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Observations and Modeling of Magnetized Plasma Jets and Bubbles Launched into a Magnetized Background Plasma[1] M. GILMORE, R. DWYER, N. HINES, University of New Mexico — The interaction of magnetized flowing plasmas with background plasma is a topic of wide interest in astrophysics as well as high temperature laboratory plasmas. In this work, hot, dense, plasma structures launched from a coaxial plasma gun into a background low density magnetized lab plasma. The dense gun plasma drags frozen-in magnetic flux into the chambe'rs background magnetized plasma, providing a rich set of dynamics to study magnetic turbulence, force-free magnetic spheromaks, shocks, as well as CME-like dynamics possibly relevant to the solar corona. Vector magnetic field data from an eleven-tipped B-dot rake probe and images from an ultra-fast camera will be presented in comparison with ongoing MHD modeling. Recent experiments show a possible magnetic Rayleigh-Taylor (MRT) instability that appears asymmetrically at the interface between launched spheromaks (bubbles) and their entraining background magnetic field and plasma. Efforts to understand this instability using in situ measurements, new chamber boundary conditions, and ultra-fast camera data will be presented.

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Mark Gilmore
University of New Mexico

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