Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

**Interaction of a supernova shock with two interstellar clouds** J.F. HANSEN, A.R. MILES, H.F. ROBEY, R.I. KLEIN, Lawrence Livermore Natl Lab, CA 94550, C.F. MCKEE, Depts. Physics and Astronomy, U. California, Berkeley, CA 94720 — The interaction of supernova shocks and interstellar clouds is an important astrophysical phenomenon since it can result in stellar and planetary formation. Our experiments attempt to simulate this mass-loading as it occurs when a shock passes through interstellar clouds. We drive a strong shock using a 5 kJ laser into a foam-filled cylinder with embedded Al spheres (diameter D=120 $\mu$m) simulating interstellar clouds. The density ratio between Al and foam is $\sim$9. We have previously reported on the interaction between shock and a single cloud, and the ensuing Kelvin-Helmholtz and Widnall instabilities. We now report on experiments under way in which two clouds are placed side by side. Cloud separation (center to center) is either 1.2$\times$D or 1.5$\times$D. Initial results for 1.2$\times$D show that cloud material merges and travels further downstream than in the single cloud case. For 1.5$\times$D, material does not merge, but the clouds tilt toward each other. Work performed under the auspices of the Department of Energy by the Lawrence Livermore National Laboratory under contract number W-7405-ENG-48.

Freddy Hansen
Lawrence Livermore Natl Lab

Date submitted: 26 Jul 2005 Electronic form version 1.4