Abstract Submitted
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Numerical and experimental investigations of helicity sustainment in spheromaks C.A. ROMERO-TALAMAS, Univeristy of Maryland, College Park, MD 20742, E.B. HOOPER, H.S. MCLEAN, T.L. STEWART, B. HUDSON[1], L.L. LODESTRO, R.D. WOOD, J.M. MOLLER, R.W. GEER, R.O. KEMPTNER, Lawrence Livermore National Laboratory, Livermore, CA 94550 — Numerical simulations of SSPX plasmas [E.B. Hooper, et al., Nucl. Fusion 39, 863 (1999)] using the NIMROD code [C.R. Sovinec, et al., J. Comput. Phys. 195, 355 (2004)] are being analyzed with the 3D visualization code VisIt. Simulations show that constant T surfaces approximately coincide with magnetic flux surfaces, except in regions where magnetic reconnection occurs, thus providing an insight of helicity and topology evolution before and after reconnection. Stellarator-like T surfaces might be formed before these reconnection events and lead to hollow profiles (measured along radial lines) similar to profiles measured at SSPX. Simulations also show how helicity increases in the open flux before reconnection, and where reconnection occurs; virtual measurements of these events are being compared to experimental ones. The authors are grateful to B.A. Nelson from the PSI center at the University of Washington, and to B.J. Whitlock from the VisIt team for their software support. Work performed under the auspices of the U.S. Department of Energy under contract DE-AC52-07NA27344 at LLNL.

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