Curriculum Vitae

Hua Shan
Department of Mathematics
University of Texas at Arlington
411 South Nedderman Drive
Arlington, TX 76019-0408
Phone: 817-272-5685 Fax: 817-272-5802
E-mail: hshan@uta.edu
URL:http://www.uta.edu/faculty/hshan/home/home.html

EDUCATION

Ph.D. Fluid Mechanics, June 1997, Tsinghua University, Beijing, China.

M.S. Fluid Mechanics, June 1997, Tsinghua University, Beijing, China.

B.S. Engineering Mechanics, September 1992, Tsinghua University, Beijing, China.

RESEARCH INTERESTS

Computational Fluid Dynamics (CFD)

- Navier-Stokes solver for compressible and incompressible flows in complex geometries
- Numerical simulation of flow separation and control
- Direct numerical simulation (DNS) and large eddy simulation (LES) of transition and turbulent flow
- RANS and LES models for turbulent flows
- Multiblock structured and unstructured grid generation
- Fluid-structure interactions

Computational Hydraulics and Hydrology

- Modeling and simulation of surface and groundwater flow and scalar transport
- Modeling and simulation of reactive biogeochemical transport in surface water

Numerical Solution to Inverse Problems

- Numerical methods for three-dimensional (3D) optical tomography

Computational Rigid Body Dynamics

- Modeling and simulation of multiple impacts

Numerical Methods in General

- High-order numerical schemes
- Finite volume and finite difference method
- Finite element method
- Moving grid method
- High-performance and parallel computing

RESEARCH EXPERIENCE

August 2003 – Present

Assistant Professor

Department of Mathematics, University of Texas at Arlington

- Developing numerical algorithms solving the inverse problem for 3D optical tomography.
- Developing a finite element model for 3D optical diffusion problems.
- Developing an integrated 3D model for surface, subsurface, and overland flows and transports – BEST3D-ISGO.
- Developing an integrated 3D model for surface and groundwater flows, salinity and temperature transport – BEST3D-ISG.
- Developing a 3D surface water hydrodynamic, salinity, temperature, sediment, and reactive biogeochemical transport model – BEST3D 2.0.
- Developing a 3D reaction-based surface water quality model (BEST3D 1.5) using the finite element method.
- Solving surface water transport equations and groundwater flows with a mixed Lagrangian-Eulerian approach (a combination of the particle tracking and the finite element method).
- DNS/LES of flow separation and transition in a subsonic flow over airfoils.
- DNS of flow separation control with passive and active vortex generators.
- Developing a 3D computational dynamics model to simulate the multiple impacts of falling rigid bodies.
- Conducting numerical simulation of tumbling-box test for model cell phones.
- Statistical analysis of the hydrological field data in the Loxahatchee River of Florida.
- Conducting numerical simulation to study the fluid-structure interaction for a maneuvering submarine.

July 2004 – August 2004

Summer Visiting Scholar

National Institute of Aerospace, Hampton, VA

- Improving the LU-SGS method for a supersonic flow solver.

October 2001 – July 2003

Visiting Research Assistant Professor

Department of Civil and Environmental Engineering, University of Central Florida

- Developing a 3D finite element model with moving grid method for free surface water flows in reservoir, estuary, and coastal water bodies.
- Improving a 3D particle-tracking algorithm for moving mesh.
- Hydrodynamics and sediment transport modeling in a watershed system of stream-river network, overland regime, and subsurface media.

- Modeling the time variations of stage and water temperature in storage reservoirs under different pumping, seepage/infiltration, and meteorological conditions.
- Conducting numerical simulations of different water management scenarios for the reservoir and canal systems in the North Palm Beach County of Florida.

October 2000 – October 2001

Visiting Assistant Professor

Department of Mathematics, University of Texas at Arlington

- Developing a 3D implicit/explicit parallel Navier-Stokes solver for DNS and LES of compressible flows using the compact finite difference scheme.
- Conducting DNS of flow separation around NACA 0012 airfoils at large angles of attack.
- DNS of flow around a slender delta wing with sharp leading edge at a large angle of attack.
- Developing the high-order weighted compact scheme for nonlinear hyperbolic equations with discontinuous solutions.
- Developing numerical grid generation algorithms for 3D multi-block meshes.

