Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Current Results and Direction of the Pulsed High Density (PHD) FRC Experiment[1] SAMUEL ANDREASON, HIROSHI GOTA, RICHARD MILROY, JOHN SLOUGH, University of Washington — The goal of the Pulsed High Density experiment (PHD) experiment is to reach break-even conditions through the magneto-kinetic compression of the Field Reversed Configuration (FRC). Continuing experimental work on PHD is focused on generating a FRC that is stable, has a long lifetime, and has sufficient flux and particle inventories to be accelerated and compressed to fusion conditions. Initial experiments with a 20 cm radius vacuum vessel produced FRCs with the required flux and particle inventories, but insufficient ion temperature to provide strong stabilization and long lifetimes. The source section has now been replaced with a 40 cm radius fused silica tube and magnet power supply similar to the Large S experiment's (LSX) formation chamber. Initial experiments will be aimed at forming keV ion temperatures at densities of $1x10^{21}$ m^{-3}. Numerical calculations indicate that a doubling of both density and temperature will be achieved in the first stage of acceleration/compression. A design of this next phase of the experiment will also be presented along with numerical modeling of the acceleration/compression process.

[1]Research funded by the DOE Office of Fusion Energy Sciences.

Samuel Andreason
PDL, University of Washington

Date submitted: 24 Jul 2006 Electronic form version 1.4