

Abstract Submitted
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NIMROD Modeling of HIT-SI and HIT-SI3 KYLE MORGAN, TOM JARBOE, University of Washington — Previous two-fluid simulations of the HIT-SI experiment using the NIMROD code at low injector frequencies have served as a launching point for modeling of both pressure effects related to Steady Inductive Helicity Injection (SIHI) and the new HIT-SI3 injector configuration. Results from the end of HIT-SI operations have encouraged the inclusion of pressure effects in NIMROD modeling. Previous simulations assumed uniform temperature and density profiles, producing good agreement with low injector frequency operations but poor agreement at high injector frequencies ($f_{inj} > \sim 40$ kHz). Experimental observations at these higher frequencies give evidence of pressure driven activity, as well as a high volume averaged β . A new series of simulations which allow for the evolution of density and temperature to examine the influence of pressure gradients have been conducted and are compared with both experimental and zero-beta modelled results. The agreement with experimental results is improved from this addition to the model. In addition, this model is applied to examine differences observed with the 3-injector configuration (HIT-SI3) in magnetic profile. Work supported by US DOE.

Kyle Morgan
University of Washington

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