

Abstract Submitted  
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**Development and Characteristics of Hybrid Discharges With Low Rotation in the DIII-D Tokamak**<sup>1</sup> R.J. JAYAKUMAR, LLNL, C.C. PETTY, P.A. POLITZER, T.C. LUCE, R.J. LA HAYE, GA — Hybrid scenarios with high plasma pressure and moderate ( $\sim 40\%$ ) bootstrap current, offer the potential of high fusion gain and long duration plasmas in ITER. Stationary hybrid discharges lasting up to three resistive diffusion times and with fusion gain corresponding to an energy gain  $Q \gtrsim 10$  in ITER, have been achieved in the DIII-D tokamak. While past discharges were obtained at high toroidal rotation, rotation was reduced in recent experiments by injecting counter neutral beams, that have now become available. The hybrid discharge is seen to be sustained robustly with high performance and without triggering deleterious  $n = 1$  modes, at a rotation even at 20% with pure co-injection value. Thermal confinement, though decreased from high rotation cases, remains high ( $\sim 10\%$  higher than that projected for conventional ITER H-mode scenario). Analysis is under way to determine if the decrease is attributable to a decrease in ExB stabilization of turbulence and/or increase in the size of tearing modes that accompany hybrid discharges.

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