

# XMM-Newton CCF Release Note

XMM-CCF-REL-197

## OM Astrometry: new boresight

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September 26, 2005

### 1 CCF components

Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
XMM_BORESIGHT_0019	2000-01-01T00:00:00	BORESIGHT		No

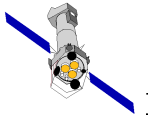
### 2 Changes

The boresight of the Optical Monitor has been redefined.

A statistical study of OM field acquisition (FAQ) offsets performed in nearly 1500 observations in Revs. 207 - 860, shows a systematic average deviation of -2.29 and -2.32 arc sec in X and Y axis respectively. These deviations have been introduced in the *newsiam* SAS task to compute the corresponding new Euler angles. Angle  $\phi$  is modified by 2.3188 arc sec, angle  $\theta$  by -2.2865 and angle  $\psi$  by -1.3229e-02.

### 3 Scientific Impact of this Update

Astrometry in OM performed with SAS will improve.



## 4 Estimated Scientific Quality

Cross-correlations with USNO Catalogue performed with SAS task *omsrclistcomb* in 905 observations using the current boresight, give average offsets of -0.25 and -0.55 arc sec in right ascension and declination respectively. The standard deviations of these offsets are 4.0 and 2.8 arc sec.

Using this new boresight in the cross-correlations reduces these errors to average offsets of -0.22 and -0.40 with standard deviations of 1.8 and 2.1 arc sec in right ascension and declination respectively.

## 5 Test procedures

The new CCF has been tested in two ways.

First, all FAQ's used to measure the deviation of the current boresight have been simulated using the new CCF. (Note that the predicted positions of the acquisition stars are based in the boresight Euler angles). The original deviation disappears in the simulation.

Secondly, SAS task *omsrclistcomb* , has been run in the observations used in the FAQ exercise, to measure the deviations with respect to USNO catalogue. Only in 905 of them a correlation is found (failures are due to few stars in the field of view, as it may occur in the UV filters).

## 6 Summary of the test results

The average offsets of the simulated FAQ are 0.02 and -0.09 arc sec in X and Y axis respectively.

The results of the cross correlation with USNO catalogue have been given before. Standard deviation in the offsets is reduced to 1.8 and 2.1 arc sec in right ascension and declination respectively.

## 7 Expected updates

No updates are expected in the near future.

## 8 Acknowledgments

Thanks to Chris Brindle and Simon Rosen for providing USNO catalogue input files for the cross correlation.