

XMM, I remember

Gabriele E. Villa

EPIC P.M.

In 1984, ESA proposed the “High Throughput X-Ray Spectroscopy” (later XMM) as second cornerstone mission of the Horizon 2000 Science Programme. The works for the Mission started in January 1985 with the creation of various Working Groups, the configuration was 12 low-energy and 7 high-energy X-ray telescopes. In February 1987, the Telescope Working Groups reduced the number of X-ray telescopes to seven standardized units. In June 1988, ESA approved the mission and issued an “Announcement of Opportunity” and the number of X-ray telescopes was reduced to three. The Instruments onboard the mission now were: 3 Imaging Cameras (later the European Photon Imaging Cameras, EPIC), two Reflecting Grating Spectrometers (RGS), the Optical UV Telescope (UVOT) and the Radiation Monitor (RM), with all Instruments working in parallel and the launcher planned to put XMM into orbit was an Ariane 4.

ESA appointed Prof. G. F. Bignami (Nanni) P.I. of the EPIC experiment. He presented to ESA the 10 Scientific European Institutes from England, France, Germany and Italy forming the EPIC Collaboration. In order to coordinate the various groups during the design and development of the Instrumentation Nanni created the “System Team” based at IASF-Milano including Engineers and Scientists competent in HW, SW, AIV, PA. This team was coordinated by me, in the role of PM, from Phase B up to the delivery of the Instruments. For me the role of PM was a new job and I had to learn how to do it but the EPIC Collaboration made it easy.... and I’ve never had serious problems!

Integration, testing and delivery to ESA of the three EPIC chains was performed by Laben Industry, which was selected by ASI (Agenzia Spaziale Italiana) for this job. This activity was performed with the collaboration of various EPIC Institutes and of the System Team under the ESA supervision.

Laben was also responsible for the development and testing of the three Data Handling Electronics Boxes (2 EMDH and 1EPDH) with the collaboration of the EPIC Institutes and of the System Team.

In parallel to the XMM Instruments development, from a paper drawing to the hardware, ESA was developing the mirrors. At that time two technologies were under study, the Carbon Fiber and the Nickel Electro-Forming technologies.

In 1995 it was realized that the Carbon-Fiber Mirrors Technology was not giving the required performances and it was necessary to adopt the Nickel Technology developed in Italy by Media-Lario Industry. This required the increase of the weight allocated to the mirrors and then the XMM Mission had to be launched by an Ariane 5.

Going from Ariane 4 to 5 gave more weight resources also to the Instruments. Therefore EPIC obtained an increase of weight allocation which allowed us to redesign the three Cameras (two MOS and one p-n, Silicon Detectors, Fig. 3 and 4) and to introduce of a Filter Wheel (Fig.2) The F.W. had four filters of various thickness, an open position and a closed one with one mm thick aluminum disk. This was a great decision that saved the Detectors during the perigee passages and the Solar Storms.

Then in 1997 Nanni was appointed ASI (Agenzia Spaziale Italiana) Scientific Director and had to leave his position of EPIC P.I. and Martin J. Turner took over his position as EPIC P.I. (Fig. 1)

The ten Institutes of the EPIC Collaboration did a wonderful job, all the hardware was developed, tested, qualified, calibrated and delivered on time to ESA, and XMM was launched on 10 December 1999 (Fig. 5) and, as you all know, EPIC is working very well and produces very good science.

