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[ ] Theory [X] Experiment [ ] Combined/General

Stability boundaries and development of the ITER baseline scenario,* 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 ($\Delta t_{duration} \leq 7.5$ 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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