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Magnetic Field Mapping Results from the Compact Toroidal Hybrid Experiment[1] J.T. PETERSON, G.J. HARTWELL, S.F. KNOWLTON, R.F. KELLY, C. MONTGOMERY, Auburn University — The Compact Toroidal Hybrid (CTH) is a recently completed device used for the study of the physics of magnetically confined fusion energy related plasmas. CTH is a five field-period, low aspect ratio ($R/a_{PLASMA} \geq 3.5$, $R = 0.75$ m, $a_{VESSEL} = 0.29$ m, $B \leq 0.6$ T) torsatron with a highly flexible vacuum magnetic field configuration for stability studies. The main helical field is produced by a continuously-wound helical coil, and the vacuum rotational transform is varied with a set of toroidal field coils. Four independent poloidal field coil sets provide equilibrium control and shaping, and are also used for ohmic current drive. Results of electron beam field mapping will be presented. Electron beam field-mapping is a technique use to evaluate the vacuum field configuration using a movable electron gun and a phosphor-coated screen. These experiments compare the actual magnetic configuration with the design field, verify the planned flexibility and the range of accessible magnetic configurations, and identify and correct vacuum field errors.

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