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SOL and Edge Flows in DIII-D[1] J.A. BOEDO, UCSD, J.S. DEGRASSIE, GA, B.A. GRIERSON, PPPL, D.A. RUDAKOV, UCSD — Recent measurements at DIII-D edge plasmas at the outer midplane show that, in the absence of external torque, the edge and near-SOL plasma flow is largely dominated by the intrinsic source of rotation most likely due to thermal ion loss. We also show that when NBI heating is present, the core momentum competes with the edge intrinsic momentum and can overwhelm it, in short, NBI-heated discharges at high power tend to determine edge and near SOL flows. Experiments performed in the DIII-D tokamak with OH heated, ECH-heated and NBI-heated discharges are diagnosed for core plasma flow with CER and edge/SOL plasma flow with Mach probes. We have changed the amount of NBI, OH and ECH heating while scanning the discharge collisionality. We have compared the experimental measurements to two complementary thermal ion loss theories that explain most of the observed features, including a scaling with Ti. One theory considers passing and trapped particles that are lost via a loss cone purely due to drifts and the other considers turbulence-enhanced loss of passing particles.

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