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Professor

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EDUCATION:

- Ph.D.** 1991, Princeton University, Princeton, New Jersey
M.S. 1984, Beijing Institute of Aeronautics and Astronautics, Beijing, China
B.S. 1981, Northwestern Polytechnic University, Xi'an, China

PROFESSIONAL APPOINTMENTS:

- July, 2003 – present **Professor,**
July, 1997 – June, 2003 **Associate Professor,**
July, 1991 – June, 1997 **Assistant Professor**
Department of Mechanical and Aerospace Engineering
University of California, Irvine, CA 92697-3975.
July, 2011 – present **Chair Professor (Adjunct),**
Beijing University, Beijing China
Sept., 1984 – June, 1986 **Teaching and Research Staff Member**
Department of Aeronautical Propulsion and Thermal Engineering
Northwestern Polytechnical University, Xi'an, China.

AWARDS AND HONORS:

- Fellow, American Institute of Aeronautics and Astronautics (AIAA),** 2013,
Citation: for gas turbine-burner innovations including the development of high-impact,
widely-used CFD codes applicable to turbomachinery aerodynamics, aircraft aeroelasticity
and advanced optimization techniques.
Outstanding UCI Mechanical Engineering Professor,
Alpha Beta Chapter of Pi Tau Sigma International Honor Society, 2008.
Changjiang Distinguished Lecture Professor, Ministry of Education of China, 2005-2008.
Outstanding Professor of the Year, Class 2000, University of California, Irvine, 2000.
Advisory Professor, Beijing University of Aeronautics and Astronautics, Dec. 2000–present.
ASEE/NASA Summer Faculty Fellowship, NASA Langley Research Center, 2001.
Guest Professor, Institute of Mechanics, the Chinese Academy of Sciences, Mar. 2003.
Distinguished Guest Professor, Northwestern Polytechnical University, Mar. 2003–2004.
The Grumman Prize, Princeton University, 1987.

PROFESSIONAL AND UNIVERSITY SERVICES:

Associate Editor, *AIAA Journal of Propulsion and Power*, Jan. 2003-present.

Associate Editor, *ASME Journal of Fluids Engineering*, Oct. 2014-present.

Member of Editorial Board, *Acta Mechanica Sinica, English Version*, Jan. 2005–2009.

Member of Editorial Board, *International Journal of Computational Fluid Dynamics*, Aug. 2008-2013.

Member of the AIAA Air-Breathing Propulsion Technical Committee, Jan. 2001-2005.

Member of the ASME Turbomachinery Technical Committee, June 1997–present.

**Member of the Planning Committee for the Department of Aeronautics
and Astronautics of Peking University**, May, 2005–Dec., 2006.

**Faculty Chair and Chair of The Executive Committee of the Henry Samueli School of
Engineering**, University of California, Irvine, 2007-2008 Academic Year.

Director of Graduate Student Admissions, Department of Mechanical and Aerospace
Engineering, University of California, Irvine, 2008–2010.

**Chair of the Workgroup and Vice Chair of the International Workshop on “The Future of
Commercial Aircraft,”** The Joint Institute of Aeronautical Science and Engineering,
24-27 May 2011, Hong Kong

External Reviewer, Undergraduate Program Review Committee, Department of Mechanical
and Aerospace Engineering, University of California, San Diego, April, 2013.

**Organizer and Co-Chair, International Symposium on Mathematics, Computing and Design
— where Analysis and Creativity Combine**, Stanford, Nov. 20-21, 2014.

Organizers and Session Chairs, various other national and international conferences.

Referee, for proposals for NSF, NRC, etc. and regularly for journals including *AIAA Journal*,
Journal of Fluid Mechanics, *Journal of Fluids Engineering*, *Journal of Turbomachinery*,
Physics of Fluids, *Computers and Fluids*, *Computer Modeling in Engineering and Sciences*,
Journal of Computational Physics, *Journal of Propulsion and Power*, and others.

