Luigi Martinelli

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EDUCATION:

PRINCETON UNIVERSITY, Princeton, NJ
Ph.D. in Mechanical and Aerospace Engineering, October 1987

POLITECNICO DI MILANO, Milano, ITALY
Laurea in Aeronautical Engineering, April 1981

HONORS/AWARDS: A.T.A. Prize (1980), Associate Fellow of the AIAA (1998). The Boeing - A. D. Welliver Faculty Fellowship (1999). Graduate Mentoring Award - McGraw Center Princaton University (2003).

EXPERIENCE:

PRINCETON UNIVERSITY, Princeton, NJ

7/00 - present **Associate Professor** in the Department of Mechanical and Aerospace Engineering. Associate faculty in the Program of Computational and Applied Mathematics, in the Program of Application in Computing, and PICSciE.

Conduct independent research in the area of Computational Fluid Dynamics encompassing: the development of mathematical models, algorithms, and computer codes for the simulation of complex fluid flows on complex geometries, the design of algorithms and computer codes suitable for vector and parallel processing, the simulation of three-dimensional turbulent flows on aircraft components in subsonic, transonic, supersonic, and hypersonic regimes, as well as incompressible flow about ship hulls comprising free surfaces.

In collaboration with A. Jameson, he has devised and implemented novel methods for shape design optimization based on the Reynolds Averaged Navier Stokes equations. These methods have been widley used in practical industrial design.

Other responsibilities include: (1) providing supervision and guidance to graduate and undergraduate students, (2) securing research grants from private and governmental sources, (3) serving in University and Departmental Committees.

7/03 - 6/07 **Director of Graduate Studies** Department of MAE - Princeton University.

7/01 - 6/07 **Senior Fellow** Rockefeller College - Princeton University.

7/02 - 12/02 **Visiting Professor** - Department of AA - Stanford University.

1/94 - 6/00 **Assistant Professor** Department of MAE - Princeton University.

8/87–1/94 **Research Staff Member** Department of MAE - Princeton University.

TEACHING:

PRINCETON UNIVERSITY, Princeton, NJ

9/90–present Development and teaching of Undergraduate and Graduate courses on Applied and Numerical Mathematics, Fluid Dynamics, and Aircraft technology and Design.

2000-present Responsible for ABET accreditation of the Aerospace Program.

PROFESSIONAL: **Peer Reviewing**: Journal of Computational Physics, AIAA Journal, AIAA Journal of Thermophysics and Heat Transfer, AIAA Journal Power and Propulsion, Computers and Fluids, International Journal of Numerical Methods in Fluids, ASME Journal of Fluids Engineering, Princeton University Press. **Technical Committees**: Member of the AIAA Fluid Dynamics Technical Committee. Technical Chair of the AIAA 16th CFD Conference 2003.

8/87–present **Consultant**: in the general area of Computational Fluid Dynamics to several aerospace firms including Aermacchi, British Aerospace, Intelligent Aerodynamics, Plasma Tec, USGA, Alinghi Challange.

SKILLS: **Computer** : Fortran, C, C++, MPI, UNIX including System Administration.

MAJOR SOFTWARE AUTHORED

1987 Flo103 cell centered 2D Navier-Stokes Solver

1990 Flo 97, 107 cell-vertex and cell-centered schemes for 3D Navier-Stokes Solver

1995 Flo107-MB Multiblock cell centerd 3D-Solver for parallel architectures.

1996 Syn107 Cell Centered 3D Navier-Stokes Optimizer

1998 Ship107 Multiblock Solver with Non-linear Free-surface.

2001 Syn107-INC Cell centered Navier Stokes optimizer for incompressible flow

2003 Synplane Shape optimization for tethrahedral meshes.

2006 Syn-FS Shape optimization for ship hulls with Free Surface.

PERSONAL: U.S. Citizen.

Luigi Martinelli - Invited Lectures

1988 *"IBM Europe Institute - Invited Lecturer"*, Oberlech, Austria.

1992 *"IBM Europe Institute - Invited Lecturer"*, Oberlech, Austria

1993 *"Cornell Theory Center-Seminar Series"*, Ithaca, New York.

1993 *"University of California at San Diego - Departmental Seminar"*, San Diego, California.

1994 *"University of California at Davis - Departmental Seminar"*, Davis, California.

1996 *"Yale - Departmental Seminar"*, New Haven, Connecticut.

