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Isotope Effect on H-mode Pedestal Characteristics in DIII-D Hydrogen and Deuterium Discharges T.H. OSBORNE, F.A. LAGGNER, General Atomics, C.F. MAGGI, JET, S. MORDIJCK, College of William and Mary, DIII-D TEAM — H-mode pedestal characteristics in 'ITER baseline' deuterium discharges on DIII-D with D neutral beam heating were compared to H discharges with H neutral beams. The discharges had ITER cross-sectional shape and aspect ratio, q_{95} =3.2, and β_N =1.8. The electron density at the top of the H-mode pedestal, n_e^{PED}, was matched using main chamber gas puff fueling. The H cases required more gas and more heating power to match n_e^{PED}, and β_N, giving ELM frequencies 4 to 8 times higher, contributing to lower carbon impurity concentration, $6n_C/n_e$ =0.1-0.25 compared to 0.6 for D. T_i/T_e =1for both H and D. The H discharges had outwardly shifted n_e profiles and narrower T_e pedestals giving lower T_e^{PED}, and T_i. The total pedestal pressure varied in H discharges with the ELM frequency but was generally lower than in D. At the lowest H ELM frequency H and D pressures were comparable partially due to the lower impurity dilution. Both H and D discharges had pressure gradients consistent with peeling-ballooning stability, and had widths consistent with the EPED width scaling, although the higher ELM frequency H discharges had pedestal pressures significantly below the EPED prediction. Results from recent experiments covering a wider range of conditions in H and D will be presented.

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