Chronological Index

- J92-121 Approximate Formula of Weak Oblique Shock Wave Angle. Hua-Sha Dou and Hsueh-Ying Teng, Beijing University of Aeronautics and Astronautics, PRC (30, 3, p. 837) Technical Note Technical Comment by T. Wolf, Technical University of Darmstadt, Germany (31, 7, p. 1363)
- **J92-130** Flow Near the Trailing Edge of an Airfoil. Lucien Z. Dumitrescu, *Université de Provence, France* (30, 4, p. 865) Technical Note
- Technical Comment by Lucien Z. Dumitrescu, *Institute of Aeronautics*, *Romania* (31, 8, p. 1538)
- J93-001 Numerical Solution of the Compressible Boundary-Layer Equations Using the Finite Element Method. E. Hytopoulos, J. A. Schetz and M. Gunzburger, Virginia Polytechnic Institute and State University (31, 1, p. 6) Synoptic based on AIAA Paper 92-0666
- J93-002 Three-Dimensional Hypersonic Shock Wave/ Turbulent Boundary-Layer Interactions. M. I. Kussoy and K. C. Horstman, *Eloret Institute* (31, 1, p. 8) Synoptic
- J93-003 Numerical Simulation of Viscous Liquid Sloshing in Arbitrarily Shaped Reservoirs. G. Popov, G. H. Vatistas, S. Sankar, and T. S. Sankar, *Concordia University, Canada* (31, 1, p. 10) Synoptic
- J93-004 Acoustic Radiation from a Thin Airfoil in Nonuniform Subsonic Flows. H. M. Atassi, M. Dusey and C. M. Davis, *University of Notre Dame* (31, 1, p. 12) Article based on AIAA Paper 90-3910
- J93-005 New Wall Treatment for Numerical Navier-Stokes Solution of Incompressible Turbulent Flows. Jean Caillé, Algorithm Informatique, Inc., Canada; and Joseph A. Schetz, Virginia Polytechnic Institute and State University (31, 1, p. 20) Article based on AIAA Paper 91-1736
- J93-006 Near-Wall Variable-Prandtl-Number Turbulence Model for Compressible Flows. T. P. Sommer, R. M. C. So and H. S. Zhang, *Arizona State University* (31, 1, p. 27) Article
- J93-007 Effect of Sidewall Suction on Flow in Two-Dimensional Wind Tunnels. R. W. Barnwell, NASA Langley Research Center (31, 1, p. 36) Article based on AIAA Paper 84-0242
- J93-008 Spectral Element-Fourier Method for Transitional Flows in Complex Geometries. Cristina H. Amon, *Carnegie Mellon University* (31, 1, p. 42) Article based on AIAA Paper 91-1608 CP914
- J93-009 Performance of Compressible Flow Codes at Low Mach Numbers. G. Volpe, *Grumman Corporate Research Center* (31, 1, p. 49) Article based on AIAA Paper 91-1662
- J93-010 Nonlinear Relaxation/Quasi-Newton Algorithm for the Compressible Navier-Stokes Equations. Jack R. Edwards and D. Scott McRae, *North Carolina State University* (31, 1, p. 57) Article based on AIAA Paper 92-2643 CP926
- J93-011 Adaptive Finite Volume Upwind Approach on Mixed Quadrilateral-Triangular Meshes. C. J. Hwang and S. J. Wu, National Cheng Kung University, Taiwan, ROC (31, 1, p. 61) Article

- J93-012 Theoretical and Experimental Study on Two-Phase Structure of Planar Mixing Layer. Keh-Chin Chang, Muh-Rong Wang, Wen-Jing Wu and Ying-Chieh Liu, *National Cheng Kung University*, *Taiwan*, *ROC* (31, 1, p. 74) Article
- J93-013 Electron-Ion Three-Body Recombination Coefficient of Argon. T. G. Owano and C. H. Kruger, *Stanford University*; and R. A. Beddini, *University of Illinois* (31, 1, p. 75) Article
- J93-014 Engineering Approach to the Prediction of Shock Patterns in Bounded High-Speed Flows. D. J. Azevedo and Ching Shi Liu, State University of New York at Buffalo (31, 1, p. 83) Article
- J93-015 Shock/Boundary-Layer Interaction Control with Vortex Generators and Passive Cavity. D. C. McCormick, United Technologies Research Center (31, 1, p. 91) Article based on AIAA Paper 92-0064
- J93-016 Eduction of Swirling Structure Using the Velocity Gradient Tensor. C. H. Berdahl and D. S. Thompson, *University of Texas at Arlington* (31, 1, p. 97) Article based on AIAA Paper 91-1823
- J93-017 Measurements of Circulation and Vorticity in the Leading-Edge Vortex of a Delta Wing. K. D. Visser and R. C. Nelson, *University of Notre Dame* (31, 1, p. 104) Article
- **J93-018** Near-Field Behavior of a Tip Vortex. A. Shekarriz, T. C. Fu and J. Katz, *Johns Hopkins University*; and T. T. Huang, *David Taylor Model Basin, CD/NSWC* (**31**, 1, p. 112) Article based on AIAA Paper 91-3307 CP918
- J93-019 Strong Vibrational Nonequilibrium in Supersonic Nozzle Flows. A. Chiroux de Gavelle de Roany, C. Flament, J. W. Rich and V. V. Subramaniam, *Ohio State University*; and Walter R. Warren Jr., *Pacific Applied Research* (31, 1, p. 119) Article based on AIAA Paper 90-0252
- J93-020 Mie Scattering Imaging of a Transverse, Sonic Jet in Supersonic Flow. J. C. Hermanson and M. Winter, *United Technologies Research Center* (31, 1, p. 129) Article
- J93-021 Numerical Prediction of Flap Losses in a Transonic Wind Tunnel. Nide G. C. R. Fico Jr., Instituto de Aeronáutica Espaço, Brazil; and Marcos A. Ortega, Instituto Technológico de Aeronáutica, Brazil (31, 1, p. 133) Article
- J93-022 Modeling, Analysis, and Prediction of Flutter at Transonic Speeds. K.-Y. Fung and T. H. Shieh, *University of Arizona* (31, 1, p. 140) Article
- J93-023 Direct Solution of Two-Dimensional Navier-Stokes Equations for Static Aeroelasticity Problems. Fort F. Felker, NASA Ames Research Center (31, 1, p. 148) Article based on AIAA Paper 92-2123 CP923
- J93-024 Finite Element Nonlinear Panel Flutter with Arbitrary Temperatures in Supersonic Flow. David Y. Xue and Chuh Mei, *Old Dominon University* (31, 1, p. 154) Article based on AIAA Paper 92-2129 CP923
- J93-025 Transverse Shear Effects on Buckling and Postbuckling of Laminated and Delaminated Plates. Hsin-Piao Chen, *California State University*, *Long Beach* (31, 1, p. 163) Article based on AIAA Paper 91-0911 CP911

- J93-026 Flexure-Torsion Behavior of Prismatic Beams, Part I: Section Properties via Power Series. J. B. Kosmatka, *University of California, San Diego* (31, 1, p. 170) Article
- J93-027 Approximation-Based Global Optimization Strategy for Structural Synthesis. A. E. Sepulveda and L. A. Schmit, *University of California, Los Angeles* (31, 1, p. 180) Article based on AIAA Paper 91-1035 CP911
- J93-028 Buckling or Transverse Deflections of Unsymmetrically Laminated Plates Subjected to In-Plane Loads. M. S. Qatu, Franklin University; and A. W. Leissa, Ohio State University (31, 1, p. 189) Article
- J93-029 Unit-Reynolds-Number Effects on Boundary-Layer Transition. Kenneth F. Stetson and Roger L. Kimmel, Wright Laboratory, Wright-Patterson AFB (31, 1, p. 195) Technical Note
- J93-030 Near-Wall Two-Equation Model for Compressible Turbulent Flows. H. S. Zhang and R. M. C. So, Arizona State University; C. G. Speziale, ICASE, NASA Langley Research Center; and Y. G. Lai, CFD Research Corporation (31, 1, p. 196) Technical Note based on AIAA Paper 92-0442
- **J93-031** Nonparameterized 'Entropy Fix' for Roe's Method. François Dubois, *Aerospatiale Espace & Defense, France*; and Guillaume Mehlman, *Ecole Polytechnique, France* (**31**, 1, p. 199) Technical Note
- J93-032 Shock Oscillation in Two-Dimensional, Inviscid, Unsteady Channel Flow. Shen-Min Liang and Chou-Jiu Tsai, National Cheng Kung University, Taiwan, ROC (31, 1, p. 200) Technical Note
- **J93-033** Generalized One-Dimensional, Steady, Compressible Flow. Fred M. Young, *Lamar University* (31, 1, p. 204) Technical Note
- J93-034 Subharmonic and Harmonic Forced Response of the Wake of a Circular Cylinder. Mohammad Javed Khan and Anwar Ahmed, *Texas A&M University* (31, 1, p. 208) Technical Note
- J93-035 Entropy Production in Finite-Difference Schemes. Ronald A. Cox and Brian M. Argrow, *University of Oklahoma* (31, 1, p. 210) Technical Note
- J93-036 Crossflow Instability in a Spinning Disk Boundary Layer. Y. Kohama and K. Suda, *Tohoku University*, *Japan* (31, 1, p. 212) Technical Note based on AIAA Paper 87-1340
- J93-037 Multisine Multiexcitation in Frequency Response Function Estimation. José Roberto de França Arruda, Universidade Estadual de Campinas, Brazil (31, 1, p. 215) Technical Note
- J93-038 Helicopter Trim Analysis by Shooting and Finite Element Methods with Optimally Damped Newton Iterations. N. S. Achar and G. H. Gaonkar, *Florida Atlantic University* (31, 2, p. 225) Article
- J93-039 Review of Unsteady Aerodynamic Methods for Turbomachinery Aeroelastic and Aeroacoustic Applications. Joseph M. Verdon, *United Technologies Research Center* (31, 2, p. 235) Survey Paper based on AIAA Paper 92-0011
- J93-040 Higher-Order Accuracy for Upwind Methods by Using the Compatibility Equations. Peter M. Goorjian and Shigeru Obayashi, NASA Ames Research Center (31, 2, p. 251) Article based on AIAA Paper 91-1543 CP914

