

Bulletin of the AAS • Vol. 55, Issue 4 (HEAD20 Abstracts)

IXPE Observations of the Pulsar 4U 1626-67

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Published on: Jul 01, 2023

URL: <https://baas.aas.org/pub/2023n4i109p05>

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We report on new X-ray spectropolarimetric observations from the recently launched Imaging X-ray Polarimetry Explorer (IXPE) of the ultracompact low-mass X-ray binary system 4U 1626-67. We also report on supplementary observations taken by NICER and Chandra/HETGS around the IXPE observation window. We will present energy-resolved and pulse phase-resolved spectropolarimetric 2-8 keV IXPE observations of 4U 1626-67 and discuss implications for our understanding of accretion geometries in accreting pulsars. NICER provided complementary spectral and timing results over the 0.3-10 keV band, with an emphasis on the soft band; Chandra/HETGS allowed for detailed characterization of the plasma in the accretion disk. 4U 1626-67 is an interesting system as it hosts a slowly spinning accretion-powered pulsar (~ 7.7 s) with a strong magnetic field ($B \sim 10^{12}$ G) in a ~ 42 minute ultracompact orbit around a very low mass hydrogen-depleted companion. It has exhibited two episodes of long-term torque reversals in 1990 and 2008, and it is currently in the spin-up state; the pulse profiles also exhibit strong energy dependence. The quiescent state is also occasionally punctured by >100 s-long flaring episodes. In addition, the system hosts a highly collisionally-ionized plasma in the accretion disk and complex emission line phenomena around 1 keV (attributed to Ne X and O VIII).