THE AERONAUTICAL JOURNAL

Editor-in-chief: Prof Peter Bearman Associate Editors

Chairman: Prof Mike Graham

Professor Chris Atkin City University, London

Professor Rene de Borst University of Glasgow

Professor Richard Brown University of Strathclyde, Glasgow

> Professor Glyn Davies Imperial College, London

Professor Victor Giurgiutiu University of South Carolina

Professor Keith Hayward RAeS Head of Research

Professor Ken Morgan Swansea University

Professor Shahrokh Shahpar Rolls-Royce

Professor Constantinos Soutis University of Sheffield Professor Holger Babinsky University of Cambridge

> Dr Trevor Birch DSTL

Professor Jonathan Cooper University of Bristol U

Professor Dimitris Drikakis Cranfield University

Dr John Green Consultant Chief Scientist, ARA

Professor Michael Henshaw Loughborough University

Dr Ravi Nayak National Aerospace Laboratories, India

> Professor Howard Smith Cranfield University

Professor John Stollery Cranfield University Professor Ken Badcock University of Liverpool

Wg Cdr Mike Bratby RAeS Air Power Group

Professor Laurent Dala University of the Witwatersrand, Johannesburg

> Mr Chris Fielding BAE Systems, Warton

Professor Ismet Gursul University of Bath

Professor Richard Hillier Imperial College, London

Professor Gareth Padfield University of Liverpool

Professor Marilyn Smith Georgia Institute of Technology

Professor Anthony Waas University of Michigan

Aims and scope

The aims and scope of *The Aeronautical Journal* are intended to reflect the objectives of the Royal Aeronautical Society as expressed in its Charter of Incorporation. Briefly, these are to encourage and foster the advancement of all aspects of aeronautical and space science. Thus the topics of *The Aeronautical Journal* include most of those covered by the various Specialist Groups of the Society, which include:

Aircraft design, aerodynamics, air law, air power, air transport, air navigation, airworthiness and maintenance, aviation medicine, avionics and systems, environmental issues, flight operations, flight simulation, fluid dynamics, fluid mechanics, general aviation, guided flight, human factors, human powered flight, light aviation, management studies, propulsion, rotorcraft, safety, space, structures and materials, structural mechanics, systems and test procedures and UAVs.

Papers are therefore solicited on all aspects of research, design and development, construction and operation of aircraft and space vehicles. Papers are also welcomed which review, comprehensively, the results of recent research developments in any of the above topics.

We recognise the inhibiting pressures of time and confidentiality and acknowledge that many of the design testing, manufacturing and operational problems that industry has to solve contain important information for the whole aerospace community. *The Aeronautical Journal* provides a platform for refereeing and presenting your work to an international audience.

Papers will be considered for publication in *The Aeronautical Journal* if they meet the terms and conditions listed in The Instructions for authors. If these are not met, the Editor reserves the right to withdraw the paper without redress, which may be at any time up to publication.

Papers should be sent to: Prof Peter Bearman, Royal Aeronautical Society, No. 4 Hamilton Place, London W1J 7BQ, United Kingdom or wayne.davis@aerosociety.com



CONTENTS

Volume 116 Number 1182

August 2012

R.D. Firouz-Abadi and S.M. Alavi Effect of thickness and angle-of-attack on the aeroelastic stability of supersonic fins 777 P.A. Suarez Espinoza, K-U. Bletzinger, H.R.E.M. Hörnlein, F. Daoud, G. Schuhmacher and M. Klug Shape optimisation in the design of thin-walled shells as components of aerospace structures 793 G. Molinari, I. Meneghin, M. Melega and E. Troiani Parametric damage tolerance design of metallic aeronautical stiffened panels 815 S. Janarthanam and V. Babu Numerical simulations of the flow through the inlet and isolator of a Mach 4 dual mode scramjet 833 N. Bojdo and A. Filippone Operational performance of inlet barrier filters for rotorcraft 847

Front Cover. This computational fluid dynamic (CFD) image is of the X-43A (Hyper - X) at the Mach 7 test condition with the engine operating.



Editor-in-Chief Professor Peter Bearman Publishing Manager Chris Male

Production Editor Wayne J Davis Publications Officer Annabel L Hallam Production Bill Read Tim Robinson Book Review Editor Brian Riddle

Publisher

Royal Aeronautical Society (RAeS) No.4 Hamilton Place London W1J 7BQ, UK Tel: +44 (0)20 7670 4300 Fax: +44 (0)20 7670 4309 e-mail: publications@aerosociety.com

http://www.aerosociety.com RAeS Chief Executive Simon Luxmoore

Subscriptions

Non-members

Annual subscription (12 issues) £419, Single copies, including back issues £37; *Non-member subscription orders are available from;* Royal Aeronautical Society, Publications Subscriptions Department, Dovetail Services Ltd, 800 Guillat Avenue, Kent Science Park, Sittingbourne, Kent ME9 8GU, UK.

Tel: +44 (0)844 848 8426, Fax: +44 (0)844 856 0650, email: ras@servicehelpline.co.uk

RAeS members

Annual subscription (12 issues) £72, Single copies, including back issues £6·50; member subscription orders are available from; Membership Department, Royal Aeronautical Society, No.4 Hamilton Place, London W1J 7BQ, UK. Tel: +44 (0)20 7670 4300, Fax: +44 (0)20 7670 4309, email: membership@aerosociety.com

RAeS Conference Proceedings

Details, price 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 4300, email: conference@aerosociety.com or via www.aerosociety.com/proceedings

Reproduction of any of the papers published in this journal is not permitted without the written consent of the Editor.

The content does not necessarily express the opinion of the Council of the Royal Aeronautical Society.

The Royal Aeronautical Society is a registered charity: No 313708



Advertisement Sales Lee Wilson +44 (0)7870 362276 lee.wilson@aerosociety.com Printer Sunday Publishing 207 Union Street London SE1 OLN UK ISSN: 0001-9240

Published monthly

All papers are available to view free of charge for subscribers and to purchase by others at: www.aerosociety.com/news/publications/aero-journal