

XMM-Newton CCF Release Note

XMM-CCF-REL-6

EPIC Flatfield

D Lumb

October 3, 2000

1 CCF components

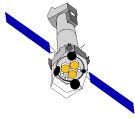
Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
EMOS1_FILTERTRANSX_0005	2000-01-01T00:00:00	FILTER- <i>name</i> EBINS		NO
EMOS2_FILTERTRANSX_0005	2000-01-01T00:00:00	FILTER- <i>name</i> EBINS		NO
EPN_FILTERTRANSX_0007	2000-01-01T00:00:00	FILTER- <i>name</i> EBINS		NO
EMOS1_QUANTUMEF_0006	2000-01-01T00:00:00	QE_CCD _n EBINS		NO
EMOS2_QUANTUMEF_0006	2000-01-01T00:00:00	QE_CCD _n EBINS		NO
EPN_QUANTUMEF_0007	2000-01-01T00:00:00	QE_CCD _n EBINS		NO

2 Changes

First release

The spatial variation of response has not yet been addressed in detail with the in-orbit calibration. It is affected by spatial variations in CCD efficiency, in filter transmission and by mirror vignetting (see mirror module effective area descriptions and RGA transmission section [1]).

For the PN CCD, the monolithic nature of CCD construction leads to a rather uniform response. Also the mirror vignetting is expected to be rather symmetric, so that we do not expect major deviations from predicted response. The filter transmission at low energies is somewhat variable, (at or below C edge) but the filters are somewhat defocussed. We are implementing a spatial component in response as soon as possible.



For the MOS CCD the situation is more complex. Firstly the CCDs themselves are not always uniform. Some of the devices have low energy efficiency changes, especially close to their edges. In addition the MOS cameras are mounted behind the RGA arrays, and these break the circular symmetry of the mirrors. As a consequence the vignetting function is azimuthally variable.

3 Scientific Impact of this Update

4 Estimated Scientific Quality

First measurements in orbit confirm the general trends. For MOS the details of RGA energy dependence and quantitative area loss are uncertain to the 5% level.

In both cameras, 10% absolute and relative spatial efficiency changes around and below the carbon edge are not represented in the calibration files.

In MOS the Variation in quantum efficiency is known to be a possible problem around the edges of some outer CCDs. Again this is noticeable only at low energies ($\leq 300\text{eV}$).

5 Expected Updates

The filter files will be updated as soon as possible to include spatial variation

Further analysis of the MOS data will be used to include a spatial variation of efficiency.

References

- [1] Christian Erd. *Transmission of the RGA — A Simulation with SciSim.* XMM-PS-TN-38, ESA/SSD, August 2000.
http://xmm.vilspa.esa.es/calibrations/docs/rgs/RGA_transmission.ps.gz.