Abstract Submitted
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Hydrodynamic studies in support of high-power laser experiments to study metal ejecta interactions[1] TOMORR HAXHIMALI, FADY NAJJAR, Lawrence Livermore Natl Lab, PETROS TZEFERACOS, University of Chicago, ALISON SAUNDERS, Lawrence Livermore Natl Lab, N/A TEAM, MERIT EJECTA TEAM — Shock-driven material can emit a fine spray of ejecta from its free surface. Understanding the dynamic and interaction of the metal ejecta is important to areas of study as diverse as industrial safety, astrophysics, spacecraft shielding, additive manufacturing and inertial confinement fusion. In this work we present results from hydrodynamic simulation studies in support of designing experiments on the OMEGA and OMEGA-EP lasers. We use a combination of two hydrodynamic codes that capture different physical aspects of the ejecta dynamics. Fields, like pressure and velocity, of elements produced in the ablated part of material are computed using FLASH code. These are then used as input in a "handshaking" region to numerical predictions using finite element and/or the smoothed particle hydrodynamics formulation with ALE3D (Arbitrary Lagrangian Eulerian) code to capture shock propagation and the dynamics of the ejecta.

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