1997 *"Penn State - Departmental Seminar"*, College Station, Pensilvania.

1997 *"University of Cincinnati - Departmental Seminar"*, Cincinnati, Ohio.

1998 *"Johns Hopkins - Departmental Seminar"*, Baltimore, Maryland.

1998 *"29-th AIAA Fluid Dynamics Conference - Invited Speaker"*, Albuquerque, New Mexico.

1998 *"Eccomas 1998 - Invited Speaker"*, Athen, Greece.

1998 *"Applied Mathematics Colloquium"*, Princeton, New Jersey.

1999 *"University of Illinois - Departmental Seminar"*, Urbana, Illinois.

2000 *"Stanford University - Fluid Mechanics Seminar"*, Stanford, California.

2000 *"University of California Irvine - Fluid Mechanics Seminar"*, Irvine, California.

2000 *"University of Virginia - Seminar Series in MAE "*, Charlottesville, Virginia.

2001 *"First MIT Confereence on Computational Fluids and Solid Mechanics- Invited Talk"*, Cambridge, Massachusetts.

2001 *"Ecole Politechnique Federal de Lausanne - Seminar Series in Applied Mathematics "*, Lausanne, Switzerland

2002 *"ICAS Congrerss - Invited Lecture "*, Toronto, Canada.

2003 *"Second MIT Confereence on Computational Fluids and Solid Mechanics- Invited Talk"*, Cambridge, Massachusetts.

2006 *"7th World Conference in Computational Mechanics "*, Los Angeles , Califirnia, July 2007. Invited Contribution.

2007 *"INSEAN -Invited Lecturer"* , Roma, Italy, December 2007.

2008 *" Seoul National l University - Invited Lecturer"* , Seoul, Korea January 2008.

Refereed Journals

J1 *"Design and manufacture of a morphing structure for a shape-adaptive supersonic wind tunnel nozzle"* (With Craig A. Steeves Katherine H. Timpano Peter T. Maxwell Richard B. Miles) Journal of Applied Mechanics , Transaction of ASME, 2008

J2 *"Continuous Adjoint Method for Unstructured Grids"* (With A. Jameson S. Shankaran) AIAA Journal (0001-1452) 2008 vol. 46 pages 1226-1239.

J3 *Quantifying the Gurken Morphogen Gradient in Drosophila Oogenesis*, Developmental Cell 2006 11: 263-272, (With Lea A. Goentoro, Gregory T. Reeves, Craig P. Kowal, Trudi Schpbach, and Stanislav Y. Shvartsman)

J4 *" Two-dimensional Implicit time dependent calculations on adaptive meshes with time evolving boundaries"*. Int. Journal Computational Fluid Dynamics, 50 , No. 2 199-218 , (2006) (with P. Lin, T. Baker and A. Jameson)

J5 *" Control Theory Based Shape Design for the Incompressible Navier Stokes Equations"*. Int. Journal Computational Fluid Dynamics, 17(6)1415-1432, December 2003 (with G. W. Cowles)

J6 *" A Flux limited Numerical Method for solving the MHD Equations to Simulate Propulsive Plasma Flows"*. Int. Journal Numerical Methods in Engineering, 53(6)1415-1432, February 2002 (with K. Sankaran, S.C. Jardin, E. Choueiri)

J7 *" Shock wave propagation and dispersion in glow discharge plasmas"*. Physics of Fluids, Vol 13, No 9, pp 2693-2705, September 2001. (with S. Macheret, D. Miles, et al,

J8 *" Numerical Method for Solving Incompressible Flow Problems with a Surface of Discontinuity"*, Journal of Computational Physics, Vol 149, 366-396, 1999. (with B. Hellenbrook and C.K. Law)

J9 *"An efficient Multigrid Algorithm for Compressible Reactive Flows"*, Journal of Computational Physyscs, 144, p. 484-516, 1998. (with A. Jameson, and S. Sheffer)

J10 *"Simulation of Supersonic Reactive Hydrocarbon Flows with Detailed Chemistry"*, Combustion Science and Technology, Vol. 136, 1-6, p. 55, 1998. (with A. Jameson, and S. Sheffer)

J11 *"Optimum Aerodynamic Design Using the Navier-Stokes Equations"* Journal of Theoretical and Computational Fluid Dynamics, Vol. 10, p.213-237, 1998. (with A. Jameson, and N. Pierce)

