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Progress on CHI and MGI Experiments on NSTX R. RAMAN, T.R. JARBOE, B.A. NELSON, University of Washington, Seattle, WA, D. MUELLER, S.P. GERHARDT, H.W. KUGEL, G. TAYLOR, Princeton Plasma Physics Laboratory, Princeton, NJ — Discharges initiated by Transient Coaxial Helicity Injection (CHI) in NSTX have attained peak toroidal plasma currents up to 300 kA. When induction from the central solenoid is then applied, these discharges develop up to 300 kA additional current compared to discharges initiated by induction only. CHI initiated discharges in NSTX have achieved 1 MA of plasma current using only 258 mWb of solenoid flux whereas standard induction-only discharges require about 50% more solenoid flux to reach 1 MA. In addition, the CHI-initiated discharge has lower plasma density and a low normalized internal plasma inductance of 0.35, as needed for achieving advanced scenarios in NSTX. In support of ITER disruption mitigations studies, two Massive Gas Injection (MGI) assemblies have been installed on NSTX. These would allow for a comparison of the benefits of injecting gas from the lower divertor region into the private flux region and the high field side region versus injection from the conventional mid-plane region. This work supported by U.S. DOE Contracts DE-AC02-09CH11466 and DE-FG02-99ER54519 AM08.

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