Abstract Submitted
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Absorber arc mitigation during CHI on NSTX[1] D. MUELLER, M.G. BELL, A.L. ROQUEMORE, Princeton University, R. RAMAN, B.A. NELSON, T.R. JARBOE, University of Washington — A method of non-inductive startup, referred to as transient coaxial helicity injection (CHI), was successfully developed on the Helicity Injected Torus (HIT-II) experiment and employed on the National Spherical Torus Experiment (NSTX). This technique has produced 160 kA of plasma current on closed flux surfaces. Over 100 kA of the CHI current has been coupled to inductively driven current ramp-up. In transient CHI, a voltage is applied across the insulating gap separating the inner and outer vacuum vessel and gas is introduced at the lower gap (the injector). The resulting current in the injector follows the helical magnetic field connecting the electrodes, forms a toroidal current and expands into the vacuum vessel. At higher CHI current, the poloidal field due to the plasma can connect the inner and outer vessels at the insulating gap at the top (called the absorber) of NSTX and lower the impedance there. This results in arcs in the absorber which are a source of impurities and which reduce the desired current in the injector. Two coils installed in the absorber will be used to reduce the magnetic field across the absorber gap and mitigate the absorber arcs.

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