J12 *"Mesh Refinement and Modeling Errors in Flow Simulations"*, AIAA Journal, Vol. 36, No. 5, pp. 676-685, May 1998. (with A. Jameson)

J13 *"Analysis and Implementation of the Gas-Kinetics BGK scheme for Computational Gas Dynamics"* International Journal of Numerical Methods, Vol. 25, No. 1, pp. 21-49, July 1997. (with A. Jameson, C. Kim, and K. Xu)

J14 *"BGK-based Schemes for the Simulation of Compressible Flow"* International Journal of Computational Fluid Dynamics, Vol. 7, 1996, pp 213-235. (with A. Jameson, C. Kim, and K. Xu)

J15 *"Gas-Kinetic Finite Volume Methods, Flux-Vector Splitting and Artificial Diffusion"*, JCP, Vol. 120, August 1995, pp 48-65. (with K. Xu, and A. Jameson)

J16 *"Flux Limited Schemes for the Compressible Navier–Stokes Equations"*, AIAA Journal, Vol. 33, No. 2, pp. 252-261, February 1995. (with S.Tatsumi, and A. Jameson)

J17 *"Multigrid Solution of Compressible Turbulent Flow on Unstructured Meshes Using a Two-Equation Model"* IJNMF, Vol. 18, No. 10., pp. 887-914, 1994. (with D. Mavriplis)

J18 *"Numerical Simulation of Flame Propagation in Internal Combustion Engines"*, Aerotecnica Missili e Spazio, Vol. 58, June/September 1979. (with C. Cercignani, L. DeLuca et al.)

Review Papers

RP1 *"Il Primo Volo nel Computer"*, Volare, February 1990, pp.90-95

Book Chapters

B1 *"Design Optimization of Propeller Blades"*, In Frontiers of Computational Fluid Dynamics 2004, D. Caughey and M. Hafez *editors*, World Scientific 2005. (with J. Dreyer)

B2 *Perspectives on Simulation Based Aerodynamic Design*, (with A. Jameson, J. J. Alonso, J. C. Vassberg, and J. Reuther) Computational Fluid Dynamics for the 21st Century: Proceedings of a Symposium Honoring Prof. Satofuka on the Occasion of His 60th Birthday, Kyoto, Japan, 15-17 July 2000, Ed. Mohamed Hafez, Koji Morinishi, Jacques Periaux Notes on Numerical Fluid Mechanics, 78, pp 135-178. ,Springer Verlag, 2001.

B3 *"Aerodynamic Shape Optimization Techniques Based On Control Theory"* (with A. Jameson) Lecture Notes of the CIME '99, Springer Verlag, in preparation.

B4 *"CFD Analysis and Design Optimization Using Parallel Computers"* Some New Directions in Science on Computers, G. Banhot S. Chen and O. Seiden Ed., World Scientific, 1997, pp. 3-40. (with A. Jameson, J. Reuther, J. Alonso)

B5 *"Sailing Thru the Nineties: Computational Fluid Dynamics for Ship performance Analysis and Design"*, In Frontiers of Computational Fluid Dynamics 1994, D. Caughey and M. Hafez *editors*, Wiley, 1994. (with J. Farmer)

Conference Proceedings AIAA

CFD1 *An Unstructured Adjoint Method for Transonic Flow* ,16th AIAA Computational Fluid Dynamics Conference, AIAA Paper AIAA-2003-3955, Orlando, FL, June 23-26, 2003. (With Antony Jameson, Sriram Shankaran)

CFD2 *"Hydrodynamic Shape Optimization of Propulsor Configuration Using a Continuous Adjoint Approach"*, Proceedings of the 15th AIAA CFD Conference, Anaheim, CA, June 2001. (With J. Dreyer)

CFD3 *"Two dimensional Implicit time dependent calculations for incompressible flows on adaptive unstructured meshes"*, Proceedings of the 15th AIAA CFD Conference, Anaheim, CA, June 2001. (with P. Lin, A. Jameson, and T. Baker)

CFD4 *"A Multigrid Method for High Speed Reactive Flows"* AIAA 97-2106, Preceedings of 13th AIAA Computational Fluid Dynamics Conference, Snowmass, June 1997. (with A. Jameson, and S. Sheffer)

CFD5 *"Accelerating Three-Dimensional Navier-Stokes Calculations"* AIAA 97-1953, Preceedings of 13th AIAA Computational Fluid Dynamics Conference, Snowmass, June 1997. (with A. Jameson, N. Pierce, and M. Giles)