December 1997 - September 2000

Post-doctoral Research Associate

Center for Numerical Simulation and Modeling (CNSM), Louisiana Tech University

- Developing a high-order explicit Navier-Stokes solver for DNS/LES of supersonic flows.
- Conducting numerical simulation of the leading edge receptivity to free-stream acoustic and vortical disturbance in the boundary layer of a flat-plate and a Joukowsky airfoil.
- Conducting LES of the oblique transition in the compressible boundary layer flow over a flat-plate at Mach 4.5.
- Testing and evaluating different subgrid models for flow transition in boundary layer.
- Developing an elliptic numerical grid generation code for 2D and 3D complex geometries.
- Post-processing of DNS/LES data and flow visualization.

September 1995 - September 1996

Exchange Ph.D. Student

J.M. Burgers Center for Fluid Mechanics, Delft University of Technology, Delft, the Netherlands

- Conducting DNS of two types of the localized turbulent regions in the pipe flow using the spectral element method.
- Investigating the laminar-turbulent transition excited by wall disturbances in a cylindrical pipe flow.

September 1992 - June 1995

Ph.D. Student, Graduate Teaching Assistant

Department of Engineering Mechanics, Tsinghua University, Beijing, China

- Developing a DNS computer code using the spectral method.
- Applying linear stability analysis to cylindrical pipe flow.
- Conducting an experimental investigation of the coherent structures of turbulent flow in curved channel using the Particle Tracking Velocimetry (PTV) method.
- Conducting an experimental study of turbulent fluctuations in curved and straight channel flows using a Laser Doppler Velocimetry (LDV) system.
- Wavelet analysis of turbulent flow data.

TEACHING EXPERIENCE

August 2003 – Present

Assistant Professor

Department of Mathematics, University of Texas at Arlington

Undergraduate courses:

- Calculus I (MATH 1426, Fa2003, Sp2004, Fa2004, Sp2005, Fa2005, Sp2006, Fa2006, Sp2007, Fa2007, Sp2008, Fa2008)
- Mathematics for Economic & Business Analysis (MATH 1316, Fa2008)

Graduate courses:

- Finite Element Method (MATH 5392, Fa2004, Fa2006, Fa2007)
- Numerical Analysis I (MATH 5338, Fa2005)
- Introduction to Parallel Computing (MATH 5392, Sp2006)
- Computational Dynamics (MATH 5392, Sp2005)
- Numerical Method for Engineering Applications (MATH 5391, Sp2006)
- Numerical Method for Solving Euler Equations (MATH 5391, Summer2007)

November 2001 – August 2003

Visiting Research Assistant Professor

Department of Civil and Environmental Engineering, University of Central Florida

Undergraduate course:

- Fluid Mechanics (CWR 3201)

Graduate course:

- Hydraulic Engineering (CWR 5205)

October 2000 – October 2001

Visiting Assistant Professor

Department of Mathematics, University of Texas at Arlington

Undergraduate course:

- College Algebra (MATH 1302, two sections)

September 1999 - September 2000

Research Associate

Department of Mathematics and Statistics, Louisiana Tech University

Undergraduate courses:

- Analytic Geometry & Calculus I (MATH 230)
- Analytic Geometry & Calculus II (MATH 231)
- Analytic Geometry &Calculus III (MATH 231)

September 1993 - June 1995

Ph.D. Student, Graduate Teaching Assistant

Department of Engineering Mechanics, Tsinghua University, Beijing, China

Undergraduate courses:

- Programming with C Language.

GRADUATE STUDENT SUPERVISED

Master's Students

Jianchun Zhang November 2006

"A statistical study and analysis of the hydrological character of the Loxahatchee River in Florida"

Shuang Ji May 2007

"Finite element solution to two-dimensional optical diffusion equation"

Amith Kalaghatagi July 2007

"Solution of unsteady Euler equations in generalized curvilinear coordinates using flux vector splitting"

GRADUATE STUDENT COMMITTEES

Ph.D. Students

Jiangang Cai November 2006

Dionisio Laeber Fleitas June 2005

Shutian Deng May 2005

William Harper Morris August 2004

Natee Pantong

Maria Luisa Oliveira

Mehmet Ali Akinlar

Humberto Perez-Gonzales

Stephen T. Salako

Venkata S Dronamraju (Civil and Environmental Engineering)

