

## Editors

**Dr. Cedric Taylor**  
Department of Civil Engineering,  
University of Wales,  
Swansea, U.K.

**Dr. Philip M. Gresho**  
Lawrence Livermore Laboratory,  
University of California,  
Livermore, California 94550, U.S.A.

## Advisory Editors

**Professor O. C. Zienkiewicz**  
Department of Civil Engineering,  
University of Wales, Swansea, U.K.

**Professor R. H. Gallagher**  
Worcester Polytechnic Institute, Worcester,  
Massachusetts 01609, U.S.A.

# International Journal for Numerical Methods in FLUIDS

## Editorial Board

### A. J. Baker

University of Tennessee, Department  
of Engineering Science and Mechanics,  
317 Perkins Hall, Knoxville,  
Tennessee 37916, U.S.A.

### M. Bercovier

Division of Applied Mathematics,  
School of Applied Science and  
Technology, The Hebrew University of  
Jerusalem, Givot Ram, Jerusalem,  
Israel.

### P. Bettess

Department of Naval Architecture  
and Shipbuilding,  
University of Newcastle-upon-Tyne,  
Queen Victoria Road,  
Newcastle-upon-Tyne,  
NE1 7RU, U.K.

### G. de Vahl Davis

School of Mechanical and  
Industrial Engineering,  
The University of New South Wales,  
P.O. Box 1, Kensington, N.S.W.,  
Australia 2033.

### J. Donea

Applied Mechanics Division,  
Joint Research Centre,  
Ispra Establishment,  
21020 Ispra (Varese), Italy.

### D. J. Evans

Department of Computer Studies,  
University of Technology,  
Loughborough, Leicestershire, U.K.

### J. H. Ferziger

Mechanical Engineering Department,  
Stanford University,  
Stanford, CA 94305, U.S.A.

### B. A. Finlayson

Dept. of Chemical Engineering, BF-10,  
University of Washington, Seattle,  
Washington 98195, U.S.A.

### D. K. Gartling

Fluid Mechanics and Heat Transfer  
Division 5511, Sandia Laboratories,  
Albuquerque, New Mexico 87115,  
U.S.A.

### R. Glowinski

I.N.R.I.A.,  
Domaine de Voluceau-Rocquencourt,  
B.P. 105,  
78150 Le Chesnay, France.

### M. Godet

I.N.S.A., Laboratoire de Mecanique  
des Contacts Bt 113,  
20 Avenue Albert Einstein,  
69621 Villeurbanne Cedex, Lyons,  
France.

### D. F. Griffiths

Department of Mathematics,  
University of Dundee,  
Dundee DD1 4HN,  
Scotland.

### W. G. Habashi

Department of Mechanical Engineering,  
Concordia University,  
1455 de Maisonneuve Blvd. West,  
Montreal, Quebec H3G 1M8, Canada.

### T. J. R. Hughes

Division of Applied Mechanics,  
Stanford University,  
Stanford, California 94305, U.S.A.

### A. G. Hutton

Central Electricity Generating Board,  
Berkley Nuclear Laboratories,  
Berkeley, Gloucestershire, U.K.

### M. Kawahara

Chuo University,  
Department of Civil Engineering,  
Kasuga 1-chome 13, Bunkyo-ku,  
Tokyo, Japan.

### R. L. Lee

Lawrence Livermore Laboratory,  
Atmospheric and Geophysical Science  
Division, Physics Department,  
University of California,  
Livermore, California 94550, U.S.A.

### B. P. Leonard

City University of New York,  
College of Staten Island,  
95 Sparkill Avenue, Staten Island,  
New York 10304, U.S.A.

### J. N. Lillington

A.E.E. Winfrith,  
Dorchester, Dorset  
DT2 8DH, U.K.

### U. Meissner

Universität Hannover,  
Lehrstuhl für Stromungsmechanik,  
Callinstr. 32, D-3000 Hannover,  
West Germany.

### K. W. Morton

Numerical Analysis Group,  
Oxford University Computing  
Laboratory, 8-11 Keble Road,  
Oxford OX1 3QD, U.K.

### J. T. Oden

Engineering Mechanics,  
The University of Texas at Austin,  
Austin, Texas 78712, U.S.A.

### M. D. Olson

The University of British Columbia,  
Department of Civil Engineering,  
2075 Westbrook Place, Vancouver,  
British Columbia, Canada V6T 1W5.

### G. F. Pinder

Princeton University,  
Department of Civil Engineering,  
School of Engineering/Applied  
Science, Princeton,  
New Jersey 08544, U.S.A.

### J. N. Reddy

Virginia Polytechnic Institute and State  
University, Department of Engineering  
Science and Mechanics,  
Norris Hall, Room 220, Blacksburg,  
Virginia 24061, U.S.A.

### P. J. Roache

Ecodynamics, Research Associates Inc.,  
P.O. Box 8172, Albuquerque,  
New Mexico 87108, U.S.A.

### R. L. Sani

CIRES,  
University of Colorado at Boulder,  
Boulder, Colorado 80309, U.S.A.

### S. F. Shen

Cornell University,  
Sibley School of Mechanical and  
Aerospace Engineering,  
Upson and Grumman Halls,  
Ithaca, New York 14853, U.S.A.

### D. B. Spalding

Imperial College of Science and  
Technology,  
Department of Mechanical  
Engineering, Exhibition Road,  
London SW7 2BX, U.K.

### R. L. Taylor

University of California,  
Department of Civil Engineering,  
Berkeley, California 94720, U.S.A.

### J. R. Whiteman

Director, Institute of Computational  
Mathematics, Brunel University,  
Uxbridge, Middlesex UB8 3PH

### M. Wolfshtein

Technion University,  
Aero Engineering Department,  
Haifa, Israel.

## Advertising:

For details contact—  
U.K. and Europe: Michael J. Levermore, Advertising Manager, John Wiley & Sons Ltd., Baffins Lane, Chichester, Sussex, PO19 1UD, England (Telephone 0243 784531).  
North America: Arthur C. Lipner, National Advertising Sales Representative, Weston Media Associates, 37 Gray's Farm Road, Weston, CT 06883, U.S.A. (Telephone 203 2260478)

*International Journal for Numerical Methods in Fluids* (ISSN 0271-2091) is published monthly by John Wiley & Sons Limited, Baffins Lane, Chichester, Sussex, England. 1986 subscription prices: to U.K. £175.00, elsewhere U.S. \$320.00. Second class postage paid at Jamaica, NY 11431. Air freight and mailing in the U.S.A. by Publications Expediting Services Inc., 200 Meacham Avenue, Elmont, NY 11003. Orders should be addressed to: Subscriptions Department, John Wiley & Sons Limited, Baffins Lane, Chichester, Sussex, PO19 1UD, England. Copyright © 1986 by John Wiley & Sons Ltd. Typeset in India by Thomson Press (India) Limited. Printed and bound in Great Britain by The Universities Press (Belfast) Ltd.

U.S.A. Postmasters: Send address changes to *International Journal for Numerical Methods in Fluids*, c/o Publications Expediting Services Inc., 200 Meacham Avenue, Elmont, NY 11003.