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Suppression of Core-Resonanat Mode by Neutral Beam Injection in MST J.K. ANDERSON, D. LIU, D.J. DEN HARTOG, C.B. FOREST, V.V. MIRNOV, M.D. NORNBERG, J.S. SARFF, J. WAKSMAN, University of Wisconsin, G. FIKSEL , University of Rochester, LLE , V.I. DAVYDENKO, P. DEICHULI, A.A. IVANOV, N. STUPISHIN, Budker Institute of Nuclear Physics — The reversed field pinch is characterized by a monotonically decreasing safety factor profile which allows multiple resonant m=1 modes. The amplitude of the innermost mode is substantially reduced during NBI experiments, where up to 1 MW of 25kV H atoms are injected and well-confined near the magnetic axis. The position and toroidal harmonic of the innermost mode can be controlled by imposing boundary conditions on the toroidal magnetic field. In cases where the n=5 mode is resonant, a rapid and robust reduction in mode amplitude (up to 40%) is observed during NBI. In deeper reversed plasmas ($q(0) < 0.2$), a substantial reduction of the n=6 mode amplitude is observed. Only the innermost mode is affected in either case. Several mechanisms could be responsible for the local change in stability; one candidate is FLR effects of fast ions in the vicinity of an island. A methodical scan of the position of the innermost rational surface (while holding approximately fixed the localized fast ion population) is used to investigate the plausibility of fast ion stabilization in MST. Work supported by USDOE.

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