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Category Number and Subject: 5.6.2. DIII-D Tokamak
[] Theory [X] Experiment

Near Infrared Spectroscopy of the DIII-D Divertor,* A.G. McLean, V.A. Soukhanovskii, *Lawrence Livermore National Laboratory*; N.H. Brooks, B.D. Bray, T.N. Carlstrom, *General Atomics* – A high speed, high resolution near infrared (NIR) spectrometer has been installed at DIII-D to make first-of-its-kind observations of the 0.8–2.2 μm region in a tokamak divertor. The goals of this diagnostic are (1) to study Paschen spectra for line-averaged measurement of low temperature plasma parameters, (2) to benchmark the chemical and physically sputtered sources of neutral carbon using the lineshape of the CI, 910 nm multiplet, and (3) to quantify contamination of the 0.75–1.1 μm region where Thomson-shifted laser light is measured by the Thomson scattering diagnostic. Diagnostic capabilities include a 300 mm, f/3.9 design, 300–2400 Gr/mm gratings providing optical resolution of ~ 0.65 –0.04 nm, and readout at up to 900 frames/second. Data are presented in L-mode plasmas, and in H-mode between ELMs and during the ELM peak. Results acquired by this diagnostic will be applied to design of a proposed divertor Thomson diagnostic for NSTX-U and aid validation of the Thomson system on ITER.

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