Abstract Submitted
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Resistive MHD Simulation of Quasi-Single-Helicity State on KTX[1] BING LUO, University of Science and Technology of China, PING ZHU, University of Science and Technology of China,University of Wisconsin-Madison, HONG LI, WANDONG LIU, University of Science and Technology of China — The potential formation of quasi-single-helicity (QSH) state on Keda Torus eXperiment (KTX) is evaluated in resistive MHD simulations using the NIMROD code. In this work, we focus on the effects of finite resistivity on the mode structure and characteristics of the dominant linear and nonlinear resistive tearing-mode instability in a finite β, cylindrical reversed field pinch model configuration for KTX. In the typical resistivity regimes of KTX where Lundquist number $S = 10^5$, the plasma reaches a steady QSH state after the initial transient phase of multiple helicities. The dominat mode of the QSH state is developed from the dominat linear tearing mode instability. The conditions for and the variations of the formation of QSH states in different resistivity regimes of KTX will be reported and discussed.

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