

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

First Flight of the Levitated Dipole Experiment¹ D.T. GARNIER, M.E. MAUEL, Columbia University, A.C. BOXER, J.E. ELLSWORTH, J. KESNER, MIT Plasma Science and Fusion Center — In the past year, the first levitated experiments have been conducted in the Levitated Dipole Experiment (LDX). LDX, which consists of a 560 kg superconducting coil floating within a 5m diameter vacuum chamber, is designed to study fusion relevant plasmas confined in a dipole magnetic field. In previous plasma run campaigns, conducted with the dipole coil held by thin supports, stable high beta plasma operation were demonstrated where the plasma kinetic energy is contained in population of energetic particles. It is expected that levitated experiments will improve confinement by removing the primary loss of energy and particles along field lines. This in turn will lead to higher plasma density and broader radial profiles which should increase the stable operational space. In February, the first flight of the floating dipole coil was achieved with 40 minutes of continuous levitation and three demonstration plasma shots. This first flight experiment demonstrated the operation of the digital feedback system that provides for stable levitation of the coil. The results from the first plasma experiments, planned for early fall, will be presented.

¹Supported by US DOE Grants: DE-FG02-98ER54458/9.

Jay Kesner
MIT PSFC

Date submitted: 20 Jul 2007

Electronic form version 1.4