- J93-041 Structured Background Grids for Generation of Unstructured Grids by Advancing-Front Method. Shahyar Pirzadeh, ViGYAN, Inc. (31, 2, p. 257) Article based on AIAA Paper 91-3233 CP918
- J93-042 Solution of the Steady Euler Equations in a Generalized Lagrangian Formulation, J. Y. Yang and C. A. Hsu, National Taiwan University, Taiwan, ROC; and W. H. Hui, Hong Kong University of Science and Technology, Hong Kong (31, 2, p. 266) Article
- J93-043 Specifying Exhaust Nozzle Contours with a Neural Network. Kevin W. Whitaker, Ravi K. Prasanth and Robert E. Markin, *University of Alabama* (31, 2, p. 273) Article based on AIAA Paper 92-3328
- J93-044 Mixing Enhancement in Compressible Mixing Layers: An Experimental Study. E. M. Fernando, QUEST Integrated Inc.; and S. Menon, Georgia Institute of Technology (31, 2, p. 278) Article based on AIAA Paper 91-1721
- J93-045 Application of Scalar Implicit Approximate Factorization for Underwater Magnetohydrodynamic Propulsion Concept Analyses. D. Choi and C. J. Knight, *Textron Defense Systems* (31, 2, p. 286) Article based on AIAA Paper 91-0386
- J93-046 Computation of Unsteady Shock-Induced Combustion Using Logarithmic Species Conservation Equations. Gregory J. Wilson, *Eloret Institute*; and Myles A. Sussman, *Stanford University* (31, 2, p. 294) Article
- J93-047 Effects of Sweepback on Unsteady Separation in Mach 5 Compression Ramp Interactions. M. E. Erengil and D. S. Dolling, *University of Texas at Austin* (31, 2, p. 302) Article
- J93-048 Visualization of the Flows in Precessing Tanks with Internal Baffles. Richard Manasseh, *University of Cambridge*, England, UK (31, 2, p. 312) Article
- J93-049 Structure and Development of Streamwise Vortex Arrays Embedded in a Turbulent Boundary Layer. Bruce J. Wendt and Isaac Greber, Case Western Reserve University; and Warren R. Hingst, NASA Lewis Research Center (31, 2, p. 319) Article based on AIAA Paper 92-0551
- J93-050 Hysteresis Effects on Wind Tunnel Measurements of a Two-Element Airfoil. Kasim Biber and Glen W. Zumwalt, Wichita State University (31, 2, p. 326) Article based on AIAA Paper 92-0267
- J93-051 Layer-Wise Approach for the Bifurcation Problem in Laminated Composites with Delaminations. Jaehong Lee, Zafer Gürdal and O. Hayden Griffin, Virginia Polytechnic Institute and State University (31, 2, p. 331) Article based on AIAA Paper 92-2224 CP922
- J93-052 Formulation and Solution of Inverse Spaghetti Problem: Application to Beam Deployment Dynamics. Janice D. Downer and K. C. Park, *University of Colorado* (31, 2, p. 339) Article based on AIAA Paper 91-1113 CP911
- **J93-053** Mode Localization in Multispan Beams. S. D. Lust, *Hughes Aircraft Company*; and P. P. Friedmann and O. O. Bendiksen, *University of California, Los Angeles* (**31**, 2, p. 348) Article based on AIAA Paper 90-1214 CP903
- J93-054 Vibration of a Sandwich Plate Strip of Linearly Varying Thickness. A. P. Gupta and R. R. Bhargava, *University of Roorkee*, *India* (31, 2, p. 356) Article

- J93-055 Probabilistic Nonlinear Finite Element Analysis of Composite Structures. S. P. Engelstad and J. N. Reddy, *Virginia Polytechnic Institute and State University* (31, 2, p. 362) Article
- J93-056 Reduced-Basis Technique for Evaluating the Sensitivity Coefficients of the Nonlinear Tire Response. Ahmed K. Noor, John A. Tanner and Jeanne M. Peters, NASA Langley Research Center (31, 2, p. 370) Article base on AIAA Paper 92-2530 CP922
- J93-057 Thin-Walled Tubes Subjected to Combined Internal Pressure and Axial Load. Wei Jiang and Kuang-Hsi Wu, Florida International University (31, 2, p. 377) Article
- J93-058 Constrained Conjugate Directions Methods for Design Optimization of Large Systems. Jasbir S. Arora and Guangyao Li, *University of Iowa* (31, 2, p. 388) Article based on AIAA Paper 92-2500 CP922
- **J93-059** Induced Drag of Wings of Finite Aspect Ratio. F. Lam, University of Cambridge, England, UK (31, 2, p. 396) Technical Note
- J93-060 Two-Equation Turbulence Model for Compressible Reacting Flows. J. R. Narayan, *NASA Ames Research Center* (31, 2, p. 398) Technical Note
- J93-061 Improved Boundary Integral Method for Inviscid Boundary Condition Applications. P. Koumoutsakos and A. Leonard, California Institute of Technology (31, 2, p. 401) Technical Note
- J93-062 Computation of Unsteady Supersonic Quasi-One-Dimensional Viscous-Inviscid Interacting Internal Flowfields. Timothy W. Swafford, *Mississippi State University* (31, 2, p. 404) Technical Note
- J93-063 Axisymmetric Buckling of Antisymmetrically Laminated Spherical Caps. M. C. Narasimhan and R. S. Alwar, *Indian Institute of Technology* (31, 2, p. 408) Technical Note
- **J93-064** Aerodynamic Applications of Pressure Sensitive Paint. M. J. Morris, J. F. Donovan, J. T. Kegelman, S. D. Schwab and R. L. Levy, *McDonnell Douglas Research Laboratories*; and R. C. Crites, *McDonnell Aircraft Company* (**31**, 3, p. 419) Article based on AIAA Paper 92-0264
- J93-065 Aero-Optical Phase Measurements Using Fourier Transform Holographic Interferometry. George Havener and Denise Kirby, *Arnold Engineering and Development Center* (31, 3, p. 426) Article based on AIAA Paper 92-0379
- J93-066 Resolution Characteristics of Holographic Particle Image Velocimetry. J. Scherer and L. P. Bernal, *University of Michigan* (31, 3, p. 434) Article based on AIAA Paper 92-0009
- J93-067 Application of Particle Image Velocimetry in High-Speed Separated Flows. M. J. Molezzi and J. C. Dutton, *University of Illinois at Urbana-Champaign* (31, 3, p. 438) Article based on AIAA Paper 92-0004
- J93-068 Fundamental Turbulence Measurements by Relief Flow Tagging. Richard B. Miles, Deyu Zhou, Boying Zhan and Walter R. Lempert, *Princeton University*; and Zhen-Su She, *University of Arizona* (31, 3, p. 447) Article based on AIAA Paper 92-0007
- J93-069 Miniature, Fast-Response Five-Hole Conical Probe for Supersonic Flowfield Measurements. J. W. Naughton, L. N. Cattafesta III and G. S. Settles, *Pennsylvania State University* (31, 3, p. 453) Article based on AIAA Paper 92-0266

- J93-070 Flowfield Measurements of a Two-Element Airfoil with Large Separation. Kasim Biber and Glen W. Zumwalt, Wichita State University (31, 3, p. 459) Article based on AIAA Paper 92-0267
- J93-071 Progress in Laser Spectroscopic Techniques for Aerodynamic Measurements: An Overview. Robert L. McKenzie, NASA Ames Research Center (31, 3, p. 465) Survey Paper based on AIAA Paper 91-0059
- J93-072 Laser-Induced Fluorescence Diagnostics Using a Two-Line Excitation Method. Michael S. Smith, Linwood L. Price and W. D. Williams, Calspan Corporation (31, 3, p. 478) Article based on AIAA Paper 92-0512
- J93-073 Planar Measurement Technique for Compressible Flows Using Laser-Induced Iodine Fluorescence. Roy J. Hartfield Jr., Steven D. Hollo and James C. McDaniel, *University of Virginia* (31, 3, p. 483) Article based on AIAA Paper 92-0141
- J93-074 Laser Absorption Measurements of OH Concentration and Temperature in Pulsed Facilities. John A. Cavolowsky and Mark E. Newfield, NASA Ames Research Center; and Mark P. Loomis, MCAT Institute (31, 3, p. 491) Article
- J93-075 Time-Resolved Infrared Emission Spectroscopy in High-Enthalpy Supersonic Air Flows. W. T. Rawlins, T. E. Parker, R. R. Foutter and M. G. Allen, *Physical Sciences, Inc.* (31, 3, p. 499) Article based on AIAA Paper 92-0140
- J93-076 Fluorescence Imaging of OH and NO in a Model Supersonic Combustor. Mark G. Allen, Terence E. Parker, William G. Reinecke, Hartmut H. Legner, Richard R. Foutter, W. Terry Rawlins and Steven J. Davis, *Physical Sciences, Inc.* (31, 3, p. 505) Article
- J93-077 Comparison of Excitation Techniques for Quantitative Fluorescence Imaging of Reacting Flows. Jerry M. Seitzman and Ronald K. Hanson, *Stanford University* (31, 3, p. 513) Article
- J93-078 Laser Selection Criteria for OH Fluorescence Measurements in Supersonic Combustion Test Facilities. T. M. Quagliaroli, G. Laufer, R. H. Krauss, and J. C. McDaniel Jr., University of Virginia (31, 3, p. 520) Article based on AIAA Paper 92-0508
- **J93-079** Compressible Flow in a Hovercraft Air Cushion. A. Pozzi, F. Manzo and P. Luchini, *University of Naples, Italy* (31, 3, p. 528) Article
- J93-080 Supersonic Boundary-Layer Stability in a High-Area-Ratio Nozzle. Laura L. Pauley and Samir N. Dagher, *Pennsylvania State University* (31, 3, p. 534) Article
- J93-081 Linearized Euler Predictions of Unsteady Aerodynamic Loads in Cascades. Kenneth C. Hall and William S. Clark, *Duke University* (31, 3, p. 540) Article based on AIAA Paper 91-3378

 Errata(31, 5, p. 970)
- J93-082 Rotational Compressible Inverse Design Method for Two-Dimensional, Internal Flow Configurations. V. Dedoussis, P. Chaviaropoulos and K. D. Papailiou, *National Technical University of Athens, Greece* (31, 3, p. 551) Article
- J93-083 Experimental Investigation of a Three-Dimensional Bluff-Body Wake. A. Ahmed, M. J. Khan and B. Bays-Muchmore, Texas A&M University (31, 3, p. 559) Article based on AIAA Paper 92-0429

- J93-084 Mixing Enhancement Due to Global Oscillations in Jets with Annular Counterflow. P. J. Strykowski and R. K. Wilcoxon, *University of Minnesota*, (31, 3, p. 564) Article based on AIAA Paper 92-0538
- J93-085 Linear Stability of the Confined Compressible Reacting Mixing Layer. D. S. Shin and J. H. Ferziger, *Stanford University* (31, 3, p. 571) Article
- J93-086 Optimal Design of Laminated Composite Plates in a Fuzzy Environment. Seung Jo Kim and Nam Seo Goo, Seoul National University, Korea (31, 3, p. 578) Article
- J93-087 Anomalous Swelling Behavior of FM 5055 Carbon Phenolic Composite. E. H. Stokes, *Southern Research Institute* (31, 3, p. 584) Article based on AIAA Paper 91-0928 CP911
- J93-088 Compression Buckling Response of Tailored Rectangular Composite Plates. Sherrill B. Biggers and Sundar Srinivasan, Clemson University (31, 3, p. 590) Article
- J93-089 Structure-Attached Corotational Fluid Grid for Transient Aeroelastic Computations. C. Farhat and T. Y. Lin, University of Colorado (31, 3, p. 597) Technical Note
- J93-090 Jet Mixing Enhancement by Hydrodynamic Excitation. William H. Brown, General Electric Aircraft Engines; and K. K. Ahuja, Georgia Institute of Technology (31, 3, p. 599) Technical Note based on AIAA Paper 90-4005
- J93-091 Effect of Tabs on the Flow and Noise Field of an Axisymmetric Jet. M. Samimy, *Ohio State University*; K. B. M. Q. Zaman, *NASA Lewis Research Center*; and M. F. Reeder, *Ohio State University* (31, 4, p. 609) Article
- J93-092 Outflow Boundary Conditions for Spatial Navier-Stokes Simulations of Transition Boundary Layers. M. Kloker and U. Konzelmann, *Universität Stuttgart, Germany*; and H. Fasel, *University of Arizona* (31, 4, p. 620) Article
- J93-093 New Approach for the Calculation of Transitional Flows. T. Wayne Young and Eric S. Warren, North Carolina State University; Julius E. Harris, NASA Langley Research Center; and H. A. Hassan, North Carolina State University (31, 4, p. 629) Article based on AIAA Paper 92-2669 CP926
- J93-094 Experimental Investigation of Instability Wave Propagation in a Three-Dimensional Boundary-Layer Flow. H. Deyhle, G. Höhler and H. Bippes, *Deutsche Forschungsanstalt für Luft- und Raumfahrt, Germany* (31, 4, p. 645) Article
- **J93-095** Grid-Independent Upwind Scheme for Multidimensional Flow. Ijaz H. Parpia and Donna J. Michalek, *University of Texas at Arlington* (31, 4, p. 646) Article based on AIAA Paper 92-0325
- J93-096 Experimental Investigation of Hypersonic Three-Dimensional Corner Flow. Hakan Papuccuoglu, *Istanbul Technical University, Turkey* (31, 4, p. 652) Article
- J93-097 Base Pressure of a Sudden Expansion from a Conical Converging Nozzle. Chi-bok Hwang, Joint Chiefs of Staff, Korea; and Wen L. Chow and Davood Moslemian, Florida Atlantic University (31, 4, p. 657) Article
- J93-098 Critical Comparison of Second-Order Closures with Direct Numerical Simulations of Homogeneous Turbulence. Tsan-Hsing Shih, NASA Lewis Research Center; and John L. Lumley, Cornell University (31, 4, p. 663) Article

