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Overview of MST Results and Plans[1] J.S. SARFF, University of Wisconsin-Madison and the Center for Magnetic Self Organization in Laboratory and Astrophysical Plasmas, MST TEAM — Ongoing optimization of MHD tearing control for improved confinement has focused on higher current and higher density operation. Both the electron and ion temperatures are now maintained above 1 keV in 0.5 MA plasmas. The duration of the MHD tearing control period has been modestly extended using new inductive control circuitry. Frozen D2 pellet injection increases the density without degrading tearing control. Simultaneous high beta and high current are thus achieved. The high ion temperature appears rapidly in fast reconnection events. Charge exchange spectroscopy measures global heating when both m=1 and 0 tearing modes are involved, whereas it appears more edge-localized for smaller, m=0 dominated events. Multipoint Thomson scattering permits improved measurements of the electron temperature profile evolution during these events. Oscillating Field Current Drive results for the dependence of current drive on the oscillator's relative phase compare reasonably well with nonlinear MHD computation. An increase in the OFCD power capability is underway. The launcher systems for lower hybrid and electron Bernstein waves have also been modified for higher power (300 kW). Other results and plans will be presented.

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