Abstract Submitted
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Towards Demonstration of Steady-State High-Performance Scenarios in DIII-D[1] T.C. LUCE, J.R. FERRON, P.A. POLITZER, C.M. GREENFIELD, A.W. HYATT, G.L. JACKSON, T.W. PETRIE, R.I. PINSKER, W.P. WEST, GA, A.M. GAROFALO, R. REIMERDES, Columbia U., T.A. CASPER, C.T. HOLCOMB, M.A. MAKOWSKI, LLNL, M. OKABAYASHI, PPPL, M. MURAKAMI, J.M. PARK, ORNL, E.J. DOYLE, UCLA, S. IDE, JAEA — Experiments on advanced scenarios in DIII-D are focused on extension to the resistive time scale, optimization, and exploration for higher performance. Optimization studies use ECCD and counter-NBI to modify the q profile shape, looking at the effect on MHD stability and bootstrap current. Feedback control of the current formation is also a key element of optimization. Closed-loop experiments and modeling of open-loop tests have been carried out. Experiments seeking β_N=5 used two approaches – high q_{min} with rotational stabilization and high magnetic shear. High shear experiments achieved $\beta_N > 4.5$ transiently. Attempts to use the longer-pulse (5 s) ECCD system to extend the duration of noninductive high-performance discharges to resistive equilibrium will be presented.

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T.C. Luce
General Atomics

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