

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Modeling Liner Compression Of FRC's: Obstacles and Advances<sup>1</sup>**

MICHAEL H. FRESE, SHERRY D. FRESE, NumerEx — Compression of a field-reversed configuration (FRC) by an imploding solid liner is a possible path to magnetized target fusion. It is critical to the success of such experiments to perform full-up multidimensional computational simulations of them. However, there are numerous difficulties in performing those simulations. We have made significant progress on these issues. First, we have performed fully integrated, simultaneous simulations of liner implosion and FRC formation on the same grid. These simulations address the generation of rotation in the FRC as well as perturbations of the liner. Second, we have developed a mixed-order numerical treatment of the anisotropic heat conduction that has proven both more robust and more accurate. This improvement has enabled us to run more simulations for design purposes. Finally, we have begun to perform 3-d simulations of the final stages of compression, beginning from the self-consistent state of the 2-d axisymmetric simulation, perturbed in a mass, energy, momentum, and flux conserving way.

<sup>1</sup>Work Supported By U. S. Air Force Research Laboratory Directed Energy Directorate.

Michael H. Frese  
NumerEx

Date submitted: 25 Jul 2006

Electronic form version 1.4