

**CENTER FOR FLUID MECHANICS
AND
THE FLUIDS, THERMAL AND CHEMICAL PROCESSES GROUP
OF
THE DIVISION OF ENGINEERING
SEMINAR SERIES**

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Simulation and Analysis of Small-scale Compressible Turbulence

While incompressible turbulence in a 3D periodic domain has been studied extensively over the last few decades, compressible turbulence in a periodic domain is relatively poorly understood. It is not clear if all small-scale features can be directly simulated. The key issue concerns the effects of compressibility and shocklet discontinuities on the dynamics of fluid turbulence. In this talk, I will discuss a novel hybrid WENO-compact finite difference simulation method for isotropic compressible turbulence. We will present statistics and scaling dynamics obtained on a 1024 cubic grid at a Taylor microscale Reynolds number of 254 and a turbulent Mach number of 1.03. Differences and similarities between the 3D compressible turbulence and 1D Burgers turbulence will be discussed.

**TUESDAY – MARCH 2, 2010
BARUS & HOLLEY, ROOM 190
3:00pm**