

# AIAA JOURNAL

VOLUME 43, NUMBER 4

APRIL 2005



## EDITORIAL

- In Memory of Gerard M. Faeth, 1936–2005 ..... 705

## HISTORY OF KEY TECHNOLOGIES

- The Supercritical Peanut: The Navy's Pioneer in High-Speed Flight Research ..... G. R. Inger 706

## AIRCRAFT TECHNOLOGY, CONVENTIONAL, STOL/VTOL

- Flow Control of a Sharp-Edged Airfoil ..... S. Miranda, P. P. Vlachos, D. P. Telionis, M. D. Zeiger 716

- Surface Modification Method for Aerodynamic Design Optimization ..... H.-J. Kim, S. Koc, K. Nakahashi 727

- Experimental Study of Incompressible Jets with Different Initial Swirl Distributions: Mean Results ..... R. T. Gilchrist and J. W. Naughton 741

- Generalized Transonic Unsteady Aerodynamics via Computational-Fluid-Dynamics/Indicial Approach (TN) ..... P. Marzocca, L. Librescu, D.-H. Kim, I. Lee, S. Schober 915

## FLUID DYNAMICS

- Acoustic Source Terms for the Linearized Euler Equations in Conservative Form ..... M. Billson, L.-E. Eriksson, L. Davidson 752

- Stability of Hypersonic Boundary Layers over a Compression Corner ..... P. Balakumar, H. Zhao, H. Atkins 760

- Autonomous Control of Micro Aircraft Vehicles Falling Through an Atmospheric Boundary Layer ..... A. J. Dorgan, E. Loth, E. Frazzoli 768

- Axisymmetric Jet Shear-Layer Excitation by Laser Energy and Electric Arc Discharges ..... R. G. Adelgren, G. S. Elliott, J. B. Crawford, C. D. Carter, J. M. Donbar, D. F. Grosjean 776

- Thrust Augmentation and Vortex Ring Evolution in a Fully Pulsed Jet ..... P. S. Krueger and M. Gharib 792

- Harmonic Balance Approach for an Airfoil with a Freeplay Control Surface ..... L. Liu and E. H. Dowell 802

- Unsteady Calibration of Fast-Response Pressure Probes, Part 1: Theoretical Studies ..... E. S. Johansen and O. K. Rediniotis 816

- Unsteady Calibration of Fast-Response Pressure Probes, Part 2: Water-Tunnel Experiments ..... E. S. Johansen and O. K. Rediniotis 827

- Unsteady Calibration of Fast-Response Pressure Probes, Part 3: Air-Jet Experiments ..... E. S. Johansen and O. K. Rediniotis 835

Table of Contents continued on back cover



A Publication of the American Institute of Aeronautics and Astronautics Devoted to Aerospace Research and Development  
AIAJAH 43(4) 705–928 (2005)  
ISSN 0001-1452

## CONTENTS—continued

- Chaotic Flow Generated by an Oscillating Foil (TN) ..... P. Blondeaux, L. Guglielmini, M. S. Triantafyllou 918

**GUIDANCE, CONTROL, AND DYNAMICS TECHNOLOGY**

- Optimization of Flexible Multibody Dynamic Systems Using the Equivalent Static Load Method ..... B. S. Kang, G. J. Park, J. S. Arora 846

**INTERDISCIPLINARY TOPICS**

- Use of Kriging Models to Approximate Deterministic Computer Models ..... J. D. Martin and T. W. Simpson 853  
 Probabilistic Structural Optimization Under Reliability, Manufacturability, and Cost Constraints ..... M. Rais-Rohani and Q. Xie 864  
 Enriched Performance Measure Approach for Reliability-Based Design Optimization ..... B. D. Youn, K. K. Choi, L. Du 874

**STRUCTURAL MECHANICS AND MATERIALS**

- Coupled High-Order Shear Layerwise Analysis of Adaptive Sandwich Piezoelectric Composite Beams ..... T. S. Plagianakos and D. A. Saravacos 885  
 Improved Transverse Shear Calculations for Rate-Dependent Analyses of Polymer Matrix Composites ..... L. Zhu, H. S. Kim, A. Chattopadhyay, R. K. Goldberg 895  
 Approximate Solution and Optimum Design of Compression-Loaded, Postbuckled Laminated Composite Plates ..... C. G. Diaconu and P. M. Weaver 906

**BOOK REVIEWS**

- Review of *Thin Film Materials—Stress, Defect Formation and Surface Evolution* ..... B. V. Sankar 922  
 Review of *Theory and Computation in Hydrodynamic Stability* ..... M. R. Malik 924

**TABLE OF CONTENTS OF NON-U.S. JOURNALS**

- Journal of the Japan Society for Aeronautical and Space Sciences* ..... 926  
*Transaction of the Japan Society for Aeronautical and Space Sciences* ..... 927