Gilberto Moreno (Mechanical & Aerospace Engineering)

Jennifer D. Goss (Mechanical & Aerospace Engineering)

Master's Students

Natee Pantong	August 2007
Sompoom Meechowna	November 2004
Nathan Nguyen Dong	November 2004

UNIVERSITY AND DEPARTMENT SERVICE

University

- Member. Traffic and Parking Appeals Panel (2006-2008)

Department of Mathematics

- Member. Graduate Affairs Committee (2005-2007)
- Member. Advisory Committee (2006-2008)
- Organizer. Applied Mathematics Seminar (2006-2008)

HONORS AND AWARDS

- Research Excellence Award, Office of the Provost and Vice President for Academic Affairs, University of Texas at Arlington, 2008
- Research Excellence Award, Office of the Provost and Vice President for Academic Affairs, University of Texas at Arlington, 2007
- Research Excellence Award, Office of the Provost and Vice President for Academic Affairs, University of Texas at Arlington, 2006
- National Science and Technology Improvement Award (Third Grade), China, 1995
- "Kuang Hua" Award (First Grade), Tsinghua University, Beijing, China, 1994
- "Kuang Hua" Award (First Grade), Tsinghua University, Beijing, China, 1993
- Excellent Graduate Student, Tsinghua University, Beijing, China, 1992

FUNDED GRANTS AND CONTRACTS

1. "Computational Optical Tomography for Anti-stroke Therapy (R21/R33)," National Institutes of Health (NIH), $1,063,798, 06/01/07 – 04/30/11, Co-PI.
2. "AIMS' Seventh International Conference on Dynamical Systems and Differential Equations," NSF, $25,000, 04/01/08 – 03/31/09, Co-PI.
3. "Improvement of BEST3D-ISG for Floodplain Habitat Hydroperiod in Northwest Fork of Loxahatchee River," South Florida Water Management District (SFWMD), $26,000, 02/01/07 – 09/30/07, PI.
4. "A Mixed Lagrangian-Eulerian and Finite Element Approach to Model 3D Subsurface Variably Saturated Flows," U.S. Army Corps of Engineers (subcontracted through University of Central Florida). $25,000, 12/01/06 – 02/28/07, PI.
5. "Development of a 3D Surface and Groundwater Coupling Hydrodynamic Model for the Loxahatchee River Estuary of Florida. – Part II. Surface Water Quality Model (BEST3D 2.0)," South Florida Water Management District (SFWMD) and Florida Department of Environmental Protection (FDEP) (subcontracted through University of Central Florida), $30,000, 10/01/06 - 12/31/06, PI.

6. "Numerical Simulation of Flow Separation Control over NACA0012 Airfoil with Active Vortex Generators," Lockheed Martin Aeronautics Company, $35,000, 04/01/05 –12/31/05, PI.
7. "Development of a 3D Surface and Groundwater Coupling Hydrodynamic Model for the Loxahatchee River Estuary of Florida. – Part I. Hydrodynamic Model (BEST3D-ISG)," South Florida Water Management District (SFWMD) (subcontracted from University of Central Florida), $70,716, 11/01/04 - 09/30/06, PI.
8. "Numerical Simulation of Flow Field behind the Active Vortex Generators," Lockheed Martin Aeronautics Company, $30,000, 06/14/04 –12/03/04, PI.
9. "Modeling and Simulation of Tumbling Impact," Nokia, $25,000, 10/01/04 – 9/30/05, Co-PI.
10. "Simulation of Dynamics of Falling Electronic Devices," Nokia, $25,000, 10/01/03– 9/30/04, Co-PI.
11. "Development of an Integrated Reservoir-Groundwater Model for Wekia Spring Shed," Florida Department of Transportation, 09/05/2003 – 09/12/2003, Consultant.

PENDING PROPOSALS

1. "DNS/LES of Laminar-Turbulent Transition over Supersonic Cone at Incidence," National Science Foundation (NSF), 06/01/09 – 05/31/12, $239,000, PI.
2. "Transrectal Imaging of Prostate Cancer Using a Globally Convergent Method," National Institutes of Health (NIH), 04/01/09 – 03/31/13, $1,369,667, Co-PI.

