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Category Number and Subject: 5.4.0 Divertors, edge physics, and  
fueling

Theory     Experiment

**Gas Balance in Ohmic Discharges on DIII-D,\*** W.P. West, N.H. Brooks, A.W. Leonard, *GA*, D.G. Whyte, B. Lipschultz, *MIT*, J.G. Watkins, *SNL*, M. Groth, C.J. Lasnier, M.E. Fenstermacher, *LLNL*, J.A. Boedo, D.L. Rudakov, *UCSD*, E.A. Unterberg, *ORISE* – Wall retention of deuterium (D) fueling gas in ohmic discharges on DIII-D has been measured by operation in a closed system with no exhaust from the vacuum vessel. Vessel pressures after identical gas injection, with and without plasma operation, are compared. The ion flux to the divertor was measured with fixed Langmuir probes, and SOL plasma density and temperatures were measured with fast-stroke probes. Ten similar discharges with no in-vessel pumping were repeated, followed by three discharges with in-vessel divertor cryopumps active then regenerated after each discharge. Preliminary analysis indicates the retained D in ohmic discharges is ~90 (20)% of the injected gas in the un(pumped) discharges, whereas previous gas balance during cryopumped ELMing H-mode discharges indicated no retention. In both the pumped and unpumped ohmic cases, the retained D is ~1% of the ion fluence to the wall.

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