Fig.1



Fig 2

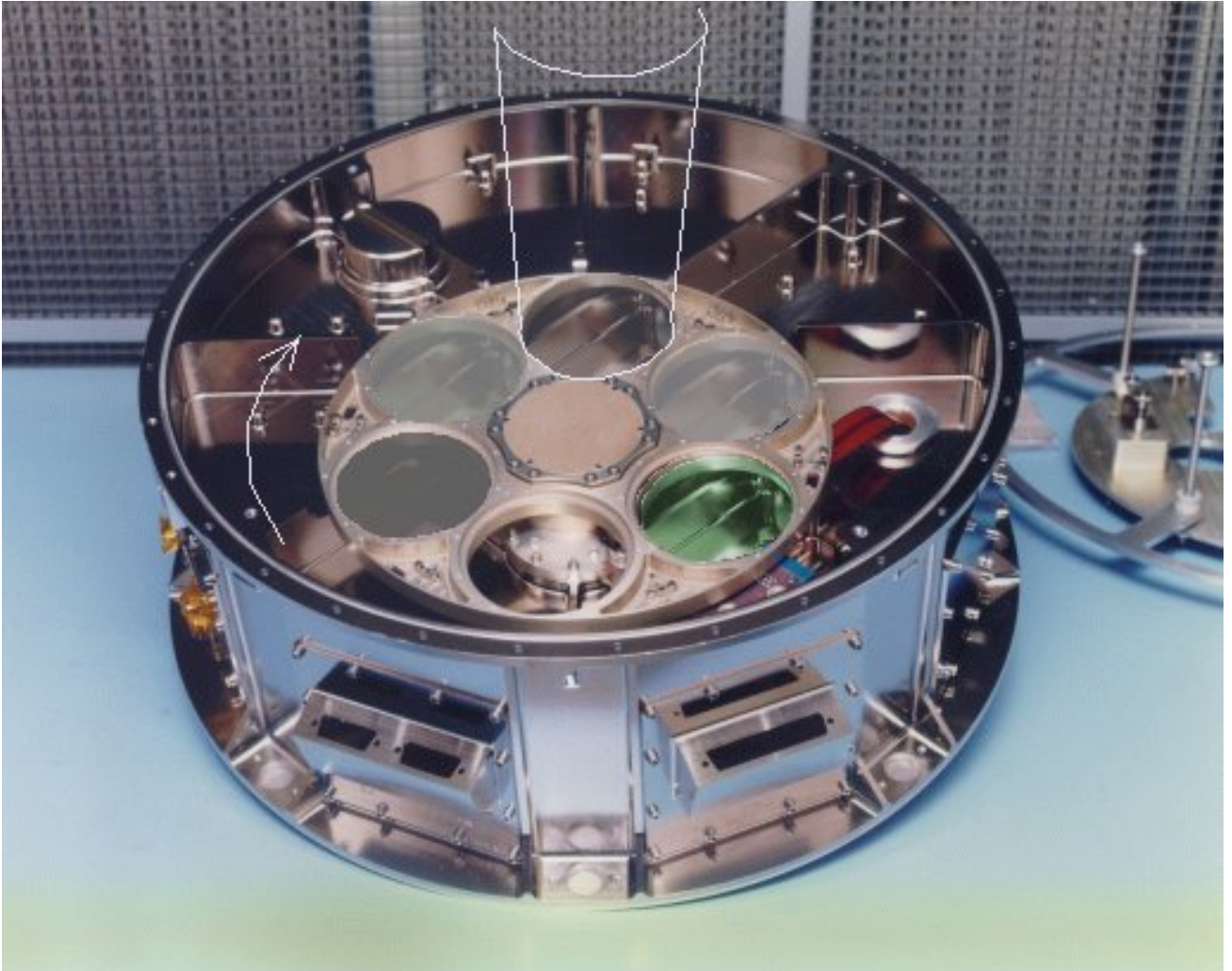


Fig. 3 MOS Camera



Fig. 4 p-n Camera

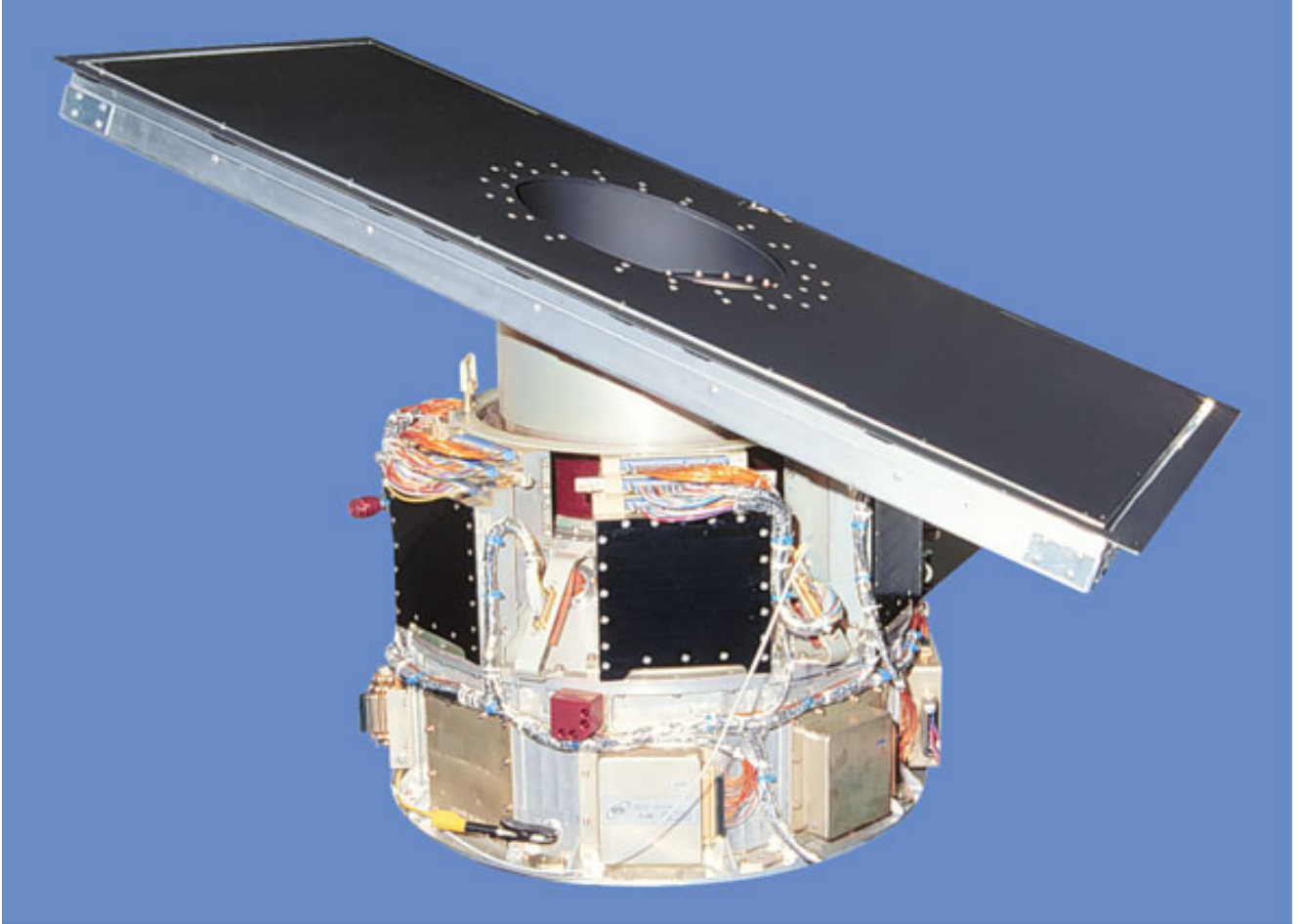


Fig. 5

Kouru : 10 December 1999

