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**The Impact of Resonant Magnetic Perturbation Strength on the L-H Power Threshold**[1] MICHAEL HANSON, UC San Diego, TODD EVANS, DMITRI ORLOV, General Atomics, BRIAN GRIERSON, Princeton Plasma Physics Laboratory — We report a DIII-D database study of H-mode power threshold in the presence of Resonant Magnetic Perturbations (RMPs) compared to the Martin L-H power scaling [Y.R. Martin, et al., J. Phys. Conf. Ser. 123, 012033 (2008).]. Since ELM control is critical for ITER, this study is important for assessing the impact of RMP ELM suppression on the L-H power over a range of DIII-D plasma conditions, which can eventually be projected to ITER. The L-H transition is a complex phenomenon with several key control parameters, some of which are altered by the RMP field. In order to understand the effects of RMPs on the L-H threshold, a scaling model is being constructed that includes the amplitude and phase of various 3D toroidal modes due to field-error correction and RMP coils in DIII-D. In addition to the loss power used in the Martin scaling ($P_L = P_{ohm} + P_{abs} - dW/dt - P_{f-loss}$) we include the radiated power loss from the core, which has a significant impact of the scaling in DIII-D and is expected to be important in ITER. Preliminary results indicate a systematically higher power needed to cross into H-mode when RMPs are present when compared to the Martin scaling.

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