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NIMROD Computation of Plasma Response to Resonant Magnetic Perturbations in DIII-D[1] P. ZHU, C.R. SOVINEC, University of Wisconsin-Madison — Plasma response is believed to be a key element in the suppression and mitigation of edge localized modes by resonant magnetic perturbations (RMPs) in tokamak experiments. We compute the plasma response to RMP in DIII-D discharges #126006 and #142603 using the extended MHD models implemented in the NIMROD code. The I-coil vacuum field is imposed as the boundary condition at the tokamak wall location. Plasma responses to RMP are obtained by following the linear and nonlinear evolution of the configuration into steady state subject to the RMP boundary condition. Such a steady state can be only reached if the unstable toroidal component edge localized modes in these discharges are suppressed by physical mechanisms in the MHD model or excluded numerically from the computation. The rotational and two-fluid effects on the toroidal and poloidal spectra of the perturbed magnetic field on each magnetic flux surface in response to RMPs are evaluated in these simulations.

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Ping Zhu
University of Wisconsin-Madison

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