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3D MHD Simulations of Large-Scale Structures of Magnetic Jets
HUI LI, MASANORI NAKAMURA, SHENGTAI LI, LANL — Extragalactic radio jets represent a significant amount of magnetic energy (and perhaps magnetic flux) flow from supermassive black holes inside massive galaxies to the intergalactic medium (IGM). We will present 3D MHD simulations of the formation of large scale magnetic jets/"towers," evolved from an isolated and idealized initial state where magnetic fields are injected in a small volume. We will present a detailed analysis of the "tower" structure, collimation mechanisms, instabilities, and flux conversion processes. We will also compare our simulation results with astrophysical jet observations.

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