- J93-099 Atomic Resonance Absorption Spectroscopy Measurements on High-Temperature CO Dissociation Kinetics. Hans-Jürgen Mick, Michael Burmeister and Paul Roth, Universität Duisburg, Germany (31, 4, p. 671) Article
- J93-100 Linear Stability of the Compressible Reacting Mixing Layer. D. S. Shin and J. H. Ferziger, *Stanford University* (31, 4, p. 677) Article based on AIAA Paper 91-0372
- J93-101 Quasiconical Free Interaction Between a Swept Shock and a Turbulent Boundary Layer. Frank K. Lu, *University of Texas at Arlington* (31, 4, p. 686) Article
- J93-102 Experimental Study of Continuous Wave Hydrogen-Fluoride Chemical Laser Overtone Performance. D. L. Carroll, L. H. Sentman, P. T. Theodoropoulos, R. E. Waldo and S. J. Gordon, *University of Illinois at Urbana-Champaign* (31, 4, p. 693) Article
- J93-103 Finite Element Analysis of Large-Amplitude Panel Flutter of Thin Laminates. Iain R. Dixon and Chuh Mei, *Old Dominion University* (31, 4, p. 701) Article based on AIAA Paper 91-1173 CP911
- J93-104 Coupling Between a Supersonic Boundary Layer and a Flexible Surface. Abdelkader Frendi, Analytical Services and Materials, Inc.; Lucio Maestrello, NASA Langley Research Center; and Alvin Bayliss, Northwestern University (31, 4, p. 708) Article
- J93-105 Optimal Selection of Weighting Matrices in Integrated Design of Structures/Controls. M. Sunar and S. S. Rao, *Purdue University* (31, 4, p. 714) Article
- J93-106 Analysis of Delamination Initiation in Postbuckled Dropped-Ply Laminates. Carlos G. Dávila, NASA Langley Research Center; and Eric R. Johnson, Virginia Polytechnic Institute and State University (31, 4, p. 721) Article based on AIAA Paper 92-2226 CP922
- J93-107 Vibration and Damping Analysis of Composite Laminates Using Shear Deformable Finite Element. K. N. Koo and I. Lee, *Korea Advanced Institute of Science and Technology* (31, 4, p. 728) Article
- J93-108 Dynamic Analysis and Design of Laminated Composite Beams with Multiple Damping Layers. Mohan D. Rao and Shulin He, *Michigan Technological University* (31, 4, p. 736) Article
- J93-109 Enhanced Composite Plate Damping Using Intercalated Graphite Fiber. George A. Lesieutre and Shridhar Yarlagadda, *Pennsylvania State University*; and Dana Christiansen and Walter Whatley, *SPARTA*, *Inc.* (31, 4, p. 746) Article based on AIAA Paper 91-1127 CP911
- J93-110 In-Plane Response of Laminates with Spatially Varying Fiber Orientations: Variable Stiffness Concept. Zafer Gürdal and Reynaldo Olmedo, Virginia Polytechnic Institute and State University (31, 4, p. 751) Article based on AIAA Paper 92-2472 CP922
- J93-111 Eigenvector Error Bounds and Their Applications to Structural Modification. Yitshak M. Ram, University of Adelaide, Australia; and Simon G. Braun, Technion-Israel Institute of Technology (31, 4, p. 759) Article
- J93-112 Refined Shear Deformation Theory of Laminated Shells. Hung-Sying Jing and Kuan-Goang Tzeng, *National Cheng Kung University, Taiwan, ROC* (31, 4, p. 765) Article

- J93-113 Optimum Design of Forging Die Shapes Using Nonlinear Finite Element Analysis. C. S. Han, R. V. Grandhi and R. Srinivasan, *Wright State University* (31, 4, p. 774) Article based on AIAA Paper 92-2436 CP922
- J93-114 Noniterative Implicit Method for Tracking Particles in Mixed Lagrangian-Eulerian Formulations. T. I-P. Shih and A. Dasgupta, Carnegie Mellon University (31, 4, p. 782) Technical Note
- J93-115 Comparative Numerical Study of Two Turbulence Models for Airfoil Static and Dynamic Stall. Donald P. Rizzetta and Miguel R. Visbal, *U. S. Air Force Wright Laboratory* (31, 4, p. 784) Technical Note based on AIAA Paper 92-4649 CP210
- J93-116 Intensified Array Camera Imaging of Solid Surface Combustion Aboard the NASA Learjet. Karen J. Weiland, NASA Lewis Research Center (31, 4, p. 786) Technical Note based on AIAA Paper 92-0240
- J93-117 Implicit Treatment of Diffusion Terms in Lower-Upper Algorithms. T. I-P. Shih and E. Steinthorsson, Carnegie Mellon University; and W. J. Chyu, NASA Ames Research Center (31, 4, p. 788) Technical Note
- J93-118 Eigenvalue Sensitivity with Respect to Location of Internal Stiffness and Mass Attachments. B. P. Wang, *University of Texas at Arlington* (31, 4, p. 791) Technical Note based on AIAA Paper 92-2513 CP922
- J93-119 Implicit Upwind Solution Algorithms for Three-Dimensional Unstructured Meshes. John T. Batina, NASA Langley Research Center (31, 5, p. 801) Article based on AIAA Paper 92-0447
- J93-120 Fluid Flow of a Row of Jets in Crossflow—A Numerical Study. S.-W. Kim and T J. Benson, NASA Lewis Research Center (31, 5, p. 806) Article based on AIAA Paper 92-0534
- J93-121 Hypersonic Nonequilibrium Flow Computations Using the Roe Flux-Difference Split Scheme. Eswar Josyula, Datta Gaitonde and Joseph S. Shang, Flight Dynamics Directorate, Wright-Patterson AFB (31, 5, p. 812) Synoptic based on AIAA Paper 91-1700
- J93-122 Round Incompressible Jets with Asymmetric Initial Velocity Distributions. G. C. Vradis, M. V. Ötügen, S. W. Kim and D. B. Kim, *Polytechnic University* (31, 5, p. 814) Synoptic
- J93-123 Transonic Turbulent Separated Flow Predictions Using a Two-Layer Turbulence Model. C. C. Chuang and C. C. Chieng, *National Tsing Hua University, Taiwan, ROC* (31, 5, p. 816) Synoptic based on AIAA Paper 92-0518
- J93-124 Results from a Conical Euler Methodology Developed for Unsteady Vortical Flows. Elizabeth M. Lee and John T. Batina, NASA Langley Research Center (31, 5, p. 818) Synoptic
- J93-125 Calculation of Compressible Boundary Layers by a Hybrid Finite Element Method. Andrew J. Meade Jr., *Rice University* (31, 5, p. 820) Article based on AIAA Paper 92-0524
- J93-126 Aerodynamic Drag Reduction for Satellites in Low Earth Orbits. Geoffrey P. Cathcart and Michael N. Macrossan, University of Queensland, Australia (31, 5, p. 826) Article
- J93-127 Comparison of Newton's and Quasi-Newton's Method Solvers for the Navier-Stokes Equations. Paul D. Orkwis, *University of Cincinnati* (31, 5, p. 832) Article based on AIAA Paper 92-2644 CP926

- J93-128 Common Vortical Structure of Turbulent Flows over Smooth and Rough Boundaries. A. J. Grass, R. J. Stuart and M. Mansour-Tehrani, *University College London, England, UK* (31, 5, p. 837) Article based on AIAA Paper 91-0333
- J93-129 Parameters Governing the Turbulent Wall Jet in an External Stream. M. D. Zhou and I. Wygnanski, *University of Arizona* (31, 5, p. 848) Article
- J93-130 Applications of Shock-Induced Mixing to Supersonic Combustion. Joseph Yang, Toshi Kubota and Edward E. Zukoski, *California Institute of Technology* (31, 5, p. 854) Article
- J93-131 Ignition Analysis of Unpremixed Reactants with Chain Mechanism in a Supersonic Mixing Layer. Y. Ju and T. Niioka, *Tohoku University*, *Japan* (31, 5, p. 863) Article
- J93-132 Numerical Study of Shock-Wave/Boundary-Layer Interactions with Bleed. T. O. Hahn and T. I-P. Shih, *Carnegie Mellon University*; and W. J. Chyu, *NASA Ames Research Center* (31, 5, p. 869) Article
- J93-133 Study of Supersonic Intersection Flowfield at Modified Wing-Body Junctions. B. Lakshmanan and S. N. Tiwari, Old Dominion University (31, 5, p. 877) Article
- J93-134 Numerical Study of Ignition Within Hydrogen-Air Supersonic Boundary Layers. Luis Fernando Figueira da Silva, Bruno Deshaies and Michel Champion, *CNRS–ENSMA*, *France* (31, 5, p. 884) Article based on AIAA Paper 92-0338
- J93-135 Deforming Grid Variational Principle for Unsteady Small Disturbance Flows in Cascades. Kenneth C. Hall, *Duke University* (31, 5, p. 891) Article based on AIAA Paper 92-0665
- J93-136 Simulation of Three-Dimensional Liquid Sloshing Flows Using a Strongly Implicit Calculation Procedure. Kuo-Huey Chen, NASA Lewis Research Center; and Richard H. Pletcher, Iowa State University (31, 5, p. 901) Article based on AIAA Paper 91-1661
- J93-137 Asymptotic Methods for the Prediction of Transonic Wind-Tunnel Wall Interference. N. D. Malmuth, Rockwell International Science Center; H. Jafroudi, University of Southern California; C. C. Wu, University of California, Los Angeles; R. McLachlan, University of Colorado; and J. D. Cole, Rensselaer Polytechnic Institute (31, 5, p. 911) Article based on AIAA Paper 91-1712

Errata (31, 6, p. 1172)

- J93-138 Optimum Fiber Orientation Angle of Multiaxially Laminated Composites Based on Reliability. Shaowen Shao, Mitsunori Miki and Yoshisada Murotsu, *University of Osaka Prefecture, Japan* (31, 5, p. 919) Synoptic based on AIAA Paper 91-1032 CP911
- J93-139 Optimum Design of Laminated Composite Plates Using Lamination Parameters. Mitsunori Miki and Yoshihiko Sugiyama, *University of Osaka Prefecture, Japan* (31, 5, p. 921) Synoptic based on AIAA Paper 91-1032 CP911
- J93-140 Parameter-Transfer Finite Element Method for Structural Analysis. R. Barboni, P. Gaudenzi and A. Mannini, Università di Roma "La Sapienza," Italy (31, 5, p. 923) Article
- J93-141 Finite Element Modeling of Piezoelectric Sensors and Actuators. Woo-Seok Hwang and Hyun Chul Park, *Pohang Institute of Science and Technology, Korea* (31, 5, p. 930) Article

