

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Quiescent H-mode Plasmas in DIII-D with Strong, Co-Current Edge Rotation¹ K.H. BURRELL, T.H. OSBORNE, P.B. SNYDER, R.J. GROEBNER, P. GOHIL, General Atomics, M.E. FENSTERMACHER, LLNL, W.M. SOLOMON, PPPL — For the first time in any tokamak, quiescent H-mode (QH-mode) plasmas have been created with neutral beam injection in the direction of the plasma current (co-injection) and with edge rotation in the co-current direction. Previous QH-mode plasmas have always exhibited counter-current rotation of the plasma edge. The existence of QH-mode with strong edge co-rotation is a confirmation of the theoretical prediction that QH-mode should exist with either sign of the edge rotation provided the magnitude of the shear in the edge rotation is sufficiently large. In addition, detailed comparison of the edge plasma conditions with peeling-ballooning mode stability theory shows good agreement with that theory. This extends the previous detailed confirmation of the theory to co-rotating QH-mode plasmas. Furthermore, the existence of QH-mode with edge co-rotation demonstrates that counter NBI and counter edge rotation are not essential conditions for QH-mode.

¹Work supported by the US DOE under DE-FC02-04ER54698, DE-AC52-07NA27344 and DE-AC02-09CH11466.

K.H. Burrell
General Atomics

Date submitted: 16 Jul 2009

Electronic form version 1.4