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Predator-Prey Oscillations During Slow L-H Transitions on DIII-D¹ R.J. COLCHIN, B.A. CARRERAS, R. MAINGI, Oak Ridge National Laboratory, M.J. SCHAFFER, T.N. CARLSTROM, N.H. BROOKS, C.M. GREENFIELD, GA, G.R. MCKEE, U. Wisc., D.L. RUDAKOV, UCSD, T.L. RHODES, E.J. DOYLE, UCLA, M.E. AUSTIN, U. Texas — A DIII-D operating regime which gives rise to an intermediate phase of experimentally-variable length between the L- and H-modes has been explored. There is no evidence that the plasma is “dithering” between the L- and H-modes. The intermediate phase is characterized by 1-2 kHz oscillations of the D_α light which are terminated only when the neutral injection power is raised sufficiently. Predator-prey type² equations, based on a general drift-wave turbulence model, are found to describe frequency and amplitude characteristics of the oscillations. Outer plasma edge studies showed that the oscillations are caused by periodic instability bursts located inside the separatrix. Fast data taken during these bursts have been obtained from a variety of diagnostics, and provide an extremely detailed picture of the bursts.

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²J.-N. Leboeuf, et al., Phys. Fluids **B 5**, 2959 (1993).

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