CFD6 *"An Efficient Multiblock Method for Aerodynamic Analysis and Design on Distributed Memory Systems"* AIAA 97-1893, Preceedings of 13th AIAA Computational Fluid Dynamics Conference, Snowmass, June 1997. (with A. Jameson, J. Reuther, J. Alonso, and J. Vassberg)

CFD7 *"A Cell-Centered Parallel Multiblock Method for Viscous Incompressible Flows with a Free Surface"* AIAA 97-1865, Proceedings of 13th AIAA Computational Fluid Dynamics Conference, Snowmass, June 1997. (with G. Cowles)

CFD8 *"Fully Nonlinear CFD Techniques for Ship Performance Analysis and Design"*, AIAA 95-1690, Proceedings of 12th Computational Fluid Dynamics Conference, San Diego, June 1995. (with J. Farmer G. Cowles and A. Jameson)

CFD9 *"RNG-Based Turbulent Transport Approximations With Applications to Transonic Flows"*, AIAA-89-1950, 9th Computational Fluid Dynamics Conference, Buffalo, June 1989. (with V. Yakhot)

Published Conference Proceedings

P1 *"An Adjoint method for Design of Ship Hulls"* Proceedings of the 9th International Conference on Numerical Ship Hydrodynamics, July, 2007, Ann Harbor, Michigan. (with A. Jameson)

P2 *"Using Computational Fluid Dynamics For Aerodynamics- A Critical Assessment"*, 23rd International Congress of Aeronautical Sciences, September 8-13, 2002, Toronto, Canada. (with A. Jameson and John C. Vassberg)

P3 *"Simulation Based Aerodynamic Design"* Proceedings, IEEE Aerospace Conference, March 18-25, 2000. Big Sky, Montana. Invited. (with A. Jameson, J. Alonso, J. Vassberg, J. Reuther)

P4 *" An Adjoint Method for the Incompressible Reynolds Averaged Navier Stokes Equations using Artificial Compressibility"* Proceedings, IEEE Aerospace Conference, March 18-25, 2000. Big Sky, Montana. (with G. Cowles)

P5 *" A Viscous Multiblock Flow Solver for Free Surface Calculations on Complex Geometries"* Proceedings, 22nd ONR Symposium on Naval Hydrodynamics, Washington, August 1998. (with G. Cowles)

P6 *"Application of A Parallel, Multigrid Algorithm for Large Eddy Simulation"*, Turbulence. Heat and Mass Transfer 2, (Hanjalic K. and Peeters T. W. J. Eds.), Delft Univ. press., June 1997 (with E. Arad)

P7 *"Assessment of An Implicit, Parallel, Multigrid Driven Algorithm for Large Eddy Simulation"*, 11th Symp. on Turbulent Shear Flows, Grenoble, Sept. 1997. (with E. Arad)

P8 *"A Viscous Parallel Multiblock Flow Solver for Hydrodynamic Analysis and Design"* Third International Symposium on Performance Enhancement for Marine Applications, Newport R.I., May 1997. (with G. Cowles)

P9 *"Nonlinear Hydrodynamics Calculations for Ship Design on Parallel Computing Platforms"*, Proceedings, 21st ONR Symposium on Naval Hydrodynamics, Trondheim, June 1996. (with G. Cowles)

P10 Fully-Implicit Multigrid Driven Algorithm for Computing Time-Resolved Non-linear Free-Surface Flow on Unstructured Grids ,Proceedings of 1996 ASME Fluids Engineering Division Summer Meeting, San Diego, July 1996, (with B.H. Liou, A. Jameson),

P11 *"Parallel Computations of Unsteady Incompressible Viscous Flow with A Fully-Implicit Multigrid Driven Algorithm"* Proceedings 6th International Symposium on Computational Fluid Dynamics, Lake Tahoe, September 1995. M. Hafez *editor*. (with A. Belov, and A. Jameson)

P12 *"On the Construction of BGK-Type Schemes for Compressible Flow Simulations"* Proceedings 6th International Symposium on Computational Fluid Dynamics, Lake Tahoe, September 1995. M. Hafez *editor*. (with K. Xu, C. Kim, and A. Jameson)

P13 *"A Novel Fully-Implicit Multigrid Driven Algorithm for Unsteady Incompressible Flow Calculations"* Proceedings ECCOMAS '94, Stuttgart, September 1994. (with A. Belov, and A. Jameson)

