

Abstract Submitted
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Reconstruction of Plasma Equilibria Using Magnetic Diagnostics on the Compact Toroidal Hybrid¹ B.A. STEVENSON, J.D. HANSON, G.H. HARTWELL, S.F. KNOWLTON, Auburn University — The ability to reconstruct fully three-dimensional plasma equilibria is becoming increasingly important in today's fusion energy experiments. Reconstructions of plasma equilibria in the Compact Toroidal Hybrid (CTH) using magnetic diagnostics and the V3FIT equilibrium reconstruction code [1] will be presented. The CTH is a heliotron-type device in which the magnetic configuration can be strongly modified by an ohmically-driven plasma current. Equilibria on CTH are reconstructed using signals from segmented and full Rogowski coils which provide the experimental input used within V3FIT. Significant reductions in systematic errors have resulted in more consistent reconstruction results. Many of the remaining differences between the reconstructed and experimental signals have been shown to be time dependent. The time evolution of the reconstructed current density profile for a series of plasma conditions will be presented. An array of Hall probes is used to measure the poloidal magnetic field within the plasma. These direct magnetic field measurements have been compared to those calculated from the reconstructed plasma.

[1] J. D. Hanson et al, Nucl. Fusion 49, 075031 (2009)

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