ds9](#), the CIAO [rmfimg](#) tool can be used to convert the RMF into image format, as can the [readrmf\(\)](#) command within [Sherpa](#) and [ChIPS](#).

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<http://cxc.harvard.edu/ciao3.4/dictionary/rmf.html>  
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