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Thomson Scattering Measurements on HIT-SI3[1] C.J. EVERSON, K.D. MORGAN, T.R. JARBOE, University of Washington — A multi-point Thomson Scattering diagnostic has been implemented on HIT-SI3 (Helicity Injected Torus - Steady Inductive 3) to measure electron temperature. The HIT-SI3 experiment is a modification of the original HIT-SI apparatus that uses three injectors instead of two. This modification alters the configuration of magnetic fields and thus the plasma behavior in the device. The scientific aim of HIT-SI3 is to develop a deeper understanding of how injector behavior and interactions influence current drive and plasma performance in the spheromak. The Thomson Scattering system includes a 20 J (1 GW pulse) Ruby laser that provides the incident beam, and collection optics that are installed such that measurements can be taken at four spatial locations in HIT-SI3 plasmas. For each measurement point, a 3-channel polychromator is used to detect the relative level of scattering. These measurements allow for the presence of temperature gradients in the spheromak to be investigated. Preliminary HIT-SI3 temperature data are presented and can be compared to predictions from computational models.

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