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Theory Experiment

Detailed OEDGE Modeling of Core-Pedestal Fueling in DIII-D,* J.D. Elder, P.C. Stangeby, *U. Toronto*; A.W. Leonard, *GA*; M.E. Fenstermacher, *LLNL*; J.A. Boedo, D.L. Rudakov, *UCSD*; B.D. Bray, N.H. Brooks, *GA*; J.G. Watkins, *SNL*; E.A. Unterberg, *ORNL* — The OEDGE code is used to model the deuterium neutral density and ionization distribution inside the separatrix for an attached L-mode SAPP discharge and an attached ELMy H-mode discharge. The background plasma solution is determined by empirical plasma reconstruction matching as many diagnostic measurements as possible. Recycling fluxes are obtained from measurements by Langmuir probes and spectroscopic measurements of D_α . The relative importance of wall, divertor and recombination sources to core and pedestal fueling are assessed. In addition, the sensitivity of the ionization source location to the details of the plasma solution in the divertor is examined. Several models for plasma-wall contact are used to estimate the strength of the wall recycling source. In the L-mode case, ionization profiles peak at the flux surface ~ 1.3 cm inboard of the separatrix (mapped to the outer midplane).

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