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Plasma Flows in the DIII-D Divertor[1] J.A. BOEDO, R.A. MOYER, M.J. SCHAFFER, N.H. BROOKS, M.A. MAHDAVI, R.C. ISLER, C.J. LASNIER, G.D. PORTER, J.G. WATKINS, The DIII-D National Team — Comprehensive measurements of parallel D^+, impurity flow, and poloidal $\mathbf{E} \times \mathbf{B}_T$ drifts were made that show their importance in understanding divertor in-out asymmetries and other divertor phenomena. Poloidal $\mathbf{E} \times \mathbf{B}_T$ flows on the private side of the separatrix that circulate $\sim 10^{22}$ ions/s, or about 30% of the total ion flux to the target are produced by the plasma potential gradients at the separatrix, driven by temperature gradients. In attached plasmas, the D^+ parallel flow on the outer divertor SOL is toward the divertor target. Flow reversal develops at the separatrix as the divertor plasma approaches detachment. In PDD cases, the deuterium flows approach Mach 1 over the whole outer divertor SOL volume and the convected heat flux transports 80% of the total heat flux to the target plates. Impurity ions feature both "forward" flows in the SOL and reversed flows near the separatrix in attached plasmas. The forward impurity flow velocities speed up whereas the reversed flows slow down during detachment.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

Special instructions: DIII-D Contributed Oral Session, immediately following TW Petrie

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