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Radiative MHD simulations of disk accretion onto neutron stars

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The discovery of pulsations in ultra luminous X-ray sources (ULXs) revealed a new class of neutron stars. These possibly strongly magnetized stars accrete matter at prodigious (super-Eddington) rates and are subject to very high spin-up torques. Other classes of sources such as the Z sources (e.g., Sco X-1) have accretion disks radiating at nearly Eddington luminosity. Recent computing advances allow for the first time to include radiation in magnetohydrodynamic simulations of accretion flows in general relativity. I will present radiative GRMHD simulations of accretion disks and discuss their relevance to neutron star sources.

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