

CAMBRIDGE

JOURNALS

JFM ARCHIVE

**Journal of
Fluid Mechanics**
Digital Archive
1956–1996

*Vital research from
the definitive source*

The JFM Digital Archive contains every article from the first 40 years of the journal, scanned and digitised to the highest standards.

Please speak to your librarian about gaining access.

journals.cambridge.org/jfm



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

**JFM FAST
TRACK HAS
EVOLVED**

JFM RAPIDS

.....

- Faster publication
- Greater visibility for papers
- Freely available to all for the first year

For more information visit

journals.cambridge.org/rapids



**CAMBRIDGE
UNIVERSITY PRESS**

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*

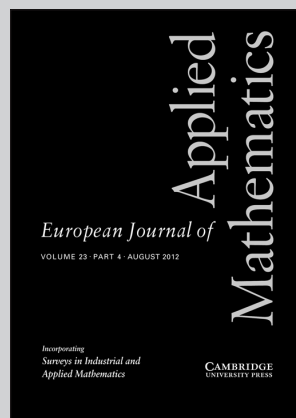
Since 2008 *EJAM* surveys have been expanded to cover Applied and Industrial Mathematics. Coverage of the journal has been strengthened in probabilistic applications, while still focusing on those areas of applied mathematics inspired by real-world applications, and at the same time fostering the development 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

Journal of Mechanics

Published on behalf of The Society of Theoretical and Applied Mechanics, R.O.C.

Editor-in-Chief

K. C. Wu, National Taiwan University, Taiwan

The objective of the *Journal of Mechanics* is to provide an international forum to foster exchange of ideas among mechanics communities in different parts of world. The Journal publishes original research in all fields of theoretical and applied mechanics.

The *Journal of Mechanics* especially welcomes papers that are related to recent technological advances, such as micro/nanomechanics, medical and biological systems, and microscale heat transfer. The contributions, which may be analytical, experimental or numerical, should be of significance to the progress of mechanics. Papers which are merely illustrations of established principles and procedures will generally not be accepted. Reports that are of technical interest are published as Short articles. Review articles are published only by invitation.

Price information

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

Free email alerts

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



Journal of Mechanics
is available online at:
<http://journals.cambridge.org/jom>

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/jom>



CAMBRIDGE
UNIVERSITY PRESS

Journal of Plasma Physics

Editor

Padma Kant Shukla, Ruhr-Universitaet Bochum, Germany

Journal of Plasma Physics publishes primary research articles in plasma physics, both theoretical and experimental, and its applications. Basic topics include the fundamental physics of plasmas, ionization, kinetic theory, particle orbits, stochastic dynamics, wave propagation, solitons, stability, shock waves, transport, heating and diagnostics. Applications include fusion, laboratory plasmas and communications devices, laser plasmas, technological plasmas, space physics, and astrophysics.

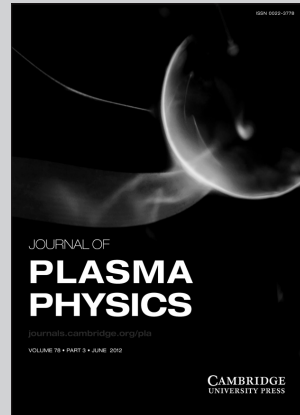
Price information

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

Free email alerts

Keep up-to-date with new material – sign up at

<http://journals.cambridge.org/pla-alerts>

**Journal of Plasma Physics**

is available online at:

<http://journals.cambridge.org/pla>

**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/pla>



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

B. P. Rynne, *Heriot-Watt University, 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>

Volume 136 Part 5 (2006) pages 889–1109 ISSN 0308-2105

THE ROYAL SOCIETY OF
EDINBURGH



PROCEEDINGS SECTION A
MATHEMATICS

PUBLISHED BY THE RSE SCOTLAND FOUNDATION
22 GEORGE STREET, EDINBURGH EH2 2PQ

*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>



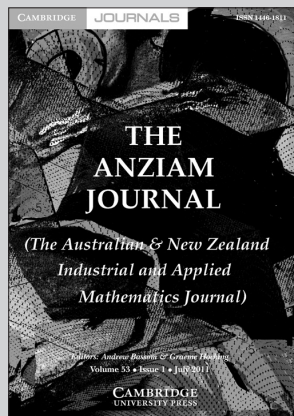
CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

The ANZIAM Journal

Published for
The Australian Mathematical Society



Editors-in-Chief

A. Bassom, *The University of Western Australia, Australia*

G. C. Hocking, *Murdoch University, Australia*

The ANZIAM Journal considers papers in any field of applied mathematics and related mathematical sciences with the aim of rapid publication in print and electronic formats. Novel applications of mathematics in real situations are especially welcomed. All papers should include some indication of applicability, and an introduction that can be understood by non-specialist readers from the whole applied mathematical community.

