Abstract Submitted
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Boundary Intrinsic Velocity in DIII-D H-modes[1] J.S. DEGRASSIE, R.J. GROEBNER, K.H. BURRELL, R.E. WALTZ, General Atomics, W.M. SOLOMON, Princeton Plasma Physics Laboratory — The toroidal velocity, V_ϕ, in the pedestal region of DIII-D H-mode discharges with negligible neutral beam injected (NBI) torque is nonzero, in the direction of the plasma current, co-I_p. This velocity is found to scale approximately linearly with the local ion temperature, T_i. Such a scaling can result simply because of thermal ion loss from the pedestal region; counter-I_p thermal ions are predominantly lost leaving a net co-I_p local average velocity. However, we also measure $V_\phi \sim T_i$ well inside of the pedestal region, where classical thermal ion orbit loss would not be effective. This could be explained by a toroidal momentum pinch with pinch velocity proportional to the gradient of T_i. There are theories that predict such a pinch driven by turbulence. We have used the GYRO code to investigate the scaling of the turbulent pinch effect in conditions typical of the edge region of these intrinsic H-mode discharges.

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