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Transport Changes Near q=1 Surfaces in the DIII-D Tokamak,* M.E. Austin, K.W. Gentle, *U. Texas-Austin*, C.T. Holcomb, *LLNL*, G.R. McKee, M.W. Shafer, *UW-Madison*, C.C. Petty, *GA*, T.L. Rhodes, *UCLA* – Spontaneous improvement in electron energy transport is routinely seen in the core of DIII-D discharges as the safety factor q approaches 1. For a range of discharge types with constant heating conditions, core χ_e is seen to decrease just before the first sawtooth, as evidenced by a sharp rise in central electron temperature. The behavior is similar to barriers observed in reverse shear plasmas near q_{min}=2,3; however, the picture is made more complicated by the onset and decay of a variety of MHD modes. Changes in turbulent fluctuation amplitudes are noted as well as the presence of high frequency coherent modes. Further evidence of q=1 transport barriers is exhibited in an off-axis EC-heated discharge where q_{min} is driven above 1 and unusual hollow T_e profiles with sharp changes in gradients are observed. We compare the data with models of transport barriers near low-order rational q surfaces.

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