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OEDGE Modeling of DIII-D Density Scan Discharges Leading to Detachment[1] J.D. ELDER, P.C. STANGEBY, C.K. TSUI, U. Toronto, A.W. LEONRAD, B.D. BRAY, GA, N.H. BROOKS, Retired, J.A. BOEDO, D.L. RUDAKOV, UCSD, J.G. WATKINS, SNL, E.A. UNTERBERG, ORNL, C.J. LASNIER, A.G. MCLEAN, LLNL — The OEDGE code is used to model the edge plasma for discharges from a density scan experiment on DIII-D. In this experiment the plasma density was increased over a series of L-mode discharges starting with a lower density discharge with both targets attached ($n_e = 1.6 \times 10^{19}\,\mathrm{m}^{-3}$) and ending with a higher density discharge with both targets detached ($n_e = 4.5 \times 10^{19}\,\mathrm{m}^{-3}$). These discharges used large X-point sweeps to maximize plasma measurements. Scans with the recently installed swing probe at the inner wall provided n_e and T_e measurements of the inner divertor. Target Langmuir probe, Thomson scattering and spectroscopic measurements in the divertor were also made. These discharges are among the best diagnosed discharges ever made on DIII-D. For attached plasmas, OEDGE modeling replicates quite well the relation between divertor measurements and measurements in the main SOL, indicating that for attached divertor conditions the controlling physics appears to have been identified and correctly incorporated in OEDGE.

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