ESA's NewAthena X-Ray Space Observatory

Abstract

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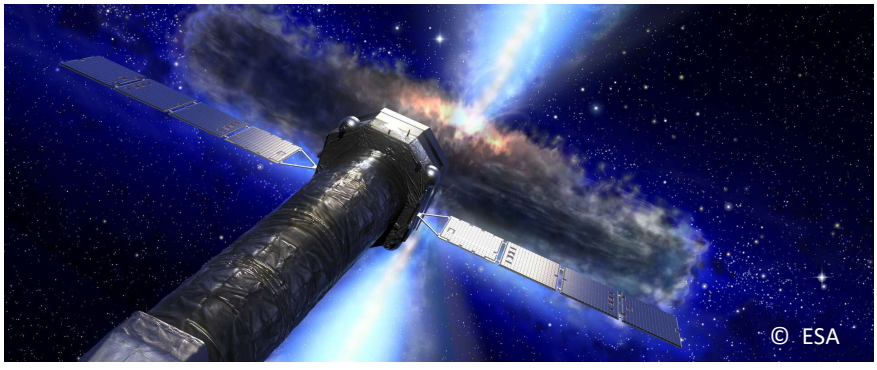
NewAthena is planned for launch in the late 2030s and will be the most powerful X-Ray telescope in space for observing the "hot and energetic universe" through the 0.2 to 10 keV X-Ray spectral window, to address a wide range of fundamental questions of modern astrophysics on e.g. black holes and galaxy evolution, neutron star physics, and large-scale structures in the Universe.

NewAthena builds on the success of previous observatories, such as XMM-Newton (ESA), Chandra (NASA) and more recently XRISM (JAXA). The NewAthena telescope is using modular Silicon Pore Optics (SPO), a new technology developed by ESA with cosine (NL), and will provide unprecedented combination of high spatial resolution (HEW 5 to 9 arcsec), large collecting area (> 1m^2 @ 1 keV) and large field of view (40 x 40 arcmin^2). The two focal plane instruments, X-IFU (led by IRAP/CNES, Toulouse) and WFI (led by MPE, Garching), will provide high-resolution non-dispersive imaging spectroscopy using ultra-cooled Transition Edge Sensors (0.1 K) and wide-field imaging capability using Active Pixel Sensors. Following an overview of the scientific objectives, the talk will present the recent project evolution and major progress achieved on SPO over the last decade, allowing to start the spacecraft development in 2027.

For the alignment of the required about 600 mirror modules for the SPO, two dedicated beamlines (X-ray Parallel Beam Facility 3 and 4) will be installed in the PTB-laboratory at BESSY II in addition to XPBF 1 and 2, operated there already since 2005 and 2016, respectively.

The talk will address the critical importance, for space science missions, of the system optimization and technology predevelopments for reaching the optimum balance between performance, affordability and implementation feasibility.



HZB BESSY II Light Source

www.hz-b.de/usermeeting

DATE
3 December 2025 from 18:15 to 19:00
The Public Lecture is a part of the BESSY@HZB User Meeting 2025. **Registration is not required.**

LOCATION
Bunsen Saal at WISTA, Volmerstraße 2, 12489 Berlin