

Abstract Submitted  
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**MHD effects in laser-produced plasmas** OLEG POLOMAROV, RICCARDO BETTI, Laboratory for Laser Energetics and FSC, U. of Rochester — The implementation of the magneto-hydrodynamic (MHD) module in the arbitrary Lagrange-Eulerian (ALE) hydro-code for laser-plasma simulation DRACO [1] is described. Using a two-dimensional axisymmetric description, the magnetic field is decomposed in an azimuthal component  $B_\phi$  and a poloidal component  $B_p = B_R \mathbf{e}_R + B_Z \mathbf{e}_Z$ . The latter is computed using a vector potential function. MHD block accounts for convection, diffusion and generation of the magnetic field by the thermoelectric/magnetic effects caused by the non-parallel temperature and density gradients and the Nernst term. The effect of the magnetic field on the transport coefficients for MHD equations is explicitly taken into account and the influence of the strong magnetic field on hydrodynamics and heating of the laser imploded plasma pellets are studied. The work is supported by the U.S. Department of Energy under Cooperative Agreement Nos. DE-FC02-04ER54789 and DE-FC52-08NA28302. 1. P. B. Radha *et al.*, Phys. Plasmas **12**, 056307 (2005).

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