

Abstract Submitted
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Numerical modeling of magnetic island structure in high-beta NSTX plasmas J. STIMATZE¹, California State University, Chico / SULI, J. MENARD, Princeton Plasma Physics Laboratory, Princeton University — Recent investigation into the dynamics of internal kink modes has yielded significant insight into core magnetic island formation and mode saturation in NSTX high-beta plasmas. Using a simplified island model and ultra-soft x-ray (USXR) data from the National Spherical Torus Experiment (NSTX), it is possible to reconstruct the associated mode configuration by fitting island simulation parameters to the recorded data. Existing code to perform these calculations has been logically restructured and improved with detailed documentation, a graphical user interface, and self-documenting programming conventions. Additionally, the simulation has been extended to improve its accuracy through conservative multi-parameter scanning. This improvement allowed further extensions that provided a significant increase in the time-step resolution of the simulation, providing more detailed information on the time evolution of the island and mode saturation.

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