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Theory Experiment

Pedestal Fueling from Recycling in DIII-D,* A.W. Leonard, *General Atomics*, M. Groth, G.D. Porter, M.E. Rensink, *LLNL* – Fueling of the pedestal in DIII-D is found to be dominated by inboard divertor recycling by assessing a combination of experimental measurements, interpretive modeling and kinetic neutral analysis. The pedestal ionization rate from this analysis can match the inferred outward ion flux across the separatrix only for high density, detached inboard divertor conditions. The 2D profile of surface recycling in the divertor and main chamber between ELMs in H-mode was previously determined in DIII-D [1] from surface mounted Langmuir probes and a plasma configuration where toroidally symmetric recycling was dominant. The measured profile of recycling neutrals is launched by the DEGAS2 code into a 2D background plasma profile reconstructed by the UEDGE fluid model and constrained to match the upstream temperature and density profiles. Divertor plasmas of varying density and temperature are constructed to test sensitivity to uncertainty in the divertor plasma conditions

[1] A.W. Leonard, et al., *J. Nucl. Mater.* **363-365**, 1066 (2007).

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