

SYMPOSIUM ON TECHNOLOGICAL REQUIREMENTS FOR FUTURE SPACE ASTRONOMY AND
SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Space-Agencies Long-Term Views (1)

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ATHENA: TECHNOLOGY DEVELOPMENT PLAN FOR A NEXT GENERATION X-RAY
TELESCOPE

Abstract

ATHENA (Advanced Telescope for High Energy Astrophysics) has recently been selected as ESA's second large class mission of the Cosmic Vision science programme. A Phase 0 study has been performed at the Concurrent Design Facility of ESA and with a first spacecraft design having been elaborated. In response to the new mission design, ESA's technology development plan has been updated to address the technology readiness of the critical technologies required for the ATHENA Mission. This paper will present and discuss the ongoing and planned technology developments required for ATHENA. Silicon Pore Optics has been under development for several years as the enabling technology for the large x-ray mirror of ESA's next X-ray telescope mission. In the coming years the technology development efforts will concentrate on demonstrating that the optics can fulfill the requirements of ATHENA with the major emphasis being placed on optical quality, environmental robustness and manufacturability of the flight model mirror. ATHENA will carry two instruments, an x-ray integral field unit spectrometer and a wide field imager, which require further developments of the cooling chain and focal plane technologies. Additional needs for new technology developments have been identified for shock-damping, for mechanisms switching the telescope field of view in between the two instruments and for extending the capabilities of testing facilities for x-ray telescopes.