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Cloud Collapse Laboratory Astrophysical Experiment Compared to CRASH Simulations MATTHEW TRANTHAM, ROBERT VANDERVORT, Univ of Michigan - Ann Arbor, PAUL KEITER, Los Alamos National Lab., CAROLYN KURANZ, Univ of Michigan - Ann Arbor — Recent laboratory experiments explored radiation hydrodynamics relevant to irradiated molecular clouds, by using X-rays from a laser-driven gold foil to irradiate a foam sphere. We used CRASH, an Eulerian code developed at the U. of Michigan, which includes block adaptive mesh refinement, multigroup diffusive radiation transport, and electron heat conduction. We present results from a series of simulations aimed at understanding the experimental results. In order to compare our simulations to experimental results we focus on features that are clearly visible in the radiographic experimental images. The position of the shock traveling through the foam sphere and the position of bow shock are both easily seen and tracked in the radiographic images. This study will show the ability of CRASH code to reproduce this experiment and aid in the analysis of the features we observe in the experimental results. This work is funded by the U.S. Department of Energy NNSA Center of Excellence under cooperative agreement number DE-NA0003869 and the National Science Foundation through the Basic Plasma Science and Engineering program NSF 16-564, grant number 1707260.

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