

Abstract Submitted
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Numerical Simulation of Non-inductive Startup in the Pegasus Toroidal Experiment¹ J.B. O'BRYAN, C.R. SOVINEC, T.M. BIRD, University of Wisconsin–Madison — Nonlinear numerical computation is used to investigate DC helicity injection from washer-gun plasma sources in the Pegasus Toroidal Experiment (Univ. of Wisconsin). Resistive MHD simulations with the NIMROD code (nimrodteam.org) are used to model non-inductive startup, with emphasis on the relaxation of the non-axisymmetric current channels into a “tokamak-like” plasma. Simulations utilize fully three-dimensional, anisotropic, temperature-dependent thermal conductivity corrected for regions of low-magnetization [Braginskii, *Reviews of Plasma Physics*, 1965], temperature-dependent resistivity, and Ohmic heating. Off-diagonal Fourier-component coupling is investigated as a means of improving preconditioning of the temperature advance.

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