MAJOR RESEARCH INTERESTS AND EXPERTISE:

Computational Fluid Dynamics and Combustion, Propulsion, Gas-turbine Engines,
Aerodynamics and Aeroelasticity, flow control, and Multi-disciplinary Optimization.

CONSULTING ACTIVITIES:

Interlligent Aerodynamics, 1992–present.

Spytek Aerospace Corporation, 2009-2011.

Zona Technologies, Scottsdale, Arizona, 2006-2011.

Alstom Power, Baden, Switzerland, 2003-2004.

Innovative Scientific Solutions, Inc., Dayton, Ohio, 2001-2004.

Stanford University, Stanford, California, 1998-1999.

ABB Corporate Research Center, Baden, Switzerland, 1995-1998.

ABB Power Generation, Baden, Switzerland, 1995-1998.

General Electric Aircraft Engines, Cincinnati, Ohio, 1994.

UNDERGRADUATE COURSES TAUGHT AT UC IRVINE:

Propulsion, MAE 112; **Introduction to Fluid Mechanics**, MAE130A;
Compressible Flow, MAE 135; **Aerodynamics**, MAE 136;
Aircraft Performance, MAE 158; **Introduction to Control Systems**, MAE 170.

GRADUATE COURSES TAUGHT AT UC IRVINE:

Engineering Analysis II, MAE 200B;
Compressible Fluid Dynamics, MAE 230C;
Computational Fluid Dynamics, MAE 237. Turbomachinery Aerodynamics and Design, MAE 295.

PATENT:

“Quiet Bleed Valve for Gas Turbine Engine,” US Patent No. US9175577B2, Nov. 3, 2015.

PUBLICATIONS

Refereed Journal Articles

- J1: Liu, F. and Wei, Y., “Research on an Implicit Approximate-Factorization Finite-Difference Method for the Euler Equations,” *Acta Aerodynamica Sinica*, No. 3, Sept. 1985. pp. 54-62.
- J2: Cen, R. Y., Jameson, A., Liu, F., and Ostriker, J.P., “The Universe in a Box I: Thermal Effects in the Standard Cold Dark Matter Scenario,” *The Astrophysical Journal*, 362: L41-L45, October 20, 1990.
- J3: Liu, F. and Jameson, A., “Cascade Flow Calculations by a Multigrid Euler Method,” *Journal of Propulsion and Power*, Volume 9, No. 1, 1993, pp. 90-97.
- J4: Liu, F. and Jameson, A., “Multigrid Navier-Stokes Calculations for Three-dimensional Cascades,” *AIAA Journal*, Vol. 31, No. 10, October, 1993, pp. 1785-1791.
- J5: Liu, F. and Zheng, X., “Staggered Finite Volume Scheme for Cascade Flow with a $k-\omega$ Turbulence Model,” *AIAA Journal*, Vol. 32, No. 8, August, 1994, pp. 1589-1597.
- J6: Chen, W., Haroun, M.A., and Liu, F., “Large Amplitude Liquid Sloshing in Seismically Excited Tanks”, *Journal of Earthquake Engineering and Structural Dynamics*, July, 1996, V25 N7:653-669.
- J7: Zheng, X. and Liu, F., “Staggered Upwind Method for Solving Navier-Stokes and $k-\omega$ Turbulence Model Equations,” *AIAA Journal*, Vol. 33, No. 6, June 1995. pp. 991-998.
- J8: Liu, F. and Ji, S., “Unsteady Flow Calculations with a Multigrid Navier-Stokes Method,” *AIAA Journal*, Vol. 34, No. 10, October, 1996.
- J9: Liu, F. and Zheng, X., “A Strongly-Coupled Time-Marching Method for Solving the Navier-Stokes and $k-\omega$ Turbulence Model Equations with Multigrid,” *Journal of Computational Physics*, Vol. 128, No. 2, pp. 289-300, 1996.

