

Abstract Submitted
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Absolute Wavelength Calibration of the IDSII Spectrometer for Impurity Ion Velocity Measurements in the MST M. BALTZER, D. CRAIG, Wheaton College (IL), D.J. DEN HARTOG, M.D. NORBERG, University of Wisconsin - Madison, MST TEAM — The MST operates two Ion Doppler Spectrometers (IDS) for high time-resolution passive and active measurements of impurity ion emission. Absolutely calibrated measurements of flow are difficult because the spectrometers record data within 0.3 nm of the line of interest, and commercial calibration lamps do not produce lines in this narrow range. Four calibration methods were investigated. First, emission along the chord bisecting the poloidal plane was measured as it should have no time-averaged Doppler shift. Second, a calibrated CCD spectrometer and the IDSII were used to observe the same plasma from opposing sides so as to measure opposite Doppler shifts. The unshifted line is located halfway between the two opposing measurements. Third, the two fibers of the IDSI were positioned to take absolute flow measurements using opposing views. Substituting the IDSII for one of the IDSI fibers, absolute measurements of flow from the IDSI were used to calibrate the IDSII. Finally, an optical system was designed to filter an ultraviolet LED, providing a known wavelength source within the spectral range covered by the IDSII. The optical train is composed of an air-gapped etalon and fused silica lenses. The quality of calibration for each of these methods is analyzed and their results compared. Preliminary impurity ion velocity measurements are shown. This work has been supported by the US DOE and the NSF.

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