

Slow L–H Transitions in DIII–D Plasmas

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Abstract. The transition from the low to high mode of plasma confinement (L–H transition) is studied in DIII–D by an experimental technique which allows an arbitrarily slow transition. During an initial transition, periodic turbulent instability bursts are observed near the separatrix which inhibit the full transition. These bursts are damped by self-generated shear flows, and a predator-prey-type relationship is shown to give a good description of the data. As the neutral beam power is raised, the oscillations change to type III ELMs. Another transition then leads to a quiet H–mode.