

Abstract Submitted
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Overview of Compact Toroidal Hybrid research program progress and plans¹ DAVID MAURER, DAVID ENNIS, JAMES HANSON, GREGORY HARTWELL, JEFFREY HERFINDAL, STEPHEN KNOWLTON, XINGXING MA, MIHIR PANDYA, NICHOLAS ROBERDS, KEVIN ROSS, PETER TRAVERSO, Auburn University — disruptive behavior on the level of applied 3D magnetic shaping; (2) test and advance the V3FIT reconstruction code and NIMROD modeling of CTH; and (3) study the implementation of an island divertor. Progress towards these goals and other developments are summarized. The disruptive density limit exceeds the Greenwald limit as the vacuum transform is increased, but a threshold for avoidance is not observed. Low- q disruptions, with $1.1 < q(a) < 2.0$, cease to occur if the vacuum transform is raised above 0.07. Application of vacuum transform can reduce and eliminate the vertical drift of elongated discharges that would otherwise be vertically unstable. Reconstructions using external magnetics give accurate estimates for quantities near the plasma boundary, and internal diagnostics have been implemented to extend the range of accuracy into the plasma core. Sawtooth behavior has been reproducibly modified with external transform and NIMROD is used to model these observations and reproduces experimental trends. An island divertor design has begun with connection length studies to model energy deposition on divertor plates located in an edge 1/3 island as well as the study of a non-resonant divertor configuration.

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David Maurer
Auburn University

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