

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Status and Plans for Transient CHI and MGI Experiments on NSTX-U R. RAMAN, T.R. JARBOE, B.A. NELSON, Univ. of Washington, D. MUELLER, F. EBRAHIMI, G. TAYLOR, S.C. JARDIN, 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. TSC simulations have been used to guide the choice of NSTX-U coil currents for initial CHI operations in FY14, which show more than a doubling of the CHI current generation potential in NSTX-U. The NIMROD code has been used to understand basic physics trends, which are consistent with scaling relations that have been used to guide the CHI design on NSTX and NSTX-U. In support of ITER disruption mitigation studies, an ITER-type MGI valve has been designed, built and tested, including in the presence of externally imposed magnetic fields. FY14 research on NSTX-U will use three of these valves positioned at different poloidal locations to study the MGI gas assimilation efficiency. This work is supported by U.S. DOE Contracts: DE-AC02-09CH11466, DE-FG02-99ER54519 AM08, and DE-SC0006757.

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Date submitted: 11 Jul 2014

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