

Abstract Submitted
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A Perspective on HIT-SI3 Confinement and Heating Based on Initial Thomson Scattering Observations (PhD Oral-24)¹ CHRIS EVERSON, KYLE MORGAN, TOM JARBOE, University of Washington, HIT-SI3 TEAM — The presented research considers electron confinement and heating on the Steady-Inductive Helicity-Injected Torus (HIT-SI3). Specifically, the mechanisms that determine how input energy is distributed in the spheromak plasma are examined. Thomson Scattering measurements of the HIT-SI3 electron temperature and relative density are used to inform the discussion for discharges driven by steady inductive helicity injection at 15.6 kHz. These measurements are compared to simulation. They also guide the parameter choices in a 0-D energy balance model to further elucidate the confinement and heating in HIT-SI3. Results suggest that, if the heat flux is assumed to be diffusive, a Rechester-Rosenbluth stochastic field formulation for the electron thermal diffusion coefficient may be most appropriate.

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