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## Numerical simulations of super-Eddington accretion flows

*Thursday, December 14, 2023 3:50 PM (25 minutes)*

Super-Eddington flows around black holes, the most powerful energy-production mechanism in the Universe, is thought to exist in very luminous compact objects as ULXs, NLS1s, GRBs, and so on. Super-Eddington accretion may also be responsible for the rapid growth of supermassive black holes in the early universe. By radiation hydrodynamics/magnetohydrodynamics (RHD/RMHD) simulations, it has been shown that in supercritical accretion flows, a large number of photons are swallowed by the black holes with accreting matter due to photon trapping. The strong radiation pressure force supports the thick disks and drives the powerful outflows. The recent general relativistic RMHD simulations of the super-Eddington flows around Kerr black holes also show the BZ effect effectively works and the precession motion occurs.

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