Abstract Submitted
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Confinement and dynamics of neutral beam injected fast ions in the MST Reversed Field Pinch[1] D. LIU, F. ALMAGRI, J.K. ANDERSON, D.J. DEN HARTOG, M.D. NORNBERG, J.S. SARFF, J. WAKSMAN, UW-Madison, G. FIKSEL, Univ. of Rochester, P. DEICHULI, V.I. DAVYDENKO, A.A. IVANOV, S.V. POLOSATKIN, N. STUPISHIN, BINP, R. ANDRE, D. MCCUNE, PPPL — The new 1MW neutral beam injector (97% H, 3% D) on MST provides a good test-bed for study of fast ions in the RFP. Analysis of the D-D fusion neutron flux decay at beam turn-off reveals that the confinement time of the fast ions is at least 10 ms, ten-fold larger than the thermal conferment times for particles and energy in standard stochastic plasmas. Also, the fast ion confinement increases with magnetic field strength. Dependence of fast ion confinement on plasma parameters, beam energy, and injection direction will be characterized and compared with TRANSP simulations. In addition, an advanced neutral particle analyzer and a prototype of fast ion charge exchange spectroscopy are under construction to measure neutralized fast ions and induced Doppler-shifted Hα light, respectively, thereby resolving fast ion density and energy distribution. Initial measurements of fast-ion dynamics during magnetic reconnection events will be presented.

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