P14 *"Gas-Kinetics Finite Volume Methods"* Proceedings 14th International Conference on Numerical Methods in Fluid Dynamics , Bangalore, July 1994. (with K. Xu, and A. Jameson)

P15 *"A Two-dimensional Multigrid Navier-Stokes Solver for Multiprocessor Architectures"*
Proceedings Parallel CFD'94/Gamni Conference, Tokyo, May 1994. (with J. Alonso, T.J. Mitty, and A. Jameson)

P16 *"A Finite-Volume Method with Unstructured Grid for Free Surface Flow Simulations"* Proceedings of the 6th International Conference on Numerical Ship Hydrodynamics, Iowa City, August 1993. (with T. Hino and A. Jameson)

P17 *"A Fast Multigrid Method for Solving the Nonlinear Ship Wave Problem with a Free Surface"* Proceedings of the 6th International Conference on Numerical Ship Hydrodynamics, Iowa City, August 1993. (with J. Farmer and A. Jameson)

P18 *"FLO67P : A Multi-Block Version of FLO67 Running within PARAGRID"*, Proceedings of Parallel CFD'93 /Gamni Conference, Paris, May 10-12, 1993. (with M. Vitaletti, L. Visintini, F. Dellagiacoma, and A. Jameson)

P19 *"Numerical Simulation of Three-Dimensional Vortex Flows over Delta Wing Configurations"*, Lecture Notes in Physics, Proceedings of the 13th International Conference on Numerical Methods in Fluid Dynamics,Vol 414, pp. 534–538, July 1992. (with E.Malfa and A. Jameson)

P20 *"A Multistage Multigrid Method for the Navier-Stokes Equations"*, Notes on Numerical Fluid Mechanics, Vol. 18, pp. 123-128, 1987. (with A. Jameson and F. Grasso)

P21 *"Solution of the Compressible Navier Stokes Equations for a Double Throat Nozzle"*, Notes on Numerical Fluid Mechanics, Vol 18, pp. 237-254, 1987. (with A. Jameson, F. Grasso, F. Bassi and M. Savini)

P22 *"Comparison of Computed and Measured Dense Spray Jets"*, Progress in Aeronautics and Astronautics, Vol 95, AIAA, 1985. (with R. Reitz and F. Bracco)

Archived Papers [1]

AP1 *"Aerodynamic Shape Optimization of Multi-element Airfoils in Ground Effect"* AIAA-08-0327, 46nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2008. (with A.H. Melvin)

- AP2 *"Design and Test of a Morphing Supersonic Nozzle"* AIAA-2008-0851, 46nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2008. (with K. Timpano, Zaidi, C. Steeves, A. Evans, and R. Miles)

AP3 *" Aerodynamic Simulation and Optimization for High Speed Flow"* AIAA-06-708, 44nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2006. (with A. Jameson, Vassberg J., and Cliff S.)

AP4 *"Aerodynamic Shape Optimization of Transonic and Supersonic Aircraft Configurations"* AIAA-05-1013, 43nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2005. (with A. Jameson, Sriram, Cliff S. and Thomas S.)

AP5 *"Aerodynamic Shape Optimization of Complete Aircraft Configuration"* AIAA-04-0533, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2004. (with A. Jameson, Sriram, and B. Haimes)

AP6 *"A Control-Theory Based Method for Shape Design in Incompressible Viscous Flow using RANS"* AIAA-00-2544, AIAA Fluids 2000, June 19-22, 2000 Denver, Colorado. (with G. Cowles)

AP7 *"Shock Wave Propagation through Glow Discharge Plasmas"* AIAA 00-0714, 38th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2000. (with S. Macheret and R.B. Miles at al.)

AP8 *"Shock Wave Propagation and Structure in Non-Uniform Gases and Plasmas"* AIAA 99-0698, 37th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1999. (with S. Macheret and R.B. Miles)

AP9 *"Viscous Flow Solvers For Aero/Hydrodynamic Analysis and Design"* AIAA 98-3003, 29th AIAA Fluid Dynamics Conference, Albuquerque, June 1998. (with A. Jameson – Invited)

AP10 *"Aerodynamic Shape Optimization Techniques Based on Control Theory"* AIAA 98-2538, 29th AIAA Fluid Dynamics Conference, Albuquerque, June 1998. (with A. Jameson, J. Reuther, J. Alonso, and J. Vassberg)

