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Experiments to understand the interaction of stellar radiation with molecular clouds ROBERT VANDERVORT, JOSH DAVIS, MATTHEW TRANTHAM, SALLEE KLEIN, University of Michigan, PAUL KEITER, Los Alamos National Laboratory, R. PAUL DRAKE, CAROLYN KURANZ, University of Michigan — Enhanced star formation triggered by local hot and massive stars is an astrophysical problem of interest. Radiation from the local stars act to either compress or blow apart gas clumps in the interstellar media. In the optically thick limit (short radiation mean free path), radiation is absorbed near the clump edge and compresses the clump. In the optically thin limit (long radiation mean free path), the radiation is absorbed throughout, acting to heat the clump. This heating explodes the gas clump. Careful selection of parameters, such as material density or source temperature, allow the experimental platform to access different hydrodynamic regimes. A stellar radiation source is mimicked by a laser-irradiated, thin, gold foil, providing a source of thermal x-rays around 80-eV. The gas clump is mimicked by low-density CRF foam. We plan to show preliminary results, in the optically thick limit, where the shock is radiographed at various times. This work is funded by the U.S. DOE NNSA Center of Excellence under grant number DE-NA0003869, and the NLUF Program, grant number DE-NA0002719, and through the LLE, University of Rochester by the NNSA/OICF under Cooperative Agreement No. DE-NA0003856. This work is funded by the LLNL under subcontract B614207.

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