Session 12

95-1840 A Novel Approach to Aerodynamic Analysis Using Analytical/Numerical Matching
D. Bliss and R. Epstein ................................................................. 626

95-1841 Experimental Investigation of the Trailing Vortex Wake of a Rectangular Wing
J. Jacob, D. Liepmann, and O. Savas .............................................. 640

95-1842 A Computational Study on the Effects of Leading Edge Lateral Blowing on Delta Wing Aerodynamics
J. Hong and L. Roberts ................................................................. 647

95-1843 Dynamic Water Tunnel Tests for Flow Visualization and Force/Moment Measurements on Maneuvering Aircraft
C. Suárez and G. Malcolm ............................................................... 658

NA - Not Available

VII

WD - Withdrawn
<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-1844</td>
<td>Investigations into the Aerodynamic Properties of A Battle Damaged Wing</td>
<td>A. Irwin, P. Render, J. McGuirk, B. Probert, and P. Alonze</td>
<td>671</td>
</tr>
<tr>
<td>95-1845</td>
<td>An Investigation, Using an Aerodynamic Panel Code, of A Special Case of A Wing Flying in Close Proximity to A Water Surface</td>
<td>C. Adler and R. Coopersmith</td>
<td>680</td>
</tr>
<tr>
<td>95-1846</td>
<td>Three-Dimensional Aerodynamic Analysis of A Subsonic Transport High-Lift Configuration and Comparisons with Wind-Tunnel Test Results</td>
<td>D. Edge and J. Perkins</td>
<td>690</td>
</tr>
<tr>
<td>95-1847</td>
<td>Euler/Navier-Stokes Analysis of Vortical Flow About Rounded Leading Edge Delta Wing</td>
<td>H. Tsai, C. Leck, L. Guarino, and K. Lee</td>
<td>703</td>
</tr>
<tr>
<td>95-1853</td>
<td>A Review of Hypervelocity Projectile Aerophysics</td>
<td>H. Legner and W. Reinecke</td>
<td>NA</td>
</tr>
<tr>
<td>95-1849</td>
<td>Optimization of Waverider Generated From Conical Flow with Combined Transverse and Longitudinal Curvature</td>
<td>S-C. Lin and Y-S. Luo</td>
<td>714</td>
</tr>
<tr>
<td>95-1851</td>
<td>Aerodynamics of Economical Aircraft Flight up to Orbit and Return</td>
<td>J. Nicolaides</td>
<td>738</td>
</tr>
<tr>
<td>95-1854</td>
<td>Aerothermodynamics of Hypersonic Projectiles</td>
<td>C. Roxan, E. Carette, and A. Luc-Bouhali</td>
<td>NA</td>
</tr>
<tr>
<td>95-1855</td>
<td>Application of a Navier-Stokes Solver to the Analysis of Multielement Airfoils and Wings Using Multizonal Grid Techniques</td>
<td>K. Jones, R. Biedron, and M. Whitlock</td>
<td>744</td>
</tr>
</tbody>
</table>

NA - Not Available
WD - Withdrawn
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-1856</td>
<td>Gridless Type Solution for High Reynolds Number Multielement Flow</td>
<td>Morinishi</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Fields</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-1857</td>
<td>A Multipoint Inverse Airfoil Design Method for Slot-Suction Airfoils</td>
<td>Saeed and M. Selig</td>
<td>768</td>
</tr>
<tr>
<td>95-1858</td>
<td>Optimization of an Advanced Design Three-Element Airfoil at High</td>
<td>Lin and C. Dominik</td>
<td>779</td>
</tr>
<tr>
<td></td>
<td>Reynolds Numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-1859</td>
<td>Development of High Lift-to-Drag, Low-Speed Airfoils with Coupled</td>
<td>Wetzel and S. Farohki</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Vortex Generators and Riblets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-1860</td>
<td>Multielement Airfoil Ice Accretion</td>
<td>Washington and M. Drela</td>
<td>790</td>
</tr>
<tr>
<td>95-1861</td>
<td>Chimera Grids Applied to Viscous, Incompressible Flows About an</td>
<td>Beran and F. Smith</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Airfoil with Structural Copuling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Session 15**

