

Abstract Submitted
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Progress Toward Fully Noninductive, High Performance Conditions in DIII-D¹ M. MURAKAMI, Oak Ridge National Laboratory, DIII-D ADVANCED SCENARIO DEVELOPMENT THRUST TEAM — The Advanced Tokamak (AT) program on DIII-D is aimed at developing the scientific basis for steady state, high performance operation in future devices. Recent experiments (since the Long Torus Opening Activities) produced AT discharges using the new high triangularity, lower divertor double-null configuration. The normalized beta exceeded 4.0 transiently and 3.7 (well above no-wall limit) was sustained for over 0.5 seconds. Scanning magnetic configurations shows a clear advantage to a double-null configuration for high performance AT discharges, and significant sensitivity to details of the plasma shape. Optimization of q profiles (q_{min} and $q_0 - q_{min}$) will be carried out to improve MHD stability, bootstrap and noninductive current fractions. Theory based modeling, benchmarked against the experiment, predicts in-principle steady-state conditions with high normalized beta using the new DIII-D capabilities and predicts to a steady state scenario with $Q \geq 5$ in ITER.

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