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Theory Experiment

Effect of Perturbation Spectrum on RMP ELM Suppression in DIII-D,* D.M. Orlov, R.A. Moyer, C. Holland, *UCSD*; T.E. Evans, N.M. Ferraro, C. Paz-Soldan, P.B. Snyder, J.S. deGrassie, C.M. Greenfield, *GA*; R. Maingi, R. Nazikian, J.K. Park, N. Logan, *PPPL*; M.E. Fenstermacher, *LLNL* – Recent experiments in DIII-D have demonstrated that while the edge localized modes (ELMs) in a tokamak can be controlled with only 5 of 12 magnetic perturbation coils with only a small increase in the coil current, the width of the q_{95} resonant window for ELM suppression is smaller with a reduced coil set due to an overall reduction of the resonant $n=3$ field in the plasma. In each I-coil configuration tested, a strong similarity of the plasma parameters was observed during ELM suppression phase in the core and pedestal regions. Vacuum and M3D-C1 plasma response modeling elucidate the role of the toroidal sidebands for resonant magnetic perturbation (RMP) ELM suppression. TGLF and TGYRO simulations are performed to understand the effect of the perturbation spectrum on the core transport.

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