

XMM-Newton CCF Release Note

XMM-CCF-REL-18

OM Astrometry

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1 CCF components

Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
OM_ASTROMET_0007	2000-01-01T00:00:00	FILTER-U FILTER-B FILTER-V FILTER-UVW1 FILTER-UVW2 FILTER-UVM2 FILTER-WHITE FILTER-MAGNI FILTER-GRISM1 FILTER-GRISM2 FILTER-GRISM10 FILTER-GRISM20 POLYNOM_MAP		Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes No No No
XMM_BORESIGHT_0013	2000-01-01T00:00:00	BORESIGHT		Yes

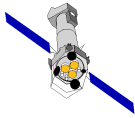
2 Changes

First release

The CCF file, ASTROMET, contains a description of the platescale of the OM images and the detector distortion for each filter element.

The file BORESIGHT includes the pointing direction alignments between star tracker and the reference axis of the Optical Monitor, which is described by the central detector position of the OM detector.

Both files describe the redundant OM detector chain.



The current analysis is limited by a number of factors, these include:

- the entire analysis was performed outside the SAS
- the entire distortion analysis (except the V-filter) is limited to the early (rev 17/18) 3C273 pointing with data acquired in ENG4 mode.
- the number of sources in the 3C273 field is limited to 46 USNO entries, which becomes even less in the UV.
- the optimum boresight from the fitting process seems to wander around from observation to observation. A change of the optimum boresight between STR and OM of $\pm 5 \text{ arcsec}$ in x-direction and $\pm 6 \text{ arcsec}$ in y-direction was observed. The OM FAQ was disabled at the time of updating the boresight file. The FAQ offers in principle a sensitive tool to assess the boresight quality.
- the following filter elements still contain pre-launch values:
 - white light filter
 - magnifier
 - visual grism
 - UV grism

The V-filter analysis was performed on the LMC pointing and is based on 230 entries. We expect the *astromet* file to be updated either once fields with more sources within the FOV are analysed or when data of several observations are analysed in a combined fashion.

3 Scientific Impact of this Update

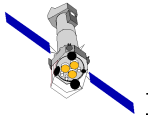
First release

4 Estimated Scientific Quality

At the time of writing a positional RMS accuracy outside the SAS is 1.0 arcsec in the V-filter and ≈ 1.5 arcsec in the other calibrated filters. The positional accuracy is worse for the uncalibrated filter elements.

Given the spread of optimum boresight offset the uncertainty of the STR-OM boresight offset is estimated to be accurate within 8 arcsec.

Inside the SAS only one field was studied so far. The mean scatter was about ± 1 arcsec both in right ascension and declination, however a global pointing offset of 11 and 7 arcsec was seen in right ascension and declination direction respectively.



5 Acknowledgements

Thanks to OM team members, especially Alice Breeveld and Simon Rosen for inputs.