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Electron Temperature Measurements and Energy Transport in SSPX B.F. HUDSON, T.A. CASPER, E.B. HOOPER, R.J. JAYAKUMAR, L.L. LODESTRO, H.S. MCLEAN, J.M. MOLLER, C.A. ROMERO-TALAMAS, R.D. WOOD, Lawrence Livermore National Laboratory — Time-resolved measurements ($\leq$100 μs) have been made with a multi-pulse Thomson scattering diagnostic in the SSPX spheromak experiment, to obtain radial electron density and temperature profile during plasma formation and sustainment. In most discharges three regimes are observed with respect to T_e and n_e evolution. Initially there is a cold (<100 eV) formation phase, followed by a hollow T_e profile with maximum temperatures 100-200 eV, and a final heat-up and cool-down phase where we obtain the highest plasma temperatures (350+ eV). The transition from hollow to peaked T_e is quite sharp ($\sim$50 μs) and the recent upgrade to double-pulse Thomson scattering ($\sim$40 μs between pulses) facilitates capturing this transition. We also present simulations using the CORSICA code where the equilibrium is kept fixed and the discharge is evolved to observe the change in temperature profiles for different transport coefficients. In addition, electron transport and heating will be correlated with measured MHD mode activity. Temperature and density measurements during multi-pulse coaxial gun-current operation will also be presented. * Work performed under the auspices of the US DOE by University of California Lawrence Livermore National Laboratory under contract W–7405–ENG–48.

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