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Computation of Low-n Plasma Response to Resonant Magnetic Perturbations in DIII-D Experiments[1] PING ZHU, University of Science and Technology of China, University of Wisconsin-Madison, CARL R. SOVINEC, University of Wisconsin-Madison — To understand the effects of resonant magnetic perturbations (RMPs) on tokamak plasmas, we have computed the plasma response to RMPs in DIII-D experiments #126006 and #142603 using the extended MHD models implemented in the NIMROD code. The I-coil vacuum field is imposed as the initial perturbations and as the boundary conditions at the tokamak wall location. Whereas the edge pedestals in these discharges are found unstable to the high-n perturbations, low-n plasma responses to RMP are obtained by following the evolution of these low-n components into quasi-steady state subject to the RMP initial and boundary conditions. Here n is the toroidal mode number. Computation results indicate that the existence and properties of the steady states for the low-n plasma response strongly depend on the plasma dissipation regime, equilibrium rotation, and two-fluid effects. Progress on the benchmarking with other 3D codes will be discussed.

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