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Electron density and toroidal current density profile evolution in high-performance pellet-fueled MST plasmas[1] L. LIN, D.L. BROWER, W.X. DING, W.F. BERGERSON, T.F. YATES, UCLA, K.J. CASPARY, B.E. CHAPMAN, J.S. SARFF, UW-Madison — High-density, high-β plasmas have been achieved in MST using pellet injection in conjunction with inductive current profile modification. Here, we present measurements during such plasmas of the electron density (n_e) and toroidal current density (j_{tor}) profiles obtained using a three-wave far-infrared (FIR) laser polarimetry-interferometry diagnostic. Electron density profiles are obtained by inverting the line-integrated interferometry measurements. However, simultaneous measurements of the electron density gradient from a differential interferometry configuration are used to assist in removal of interferometric fringe jumps during the pellet ablation and improve the overall accuracy of the inverted density profiles. Toroidal current density profiles are measured by handling the polarimetry measurements with a parameterized functional fitting method. The evolution of n_e and j_{tor} during pellet ablation is resolved, and profile dynamics will be presented.

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