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Theory Experiment

Comparison of ELM Control Using One vs Two Rows of RMP Coils in DIII-D,* M.E. Fenstermacher, *LLNL*, T.E. Evans, T.H. Osborne, M.J. Schaffer, J.S. deGrassie, R.J. Groebner, A.W. Leonard, P.B. Snyder, *GA*, R.A. Moyer, *UCSD* – Large Type-I edge localized modes (ELMs), in plasmas with an ITER similar shape at the ITER pedestal collisionality, $\nu_e \sim 0.1$ and low edge safety factor ($q_{95} \approx 3.6$), were suppressed by $n = 3$ resonant magnetic perturbations (RMPs) using either a single toroidal row or two poloidally separated rows of internal coils (I-coils). ELM suppression with a single row of internal coils was achieved at approximately the same q_{95} surface-averaged perturbation field as with two rows of coils, but required higher current per coil. Maintaining complete suppression of ELMs using $n = 3$ RMPs from a single toroidal row of internal coils was less robust to variations in input neutral beam injection torque than previous ELM suppression cases using both rows of internal coils. With either configuration of RMP coils, maximum ELM size is correlated with the width of the edge region having good overlap of the magnetic islands from vacuum field calculations.

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