

Abstract Submitted  
for the DPP10 Meeting of  
The American Physical Society

**Upgrade of Far-Infrared Interferometer-Polarimeter Diagnostic on MST**<sup>1</sup> D.L. BROWER, W.X. DING, L. LIN, W.F. BERGERSON, UCLA — Recently, the 3-wave far-infrared interferometric diagnostic system on MST has been improved by (1) upgrading the infrared pump source, (2) developing more precise alignment techniques, and (3) refining system calibration. System upgrades serve to reduce phase noise and lower systematic errors thereby improving overall resolution. This multichannel system can be configured to make combined phase measurements of interferometry/Faraday rotation or interferometry/differential interferometry leading to direct determination of 3 equilibrium (density, magnetic field and current density) and 5 fluctuating (density and density gradient, poloidal and radial magnetic field, current density) quantities. Combined measurements have system bandwidth of  $\sim 250$  kHz while individual measurements can be up to  $\sim 2$  MHz. Results for standard sawtooth and high-performance plasmas will be presented, including 3-D effects during quasi-single helicity conditions and core fluctuation characteristics for MST plasmas with 1 MW neutral beam heating.

<sup>1</sup>Work supported by US Department of Energy.

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Date submitted: 14 Jul 2010

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