- J10: Liu, F., Ji, S., and Liao, G., "An Adaptive Grid Method and Its Application to Steady Euler Flow Calculations," *SIAM Journal on Scientific Computing*, vol. 20, No. 3, pp. 811-825, 1998.
- J11: Zheng, X., Liu, C., Liu, F., and Yang, C., "Turbulent Transition Simulation Using the $k-\omega$ Model," *International Journal for Numerical Methods in Engineering*, 42, pp. 907-926, 1998.
- J12: Sirignano, W.A. and Liu, F., "Performance Increases for Gas-Turbine Engines Through Combustion Inside the Turbine," *Journal of Propulsion and Power*, Vol. 15, No. 1, pp. 111-118, January-February, 1999.
- J13: Ji, S., and Liu, F., "Flutter Computation of Turbomachinery Cascades Using a Parallel Unsteady Navier-Stokes Code," *AIAA Journal*, Volume 37, No. 3, pp. 320-327, March, 1999.
- J14: Liao, G., Liu, F., de la Pena, G.C., Peng, D., and Osher, S., "Level-Set-Based Deformation Methods for Adaptive Grids," *Journal of Computational Physics*, 159, pp. 103-122, 2000.
- J15: Sadeghi, M., and Liu, F., "Computation of Mistuning Effects on Cascade Flutter," *AIAA Journal*, Vol. 39, No. 1, pp. 22-28, Jan., 2001.
- J16: Liu, F. and Sirignano, W.A., "Turbojet and Turbofan Engine Performance Increases Through Turbine Burners," *Journal of Propulsion and Power*, Vol. 17, No. 3, pp. 695-705, May-June, 2001.
- J17: Liu, F., Cai, J., Zhu, Y., Wong, A.S.F., and Tsai, H.M., "Calculation of Wing Flutter by a Coupled Fluid-Structure Method," *Journal of Aircraft*, Vol. 38, No. 2, pp. 334-342, March-April, 2001.
- J18: Yao, J., Jameson, A., Alonso, J. J., and Liu, F., "Development and Validation of a Massively Parallel Flow Solver for Turbomachinery Flows," *Journal of Propulsion and Power*, Vol. 17, No. 3, pp. 659-668, May-June, 2001.
- J19: Fang, X., Liu, F., and Sirignano, W. A., "Ignition and Flame Studies for an Accelerating Transonic Mixing Layer," *Journal of Propulsion and Power*, Vol. 17, No. 5, pp. 1058-1066, Sept.-Oct., 2001.
- J20: Tsai, H.M., Wong, A.S.F. , Cai, J. , Zhu, Y., and Liu, F., "Unsteady Flow Calculations with a Parallel Multiblock Moving Mesh Algorithm," *AIAA Journal*, Vol. 39, No. 6, pp. 1021-1029, Jun., 2001.
- J21: Cai, J., Liu, F., and Sirignano, W.A., "Three-Dimensional Flame Propagation Above Liquid Fuel Pools," *Combustion Science and Technology*, v. 174 (5-6) pp. 5-34, 2002.
- J22: Cai, J., Liu, F., and Luo, S., "Stability of Symmetric Vortices in Two-Dimensions and over Three-Dimensional Slender Conical Bodies," *Journal of Fluid Mechanics*, v. 480, 2003, pp. 65-94.

