Abstract Submitted
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Alfvén Modes in the MST Revised Field Pinch[1] MENG LI, BORIS BREIZMAN, LINJIN ZHENG, Institute for Fusion Studies, The University of Texas at Austin, LIANG LIN, WEIXING DING, DAVID BROWER, University of California Los Angeles — This work presents a theoretical and computational analysis of core-localized energetic particle driven modes observed near the magnetic axis in MST[L. Lin, W. X. Ding, D. L. Brower, et al., Phys. Plasmas 20, 030701 (2013)]. Using the measured safety factor and plasma pressure profiles as input, the linear ideal MHD code AEGIS [L. J. Zheng and M. Kotschenreuther, J. Comp. Phys. 211, 748 (2006)] reveals Alfvénic modes close to the measured frequencies. The AEGIS results together with a reduced analytical model demonstrate that the modes are essentially cylindrical and dominated by a single poloidal component (m = 1). The calculated modes are localized in the plasma core where the magnetic shear is weak and continuum damping is minimal. Detailed analysis establishes constraints on the safety factor and plasma pressure under which two modes can exist simultaneously as seen in experiment.

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