Price information

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

Free email alerts

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

The ANZIAM Journal is available
online at:

<http://journals.cambridge.org/anz>

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/anz>



CAMBRIDGE
UNIVERSITY PRESS

- S 485 Inertial instability of intense stratified anticyclones. Part 2. Laboratory experiments
A. Lazar, A. Stegner, R. Caldeira, C. Dong, H. Didelle & S. Viboud
- 510 Pressure jump interface law for the Stokes–Darcy coupling: confirmation by direct numerical simulations
T. Carraro, C. Goll, A. Marciniak-Czochra & A. Mikelić
- 537 Two-layer shallow-water dam-break solutions for gravity currents in non-rectangular cross-area channels
M. Ungarish
- 571 Weakly nonlinear stages of boundary-layer transition initiated by modulated Tollmien–Schlichting waves
I. B. de Paula, W. Würz, E. Krämer, V. I. Borodulin & Y. S. Kachanov
- 616 On continuous spectra of the Orr–Sommerfeld/Squire equations and entrainment of free-stream vortical disturbances
M. Dong & X. Wu
- 660 Steady gravity waves due to a submerged source
C. J. Lustri & S. J. Chapman
- 687 Short-time asymptotics of hydrodynamic dispersion in porous media
T. R. Brosten
- 706 Turbophoresis attenuation in a turbulent channel flow with polymer additives
A. Nowbahar, G. Sardina, F. Picano & L. Brandt

JFM Rapids (online only)

- R1 The non-stationary hysteresis phenomenon in shock wave reflections
M. Geva, O. Ram & O. Sadot
- R2 Coupled systems of two-dimensional turbulence
R. Salmon
- R3 Unravelling the Rayleigh–Taylor instability by stabilization
A. Poehlmann, R. Richter & I. Rehberg

S indicates supplementary data or movies available online.

- 1 Instabilities in laminar separation bubbles
J.-C. Robinet
- 5 The elastic Landau–Levich problem
H. N. Dixit & G. M. Homsy
- 29 Scaling laws for the thrust production of flexible pitching panels
P. A. Dewey, B. M. Boschitsch, K. W. Moored, H. A. Stone & A. J. Smits
- 47 On the scaling of air entrainment from a ventilated partial cavity
S. A. Mäkiharju, B. R. Elbing, A. Wiggins, S. Schinasi, J.-M. Vanden-Broeck, M. Perlin, D. R. Dowling & S. L. Ceccio
- 77 Experimental investigation of freely falling thin disks. Part 2. Transition of three-dimensional motion from zigzag to spiral
C. Lee, Z. Su, H. Zhong, S. Chen, M. Zhou & J. Wu
- 105 Prandtl number dependence and instability mechanism of the near-field flow in a planar thermal plume
T. Hattori, S. E. Norris, M. P. Kirkpatrick & S. W. Armfield
- 128 Effects of convection and diffusion of the vapour in evaporating liquid films
K. Kanatani
- 150 On the scaling of shear-driven entrainment: a DNS study
H. J. J. Jonker, M. van Reeuwijk, P. P. Sullivan & E. G. Patton
- 166 Dynamics of nearly spherical bubbles in a turbulent channel upflow
J. Lu & G. Tryggvason
- 190 Gravity-driven thin-film flow on a flexible substrate
P. D. Howell, J. Robinson & H. A. Stone
- 214 Three-dimensional quasi-geostrophic convection in the rotating cylindrical annulus with steeply sloping endwalls
M. A. Calkins, K. Julien & P. Marti
- S 245 Statistical accuracy of scattered points filters and application to the dynamics of bubbles in gas-fluidized beds
A. Acosta-Iborra, S. Sánchez-Delgado, S. A. Scott, C. R. Müller & J. S. Dennis
- 282 Stabilization of fluidized beds of particles magnetized by an external field: effects of particle size and field orientation
M. J. Espin, J. M. Valverde & M. A. S. Quintanilla
- 304 On the heat transferred to the air surrounding a semi-infinite inclined hot plate
M. J. Gollner, A. L. Sánchez & F. A. Williams
- 316 Vorticity moments in four numerical simulations of the 3D Navier–Stokes equations
D. A. Donzis, J. D. Gibbon, A. Gupta, R. M. Kerr, R. Pandit & D. Vincenzi
- S 332 Vortex development on pitching plates with lunate and truncate planforms
C. Hartloper & D. E. Rival
- S 345 Interactions between aquatic plants and turbulent flow: a field study using stereoscopic PIV
S. M. Cameron, V. I. Nikora, I. Albayrak, O. Miler, M. Stewart & F. Siniscalchi
- 373 Evolution of a stratified rotating shear layer with horizontal shear. Part 2. Nonlinear evolution
E. Arobone & S. Sarkar
- 401 Numerical investigation of the flow dynamics past a three-element aerofoil
S. Deck & R. Laraufie
- 445 Wall pressure coherence in supersonic turbulent boundary layers
A. Di Marco, R. Camussi, M. Bernardini & S. Pirozzoli
- 457 Inertial instability of intense stratified anticyclones. Part 1. Generalized stability criterion
A. Lazar, A. Stegner & E. Heifetz

Contents continued on inside back cover.