Abstract Submitted
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**Transport Analysis on MST using Thomson Scattering and Equilibrium Reconstruction**[1] J.A. REUSCH, J.K. ANDERSON, H.D. CUMMINGS, D.J. DEN HARTOG, C.B. FOREST, R. O'CONNELL, University of Wisconsin - Madison — Improvements in the Thomson Scattering system on MST coupled with the equilibrium reconstruction code MSTFit have enabled higher resolution transport analysis with improved accuracy in the plasma edge. Uncertainty in $\nabla$Te has been drastically reduced by both the higher spatial resolution of the new Thomson system (up to 20 points per laser pulse) and careful spatial calibration of the system using an insertable probe, which removes virtually all error in radial position. This greatly improves the accuracy of transport quantities such as the electron thermal conductivity, $\chi_e$. The new system can collect multiple Te profiles in a single discharge, helping to constrain the time rate of change of several quantities, most notably the stored thermal energy, $\dot{W}$, the pressure profile, and hence the magnetic equilibrium. We have developed a procedure to compute the ohmic input power, $P_\Omega$, based on the time rate of change of the equilibrium without a measurement of $Z_{eff}$. This has greatly improved the reliability of the measured energy confinement time, $\tau_E$. Sample transport analysis results are presented.

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