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DIII-D Quiescent H-mode Experiments With Co Plus Counter Neutral Beam Injection[1] K.H. BURRELL, W.P. WEST, P. GOHIL, T.H. OSBORNE, P.B. SNYDER, GA, M.E. FENSTERMACHER, LLNL, W.M. SOLOMON, PPPL — QH-mode discharges have all the confinement advantages of H-mode with none of the detrimental effects caused by ELMs. Edge density control is instead provided by an edge MHD mode, the edge harmonic oscillation (EHO). The edge parameter operating regime in QH-mode is consistent with peeling-ballooning mode stability calculations. Using these as a guide, we developed a double-null plasma shape that has a much broader range of edge stability compared to the upper single null plasmas used previously. Altering the edge rotation in these plasmas using the co plus counter NBI capability on DIII-D, we could control the edge density and pressure by a factor of $\sim$2 while retaining the ELM-free state. The change in rotation alters the EHO and, apparently, the edge particle transport. Pedestal densities up to $1/2$ the Greenwald density have been achieved in these plasmas, which is the same as the ELMing H-mode value. Accordingly, we now have a technique for actively controlling edge pressure in QH-mode plasmas.

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