- J23: Xiao, Q., Tsai, H.M., and Liu, F., "Computation of Transonic Diffuser Flows by a Lagged $k-\omega$ Turbulence Model," *Journal of Propulsion and Power*, May-June, 2003, pp. 473-483.
- J24: Gao, C. Luo, S., and Liu, F., "Solution of the Euler Equations with Approximate Boundary Conditions for Thin Airfoils," *Journal of Northwestern Polytechnical University*, Vol. 21, No. 3, pp. 253-258, June, 2003.
- J25: Cai, J., Liu, F., and Sirignano, W.A., "Three-Dimensional Structures of Flames over Liquid Fuel Pools," *Combustion Science and Technology*, Vol. 175, No. 11, pp. 2113-2139, Nov., 2003.
- J26: Gao, C. Luo, S., and Liu, F., "Numerical Solution of the Unsteady Euler Equations for Airfoils Using Approximate Boundary Conditions," *Acta Mechanica Sinica*, Vol. 19, No.5, pp. 427-436, Oct., 2003.
- J27: Cai, J., Luo, S., and Liu, F., "Stability of Symmetric and Asymmetric Vortices over Slender Conical Wings and Bodies," *Physics of Fluids*, Vol. 16, No. 2, pp. 424-432, 2004.
- J28: Kirshman, D.J., and Liu, F., "A Gridless Boundary Condition Method for the Solution of the Euler Equations on Embedded Cartesian Meshes with Multigrid," *Journal of Computational Physics*, Vol. 201, No. 1, pp. 119-147, Nov., 2004.
- J29: Koh, E.P.C., Tsai, H.M., and Liu, F., "Euler Solution Using Cartesian Grid with a Gridless Least Squares Boundary Treatment," *AIAA Journal*, Vol. 43, No. 2, pp.246-255, 2005.
- J30: Gao, C., Yang, S., Luo, S., Liu, F., and D.M. Schuster, "Calculation of Airfoil Flutter by an Euler Method with Approximate Boundary Conditions," *AIAA Journal*, Vol. 43, No. 2, pp. 295-305, 2005.
- J31: Xiao, Q., Tsai, H.M, and Liu, F., "Computation of Turbulent Separated Nozzle Flow by a Lag Model," *Journal of Propulsion and Power*, vol. 21 no. 2 pp.368-371, 2005.
- J32: Kirshman, D.J., and Liu, F., "Flutter Prediction by a Cartesian mesh Euler Method with Small Perturbation Gridless Boundary Conditions," *Computers and Fluids*, Vol. 35, no. 6, pp. 571-586, 2006.
- J33: Cai, J., Tsai, H.M., and Liu, F., "A Parallel Viscous Flow Solver On Multi-block Overset Grids," *Computers and Fluids*, Vol. 35, no. 10, pp. 1290-1301, 2006.
- J34: McBean, I., Hourigan, K., Thompson, M., and Liu, F., "Prediction of Flutter of Turbine Blades in a Transonic Annular Cascade," *Journal of Fluids Engineering*, Vol. 127, No. 6, pp.1053-1058, Nov. 2005.
- J35: Xiao, Q., Tsai, H.M, and Liu, F., "Numerical Study of Transonic Buffet on a Supercritical Airfoil," *AIAA Journal*, Vol. 44, no. 3, pp. 620-628, 2006.
- J36: Sadeghi, M. and Liu, F., "Computation of Cascade Flutter by Uncoupled and Coupled Methods," *International Journal of Computational Fluid Dynamics*, Vol. 19, No. 8, pp. 559-569, November 2005.

