

# Design and tests of the hard X-ray polarimeter X-Calibur

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## ABSTRACT

X-ray polarimetry promises to give qualitatively new information about high-energy astrophysical sources, such as binary black hole systems, micro-quasars, active galactic nuclei, and gamma-ray bursts. We designed, built and tested a hard X-ray polarimeter *X-Calibur* to be used in the focal plane of the InFOC $\mu$ S grazing incidence hard X-ray telescope. X-Calibur combines a low-Z Compton scatterer with a CZT detector assembly to measure the polarization of 10 – 80 keV X-rays making use of the fact that polarized photons Compton scatter preferentially perpendicular to the electric field orientation. X-Calibur achieves a high detection efficiency of order unity.

**Keywords:** X-rays, polarization, black hole, InFOCuS, X-Calibur