

Abstract Submitted
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Design and Construction of the Plasma Bubble Expansion Experiment¹ Y. ZHANG, A.G. LYNN, University of New Mexico, S.C. HSU, Los Alamos National Laboratory, M. GILMORE, CHRISTOPHER WATTS, University of New Mexico — We will present the design and construction of a new compact coaxial magnetized plasma gun and its associated hardware systems. The plasma gun will be used for experimental studies of “magnetic bubble” expansion into a pre-existing lower density background plasma on the HELCAT facility at UNM. These experiments will address key nonlinear plasma physics issues pertinent to plasma models of the formation and evolution of extra-galactic radio lobes. The gun will be powered by a 120 μ F 10kV ignitron-switched capacitor bank. High pressure gas, controlled by a gas valve system, will be puffed into an annular gap between inner and outer coaxial electrodes. An applied high voltage ionizes the gas and creates a radial current sheet. The \sim 100kA discharge current generates toroidal flux, and an external magnet will provide poloidal “bias” flux. This poster will describe in detail the design and construction of the various power systems for the new plasma gun source.

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