

PREPARATION OF MANUSCRIPTS

The ANZIAM Journal is typeset in L^AT_EX. Style files are available from <http://www.austms.org.au/Publ/ANZIAM/authorinfo.shtml>.

The manuscript should conform to the following rules. In case of any doubt, authors are advised to refer to previous papers in the Journal.

1. Abstract, title and author details. An abstract not exceeding 300 words should be included in the manuscript. If the title is long, supply also a shortened form of the title not exceeding 40 characters, including spaces. Addresses should be shown under the authors name, including e-mail address if available.

2. Main headings. Main headings should be numbered, centred and shown thus:

2. Preliminary results

3. Theorems. The titles LEMMA, THEOREM, COROLLARY, REMARK, DEFINITION *etc.* should be left-justified and numbered consecutively with arabic numerals, *e.g.*

LEMMA 1.1. The content of the lemma, theorem *etc.* should follow, as here.

4. Acknowledgements. If acknowledgements of support and assistance are made, these should be given at the end of the article. Footnotes should be avoided.

5. Equations. Equations should be punctuated to conform to their place in the syntax of the sentence. Equation numbers should be shown on the right in round brackets.

6. References. The reference list should be in ALPHABETICAL ORDER by name of first author, preceded by a reference number in square brackets. These references should be cited in the text by giving the appropriate number in square brackets. The following layout for books, journal articles, theses, articles in books, and conference proceedings respectively, must be followed.

- [1] M. Abramowitz and I. A. Stegun (eds), *Handbook of mathematical functions* (Dover, New York, 1970).
- [2] S. N. Biswas and T. S. Santhanam, "Coherent states of para-Bose oscillators", *J. Austral. Math. Soc. Ser. B* **22** (1980) 210–217.
- [3] F. H. Busse, "On the mean field problem of thermal convection", *Max-Planck Inst. Phys. Astrophys. Rep. MPI-PAE/Astro* **31** (1970) 1–31.
- [4] E. M. Casling, "Slender planing surfaces", Ph. D. Thesis, University of Adelaide, 1978.
- [5] R. H. Day, "Adaptive process and economic theory", in *Adaptive economic models* (eds R. H. Day and T. Groves), (Academic Press, New York, 1975) 1–38.
- [6] J. W. Miles, "Resonant response of harbors (the harbor paradox revisited)", *Proc. 8th Symp. Naval Hydro.* (1970) 95–115.

7. Tables. Each should be preceded by a caption beginning: TABLE 1 (or 2, 3, *etc.*)

8. Figures. Each figure should have a caption beginning: FIGURE 1 (or 2, 3, *etc.*)

Authors should provide diagrams drawn to professional standards in the form of encapsulated Postscript files. Other forms of diagrams drawn to professional standard may be acceptable, however this may also necessitate a payment from the author(s) to cover additional cost involved in processing them.

SUBMISSION OF MANUSCRIPTS

Prior to submission authors are asked to read the section "Preparation of Manuscripts" on the previous page.

Authors of articles submitted for publication in The ANZIAM Journal are asked to ensure that their manuscripts are in a form suitable for sending to the printer. Editors reserve the right to return poorly presented material to authors for revision.

The author should submit a pdf file if possible to the Online Journal System. Follow the instructions at <http://anziamj.austms.org.au/ojs/index.php/ANZIAMJ/user/register>.

It will speed up processing of accepted papers if a \LaTeX version of the manuscript is available. It is not necessary to send such a file with the submitted paper. This will be requested if the paper is accepted.

Authors of accepted papers will be provided with a complimentary electronic version of their paper as published.

Excessive costs incurred by the Australian Mathematical Society through corrections to or withdrawal of articles may be charged to the authors concerned.

Submission of a paper to The ANZIAM Journal is a representation by the author that the manuscript has not been copyrighted or published, and that it is not being considered for publication elsewhere.

THE ANZIAM JOURNAL AND THE ELECTRONIC SUPPLEMENT

The Journal of the Australian Mathematical Society began publication in 1959, and from 1975 appeared in two series, Series A (Pure Mathematics and Statistics) and Series B (Applied Mathematics). Series B is now The ANZIAM Journal and is published in volumes comprising four quarterly parts. There is also a fifth (electronic) part designed for rapid publication (<http://anziamj.austms.org.au/ojs/index.php/ANZIAMJ>). The Editor-in-Chief is A. J. Roberts, School of Mathematical Sciences, The University of Adelaide, ADELAIDE, SA 5005; anthony.roberts@adelaide.edu.au. All five parts are refereed. All accepted papers have the option of publication in the electronic part.

It is the editorial policy of The ANZIAM Journal to consider papers in any field of applied mathematics and related mathematical sciences. Novel applications of mathematics in real situations are especially welcome. All papers must include some indication of applicability, and an introduction that can be understood by non-specialist readers from the whole applied mathematical community.

