Category Number and Subject: 5.6.2 DIII-D Tokamak

[ ] Theory [x] Experiment

ELM Control With n=3 Magnetic Perturbations,* R.A. Moyer, J.A. Boedo, I. Joseph, D.L. Rudakov, *UCSD*, T.E. Evans, K.H. Burrell, T.H. Osborne, M.J. Schaffer, P.B. Snyder, N.H. Brooks, R.J. Groebner, G.L. Jackson, R.J. LaHaye, A.W. Leonard, D.M. Thomas, W.P. West, *GA*, P. Thomas, M. Becoulet, *CEA-Cadarache*, E.J. Doyle, T.L. Rhodes, G. Wang, L. Zeng *UCLA*, J.G. Watkins, *SNL*, M.E. Fenstermacher, C.J. Lasnier *LLNL*, K.H. Finken, *FZ Jülich* – ELMs are eliminated with magnetic perturbation in ITER-relevant edge collisionality ($\nu_e^* \approx 1$) H-modes. This extension of previous ELM suppression at $\nu_e^*\approx$1 was obtained by optimizing the poloidal mode spectrum of the perturbation and pumping to reach low ν_e^*. ELITE calculations suggest that ELMs are eliminated by moving the edge gradients into an ELM stable region. The perturbation lowers the gradients by increasing particle transport while leaving the electron thermal transport nearly unchanged. This contradicts expectations for transport in stochastic fields, and demonstrates the need for improved models of plasma response to stochastic fields.

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