Cambridge Mathematics

Introduction to Dynamical Systems

D. K. ARROWSMITH and **C. M. PLACE**

A valuable first textbook on the mathematical structures underlying dynamical systems.

£50.00 net HB 0 521 30362 1 430 pp. 1990
£19.50 net PB 0 521 31650 2

Now in paperback

Heat Kernels and Spectral Theory

E. B. DAVIES

The first account of recent dramatic improvements made in our quantitative understanding of this subject area.

£13.50 net PB 0 521 40997 7 208 pp. 1991
Cambridge Tracts in Mathematics 92

Now in paperback

Matrix Analysis

R. HORN and **C. R. JOHNSON**

'An excellent addition to the list of my favourite books in matrix theory.'
Linear and Multilinear Algebra

£15.00 net PB 0 521 38632 2 561 pp. 1990

Topics in Matrix Analysis

R. HORN and **C. R. JOHNSON**

Builds on its predecessor to give a detailed treatment of several topics with important applications and of special mathematical interest.

£45.00 net HB 0 521 30587 X 607 pp. 1991

Integral Equations

A Practical Treatment, from Spectral Theory to Applications

DAVID PORTER and **DAVID S. G. STIRLING**

This textbook tackles the solution of integral equations using a blend of abstract 'structural' results and more direct, down-to-earth mathematics.

£45.00 net HB 0 521 33151 X 384 pp. 1991
£15.00 net PB 0 521 33742 9
Cambridge Texts in Applied Mathematics

Now in paperback

The Design of Experiments

Statistical Principles for Practical Application

R. MEAD

An essential guide for all applied statisticians and scientists engaged in design, implementation and analysis of experiments.

£19.50 net PB 0 521 28762 6 640 pp. 1990

Dynamic Fracture Mechanics

L. B. FREUND

This is the first book to present a comprehensive survey of research in the field of dynamic fracture, much of which has been carried out by the author and others over the last twenty years.

£40.00 net HB 0 521 30330 3 580 pp. 1990
Cambridge Monographs on Mechanics and Applied Mathematics

Relativistic Fluids and Magneto-Fluids

A. M. ANILE

A unified and systematic treatment of the main results and techniques of relativistic fluid dynamics with an emphasis on waves and shock waves.

£50.00 net HB 0 521 30406 7 400 pp. 1990
Cambridge Monographs on Mathematical Physics

Relativity on Curved Manifolds

F. DE FELICE and **C. J. S. CLARKE**

General relativity is now essential to the understanding of modern physics, but the power of the theory cannot be fully explained without a detailed knowledge of its mathematical structure.

£45.00 net HB 0 521 26639 4 464 pp. 1990
Cambridge Monographs on Mathematical Physics

Now in paperback

Hamiltonian Systems: Chaos and Quantization

ALFREDO M. OZORIO DE ALMEIDA

This introduction to the theory of Hamiltonian chaos outlines the main results in the field, and goes on to consider the implications for quantum mechanics.

£15.00 net PB 0 521 38670 5 247 pp. 1990
Cambridge Monographs on Mathematical Physics

Introduction to Polymer Dynamics

PIERRE GILLES DE GENNES

Based on lectures given at the Polytechnic of Milan, this book gives a broad overview of the field of polymer dynamics. The author is one of the most distinguished workers in the field.

£20.00 net HB 0 521 38172 X 66 pp. 1990
£6.95 net PB 0 521 38849 X
Lezioni Lincee

General Relativity

An Introduction to the Theory of Gravitation
Second Edition

HANS STEPHANI

The revised and corrected edition of an excellent introduction to the subjects of gravitation and space-time structure.

£40.00 net HB 0 521 37066 3 315 pp. 1990
£17.50 net PB 0 521 37941 5

Weak Chaos and Quasi-Regular Patterns

G. M. ZASLAVSKY et al

This book presents the fundamentals of chaos theory in conservative systems, providing a systematic study of the theory of transitional states of physical systems which lie between deterministic and chaotic behaviour.

£40.00 net HB 0 521 37317 4 272 pp. 1991
Cambridge Nonlinear Science Series 1

Vortex Element Methods for Fluid Dynamic Analysis of Engineering Systems

R. I. LEWIS

This is the first comprehensive text on two advanced fluid flow methods for design and analysis of engineering systems.

