

Abstract Submitted
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Overview of Recent Progress on the SSPX Spheromak¹ H.S. MCLEAN, D.N. HILL, R.D. WOOD, E.B. HOOPER, B.I. COHEN, L.L. LODESTRO, J.M. MOLLER, C.A. ROMERO-TALAMAS, R. FOSTER, A. LUDINGTON, J. ORTIZ, Lawrence Livermore National Laboratory, E. MEZONLIN, Florida A&M University — Recent results from SSPX show increased Te and better understanding of spheromak plasma confinement and magnetic field generation. Magnetic fluctuations are $< 1\%$ when the q-profile doesn't span low-order rational surfaces. The magnetic field can be built up and sustained with periodic current pulses or a steady-state discharge using a new modular capacitor bank. Magnetic reconnection is measured and modeled during plasma formation and compared with fast imaging diagnostics. New diagnostics include a neutral particle analyzer, soft x-ray detectors, and multi-pulse Thomson scattering. A neutral beam heating system is being procured to provide an independent heat source for confinement and pressure-limit studies. NIMROD 3-d MHD simulations examine long duration steady-state discharges and a next-generation spheromak experiment with reduced edge current losses and high flux amplification.

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