Abstract Submitted
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NIMROD studies of RWM stability and non-linear evolution for NSTX equilibria[1] A.L. BECERRA, C.C. HEGNA, C.R. SOVINEC, University of Wisconsin, Madison, S.E. KRUGER, J.R. KING, Tech-X Corp., S.A. SABBAGH, Columbia University — We make use of the generalized thin resistive wall boundary condition recently implemented in NIMROD to study the linear and nonlinear RWM stability properties of a series of reconstructed NSTX equilibria. The boundary condition operates by matching the magnetic field inside the computational domain with external fields found using the Green's function method in the GRIN vacuum-field solver at the wall, and is valid for toroidal geometries with poloidal asymmetry as well as for cylindrical geometries. Time series of NSTX equilibrium reconstructions from two shots whose normalized betas span the no-wall limit are studied. The critical beta for RWM onset found by NIMROD is compared with the stability limit predicted by ideal MHD code DCON. Scans with varying wall parameters are also performed to demonstrate the approximately linear relationship between growth rate and wall resistivity, and to test the performance limits of the boundary condition. The stability of these equilibria for n>1 is also examined, with both linear and non-linear runs in preparation for examining the non-linear effects due to toroidal rotation.

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