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OEDGE Modeling of Carbon Spectroscopy and Carbon Core Leakage for Puffing $^{13}CH_4$ into the Main SOL of DIII-D[1] J.D. ELDER, P.C. STANGEBY, A.G. MCLEAN, U. Toronto, S.L. ALLEN, M.E. FENSTERMACHER, M. GROTH, LLNL, J.A. BOEDO, D.L. RUDAKOV, UCSD, B.D. BRAY, N.H. BROOKS, A.W. LEONARD, W.P. WEST, GA, W.R. WAMPLER, J.G. WATKINS, SNL, D.G. WHYTE, U. Wisc. — Methane puffing experiments were conducted on DIII-D in both L- and H-mode conditions. The puffing was toroidally symmetric into the crown of a series of well-characterized LSN discharges in which the plasma conditions, carbon emissions and core carbon increment were measured. The hydrocarbon species are modeled in OEDGE using an improved methane kinetics and breakup model, with the latest Janev-Reiter reaction data. The resulting carbon is followed until it deposits on surfaces. Code calculated emissions from CI, CII and CIII, as well as the carbon increment in the confined plasma, for varying scenarios of parallel and radial flow, are compared to the measured values. The flows required to reproduce the experimental measurements are estimated and the expected sensitivity of the measurements to underlying flows is examined.

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