Abstract Submitted
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Stability boundaries and development of the ITER baseline scenario[1] G.L. JACKSON, T.C. LUCE, R.J. BUTTERY, A.W. HYATT, J.R. FERRON, R.J. LA HAYE, P.A. POLITZER, General Atomics, W.M. SOLOMON, PPPL, F. TURCO, Columbia U., E.J. DOYLE, UCLA — Plasmas stable to $m/n = 2/1$ tearing modes (TMs), in the ITER baseline scenario (IBS) with ITER similar I_p/aB_T, have been demonstrated in DIII-D, evolving to stationary conditions. Previous studies showed the possibility that long pulse IBS plasmas might be susceptible to TMs. However within a defined stability boundary, most of these longer duration discharges have achieved stationary conditions ($\Delta\tau_{duration} \leq 7.5$ s and $\leq 11\tau_R$) with high Co-beam torque and without the need for ECCD. To mitigate 2/1 TMs at reduced torque, broad ECCD deposition was found to be most effective when positioned near the $q = 3/2$ flux surface, although a subset of low torque pulses were also obtained without ECCD. The DIII D internal coils (I coils) were used to achieve ELM suppression in IBS plasmas with ECCD at $q_{95} = 3.15$ for durations up to 1 s with only the upper row of I coils, providing a broad $n = 3$ spectrum. Conditions stable to $n = 1$ tearing modes in IBS discharges and the effect of Z_{eff}, density, and other parameters are discussed.

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