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Laser-Produced Colliding Plasmas on LaPD ANDREW COLLETTE, WALTER GEKELMAN, STEPHEN VINCENA, University of California, Los Angeles — The expansion and interaction of dense plasmas in the presence of a magnetized background plasma is important in many astrophysical processes, among them shocks which transport energy. We study the collision of two dense, laser-produced plasmas expanding perpendicular to the background magnetic field, each with an Alfvén Mach number of approximately 0.5. The plasmas are launched off of two carbon targets, 9cm apart, by a short pulse of laser energy (Nd:YAG, 1J 8ns). Experiments are currently in progress in a small test chamber at UCLA (background plasma $n \approx 3 \times 10^{12}$, 3 meters long, $B_0 < 700$G) and will shortly be migrated to the LaPD (LArge Plasma Device; $n \approx 3 \times 10^{12}$, 18 meters long, 70cm diameter, $400\text{G} < B_0 < 2.5\text{kG}$). Additionally, previous investigations of laser-produced plasmas on LaPD have identified complex current systems associated with their expansion, which radiate Alfvén and Lower Hybrid waves. We present an analysis of the shocks and waves produced by these interactions and their effect on the background plasma. Work supported by the NSF and done at the BAPSF (UCLA).

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