Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Shock structure and Riemannian geometry ROGER MINICH, LLNL — The stress-energy tensor, $T_{\mu\nu}$ is studied for 1+1 dimensional compressive flow. In particular, the convergence and curvature of Riemann characteristics and corresponding shock structure is studied for different symmetries of the stress-energy tensor. The curvature of the Riemann characteristics is related to the trace of the stress-energy tensor, T^{μ}_{μ} , and the energy dissipated. Universal constraints on the thermal conductivity are also discussed. The results are compared to both experiment and molecular dynamics simulations. The study suggests that conformal symmetry may play a key role in understanding shock formation and empirical scaling laws.

Roger Minich
LLNL

Date submitted: 10 Feb 2011 Electronic form version 1.4