- J93-142 Nonlinear Large Amplitude Vibration of Composite Helicopter Blade at Large Static Deflection. Taehyoun Kim and John Dugundji, *Massachusetts Institute of Technology* (31, 5, p. 938) Article based on AIAA Paper 91-1221 CP911
- J93-143 Approximation of Parameter Uncertainty in Nonlinear Optimization-Based Parameter Estimation Schemes. W. R. Witkowski and J. J. Allen, Sandia National Laboratories (31, 5, p. 947) Article
- J93-144 Optimization of Laminate Stacking Sequence for Buckling Load Maximization by Genetic Algorithm. Rodolphe Le Riche and Raphael T. Haftka, Virginia Polytechnic Institute and State University (31, 5, p. 951 Article based on AIAA Paper 92-2314 CP922
- J93-145 Laminar Boundary Layers Subjected to High-Frequency Traveling-Wave Fluctuations. David Greenblatt and Steven B. Damelin, *Aerotek, South Africa* (31, 5, p. 957) Technical Note
- J93-146 TURNS: A Free-Wake Euler/Navier-Stokes Numerical Method for Helicopter Rotors. G. R. Srinivasan and J. D. Baeder, NASA Ames Research Center (31, 5, p. 959) Technical Note
- J93-147 Correlation of Conical Interactions Induced by Sharp Fins and Semicones. Xue-Ying Deng and Jin Hua Liao, *Beijing University of Aeronautics and Astronautics*, *PRC* (31, 5, p. 962) Technical Note based on AIAA Paper 91-1756
- J93-148 Oblique Shock Formation in Impulsively Started Wedge Flows. J. Falcovitz, Technion—Israel Institute of Technology; Y. Kivity Rafael Ballistic Center, Israel; and D. Weihs, Technion—Israel Institute of Technology (31, 5, p. 964) Technical Note
- J93-149 Experimental Investigations of Asymmetric Vortex Flows Behind Elliptic Cones at Incidence. Wolfgang H. Stahl, King Fahd University of Petroleum and Minerals, Saudi Arabia (31, 5, p. 966) Technical Note
- J93-150 Relation Between Spectra of Hot-Wire Signals and Velocity Fluctuations. Sundar Ramamoorthy, Sastry Munukutla and Periasamy K. Rajan, *Tennessee Technological University* (31, 5, p. 968) Technical Note based on AIAA Paper 92-3958
- J93-151 Aerodynamics of Maneuvering Slender Wings with Leading-Edge Separation. T. Sean Tavares, U.S. Air Force Wright Laboratory, Wright-Patterson AFB; and James E. McCune, Massachusetts Institute of Technology (31, 6, p. 977) Article
- J93-152 Lifting Line Theory for Supersonic Flow Applications. I. Jadic, Institute of Applied Mathematics, Romania; and V. N. Constantinescu, Polytechnical Institute, Romania (31, 6, p. 987) Article based on AIAA Paper 91-5058
- J93-153 Velocity and Vorticity Distributions over an Oscillating Airfoil Under Compressible Dynamic Stall. M. S. Chandrasekhara, *Naval Postgraduate School*; and S. Ahmed, *MCAT Institute* (31, 6, p. 995) Synoptic based on AIAA Paper 91-1799
- J93-154 Hydrodynamics, Gravitational Sensitivity, and Transport Phenomena in Continuous Flow Electrophoresis. M. S. Bello and V. I. Polezhaev, *Russian Academy of Sciences* (31, 6, p. 997) Synoptic based on AIAA Paper 91-0112
- J93-155 Systematic Comparison of Mathematically Simple Turbulence Models for Three-Dimensional Boundary Layers. Marco S. G. Bettelini and Torstein K. Fanneløp, Swiss Federal Institute of Technology, Switzerland (31, 6, p. 999) Article

- J93-156 Rational Extension of the Clauser Eddy Viscosity Model to Compressible Boundary-Layer Flow. Tibor Kiss and Joseph A. Schetz, Virginia Polytechnic Institute and State University (31, 6, p. 1007) Article
- J93-157 Investigation of a Contoured Wall Injector for Hypervelocity Mixing Augmentation. Ian A. Waitz, Massachusetts Institute of Technology; and Frank E. Marble and Edward E. Zukoski, California Institute of Technology (31, 6, p. 1014) Article
- J93-158 Numerical Simulation of Nonswirling and Swirling Annular Liquid Jets. Stephen G. Chuech, *Delavan, Inc.* (31, 6, p. 1022) Article based on AIAA Paper 92-0464
- J93-159 Flip-Flop Jet Nozzle Extended to Supersonic Flows. Ganesh Raman, Sverdrup Technology, Inc.; Michael Hailye, University of Michigan; and Edward J. Rice, NASA Lewis Research Center (31, 6, p. 1028) Article based on AIAA Paper 92-2724 CP926
- J93-160 Stabilization of the Burnett Equations and Application to Hypersonic Flows. Xiaolin Zhong, Robert W. MacCormack and Dean R. Chapman, *Stanford University* (31, 6, p. 1036) Article based on AIAA Paper 91-0770
- J93-161 Theoretical Estimates of Vibrational Relaxation in Nitrogen up to 40,000 K. C. Frederick Hansen, *University of Oregon* (31, 6, p. 1044) Article based on AIAA Paper 91-0465
- J93-162 Unsteady Transonic Two-Dimensional Euler Solutions Using Finite Elements. Gary A. Davis and Oddvar O. Bendiksen, *University of California*, *Los Angeles* (31, 6, p. 1051) Article based on AIAA Paper 92-2504 CP922
- J93-163 Electric-Discharge Excited Blast Waves in a Flat Subsonic Nozzle. Paolo Luchini, *University of Naples, Italy* (31, 6, p. 1060) Article
- J93-164 Millisecond Aerodynamic Force Measurement with Side-Jet Model in the ISL Shock Tunnel. K. W. Naumann, H. Ende, G. Mathieu and A. George, French-German Research Institute Saint-Louis, France (31, 6, p. 1068) Article based on AIAA Paper 92-3963
- J93-165 Error Analysis of Finite Element Results on Plates with Nonuniform Grids. Rajaram Sistla, *Analytical Services and Materials, Inc.* (31, 6, p. 1075) Synoptic based on AIAA Paper 92-2353 CP922
- J93-166 Review of Crack Propagation Under Unsteady Loading. H. H. Bryan and K. K. Ahuja, Georgia Institute of Technology (31, 6, p. 1077) Survey Paper
- J93-167 Large-Amplitude Finite Element Flutter Analysis of Composite Panels in Hypersonic Flow. Carl E. Gray Jr., NASA Langley Research Center; and Chuh Mei, Old Dominion University (31, 6, p. 1090) Article
- J93-168 Alternative Approximations for Integrated Control/ Structure Aeroservoelastic Synthesis. Eli Livne, *University of Washington* (31, 6, p. 1100) Article
- J93-169 Supersonic Flutter Analysis of Composite Plates and Shells. R. M. V. Pidaparti, *Purdue University at Indianapolis*; and H. T. Y. Yang, *Purdue University* (31, 6, p. 1109) Article
- J93-170 Interlaminar Stresses Around a Hole in Symmetric Cross-Ply Laminates Under Bending/Torsion. Chu-Cheng Ko and Chien-Chang Lin, *National Chung-Hsing University, Taiwan, ROC* (31, 6, p. 1118) Article

- J93-171 Comparison of Eight Variations of a Higher-Order Theory for Cylindrical Shells. R. A. Smith and A.N. Palazotto, *Air Force Institute of Technology, Wright-Patterson AFB* (31, 6, p. 1125) Article based on AIAA Paper 92-2229 CP922
- J93-172 Experimental and Theoretical Study for Nonlinear Aeroelastic Behavior of a Flexible Rotor Blade. D. M. Tang and E. H. Dowell, *Duke University* (31, 6, p. 1133) Article
- J93-173 Design of Frames Against Buckling Using a Rayleigh Quotient Approximation. Robert A. Canfield, *Air Force Institute of Technology, Wright-Patterson AFB* (31, 6, p. 1143) Article based on AIAA Paper 92-2249 CP922
- J93-174 Shock Wave Focusing in a Log-Spiral Duct. O. Inoue, N. Takahashi and K. Takayama, *Tohoku University*, *Japan* (31, 6, p. 1150) Technical Note
- J93-175 Wakes of Three Axisymmetric Bodies at Zero Angle of Attack. Özlem Ilday, Hayri Acar, M. Kubilay Elbay and Veysel Atli, *Istanbul Technical University, Turkey* (31, 6, p. 1152) Technical Note
- J93-176 Grid-Free Particle Method Applied to the Equations of Unsteady Compressible Fluid Motion. Yoshifumi Ogami and A. Y. Cheer, *University of California, Davis* (31, 6, p. 1155) Technical Note
- J93-177 Vortex-Induced Energy Separation in Shear Flows. J. J. O'Callaghan and M. Kurosaka, *University of Washington* (31, 6, p. 1157) Technical Note based on AIAA Paper 92-0192
- J93-178 Instantaneous Structure of Vortex Breakdown on a Delta Wing via Particle Image Velocimetry. J. Towfighi and D. Rockwell, *Lehigh University* (31, 6, p. 1160) Technical Note
- J93-179 Modified Solution for Finding the Optimal Angle of Spacecraft Walls Under Orbital Debris Impacts. Chris P. Pantelides and Shyh-Rong Tzan, *University of Utah* (31, 6, p. 1162) Technical Note
- J93-180 Second-Order Epsilon Decomposition Approach for System Identification. Lingmi Zhang, Boqing He and Tong Xiao, Nanjing Aeronautical Institute, PRC; and Irving U. Ojalvo, Columbia University (31, 6, p. 1165) Technical Note
- J93-181 Actuator Placement Optimization by Genetic and Improved Simulated Annealing Algorithms. Junjiro Onoda, Institute of Space and Astronautical Science, Japan; and Yoji Hanawa, University of Tokyo, Japan (31, 6, p. 1167) Technical Note based on AIAA Paper 92-2558 CP922
- J93-182 Method for Visualizing Gas Temperature Distributions Around Hypersonic Vehicles by Using Electric Discharge. Masatomi Nishio, Fukuyama University, Japan (31, 6, p. 1170) Technical Note
- J93-183 Control of Vortices on a Delta Wing by Leading-Edge Injection. W. Gu, O. Robinson and D. Rockwell, *Lehigh University* (31, 7, p. 1177) Article
- J93-184 Optimization of Multiple-Panel Compliant Walls for Delay of Laminar-Turbulent Transition. Peter W. Carpenter, University of Warwick, England, UK (31, 7, p. 1187) Synoptic
- J93-185 Studies on the Flowfield of Multijet with Square Configuration. Gamal H. Moustafa, Menoufia University, Egypt; and E. Rathakrishnan, Indian Institute of Technology (31, 7, p. 1189) Synoptic

