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Measurements of Divertor Radiated Power Losses in the 170–1700 Å Spectral Region on DIII–D¹ R.D. WOOD, S.L. ALLEN, M.E. FENSTERMACHER, D.N. HILL, LLNL, R.C. ISLER, ORNL, A.W. LEONARD, W.P. WEST, GA — We have spectroscopically measured the bulk of the radiated power losses and the constituents of the divertor radiation on DIII–D. At typical divertor electron densities (n_e) and temperatures (T_e) the bulk of the radiated power comes from the 400–1600 Å spectral region. To directly measure this radiation, a 290 g/mm grating covering the 170–1700 Å region was recently installed in the Divertor UV SPRED spectrograph. The spectrograph was then photometrically calibrated using synchrotron radiation. In general, the spectroscopically measured radiative losses are in agreement with those from bolometry. In deuterium plasmas with strong deuterium puffing, low T_e detached plasmas are observed. In these discharges, a highly radiating zone forms along the outboard leg of the divertor; CIV emissions (1550 Å) dominate near the X–point and Ly- α (1216 Å) near the OSP. A measure of the Ly- α to Ly- β ratio provides evidence of collisional-radiative recombination processes. Spectroscopic analysis of helium plasmas with a detached divertor will be presented.

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