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Evidence for Stochastic Effects in the DIII-D Boundary¹ R.A. MOYER, UCSD, T.E. EVANS, GA, T.L. RHODES, UCLA, J.G. WATKINS, SNL, C.J. LASNIER, LLNL, H. TAKAHASHI, PPPL — The DIII-D C-coil, designed to reduce locked and resistive wall mode effects, provides a resonant magnetic perturbation which also affects the plasma periphery. We have used the C-coil to produce stochastic layers inside the separatrix in diverted ohmic discharges. The properties of these layers are similar to those in limiter tokamaks with externally induced stochastic layers, including: increased global recycling, recycling profile broadening at the target plates, and localized flattening of the T_e and density profiles in the stochastic layer. The location of this stochastic layer is consistent with TRIP3D modeling. Signatures of stochastic boundary layers have also been seen in high power discharges, including: local profile flattening at the separatrix, bifurcated heat flux profiles, and asymmetric currents in the scrape-off layer. We compare discharges with indications of non-axisymmetric boundary effects to TRIP3D modeling, to determine the nature of the plasma response to edge stochastic layers at high auxiliary heating powers.

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