European Journal of Applied Mathematics

Co-Editors-in-Chief

S. D. Howison, *University of Oxford, UK*

A. A. Lacey, *DPMMS, Heriot-Watt University, UK*

M. J. Ward, *University of British Columbia, Canada*

Since 2008 *EJAM* surveys have been expanded to cover Applied and Industrial Mathematics. Coverage of the journal has been strengthened in probabilistic applications, while still focusing on those areas of applied mathematics inspired by real-world applications, and at the same time fostering the development of theoretical methods with a broad range of applicability. Survey papers contain reviews of emerging areas of mathematics, either in core areas or with relevance to users in industry and other disciplines. Research papers may be in any area of applied mathematics, with special emphasis on new mathematical ideas, relevant to modelling and analysis in modern science and technology, and the development of interesting mathematical methods of wide applicability.

Price information

is available at: <http://journals.cambridge.org/ejm>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/ejm-alerts>



European Journal of Applied Mathematics

is available online at:
<http://journals.cambridge.org/ejm>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/ejm>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Journal of Fluid Mechanics

Editor

M. G. Worster, University of Cambridge, UK

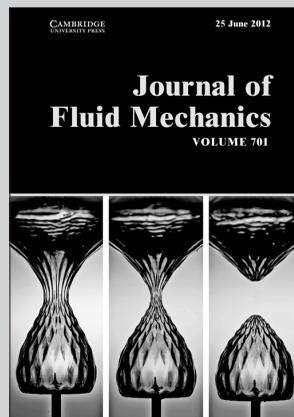
Journal of Fluid Mechanics is the leading international journal in the field and is essential reading for all those concerned with developments in fluid mechanics. It publishes authoritative articles covering theoretical, computational and experimental investigations of all aspects of the mechanics of fluids. Each issue contains papers on both the fundamental aspects of fluid mechanics, and their applications to other fields such as aeronautics, astrophysics, physiology, chemical and mechanical engineering, hydraulics, meteorology, oceanography, geology, acoustics and combustion.

Price information

is available at: <http://journals.cambridge.org/flm>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/flm-alerts>



Journal of Fluid Mechanics

is available online at:
<http://journals.cambridge.org/flm>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/flm>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Glasgow Mathematical Journal

Published for The Glasgow Mathematical Journal Trust

Editor-in-Chief

I. A. B. Strachan, *University of Glasgow, UK*

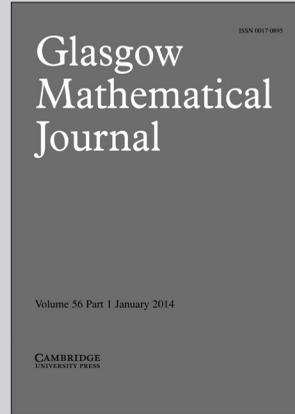
Glasgow Mathematical Journal publishes original research papers in any branch of pure and applied mathematics. An international journal, its policy is to feature a wide variety of research areas, which in recent issues have included ring theory, group theory, functional analysis, combinatorics, differential equations, differential geometry, number theory, algebraic topology, and the application of such methods in applied mathematics.

Price information

is available at: <http://journals.cambridge.org/gmj>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/gmj-alerts>



Glasgow Mathematical Journal
is available online at:
<http://journals.cambridge.org/gmj>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/gmj>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Mathematika

Produced, marketed and distributed for
The London Mathematical Society

Managing Editor

Alex Sobolev, *University College London, United Kingdom*

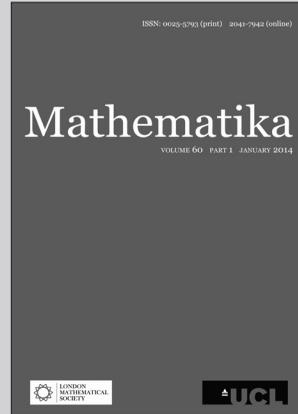
Mathematika publishes both pure and applied mathematical articles and has done so continuously since its founding by Harold Davenport in the 1950s. The traditional emphasis has been towards the purer side of mathematics but applied mathematics and articles addressing both aspects are equally welcome. The journal, which is owned by University College London and published by the London Mathematical Society, will continue to publish research papers of the very highest mathematical quality. All articles, including the full archive dating back to 1954, are available electronically via Cambridge Journals Online.

Price information

is available at: <http://journals.cambridge.org/mtk>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/mtk-alerts>



Mathematika

is available online at:
<http://journals.cambridge.org/mtk>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/mtk>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Mathematical Proceedings of the Cambridge Philosophical Society

Published for The Cambridge Philosophical Society

Editor

B. J. Green, *University of Cambridge, UK*

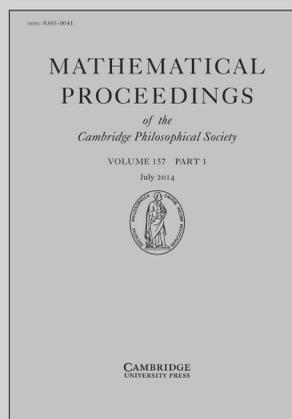
Mathematical Proceedings is one of the few high-quality journals publishing original research papers that cover the whole range of pure and applied mathematics, theoretical physics and statistics. All branches of pure mathematics are covered, in particular logic and foundations, number theory, algebra, geometry, algebraic and geometric topology, classical and functional analysis, differential equations, probability and statistics. On the applied side, mechanics, mathematical physics, relativity and cosmology are included.

