

Abstract Submitted
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Magnetic Bubble Expansion as an Experimental Model for Extra-Galactic Radio Lobes ALAN LYNN, YUE ZHANG, University of New Mexico, SCOTT HSU, Los Alamos National Laboratory — The Plasma Bubble Expansion Experiment (PBEX) is conducting laboratory experiments 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 radio lobe structures. Experiments are being conducted in the 4 meter long, 50 cm diameter HELCAT linear plasma device at UNM. A pulsed magnetized coaxial gun (~ 10 kV, ~ 100 kA, ~ 2 mWb) forms and injects magnetized plasma bubbles perpendicularly into a lower pressure weakly magnetized background plasma formed by a helicon and/or hot cathode source in HELCAT. Ideal MHD simulations show that an MHD shock develops ahead of the bubble as it propagates, and that the bubble develops asymmetries due to the background field [1]. Experimental data from plasma bubble injection into a background plasma, particularly magnetic probe measurements, will be discussed.

[1] W. Liu et al., Phys. Plasmas 15, 072905 (2008).

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