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Quantifying uncertainty in high-energy-density radiative shock experiments CAROLYN KURANZ, R.P. DRAKE, M.J. GROSSKOPF, M.R. TRANTHAM, J.P. HOLLOWAY, University of Michgan, D. BINGHAM, J. GOH, Simon Fraser University — Radiative shocks, which are in a regime where most of the incoming energy flux is converted into radiation, occur in astrophysical systems as well as inertial confinement fusion experiments. We have performed radiative shock experiments on the Omega laser facility that irradiate a thin Be disk with a laser irradiance of $\sim 10^{15}$ W/cm^2. The ablation pressure creates a 40 Mbar shock in the Be, which breaks out into Xe gas at 1.1 atm. The shock can reach velocities of over 130 km/s. At such high velocities the radiative fluxes become significant, which leads to extensive radiative cooling. Experimental results to be presented include observations ranging from about 0.5 ns until 26 ns after the laser pulse is initiated. Experiments were performed over multiple shot days and this presentation will address the variation and uncertainty in these experiments. Data will be compared to results from the 3D radiation-hydrodynamic code developed at our Center for Radiative Shock Hydrodynamics. This work is funded by the PSAAP in NNSA-ASC via grant DEFC52- 08NA28616, by the NNSA-DS and SC-OFES Joint Program in HEDLP, grant number DE-FG52-09NA29548, and by the NLUF Program, grant number DE-NA0000850.

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