

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

ODTLES: Simulations of wall-bounded turbulent flows with small-scale resolution¹ ESTEBAN GONZALEZ, Combustion Science & Engineering, Inc., ALAN KERSTEIN, Consultant, ROD SCHMIDT, Sandia National Laboratories — The numerical simulation of turbulent flows is difficult because of their broad range of scales of motion and because they include a large variety of small-scale processes, such as friction near a wall, diffusion at an interface, multi-phase couplings, and chemical reactions. Traditional approaches to model these flows are limited in breadth and accuracy because they filter out information from small-scale processes. An alternative method that circumvents this problem is ODTLES. This method resolves, not models, small-scale phenomena in a computationally affordable way, in comparison with full three-dimensional resolution, through the use of a lattice-work of one-dimensional (1D) domains, where flow properties are time-advanced with 1D stochastic simulations. This talk will discuss the methodology behind ODTLES and results for incompressible wall-bounded turbulence.

¹This work is supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Chemical Sciences, Geosciences, and Biosciences.

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Date submitted: 06 Nov 2012

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