

Abstract Submitted  
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**Comparison of resistive MHD simulations and experimental CHI discharges in NSTX**<sup>1</sup> E.B. HOOPER, LLNL, C.R. SOVINEC, U. Wisconsin, R. RAMAN, U. Washington, F. FATIMA, PPPL — Resistive MHD simulations using NIMROD [1] simulate CHI discharges for NSTX startup plasmas [2]. Quantitative comparison with experiment ensures that the simulation physics includes a minimal physics set needed to extend the simulations to new experiments, e.g. NSTX-U. Important are time-varying vacuum magnetic field, ohmic heating, thermal transport, impurity radiation, and spatially-varying plasma parameters including density. Equilibria are compared with experimental injector currents, voltages and parameters including toroidal current, photographs of emitted light and measurements of midplane temperature profiles, radiation and surface heating. Initial results demonstrate that adjusting impurity radiation and cross-field transport yields temperatures and injected-current channel widths similar to experiment. These determine the plasma resistance, feeding back to the impedance on the injector power supply.

[1] E. B. Hooper, et al., to be published; F. Ebrahimi, et al., to be published.

[2] R. Raman et al., Phys. Rev. Letters **104**, 095003 (2010).

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