

Abstract Submitted
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Measurements of beam-driven instabilities with the upgraded MST interferometer-polarimeter¹ E. PARKE, UCLA, J. K. ANDERSON, UW-Madison, D. L. BROWER, W. X. DING, UCLA — Neutral beam injection (NBI) in MST produces a core-localized fast ion population that modifies the plasma equilibrium and drives a rich variety of instabilities. These instabilities include energetic particle modes (EPMs) and Alfvénic modes that can produce an avalanche process leading to significantly enhanced fast ion transport, as well as chirping modes. The MST FIR interferometer-polarimeter system has high-bandwidth and low phase noise and has previously been used to characterize density fluctuations correlated with many of these instabilities, as well as internal magnetic fluctuations associated with the dominant, $n = 5$ EPM. However, many of the Alfvénic and chirping modes were too weak to observe in polarimetry measurements in previous studies. Recent upgrades to the interferometer-polarimeter have further reduced the noise floor and extended the accessible bandwidth for fluctuation measurements. Initial measurements of fast ion driven instabilities with the upgraded system will be presented. Improved measurements of internal structure may be important for understanding mode dynamics and particle transport.

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