

Dynamics of exploding plasmas in a large magnetized plasma^{*}

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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, $4 \times 10^{12} \text{ cm}^{-3}$, 5 eV). The bulk blow-off velocity of the laser-plasma is initially larger than the Alfvén velocity in the ambient plasma ($M_A=2.5$). We measured in detail the dynamics of the diamagnetic cavity and field compression over c/w_{pi} and w_{ci}^{-1} . The laser plasma radiates large amplitude shear Alfvén waves that influence the energy balance and bubble dynamics.

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