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DIII–D Progress in Advanced Tokamak Performance[1]

T.C. SIMONEN, T.S. TAYLOR, G.L. JACKSON, General Atomics, B.W. RICE, Lawrence Livermore National Laboratory — Advanced Tokamak (AT) operating modes provide promising paths toward attractive fusion power plant concepts as indicated by the ARIES-RS system study. DIII–D and the world tokamak community are making steady progress in AT performance and understanding. The highest performance AT discharges are transitory and achieve several relevant dimensionless plasma parameters simultaneously. This paper reports on recent DIII–D progress in extending the duration and in achieving simultaneous AT plasma performance measures. Figures of merit considered include normalized confinement quality and plasma beta. With $q_0 \gtrsim 1$ and no sawteeth, $\beta_N \sim 3.5$, $H_H \sim 1.5$, $q_{95} \sim 4$, $n_e/n_G \sim 0.5$, $T_e/T_i \lesssim 0.6$ are achieved simultaneously for a second ($4.5\,\tau_E$). Paths for future DIII–D research are given.

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☐ Prefer Oral Session
☒ Prefer Poster Session

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Special instructions: DIII–D Poster Session I (transport, turbulence, & stability): first poster

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