Abstract Submitted
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Spatial Expansion and Automation of the Pegasus Thomson Scattering Diagnostic System[1] G.M. BODNER, M.W. BONGARD, R.J. FONCK, J.A. REUSCH, D.J. SCHLOSSBERG, G.R. WINZ, University of Wisconsin-Madison — The Pegasus Thomson scattering diagnostic system has recently undergone modifications to increase the spatial range of the diagnostic and automate the Thomson data collection process. Two multichannel spectrometers have been added to the original configuration, providing a total of 24 data channels to view the plasma volume. The new system configuration allows for observation of three distinct regions of the plasma: the local helicity injection (LHI) source (R $\sim$ 67-73.8 cm), the plasma edge (R $\sim$ 51.5-57.6 cm), and the plasma core (R $\sim$ 35-41.1 cm). Each spectrometer utilizes a volume-phase holographic (VPH) grating and a gated-intensified CCD camera. The edge and the LHI spectrometers have been fitted with low-temperature VPH gratings to cover $T_e = 10 - 100\ eV$, while the core spectrometer has been fitted with a high-temperature VPH grating to cover $T_e = 0.1 - 1.0\ keV$. The additional spectrometers have been calibrated to account for detector flatness, detector linearity, and vignetting. Operation of the Thomson system has been overhauled to utilize LabVIEW software to synchronize the major components of the Thomson system with the Pegasus shot cycle and to provide intra-shot beam alignment. Multi-point Thomson scattering measurements will be obtained in the aforementioned regions of LHI and Ohmic discharges and will be compared to Langmuir probe measurements.

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