XMM-Newton CCF Release Note

XMM-CCF-REL-231

EPIC canned response matrices

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July 11, 2007

1 Purpose

The generated EPIC canned response matrix files (RMFs) are described and published on a dedicated web page at http://xmm.esac.esa.int/external/xmm_sw_cal/calib/epic_files.shtml and allow the user to load them (together with source and background spectra of EPIC observations and related ancillary matrices) into spectral analysis packages like XSPEC for model fitting.

RMFs can also be created by the users with help of the XMM-Newton Science Analysis Software (SAS). The method using SAS is described in the SAS User's Guide and Data analysis threads: RMFs are automatically adjusted to the spectra under study with respect to energy and pattern selection.

The canned RMFs are nevertheless published for the following reasons:

- Mainly in the early years of the XMM-Newton mission, computer resources at users' institutes were frequently rather slow with respect to the generation of RMFs. This situation probably has improved for many users over the years but might still be present for some of them.

- Canned RMFs are useful for users preparing XMM-Newton observing proposals, e.g. when simulating expected source spectra, without having to fully process data with the SAS.

- The concept of providing standard canned matrices allows calibration developments to proceed independently of SAS releases.

- The source spectra produced as part of the pipeline processing of the Survey Science Centre are associated with a set of specific standard RMFs.

No ready-made MOS RMFs are provided as of SAS 6.5 for reasons explained in the web pages 'Update 2005-12-15' in http://xmm.esac.esa.int/external/xmm_sw_cal/calib/epic_files_updates.shtml.
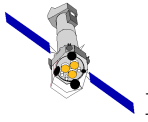
However, to allow users access to MOS RMFs that can be used to prepare XMM-Newton observing proposals, since SAS 7.1.0, some RMFs have been provided again:

MOS1 and MOS2, pattern 0 and pattern 0-12 matrices for on-patch, wings of patch and off-patch positions, for the current epoch only.

More details on the generation of the canned response matrices can be found in:

- *Generation of Canned pn Response Matrices, XMM-SOC-Procedure 03-01-0003-0001, 2007*
  http://xmm.esac.esa.int/CCB/SOPH/Procedures/03/Attachments/01-0003-0001.pdf

The matrices are provided at: http://xmm.esac.esa.int/external/xmm_sw_cal/calib/epic_files.shtml

2   Changes

Response matrices have been generated for the latest SAS public release, i.e. version 7.1.0.

3   Scientific Impact of this Update

The matrices will allow the general user to spectrally analyze observations with corresponding filter/mode/pattern/location and observing epoch settings. Further details are given on the web page describing the canned matrices and in the SAS Manual and SAS threads.

4   Estimated Scientific Quality

In agreement with Scientific Quality reported for the corresponding public SAS release.

5   Test procedures & results

The matrices have been created with a validated SAS version.

6   Expected Updates

These matriced will be updated in the future after every public SAS release and/or after major changes in the EPIC calibration.