Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Computational Simulation Of Neutral Beam Injection On MST

JEFF WAKSMAN, JAY ANDERSON, GENNADY FIKSEL, UW-Madison — MST has recently installed a 1 MW, 20 ms tangential neutral beam injection system. Understanding of initial measurements and guidance of future diagnostics relies heavily on accurate calculations of the beam characteristics. The transport code TRANSP was used to simulate the beam's effect on the plasma, such as shine-through, power and momentum deposition and current drive. While the code was originally developed for tokamaks, its Monte Carlo Beam Deposition and Slowing-Down Model is of particular interest for MST. Initial studies used real Grad-Shafranov equilibrium reconstructions of MST discharges without field reversal, satisfying a TRANSP requirement that the toroidal flux be a monotonic function of radius. Subsequent computations were performed on RFP equilibria modified in one of two different ways: either the plasma boundary was defined to be inside of the reversal surface, or a small artificial toroidal field was added near the boundary. Results from the simulations will be compared with the initial data from NBI operation on MST. Work supported by the U.S.D.O.E.

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Date submitted: 22 Jul 2009 Electronic form version 1.4