PUBLICATIONS

Peer Reviewed Journals:

1. Pantong, N., Su,J., Shan,H., Klibanov,M.V., and Liu, H. 2009. "Globally accelerated reconstruction algorithm for diffusion tomography with continuous-wave source in an arbitrary convex shape domain," to appear J. Opt. Soc. Am. A.
2. Shan, H., Klibanov, M.V., Su, J., Pantong, N., and Liu, H. 2008. "A globally accelerated numerical method for optical tomography with continuous wave source," to appear Journal of Inverse and Ill-Posed Problems.
3. Shan, H., Klibanov, M. V., Liu, H., Pantong, N., and Su, J. 2008. "A globally convergent convexification algorithm for an inverse elliptic problem," Inverse Problems 24, 025006.
4. Shan, H., Yeh, G.T., Hu, G., Wu, T.S. 2008. "An integrated model for flow and transport in surface water, groundwater, and overland regimes," Journal of Coastal Research Special Issue 52, 95-106.
5. Shan, H., Jiang, L., Liu, C., Love, M, and Maines, B. 2008. "Numerical study of passive and active flow separation control over a NACA0012 airfoil," Computers and Fluids 37, 975-992.
6. Shan, H. 2007. "Numerical simulation of flow behind active vortex generators with direct forcing immersed boundary method," International Journal of Computational Fluid Dynamics 21(1), 49-60.
7. Shan, H., Su, J., Zhu, J., and Xu, L. 2007. "Three dimensional modeling and simulation of a falling electronic device," ASME J. Computational and Nonlinear Dynamics 2(1), 22-31.

8. Su., J., Shan, H., Liu, H., Klibanov, M. 2006. "Reconstruction method with data from a multiple-site continuous-wave source for three-dimensional optical tomography," J. Opt. Soc. Am. A. 23(10), 2388-2395.
9. Shan, H., Su, J., Badiu, F., Zhu, J., and Xu, L. 2006. "Modeling and simulation of multiple impacts of falling rigid bodies," Mathematical and Computer Modeling 43, 592-611.
10. Badiu, F., Su, J., Shan, H., Zhu, J., and Xu, L. 2005. "An analysis of clattering impacts of a falling rod," Nonlinear Dynamics and System Theory 6(1), 49-62.
11. Shan, H., Jiang, L., and Liu, C. 2005. "Direct numerical simulation of flow separation around a NACA 0012 airfoil," Computers and Fluid 34, 1096-1114.
12. Shan, H., Yeh, G.T. 2004. "A three-dimensional finite element model for free surface flows," Computational Fluid Dynamics Journal 13 (3), 552-560.
13. Jiang, L., Shan, H., and Liu, C. 2001. "Weighted compact scheme for shock capturing," International Journal of Computational Fluid Dynamics 15, 147 155.
14. Shan, H., Jiang, L., and Liu, C. 2000. "Numerical investigation of compressible separated flow around an NACA 0012 airfoil at 12 angle of attack," Computational Fluid Dynamics Journal 9(2), 96-104.
15. Shan, H., Ma, B., Zhang, Z and Nieuwstadt, F. T. M. 1999. "Direct numerical simulation of a puff and slug in transitional cylindrical pipe flow," Journal of Fluid Mechanics 387, 39-60.
16. Shan, H., Jiang, L., and Liu, C. 1999. "Large eddy simulation of flow transition in a compressible flat-plate boundary layer at Mach number 4.5," International Journal of Computational Fluid Dynamics 13, 25-41.
17. Shan, H., Jiang, L., and Liu, C. 1999. "Study of flow transition in a supersonic flat-plate boundary layer: Large eddy simulation and validation," Computational Fluid Dynamics Journal 8(2), 208-219.
18. Jiang, L., Shan, H., and Liu, C. 1999. "Direct numerical simulation of leading edge receptivity in a flat-plate boundary layer," Computational Fluid Dynamics Journal 8(3), 470-480.
19. Shan, H., Zhang, Z., and Nieuwstadt, F. T. M. 1999. "Direct numerical simulation of transition in pipe flow under the influence of wall disturbances," International Journal of Heat and Fluid Flow 19, 320-325.
20. Shan, H., Zhang, Z. S., and Nieuwstadt, F. T. M. 1998. "Direct numerical simulation of the rough pipe transition," Communications in Nonlinear Science & Numerical Simulation 2(1), 43-49.
21. Wang, J. L., Zhang, Z. S., and Shan, H. 1996. "Measurements of effect of longitudinal vortices on turbulent flow near wall with LDV method," ACTA Mechanica Sinica 28(3), 381-384. (in Chinese)
22. Shan, H., Wang, J. L., Liu, X. F. and Shen, X. 1996. "Correlation measurement of turbulent fluctuations in a curved channel using a two-point LDV system," ACTA Mechanica Sinica 28(5), 597-602. (in Chinese)
23. Zhang, Z. S., Huang, W. D., and Shan, H. 1993. "Particle tracking methods for measurements of turbulent properties in curved channel," Appl. Sci. Research 51, 249-254.

