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Carbon Radiation Studies in the DIII–D Divertor with the Monte Carlo Impurity (MCI) Code[1] T.E. EVANS, A.W. LEONARD, W.P. WEST, General Atomics, D.F. FINKENTHAL, Palomar College, M.E. FENSTERMACHER, G.D. PORTER, Lawrence Livermore National Laboratory, Y. CHU, University of Pittsburgh — Carbon sputtering and transport are modeled in the DIII–D divertor with the MCI code. Calculated 2-D radiation patterns are compared with measured radiation distributions. The results are particularly sensitive to T_i near the divertor target plates. For example, increasing the ion temperature from 8 eV to 20 eV in MCI raises P_{rad}^{div} from 1626 to 2862 kW. Although this presents difficulties in assessing which sputtering model best describes the plasma-surface interaction physics (because of experimental uncertainties in T_i), processes which either produce too much or too little radiated power compared to the measured value of 1718 kW can be eliminated. Based on this, the number of viable sputtering options has been reduced from 12 to 4. For the conditions studied, three of these options involve both physical and chemical sputtering, and one requires only physical sputtering.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

Special instructions: DIII–D Oral Session II, immediately following Whyte

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