

In-Out B^{5+} Impurity Asymmetries in the Pedestal Region on Alcator C-Mod

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Ion-impurity friction caused by large radial temperature and density gradients can give rise to poloidal impurity asymmetries. On Alcator C-Mod, an in-out impurity density asymmetry was measured in the pedestal region, inferred from CXRS (B^{5+}) velocity measurements at the low-field and high-field sides (LFS and HFS) of the tokamak, combined with neoclassical transport theory. To confirm these findings, the direct measurement of boron density at the LFS and HFS was made with the same CXRS systems. To calculate impurity density from CXRS measurements, the neutral density of the beam or other neutral source must be accurately known. Since the HFS CXRS measurement utilizes a deuterium gas puff as the source of neutrals for charge exchange, measurements of D_α coincident with the CXRS views were used to constrain neutral transport codes. The resulting boron density profiles show a density asymmetry consistent with the previous velocity based results, with the boron density in the pedestal region higher at the HFS, then reducing to LFS density levels further into the core.