

IAF SYMPOSIUM ON ONGOING AND NEAR FUTURE SPACE ASTRONOMY AND
SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Space Astronomy missions, strategies and plans (1)

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ATHENA – EUROPE’S NEXT-GENERATION SPACE-BASED X-RAY TELESCOPE

Abstract

ATHENA is a new generation of spaceborne X-ray observatories, which follows on from the XMM-Newton spacecraft and provides significantly enhanced performance levels. It aims to answer to the ‘Hot and Energetic Universe’ Science theme selected for ESA’s large science mission. It is the second large mission (L2) in the ESA Cosmic Vision 2015-2025 programme, to be launched in 2035.

Athena spacecraft is a very large space system currently in predevelopment and consisting of

- The science instrument module (SIM) containing the two key instruments:
 - The X-ray Integral Field Unit (X-IFU), an advanced actively-shielded X-ray microcalorimeter spectrometer for high-spectral resolution imaging, and,
 - The Wide Field Imager (WFI), a Silicon DEPFET Active Pixel Sensor camera with a large field of view, high count-rate capability.
- The optical module (OM) containing the mirror assembly structure encompassing hundreds of novel silicon pore optics mirror elements
- The fixed metering structure (FMS), acting both as central structure and as telescope baffle connecting optical module and SIM
- The service module providing power, propulsion, data handling, communication and attitude control to the spacecraft

In essence Athena is a single X-ray telescope with a focal length of 12 m and an unprecedented mirror effective area between greater than 1.34m² at 1 keV, with an excellent angular resolution and a wide field of view.

This interactive presentation will present the current status of the Athena development, the technical challenges and way forward to implementation.