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Challenges of Astrophysical Disk-Jet-Lobe Systems HUI LI, Los Alamos Natl Lab — Supermassive black holes residing at the centers of most massive galaxies are widely regarded as (the) sources of the non-thermal energy in the universe. Much of the black hole formation energy is released through an accretion disk around the (spinning) black hole and the powerful jets/lobes emanating from it. The fate of these jets and lobes could have important implications in terms of the overall magnetization of the wider inter-galactic medium. Many unsolved problems remain in trying to understand the physics of these systems and the need for more plasma physics is acute. We discuss how astronomical observations, laboratory experiments, theory and simulations are helping us to make progress.

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