

Abstract Submitted
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Foil Liner Compression of FRCs to Megagauss Fields¹ JOHN SLOUGH, DAVID KIRTLEY, CHRIS PIHL, GEORGE VOTROUBEK, MSNW LLC, RICHARD MILROY, GEORGE MARKLIN, University of Washington — The Foil Liner Compression Experiment will explore the metallic liner compression of the FRC where a theta pinch compression coil will be employed to drive a thin foil liner. The intention is to reduce the complexity and enhance the survivability of the apparatus, as well as minimize the kinetic energy required to reach fusion conditions. It is believed that it is possible to accomplish this at sub-megajoule energies. This however will require operation at very small scale. At small scale the implosion speed must be reasonably fast to maintain the magnetized plasma (FRC) equilibrium during compression. These additional considerations imply that a relatively thin liner must be employed. For limited liner kinetic energy, it becomes clear that the thinnest liner imploded to the smallest radius consistent with the requirements for FRC equilibrium lifetime is desired. For the experiments planned, existing facilities for FRC target creation will be adapted for insertion into an aluminum foil liner with a radius of 70 mm and a thickness of 0.1 mm. A key component of this work will be advancement of the numerical codes to provide accurate and predictive capabilities of the plasma/foil liner compression. These efforts will also be discussed.

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