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Effect of Aspect Ratio on H-mode and ELM Characteristics[1] K.E. THOME, G.M. BODNER, M.W. BONGARD, M.G. BURKE, R.J. FONCK, D.M. KRIETE, University of Wisconsin-Madison — The H-mode confinement regime is achieved at near-unity aspect ratio ($A < 1.2$) in the Pegasus Toroidal Experiment via high-field-side fueling and low edge recycling. Ohmic H-mode is attained in both limited and diverted magnetic topologies. This regime is characterized by: reduced D_α emissions; increased core rotation; increased central heating; formation of edge current and pressure pedestals; and measured energy confinement consistent with the ITER98pb(y,2) scaling. The H-mode power threshold, P_{LH}, behaves quite differently at low-A when compared with high-A operations. P_{LH}/P_{LH_ITPA08} increases sharply as A is lowered and no difference in P_{LH} for limited and diverted plasmas is observed at $A \sim 1.2$. No minimum in P_{LH} with density is observed. Some of these results are consistent with the FM[3] model for the L-H transition.[2] Two classes of ELMs have been observed. Small, Type III-like ELMs are present at low input power and have $n \leq 4$. At $P_{OH} >> P_{LH}$, they transition to large, Type-I-like ELMs with intermediate $5 < n < 15$. The Type III ELM magnetic structures behave opposite that of high-A plasmas, with n much higher, presumably due to the naturally higher J/B peeling mode drive at low-A. Long-sought measurements of the $J_{edge}(R,t)$ pedestal collapse during an ELM event show a complex, multimodal pedestal collapse and the subsequent ejection of a current-carrying filament.

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[2]Fundamenski *et al.*, Nucl. Fusion **52**, 062003 (2012.)

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