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Calibration of the Thomson Scattering System on the ZaP Experiment R.J. OBERTO, U. SHUMLAK, B.A. NELSON, R.P. GOLINGO, Aerospace and Energetics Research Program, University of Washington, D.J. DEN HARTOG, University of Wisconsin-Madison — The ZaP Experiment studies the sheared flow stabilization of a Z-pinch plasma. A Thomson scattering system measures the local electron temperature and density in the pinch using a 10 J ruby laser. The scattered light is collected by a fiber optic bundle, separated by a single-grating spectrometer with ruby and H_α filters, and binned by an array of photomultiplier tubes (PMTs). The PMT response is digitized, providing a time-resolved signal. Preliminary measurements using a preliminary calibration indicate temperatures from 50 to 150 eV. To calibrate the system completely, a tungsten lamp has been used to measure the system's spectral response, determine PMT gain, and characterize the filters in the spectrometer. The instrument function of the spectrometer has been characterized using a helium-neon laser. The total system throughput will be determined by comparing predicted and measured Raman scattering signals. The calibration will enable absolute density measurements, improved analysis codes, and system optimization.

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