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CDH-mode and Highly Radiative Discharges in the DIII-D Tokamak,¹ G.L. JACKSON, G.M. STAEBLER, A.W. LEONARD, T.W. PETRIE, M.J. SCHAFFER, W.P. WEST, General Atomics, S.L. ALLEN, R.D. WOOD, Lawrence Livermore National Laboratory, R. MAINGI, Oak Ridge Associated Universities, D.G. WHYTE, INRS-Energie et Materiaux — H-mode discharges with a highly radiating mantle and large radiating power fraction, $P_{\text{rad}}/P_{\text{tot}}$ up to 0.9, have been obtained in DIII-D under conditions of complete or nearly complete detachment using neon gas injection. Such discharges exhibit characteristics similar to the ASDEX-Upgrade CDH-mode including electron temperature in the private flux region of less than 2 eV and a large reduction (up to a factor of 5), in conducted heat flux to the floor. The energy confinement enhancement factor, H, is up to 1.6 times the ITER-89P empirical scaling relation. Most CDH-mode discharges in DIII-D were obtained with feedback control of radiated power using neon gas injection. We will discuss the global confinement properties of these discharges, neon density profiles, neon core penetration, and changes in the density, temperature and pressure profiles at the plasma edge.

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Prefer Oral Session
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