Abstract Submitted
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High-beta extended MHD simulations of stellarators with Spitzer resistivity[1] TORRIN BECHTEL, Univ of Wisconsin, Madison — The nonlinear, extended MHD code NIMROD is used to study high-beta, 3D magnetic topology evolution of a toroidal stellarator. The configurations under investigation derive from the geometry of the Compact Toroidal Hybrid (CTH) experiment. However, the vacuum rotational transform profile is artificially raised by modifying applied magnetic fields in an effort to examine the sensitivity of low order rational surfaces and/or magnetic islands. Finite beta plasmas are created using a volumetric heating source and temperature dependent anisotropic heat conduction and resistivity. Flux surface dependent temperature and density profiles are used for the initial condition so that Spitzer resistivity can be applied. The onset of MHD instabilities and nonlinear consequences are monitored as a function of beta as well as the fragility of the magnetic surfaces.

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