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Density Profile and Fluctuations in Quasi-Single-Helicity MST Plasmas W.F. BERGERSON, D.L. BROWER, UCLA, B. CHAPMAN, UW-Madison and CMSO, W.X. DING, UCLA, J.S. SARFF, S.C. PRAGER, UW-Madison and CMSO, UCLA TEAM, UW-MADISON AND CMSO COLLABORATION — Numerous resonant and overlapping tearing modes of multiple helicity (MH) generate the stochastic magnetic field in reversed field pinch (RFP) plasmas. However, RFPs with one resistive tearing mode impart a single helicity (SH) to the magnetic field and are predicted to preserve good magnetic surfaces and reduce transport. Between the extremes of MH and SH is Quasi-Single-Helicity (QSH), a plasma with a dominant tearing mode and multiple smaller modes. Equilibrium density profiles and density fluctuations have been studied in the MST RFP by employing standard and differential interferometry techniques in 300 kA plasmas at modest density ($0.5 * 10^{13}$ m^{-3}). Initial comparison of the MH and QSH states indicates the latter has a hollow density profile, while the former is centrally peaked. This finding is maintained when looking at ensembled data. Modification to stochastic magnetic field driven particle transport during QSH provides a potential explanation for the equilibrium profile changes. Equilibrium magnetic and current density profiles measured by polarimetry will also be investigated. This work is supported by the DoE.

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