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**Role of cross-field drifts in the onset of divertor detachment**[1]
MATHIAS GROTH, Aalto U., Finland, S.L. ALLEN, M.E. FENSTERMACHER, D.H. HILL, M.A. MAKOWSKI, A.G. MCLEAN, C.J. LASNIER, G.D. PORTER, T.D. ROGNLIEN, LLNL, A.R. BRIESEMEISTER, E.A. UNTERBERG, ORNL, A.W. LEONARD, GA, J.G. WATKINS, SNL — The impact of cross-field drifts in divertor configurations was investigated in DIII-D L and H-mode discharges. The studies show that the electron temperature at the outer divertor plate is reduced to below 2 eV at about 20% lower pedestal density in configurations with the ion Bx$\nabla$B direction toward the divertor X-point. When attached, these plasmas have significantly lower electron temperatures and and higher densities in the inner than in the outer divertor as directly measured with divertor Thomson scattering and inferred from line emission imaging using tangentially viewing cameras. Upon reversal of the toroidal field direction, the divertor conditions were observed in-out symmetric. Simulations with the edge fluid code UEDGE show that poloidal flows due to the radial electric field in the private flux region dominate the divertor asymmetries.

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