

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 aerjournal@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 121 (2017), which includes print and electronic access, is £551 (USA, Canada and Mexico US\$827) and includes delivery by air; single parts are available at £53 (USA, Canada and Mexico US\$79) plus postage. The electronic-only price available to institutional subscribers is £483 (USA, Canada and Mexico US\$725). 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, UPH, 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 £89 for Hardcopy and online access and £68 for online access only. Individual copies are £7.75. 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 Simon Levy, simon.levy@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

© 2017 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 the UK by Bell & Bain Limited, Glasgow.



CONTENTS

Volume 121 Number 1241

July 2017

Y. Xu and Z. Zhen

Multivariable adaptive distributed leader-follower flight control for multiple UAVs formation 877

L. Ferrier, M. Vezza and H. Zare-Behtash

Improving the aerodynamic performance of a cycloidal rotor through active compliant morphing 901

S. Q. Liu, S. J. Gong, Y. X. Li and Z. R. Lu

Vectorial backstepping method—based trajectory tracking control for an under-actuated stratospheric airship 916

R. Hayes, R. Dwight and S. Marques

Reducing parametric uncertainty in limit-cycle oscillation computational models 940

Kaori Shoji, Daigoro Isobe and Motofumi Usui

Numerical investigations to suppress thermal deformation of the large deployable reflector during earth eclipse in space 970

Farhad Fani Saberi, Mansour Kabganian, Hamed Kouhi and Morteza Shahravi

Gimbaled-thruster based nonlinear attitude control of a small spacecraft during thrusting manoeuvre 983

Z. Saboohi and F. Ommi

Emission prediction in conceptual design of the aircraft engines using augmented CRN 1005

Front Cover: Lockheed Martin concept

Cambridge Core

For further information about this journal please go to the journal website at:

cambridge.org/aer



MIX
Paper from
responsible sources
FSC® C007785

CAMBRIDGE
UNIVERSITY PRESS