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Magnetic diagnostics and plans for polarimetry on the Compact Toroidal Hybrid torsatron[1] B.A. STEVENSON, G. HARTWELL, S. KNOWLTON, J. HANSON, Physics Department, Auburn University — Plasma equilibria with significant levels of toroidal plasma current are investigated on the Compact Toroidal Hybrid (CTH) to assess the nature of current-driven instabilities in stellarators. Reconstruction of current-driven equilibria is being undertaken with the new V3FIT 3D magnetic equilibrium reconstruction code. Magnetic diagnostics for reconstruction include single and multi-part Rogowski coils, B-dot probes, and a diamagnetic loop. A 1-mm polarimeter / interferometer system for current profile measurements is also being investigated. Modeling results for the polarimeter diagnostic will be shown. These simulations show that the required frequency range needed to maximize the polarimetric phase shift while minimizing refractive effects in CTH plasmas is near 220 GHz. Initial reconstruction results using V3FIT will be shown using data from the internal and external Rogowski coil sets.

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