- J93-186 New Time Scale Based k-ε Model for Near-Wall Turbulence. Z. Yang and T. H. Shih, NASA Lewis Research Center (31, 7, p. 1191) Article
- **J93-187 High-Speed Turbulence Modeling of Shock-Wave/Boundary-Layer Interaction.** F. Grasso and D. Falconi, *Università di Roma "La Sapienza," Italy* (**31**, 7, p. 1199) Article based on AIAA Paper 93-0778
- J93-188 Measurements in a Pressure-Driven Three-Dimensional Turbulent Boundary Layer During Development and Decay. Walter R. Schwarz and Peter Bradshaw, *Stanford University* (31, 7, p. 1207) Article based on AIAA Paper 93-0543
- J93-189 Accuracy of Flux-Split Algorithms in High-Speed Viscous Flows. Datta Gaitonde and J. S. Shang, Wright Laboratory, Wright-Patterson AFB (31, 7, p. 1215) Article
- J93-190 Nonlinear Relaxation Navier-Stokes Solver for Three-Dimensional, High-Speed Internal Flows. Jack R. Edwards and D. Scott McRae, *North Carolina State University* (31, 7, p. 1222) Article based on AIAA Paper 93-0540
- J93-191 Damping of Surface Pressure Fluctuations in Hypersonic Turbulent Flow Past Expansion Corners. Kung-Ming Chung and Frank K. Lu, *University of Texas at Arlington* (31, 7, p. 1229) Article
- J93-192 Spectral Solution of the Viscous Blunt-Body Problem. David A. Kopriva, *Florida State University* (31, 7, p. 1235) Article
- J93-193 Analysis of Hypersonic Nozzles Including Vibrational Nonequilibrium and Intermolecular Force Effects. P. W. Canupp, G. V. Candler, J. N. Perkins and W. D. Erickson, *North Carolina State University* (31, 7, p. 1243) Article based on AIAA Paper 92-0330
- J93-194 Large-Field High-Brightness Focusing Schlieren System. Leonard M. Weinstein, NASA Langley Research Center (31, 7, p. 1250) Article based on AIAA Paper 91-0567
- J93-195 Influence of Stator-Rotor Gap on Axial-Turbine Unsteady Forcing Functions. Theodosios Korakianitis, Washington University (31, 7, p. 1256) Article
- J93-196 Aeroelastic Response, Loads, and Stability of a Composite Rotor in Forward Flight. Edward C. Smith and Inderjit Chopra, *University of Maryland* (31, 7, p. 1265) Article based on AIAA Paper 92-2566 CP922
- J93-197 Optimal Location of Actuators for Active Damping of Vibration. J. Holnicki-Szulc, *Institute of Fundamental Technological Research, Poland*; and F. López-Almansa and J. Rodellar, *Technical University of Catalonia, Spain* (31, 7, p. 1274) Article
- J93-198 Analysis of Distributed Thermopiezoelectric Sensors and Actuators in Advanced Intelligent Structures. S. S. Rao and M. Sunar, *Purdue University* (31, 7, p. 1280) Article
- J93-199 Enhancing Induced Strain Actuator Authority Through Discrete Attachment to Structural Elements. Z. Chaudhry and C. A. Rogers, Virginia Polytechnic Institute and State University (31, 7, p. 1287) Article
- J93-200 Postbuckling Failure of Composite Plates with Holes. H. H. Lee and M. W. Hyer, *Virginia Polytechnic Institute and State University* (31, 7, p. 1293) Article based on AIAA Paper 92-2280 CP922

- J93-201 Efficient Higher Order Composite Plate Theory for General Lamination Configurations. Maenghyo Cho and R. Reid Parmerter, *University of Washington* (31, 7, p. 1299) Article based on AIAA Paper 91-1204 CP911
- J93-202 Semi-Analytical Static Nonlinear Structural Sensitivity Analysis. Raphael T. Haftka, Virginia Polytechnic Institute and State University (31, 7, p. 1307) Article
- J93-203 Forced Harmonic Response Analysis of Nonlinear Structures Using Describing Functions. Ömer Tanrikulu, Tübitak-Sage, Turkey; Bayindir Kurlan and H. Nevzat Özgüven, Middle East Technical University, Turkey; and Mehmet Imregün, Imperial College of Science Technology and Medicine, England, UK (31, 7, p. 1313) Article
- J93-204 Eigensolutions Sensitivity for Nonsymmetric Matrices with Repeated Eigenvalues. Angelo Luongo, *University of L'Aquila, Italy* (31, 7, p. 1321) Article Errata(31, 12, p. 2384)
- J93-205 Multiobjective Optimization of Large-Scale Structures. Ramana V. Grandhi and Geetha Bharatram, Wright State University; and Vipperla B. Venkayya, Flight Dynamics Directorate, Wright-Patterson AFB (31, 7, p. 1329) Article
- J93-206 Noise Transmission of Skin-Stringer Panels Using a Decaying Wave Method. Donald E. Huntington and Constantinos S. Lyrintzis, San Diego State University (31, 7, p. 1338) Technical Note
- J93-207 Supersonic Jet Control via Point Disturbances Inside the Nozzle. D. P. Wishart and A. Krothapalli, Florida A&M University and Florida State University; and M. G. Mungal, Stanford University (31, 7, p. 1340) Technical Note
- **J93-208** Low-Frequency Flow Oscillation over Airfoils near Stall. Michael B. Bragg, Douglas C. Heinrich and Abdollah Khodadoust, *University of Illinois at Urbana-Champaign* (31, 7, p. 1341) Technical Note
- **J93-209** Mach Disk of Dual Coaxial Axisymmetric Jets. Anil K. Narayanan and K. A. Damodaran, *Indian Institute of Technology* (31, 7, p. 1343) Technical Note
- J93-210 Front Body Effects on Drag and Flowfield of a Three-Dimensional Noncircular Cylinder. Khalid M. Sowoud and E. Rathakrishnan, *Indian Institute of Technology* (31, 7, p. 1345) Technical Note
- J93-211 Subsonic/Transonic Cascade Flutter Using a Full-Potential Solver. Milind A. Bakhle, T. S. R. Reddy and Theo G. Keith Jr., *University of Toledo* (31, 7, p. 1347) Technical Note based on AIAA Paper 92-2119 CP923
- J93-212 Supersonic Panel Flutter Analysis of Shallow Shells. Maher N. Bismarck-Nasr, *Instituto Tecnológico de Aeronáutica, Brazil* (31, 7, p. 1349) Technical Note
- J93-213 Stability Criteria of Structural Control with Systems Noncolocated Velocity Feedback. Shih-Ming Yang, National Cheng Kung University, Taiwan, ROC (31, 7, p. 1351) Technical Note
- J93-214 Nonlinear Response of Asymmetrically Laminated Plates in Cylindrical Bending. Erasmo Carrera, *DIAS-Politecnico di Torino, Italy* (31, 7, p. 1353) Technical Note
- J93-215 Improved Method for Evaluating Damping Ratios of a Vibrating System. M. Liu, Jilin University of Technology, PRC; and D. G. Gorman, Robert Gordon Institute of Technology, Scotland, UK (31, 7, p. 1357) Technical Note

- J93-216 Mesh Distortion Control in Shape Optimization. S. Zhang and A. D. Belegundu, *Pennsylvania State University* (31, 7, p. 1360) Technical Note based on AIAA Paper 92-2252 CP922
- J93-217 Computation of Crossing Shock/Turbulent Boundary
 Layer Interaction at Mach 8.3. N. Narayanswami, Rutgers
 University; C. C. Horstmann, NASA Ames Research Center; and D.
 D. Knight, Rutgers University (31, 8, p. 1369) Article
 Errata (31, 11, p. 2192)
- J93-218 Numerical Investigation of Subsonic and Supersonic Asymmetric Vortical Flow. K. J. Vanden and D. M. Belk, Wright Laboratory, Armament Directorate, Eglin AFB (31, 8, p. 1377) Article based on AIAA Paper 91-2869 CP916
- J93-219 Instantaneous Topology of the Unsteady Leading-Edge Vortex at High Angle of Attack. C. Magness, O. Robinson and D. Rockwell, *Lehigh University* (31, 8, p. 1384) Article
- **J93-220 Downstream Evolution of Proper Orthogonal Decomposition Eigenfunctions in a Lobed Mixer.** L. Ukeiley, M. Glauser and D. Wick, *Clarkson University* (**31**, 8, p. 1392) Article
- J93-221 Organized Structure in a Compressible Turbulent Shear Layer. Y. R. Shau, D. S. Dolling and K. Y. Choi, *University of Texas at Austin* (31, 8, p. 1398) Article based on AIAA Paper 92-0180
- J93-222 Large-Eddy Simulation of Turbulent Obstacle Flow Using a Dynamic Subgrid-Scale Model. Kyung-Soo Yang and Joel H. Ferziger, *Stanford University* (31, 8, p. 1406) Article based on AIAA Paper 93-0542
- J93-223 Comparison of Two-Equation Turbulence Models for Boundary Layers with Pressure Gradient. David C. Wilcox, DCW Industries, Inc. (31, 8, p. 1414) Article
- J93-224 Stability Criteria for a General Class of Finite Difference Schemes. James N. Scott and Yi-Ping Yao, *Ohio State University* (31, 8, p. 1422) Article based on AIAA Paper 92-0424
- **J93-225** Vorticity Dynamics of Inviscid Shear Layers. Jeffrey W. Yokota, *Sverdrup Technology, Inc.* (**31**, 8, p. 1430) Article based on AIAA Paper 92-0420
- J93-226 Adaptive Refinement-Coarsening Scheme for Three-Dimensional Unstructured Meshes. Y. Kallinderis and P. Vijayan, *University of Texas at Austin* (31, 8, p. 1440) Article
- J93-227 Sphere Wakes in Still Surroundings at Intermediate Reynolds Numbers. J.-S. Wu and G. M. Faeth, *University of Michigan* (31, 8, p. 1448) Article
- **J93-228** Halogen Atom/Metal Trimer CW Laser Engineering Concept Overview. G. Emanuel, *University of Oklahoma*; and T. A. Jacobs, *Consultant* (**31**, 8, p. 1456) Article based on AIAA Paper 92-2995
- **J93-229** Phase Nonequilibrium Effects on the Gain of a Two-Phase Flow Gasdynamic Laser. R. K. Thulasiram and N. M. Reddy, *Indian Institute of Science* (31, 8, p. 1461) Article based on AIAA Paper 92-3019
- J93-230 Static and Dynamic, Local and Global, Bifurcations in Nonlinear Autonomous Structural Systems. A. N. Kounadis, National Technical University of Athens, Greece (31, 8, p. 1468) Article
- J93-231 Nonlinear Flutter of Orthotropic Composite Panel Under Aerodynamic Heating. Jehad F. Abbas, R. A. Ibrahim and Ronald F. Gibson, *Wayne State University* (31, 8, p. 1478) Article based on AIAA Paper 92-2132 CP923

