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Probing the Accretion/Ejection Geometry of X-ray Binaries Using Spectro-Polarimetry Study

It is widely postulated that the high-energy radiation in X-ray binary systems arises from the upscattering of photons originating from the accretion disk, likely due to interactions with an electron cloud or a corona. Nevertheless, our understanding of the exact geometry and orientation of these coronal structures remains limited. In recent times, spectro-polarimetry studies have emerged as a powerful tool for unraveling the intricate geometry of material flows within these systems. In this overview, we delve into recent advancements that aim to elucidate critical parameters such as inclination angles and the presence and alignment of scattering regions within X-ray binary systems. These findings carry significant implications for our comprehension of various phenomena, including accretion disk dynamics, the formation of jets, and the interplay between the compact object and its surrounding environment.
Our spectro-polarimetric observations have unveiled intriguing energy-dependent polarization signatures and variations in the degree of polarization corresponding to different spectral states exhibited by X-ray binaries.

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