AP11 *"Calculation of Plunging Breakers with a fully Implicit Adaptive Method"* AIAA 98-2968, 29th AIAA Fluid Dynamics Conference, Albuquerque, June 1998. (with B. Liou, A. Jameson, and T. Baker)

[1] Accepted following peer review of Extended Abstracts

AP12 *"Simulation of Supersonic Reactive Hydrocarbon Flows with Detailed Chemistry"* AIAA 97-3240, AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Seattle, July 1997. (with A. Jameson, and S. Sheffer)

AP13 *"Optimum Aerodynamic Design Using the Navier-Stokes Equations"* AIAA 97-0101, 35th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1997 (with A. Jameson, and N. Pierce)

AP14 *"Parallel Computation of Supersonic Reactive Flows with Detailed Chemistry"* AIAA 97-0899, 35th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1997 (with A. Jameson, and S. Sheffer)

AP15 *"Time-Accurate Simulation of Helicopter Rotor Flows Including Aeroelastic Effects"* AIAA 97-0399, 35th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1997 (with A. Jameson, J. Alonso and S. Sheffer)

AP16 *"An Accurate LED-BGK Solver on Unstructured Adaptive Meshes"* AIAA 97-0328, 35th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1997 (with A. Jameson, C. A. Kim, and K. Xu,)

AP17 *"Three-Dimensional Unsteady Incompressible Flow Computations Using Multigrid"* AIAA 97-0443, 35th AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 1997 (with A. Jameson, and A. Belov)

AP18 *"Large Eddy Simulation using a Parallel, Multigrid Driven Algorithm"*, AIAA 96-2065, 27th AIAA Fluid Dynamics Conference, New Orleans, June 1996. (with E. Arad)

AP19 *"Mesh Refinement and Modeling Errors in Flow Simulations"*, AIAA 96-2050, 27th AIAA Fluid Dynamics Conference, New Orleans, June 1996. (with A. Jameson – Invited)

AP20 *"Fluid Mechanics in a Radiatively Driven Hypersonic Wind-Tunnel–Prediction and Preliminary Experiment"*, AIAA 96-2199, 27th AIAA Fluid Dynamics Conference, New Orleans, June 1996. (with G. Brown, A. Ratta, R. Anderson, W. Lempert, and R. Miles)

AP21 *"On the Construction of the BGK-Type Schemes for Compressible Flow Simulations"*, AIAA 96-0525, 34th AIAA Aerospace Science Meeting and Exhibit, Reno, January 1996. (with K. Xu, C.A. Kim, and A. Jameson)

AP22 *"A New High Resolution Scheme for Compressible Viscous Flows with Shocks"*, AIAA-95-0466, AIAA 33rd Aerospace Science Meeting and Exhibit, Reno, January 1995. (with S. Tatsumi, and A. Jameson)

AP23 *"Euler Multigrid Calculations Using a Gas-Kinetic Scheme"*, AIAA-95-0206, AIAA 33rd Aerospace Science Meeting and Exhibit, Reno, January 1995. (with K. Xu, and A. Jameson)

AP24 *"Multigrid Unsteady Navier-Stokes Calculations with Aeroelastic Applications"*, AIAA-95-0049, AIAA 33rd Aerospace Science Meeting and Exhibit, Reno, January 1995. (with J. Alonso, and A. Jameson)

AP25 *"A New Implicit Algorithm with Multigrid for Unsteady Incompressible Flow Calculations"*, AIAA-95-0048, AIAA 33rd Aerospace Science Meeting and Exhibit, Reno, January 1995. (with A. Belov, and A. Jameson)

AP26 *"A Fast Multigrid Method for Solving Incompressible Hydrodynamic Problems with Free Surfaces"* , AIAA 31st Aerospace Sciences Meeting, Reno, January 1993, AIAA 93-0767.

