

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Overview of MST Results and Plans¹ S.C. PRAGER, University of Wisconsin and the Center for Magnetic Self-Organization in Laboratory and Astrophysical Plasmas, MST TEAM — Recent results in the MST reversed field pinch include improved confinement with copious energetic electrons and elevated ion temperature; good confinement of fast ions with large gyro-radii in the standard RFP (inferred from neutron emission of neutral- beam-injected ions) despite the underlying stochasticity of the magnetic field; sustainment of 10 percent of the plasma current by oscillating field current drive (ac helicity injection), in agreement with theory for the applied power; determination that ion heating during reconnection events is global, as measured by charge exchange recombination spectroscopy; observation that global magnetic self-organization (characterized by sudden changes in magnetic energy, plasma momentum, and ion temperature) occurs only when spontaneous ($m = 1$) and driven ($m = 0$) reconnection are present simultaneously; and wave injection from electron Bernstein wave and lower hybrid wave antennas, satisfying theoretical expectations of plasma loading at power levels of about 100 kW. Development of many auxiliary and diagnostic systems is underway.

¹Supported by DOE and NSF

Stewart Prager
University of Wisconsin

Date submitted: 26 Jul 2005

Electronic form version 1.4