

Abstract Submitted
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Overview of power and diagnostic upgrades for HIT-SI3 and planned HIT-SIU experiments¹ A.C. HOSSACK, C.J. HANSEN, University of Washington, K.D. MORGAN, CTFusion, Inc. — The HIT-SI3 device is being upgraded with new switching power amplifiers (SPAs) and capacitor banks for a 70% increase in nameplate power capacity and a 35% increase in stored energy. The additional power injection will enable optimized j/n and longer duration sustainment of high current (>100 kA) and high current amplification (>3) spheromaks. A new, multi-chord, two-color interferometer is being constructed to measure plasma density in the toroidal midplane. The new system will be able to operate in HIT-SI3's high density regime ($n_e > 5 \times 10^{19} \text{ m}^{-3}$) where the previous far-infrared interferometer could not. Additionally, plans for the new HIT-SI-Upgrade (HIT-SIU) are presented. The three, discrete helicity injectors will be replaced with a manifold which has four connections to the spheromak flux conserver. The new injector manifold will test lower density startup, improved plasma-facing insulating coatings, applied perturbation spectra predicted to improve performance, and a geometry compatible with larger, future devices.

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