

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Experimental and Numerical Studies of Magnetic Bubble Expansion as a Model for Extra-Galactic Radio Lobes¹ A.G. LYNN, Y. ZHANG, University of New Mexico, S.C. HSU, H. LI, W. LI, Los Alamos National Laboratory, M. GILMORE, CHRISTOPHER WATTS, University of New Mexico — Recent work in plasma astrophysics has suggested that magnetic energy features prominently in the large-scale evolution of active galaxies. The Plasma Bubble Expansion Experiment (PBEX) will conduct laboratory experiments and coordinated numerical modeling to address outstanding nonlinear plasma physics issues related to how magnetic energy and helicity carried by extra-galactic jets interacts with the intergalactic medium to form extra-galactic radio lobe structures. Experiments will be conducted in the 4 meter long, 50 cm diameter HELCAT linear plasma device at UNM. A new pulsed coaxial gun will form and inject magnetized plasma bubbles into a lower pressure background plasma formed by the helicon and/or hot cathode source in HELCAT. Experimental parameters will be adjusted so that important dimensionless parameters are relevant to the astrophysical context. Preliminary magnetic probe measurements and MHD modeling will be presented.

¹Supported by NSF-AST/DOE and LANL LDRD

Alan Lynn
University of New Mexico

Date submitted: 19 Jul 2007

Electronic form version 1.4