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Plasma injection and evolution in CHI simulations of NSTX[1] E.B. HOOPER, Lawrence Livermore Natl Lab, C.R. SOVINEC, University of Wisconsin, R. RAMAN, University of Washington — Simulations of co-injection of helicity and plasma into a low density plasma in NSTX are compared with experiment, extending previous simulations that assumed helicity injection into a constant density plasma [1, 2]. The background plasma response is minimized by density-dependent artificial radiation. Helicity and plasma flow from the slot at the ExB velocity due to the applied voltage. A simple model of impurity radiation from the injected plasma improves agreement with the temperature during experimental plasma buildup and following flux closure after injection [3]. The simulations also explore the effect of impurity concentration near the bottom plate where impurities are generated at the footprints of the currents associated with the injection. As in previous simulations [4], non-axisymmetric flows and currents are generated during injection but have little impact on the final closed-flux configuration.

[1] E. B. Hooper, et al., Phys. Plasmas **20**, 092510 (2013).
[2] F. Ebrahimi, et al. Phys. Plasmas **20**, 090702 (2013); Phys. Plasmas **21**, 0566109 (2014).
[3] E. B. Hooper, et al., Bull. Am. Phys. Soc. **59**(16), NP8.23 (2013).
[4] E. B. Hooper, et al., Bull. Am. Phys. Soc. **56**(12), 255 (2011).

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