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**Edge Similarity Experiments on C-Mod and DIII-D<sup>1</sup>**

M. GROTH, G.D. PORTER, T.D. ROGNLIEN, Lawrence Livermore National Laboratory, P.G. STANGEBY, U. Toronto Institute for Aerospace Studies — The detachment of the scrape-off layer plasma from the divertor target plates in tokamaks is considered as the main provision to reduce particle and heat fluxes onto the material surfaces. Plasma detachment arises when the electron temperature at the target falls below 5 eV, causing an ionisation front to be formed that is well separated from the solid surfaces. Numerical simulations of scrape-off layer plasmas in a simplified 2D geometry using UEDGE show that increasing the core plasma density and decreasing the power into the scrape-off layer plasma reduces the electron temperature at the separatrix, broadens the neutral density profile and, consequently, moves the ionisation front farther away from the target. The position of the ionisation front is controlled by transport processes that take place both at the high temperature and the low temperature side of the front. This contribution examines the significance of these processes, and attempts to describe the location of the ionization front in terms of simple scaling laws.

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Prefer Oral Session  
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