- J93-232 Nonlinear Large Amplitude Aeroelastic Behavior of Composite Rotor Blades. Tachyoun Kim and John Dugundji, Massachusetts Institute of Technology (31, 8, p. 1489) Article based on AIAA Paper 92-2257 CP922
- J93-233 Delamination in Cross-Ply Laminated Composite Subjected to Low-Velocity Impact. H. Razi, Boeing Commercial Airplane Group; and A. S. Kobayashi, University of Washington (31, 8, p. 1498) Article based on AIAA Paper 92-2555 CP922
- J93-234 Analysis of Passive Damping in Thick Composite Structures. D. A. Saravanos, *Ohio Aerospace Institute* (31, 8, p. 1503) Article
- **J93-235** Passive Damping of Large Space Structures. Bhavani V. Sankar and Amitabh S. Deshpande, *University of Floria* (31, 8, p. 1511) Article
- J93-236 Some Measurements on Dependence of Rectangular Cylinder Drag on Elevation. R. G. Batt and S. A. Peabody II, TRW Space and Defense (31, 8, p. 1517) Technical Note
- J93-237 Fluid Column Stability in the Presence of Periodic Accelerations. M. J. Lyell, West Virginia University (31, 8, p. 1519) Technical Note
- J93-238 Coherent Structure Interactions in Excited Coaxial Jet of Mean Velocity Ratio of 0.3. S. K. Tang and N. W. M. Ko, University of Hong Kong (31, 8, p. 1521) Technical Note
- J93-239 Spreading Rate of an Unsteady Turbulent Jet. H. Kouros, R. Medina and H. Johari, Worcester Polytechnic Institute (31, 8, p. 1524) Technical Note
- J93-240 Multifluid Model of Turbulence for Li-SF₆ Submerged Combustion, S. H. Chan and M. M. M. Abou-Ellail, University of Wisconsin—Milwaukee (31, 8, p. 1526) Technical Note based on AIAA Paper 92-3137
- J93-241 Initial Acceleration Effects on Flow Evolution Around Airfoils Pitching to High Angles of Attack. Manoochehr M. Koochesfahani and Vanco Smiljanovski, *Michigan State University* (31, 8, p. 1529) Technical Note
- J93-242 Decay of Aircraft Vortices near the Ground. Milton E. Teske and Alan J. Bilanin, *Continuum Dynamics, Inc.*; and John W. Barry, *U.S. Department of Agriculture Forest Service* (31, 8, p. 1531) Technical Note
- J93-243 Material Model for Composites Using Neural Networks. R. M. V. Pidaparti and M. J. Palakal, *Purdue University* (31, 8, p. 1533) Technical Note
- J93-244 Postbuckling Analysis of Composite Laminated Cylindrical Panels Under Axial Compression. J. H. Kweon and C. S. Hong, Korea Advanced Institute of Science and Technology (31, 8, p. 1535) Technical Note
- J93-245 Evaluation of Algebraic Eddy-Viscosity Models in Three-Dimensional Turbulent Boundary-Layer Flows. M. Semih Ölçmen and Roger L. Simpson, Virginia Polytechnic Institute and State University (31, 9, p. 1545) Survey Paper
- J93-246 Periodic Vortex Shedding over Delta Wings. O. K. Rediniotis, H. Stapountzis and D. P. Telionis, Virginia Polytechnic Institute and State University (31, 9, p. 1555) Article
- **J93-247** Thoughts on Conical Flow Asymmetry. L. E. Ericsson, Lockheed Missiles & Space Company, Inc. (31, 9, p. 1563) Article based on AIAA Paper 92-0427

- J93-248 Mountain Valley Evacuation by Upper Level Flows: A Scale Model Study. William J. Cunningham Jr., *University of Colorado*; and Alfred J. Bedard Jr., *National Oceanic and Atmospheric Administration/Environmental Research Laboratories* (31, 9, p. 1569) Article based on AIAA Paper 92-0288
- **J93-249 Boundary Conditions for Direct Computation of Aerodynamic Sound Generation.** Tim Colonius, Sanjiva K. Lele and Parviz Moin, *Stanford University* (**31**, 9, p. 1574) Article based on AIAA Paper 92-2075
- J93-250 Sparse Distributed Associative Memory for the Identification of Aerospace Acoustic Sources. E. A. Scott, C. R. Fuller, W. F. O'Brien and R. H. Cabell, *Virginia Polytechnic Institute and State University* (31, 9, p. 1583) Article based on AIAA Paper 90-3992
- J93-251 Flow and Heat Transfer in a Turbulent Boundary Layer Through Skewed and Pitched Jets. Xin Zhang and Michael W. Collins, City University, England, UK (31, 9, p. 1590) Article
- J93-252 Skin Friction and Velocity Profile Family for Compressible Turbulent Boundary Layers. P. G. Huang, Eloret Institute; P. Bradshaw, Stanford University; and T. J. Coakley, NASA Ames Research Center (31, 9, p. 1600) Article Errata(31, 11, p. 2192)
- J93-253 Secondary Instability Mechanisms in Compressible Axisymmetric Boundary Layers. Lian L. Ng, Analytical Services and Materials Inc.; and Thomas A. Zang, NASA Langley Research Center (31, 9, p. 1605) Article
- J93-254 Effect of Curvature on Stationary Crossflow Instability of a Three-Dimensional Boundary Layer. Ray-Sing Lin and Helen L. Reed, *Arizona State University* (31, 9, p. 1611) Article
- J93-255 Upwind Finite-Volume Navier-Stokes Computations on Unstructured Triangular Meshes. Dartzi Pan and Jen-Chieh Cheng, *National Cheng Kung University, Taiwan, ROC* (31, 9, p. 1618) Article
- J93-256 Three-Dimensional Time-Marching Aeroelastic Analyses Using an Unstructured-Grid Euler Method. Russ D. Rausch, Purdue University; John T. Batina, NASA Langley Research Center; and Henry T. Y. Yang, Purdue University (31, 9, p. 1626) Article based on AIAA Paper 92-2506 CP922
- J93-257 Practical Aspects of Spatially High-Order Accurate Methods. Andrew G. Godfrey, Curtis R. Mitchell and Robert W. Walters, Virginia Polytechnic Institute and State University (31, 9, p. 1634) Article based on AIAA Paper 92-0054
- J93-258 Model for Entropy Production and Pressure Variation in Confined Turbulent Mixing. Dimitri Papamoschou, University of California, Irvine (31, 9, p. 1643) Article
- **J93-259 Vortical Solutions in Supersonic Corner Flows.** R. Marsilio, *Politecnico di Torino, Italy* (**31**, 9, p. 1651) Article based on AIAA Paper 93-0760
- J93-260 Euler Calculations of Unsteady Interaction of Advancing Rotor with a Line Vortex. G. R. Srinivasan and W. J. McCroskey, *NASA Ames Research Center* (31, 9, p. 1659) Article based on AIAA Paper 89-1848
- J93-261 Stability of Fluttered Panels Subjected to In-Plane Harmonic Forces. T. H. Young and F. Y. Chen, *National Taiwan Institute of Technology, Taiwan, ROC* (31, 9, p. 1667) Article

- J93-262 Application of the Variational-Asymptotical Method to Laminated Composite Plates. Dewey H. Hodges, Bok W. Lee and Ali R. Atilgan, *Georgia Institute of Technology* (31, 9, p. 1674) Article based on AIAA Paper 92-2357 CP922
- J93-263 Exact Solutions for Static Analysis of Intelligent Structures. M. C. Ray, R. Bhattacharya and B. Samanta, *Indian Institute of Technology, India* (31, 9, p. 1684) Article
- J93-264 Structural Modeling of Composite Beams with Induced-Strain Actuators. Ramesh Chandra and Inderjit Chopra, *University of Maryland* (31, 9, p. 1692) Article
- J93-265 Updating Finite Element Dynamic Models Using an Element-by-Element Sensitivity Methodology. Charbel Farhat and Francois M. Hemez, *University of Colorado* (31, 9, p. 1702) Article
- J93-266 Comparison of Advanced Reduced-Basis Methods for Transient Structural Analysis. David M. McGowan and Susan W. Bostic, *NASA Langley Research Center* (31, 9, p. 1712) Article based on AIAA Paper 91-1059 CP911
- J93-267 Testing a Low Reynolds Number k-ε Turbulence Model Based on Direct Simulation Data. V. Michelassi, W. Rodi and J. Zhu, *University of Karlsruhe, Germany* (31, 9, p. 1720) Technical Note
- J93-268 Evaluation of Baldwin-Barth Turbulence Model with an Axisymmetric Afterbody-Exhaust Jet Flowfield. M. Kandula, Lockheed Engineering and Sciences Company; and P. G. Buning, NASA Ames Research Center (31, 9, p. 1723) Technical Note based on AIAA Paper 93-0418
- J93-269 Parallelization of the Factored Implicit Finite Difference Technique. Abraham N. Varghese, Naval Undersea Warfare Center; and Peter E. Raad, Southern Methodist University (31, 9, p. 1725) Technical Note
- J93-270 Effects of a Rear Stagnation Jet on the Wake Behind a Cylinder. R. Duke, B. Shrader and J. Mo, *Memphis State University* (31, 9, p. 1727) Technical Note
- J93-271 Multigrid Techniques for Hypersonic Viscous Flows. F. Grasso and M. Marini, *Università di Roma "La Sapienza," Italy* (31, 9, p. 1729) Technical Note based on AIAA Paper 93-0771
- J93-272 Boundary Formulations for Sensitivity Analysis Without Matrix Derivatives. J. H. Kane and K. Guru Prasad, Clarkson University (31, 9, p. 1731) Technical Note
- J93-273 Dynamic Continuum Plate Representations of Large Thin Lattice Structures. Usik Lee, *Inha University, Korea* (31, 9, p. 1734) Technical Note based on AIAA Paper 92-2133 CP922
- J93-274 Shock-Wave Reflection over a Semicircular Cylinder in a Dusty Gas. Xiaolong Yang, Shmuel Eidelman and Itzhak Lottati, *Science Applications International Corporation* (31, 10, p. 1737) Article
- J93-275 Low Aspect Ratio Wing Code Validation Experiment. Michael E. Olsen and H. Lee Seegmiller, NASA Ames Research Center (31, 10, p. 1744) Article based on AIAA Paper 92-0402
- J93-276 Control of Circular Cylinder Flow by the Use of Dimples. P. W. Bearman and J. K. Harvey, *Imperial College of Science*, *Technology and Medicine*, *England*, *UK* (31, 10, p. 1753) Article

- J93-277 Effective Treatment of the Singular Line Boundary Problem for Three-Dimensional Grids. Grant Palmer, NASA Ames Research Center; and Ethiraj Venkatapathy, Eloret Institute (31, 10, p. 1757) Synoptic based on AIAA Paper 92-0545
- J93-278 Zonal-Local Solution Method for the Turbulent Navier-Stokes Equations. D. Drikakis and S. Tsangaris, *National Technical University of Athens, Greece* (31, 10, p. 1759) Synoptic
- J93-279 Active Aerodynamic Control of Wake-Airfoil Interaction Noise-Experiment. J. Simonich and P. Lavrich, United Technologies Research Center; and T. Sofrin and D. Topol, Pratt & Whitney Aircraft (31, 10, p. 1761) Article
- J93-280 Boundary Layer and Pressure Measurements on a Cylinder with Unsteady Circulation Control. Ali Zandieh and J. Gordon Leishman, *University of Maryland at College Park* (31, 10, p. 1769) Article
- J93-281 Low-Reynolds-Number k-ε Model for Unsteady Turbulent Boundary-Layer Flows. Sixin Fan and Budugur Lakshminarayana, Pennsylvania State University; and Mark Barnett, United Technologies Research Center (31, 10, p. 1777) Article
- J93-282 Multigrid Navier-Stokes Calculations for Three-Dimensional Cascades. Feng Liu, *University of California, Irvine*; and Antony Jameson, *Princeton University* (31, 10, p. 1785) Article based on AIAA Paper 92-0190
- J93-283 Multigrid Acceleration of a Fractional-Step Solver in Generalized Curvilinear Coordinate Systems. Moshe Rosenfeld, *Tel Aviv University, Israel*; and Dochan Kwak, *NASA Ames Research Center* (31, 10, p. 1792) Article based on AIAA Paper 92-0185
- J93-284 Riemann Solvers for Perfect and Near-Perfect Gases. Jack Pike, *Chawston, Bedfordshire, England, UK* (31, 10, p. 1801) Article
- J93-285 Space Marching Calculations About Hypersonic Configurations Using a Solution-Adaptive Mesh Algorithm.

