

Abstract Submitted  
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**Initial Operation of the Compact Toroidal Hybrid Experiment<sup>1</sup>**

STEPHEN KNOWLTON, Auburn University, GREGORY HARTWELL, RALPH KELLY, CHRISTOPHER MONTGOMERY, JOSHUA PETERSON, ADAM STEVENSON, TYLER DART, Auburn University — The Compact Toroidal Hybrid (CTH) is a five-field period, low aspect ratio ( $R/a \geq 3.5$ ) torsatron that uses ohmic current to investigate current-driven ideal and resistive instabilities and disruptions in stellarators, and to test new 3-D equilibrium reconstruction procedures for helical confinement devices. The device parameters are  $R = 0.75$  m,  $a_{VESSEL} = 0.29$  m,  $B \leq 0.6$  T. A continuously-wound coil produces the main helical field, and a set of ten toroidal field coils allows the vacuum rotational transform to be varied in the range  $t_{VAC}(a) = 0.2 - 0.5$ . Equilibrium, shaping, and ohmic current drive are provided by four independent poloidal field coil sets. Initial tests of plasma generation by electron cyclotron heating were performed at 0.1 T. Following vacuum field mapping studies, second harmonic electron cyclotron heating at 18 GHz will be pursued using an initial diagnostic set including probes,  $H_\alpha$  monitors, and a microwave interferometer. Ohmic operation with equilibrium reconstruction will be implemented subsequent to these studies.

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