

Abstract Submitted  
for the DFD08 Meeting of  
The American Physical Society

**Direct Numerical Simulations of Shock-Turbulence Interactions**

MARK PETERSEN, DANIEL LIVESCU, JAMALUDIN MOHD-YUSOF, SUMNER DEAN, Los Alamos National Laboratory — We explore the nature of shock-turbulence interaction in three configurations: forced compressible isotropic turbulence, isotropic and anisotropic turbulence passing through a planar shock. The last problem is relevant to the turbulence changes during the re-shock in a classical Richtmyer-Meshkov problem. Results from direct numerical simulations are used to examine the modifications in the turbulence properties due to compressibility and as it interacts with the shock, including spectral laws and the kinetic energy, mass flux, and density-specific volume correlation transport equations budgets. The simulations are performed at resolutions up to  $1024^3$ , over a large range of turbulent Mach numbers ( $M_t = 0.02 \dots 0.4$ ), and for Taylor Reynolds numbers,  $Re_\lambda$ , up to 300.

Mark Petersen  
Los Alamos National Laboratory

Date submitted: 01 Aug 2008

Electronic form version 1.4