£75.00 net HB 0 521 36010 2 450 pp. 1991
Cambridge Engine Technology Series

Quantized Vortices in Helium II

R. J. DONNELLY

The comprehensive approach of the author to the properties of quantized vortex lines in superfluid helium-4 will make this book invaluable.

£50.00 net HB 0 521 32400 9 360 pp. 1991
Cambridge Studies in Low Temperature Physics 3

For further information, please contact Susan Chadwick at the address below.
To order any Cambridge book call our 24 hour ordering service on 0223 325970.

Cambridge University Press

The Edinburgh Building, Cambridge CB2 2RU, UK.

https://doi.org/10.1017/S0956792500000498 Published online by Cambridge University Press

INSTRUCTIONS TO AUTHORS

Submission of manuscripts Papers may be submitted to any member of the editorial board. Three copies should be sent; originals of figures should *not* be included until the paper has been accepted. Papers may be submitted electronically by sending a LaTeX file to EJAM@UK.AC.OX.VAX; this file should include the figures (line figures only). Electronic communications can also be used for minor corrections and for messages to the editors.

Layout of manuscripts Papers should be typewritten **in double spacing throughout**, on one side of the paper. Please avoid footnotes if possible. Papers must begin with an abstract of not more than 300 words, and they should end with a brief concluding section. The SI system of units must be used throughout.

Illustrations Figures should be drawn in indian ink on good quality white paper. Wherever possible they will be reproduced *with* the author's lettering. A list of captions for figures should be attached separately.

Where appropriate, articles may be illustrated by photographs: high-quality glossy black and white prints are necessary.

References References should be listed in alphabetical order at the end of the main text. Please include the article title in the reference, which should be in the order: author's surname, initials; year in parentheses; article title; journal name, abbreviated in accordance with the *World List of Scientific Periodicals* (4th Edn); volume number (underlined); inclusive page numbers.

Citations in the text Any unambiguous system is acceptable. Three recommended ways of citing a 1992 paper by A. European are: European (1992); European [Eu]; European [7]. In the second case, the reference at the end of the text should be preceded by [Eu], and in the third by [7]. Please note that in the third system, alterations may lead to wholesale renumbering.

EDITORIAL POLICY

The **European Journal of Applied Mathematics** aims to publish papers in all areas of applied mathematics, with especial emphasis on the following.

(i) The exposition of new mathematical ideas relevant to the modelling and analysis of modern technological processes.

(ii) The development of interesting mathematical methods with broad areas of applicability.

There is no restriction in the areas of applicability or the style of mathematics, although standard mathematical techniques will only be published if they are associated with novel applications or lead to substantial advances in established problem areas.

COPYING

This journal is registered with the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Organisations in the USA who are also registered with the C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per-copy fee of $5.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0956-7925/91 $5.00+.00.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, Pennsylvania 19104, USA, is authorised to supply single copies of separate articles for private use only.

For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press.

https://doi.org/10.1017/S0956792500000498 Published online by Cambridge University Press

European Journal of
Applied Mathematics
VOLUME 2 · PART 3 · SEPTEMBER 1991

CONTENTS

Explicit Galoisian solutions in anisotropic elasticity *page* 191
A. K. HEAD

Experimental and theoretical investigation of an equation of dendritic crystal growth 199
J. N. DEWYNNE and F. N. H. ROBINSON

Matched asymptotics for a generalisation of a model equation for optical tunnelling 223
J. LIU and A. WOOD

The Cahn–Hilliard gradient theory for phase separation with non-smooth free energy – Part I: Mathematical analysis 233
J. F. BLOWEY and C. M. ELLIOTT

Vector hysteresis models 281
P. KREJCI

© Cambridge University Press 1991
CAMBRIDGE UNIVERSITY PRESS
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
40 West 20th Street, New York, NY 10011–4211, USA
10 Stamford Road, Oakleigh, Victoria 3166, Australia

Printed in Great Britain by the University Press, Cambridge

https://doi.org/10.1017/S0956792500000498 Published online by Cambridge University Press