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Theory Experiment

RMP Assisted ELM-Free H-modes in DIII-D Plasmas With ITER Shapes and Pedestal Collisionalities,* T.E. Evans, K.H. Burrell, A.W. Leonard, T.H. Osborne, W.P. West *General Atomics*, R.A. Moyer, I. Joseph, *UCSD*, M.E. Fenstermacher, C.J. Lasnier, *LLNL*, J.G. Watkins, *SNL* – Resonant magnetic perturbations (RMP) eliminate ELMs in DIII-D with ITER Similar Shapes (ISS) and pedestal collisionalities. Significant differences in the RMP plasma response are seen in ISS compared to lower average triangularity (LAT) shapes. In ISS, ELM suppression is obtained by increasing the the RMP coil-current/ B_T by 50% which may result from a slight increase in the ISS plasma-coil separation. The divertor recycling increases ~40% rather than decreasing with $n_{e,ped}$. No increase in carbon sources (typical of LAT) are seen in ISS and the divertor remains in a flux limited rather than a sheath limited regime although $n_{e,ped}$ in ISS and LAT are essentially identical. The effectiveness of RMP assisted divertor target plate shielding improves significantly in ISS due to increased particle recycling and a ~100% increase in the lower divertor radiated power. τ_E in both ISS and LAT were the same.

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