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Energy Confinement and Helicity Dissipation Studies Using Thomson Scattering on the Pegasus Toroidal Experiment[1] D.J. SCHLOSSBERG, A.S. DOWD, R.J. FONCK, N.L. SCHOENBECK, G.R. WINZ, University of Wisconsin-Madison — The Pegasus Toroidal Experiment provides several unique operating regimes that require characterization of plasma density and temperature by Thomson scattering. High-β, high I_p/I_{TF} regimes at low B_T present discharges that require accurate plasma profiles for equilibrium reconstructions. Investigations of non-solenoidal startup using point-source DC helicity injection necessitate characterizing resistive helicity dissipation, accessible via measurement of T_e and n_e profiles. Furthermore, the usefulness of this method for startup of future fusion devices hinges on confinement scaling during helicity injection. By measuring temperature and density profiles before, during, and after Taylor relaxation, the dominant energy confinement scalings and related helicity dissipation rates for this startup technique can be evaluated. To address these issues, a new multi-point Thomson scattering diagnostic has been deployed on Pegasus. It will provide 12–24 spatial points radially across the plasma with a high degree of flexibility to provide measurements within the varied plasma regimes. First results from the newly installed Thomson scattering system will be shown for some of these regimes.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: Please place as poster 6 within the Pegasus poster presentations.

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