

XMM-Newton CCF Release Note

XMM-CCF-REL-145

EPIC MOS Spectral Response Distribution

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1 CCF components

Name of CCF	VALDATE	EVALDATE	List of Blocks changed	CAL VERSION	XSCS flag
EMOS1_REDIST_0027.CCF	1999-12-10	2000-07-15	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0028.CCF	2000-07-15	2000-11-09	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0029.CCF	2000-11-09	2001-04-18	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0030.CCF	2001-04-18	2001-08-18	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0031.CCF	2001-08-18	2001-09-26	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0032.CCF	2001-09-26	2001-11-25	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0033.CCF	2001-11-25	2002-11-07	CCD_REDISTRIBUTION-n	3.152	NO
EMOS1_REDIST_0034.CCF	2002-11-07	-	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0027.CCF	1999-12-10	2000-07-15	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0028.CCF	2000-07-15	2000-11-09	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0029.CCF	2000-11-09	2001-04-18	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0030.CCF	2001-04-18	2001-08-18	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0031.CCF	2001-08-18	2001-09-26	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0032.CCF	2001-09-26	2001-11-25	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0033.CCF	2001-11-25	2002-11-07	CCD_REDISTRIBUTION-n	3.152	NO
EMOS2_REDIST_0034.CCF	2002-11-07	-	CCD_REDISTRIBUTION-n	3.152	NO

2 Changes

This release includes new redistribution parameters for the post-cooling, after 7th November 2002, observations. It also contains tweaks to the parameters for all epochs, based on a remodelling of the time dependence of the MOS spectral line resolution.

3 Scientific Impact of this Update

The new modelling of the spectral resolution results in an increase in the line width at Aluminium K_{α} (1.5 keV) of $\sim 4\%$ at all epochs and an epoch-dependent change of

between -1% and +1% at Manganese K_α (5.9 keV), relative to the previous set of CCFs (0020-0026).

In summary, it would be wise to refit any low-energy line spectra which have been previously modelled using earlier CCF elements. Fits to high-energy lines, such as Fe K_α , which have used the CCF elements 0020–0026 will be unaffected by this update.

4 Estimated Scientific Quality

The line centre energy is accurate to 3–4 eV at 1.5 keV and the line widths are estimated to be correct to $\sim 3\%$.

5 Expected Updates

6 Test procedures

The changes introduced here are only used within `rmfgen`. They are designed to allow the SAS to produce RMFs which are equivalent to the LUX canned matrices. Tests will check that they are as similar as possible.

1. Mos-1, epoch 8, post-cooling, imaging mode response, all patterns.
2. Mos-2, epoch 4 (01-May-2001) imaging mode response, all patterns.

7 Test results

The difference between the MOS standard RMF and the SAS responses generated using these new CCF elements are shown in Figures 1 and 2. The MOS-1 and MOS-2 responses are duplicated perfectly.

