

- 430 Non-normal dynamics of time-evolving co-rotating vortex pairs  
**X. Mao, S. J. Sherwin & H. M. Blackburn**
- 460 Mass transport under standing waves over a sloping beach  
**P. Scandura, E. Foti & C. Faraci**
- 473 On the flow field induced by a hovering rotor or a static jet  
**P. R. Spalart**
- 482 Resonant behaviour of an oscillating wave energy converter in a channel  
**E. Renzi & F. Dias**

*S* indicates supplementary data or movies available online.

- 1 A  $k-\varepsilon$  turbulence model based on the scales of vertical shear and stem wakes valid for emergent and submerged vegetated flows  
**A. T. King, R. O. Tinoco & E. A. Cowen**
- S* 40 Collapse and pinch-off of a non-axisymmetric impact-created air cavity in water  
**O. R. Enriquez, I. R. Peters, S. Gekle, L. E. Schmidt, D. Lohse & D. van der Meer**
- S* 59 Interaction of a strong shockwave with a gas bubble in a liquid medium: a numerical study  
**N. A. Hawker & Y. Ventikos**
- 98 Wakes behind a prolate spheroid in crossflow  
**G. K. El khoury, H. I. Andersson & B. Pettersen**
- 137 Motion and structure of atmospheric mesoscale baroclinic vortices: dry air and weak environmental shear  
**E. Päschke, P. Marschalik, A. Z. Owino & R. Klein**
- 171 Compound viscous thread with electrostatic and electrokinetic effects  
**D. T. Conroy, O. K. Matar, R. V. Craster & D. T. Papageorgiou**
- 201 First instability of the flow of shear-thinning and shear-thickening fluids past a circular cylinder  
**I. Lashgari, J. O. Pralits, F. Giannetti & L. Brandt**
- 228 A detailed analysis of a dynamo mechanism in a rapidly rotating spherical shell  
**F. Takahashi & H. Shimizu**
- 251 Oscillatory sensitivity patterns for global modes in wakes  
**O. Tammisola**
- 278 Turbulent buoyant convection from a maintained source of buoyancy in a narrow vertical tank  
**Daan D. J. A. van Sommeren, C. P. Caulfield & A. W. Woods**
- 304 Shock propagation in liquids containing bubbly clusters: a continuum approach  
**H. Grandjean, N. Jacques & S. Zaleski**
- 333 Strong-field electrophoresis  
**O. Schnitzer & E. Yariv**
- S* 352 Influence of initial turbulence level on the flow and sound fields of a subsonic jet at a diameter-based Reynolds number of  $10^5$   
**C. Bogey, O. Marsden & C. Bailly**
- 386 Emptying non-adiabatic filling boxes: the effects of heat transfers on the fluid dynamics of natural ventilation  
**G. F. Lane-Serff & S. D. Sandbach**
- 407 Long-lived and unstable modes of Brownian suspensions in microchannels  
**A. Khoshnood & M. A. Jalali**
- 419 Local dissipation scales and energy dissipation-rate moments in channel flow  
**P. E. Hamlington, D. Krasnov, T. Boeck & J. Schumacher**

Contents continued on inside back cover.