Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

VMEC Initialized NIMROD Simulations of CTH[1] N.A. ROBERDS, J.D. HANSON, M. CIANCIOSA, J. HEBERT, Auburn University, S.E. KRUGER, J.R. KING, Tech-X Corporation — Using an experimentally reconstructed equilibrium for initial conditions, a whole device fluid simulation can be used to gain insight into the dynamics of an experimental shot. A module has been developed to initialize the extended MHD code NIMROD [1] using the output from VMEC [2]. VMEC is a 3D inverse equilibrium code used in reconstructions of Compact Toroidal Hybrid (CTH) discharges. While this module is essential for simulations of CTH based on reconstructions, it could also be useful for simulating tokamaks and other devices where 3D shaping of the equilibrium fields is important. Results are presented for free boundary simulations of CTH in support of efforts to investigate disruptions. Additionally, a NIMROD simulation of the Biro-Wu MHD shocktube benchmark case is presented.

[1] C.R. Sovinec et al, J. Comput. Phys. 195, 355 (2004).
[2] S. P. Hirshman and J. C. Whitson, Phys. Fluids 26 3553 (1983).

[1]Work supported by US. Department of Energy Grant No. DEFG-0203-ER-54692.

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Date submitted: 10 Jul 2014 Electronic form version 1.4