Abstract Submitted
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Laser Energy Deposition Package for CRASH[1] B.R. TORRALVA, I.V. SOKOLOV, B. VAN DER HOLST, G. TOTH, M.J. GROSSKOPF, K.G. POWEL, R.P. DRAKE, University of Michigan, Ann Arbor, MI 48109, USA — A package has been implemented into the Center for Radiative Shock Hydrodynamics (CRASH) code to self-consistently model laser energy transport and deposition. This allows one to use CRASH to simulate a complete radiative shock wave experiment in which all forms of energy present in the calculations are computed and evolved in time using a single, multi-physics model – the CRASH model. The laser energy transport is simulated via the implementation of an efficient parallel ray-tracing algorithm based on the geometric optics approximation, whereas, the laser energy deposition is calculated via the inverse bremsstrahlung mechanism along the ray's path. Results will be presented for tests in which laser energy is transported and deposited in a gas with a linear density profile, along with convergence tests of intense laser initiated shock waves. Initial test simulations of a complete radiative shock wave experiment will also be presented.

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Ben Torralva
University of Michigan, Ann Arbor, MI 48109, USA

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