

Editorial Board

Michael Pepper, Editor

Department of Physics, Cavendish Laboratory,
University of Cambridge

Andrew J. Coates

Mullard Space Science Laboratory, University College London

A. Giles Davies

School of Electronic and Electrical Engineering, University of Leeds

Peter J. Dornan

Department of Physics, Imperial College London

Freeman J. Dyson

School of Natural Sciences, Institute of Advanced Study, Princeton

Richard S. Ellis

Department of Astronomy, Caltech

Celso Grebogi

Centre for Applied Dynamics Research, University of Aberdeen

Godfrey Gumbs

Department of Physics, Hunter College

Andreas Hoenger

Department of Molecular, Cellular and Developmental Biology,
University of Colorado

Judith Howard

Department of Chemistry, University of Durham

Giles Hunt

Department of Mechanical Engineering, University of Bath

Holger Kantz

Max Plank Institute for the Physics of Complex Systems

Peter Kohl

University Laboratory of Physiology, University of Oxford

Jürgen Kurths

Institute of Physics, University of Potsdam

William McGuire

Department of Earth Sciences, University College London

Annie Powell

Institute of Inorganic Chemistry, University of Karlsruhe

Blanca Rodriguez

University of Oxford Computing Laboratory, University of Oxford

Peter Sammonds

Department of Earth Sciences, University College London

Clarence E. Schutt

Department of Chemistry, Princeton University

Gabor Stepan

Department of Applied Mechanics,
Budapest University of Technology and Economics

Marshall Stoneham

Centre for Materials Research, University College London

Rowan Sutton

National Centre for Atmospheric Science, University of Reading

Michael Tabor

Program in Applied Mathematics, University of Arizona

S. Randall Thomas

Biologie Intégrative et Systèmes Complexes, CNRS

J. Michael T. Thompson

DAMTP, Centre for Mathematical Sciences, University of Cambridge

Publishing Editor: Suzanne Abbott

(tel: +44 (0)20 7451 2214; fax: +44 (0)20 7976 1837;
suzanne.abbott@royalsociety.org).

Production Editor: Joanna Bolesworth

6–9 Carlton House Terrace, London SW1Y 5AG, UK
publishing.royalsociety.org

AIMS AND SCOPE

Each issue of *Phil. Trans. R. Soc. A* is devoted to a specific area of the mathematical, physical and engineering sciences. This area will define a research frontier that is advancing rapidly, often bridging traditional disciplines. *Phil. Trans. R. Soc. A* is essential reading for mathematicians, physicists, engineers and other physical scientists. As well as theme issues, the journal publishes papers from the Royal Society's mathematical, physical and engineering discussion meetings. For information on submitting a proposal for a theme issue, please consult the journal's website at publishing.royalsociety.org/philtransa.

ISBN 978-0-85403-724-7

COPYRIGHT © 2008 The Royal Society

Except as otherwise permitted under the Copyright, Designs and Patents Act, 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publisher, or, in the case of reprographic reproduction, in accordance with the terms of a licence issued by the Copyright Licensing Agency. In particular, the Society permits the making of a single photocopy of an article from this issue (under Sections 29 and 38 of the Act) for an individual for the purposes of research or private study.

SUBSCRIPTIONS

In 2009 *Phil. Trans. R. Soc. A* (ISSN 1364-503X) will be published twice a month. Full details of subscriptions and single issue sales may be obtained either by contacting our journal fulfilment agent, Portland Customer Services, Commerce Way, Colchester CO2 8HP; Tel: +44 (0)1206 796351; fax: +44 (0)1206 799331; email: sales@portland-services.com or by visiting our website at publishing.royalsociety.org/subscribers. The Royal Society is a Registered Charity No. 207043.

Subscription prices 2009 calendar year	Europe	USA & Canada	All other countries
Printed version plus electronic access	£1700/US\$3230/ €2210	£1796/US\$3412	£1840/US\$3496

Typeset in India and printed in Europe by the Alden Group, Oxfordshire.

This paper meets the requirements of ISO 9706:1994(E) and ANSI/NISO Z39:48-1992 (Permanence of Paper) effective with volume 338, issue 1649, 1992.

Philosophical Transactions of the Royal Society A (ISSN 1364-503X) is published twice a month by the Royal Society and distributed in the USA by DSW, 75 Aberdeen Road, Emigsville PA 17318-0437. Periodicals postage paid at Emigsville PA. POSTMASTER: send address changes to *Philosophical Transactions of the Royal Society A*, c/o PO Box 437, Emigsville PA 17318-0437.