Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Impact of Divertor Closure on Super-H mode Plasmas in DIII-D[1] T.M. WILKS, MIT-PSFC, P.B. SNYDER, M. KNOLKER, A. HYATT, D. ELDON, General Atomics, F. LAGGNER, PPPL, C. PAZ-SOLDAN, General Atomics, J. HUGHES, MIT-PSFC, B. GRIERSON, PPPL, A. JARVINEN, LLNL, DIII-D TEAM — Integration of a high pressure pedestal and high performance core with a radiative divertor is assessed in DIII-D Super H-mode (SH) plasmas. SH is a promising regime for future devices due to the high pedestal pressures able to be obtained via increased shaping and density. The peeling limited pedestal in the SH regime allows for high densities in the scrape off layer and pedestal foot, without degradation of the pedestal height. Previous DIII-D experiments have shown significant temperature reduction at the divertor plate and near-detachment conditions with nitrogen seeded SH-modes in an open divertor. In this poster, similar plasmas operating in the upper, more closed, divertor configuration in DIII-D are compared to those operating in the lower divertor. The SH pedestal in the closed divertor is more resilient to deuterium gas puffing than the open divertor configuration, showing less degradation in both the temperature and density pedestal with increased gas. The closed divertor configuration can tolerate fueling up to ˜145 Torr-L/s while maintaining a high performance core. The open divertor displays higher absolute separatrix densities and collisionalities with similar pedestal pressure due to increased pumping efficiency in the closed divertor configuration.

[1]Work supported by US DOE under DE-FC02-04ER54698, DE-SC0014264, DE-SC0019352, DE-FG02-08ER54984, DE-AC02-09CH11466, and DE-AC52-07NA27344

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Date submitted: 26 Jun 2020 Electronic form version 1.4