

W15a The high X-ray polarization from an accretion disk corona source

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We report the first X-ray polarization measurement of an accretion disk corona (ADC) source, detecting a polarization degree of $8.8 \pm 1.4\%$ and a polarization angle of $-46 \pm 5^\circ$ (1σ confidence) in the 2–8 keV band for the neutron star 2S 0921-630. ADC sources are observed at high inclinations, where the central emission is obscured by the vertical structure of the accretion disk. The observed X-rays originate mainly from electron scattering and reprocessing in photoionized plasma, likely associated with an equatorial disk wind launched from the outer disk. Our analysis reveals a potential increase in polarization degree and angle with energy across the band. To interpret these findings, we performed spectro-polarimetric simulations based on a thermal-radiative wind model driven by X-ray irradiation of the outer accretion disk. These simulations reproduce the high polarization degree and its weak energy dependence, but the observed variation in polarization angle suggests a more complex, non-axisymmetric scattering geometry. These results offer new insights into the scattering processes and wind structures in ADC sources, advancing our understanding of X-ray polarization in compact object systems.