Abstract Submitted
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H-mode Characterization and Edge Stability at Near-Unity Aspect Ratio in Pegasus Discharges[1] K.E. THOME, J.L. BARR, M.W. BONGARD, M.G. BURKE, R.J. FONCK, L.M. PEGUERO, J.M. PERRY, D.J. SCHLOSSBERG, D.S. THOMPSON, University of Wisconsin-Madison — Unique features of operating at near-unity aspect ratio include: ready access to Ohmic H-mode; operation in the low collisionality regime with strong neoclassical effects; and ELM instabilities driven by peeling and peeling- ballooning modes. Ohmic H-mode is achieved in both limited and diverted configurations by using high-field-side fueling. The access to and characteristics of H-mode regimes as well as various ELM types in PEGASUS is currently being explored. Characteristics of the L-H transition are: formation of an edge current pedestal; reversal of the direction of toroidal flow at the transition; doubling of the stored energy; and the presence of ELMs. Modest temperatures and pulse lengths in PEGASUS allow the use of insertable probes to measure the properties of the edge plasma with high spatial and temporal resolution, even in ELMy H-mode. A current pedestal in the edge $J(R,t)$ profile is observed in H-mode but not in L-mode operation. This pedestal is destroyed during an ELM event cycle, but returns quickly after the ELM. Peeling modes, identified in the edge of L-mode plasmas with strong edge current, drive the formation of an edge current hole and ejection of a current-carrying filament consistent with electromagnetic blob theory. Similar behavior is indicated with ELMs in H-mode plasmas.

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