CONTENTS

Preface

Formation and dynamics of bubbles in breaking waves:
  Part I. Algorithms for the identification of bubbles and breakup/coalescence events.
  W. H. R. Chan, M. S. Dodd, P. L. Johnson, J. Urzay and P. Moin

Formation and dynamics of bubbles in breaking waves:
  Part II. The evolution of the bubble size distribution and breakup/coalescence statistics.
  W. H. R. Chan, M. S. Dodd, P. L. Johnson, J. Urzay and P. Moin

Tensor-based analysis of the flow topology in droplet-laden homogeneous isotropic turbulence.
  M. S. Dodd and L. Jofre

A conservative diffuse-interface method for the simulation of compressible two-phase flows with turbulence and acoustics.
  S. S. Jain, A. Mani and P. Moin

Fine-scale invariants in turbulence generated by rising bubbles.
  I. Paul and M. S. Dodd

The most effective interface disturbance of a round liquid jet.
  H. Hwang and M. J. P. Hack

On wall modeling for LES of particle-laden turbulent channel flows.
  M. Bassenne, P. L. Johnson, J. Urzay and P. Moin

Toward wall-modeled LES of particle-laden flows:
  Analysis of turbophoresis and inter-particle collisions in a turbulent channel flow.
  P. L. Johnson

A filtering strategy for the convergence of the Beer-Bouguer law for radiation extinction in random particulate media.
  I. Paul and A. Mani

Characterization of structural uncertainty in LES of a round jet.
  L. Jofre, S. P. Domino and G. Iaccarino
Statistical description of intermittency and rare events via conditional space-time POD: Example of acoustic bursts in turbulent jets.
O. T. SCHMIDT, P. J. SCHMID, A. TOWNE AND S. K. LELE 151

Lyapunov stability analysis of nonlinear dynamics of sound generation in a mixing layer.
Z.-N. WANG, N. CHANDRAMOORTHY, P. G. TUCKER, Q. WANG, A. TOWNE AND S. K. LELE 161

Equilibrium wall-modeled LES of shock-induced aerodynamic heating in hypersonic boundary layers.
L. FU, M. KARP, S. T. BOSE, P. MOIN AND J. URZAY 171

Characteristic scales of Townsend’s wall-attached eddies.
A. LOZANO-DURÁN AND H. J. BAE 183

DNS-aided explicitly filtered LES of channel flow.
H. J. BAE AND A. LOZANO-DURÁN 197

Wall turbulence with constrained energy extraction from the mean flow.
A. LOZANO-DURÁN, M. KARP AND N. C. CONSTANTINOU 209

A computational framework for stability analysis of high-speed flows in complex geometries.
T. FLINT AND M. J. P. HACK 221

Separation delay by optimal streaks.
M. KARP AND M. J. P. HACK 237

Wall-modeled LES of a spatially-developing non-equilibrium turbulent boundary layer.
M. CHO, G. I. PARK AND P. MOIN 251

A variational framework for identifying nonlinear optimal disturbances in compressible flow.
Z. HUANG, T. FLINT AND M. J. P. HACK 261

Thermal structures and heat transfer in wall-bounded flows at transcritical conditions.
J. GUO, X. I. A. YANG AND M. IHME 273

Mean flow scaling in a spanwise rotating channel.
Variational multiscale SGS modeling for LES
using a high-order discontinuous Galerkin method.

K. Bando, F. Naddei, M. de la Llave Plata and M. Ihme 299

Roster 313