

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Overview of recent results and future plans on the Compact Toroidal Hybrid experiment¹ D.A. MAURER, M.C. ARCHMILLER, M.R. CIANCIOSA, D.A. ENNIS, J.D. HANSON, G.J. HARTWELL, J.D. HEBERT, J.L. HERFINDAL, S.F. KNOWLTON, X. MA, S. MASSIDDA, M.D. PANDYA, N.A. ROBERDS, P.J. TRAVERSO, Auburn University — Goals of the Compact Toroidal Hybrid (CTH) experiment are to: (1) investigate the dependence of plasma disruptive behavior on the level of applied 3D magnetic shaping, (2) test and advance 3D computational modeling tools in strongly shaped plasmas, and (3) study the implementation of a new island divertor. Progress towards these goals and other developments are summarized. The disruptive density limit is observed to exceed the Greenwald limit as the vacuum transform is increased, but a threshold for disruption avoidance is not observed. Low q operation is routine, with low q disruptions avoided when the vacuum transform is raised to the value of 0.07 or above. Application of vacuum transform has been demonstrated to reduce and eliminate the vertical drift of elongated discharges that would otherwise be vertically unstable. Current efforts at improved equilibrium reconstruction and diagnostic development will be overviewed. NIMROD is used to model the current ramp phase of CTH and 3D shaped sawtooth behavior. An island divertor design has begun with connection length studies and initial EMC3-Eirene results to model energy deposition on divertor plates located in an edge 1/3 island.

¹This work is supported by U.S. Department of Energy Grant No. DE-FG02-00ER54610

David Maurer
Auburn University

Date submitted: 23 Jul 2015

Electronic form version 1.4