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Diagnosis of the Inner SOL in DIII-D Using Tangentially Viewing CID Cameras¹ M. GROTH, M.E. FENSTERMACHER, G.D. PORTER, LLNL, R.L. BOIVIN, N.H. BROOKS, W.P. WEST, GA, P.C. STANGEBY, UTIAS, D.G. WHYTE, UCSD — The role of main chamber, recycling versus divertor recycling, in impurity generation in tokamaks is currently a highly debated issue in the community. A CID camera which tangentially views the inner scrape-off layer (SOL) plasma was used to investigate the poloidal distribution of light recycling from deuterium and impurity emission near the inner wall in lower single-null plasmas. A narrow level of deuterium Balmer- α light was observed to fill the region between the separatrix and the inner wall, with its intensity decaying exponentially with height in the vessel. The emission at CII (515 nm) and CIII (465 nm) looked similar, but extended farther upstream in the inner scrape-off layer. Experiments were performed to test the dependence of the deuterium and impurity emission on the equilibrium magnetic balance and the distance between the separatrix and inner wall. Preliminary numerical simulations of generic DIII-D plasmas using UEDGE show similar poloidal profiles for the D_α , CII, and CIII emission.

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