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Modeling RMP Footprint in NIMROD[1] E.C. HOWELL, J.R. KING, S.E. KRUGER, Tech-X, D. ORLOV, R.A. MOYER, UCSD, T. EVANS, General Atomics — NIMROD calculations are used to study RMP induced footprint structures in DIII-D. The RMP fields alter the magnetic field structure near the divertor, splitting the separatrix in a homoclinic tangle of spiral lobes. Large asymmetric heat and particle fluxes may result where these lobes intersect the divertor (the magnetic footprint). Impurity radiation in the divertor may act to smooth out the heat flux reducing the asymmetry. Accurate modeling of the footprint, including the plasma response, is needed to predict and control the asymmetric fluxes to the divertor. Due to the chaotic nature of the magnetic field lines in the homoclinic tangle, the magnetic footprint structure is sensitive to the plasma response to the RMP. Here we use resistive MHD to model the plasma response. The model allows field penetration to drive the formation of islands, and equilibrium flow profiles are included to account for the plasma screening. Modeling shows that coupling to a marginally stable core 1/1 modes amplifies the RMP excited edge modes and that this coupling is sensitive to the core rotation. The effect of this amplification on the edge stochasticity and footprint structure is investigated using field line integration.

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