



ASTROPHYSICAL MAGNETOHYDRODYNAMIC (MHD) JETS: OBSERVATIONS, THEORY AND SIMULATIONS

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Long-lived, stable (narrow streams of plasma) jets are observed in a wide variety of systems, from protostars, through Galactic compact objects to active galactic nuclei. Magnetic fields play a central role in launching, accelerating, and collimating the jets through various media. I will review the theory and simulations of MHD jets launched from accretion disks surrounding a central object and their confrontation to observations. I will explain how jets can evade destructive MHD instabilities by favoring specific magnetic field configurations anchored to the underlying accretion disk. I end by pointing out some implications to astrophysical phenomena and models involving jets (e.g., gamma-ray bursts and ultra-high energy cosmic rays) and to star formation.

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