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Studies of NSTX equilibria with beta above the n=1 no-wall limit using new toroidal resistive wall boundary condition in NIMROD[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 GRIN vacuum-field solver at the wall, and is valid for toroidal geometries with poloidal asymmetry as well as for cylindrical geometries. A time series of NSTX equilibrium reconstructions from a single shot with a range of normalized beta above and below the no-wall limit is used to benchmark this boundary condition by comparing the beta computed for RWM onset with the stability limit predicted by DCON. Scans with varying wall parameters are also performed to demonstrate the approximately linear relationship between growth rate and wall resistivity, and to determine the wall parameters that are the best match to the NSTX device. The stability of these equilibria for n>1 is also tested, with both linear and non-linear runs.

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