Peer Reviewed Publications/Presentations at Scholarly Conferences:

1. Shan, H. 2008. "A fully integrated finite element hydrodynamic model for coastal regions," 7th AIMS Conference on Dynamical Systems, Differential Equations and Applications, May 18-21, Arlington, Texas.
2. Yeh, G.T. and Shan, H. 2008. "A mixed Lagrangian-Eulerian and finite element approach to modeling variably saturated flows in three dimensions," World Environmental & Water Resources Congress, May 12-16, Honolulu, Hawaii.
3. Shan, H., Yeh, G.T., Hu, G., Wu, T.S. 2007. "On the framework of the integrated surface, subsurface, and overland model for flow and transport," The 10th International Conference on Estuarine and Coastal Modeling (ECM 10), November 3-7, Newport, Rhode Island.
4. Wu, T.S., Shan, H., Yeh, G.T., Hu, G., 2007. "Computational modeling of moving boundaries in a 3D surface water model," The 10th International Conference on Estuarine and Coastal Modeling (ECM 10), November 3-7, Newport, Rhode Island.
5. Yeh, G.T., Shan, H. Hu, G., Wu, T.S. 2007. "An integrated model of hydrodynamics and water quality transport," The 10th International Conference on Estuarine and Coastal Modeling (ECM 10), November 3-7, Newport, Rhode Island.
6. Shan, H., Yeh, G.T., Hu, G., Wu ,T.S. 2007. "An integrated model for flow and transport in surface, water, groundwater, and overland regimes," The 9-th International Symposium on Fluid Control, Measurement and Visualization (FLUCOME 2007), September 16-19, Tallahassee, Florida.
7. Yeh, G.T., Shan, H., Wanielista, M., Hu, G., and Wu, T.S. 2007. "BEST3D-ISG: A bay/estuary model to simulate hydrodynamics and thermal and salinity transport in 3-dimension: an integrated surface water and groundwater model," World Environmental & Water Resources Congress 2007, May 15-19, Tampa, Florida.
8. Yeh, G.T., Shan, H., Hu, G., Wu ,T.S. 2006. "BEST3D: A numerical hydrodynamics and water quality model: Part I – Hydrodynamics," The 7th International Conference on Hydroscience and Engineering (ICHE-2006), September 10-13, Philadelphia, Pennsylvania.
9. Yeh, G.T., Shan, H., Zhang, F, Hu, G., Wu ,T.S. 2006. "BEST3D: A numerical hydrodynamics and water quality model: Part II – Water quality," The 7th International Conference on Hydroscience and Engineering (ICHE-2006), September 10-13, Philadelphia, Pennsylvania.
10. Shan, H., Yeh, G.T. 2006. "A bay/estuary model to simulate hydrodynamics and water quality transport. Part 1: Hydrodynamics," CMWR XVI - Computational Methods in Water Resources, June 19-22, Copenhagen, Denmark.
11. Yeh, G.T., Shan, H., Hu, G., and Wu, T.S. 2006. "An integrated three-dimensional surface water and groundwater model to simulate hydrodynamics and thermal and salinity transport" (invited paper), Joint Federal Interagency Conferences – 3rd Federal Interagency Hydrologic Modeling Conference and 8th Federal Interagency Sedimentation Conference, April 2-4, Reno, Nevada.
12. Yeh, G.T., Shan, H., Wanielista, M., Hu, G., and Wu, T.S. 2006. "Loxahatchee river integrated surface and groundwater model," Stormwater Management Academy – The 2nd Research Symposium, May 4-5, Orlando, Florida.
13. Shan, H., Jiang, L., Liu, C., Love, M, and Maines, B. 2005. "Numerical simulation of time-dependent flow behind a pair of active vortex generators," AIAA Paper 2005-5018, 35th AIAA Fluid Dynamics Conference and Exhibit, June 6-9, Toronto, Ontario.