- J37: Cai, J., Luo, S., and Liu, F., “Stability of Symmetric and Asymmetric Vortices over Slender Conical Wing-body Combinations,” *AIAA Journal*, Vol. 44, No. 7, pp. 1601-1608, 2006.
- J38: Zhang, J., He, G., and Liu, F., “Electro-osmotic Flow and Mixing in Heterogeneous Microchannels,” *Physical Review E*, Vol. 73, No. 5, 2006.
- J39: Sadeghi, M. and Liu, F., “Investigation of Mistuning Effects on Cascade Flutter Using a Coupled Method,” *Journal of Propulsion and Power*, Vol. 23, No. 2, pp. 266-272, 2007.
- J40: Cheng, F.C., Liu, F., and Sirignano, W.A., “Nonpremixed Combustion in an Accelerating Transonic Flow Undergoing Transition,” *AIAA Journal*, Vol. 45, No. 12, pp. 2935-2946, 2007.
- J41: Cai, J., Tsai, H.M., Luo, S., and Liu, F., “Stability of Vortex Pairs over Slender Conical Bodies — Analysis and Numerical Computation,” *AIAA Journal*, Vol. 46, No. 3, pp. 712-722, 2008.
- J42: Papamoschou, D. and Liu, F., “Aerodynamics of Fan Flow Deflectors for Jet Noise Suppression,” *Journal of Propulsion and Power*, Vol. 24, No. 3, pp. 437-445, 2008.
- J43: Cheng, F.C., Liu, F., and Sirignano, W.A., “Nonpremixed Combustion in an Accelerating Turning Transonic Flow Undergoing Transition,” *AIAA Journal*, Vol. 46, No. 5, pp. 1204-1215, 2008.
- J44: Liu, F., Luo, S., Gao, C., Meng, X., Hao, J., Wang, J., and Zhao, Z., “Flow Control over a Conical Forebody Using Duty-cycled Plasma Actuators,” *AIAA Journal*, Vol. 46, No. 11, pp. 2969-2973, 2008.
- J45: Cheng, F.C., Liu, F., and Sirignano, W.A., “Reacting Mixing-Layer Computations in a Simulated Turbine-stator Passage,” *Journal of Propulsion and Power*, Vol. 25, No. 2, pp. 322-334, 2009, (doi: 10.2514/1.37739)
- J46: Zhang, W., Ye, Z., Zhang, C. and Liu, F., “Supersonic Flutter Analysis Based on a Local Piston Theory,” *AIAA Journal* vol.47 No. 10 pp. 2321-2328, 2009, doi: 10.2514/1.37750
- J47: Cai, J., Tsai, H.M., and Liu, F., “Numerical Simulation of Vortical Flows in the Near Field of Jets from Notched Circular Nozzles,” *Computers and Fluids*, 39 (2010), pp. 539-552, doi: 10.1016/j.compfluid.2009.10.006
- J48: Liao, W., Koh, E.P.C., Tsai, H.M., and Liu, F., “Euler Calculations with Embedded Cartesian Grids and Small Perturbation Boundary Conditions” *Journal of Computational Physics*, Vol. 229 No. 9, May, 2010. doi:10.1016/j.jcp.2010.01.014.
- J49: Xiong, J., Nielsen, P., Liu, F., and Papamoschou, D., “Computation of High-Speed Coaxial Jets with Fan Flow Deflection,” *AIAA Journal* vol. 48 No. 10, pp. 2249-2262, 2010, doi: 10.2514/1.51645.
- J50 Meng, X., Qiao, Z., Gao, C., Luo, S., and Liu, F., “Effect of Dorsal Fin on the Stability of Vortices over a Delta Wing,” *Modern Physics Letters B*, vol. 24, no. 13, pp. 1389-1392, 2010, doi: 10.1142/S0217984910023694.

