Dynamics of exploding plasmas in a large magnetized plasma*

C. Niemann¹, C. Constantin¹, E. Eyerson¹, D. Schaeffer¹, L. Morton¹, W. Gekelman¹, P. Pribyl¹, D. Winske², D. Larson³, N. Kugland¹, S. Glenzer³, R. Campbell³, B. Van Campernolle¹

¹University of California Los Angeles, 1040 Veteran Ave., Los Angeles, CA 90095
²Los Alamos National Laboratory
³Lawrence Livermore National Laboratory, 7000 East Ave., Livermore, CA 94550

We present measurements of the expansion of a laser-produced plasma across a DC magnetic field (300 G) in a large (1m x 17 m), magnetized plasma (He, 4x10¹² cm⁻³, 5 eV). The bulk blow-off velocity of the laser-plasma is initially larger than the Alfvén velocity in the ambient plasma (Mₐ=2.5). We measured in detail the dynamics of the diamagnetic cavity and field compression over c/wₚl and wₐc⁻¹. The laser plasma radiates large amplitude shear Alfvén waves that influence the energy balance and bubble dynamics.

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