

Abstract Submitted
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Coil optimization for a high- β stellarator-tokamak hybrid¹ B. SCHLOMANN, A.S. WARE, University of Montana, D.A. SPONG, Oak Ridge National Laboratory — Magnetic coil configurations are developed for a drift-optimized, tokamak-stellarator hybrid that is stable to both pressure- and current-driven modes for high values of β . Previous work on this configuration [A. S. Ware, *et al.*, Phys. Rev. Lett, 89, 125003 (2002)] was carried out using a fixed-boundary equilibrium (i.e., with no set of external coils). Here, we present initial work to produce a realizable coil set for such a configuration. This work is done using the COILOPT code to develop an initial coil set and the STELLOPT code to enhance the quality of the resulting free-boundary equilibria. Since this is a hybrid device, the initial modular coil sets have the advantage of being simpler than modular coils from recent stellarator design efforts (such as QPS and NCSX). The stability and confinement properties of the resultant optimized free-boundary configuration will be tested.

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