- J51 Wang J., Li H., Liu, F., and Luo, S., “Characteristics of Fore-body Separate Flow at High Angle of Attack under Plasma Control,” *Modern Physics Letters B*, vol. 24, no. 13, pp. 1401-1404, 2010, doi: 10.1142/S0217984910023724.
- J52 Zhao, Z., Gao C., Liu F., and Luo, S., “Plasma Flow Control over Forebody at High Angles of Attack,” *Modern Physics Letters B*, vol. 24, no. 13, pp. 1405-1408, 2010, doi: 10.1142/S0217984910023736
- J53: Luo, J., Xiong, J., Liu, F., and I. McBean, “Three-dimensional Aerodynamic Design Optimization of a Turbine Blade by Using an Adjoint Method,” *ASME Journal of Turbomachinery*, Vol. 133, No. 1, (2011), doi:10.1115/1.4001166
- J54: Cai, J., Tsai, H.M., Luo, S., and Liu, F., “Design of Optimal Wing-Body Configuration to Delay the Onset of Vortex Asymmetry,” *AIAA Journal*, Vol. 49, No. 1, (2011), doi:10.1115/1.4001166
- J55: Cleckler, J., Elghobashi, S., and Liu, F., “On the motion of inertial particles by sound waves,” *Physics of Fluids*, Vol. 24, Issue 3, 033301, 2012, doi: 10.1063/1.3696243.
- J56: Sirignano, W.A, Dunn-Rankin, D., Liu, F., Colcord, B., and Puranam, S., “Turbine Burners: Performance Improvement and Challenge of Flameholding,” *AIAA Journal*, vol. 50, No. 8, pp. 1645-1669, 2012, doi: 10.2514/1.J051562.
- J57: Xiong, J., Liu, F., and Papamoschou, D., “Aerodynamic Performance of Fan Flow Deflectors for Jet Noise Reduction,” *Journal of Propulsion and Power*, vol. 28, No. 4, 2012, pp 728-738, doi: 10.2514/1.B34489.
- J58: Xiong, J., Johnson, A., Liu, F., and Papamoschou, D., “Body Force Model for the Aerodynamics of Inclined Perforated Surfaces,” *AIAA Journal* Vol. 50, No. 11, pp. 2525-2535, 2012. doi: 10.2514/1.J051699
- J59: Colcord, B., Sirignano, W.A., and Liu, F., “Flameholding in Converging and Turning Channels over Cavities with Slot Injection,” *Combustion Science and Technology*, Volume 185, Issue 7, July 2013, pages 1016-1043.
- J60: Chen, S., Chen, Y., Xia, Z., Qu, K., Shi, Y., Xiao, Z., Liu, Q., Cai, Q., Liu, F., Lee, C., Zhang, R., and Cai, J., “Constrained Large-eddy Simulation and Detached Eddy Simulation of Flow Past a Commercial Aircraft at 14 Degrees Angle of Attack,” *Science China, Physics, Mechanics and Astronomy*, February 2013 Vol. 56 No. 2: 270276 doi: 10.1007/s11433-013-4990-z.
- J61: Colcord, B., Sirignano, W.A., and Liu, F., “Flameholding in Converging and Turning Channels over Cavities with Periodic Port Injection,” *AIAA Journal*, 2013, Vol.51: 1621-1630, doi: 10.2514/1.J051890.
- J62: Luo, J., Zhou, C., Liu, F., “Multi-Point Design Optimization of a Transonic Compressor Blade by Using an Adjoint Method,” *ASME Journal of Turbomachinery*, May, Vol. 136, (2014), doi: 10.1115/1.4025164.

