

Acta

Numerica

1995



# Acta Numerica 1995

## **Managing editor**

### **A. Iserles**

*DAMPT, University of Cambridge, Silver Street  
Cambridge CB3 9EW, England*

## **Editorial Board**

*C. de Boor, University of Wisconsin, Madison, USA*

*F. Brezzi, Istituto di Analisi Numerica del CNR, Italy*

*J. C. Butcher, University of Auckland, New Zealand*

*P. G. Ciarlet, Université Paris VI, France*

*G. H. Golub, Stanford University, USA*

*H. B. Keller, California Institute of Technology, USA*

*H.-O. Kreiss, University of California, Los Angeles, USA*

*K. W. Morton, University of Oxford, England*

*M. J. D. Powell, University of Cambridge, England*

*R. Temam, Université Paris-Sud, France*

Acta

Numerica

1995



**CAMBRIDGE**  
**UNIVERSITY PRESS**

Published by the Press Syndicate of the University of Cambridge  
The Pitt Building, Trumpington Street, Cambridge CB2 1RP  
40 West 20th Street, New York, NY 10011-4211, USA  
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press 1995

First published 1995

Printed in Great Britain at the University Press, Cambridge

Library of Congress cataloguing in publication data available

A catalogue record for this book is available from the British Library

ISBN 0-521-48255-0 hardback

ISSN 0962-4929

# Contents

<b>Sequential quadratic programming</b> .....	1
<i>Paul T. Boggs</i>	
<b>A taste of Padé approximation</b> .....	53
<i>C. Brezinski and J. Van Iseghem</i>	
<b>Introduction to adaptive methods for differential equations</b> ..	105
<i>Kenneth Eriksson, Don Estep, Peter Hansbo and Claes Johnson</i>	
<b>Exact and approximate controllability for distributed parameter systems</b> .....	159
<i>R. Glowinski and J. L. Lions</i>	
<b>Numerical solutions to free boundary problems</b> .....	335
<i>Thomas Y. Hou</i>	
<b>Particle methods for the Boltzmann equation</b> .....	417
<i>Helmut Neunzert and Jens Struckmeier</i>	
<b>The new qd algorithms</b> .....	459
<i>Beresford N. Parlett</i>	