

Abstract Submitted
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Vacuum Field Mapping of Magnetic Equilibria and Islands in the Compact Toroidal Hybrid Experiment¹ J.T. PETERSON, J. HANSON, G.J. HARTWELL, S.F. KNOWLTON, C. MONTGOMERY, J. MUNOZ, Physics Department, Auburn University — Vacuum field mapping experiments are being performed on the Compact Toroidal Hybrid (CTH) to get an accurate model the magnetic coils and to minimize magnetic islands. Using the electron-beam, phosphor-coated screen/wand techniques, comparisons are made between the designed and experimentally achieved magnetic configurations. A Single Value Decomposition (SVD) technique uses the modeled and experimentally measured magnetic axis position and rotational transform to attempt to give a more accurate model of the CTH coils. Furthermore, magnetic islands are observed at low order rational surfaces. Corrections to reduce the resonant island sizes are computed with the Fix Stellarator code and applied by a set of up to 15 circular error-correction coils. We have successfully minimized the size of the island on the $iota = 1/3$ rational surface. Efforts are underway to reduce the island width of multiple island chains in the same equilibrium.

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