Price information

is available at: <http://journals.cambridge.org/psp>

Free email alerts

Keep up-to-date with new material – sign up at <http://journals.cambridge.org/psp-alerts>



Mathematical Proceedings of the Cambridge Philosophical Society is available online at: <http://journals.cambridge.org/psp>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/psp>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Proceedings of the Royal Society of Edinburgh, Section A: Mathematics

Marketed and Distributed for the Royal Society of Edinburgh

Chairman and Executive Editor

A. A. Ranicki, *University of Edinburgh, UK*

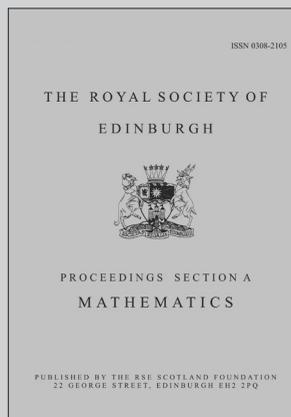
A flagship publication of The Royal Society of Edinburgh, Proceedings A is a prestigious, general mathematics journal publishing peer-reviewed papers of international standard across the whole spectrum of mathematics, but with the emphasis on applied analysis and differential equations. An international journal, publishing six issues per year, Proceedings A has been publishing the highest-quality mathematical research for nearly 70 years. Recent issues have included a wealth of key contributors and considered research papers.

Price information

is available at: <http://journals.cambridge.org/prm>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/prm-alerts>



Proceedings of the Royal Society of Edinburgh, Section A: Mathematics is available online at:
<http://journals.cambridge.org/prm>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/prm>



CAMBRIDGE
UNIVERSITY PRESS

THE AUSTRALIAN MATHEMATICAL SOCIETY

<i>President:</i>	P. J. FORRESTER	Department of Mathematics and Statistics The University of Melbourne Parkville VIC 3010, Australia
<i>Secretary:</i>	P. J. STACEY	Department of Mathematics and Statistics La Trobe University Bundoora Victoria 3086, Australia
<i>Treasurer:</i>	A. HOWE	Department of Mathematics Mathematical Sciences Institute The Australian National University Canberra ACT 0200, Australia

Membership and correspondence: Applications for membership, notices of changes of address or title or position, members' subscriptions and correspondence related to accounts should be sent to the Treasurer. All other correspondence should be sent to the Secretary.

Subscriptions: Four parts are planned for 2015. Subscription prices for 2015 are £311 (\$572 in USA, Canada and Mexico) which includes print and electronic access. The electronic-only access price for 2015 is £254 (\$462 in USA, Canada and Mexico). Single parts cost £86 (\$157 in USA, Canada and Mexico). Prices include delivery by air where appropriate. EU subscribers who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Orders, which must be accompanied by payment, should be sent to a subscription agent, book-seller, or direct to the publishers: Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge CB2 8BS or, in the USA, Canada and Mexico, Cambridge University Press, Journals Fulfilment Department, 100 Brook Hill Drive, West Nyack, NY 10994-2133. Japanese prices are available from Kinokuniya Company Ltd, PO Box 55, Chitose Tokyo 156, Japan. Periodicals postage is paid at New York, NY and additional mailing offices. POSTMASTER: send address changes in USA, Canada and Mexico to *The ANZIAM JOURNAL*, Cambridge University Press, Journals Fulfilment Department, 100 Brook Hill Drive, West Nyack, NY 10994-2133.

This journal is included in the Cambridge Journals Online service. Further information, and online access for subscribers, is available at <http://journals.cambridge.org/anz>.

Copying: This journal is registered with the Copyright Clearance Centre, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA who are registered with the CCC may therefore copy materials beyond the limits permitted by sections 107 and 108 of US copyright law subject to payment to CCC of the per-copy fee of \$16.00. This consent does not extend to multiple copying for promotional and commercial purposes. Code 1446-1811/2015 \$16.00.

Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press.

Published by Cambridge University Press for the Australian Mathematical Publishing Association Incorporated. Printed in the United Kingdom at Bell & Bain Ltd, Glasgow.

© 2015 Australian Mathematical Publishing Association Inc.



This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

Table of Contents

Editorial: Modelling approach to nanoscale science and technology <i>Cox, B. J. & Hendy, S. C.</i>	1
Discrete symmetries of low-dimensional Dirac models: a selective review with a focus on condensed-matter realizations <i>Winkler, R. & Zülicke, U.</i>	3
Penetration of spherical gold nanoparticle into a lipid bilayer <i>Baowan, D.</i>	18
Design of a nanotori-metallofullerene logic gate <i>Lee, R. K. F. & Hill, J. M.</i>	29
Analytical representations of regular-shaped nanostructures for gas storage applications <i>Lim, W.-X. & Thornton, A. W.</i>	43
Modelling ion, water and ion-water cluster entering peptide nanotubes <i>Thamwattana, N.</i>	62
Effective slip length: some analytical and numerical results <i>Zhang, X. P., Lund, N. J. & Hendy, S. C.</i>	79