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-1862</td>
<td>Flowfield and Acoustic Characteristics of Telescope Cavity in SOFIA</td>
<td>Srinivasan</td>
<td>801</td>
</tr>
<tr>
<td></td>
<td>Platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-1864</td>
<td>Preliminary Analysis of Ascent Loads on a Space Shuttle Liquid Flyback Booster Configuration</td>
<td>Gomez and J. Slotnick</td>
<td>824</td>
</tr>
<tr>
<td>95-1865</td>
<td>Investigation of the Unsteady Pressure Fluctuations on an F/A-18 Wing at High Incidence</td>
<td>Lee and S. Marineau-Mes</td>
<td>832</td>
</tr>
<tr>
<td>95-1866</td>
<td>Aerodynamics of Heat Exchangers for High-Altitude Aircraft</td>
<td>Drela</td>
<td>845</td>
</tr>
<tr>
<td>95-1867</td>
<td>Tests of Reaction Jets on a Scale Model of a Subsonic Missile</td>
<td>Facinelli and O. Nicks</td>
<td>856</td>
</tr>
</tbody>
</table>

NA - Not Available  IX  WD - Withdrawn
Session 16

95-1868 Navier-Stokes Analysis of A Delta Wing In Static and Dynamic Roll
N. Chaderjian and L. Schiff .......................................................... 1260

95-1869 Aerodynamics of a Chined Forebody Oscillating In Pitch
R. Mange and M. Bragg ................................................................. 867

95-1870 Investigation of Multiple-Body Trajectory Prediction Using Time-Accurate Computational Fluid Dynamics
R. Thoms and K. Jordan ............................................................... NA

95-1871 The Effect of Cumulation for Supersonic Move In Nonuniform Atmosphere
P. Georgievskii and V. Levin ......................................................... 878

95-1872 Impulsive Start of a Symmetric Airfoil at High Angle-of-Attack
J. Katz, S. Yon, and S. Rogers ..................................................... 886

95-1873 Unsteady Aerodynamics of Deforming Airfoils
J. Singh ........................................................................................ NA

95-1874 Unsteady Aerodynamics Effects on A Half Delta Wing Oscillating in Pitch
J. Vaughan and N. Wood .............................................................. 894

Session 17

95-1875 A New Procedure for Airfoil Definition
P. Venkataraman ........................................................................... 905

95-1876 Optimum Airfoil Design in Viscous Flows
P. Venkataraman ........................................................................... 915

95-1877 A Dual-Time Method for the Solution of the 2D Unsteady Navier-Stokes Equations on Structured Moving Meshes
A. Gaitonde ................................................................................. 926

95-1878 Searching for Airfoil Stall: Preconceptions or Artifacts?
L. Dumitrescu ............................................................................... NA

95-1879 On the Subsonic and Transonic Doublet in the Farfield Representation of an Airfoil
M. Mokry .................................................................................... 937

95-1880 Further Investigations of Icing Effects on an Advanced High-Lift Multi-Element Airfoil
D. Miller, J. Shin, D. Sheldon, A. Khodadoust, P. Wilcox, and T. Langhals ................................................................. 948

NA - Not Available  x  WD - Withdrawn
95-1881  Gurney Flap Effects and Scaling for Low-Speed Airfoils  
P. Giguère, J. Lemay, and G. Dumas  ................................................................. 966

Session 18

95-1882  Induced Aerodynamic Effects from Jet Reaction Controls on A  
Missile Model at Angles of Attack up to 75°  
F. Capone, S. Asbury, and K. Deere ................................................................. NA

95-1883  Preliminary Design and Cost Analysis of a Family of Unmanned  
Aerial Vehicles  
T. Zych and M. Selig ......................................................................................... 977

95-1884  Potential Flow Applications to the Evaluation of the F/A-18E/F  
Aircraft Flowfield Effect on Separation Characteristics of A Rail  
Launched Missile  
M. Talbot ........................................................................................................... 986

95-1885  The Effects of Leading-Edge Suction on the Aerodynamics of Moth  
Wings  
M. Smith ............................................................................................................ NA

95-1886  Variable-Complexity Response Surface Aerodynamic Design of an  
HSCT Wing  
A. Giunta, R. Narducci, S. Burgee, B. Grossman, W. Mason, L. Watson, and  
R. Haftka ......................................................................................................... 994

Session 19

95-1887  Fixed-Wing Performance Predictions of the Canard Rotorwing  
Concept Based on Wind Tunnel Test Results  
S. Bass, T. Thompson, and J. Rutherford ....................................................... 1003

95-1888  Numerical Analysis of Aerodynamic Performance of Rotors with  
Leading Edge Slats  
A. Bangalore and L. Sankar .............................................................................. 1013

95-1889  A Calculation of A Helicopter Rotor in Hover by Viscous-Inviscid  
Interaction  
A. Filippone and J. Sorensen ........................................................................... NA

95-1890  Unsteady Flow Control on Rotor Airfoils  
W. Geissler and H. Sobieczky ........................................................................ 1024

95-1891  Reduction of Blade Vortex Interaction Noise Using Prescribed  
Pitching  
V. Parameswaran and J. Baeder ................................................................... 1033

