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**Laboratory Experiments on Propagating Plasma Bubbles into Vacuum, Vacuum Magnetic Field, and Background Plasmas** ALAN G. LYNN, YUE ZHANG, MARK GILMORE, University of New Mexico, SCOTT HSU, Los Alamos National Laboratory — We discuss the dynamics of plasma “bubbles” as they propagate through a variety of background media. These bubbles are formed by a pulsed coaxial gun with an externally applied magnetic field. Bubble parameters are typically  $n_e \sim 10^{20} \text{ m}^{-3}$ ,  $T_e \sim 5 - 10 \text{ eV}$ , and  $T_i \sim 10 - 15 \text{ eV}$ . The structure of the bubbles can range from unmagnetized jet-like structures to spheromak-like structures with complex magnetic flux surfaces. Some of the background media the bubbles interact with are vacuum, vacuum with magnetic field, and other magnetized plasmas. These bubbles exhibit different qualitative behavior depending on coaxial gun parameters such as gas species, gun current, and gun bias magnetic field. Their behavior also depends on the parameters of the background they propagate through. Multi-frame fast camera imaging and magnetic probe data are used to characterize the bubble evolution under various conditions.

Alan Lynn  
University of New Mexico

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