

January 15, 2007

## **XMM-Newton Users Group Resolution on XMM-Newton extension**

The XMM-Newton Users Group (UG) held an extraordinary meeting on 9th January 2007, to discuss the implications for XMM-Newton of the cost savings proposed by the D/Sci and for the mission extension beyond 2010 in response to the SPRT recommendation to save €200M from the Science Program for the period 2010-2015.

The proposed plan includes a reduction of the provisional budget for mission extensions by €60M (64% cut). In that scheme, the additional CaC allocated to XMM-Newton and Integral beyond 2010 would be €40M, to be compared to the provision of €87.8M in the original plan (corresponding to 4 years extension for XMM-Newton beyond March 2010; 2 year extension for Integral beyond December 2010). This assumes an equal fractional reduction for the other missions considered for extension (Mars Express and Venus Express) if not, then the allocated budget could be even smaller.

A number of potential cost saving measures have been identified for both XMM-Newton and Integral and the corresponding required CaC for various mission duration scenario were presented to the UG.

The XMM-Newton UG re-expresses its strong support for the continuation of the XMM-Newton mission beyond 2010. XMM-Newton continues to produce exciting new discoveries and high quality results and it is presently impossible to predict when its scientific impact might significantly decrease. The publication rate has been about 300 papers per year since 2004. In addition, the UG emphasizes that continuous access to the X-ray window, as uniquely provided by XMM, is essential to consolidate the success of European Astronomy as a whole, and in particular to make the most of forthcoming ESA missions (*e.g.* Planck, Herschel) and ground-based facilities (*e.g.* 2<sup>nd</sup> generation VLTI instruments, ALMA) and to prepare possible Cosmic Vision missions (*e.g.* XEUS). The UG emphasizes that the XMM-Newton mission is used by a large fraction of the astronomical community. Current X-ray research brings a unique multi-wavelength complement to ground-based science, in practically all fields (almost all objects in the Universe, from comets to quasars, emit X-rays).

The XMM-Newton UG discussed the overall strategy proposed by the Executive for mission extension and cost savings.

The UG agrees on the importance of continuing opportunity for new projects and supports the implementation of Cosmic Vision in a timely fashion. However, it is convinced that the proposed €60M cut on mission extension would not only seriously damage the science return of XMM-Newton, but also the ESA Science programme as whole. The UG also points out the arbitrary and untimely nature of the proposed cut. It makes the following recommendations:

- **Recommendation 2007-01-9/1.** The UG urges the advisory groups and SPC not to accept any cost cap on mission extension that would irreversibly preclude running XMM-Newton as a true observatory at least up to 2014. As detailed below, the UG endorses some potential savings that can be achieved with moderate impact on the science return. More drastic savings/cuts such as those envisaged (see below) would inevitably bring an increase of risks to the mission that cannot be accepted.

- **Recommendation 2007-01-9/2.** The UG strongly recommends that the extension be decided at the originally foreseen steps (end of 2007, 2009, 2011) taking into account at each time the instruments' health and expected scientific results, possibly in comparison with other missions.

The XMM-Newton UG discussed the scientific requirements for the XMM operation beyond 2010 and the impact of the cost reduction options presented by A. Parmar. The UG makes the following detailed recommendations:

- **Recommendation 2007-01-9/3.** For optimum quality of the XMM-Newton science programme, observing time must be made available to the whole astronomical community through competitive AOs, issued every year, as currently implemented. The operation of XMM-Newton in sky-scan only mode is not an acceptable option.

- **Recommendation 2007-01-9/4.** The capability to perform TOO observations (*e.g.* follow-up of high redshift GRBs) and coordinated observations (specially with new missions like Herschel, GLAST...) must be kept. Our understanding of variable sources (*e.g.* how accretion works?) depends critically on this capability.

- **Recommendation 2007-01-9/5.** Adequate XMM-Newton user support needs to be maintained. The UG emphasizes that this is a key element for the present overwhelming (and future) success of XMM-Newton. More specifically, this includes:

- Calibration and instrument health monitoring. It is essential to keep the existing expertise in each instrument, in cross-calibration and the capacity to react to changes in instrument performances. Some cost savings may be possible here (up to at most 1 FTE) as long as there is no risk that these tasks cannot be performed properly.

- SAS maintenance. Although the development of major new functionalities will probably not be necessary after 2010, the SAS will need to be maintained and regularly updated, in particular to follow the evolution of calibration and operating systems. Again the proposed cost saving (by at most 1 FTE) is the maximum that can be accepted.

- Archive development and maintenance. The use of the archive is expected to increase with time. The UG considers that a proposed cost saving up to 50 % may be possible, provided that the development of necessary tools for archive search and data retrieval is completed by 2010. The UG intends to review the existing tools and issue recommendations for further developments at its next meeting.

- Community support (proposal enhancement, help desk, observation scheduling and coordination...). In view of the very large community using XMM (roughly 20% of the worldwide astrophysical community) and expected to use XMM in the future, including non X-ray specialists, it is essential that the present level of support be kept. The proposed cost-savings is not acceptable.

- **Recommendation 2007-01-9/6.** The observation efficiency must remain high and, even more importantly, the integrity of the instruments must not to be put at risk (*e.g.* irreversible particle damages due to late closure of the EPIC filter wheels). The UG recommends detailed risk assessment studies for the various cost savings options for the MOC activities, in particular the suggestion that a single SPACON operates both XMM-Newton and Integral.