AP27 *"Multigrid Solution of Compressible Turbulent Flow on Unstructured Meshes Using a Two-Equation Model"* AIAA-91-0237, January 1991. (with D. Mavriplis)

AP28 *"Multigrid Solution of the Navier-Stokes Equations on Triangular Meshes"*, AIAA-89-0120, 27th AIAA Aerospace Science Meeting and Exhibit, Reno, January 1989. (with A. Jameson and D. Mavriplis)

AP29 *"Validation of a Multigrid Method for the Reynolds Averaged Equations"*, AIAA-88-044, 26th AIAA Aerospace Science Meeting and Exhibit, Reno, January 1988. (with A. Jameson)

AP30 *"A Multigrid Method for the Navier Stokes Equations"*, AIAA-86-0208, 24th AIAA Aerospace Science Meeting and Exhibit, Reno, January 1986. (with A. Jameson and F. Grasso)

Archived Reports

AR1 *"Multigrid Solution of Compressible Turbulent Flow on Unstructured Meshes Using a Two-Equation Model"* ICASE Report No. 91-11, January 1991. (with D. Mavriplis)

AR2 *"Multigrid Solution of the Navier-Stokes Equations on Triangular Meshes"*, ICASE Report 89-11, February 1989. (with A. Jameson and D. Mavriplis)

AR3 *"Numerical Modeling of Gasjet Nosetip at Hypersonic Speeds, Flow Research"* Report 393, May 1987. (with S. Menon, W.H. Jou and A. Jameson)

AR4 *"Calculation of Viscous Flows with a Multigrid Method"*, Ph. D. Thesis, MAE 1754-T, Princeton University, 1987.

AR5 *"A Study of the Effects of Mesh Variation on Euler Equations Solutions"*, MAE Report 1712, June 1985. (with A. Jameson)

Abstracts

ABS1 *Modeling of Shock Wave Propagation in Non-Uniform Plasmas and Gases* APS Fluid Meeting 1998 (with S. Macheret, and R. Miles)

ABS2 *Finite Volume Multigrid Methods for Ship Hydrodynamics*, Eccomas 1998 Minisymposium (Invited)

ABS3 *On the Modulation of the Computed Lifting Force Acting on a 3-D Circular Cylinder* APS Fluid Meeting 1996 (with A. Belov, and A. Jameson)

ABS4 *"Multigrid Solutions of the Euler and Navier–Stokes Equations For a Series 60 Cb=0.6 Ship Hull For Froud Numbers 0.160, 0.220, and 0.316 (Program 1: Navier–Stokes Formulation)"* Proceedings of the SRI Workshop on Numerical Ship Hydrodynamics, Tokyo, 22-25 March 1994. (with J. Farmer and A. Jameson)

ABS5 *"Multigrid Solutions of the Euler and Navier–Stokes Equations For a Series 60 Cb=0.6 Ship Hull For Froud Numbers 0.160, 0.220, and 0.316 (Program 2: Euler Formulation)"* Proceedings of the SRI Workshop on Numerical Ship Hydrodynamics, Tokyo, 22-25 March 1994. (with J. Farmer and A. Jameson)

ABS6 *"A Multistage Multigrid Method for the Navier-Stokes Equations"*, GAMM Workshop on Numerical Simulation of Compressible Navier Stokes Equations, Sophia Antipolis, December 4-5 1985. (with A. Jameson and F. Grasso)

ABS7 *"Single Grid Solution of the Compressible Navier Stokes Equations on a H-Mesh"*, GAMM Workshop on Numerical Simulation of Compressible Navier Stokes Equations, Sophia Antipolis, December 4-5 1985. (with A. Jameson , F. Grasso, F. Bassi and M. Savini)

ABS8 *"Recent Research on Unsteady Combustion at CNPM"*, Proceedings of the VIth Symposium on Combustion Processes, Kerpacz (Poland), August 1979. (with L. DeLuca, C. Casci, A. Coghe et al.)

Two-Years List 2007-2008

J1 *"Design and manufacture of a morphing structure for a shape-adaptive supersonic wind tunnel nozzle"* (With Craig A. Steeves Katherine H. Timpano Peter T. Maxwell Richard B. Miles) Journal of Applied Mechanics , Transaction of ASME, 2008

J2 *"Continuous Adjoint Method for Unstructured Grids"* (With A. Jameson S. Shankaran) AIAA Journal (0001-1452) 2008 vol. 46 pages 1226-1239.

P1 *"An Adjoint method for Design of Ship Hulls" Proceedings of the 9th International Conference on Numerical Ship Hydrodynamics, 2007, Ann Harbor, Michigan. (with A. Jameson)*

AP1 "Aerodynamic Shape Optimization of Multi-element Airfoils in Ground Effect" *AIAA-08-0327, 46nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2008. (with A.H. Melvin)*

AP3 "Design and Test of a Morphing Supersonic Nozzle" *AIAA-2008-0851, 46nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, January 2008. (with K. Timpano, Zaidi, C. Steeves, A. Evans, and R. Miles*