

Abstract Submitted
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Energy Released During the H-L Back Transition¹ D. ELDON, E. KOLEMEN, Princeton U., P. GOHIL, GA, G.R. MCKEE, Z. YAN, U. Wisc., L. SCHMITZ, UCLA — Prompt energy loss (ΔW) at the H-L transition, as a fraction of total stored energy before the transition, is about 30% and is insensitive to density in ITER-similar DIII-D plasmas. Occasionally, some ELMs will appear before the transition and reduce total energy, thus reducing ΔW across the following transition. Other results (not in the ITER-similar shape) have shown that ELMs can be triggered in low powered H-modes, prior to H-L transitions, when the plasma is stable to ideal P-B modes (these are not typical type-I ELMs, despite superficial similarities) and $E \times B$ shear is strong. These are indeed ELMs occurring in H-mode and not part of a dithering transition. Finally, ELM ΔW is sensitive to edge toroidal rotation and becomes smaller than uncertainty (< 5 kJ) at low rotation ($\omega_{tor} < 5$ krad/s). These results point to a strategy where ΔW for the H-L transition may be reduced by the presence of (not type-I) ELMs before the transition, and ΔW for the ELMs may be reduced by controlling rotation.

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