Footprint structures due to resonant magnetic perturbations in DIII-D

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ABSTRACT

Numerical modeling of the typical footprint structure due to toroidal mode number $n = 3$ resonant magnetic perturbation in DIII-D is shown in high resolution. The internal vacuum magnetic field structures of the footprints are resolved. Unstable manifolds of the separatrix and the $q = 4$ resonant surface are presented and their interaction with the divertor target plates is discussed. Based on the manifold analysis, the boundaries and interior structures of the footprints are explained. A direct connection of all magnetic resonances inside the stochastic plasma volume to the target plates is verified.