 Albert D. Harvey and Sumanta Acharya, Louisiana State University; and Scott L. Lawrence, NASA Ames Research Center (31, 10, p. 1809) Article based on AIAA Paper 91-3237 CP918
- J93-286 Three-Dimensional Shock-Wave/Boundary-Layer Interactions with Bleed. T. I-P. Shih and M. J. Rimlinger, Carnegie Mellon University; and W. J. Chyu, NASA Ames Research Center (31, 10, p. 1819) Article
- J93-287 Observations of Liquid Jets Injected into a Highly Accelerated Supersonic Boundary Layer. Arthur W. Johnson and K. R. Sreenivasan, *Yale University* (31, 10 p. 1827) Article
- J93-288 Numerical Investigation of Oscillatory Instability in Shock-Induced Combustion Around a Blunt Body. Akiko Matsuo and Toshi Fujiwara, *Nagoya University*, *Japan* (31, 10, p. 1835) Article based on AIAA Paper 91-1414
- J93-289 Skin-Friction Topology Over a Surface Mounted Semi-Ellipsoidal Wing at Incidence. Timothy A. Johnson and Virendra C. Patel, *Iowa Institute of Hydraulic Research, University of Iowa* (31, 10, p. 1842) Article
- J93-290 Prismatic Grid Generation for Three-Dimensional Complex Geometries. Y. Kallinderis and S. Ward, *University of Texas at Austin* (31, 10, p. 1850) Article

- J93-291 Three-Dimensional Navier-Stokes/Full-Potential Coupled Analysis for Viscous Transonic Flow. Lakshmi N. Sankar, Georgia Institute of Technology; Bala K. Bharadavj, Douglas Aircraft Company; and Fu-Lin Tsung, Georgia Institute of Technology (31, 10, p. 1857) Article based on AIAA Paper 91-1595 CP914
- J93-292 Thrust Imparted to an Airfoil by Passage Through a Sinusoidal Upwash Field. Herbert S. Ribner, *University of Toronto, Canada* (31, 10, p. 1863) Article
- J93-293 Unsteady Euler Solutions for Arbitrarily Moving Bodies and Boundaries. J. Y. Trépanier, M. Reggio, M. Paraschivoiu and R. Camarero, École Polytechnique de Montréal, Canada (31, 10, p. 1869) Article based on AIAA Paper 92-0051
- **J93-294 Images Constructed from Computed Flowfields.** Leslie A. Yates, *Eloret Institute*, (**31**, 10, p. 1884) Article based on AIAA Paper 92-4030
- J93-295 Some Acoustic Features of Perforated Test Section Walls with Splitter Plates. Boris L. Medved, *National Research Council, Canada* (31, 10, p. 1885) Article based on AIAA Paper 90-1418 CP905
- J93-296 Use of Previous Experience to Estimate Precision Uncertainty of Small Sample Experiments. W. G. Steele, R. P. Taylor and R. E. Burrell, *Mississippi State University*; and H. W. Coleman, *University of Alabama in Huntsville* (31, 10, p. 1891) Article based on AIAA Paper 92-3954
- J93-297 Flutter Analysis of Stiffened Laminated Composite Plates and Shells in Supersonic Flow. Chung-Li Liao and Yee-Win Sun, *National Taiwan Institute of Technology, Taiwan, ROC* (31, 10, p. 1897) Article
- J93-298 Optimal Placement of Active Elements in Control Augmented Structural Synthesis. A. E. Sepulveda, I. M. Jin and L. A. Schmit Jr., *University of California, Los Angeles* (31, 10, p. 1906) Article
- J93-299 Smooth Contact of Orthotropic Laminates by Rigid Cylinders. Enboa Wu, Jey-Chung Chao and Ching-Shih Yen, National Taiwan University, Taiwan, ROC (31, 10, p. 1916) Article
- J93-300 Sensor Placement for On-Orbit Modal Identification via a Genetic Algorithm. Leehter Yao, William A. Sethares and Daniel C. Kammer, *University of Wisconsin-Madison* (31, 10, p. 1922) Article
- **J93-301** Mode Localization Experiments on a Ribbed Antenna. M. B. Levine-West and M. A. Salama, *Jet Propulsion Laboratory, California Institute of Technology* (31, 10, p. 1929) Article based on AIAA Paper 92-2453 CP922
- J93-302 Application of Lamination Parameters to Reliability-Based Stiffness Design of Composites. Mitsunori Miki, Yoshisada Murotsu and Nobuhiko Murayama, *University of Osaka Prefecture, Japan*; and Tetsuo Tanaka, *Matsushita Electric Works, Ltd., Japan* (31, 10, p. 1938) Article based on AIAA Paper 92-2350 CP922
- J93-303 Strain Energy of Thermally Stressed Multilayer Panels and Its Sensitivity Coefficients. Ahmed K. Noor, Yong H. Kim and Jeanne M. Peters, *University of Virginia and NASA Langley Research Center* (31, 10, p. 1946) Article
- J93-304 Transition Correlation in Subsonic Flow over a Flat Plate. J. A. Masad and M. R. Malik, *High Technology Corporation* (31, 10, p. 1953) Technical Note

- J93-305 Application of a Generalized Minimal Residual Method to Two-Dimensional Unsteady Flows. R. Hixon and L. N. Sankar, Georgia Institute of Technology (31, 10, p. 1955) Technical Note based on AIAA Paper 92-0422
- J93-306 Fast Three-Dimensional Vortex Method for Unsteady Wake Calculations. Kiat Chua and Todd R. Quackenbush, Continuum Dynamics, Inc. (31, 10, p. 1957) Technical Note based on AIAA Paper 92-2624 CP926
- J93-307 Role of Turbulent Shear Stresses in Particle Dispersion. Ian M. Kennedy and Wolfgang Kollmann, *University of California, Davis* (31, 10, p. 1959) Technical Note
- **J93-308** Prestressing a Space Structure. A. S. K. Kwan and S. Pellegrino, *Cambridge University*, *England*, *UK* (**31**, 10, p. 1961) Technical Note
- J93-309 Transverse Shear Deformation in Exact Buckling and Vibration of Composite Plate Assemblies. Melvin S. Anderson, Old Dominion University Research Foundation; and David Kennedy, University of Wales, College of Cardiff, England, UK (31, 10, p. 1963) Technical Note based on AIAA Paper 92-2287 CP922
- J93-310 Design Sensitivity Analysis of Structural Frequency Response. T. Ting, *University of Bridgeport* (31, 10, p. 1965) Technical Note based on AIAA Paper 92-4799 CP213
- J93-311 Analysis of High Reynolds Number Inviscid/Viscid Interactions in Cascades. M. Barnett, J. M. Verdon and T. C. Ayer, *United Technologies Research Center* (31, 11, p. 1969) Article based on AIAA Paper 92-3073
- J93-312 Comparison of Confined, Compressible, Spatially Developing Mixing Layers with Temporal Mixing Layers. Linda Sigalla Hedges, *Boeing Commercial Airplane Group*; and D. Scott Eberhardt, *University of Washington* (31, 11, p. 1977) Article
- J93-313 Developing Numerical Techniques for Solving Low Mach Number Fluid-Acoustic Problems. Vincent P. Manno and Scott H. Reitsma, *Tufts University*; and Thomas F. Tureaud, *Charles Stark Draper Laboratories*, *Inc.* (31, 11, p. 1984) Article
- J93-314 Effect of Acoustic Coupling on Random and Harmonic Plate Vibrations. Abdelkader Frendi, Analytical Services and Material Inc.; and Jay Robinson, NASA Langley Research Center (31, 11, p. 1992) Article
- J93-315 Length Scales and the Energy Balance for Turbulence Near a Free Surface. R. A. Handler, T. F. Swean Jr., R. I. Leighton and J. D. Swearingen, *Naval Research Laboratory* (31, 11, p. 1998) Article based on AIAA Paper 91-1775
- J93-316 Locally Implicit Total Variation Diminishing Schemes on Mixed Quadrilateral-Triangular Meshes. C. J. Hwang and S. Y. Yang, *National Cheng Kung University, Taiwan, ROC* (31, 11, p. 2008) Article
- J93-317 Discontinuous Galerkin Finite Element Method for Euler and Navier-Stokes Equations. San-Yih Lin and Yan-Shin Chin, *National Cheng Kung University*, *Taiwan*, *ROC* (31, 11, p. 2016) Article based on AIAA Paper 93-0337
- J93-318 Stability of a Fluid Surface in a Microgravity Environment. Jaume Casademunt, Wenbin Zhang and Jorge Viñals, Florida State University; and Robert F. Sekerka, Carnegie Mellon University, (31, 11, p. 2027) Article based on AIAA Paper 93-0911

- J93-319 Enhancement of Mixing in High-Speed Heated Jets Using a Counterflowing Nozzle. P. J. Strykowski, *University of Minnesota*; and A. Krothapalli and D. Wishart, *Florida A&M University and Florida State University* (31, 11, p. 2033) Article
- J93-320 Three-Dimensional Simulations of Compressible Mixing Layers: Visualizations and Statistical Analysis. L. J. Leep, J. C. Dutton and R. F. Burr, *University of Illinois at Urbana-Champaign* (31, 11, p. 2039) Article
- J93-321 Vibrational Nonequilibrium Effects on Diatomic Dissociation Rates. C. Frederick Hansen, *University of Oregon* (31, 11, p. 2047) Article
- **J93-322** Oscillatory Blowing: A Tool to Delay Boundary-Layer Separation. A. Seifert, T. Bachar, D. Koss, M. Shepshelovich and I. Wygnanski, *Tel Aviv University, Israel* (31, 11, p. 2052) Article based on AIAA Paper 93-0440
- J93-323 Three-Dimensional Velocity Field in a Compressible Mixing Layer. Mark R. Gruber, Wright Laboratory, Wright-Patterson AFB; Nathan L. Messersmith, Purdue University; and J. Craig Dutton, University of Illinois at Urbana-Champaign (31, 11, p. 2061) Article based on AIAA Paper 92-3544
- J93-324 Three-Dimensional Navier-Stokes Analysis of Tip Clearance Flow in Linear Turbine Cascades. Jong-Shang Liu and Riccardo Bozzola, *Textron Lycoming Turbine Engine Division* (31, 11, p. 2068) Article based on AIAA Paper 93-0391
- J93-325 Characteristics of Stretched Vortical Structures in Two-Dimensional Stagnation Flow. Chin Yi Wei and Jiun Jih Miau, *National Cheng Kung University, Taiwan, ROC* (31, 11, p. 2075) Article
- J93-326 Two-Beam Multiplexed Laser-Induced Fluorescence Measurements of an Argon Arcjet Plume. Wilhelmus M. Ruyten, University of Tennessee—Calspan Center for Space Transportation and Applied Research; and Dennis Keefer, University of Tennessee Space Institute (31, 11, p. 2083) Article
- J93-327 Effect of Gain Length on Hydrogen Fluoride Chemical Laser Amplifier Performance. R. E. Waldo and L. H. Sentman, *University of Illinois at Urbana-Champaign* (31, 11, p. 2090) Article
- J93-328 Gas Temperature Measurements Using a Dual-Line Detection Rayleigh Scattering Technique. M. Volkan Ötügen, Polytechnic University; Kurt D. Annen, Aerodyne Research, Inc.; and Richard G. Seasholtz, NASA Lewis Research Center (31, 11, p. 2098) Article
- J93-329 Uncertainty Estimates for Pressure Sensitive Paint Measurements. Miklos Sajben, McDonnell Douglas Aerospace (31, 11, p. 2105) Article
- J93-330 Improved Control Design Variable Linking for Optimization of Structural/Control Systems. Ik Min Jin and Lucien A. Schmit, *University of California*, Los Angeles (31, 11, p. 2111) Article based on AIAA Paper 92-1241
- J93-331 Approximate Elasticity Solution for Laminated Anisotropic Finite Cylinders. Hung-Sying Jing and Kuan-Goang Tzeng, National Cheng Kung University, Taiwan, ROC (31, 11, p. 2121) Article
- J93-332 Analysis of Instability-Related Delamination Growth Using a Crack Tip Element. Barry D. Davidson and Todd M. Krafchak, *Syracuse University* (31, 11, p. 2130) Article based on AIAA Paper 93-1399 CP931

