

Abstract Submitted
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Extension of the SIESTA Equilibrium Code to Non-Stellarator Symmetry¹ M.R. CIANCIOSA, S.P. HIRSHMAN, S.K. SEAL, Oak Ridge National Lab — Resonant magnetic perturbation (RMP) fields applied for edge localized mode (ELM) mitigation, break the nested flux topology of nominally axisymmetric tokamaks. Understanding the implications of this, requires equilibrium codes that can account for non-nested surface topologies. SIESTA is a 3D equilibrium code that allows for islands and stochastic regions. With the assumption of stellarator symmetry, SIESTA has successfully solved island equilibria in RMP perturbed tokamaks (Hirshman *et. al.* J. Plasma Phys. 2016). However, this assumption of stellarator symmetry limits the application of SIESTA to equilibria with up-down symmetry. Diverted tokamaks and the stellarator symmetry breaking trim coils of W7-X require an extension of SIESTA allowing for up-down asymmetry. We present an initial implementation of SIESTA without stellarator symmetry and study the effects of 3D asymmetry on DIII-D and W7-X plasmas.

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