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Feasibility study of off-axis NBI in the Reversed Field Pinch[1] J.K. ANDERSON, W. CAPECCHI, J. KIM, J.J. KOLINER, M.D. NORNBERG, J.A. REUSCH, University of Wisconsin, L. LIN, UCLA — The reversed field pinch is a unique and complementary magnetic configuration for the study of energetic ion driven instabilities and their effects. EP-driven modes (destabilized by fast ion spatial gradients) have been discovered in MST with use of 1 MW tangentially-oriented neutral beam injection (NBI). More widely ranging studies of EP modes would be possible in MST with control of the fast ion density profile: the tangential NBI can only generate a core-localized, high pitch fast ion population. Here we present an initial physics study on the feasibility of off-axis NBI in the RFP. Simple deposition calculations suggest a flexible mounting system on a single large port allows localized placement of the fast ion source over a significant radial range ($r/a \sim 0.1 - 0.6$). TRANSP/ NUBEAM calculations are used with a subset of MST equilibria to predict classical behavior of fast ions in these injection geometries. Ion orbit tracing through the tearing-mode-induced turbulent magnetic field is performed with RIO to evaluate the behavior of fast ions at mid-radius. Expected fast ion density profiles and implications on mode stability are presented for a variety of MST discharges.

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