

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

3D MHD Simulations of Spheromak Compression¹ JAMES E. STUBER, SIMON WOODRUFF, Woodruff Scientific, JOHN O'BRYAN, CARLOS A. ROMERO-TALAMAS, University of Maryland Baltimore County, DARPA SPHEROMAK TEAM — The adiabatic compression of compact tori could lead to a compact and hence low cost fusion energy system. The critical scientific issues in spheromak compression relate both to confinement properties and to the stability of the configuration undergoing compression. We present results from the NIMROD code modified with the addition of magnetic field coils that allow us to examine the role of rotation on the stability and confinement of the spheromak (extending prior work for the FRC [1]). We present results from a scan in initial rotation, from 0 to 100km/s. We show that strong rotational shear (10km/s over 1cm) occurs. We compare the simulation results with analytic scaling relations for adiabatic compression.

[1] Woodruff et al Adiabatic Compression of a Doublet Field Reversed Configuration (FRC) J. Fusion Energy 27(1-2):128 (2007)

¹Work performed under DARPA grant N66001-14-1-4044.

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Date submitted: 24 Jul 2015

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