Abstract Submitted
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Physicsdesign point for a 1MW fusion neutron source[1] SIMON WOODRUFF, PAUL MELNIK, PAUL SIECK, JAMES STUBER, Woodruff Scientific Inc, CARLOS ROMERO-TALAMAS, JOHN O'BRYAN, University of Maryland Baltimore County, RONALD MILLER, Decysive Systems Inc — We are developing a design point for a spheromak experiment heated by adiabatic compression for use as a compact neutron source. We utilize the CORSICA and NIMROD MHD codes as well as analytic modeling to assess a concept with target parameters R0=0.5m, Rf=0.17m, T0=1keV, Tf=8keV, n0=2e20m-3 and nf= 5e21m-3, with radial convergence of C=R0/Rf=3. We present results from CORSICA showing the placement of coils and passive structure to ensure stability during compression. We specify target parameters for the compression in terms of plasma beta, formation efficiency and energy confinement. We present results simulations of magnetic compression using the NIMROD code to examine the role of rotation on the stability and confinement of the spheromak as it is compressed.

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