

Table of Contents

Hydrodynamic Turbulence: a 19th Century Problem with a Challenge for the 21st Century	
V. L’vov and I. Procaccia	1
Exponents of Bulk Heat Transfer in Convective Turbulence	
P. Constantin	17
Hierarchical Structures and Scalings in Turbulence	
Zhen-Su She	28
Intermittency of Passive Scalars in Delta-Correlated Flow: Introduction to Recent Work	
U. Frisch and A. Wirth	53
A Minimal Model for Intermittency of Passive Scalars	
L. Biferale and A. Wirth	65
Generalized Scaling in Turbulent Flows	
L. Biferale, R. Benzi, and M. Pasqui	74
About the Interaction Between Vorticity and Stretching in Coherent Structures	
B. Andreotti, S. Douady, and Y. Couder	92
Pressure and Intermittency in the Inertial Range of Turbulence	
O.N. Boratav and R.B. Pelz	109
Time-Periodic Statistical Solutions of the Navier-Stokes Equations	
A. V. Fursikov	123
Local Exact Controllability for the 2-D Navier-Stokes Equations with the Navier Slip Boundary Conditions	
O. Yu. Imanuvilov	148

Nonexistence of Global Solutions to Nonlinear Wave Equations	
V. Kalantarov	169
Applications of Direct Numerical Simulation to Complex Turbulent Flows	
S. Biringen and R. S. Reichert	182
Computational Aspects of Three-Dimensional Vortex Element Methods: Applications with Vortex Rings	
C. R. Kaykayoglu	207
Boundary-Layer Turbulence Modeling and Vorticity Dynamics: I. A Kangaroo-Process Mixing Model of Boundary-Layer Turbulence	
H. Dekker, G. de Leeuw, and A. Maassen van den Brink	223
Boundary-Layer Turbulence Modeling and Vorticity Dynamics: II. Towards a Theory of Turbulent Shear Flow?	
H. Dekker	238
Subject Index	243