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Extreme X-ray weakness and variability in super-Eddington accreting AGNs

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A prominent feature of Active Galactic Nuclei (AGNs) is their significant X-ray emission. However, we have systematically discovered a class of AGNs characterized by extreme X-ray weakness (more than 10 times weaker) and extreme X-ray variability transitioning from a weak state to a normal state. These AGNs do not exhibit corresponding significant variations in optical-infrared continuum or emission lines, while generally possessing super-Eddington accretion rates. In this presentation, I will introduce the results of X-ray and multi-wavelength observational studies on this class of AGNs, as well as the corresponding accretion disk wind-induced obscuration model. These results will also help to understand phenomena such as rapid X-ray flares in narrow-line Seyfert 1 galaxies, the JWST “little red dots,” and extreme X-ray weakness in intermediate-mass accreting black holes.

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