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Super-Alfvénic Expansion of a Laser-Plasma through an Ambient Magnetized Plasma ERIK EVERSON, CARMEN CONSTANTIN, LUCAS MORTON, DEREK SCHAEFFER, NATHAN KUGLAND, WALTER GEKELMAN, CHRISTOPH NIEMANN, University of California, Los Angeles — In recent experiments on the Large Plasma Device (LAPD) several diagnostics have been implemented to investigate the super-Alfvénic flows created by the rapid expansion of a high-density, energetic laser-plasma through the ambient magnetized, helium plasma of the LAPD. The laser-plasma is created by a 25 J, 5 ns FWHM laser pulse of 1064 nm light incident on a graphite target and is allowed to expand a distance > 30 cm across the magnetic field lines. With the laser-plasma expansion imparting enough energy to the low-density ambient plasma ($n \sim 2 \times 10^{-12}$ cm^{-3}, $T_e \sim 6$ eV, $T_i \sim 1$ eV, $B_o = 300$ G), super-Alfvénic flows can be created. The magnetic structure of these flows has been measured using a 1 mm, 3-axis differential magnetic probe (B-dot probe). A measurement of the energy distribution of ions has also been attempted using an energy analyzer.

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