14. Deng, S., Cai, J., Shan, H., and Liu, C. 2005. "DNS for K- and H-type flow transition over a flat plate," AIAA Paper 2005-0666, 43rd AIAA Aerospace Sciences Meeting and Exhibit, Jan. 10-13, Reno, Nevada.
15. Shan, H., Zhang, F., Yeh, G.T., Hu, G., and Wu, T. 2004. "An integrated surface water and groundwater model of fluid flow and thermal, salinity, sediment and reactive biogeochemical transport," American Geophysical Union Fall Meeting, Dec 13-17, San Francisco, California.
16. Shan, H., Su, J., Badiu, F., Zhu, J., and Xu, L. 2004. "Multiple impact dynamics of a falling rod and its numerical solution," The 8th International Conference on Integral Methods in Science and Engineering (IMSE 2004), August 2-4, Orlando, Florida.
17. Deng, S., Shan, H., and Liu. C. 2004. "Direct numerical simulation of flow transition over a flat plate," AIAA Paper 2004-0590, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Jan. 5-8, Reno, Nevada.
18. Cai, J., Deng, S. Shan, H., and Liu. C. 2004. "Large eddy simulation of tip vortex flow at high Reynolds number," AIAA Paper 2004-0262, 42nd AIAA Aerospace Sciences Meeting and Exhibit, Jan. 5-8, Reno, Nevada.
19. Shan, H., Yeh, G.T. and, Hu. G. 2003. "Three-dimensional hydrodynamic modeling of Loxahatchee River and Estuary," 8th International Conference on Estuarine and Coastal Modeling. November 3-5, Monterey, California.
20. Shan, H., and Yeh, G.T. 2002. "Modeling three-dimensional free surface flow," American Geophysical Union Spring Meeting, May 28-31, 2002, Washington, DC.
21. Shan, H., Jiang, L., and Liu, C. 2001. "Numerical simulation of complex flow around a 85 delta wing," Proceedings of the Third AFOSR (Air Force Office of Scientific Office) International Conference on DNS/LES, August 5-9, Arlington, Texas
22. Jiang, L., Shan, H., and Liu, C. 2001. "Weighted compact scheme," Proceedings of the Third AFOSR (Air Force Office of Scientific Office) International Conference on DNS/LES, August 5-9, Arlington, Texas.
23. Shan, H., Jiang, L., and Liu, C. 2000. "Direct numerical simulation of three-dimensional flow around a delta wing," AIAA Paper 2000-0402, 38th AIAA Aerospace Sciences Meeting and Exhibit, January 10-13, Reno Nevada.
24. Jiang, L. Shan, H., and Liu, C. 1999. "Direct numerical simulation of boundary-layer receptivity for subsonic flow around airfoil," Proceedings of the Second AFOSR (Air Force Office of Scientific Office) International Conference on DNS/LES, June 7-9, Rutgers, New Jersey.
25. Jiang, L., Shan, H., and Liu, C. 1999. "Non-reflecting boundary conditions for DNS in curvilinear coordinates," Proceedings of the Second AFOSR (Air Force Office of Scientific Office) International Conference on DNS/LES, June 7-9, Rutgers, New Jersey.
26. Shan, H., Jiang, L., Zhao, W. and Liu, C. 1999. "Large eddy simulation of flow transition in a supersonic flat-plate boundary layer," AIAA Paper 99-0425, 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, Reno Nevada.
27. Shan, H., Jiang, L., Sun, S., Liu, G. and Liu, C. 1998. "Large eddy simulation of flow transition in a supersonic flat-plate boundary layer," MHPCC Application Briefs, 9.
28. Shan, H., and Zhang, Z. S. 1997. "Direct numerical simulation of the evolution of a forced disturbance in a cylindrical pipe flow," Proceedings of the 5th National Conference on Turbulence and Flow Instability AND the 2nd National Conference on Industrial Turbulence and Flow Simulation. (in Chinese).