- J63: Luo, J., Xiong, J., and Liu, F., “Aerodynamic Design Optimization by Using a Continuous Adjoint Method,” *Science China, Physics, Mechanics and Astronomy*, Vol. 57, No. 7, pp. 1363-1375, 2014, DOI: 10.1007/s11433-014-5479-0.
- J64: Zheng, B., Wang, Z., Gao, C., Fang, H., Xiong, J., Liu, F., and Luo, S., “Computational Analysis of Conical Forebody Flow at High Alpha with Transitional Model,” *J. of Aircraft*, Vol. 52, No. 1 (2015), pp. 357-366. doi: 10.2514/1.C032469.
- J65: Luo, J. and Liu, F., “Multi-Objective Optimization of a Transonic Compressor Rotor by Using an Adjoint Method,” *AIAA Journal*, Vol. 53, No. 3, pp. 797-801. DOI: 10.2514/1.J053436, 2015.
- J66: Luo, J. and Liu, F., McBean, I., “Turbine Blade Row Optimization through Endwall Contouring by an Adjoint Method,” *Journal of Propulsion and Power*, 31(2): 505-518, 2015, DOI: 10.2514/1.B35152.
- J67: Zhan, L., Liu, F., and Papamoschou, D., “Fourier Time Spectral Method for Subsonic and Transonic Flows,” *Acta Mechanica Sinica*, 2016, DOI 10.1007/s10409-015-0547-x.
- J68: Wang, S., Rusak, Z., Rui, G., and Liu, F., “On the three-dimensional stability of a solid-body rotation flow in a finite-length rotating pipe,” *J. of Fluid Mechanics*, vol. 797, pp. 284-321, 2016, DOI: 10.1017/jfm.2016.223
- J69: Meng, X., Qiao, Z., Gao, C., Liu, F., and Luo, S., “Effect of Dorsal Fin on the Symmetry of Vortices over a Slender Delta Wing” *AIAA Journal*, July 2016, DOI: 10.2514/1.J054675
- J70: Zhan, L. and Liu, F., A Space-Time Lower-Upper Symmetric Gauss-Seidel Scheme for the Time Spectral Method, *International Journal of Computational Fluid Dynamics*, Aug. 2016. DOI:10.1080/10618562.2016.1220551.
- J71: Yang, J., Xiong, J., McBean, I., Havakechian, S., Liu, F., and Luo, J., “Performance Impact of Manufacturing Variations for Multi-stage Steam Turbines,” *Journal of Propulsion and Power*, to appear.

Invited Book Chapters

- B1: Liu, F., “Multigrid Solution of the Navier-Stokes Equations with a Two-equation Turbulence Model,” in *Frontiers of Computational Fluid Dynamics–1998*, ed. D.A. Caughey and M.M. Hafez, John Wiley & Sons, 1994. pp. 339-359.
- B2: Cai, J., Tsai, H-M., Luo, S., and Liu, F., “Study of Stability of Vortex Pairs over a Slender Conical Body by Euler Computations,” in *Frontiers of Computational Fluid Dynamics–2006*, ed. D.A. Caughey and M.M. Hafez, World Scientific, 2006, pp. 297-323.

Archived Conference Papers

- C1: Jameson, A. and Liu, F., “Multigrid Calculations for Cascades”, in *Eleventh International Conference on Numerical Methods for Fluid Dynamics, Lecture Notes in Physics 323*, edited by D.L. Dwoyer, M.Y. Hussaini, and R.G. Voigt, pp. 318-323, Springer-Verlag, NY., 1989.
- C2: Liu, F. and Jameson, A., “Multigrid Euler Calculations for Three-Dimensional Cascades,” AIAA Paper 90-0688, presented at the 28th AIAA Aerospace Sciences Meeting, January 8-11, 1990, Reno, NV.
- C3: Liu, F. and Jameson, A., “Cascade Flow Calculation by a Multigrid Vertex Scheme for the Navier-Stokes Equations,” presented at the 4th International Symposium on Computational Fluid Dynamics, Sept. 9-12, 1991, Davis, CA.
- C4: Liu, F. and Jameson, A., “Multigrid Navier-Stokes Calculations for Three-Dimensional Cascades,” AIAA Paper 92-0190, presented at the 30th AIAA Aerospace Sciences Meeting, January 6-9, 1992, Reno, NV.
- C5: Liu, F. and Zheng, X., “A Staggered Finite Volume Scheme for Solving Cascade Flow with a two-equation Model of Turbulence,” AIAA 93-1912, presented at the 29th AIAA/SAE/ASME/ASEE Joint Propulsion Conference, June 28-July 1, 1993, Monterey, CA.
- C6: Zheng, X. and Liu, F., “Numerical Solution of Navier-Stokes Equations and $k-\omega$ Turbulence Model Equations Using a Staggered Upwind Method,” AIAA 93-2968, presented at the 24th AIAA Fluid Dynamics Conference, July 6-9, 1993, Orlando, FL.
- C7: Liu, F. and Zheng, X., “A Strongly-Coupled Time-Marching Method for Solving the Navier-Stokes and $k-\omega$ Turbulence Model Equations with Multigrid,” AIAA paper 94-2389, presented at AIAA 25th Fluid Dynamics Conference, June 20-23, 1994, Colorado Springs, CO.
- C8: Liu, F. and Ji, S., “Unsteady Flow Calculations with a Multigrid Navier-Stokes Method,” AIAA paper 95-2205, presented at AIAA 26th Fluid Dynamics Conference, June 19-22, 1995, San Diego, CA.
- C9: Liu, F. and Wang, L., “A Solution Adaptive Unstructured Mesh Method for Cascade Flow Calculations,” ASME AD-vol. 49, presented at the ASME Symposium on Computational Fluid Dynamics for Aeropropulsion, Nov., 1995, San Francisco, CA.
- C10: Ji, S. and Liu, F., “Computation of Self-excited Oscillation of Transonic Flow Around an Airfoil in a Channel,” AIAA Paper-96-0063, presented at 34th AIAA Aerospace Sciences Meeting, Jan. 15-18, 1996, Reno, NV.
- C11: Ji, S. and Liu, F., “Computation of Unsteady Flows around Oscillating Blades and Aeroelasticity Behavior,” AIAA Paper-97-0161, presented at 35th AIAA Aerospace Sciences Meeting, Jan. 6-10, 1997, Reno, NV.

