

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Effects of Heat Conduction on Artificial Viscosity Methods for Shock Capturing¹ ANDREW COOK, LLNL — We investigate the efficacy of artificial thermal conductivity for shock capturing. The conductivity model is derived from artificial bulk and shear viscosities, such that stagnation enthalpy remains constant across shocks. By thus fixing the Prandtl number, more physical shock profiles are obtained, only on a larger scale. The conductivity model does not contain any empirical constants. It increases the net dissipation of a computational algorithm but is found to better preserve symmetry and produce more robust solutions for strong-shock problems.

¹This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Andrew Cook
LLNL

Date submitted: 30 Jul 2013

Electronic form version 1.4