

**Abstract Submitted for the Forty-Eighth Annual Meeting
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Category Number and Subject: 5.6.2. DIII-D Tokamak

☐ Theory ☒ Experiment

DIII-D Quiescent H-Mode Experiments With Co Plus Counter Neutral Beam Injection,* K.H. Burrell, W.P. West, P. Gohil, R.J. Groebner, P.B. Snyder, GA, M.E. Fenstermacher, C.J. Lasnier, LLNL, W.M. Solomon, PPPL – In many ways, quiescent H-modes are the ideal H-mode plasma. They exhibit H-mode confinement for long duration (>4 s or $30 \tau_E$) with constant density and radiated power. The absence of edge localized modes (ELMs) means no pulsed divertor heat loads. The quiescent edge is also quite compatible with core transport barriers. To utilize QH-mode in future devices, the goals of our recent QH-mode experiments are to develop an improved physics understanding of the QH-mode, especially the ELM stabilization, and to broaden the QH-mode operating space. During the 2006 campaign, we utilized DIII-D's new co plus counter NBI capability to determine how much counter injection is necessary for QH-mode operation. As plasma triangularity is increased, increasing amounts of co-injection can be used while still maintaining the quiescent state. This is consistent with expectations based on peeling-ballooning mode theory. Further experiments are planned to explore the co-counter boundary more thoroughly.

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