



Engineering

Books and Journals from
Cambridge University Press

Cambridge publishes a range of high-quality books and journals on the theory and practice of engineering, in communications, information theory, signal processing, networks, RF and microwave, circuits and devices, materials science and polymer research, applied photonics, thermal-fluids, mechanics, aerospace, and chemical engineering.

For further details visit:
[cambridge.org/core-engineering](https://www.cambridge.org/core-engineering)

Cambridge
Core

 **CAMBRIDGE**
UNIVERSITY PRESS

Cambridge Core

Access
leading
journals in
your subject

Explore today at [cambridge.org/core](https://www.cambridge.org/core)

Cambridge **Core**



CAMBRIDGE
UNIVERSITY PRESS

Submission of Manuscripts

All manuscripts should be submitted online at: <http://www.edmgr.com/aeroj>
Any enquiries should be directed to Wayne J Davis at aerojournal@aerosociety.com.
The current set of instructions for authors are available at: <http://journals.cambridge.org/AER>

Subscriptions

The Aeronautical Journal (ISSN 0001-9240) is published monthly in 12 issues each year.

Non-Members

The subscription price (excluding VAT) to *The Aeronautical Journal* for volume 124 (2020), which includes print and electronic access, is £639 (USA, Canada and Mexico US\$958) and includes delivery by air; single parts are available at £61 (USA, Canada and Mexico US\$92) plus postage. The electronic-only price available to institutional subscribers is £533 (USA, Canada and Mexico US\$800). EU subscribers (outside the UK) 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, may be sent to any bookseller or subscription agent or direct to the publishers: Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge CB2 8BS, or in the USA, Canada, and Mexico to Cambridge University Press, Journals Fulfillment Department, 1 Liberty Plaza, Floor 20, New York, NY 10006, USA. Japanese Prices for institutions are available from Kinokuniya Company Ltd, P.O. Box 55, Chitose, Tokyo, Japan.

RAeS Members

The subscription price for RAeS members is £105 for hardcopy and online access and £80 for online access only. Individual copies are £9. Orders are available from: Membership Department, Royal Aeronautical Society, No.4 Hamilton Place, London, W1J 7BQ, UK. Tel: +44 (0)20 7670 4304 or email: subscriptions@aerosociety.com

RAeS Conference Proceedings

Details, prices and availability of Royal Aeronautical Society Conference Proceedings can be obtained from: RAeS Conference and Events Department, No.4 Hamilton Place, London, W1J 7BQ, UK. Tel: +44 (0)20 7670 4345, email: conference@aerosociety.com or via www.aerosociety.com/events/catch-up-on-events/conference-proceedings

Advertising

All advertising enquiries should be sent to Neeral Patel
partners@aerosociety.com

Internet Access

The Aeronautical Journal is included in the Cambridge Journals Online service and can be found at: <http://journals.cambridge.org/AER>.

The Aeronautical Journal now supports open access publications across its hardcopy and online platforms, and accepts papers to consider for publication under both the 'green' and 'gold' open access options.

Information contained within *The Aeronautical Journal* has been published in good faith and the opinions expressed do not represent those of the Royal Aeronautical Society.

The Royal Aeronautical Society is a registered charity: No 313708

© 2020 Royal Aeronautical Society

All rights reserved. No part of this publication may be reproduced in any form or by any means, electronic, photocopying or otherwise, without permission in writing from Cambridge University Press. Permission to copy (for users in the USA) is available from the Copyright Clearance Center, <http://www.copyright.com>.

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.

Printed in Great Britain by Bell & Bain Ltd, Glasgow.



CONTENTS

Volume 124 Number 1281

November 2020

Bilevel programming model and algorithms for flight gate assignment problem J. Lin, X. Ding, H. Li and J. Zhou	1667
Body-force and mean-line models for the generation of axial compressor sub-idle characteristics M. Righi, L.E. Ferrer-Vidal and V. Pachidis	1683
Modelling performance an air transport network operated by subsonic and supersonic aircraft M. Janić	1702
Finite-element modelling of NiTi shape-memory wires for morphing aerofoils W.L.H. Wan A. Hamid, L. Iannucci and P. Robinson	1740
Demonstration of a prototype design synthesis capability for space access vehicle design L. Rana and B. Chudoba	1761
Design and implementation of a power distribution system adopting overcurrent protection M. Bekhti, M. Bensaada and M. Beldjehem	1789
Time-domain non-linear aeroelastic analysis via a projection-based reduced-order model S. Lee, H. Cho, H. Kim and S.-J. Shin	1798
Optimisation of interval management – speed planning using SMP SO T. Riedel, M. Takahashi and E. Itoh	1819

Front Cover: Gatwick Airport (Gatwick)