

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Two Non-Invasive Optical Diagnostics for the Plasma Couette Experiment¹ MEGAN TABBUTT, KEN FLANAGAN, JASON MILHONE, MARK NORBERG, FRED ROESLER, CARY FOREST, University of Wisconsin - Madison, WIPAL TEAM TEAM — Two non-invasive optical diagnostics have been developed for the Plasma Couette Experiment Upgrade (PCX-U). PCX-U is capable of producing electron temperatures of 5 to 15 eV, densities between 10^{10} and $5 \times 10^{11} \text{cm}^{-3}$, and ion temperatures between 0.5 eV to 2 eV. The first diagnostic described utilizes a low cost USB spectrometer for optical emission spectroscopy (OES). Combined with a modified coronal model, OES is used to measure electron temperature in Argon plasmas. A higher resolution spectrometer is used to image ion lines which can be analyzed to determine moments of the ion energy distribution function, particularly ion temperature and flow. Both optical diagnostics are mounted on a linear stage for scanning chords across the plasma volume. Abel transform techniques are used to create radial profiles of measured plasma properties.

¹DOE, NSF

Megan Tabbutt
University of Wisconsin - Madison

Date submitted: 15 Jul 2016

Electronic form version 1.4