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Evolution of a radiative shock system on the Omega laser facility[1]
CAROLYN KURANZ, R.P. DRAKE, M.J. GROSSKOPF, C.M. KRAULAND, F.W. DOSS, C.M. HUNTINGTON, B. TORRALVA, E. RUTTER, S.R. KLEIN, D.C. MARION — Radiative shocks, which are in a regime where most of the incoming energy flux is converted into radiation, can be created in a laboratory using a high-powered laser. We have performed experiments on the Omega laser facility that irradiate a 20 μm thick Be disk with about 4 kJ of laser energy in a 1 ns pulse. This shocks and accelerates the disk into a Xe or Ar gas at 1.1 atm. These radiative shocks can reach up to 130 km/s. A 3D, MHD code with a radiation solver is being developed at the Center for Radiative Shock Hydrodynamics (CRASH) that will model this experiment. Diagnostics for this experiment have included x-ray radiography, x-ray Thomson scattering, optical pyrometry, and UV Thomson scattering. Experimental results include observations ranging from shock breakout of the Be disk until 26 ns after the laser pulse is initiated. These results will be presented.

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