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Charge Exchange Measurements of Impurity Density Asymmetry in DIII-D,* B.F. Kraus, *U. of Alabama*; K.H. Burrell, *GA*; C. Chrystal, *UCSD*; N. Commaux, *ORNL* – Poloidal asymmetries of impurity density have been investigated using charge exchange spectroscopy measurements of carbon density on both the low- and high-field sides of DIII-D plasmas. In tokamak plasmas with high toroidal rotation, neoclassical theory predicts that centrifugal effects can cause accumulation of impurities on the low-field side of flux surfaces. The magnitude of the poloidal asymmetry is set by a balance between centrifugal effects and the poloidal electric field required to maintain charge neutrality. Accordingly, measurements of impurity density asymmetry, which can be made in the core of DIII-D, can be used to infer poloidal asymmetries of the electrostatic potential. Density asymmetries can be an important component of impurity transport for plasmas with high rotation as well as plasmas with significant fast ion content. Results will be presented for plasmas with both high and low rotation and for plasmas with minimal and significant neutral beam injection. These charge exchange measurements have been supplemented by visible bremsstrahlung measurements of Z-effective on the low- and high-field sides of the plasma.

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