

Abstract Submitted
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MGI and CHI Research on NSTX-U R. RAMAN, T.R. JARBOE, B.A. NELSON, Univ. of Washington, D. MUELLER, F. EBRAHIMI, S.C. JARDIN, M. ONO, J.E. MENARD, PPPL — Results from NSTX Transient Coaxial Helicity Injection (CHI) experiments have demonstrated generation of 300kA start-up currents, and when these discharges were coupled to induction they attained 1MA of plasma current consuming 65% of the inductive flux of standard inductive-only discharges in NSTX. The NSTX-U device will have numerous improvements to enhance transient CHI capability, and simulations suggest that the NSTX-U coil configuration supports CHI plasma currents in excess of 400kA. Design studies of CHI for a ST-FNSF have identified viable reactor installation concepts. In support of disruption mitigation studies, three ITER-type MGI valves in a J X B torque-cancelling configuration have been built and tested in an off-line test stand, including in the presence of externally imposed magnetic field. FY16 research on NSTX-U will study the MGI gas assimilation efficiency, and the advantages of gas injection into the private flux region. This work is supported by U.S. DOE Contracts: DE-AC02-09CH11466, DE-FG02-99ER54519 AM08, and DE-SC0006757.

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