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How General Relativistic Effects Modify Spectral-Timing Properties of Accreting Black Holes

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Black holes are among the most challenging objects to study in the universe since nothing can escape from their event horizon. Fortunately, these objects leave traces by imposing their extreme gravitational pull on the surrounding matter as it falls into the black hole. Spectral-timing analysis has become very popular for studying accreting black holes and inferring the geometrical structure of these systems. It combines the analysis of X-ray spectral and timing features produced in the innermost region of accreting black holes, allowing us to characterize properties such as mass and spin, and to shed light on the interplay between the corona, the jet, and the accretion disk. NICER is the perfect instrument to perform such analysis due to its extraordinary timing capabilities and fine spectral resolution. I will overview the most recent results derived from the spectral-timing analysis of accreting black holes using NICER observations.

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