Abstract Submitted
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Sorting Category: 6.6.2 (Experimental)

E×B Drifts in Attached and Detached Divertor Plasmas in DIII-D[1] J.A. BOEDO, R.A. MOYER, D.L. RUDAKOV, UCSD, M.J. SCHAFFER, N.H. BROOKS, T.E. EVANS, A.W. LEONARD, M.A. MAHDAVI, GA, S.L. ALLEN, M.E. FENSTERMACHER, C.J. LASNIER, G.D. PORTER, T.G. ROGNLIEN, LLNL, R.C. ISLER, ORNL, J.G. WATKINS, SNL, DIII-D TEAM — Experiments during attached and detached divertors find $E \times B_T$ flows in the SOL and along the separatrix important for particle and heat transport. These results emphasize the need to include electric fields and drifts self-consistently in divertor modeling. The experiments were conducted in DIII-D with plasma current $I_p = 1.4\,\mathrm{MA}$, density $n_e = 2.8 \times 10^{14}\,\mathrm{cm}^3$, $B_T = 2\,\mathrm{T}$ at $R_0 = 1.7\,\mathrm{m}$, and neutral beam heating power of 8.65 MW. Attached plasmas feature $5\,\mathrm{kV/m}$ gradients from the cold private region to the hot separatrix, creating $E \times B_T$ drifts of $N \approx 1 \times 10^{22}\,\mathrm{s}^1$ along the private flux side of the separatrix. The private poloidal $E \times B$ ion flow is ∼35% of the total (inner plus outer) target ion flow, and is comparable to the inner target flow. Upon detachment, the potential drop in the private region and across the separatrix is zero within the error bars.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: 2nd poster in Divertor Session (after Petrie, before Watkins)

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