Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Overview of Recent NIMROD-Based Computational Work at the Univ. of Wisconsin-Madison[1] C.R. SOVINEC, A.L. BECERRA, T.A. BECHTEL, K.J. BUNKERS, T.A. COTE, E.C. HOWELL, J.B. O'BRYAN, J.P. SAUPPE, P. ZHU, University of Wisconsin-Madison — The NIMROD code (https://nimrodteam.org) is a versatile and well tested computational tool for modeling macroscopic dynamics in magnetized plasma. The Center for Plasma Theory and Computation at the Univ. of Wisconsin-Madison presently applies NIMROD in studies of magnetic relaxation in reversed-field pinches and spheromaks, non-inductive current drive in spherical tokamaks, vertical-displacement instability, resistive-wall mode, edge localized modes and resonant magnetic perturbation in tokamaks, and magnetic topology evolution in a stellarator-tokamak hybrid. Recent contributions to NIMROD development include spectral-element stabilization, nodal trigonometric basis functions, resistive-wall options, and magnetization effects in viscosity. A summary of this application and development work is presented, along with a perspective on NIMROD modeling.

[1]Work supported by the U.S. Dept. of Energy.

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Date submitted: 11 Jul 2014 Electronic form version 1.4