

Abstract Submitted  
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**Characterization and initial results from the upgraded MST interferometer-polarimeter**<sup>1</sup> E. PARKE, D.L. BROWER, W.X. DING, UCLA, J.R. DUFF, UW-Madison — The FIR interferometer-polarimeter diagnostic on MST is a high-bandwidth system with unique capabilities for measuring high-frequency density and internal magnetic fluctuations. Installation of new planar-diode mixers improves both the signal strength and the noise floor compared to the corner-cube mixers previously used. The new mixer technology also offers a simpler detection configuration that eliminates the need for additional amplifiers. We characterize the bandwidth capabilities of the upgraded heterodyne receiver system and present initial measurements in reversed-field pinch (RFP) plasmas. High wavenumber resolution becomes possible when operating without focusing elements, using only the 2-3 mm aperture on the mixer to determine the sampled chord width. This configuration will provide better resolution of small-scale fluctuations observed in the RFP during periods of improved, tokamak-like confinement. Finally, cross-correlation techniques between two mixers viewing the same chord further reduce measurement noise and improve the resolution of high-frequency, small-amplitude magnetic and density fluctuations. Initial tests of this technique in neutral-beam heated plasmas will be presented.

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