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Flux Surface Variation of Impurity Density and Flows in the Pedestal Region MICHAEL CHURCHILL, BRUCE LIPSCHULTZ, CHRISTIAN THEILER, MIT PSFC, ALCATOR C-MOD TEAM — Measured impurity density and flows in the pedestal region of Alcator C-Mod can deviate significantly on a flux surface from current model predictions. Comparing localized measurements at the low-field side (LFS) midplane and the high-field side (HFS) midplane, boron (B5+) impurity density asymmetries larger than 10x are observed in H-mode plasmas, with larger densities at the HFS. The LFS density pedestal varies in position and width with varying plasma conditions, while the HFS impurity density profile remains rather fixed. Impurity density asymmetries are not observed in plasmas with small gradients, i.e L-mode, suggesting the drive for the asymmetry may be the strong gradients in the H-mode pedestal region. However, impurity density asymmetries are also absent in I-mode plasmas, despite the presence of a strong radial gradient in temperature (with no main ion density pedestal). This indicates an interplay between the gradient scale lengths of the main ion density and temperature in the drive of the impurity density asymmetry. Impurity flows in the pedestal show the opposite behavior; flows measured in H-mode plasmas are close to the expected in-out variation, while in I-mode they deviate significantly. Supported by USDoE award DE-FC02-99ER54512.

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