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Toroidal Rotation With Near-Balanced NBI in DIII-D H-Mode Discharges* J.S. deGrassie, K.H. Burrell, R.J. Groebner, *GA,* W.M. Solomon, *PPPL* — Intrinsic rotation exists in the tokamak with no applied auxiliary torque and is important to understand for projection to burning plasmas and ITER. Rice's scaling, that $V \sim W/I_p$ [1], exists in other tokamaks, including DIII-D, where V is toroidal velocity, and W the stored energy. A dimensionless casting of this scaling is being sought [1]. Heating by rf waves is the primary tool to investigate intrinsic rotation in H-mode conditions. It is difficult to attain ITER-relevant values of $\beta_N \sim 2$ simply due to the typical rf power capabilities installed, compared with neutral beam injection (NBI). In DIII-D we are using the balanced beam capability to investigate the intrinsic rotation scaling at these β_N values. An issue is the localized remnant torque density that exists to some extent with mirrored beam injection, because of the opposite radial drift of co- and counter-injected fast ions. We will show how these higher β_N conditions compare with the Rice scaling and account for remnant torque.

[1] J.E. Rice, Nucl. Fusion **47**, 1618 (2007).

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