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Impact of Divertor Magnetic Balance and Particle Drifts on Radiating Divertor Behavior in DIII-D[1] T.W. PETRIE, N.H. BROOKS, J.R. FERRON, A.W. HYATT, A.W. LEONARD, T.C. LUCE, M.R. WADE, W.P. WEST, General Atomics, M.E. FENSTERMACHER, M. GROTH, C.J. LASNIER, G.D. PORTER, Lawrence Livermore National Laboratory, J.G. WATKINS, Sandia National Laboratories — Recent DIII-D experiments show that both magnetic balance between upper and lower divertors and the particle drifts in the SOL and divertors are important to understanding how argon impurities accumulate in double-null plasmas in a "puff and pump" radiating divertor scenario. The best results to-date in terms of coupling a radiating divertor approach to an H-mode plasma with minimal degradation in τ_E have been produced in a double-null shape biased opposite to the ion $\mathbf{B} \times \nabla B$ drift direction. Edge transport modeling with UEDGE [1] shows that the maintenance of low core impurity levels in this configuration can be largely ascribed to the central role of particle drifts. Additionally, it is found that ion $\mathbf{B} \times \nabla B$ drift direction plays a much more important role than divertor closure in controlling plasma density.

[1] T.D. Rognlien, et al., Phys. Plasmas **34**, 362 (1994).

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