

Abstract Submitted
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Feedback Stabilization for the HIT-SI device J.S. WROBEL, D. HOMIAK, T.R. JARBOE, B.A. NELSON, P.E. SIECK, University of Washington — HIT-SI has successfully established spheromaks through the use of inductive helicity injection. During sustainment, the produced spheromaks experience plasma current decay despite continued driving. Soak-through in the copper flux-conserver and through the diagnostic gap is suspected as the cause, supported by data from the existing surface magnetic probe array, which suggests the occurrence of mode locking. To further study the possibility and effect of locked modes and to test the applicability of feedback control as a corrective measure, application of additional sensors to coincide with feedback sites is underway. Through feedback it may also be possible to suppress occasional current reversals. Application of fields outside of vacuum, through the stainless steel tank and through the Cu flux-conserver, is proposed. Results, and the design and modeling of the feedback system, will be presented for various HIT-SI spheromak conditions.

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