- C12: Sirignano, W.A., Delplanque, J.P., and Liu, F. "Selected Challenges in Jet and Rocket Engine Combustion Research," AIAA Paper-97-2701, invited talk at the 33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, July, 1997, Seattle, WA.
- C13: Yao, J., Ji, S., Liu, F., and Jennions, I.K., "Computation of Steady Flow in a Turbomachinery Stage by a Third-Order Accurate Scheme," AIAA Paper 98-0920, presented at the 36th AIAA Aerospace Sciences Meeting and Exhibit, Jan. 12-15, 1998, Reno, NV.
- C14: Liu, F., Jennions, I.K., and Jameson, A., "Computation of Turbomachinery Flow by a Convective-Upwind-Split-Pressure (CUSP) Scheme," AIAA Paper 98-0969, presented at the 36th AIAA Aerospace Sciences Meeting and Exhibit, Jan. 12-15, 1998, Reno, NV.
- C15: Ji, S. and Liu, F. "Computation of Flutter of Turbomachinery Cascades Using a Parallel Unsteady Navier-Stokes Code," ASME 98-GT-043, presented at the ASME TURBO'98, June 2-5, 1998, Stockholm, Sweden.
- C16: Sadeghi, M. and Liu, F., "A Method for Calculating Mistuning Effects on Cascade Flutter," Proceedings of the 8-th International Symposium on Computational Fluid Dynamics, Sept. 5-10, 1999, Bremen, Germany.
- C17: Sadeghi, M. and Liu, F., "Computation of Mistuning Effects on Cascade Flutter," AIAA Paper 2000-0230, presented at the 38th AIAA Aerospace Sciences Meeting and Exhibit, Jan. 10-13, 2000, Reno, NV.
- C18: Fang, X., Liu, F., and Sirignano, W.A., "Ignition and Flame Studies for an Accelerating Transonic Mixing Layer," AIAA Paper-2000-0437, presented at the 38th AIAA Aerospace Sciences Meeting and Exhibit, Jan. 10-13, 2000, Reno, NV.
- C19: Liu, F., and Sirignano, W.A., "Turbojet and Turbofan Engine Performance Increases Through Turbine Burners," AIAA Paper-2000-0741, presented at the 38th AIAA Aerospace Sciences Meeting and Exhibit, Jan. 10-13, 2000, Reno, NV.
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- C108: Xiong, J., Johnson, A., Liu, F., Papamoschou, D., "Modeling of Wedge-Shaped Porous Flaps for Jet Noise Reduction," AIAA-2011-0910, 49th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Orlando, Florida, Jan. 4-7, 2011
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