Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Transport of parallel momentum during reconnection events in the MST Reversed Field Pinch[1] G. FIKSEL, A.F. ALMAGRI, D. CRAIG, F. EBRAHIMI, C.C. HEGNA, A. KURITSYN, V.V. MIRNOV, S.C. PRAGER, University of Wisconsin-Madison, WI 53706 — Transport of parallel momentum during reconnection events has been investigated in the MST. The events are characterized in part by a sudden increase of resistive tearing magnetic fluctuations and generation of magnetic flux, abrupt ion heating, and changes in the plasma rotation. The plasma parallel velocity abruptly decreases in the core and speeds up at the edge which results in the flattening of the parallel momentum profile. The parallel velocity is reconstructed from the poloidal velocity of bulk plasma measured with the Rutherford scattering diagnostic (core) and Mach probe (edge), and the toroidal phase velocity of resistive tearing modes measured with an edge array of magnetic pickup coils. This transport of parallel momentum can be understood within the framework of two-fluid turbulent relaxation theory and from detailed calculations of fluctuation induced Maxwell and Reynolds stresses resulting from multiple tearing modes. Edge measurements of fluctuation induced Maxwell stress will be presented.

[1]Work Supported by U.S.D.O.E. and N.S.F.

V.V. Mirnov
University of Wisconsin-Madison

Date submitted: 19 Jul 2006 Electronic form version 1.4