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Theory Experiment

Carbon Density Asymmetry and Beam Density Verification

in DIII-D* R.S. Bielajew, *U.Michigan*; C. Chrystal, *UCSD*; B.A. Grierson, *PPPL*; K.H. Burrell, *GA* — Carbon density asymmetry in DIII-D plasmas has been measured using charge exchange spectroscopy coupled with main ion measurements. These main ion charge exchange measurements are used to verify the neutral beam density. Centrifugal effects in plasmas with high toroidal rotation and electrostatic effects due to trapped fast ions can both drive impurity density asymmetries within flux surfaces. Measuring impurity density asymmetry is important for verifying theories of parallel impurity transport. New main ion charge exchange measurements implemented on the high field side of the plasma are instrumental to this work. Impurity density asymmetry is measured in plasmas with low and high [$V_\phi/V_{t,imp} \approx 0$ (1)] rotation and low and high ($\eta_{fast}/\eta_e > 0.2$).

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