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H-Mode Pedestal Structure and Transport in Hybrid Plasmas During Magnetic Perturbation in the DIII-D Tokamak[1] B. HUDSON, ORISE, A.W. LEONARD, T.E. EVANS, T.H. OSBORNE, C.C. PETTY, P.B. SNYDER, General Atomics — The effect of resonant magnetic perturbation (RMP) on the H-mode pedestal structure is studied in hybrid discharges in the DIII-D tokamak. The empirical window for complete edge localized mode (ELM) suppression appears to be the same as in standard H-mode plasmas, which is $3.5 < q_{95} < 3.9$. A reduction in the pedestal bootstrap current during RMP is inferred through a decrease in q_{95}, at fixed I_p/aB_T, consistent with the measured reduction in the edge pressure gradient. Statistical analysis indicates that magnetic and MSE measurements are consistent with an edge parallel current profile given by the Sauter bootstrap current model. Small amplitude ELMs are observed to return, when the rotation frequency becomes small or when q_{95} is outside the resonance window for ELM suppression, associated with an increase in pedestal electron temperature and a decrease in the calculated magnetic field line diffusion. The EPED1 model and ELITE code are used to predict the pedestal height and determine ELM stability.

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