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**Magnetic Fields in Quasar Jets and their Environments**[1]
CHRISTOPHER WALKER, DAVID HOUGH, Trinity University — We observed radio jets in the cores of 15 lobe-dominated quasars at parsec-scale resolution using the NRAO VLBA. Measurements of fractional polarization (m) and rotation measure (RM) were used to explore four models of the magnetic field (B) in the jets and the surrounding medium. (1) We used the model of Wardle et al. (1994, ApJ, 437, 122), with shocks in a parallel-B flow to explain m variations along the jet, to find a shock-frame flow speed of $\sim$0.6c and a ratio of ordered to random B of $\sim$1 in the quasar 3C245. (2) A cylindrical jet model, with a parallel-B sheath of fractional thickness $\sim$0.1, reproduces observed m edge enhancements. (3) We used the model of Taylor (2000, ApJ, 533, 95), with a "Faraday screen" around the inner jet, for two trial B configurations: simple dipole and turbulent cells. Both can explain the observed rapid RM declines along the jets. (4) A conical jet model, with helical B causing internal Faraday rotation, reproduces observed m edge enhancements, but predicts an unobserved central peak in m. Finally, a comparative analysis of core-dominated quasars (Lister & Homan, 2005, AJ, 130, 1389) suggests that parallel-B structures occur in all quasar jets.

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