

Abstract Submitted
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Quiescent H-Mode Plasmas with Rotation Driven by Static Non-axisymmetric Fields¹ A.M. GAROFALO, K.H. BURRELL, G.L. JACKSON, General Atomics, A. COLE, U. Wisc., W.M. SOLOMON, PPPL, M.J. LANCTOT, H. REIMERDES, Columbia U. — A quiescent H-mode (QH-mode) edge allows ELM-free operation of a plasma with good confinement and good particle exhaust. Until recently, QH-mode operation required rather strong plasma toroidal rotation in order for the edge velocity shear to exceed a minimum value [1]. However, rapid rotation may not be feasible in a self-heated burning plasma with little or no momentum injection from neutral beams. New DIII-D experiments in ITER-similar plasmas show that the neoclassical torque from static, nonresonant magnetic fields (NRMFs) provides a useful knob to change the edge rotation profile shear. NRMF application resulted in QH-mode operation with less than half the rotation (evaluated on top of the pedestal) of previous QH-mode without the NRMFs. At this low rotation, the NRMF torque may be amplified by entering the theoretically predicted $1/\nu$ collisionality regime.

[1] K.H. Burrell, *et al.*, Phys. Rev. Lett. **102**, 155003 (2009).

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