29. Shan, H., and Zhang, Z. S. 1997. "Direct numerical simulation of transition flow in the rough pipe," Proceedings of the 5th National Conference on Turbulence and Flow Instability AND the 2nd National Conference on Industrial Turbulence and Flow Simulation. (in Chinese).
30. Nieuwstadt, F. T. M., Shan, H., and Zhang, Z. S. 1997. "Direct numerical simulation of a puff and slug in transitional pipe flow,"(Invited Paper) Advances in DNS/LES, Proceeding of the First AFOSR (Air Force Office of Scientific Office) International Conference on DNS/LES. Ruston, Louisiana, August 4-8. Ed. By C. Liu, Z. Liu, and L. Sakell., 51-56.
31. Zhang, Z. S., and Shan, H. 1996. "Structure of turbulent flow over curved walls," The Recent Development in Turbulence Research, Proceedings of Sino-Japan Workshop of Turbulent Flow, Ed. by Z. S. Zhang, & Y. Miyake, International Academic Publishers, Beijing. 343-358.
32. Shan, H., Zhang, Z. S., and Nieuwstadt, F. T. M. 1996. "Direct numerical simulation of the transition in pipe flows," Proceedings of the 2nd Sino-Japan Workshop on Turbulent Flow.
33. Shan, H., Wang, J.L., Liu, X. F. and Shen, X. 1994. "Coherent measurement of turbulent fluctuations in a curved channel using a two-point LDV system". Modern Techniques and Measurements in Fluid Flow, Proceedings of the 2nd International Conference on Fluid Dynamic Measurement and Its Application, Ed. by X. Shen & X. J. Sun. International Academic Publishers, Beijing. 107-111.
34. Zhang, Z. S., Xu, C. X., and Shan, H. 1994. "The dynamical characteristics of instability in channel flow". Proceedings of the 4th National Conference on Turbulence and Flow Instability, 304-305 (in Chinese).
35. Zhang, Z. S., Shan, H., and Huang, W. D. 1993. "Measurements of turbulence in a curved channel by the particle tracking method". Near-Wall Turbulence, Ed. by R. M. C. So, C. G. Speziale and B. E. Launder, Elsevier & Science Publishers B. V, 649-655.

Technical Reports:

1. Shan, H., L. Jiang, and Yeh, G. T. 2007. "Development of BEST3D-ISGO for Floodplain Habitat Hydroperiod in Northwest Fork of Loxahatchee River," Technical Report, South Florida Water Management District (SFWMD).
2. Yeh, G.T. and Shan, H. 2006. "Loxahatchee River Integrated Surface Water Hydrodynamics and Water Quality Model," Technical Report, Florida Department of Environmental Protection under DEP Agreement No. S0133.
3. Yeh, G.T. and Shan, H. 2006. "Loxahatchee River Three-Dimensional Integrated Surface and Groundwater Model - Deliverable Report No. 3.3 Calibration and Verification using 3DISG," Technical Report, South Florida Water Management District (SFWMD) under SFWMD Agreement No. C-C11704A and Florida Department of Environmental Protection under DEP Agreement No. S0133.
4. Yeh, G. T. and Shan, H. 2005. "Loxahatchee River Three-Dimensional Integrated Surface and Groundwater Model - Deliverable Report No. 2.2 Preliminary Model Installation and Model Demonstration," Technical Report, South Florida Water Management District (SFWMD) under SFWMD Agreement No. C-C11704A and Florida Department of Environmental Protection under DEP Agreement No. S0133.

