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**Cross-field transport asymmetries in unbalanced double-null divertor configurations.** A.YU. PIGAROV, UCSD, T.D. ROGNLIEN, LLNL, B. LABOMBARD, MIT, S.I. KRASHENINNIKOV, UCSD — A key feature of anomalous cross-field transport in the tokamak SOL is strong poloidal asymmetry where the plasma flux is much larger on low field side (LFS) than on high field side (HFS). As shown, this asymmetry can cause an enhanced main chamber recycling at LFS and the large, M$\sim$1, parallel plasma flows. Recent experiments performed in Alcator C-Mod with an unbalanced double null (DN) configuration show (as measured by reciprocating probes at the LFS and HFS midplanes) that plasma density profiles have a much shorter cross-field decay length in the region outside the secondary separatrix on the HFS compared to the same region on the LFS. In well-balanced DN discharges, the density e-folding length measured at the HFS midplane is substantially smaller than that in single null (SN) configuration. These data independently indicate a strong ballooning-like asymmetry. We use UEDGE code to simulate plasma transport in unbalanced DN shots obtained in C-mod. From matching experimental profile data, we infer an asymmetry factors for the anomalous cross-field plasma transport (diffusive and convective) which are indicative of strong asymmetry. The effect of secondary separatrix on radial plasma profiles, parallel plasma flows, and impurity migration will be discussed. Simulated transport asymmetries in unbalanced DN, balanced DN, and SN shots will be compared. Work supported by DoE grant DEFG0204ER54739.

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