

Abstract Submitted
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NIMROD Modeling of the Compact Toroidal Hybrid (CTH)¹ J.D. HEBERT, J.D. HANSON, S.F. KNOWLTON, D.A. MAURER, Auburn University, M.G. SCHLUTT, C.C. HEGNA, University of Wisconsin-Madison, S.E. KRUGER, Tech-X Corporation — The 3D extended MHD code NIMROD [1] has been modified to model the non-axisymmetric vacuum fields of the Compact Toroidal Hybrid (CTH) torsatron. Previous results [2] have shown good agreement between modeled and experimental vacuum fields as well as the formation and growth of island structures in discharges with driven current at zero β and constant conductivity. Modeling of current-driven discharges with self consistent Ohmic heating and finite β will be presented. A new post-processor to calculate the expected signals from experimental diagnostics using NIMROD simulation data is under development. Preliminary comparisons using magnetic diagnostic data from CTH will be shown.

[1] C.R. Sovinec, A.H. Glasser, D.C. Barnes, T.A. Gianakon, R.A. Nebel, S.E. Kruger, D.D. Schnack, S.J. Plimpton, A. Tarditi, M.S. Chu and the NIMROD Team, “Nonlinear Magnetohydrodynamics with High-order Finite Elements,” *Journal of Computational Physics*, 195, 355 (2004).

[2] M. G. Schlutt et al, submitted to *Nucl. Fusion* (2012)

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