Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Neutral Beam Current Drive in Spheromak plasma and plasma stability L.D. PEARLSTEIN, R.J. JAYAKUMAR, B. HUDSON, D.N. HILL, L.L. LODESTRO, H.S. MCLEAN, T.K. FOWLER, T.A. CASPER, SSPX TEAM — A key question for the Sustained Spheromak Physics Experiment (SSPX) is understanding how spheromaks can be sustained by other current drive tools such as neutral beam current drive. Another question is whether the present relationship between current and maximum spheromak magnetic field (plasma beta) is related to Alcator-like ohmic confinement limit or is a stability limit. Using the code CORSICA, the fraction of neutral beam current drive that can be achieved has been calculated for different injection angles with a fixed equilibrium. It is seen that relaxing the equilibrium with this drive simply drives the core safety factor to low values. Other equilibria where the NBI may give aligned current drive are being explored. Free-boundary equilibria calculations are underway to see what hyperresistivity model gives the observed sustained SSPX performance and include that in the NBI calculations. Work performed under the auspices of the US DOE by University of California Lawrence Livermore National Laboratory under contract W-7405-ENG-48.

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Date submitted: 20 Jul 2007 Electronic form version 1.4