Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Effects of Biasing and Boundary Conditions on Convective Blobs in Magnetized Laboratory Plasmas[1] L. YAN, M. GILMORE, C. WATTS, University of New Mexico, T.A. CARTER, UCLA — Intermittent convective plasma transport across magnetic field lines ("blobs") has been one of the most important issues in fusion-related edge plasma physics, and is thought to play a key role in cross-field transport in the tokamak scrape-off layer. Fundamental experiments on blobs are being conducted in both the linear LAPD and HelCat devices. HelCat is a 4 m long, 50 cm diameter device with B $<$ 0.22 T and both RF helicon and cathode sources. Blobs are always observed in LAPD and HelCat cathode plasmas. However, blobs are seen in HelCat helicon plasmas only under certain conditions. Biased electrodes (HelCat), and biasing of the cathode with respect to the wall (LAPD), are utilized to affect the sheared ExB flow profiles. Fluctuations, flux, and flows are monitored with probes. Measurements with biasing in both devices show that flow shear is modified at the edge and blob characteristics change. In HelCat, flows and blobs also change with axial and radial boundary conditions.

[1]Work supported by the U.S. D.o.E. under grant no. DE-FG02-04ER54791.

Mark Gilmore
University of New Mexico

Date submitted: 18 Jul 2009 Electronic form version 1.4