5. Shan, H., Jiang, L., Liu, C. 2005. "Numerical Study of Flow Separation Control over a NACA 0012 Airfoil," Technical Report, Lockheed Martin Aeronautics Company.
6. Su, J., Shan, H., F. Badiu, 2005. "Modeling and Simulation of Tumbling Impact," Technical Report, Nokia.
7. Shan, H., Jiang, L., Liu, C. 2004. "Numerical Simulation of Flow Control with Dynamic Vortex Generator," Technical Report, Lockheed Martin Aeronautics Company.
8. Su, J., Shan, H., F. Badiu, 2004. "Simulation of Dynamics of Falling Electronic Devices," Technical Report, Nokia.
9. Yeh, G. T. and Shan, H. 2003. "BEST3D: A Bay and Estuary Model for Simulating Hydrodynamics and Thermal, Salinity, Sediment, and Water Quality Transport in 3-Dimensions," Technical Report, Dept. of Civil and Environmental Engineering, University of Central Florida.
10. Wanielista, M., Milon, W., Shan, H., Nnadi, O., Finnoff, D., and Yeh, G. 2003. "Evaluation of the storage value of reservoirs in south Florida," Technical Report, Florida Department of Environmental Protection.
11. Liu, C., Shan, H., and Jiang, L. 2000. "Parallel DNS/LES for compressible flow around 2D and 3D airfoils," Technical Report, AFOSR Grant No. F49620-99-1-0042.
12. Liu, C., Jiang, L., and Shan, H. 2000. "Boundary conditions in curvilinear coordinates for DNS of turbulent flow". Technical Report, AFOSR Contract No. F49620-93-C-0063
13. Liu, C., Shan, H., and Jiang, L. 1999. "Direct numerical simulation of separated flow around NACA 0012 airfoil," Technical Report, NASA Grant No. NAG-1-2136.
14. Liu, C., Shan, H., and Jiang, L. 1999. "Parallel implicit multigrid method for direct numerical simulation of time-dependent compressible turbulent flow around flight vehicles," Technical Report, AFOSR Grant No. F49620-97-1-0033.

REVIEW ASSIGNMENTS

Reviewer for journals:

- Journal of Mathematical Analysis and Applications
- Computers and Mathematics with Applications
- Applied Mathematics Letters
- Mathematical and Computer Modelling
- Estuarine, Coastal and Shelf Science
- Aerospace Science and Technology
- ASCE Journal of Engineering Mechanics
- Optics Express

Reviewer for conferences:

- The 10th International Conference on Estuarine and Coastal Modeling
- ASME International Mechanical Engineering Congress and Exposition
- The 3rd AFOSR International Conference on DNS/LES

OTHER SYNERGISTIC ACTIVITIES

- Member of Organizing Committee: The 7th AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, Texas, May 18-21, 2008.
- Training workshop lecturer. BEST3D 2.0 – an integrated model for surface water hydrodynamics, sediment and reactive biogeochemical transport. Florida Department of Environmental Protection (FDEP), Tallahassee, Florida, January 4 -5, 2007.
- Invited paper, coauthored with Yeh, G.T., Hu, G., and Wu, T.S. The Joint Federal Interagency Conferences – 3rd Federal Interagency Hydrologic Modeling Conference and 8th Federal Interagency Sedimentation Conference, Reno, Nevada, April 2-4, 2006.
- Invited speaker. The 3rd AFOSR International Conference on DNS/LES, Arlington, Texas, August 5-9, 2001.
- Member of Paper Review Committee: The 3rd AFOSR International Conference on DNS/LES, Arlington, Texas, August 5-9, 2001

COLLABORATORS

Drs. Jianzhong Su, Li Jiang, and Chaoqun Liu (Dept. of Mathematics, University of Texas at Arlington)

Dr. Hanli Liu (Dept. of Biomedical Engineering, University of Texas at Arlington)

Dr. Yuanbo Peng (Dept. of Psychology, University of Texas at Arlington)

Dr. Anand. Puppala, (Dept. of Civil and Environmental Engineering, University of Texas at Arlington)

Drs. Gour-Tsyh Yeh and Martin Wanielista (Dept. of Civil and Environmental Engineering, University of Central Florida)

Dr. Gordon Hu (South Florida Water Management District)

Dr. Tien-Shuenn Wu (Florida Department of Environmental Protection)

Dr. Michael Kilbanov (Dept. of Mathematics, University of North Carolina at Charlotte)

Dr. Chao-Ho Sung (Naval Surface Warfare Center)

Dr. Meelan Choudhari (NASA Langley Research Center)

Drs. Michael Love and Brant Maines (Lockheed Martin Aeronautics Company)

Drs. Jiansen Zhu and Leon Xu (Nokia Research Center)