NA - Not Available  
WD - Withdrawn
<table>
<thead>
<tr>
<th>Session 20</th>
</tr>
</thead>
</table>
| 95-1892 Application of ENO Schemes to Rotary Wing Problems  
  N. Hariharan and L. Sankar | 1044 |
| 95-1893 An Assessment of Missile DATCOM Prediction Accuracy Relative to Generic Body+Wing+Tail Missile Pitch Aerodynamics  
  J. White | 1058 |
| 95-1894 Non-Linear Aerodynamic Analysis of Grid Fin Configurations  
  J. Burkhalter and H. Frank | 1069 |
| 95-1895 CFD Predictions and Comparison To Tunnel Data for the Asymmetric Firing of A Forward Mounted Attitude Control Thruster  
  R. Roger, S. Chen, G. Edwards, and M. Brooks | NA |
| 95-1896 Aerodynamic Effects Due to Body Modifications on a Tube Launched Tactical Missile  
  R. Kretzschmar, S. Mallette, R. Deep, and L. Hall | 1084 |
| 95-1897 Aerodynamic Characteristics of Wrap Around Fins on a Tube Launched Tactical Missile  
  R. Kretzschmar, S. Mallette, R. Deep, and L. Hall | 1093 |
| 95-1898 Payoffs of Improved Missile Control Effectiveness  
  L. Schindel and L. Lam | 1101 |
| 95-1899 Fin-Interference Effects on the Aerodynamics of A Swept-Fin Missile  
  K. Moran and P. Beran | 1111 |

<table>
<thead>
<tr>
<th>Session 21</th>
</tr>
</thead>
</table>
| 95-1900 Vortex Wakes of Two Subsonic Transports as Measured In 80- by 120- Foot Wind Tunnel  
  V. Rossow, R. Fong, M. Wright, and L. Bisbee | NA |
| 95-1901 Dynamic Test of the Orbital Reentry Vehicle (OREX) In a Transonic Wind Tunnel with Comparison to Flight Data  
  T. Yoshinaga, A. Tate, M. Watanabe, and T. Shimoda | 1129 |
| 95-1902 A Wind Tunnel Test of a Tilt-body Freewing Aircraft Including Thrust Effects  
  W. Chen and J. Barlow | 1139 |
| 95-1903 A Further Study on Adaptive Wall Strategy for Half Model Testing  
  L. Huaxing, H. Jiaju, and Z. Peichu | 1150 |
| 95-1904 Dynamic Leading-Edge Flap Scheduling  
  R. Rennie and E. Jumper | 1159 |

NA - Not Available  
WD - Withdrawn
95-1905  Nonlinear Analysis of Airfoil Flutter at Transonic Speeds
S. Morton and P. Beran ................................................................. 1169

95-1906  Flight Test Validation of Aerial Target Separation Trajectory
Predictions
P. Richardson ................................................................................. 1180

95-1907  Low-Disturbance Flow Characteristics of the NASA Ames Laminar
Flow Supersonic Wind Tunnel
S. Wolf and J. Laub ........................................................................ NA

Session 22

95-1908  The Application of Navier-Stokes Computations to the Design of
High-Speed, Low-Drag Magnetically Levitated (Maglev) Vehicle
Shapes
M. Siclari, R. Ende, and G. Carpenter .............................................. 1189

95-1909  Cambered Airfoil In Ground Effect-Wind Tunnel and Road Conditions
R. Ranzenbach and J. Barlow ........................................................... 1208

95-1910  Development of a Hydrodynamic Free Surface Capability in a Low
Order Aerodynamic Panel Method
C. Adler and R. Coopersmith ............................................................. 1216

95-1911  Development of a Ground Test Vehicle (GTV) System to Measure the
Aerodynamic Characteristics of Unmanned Air Vehicles
M. Cavanaugh and R. Holifield ......................................................... 1230

95-1912  Wake Measurements In A Strong Adverse Pressure Gradient
S. Schneider, R. Hoffenberg, and J. Sullivan ....................................... NA

95-1913  Numerical Prediction of Aerodynamic Drag for Heavy Ground
Transportation Vehicles
B. Hassan, W. Gutierrez, W. Wolfe, M. Walker, B. Ruefer, and J. Hurt ...... 1238

95-1917  Experimental Studies of Maglev Aerodynamics
J. Tyll, D. Liu, J. Schetz, and J. Marchman ......................................... 1249

95-1915  Shock-Guideway Interactions for A Magnetically Levitated
Hypervelocity Sled
A. Grantz and C. McKinney ............................................................ WD

NA - Not Available

WD - Withdrawn