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Initial Computations of Vertical Displacement Events with NIMROD[1] KYLE BUNKERS, C.R. SOVINEC, Univ of Wisconsin, Madison — Disruptions associated with vertical displacement events (VDEs) have potential for causing considerable physical damage to ITER and other tokamak experiments. We report on initial computations of generic axisymmetric VDEs using the NIMROD code [Sovinec, *et. al.*, JCP **195**, 355 (2004)]. An implicit thin-wall computation has been implemented to couple separate internal and external regions without numerical stability limitations. A simple rectangular cross-section domain generated with the NIMEQ code [Howell and Sovinec, CPC (2014)] modified to use a symmetry condition at the midplane is used to test linear and nonlinear axisymmetric VDE computation. As current in simulated external coils for large-R/a cases is varied, there is a clear $n = 0$ stability threshold which lies below the decay-index criterion for the current-loop model of a tokamak to model VDEs [Mukhovatov and Shafranov, Nucl. Fusion **11**, 605 (1971)]; a scan of wall distance indicates the offset is due to the influence of the conducting wall. Results with a vacuum region surrounding a resistive wall will also be presented. Initial nonlinear computations show large vertical displacement of an intact simulated tokamak.

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