

Abstract Submitted
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Characterizing the transition from high recycling to partial detachment¹ A.G. MCLEAN, S.L. ALLEN, M. FENSTERMACHER, C. LASNIER, W.H. MEYER, G. PORTER, V. SOUKHANOVSKII, LLNL, B.D. BRAY, T.N. CARLSTROM, A.W. LEONARD, C. LIU, GA, D. ELDON, UCSD, M. GROTH, Aalto U., P.C. STANGEBY, C. TSUI, U. Toronto — Experiments at DIII-D have explored the transition from the high recycling to the partially detached divertor condition in L- and H-mode with an unprecedented level of detail. Improved divertor and core Thomson scattering diagnostics were coupled with high resolution spectroscopic studies of molecular and neutral emissions. 2-D T_e and n_e profiles of the outer leg reveal the earliest indications of formation of the detachment front at the target plate, reducing local T_e at the outer strike point from 8-10 eV to 2-3 eV with a marginal ($< 10\%$) increase in $\langle n_e \rangle$ upstream. These data help guide and expose any missing physics in simulations of detachment onset using state-of-the-art boundary codes, and in predictions for operation with a partial detached divertor in future devices.

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