- J93-333 Implementation of Design Sensitivity Analysis for Nonlinear Elastic Structures. M. J. Poldneff and I. S. Rai, Goodyear Tire and Rubber Company; and J. S. Arora, University of Iowa (31, 11, p. 2137) Article
- J93-334 Shape Optimization by Using Simulated Biological Growth Approaches. J. L. Chen and W. C. Tsai, *National Cheng Kung University*, *Taiwan*, *ROC* (31, 11, p. 2143) Article
- J93-335 Mass-Additive Modal Test Method for Verification of Constrained Structural Models. John R. Admire, Michael L. Tinker and Edward W. Ivey, NASA Marshall Space Flight Center (31, 11, p. 2148) Article
- J93-336 Spin Stability of Undamped Flexible Structures Rotating About the Minor Axis. Clark R. Dohrmann, Sandia National Laboratories; and Henry R. Busby, Ohio State University (31, 11, p. 2154) Article
- J93-337 Optimization of Frequencies Spectrum in Vibrations of Flexible Structures. W. Szyszkowski and J. M. King, *University of Saskatchewan, Canada* (31, 11, p. 2163) Article based on AIAA Paper 92-4775 CP9213
- J93-338 Alternative Approximation for Stresses in Plate Structures. Ming Zhou, Essen University, Germany; and Harold L. Thomas, VMA Engineering (31, 11, p. 2169) Article
- J93-339 Three-Dimensional Separated Flow over a Prolate Spheroid. Wenhan Su, Bo Tao and Li Xu, Bejing University of Aeronautics and Astronautics, PRC (31, 11, p. 2175) Technical Note
- **J93-340** Reynolds Stress Profiles in the Near Wake of an Oscillating Airfoil. Seung O. Park and Boo II Lee, *Korea Advanced Institute of Science and Technology* (**31**, 11, p. 2176) Technical Note
- J93-341 Premixed Flame Propagation in an Optically Thick Gas. Angel Abbud-Madrid and Paul D. Ronney, *Princeton University* (31, 11, p. 2179) Technical Note
- J93-342 Reliability Analysis of Laminated Ceramic Matrix Composites Using Shell Subelement Techniques. A. Starlinger, NASA Lewis Research Center; D. J. Thomas, State University of New York, Buffalo; S. F. Duffy, Cleveland State University; and J. P. Gyekenyesi, NASA Lewis Research Center (31, 11, p. 2181) Technical Note based on AIAA Paper 92-2348 CP922
- J93-343 Reflection of Planar Shock Waves from Rubber Walls: Uniaxial Strain Case. G. Ben-Dor, G. Mazor, M. Mond and O. Igra, *Ben-Gurion University of the Negev, Israel*; and W. Heilig and H. Reichenbach, *Ernst Mach Institute*, *Germany* (31, 11, p. 2184) Technical Note
- J93-344 Large Displacement Axisymmetric Element for Nonaxisymmetric Deformation. T. M. V. Kaiser, Centre for Frontier Engineering Research, Canada; and A. E. Elwi and A. Mioduchowski, University of Alberta, Canada (31, 11, p. 2186) Technical Note
- J93-345 Lagrangian Random Choice Method for Steady Two-Dimensional Supersonic/Hypersonic Flow. C. Y. Loh, NASA Lewis Research Center; and W. H. Hui, Hong Kong University of Science and Technology (31, 12, p. 2193) Synoptic based on AIAA Paper 91-1546 CP914
- J93-346 Compressible Two-Dimensional Solid Jets in Proximity to the Ground. A. Pozzi, F. Manzo and L. Mazzei, Universitá di Napoli "Federico II," Italy (31, 12, p. 2195) Synoptic

- J93-347 Hypersonic Crossing Shock-Wave/Turbulent-Boundary-Layer Interactions. M. I. Kussoy and K. C. Horstman, *Eloret Institute*; and C. C. Horstman, *NASA Ames Research Center* (31, 12, p. 2197) Article based on AIAA Paper 93-0781
- J93-348 Structure of Crossing-Shock-Wave/Turbulent-Boundary-Layer Interactions. T. J. Garrison and G. S. Settles, *Pennsylvania State University*; and N. Narayanswami and D. D. Knight, *Rutgers University* (31, 12, p. 2204) Article based on AIAA Paper 92-3670
- J93-349 Diverging Boundary Layers with Zero Streamwise Pressure Gradient and No Wall Curvature. Wayne R. Pauley, Pennsylvania State University; John K. Eaton, Stanford University; and Andrew D. Cutler, George Washington University JIAFS/NASA Langley Research Center (31, 12, p. 2212) Article
- J93-350 Theoretical Aspects of Transition and Turbulence in Boundary Layers. Frank T. Smith, *University College London*, England, UK (31, 12, p. 2220) Article based on AIAA Paper 91-0331
- J93-351 Multidomain Spectral Solutions of High-Speed Flows over Blunt Cones. David A. Kopriva, *Florida State University* (31, 12, p. 2227) Article based on AIAA Paper 92-0324
- J93-352 Computation of Unsteady Viscous Flow Using a Pressure-Based Algorithm. Y.-H. Ho and B. Lakshminarayana, *Pennsylvania State University* (31, 12, p. 2232) Article based on AIAA Paper 91-1597 CP914
- J93-353 Numerical Simulation of Confined Transonic Normal Shock Wave/Turbulent Boundary-Layer Interactions. Edwin Blosch and Bruce F. Carroll, *University of Florida*; and Martin J. Morris, *McDonnell Douglas Aerospace* (31, 12, p. 2241) Article
- J93-354 Experiments in Non-Reacting Compressible Shear Layers. J. L. Hall, P. E. Dimotakis and H. Rosemann, *California Institute of Technology* (31, 12, p. 2047) Article based on AIAA Paper 91-0629
- J93-355 Analysis of Thermochemical Nonequilibrium Models for Carbon Dioxide Flows. Stacey G. Rock, Center for Space Transportation and Applied Research; Graham V. Candler, University of Minnesota; and Hans G. Hornung, California Institute of Technology (31, 12, p. 2055) Article based on AIAA Paper 92-2852
- J93-356 Model for Rotor Tip Vortex-Airframe Interaction, Part 1: Theory. H. Affes and A. T. Conlisk, *Ohio State University* (31, 12, p. 2263) Article
- J93-357 Model for Rotor Tip Vortex-Airframe Interaction, Part 2: Comparison with Experiment. H. Affes and A. T. Conlisk, Ohio State University; and J. M. Kim and N. M. Komerath, Georgia Institute of Technology (31, 12, p. 2274) Article
- **J93-358** Early Vortex Burst on a Delta Wing in Pitch. M. R. Soltani and M. B. Bragg, *University of Illinois at Urbana-Champaign* (31, 12, p. 2283) Article
- J93-359 Experimental Investigation of Transitional Free Shear Layer Optics. Larry Chew, *University of Central Florida*; and Walter Christiansen, *University of Washington* (31, 12, p. 2290) Article
- J93-360 Structural Optimization with Frequency Constraints—A Review. Ramana Grandhi, Wright State University (31, 12, p. 2296) Survey Paper based on AIAA Paper 92-4813 CP9213

- J93-361 Reliability and Nonlinear Supersonic Flutter of Uncertain Laminated Plates. D. G. Liaw and Henry T. Y. Yang, *Purdue University* (31, 12, p. 2304) Article based on AIAA Paper 91-1168 CP911
- J93-362 Numerical Simulations of Flutter and its Suppression by Active Control. J. Alan Luton and Dean T. Mook, *Virginia Polytechnic Institute and State University* (31, 12, p. 2312) Article based on AIAA Paper 92-4652 CP929
- J93-363 Thermoviscoelastic Analysis of Delamination Onset and Free Edge Response in Laminated Composites. Sung Yi, University of Illinois at Urbana-Champaign (31, 12, p. 2320) Article based on AIAA Paper 91-0962 CP911
- J93-364 Behavior of Laminated Composites Under Monotonically Increasing Random Load. Y. A. Dzenis and S. P. Joshi, *University of Texas at Arlington*; and A. E. Bogdanovich, *North Carolina State University* (31, 12, p. 2329) Article
- J93-365 Free Vibration Analysis of Laminated Plates Using a Layerwise Theory. Ashgar Nosier, Rakesh K. Kapania and J. N. Reddy, Virginia Polytechnic Institute and State University (31, 12, p. 2335) Article based on AIAA Paper 92-1320 CP931
- J93-366 Design Sensitivity Analysis for Repeated Eigenvalues in Structural Design. Ting-Yu Chen, National Chung Hsing University, Taiwan, ROC (31, 12, p. 2347) Article
- J93-367 Optimization of Boundary Conditions for Maximum Fundamental Frequency of Vibrating Structures. Jae Hong Son and Byung Man Kwak, Korea Advanced Institute of Science and Technology (31, 12, p. 2351) Article
- J93-368 Evaluation of Kowalski's Method of Calculating Stresses at Internal Thread Reliefs. S. K. Tsang, *Dowty Aerospace Los Angeles* (31, 12, p. 2358) Article
- J93-369 Investigation of the Stress Distributions in Corner Tensioned Rectangular Membranes. D. J. Gorman, University of Ottawa, Canada; R. K. Singhal and W. B. Graham, Canadian Space Agency; and J. M. Crawford, Dynacon Enterprises, Ltd., Canada (31, 12, p. 2361) Article
- J93-370 Improved Coordination in Nonhierarchic System Optimization. J. E. Renaud, *University of Notre Dame*; and G. A. Gabriele, *Rennselaer Polytechnic Institute* (31, 12, p. 2367) Article based on AIAA Paper 92-2497 CP922
- J93-371 Unsteady Pressures Under Impinging Jets in Crossflows. K. Knowles, M. J. Wilson and D. Bray, Royal Military College of Science (Cranfield University), England, UK (31, 12, p. 2374) Technical Note
- **J93-372** Effect of Swirl on Jet Atomization. E. A. Ibrahim, *Tuskegee University* (31, 12, p. 2376) Technical Note
- J93-373 Pseudospectral Simulation of Shock-Turbulence Interactions. John V. Shebalin, NASA Langley Research Center (31, 12, p. 2378) Technical Note
- J93-374 Generalized Vortex Lattice Method for Oscillating Thin Airfoil in Subsonic Flow. Paulo A. O. Soviero, *Instituto Tecnológico de Aeronáutica, Brazil* (31, 12, p. 2380) Technical Note
- J93-375 Disperse Phase Motion in Neutrally Bouyant and Zero-Gravity Pipe Flows. K. R. Sridhar, *University of Arizona*; and B. T. Chao, *University of Illinois at Urbana-Champaign* (31, 12, p. 2382) Technical Note