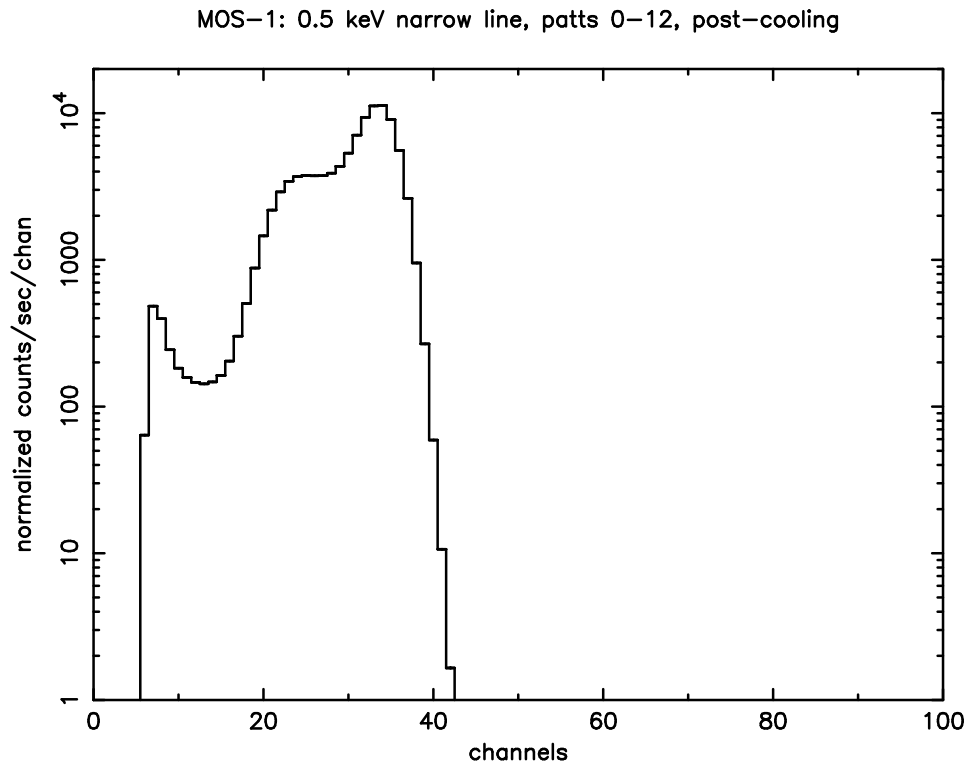


Figure 1: Comparison of MOS-1 canned response function, `m11_im_all_2002-11-07.rmf` (not yet released) v SAS equivalent for a 0.5 keV line from an imaging mode observation of revolution 540 (post-cooling), using all patterns.

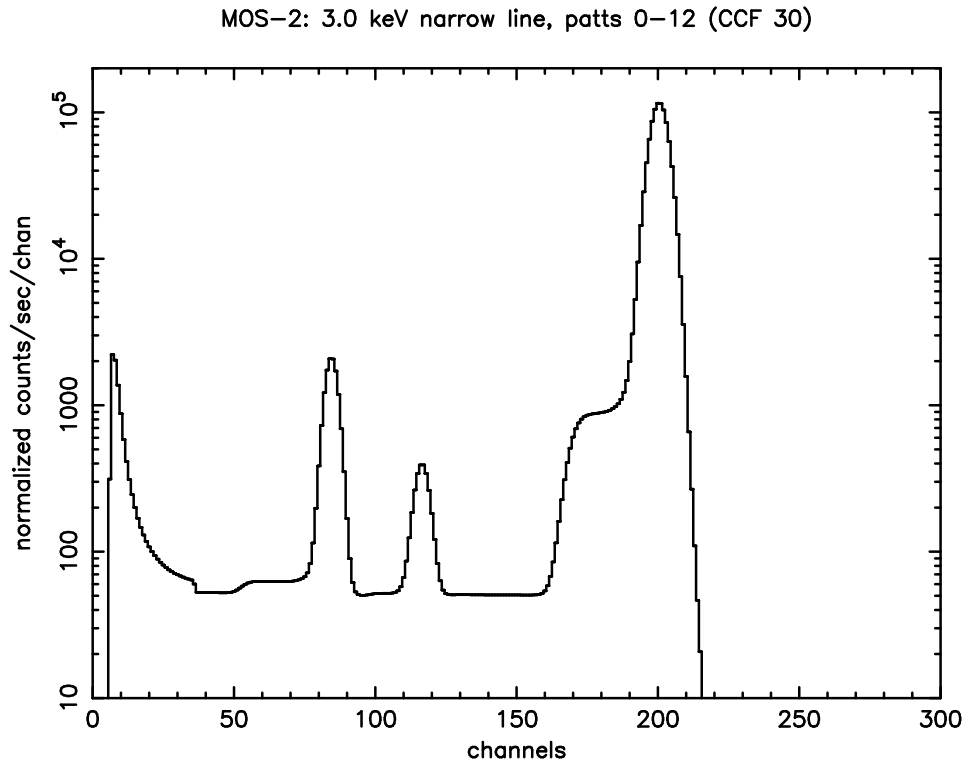


Figure 2: Comparison of MOS-2 canned response function, m21_im_all_2002-11-07.rmf (not yet released) v SAS equivalent for a 3.0 keV line from an imaging mode observation of revolution 255 using all patterns.