Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

**Comparison of Sub- and Super-Alfvénic Laser-Plasma Explosions through Low-Density, Magnetized Helium and Hydrogen Plasmas** E.T. EVERSON, D. SCHAEFFER, UCLA, M. LAUTER, G. RENNENKAMPFF, University of the German Armed Forces, Munich, A.S. BONDARENKO, C.G. CONSTANTIN, C. NIEMANN, UCLA — Recent experiments performed at the University of California at Los Angeles (UCLA) utilized the Large Plasma Device (LAPD) and the Phoenix Laser to drive sub- and super-Alfvénic laser-plasma explosions through the uniform, magnetized background plasma of the LAPD. The 30 J, 5 ns FWHM Phoenix laser ablated a graphite target to produce a debris plasma that is allowed to expand $> 50$ cm and shock the low-density ($1 - 5 \times 10^{12}$ cm$^{-3}$), magnetized ($275 - 600$ G) Helium (or Hydrogen) plasma of the LAPD. An array of seven 3-axis b-dot probes were used to measure the magnetic field compression, expulsion, and fast-diffusion of the diamagnetic cavity formed by the laser-plasma expansion as well as the quasi-parellal launched waves. The diamagnetic cavity structure and influence is studied for various background plasma species (Helium and Hydrogen), magnetic fields, and densities.

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Date submitted: 26 Jul 2011 Electronic form version 1.4