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Detector development for the WFI of Athena

The ATHENA X-ray observatory was selected as ESA's second large-class mission, scheduled to be launched in 2028. The Wide Field Imager (WFI) is one of its two primary instruments and will provide single photon spectroscopy in an energy band of 0.2 keV to 15 keV. To achieve unprecedented spectroscopic and imaging capabilities with a large field of view of $40' \times 40'$, its focal plane is covered by DEPFET (depleted p-channel field effect transistor) active pixel sensors.

In the course of the detector development for the WFI, various variant of prototype DEPFETs –regarding the fabrication technology and layout –have been produced and investigated. Within these studies, an excellent performance was achieved, by e.g. operating 64×64 pixel detectors at noise levels below 2 e-ENC or readout speeds faster than $2.6 \mu\text{s}/\text{pixel}$.

Authors: Dr TREBERSPURG, Wolfgang (Max-Planck-Institut für extraterrestrische Physik); Dr BEHRENS, Annika (Max-Planck-Institut für extraterrestrische Physik); Dr BONHOLZER, Michael (Max-Planck-Institut für extraterrestrische Physik); MÜLLER-SEIDLITZ, Johannes (Max-Planck-Institut für extraterrestrische Physik); VALENTIN, Emberger (Max-Planck-Institut für extraterrestrische Physik)

Presenter: Dr TREBERSPURG, Wolfgang (Max-Planck-Institut für extraterrestrische Physik)