Abstract Submitted
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Collisionality and temperature dependence of the edge main-ion co-current rotation profile feature on DIII-D[1] SHAUN HASKEY, BRIAN GRIERSON, ARASH ASHOURVAN, DEVON BATTAGLIA, Princeton Plasma Physics Laboratory, COLIN CHRYSTAL, KEITH BURRELL, RICHARD GROEBNER, JOHN DEGRASSIE, General Atomics, LUKE STAGNER, UC Irvine, TIMOTHY STOLTZFUS-DUECK, Princeton University, NOVIMIR PABLANT, Princeton Plasma Physics Laboratory — A new edge main-ion (D^+) CER system and upgraded edge impurity system are revealing clear differences between the main-ion and dominant impurity (C^{6+}) toroidal rotation from the pedestal top to the scrape off layer on DIII-D with implications for intrinsic rotation studies. A peaked co-current edge toroidal rotation is observed for the main ion species near the outboard midplane separatrix with values up to 140km/s for low collisionality QH modes. In lower power (P_{NBI} =0.8MW) H-modes the edge rotation is still present but reduced to ˜50km/s. D^+ and C^{6+} toroidal rotation differences are presented for a variety of scenarios covering a significant range of edge collisionality and T_i. Observations are compared with predictions from several models including collisionless ion orbit loss calculations and more complete modeling using the XGC0 code, which also predicts 140km/s edge rotation for low collisionality QH mode cases.

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