

Observations of the Stellar Mass Black Hole Cygnus X-1 with the Imaging X-ray Polarimetry Explorer

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X-ray polarization observations allow us to test accretion disk, corona, and emission models of stellar mass black holes in X-ray binaries. The Imaging X-ray Polarimetry Explorer (IXPE), launched on December 9, 2021, enables X-ray polarimetric observations with unprecedented sensitivity in the 2—8 keV energy range. We report here on the first IXPE observation of the black hole Cygnus X-1. We accompanied the May 2022 campaign with simultaneous Nuclear Spectroscopic Telescope Array (NuSTAR), Neutron Star Interior Composition Explorer (NICER), and INTERNATIONAL Gamma-Ray Astrophysics Laboratory (INTEGRAL) coverage to decompose the IXPE energy spectra into thermal disk, coronal, and reflection components. Furthermore, we present the implications of the polarization signature of Cygnus X-1 on the radio jet, the coronal geometry, and the inner accretion flow orientation.