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Horizon-scale simulations of galaxy-fueled, strongly magnetized quasars

Monday, 5 May 2025 14:30 (15 minutes)

"Classical" accretion disks are geometrically thin, radiatively efficient and mechanized by turbulent viscosity. Yet, many observational and theoretical issues challenge this paradigm. Realistic quasar disks may be fed from cold, highly magnetized gas complexes, which can result in magnetically dominated disks that accrete extremely quickly. I will present horizon-scale simulations of magnetically dominated disks that were self-consistently formed in a galaxy. I will show how the magnetic field evolves in surprising ways as the gas reaches the BH. I will also show how "magnetic flux inversions" naturally emerge within these systems. Such events may power some Changing-look AGN and have analogues in neutron star mergers or tidal disruption events.

Primary author: KAAZ, Nick (Northwestern University)

Presenter: KAAZ, Nick (Northwestern University)

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