

Curriculum Vitae of Dr. Chunlei Liang

Present position

Assistant Professor, Department of Mechanical and Aerospace Engineering, George Washington University, September 2010-present <http://www.seas.gwu.edu/~chliang>

Education

Xi'an Jiaotong University, (1996-2000) B.Sc., Thermal Energy Engineering; Minor in English.

University of London, UK, Ph.D., Mechanical Engineering, 2005 PhD thesis: Large Eddy Simulation of Turbulent Flow and Heat Transfer in Tube bundles. Supervised by Dr. George Papadakis and Prof. Michael Yianneskis.

Visiting Student and Postdoc Reserach Associate, Institute for Hydromechanics, University of Karlsruhe, Germany, 2004-2005. Funded by German Research Foundation. Advised by Prof. Wolfgang Rodi

Postdoctoral Training

Visiting postdoc research scholar, Department of Aerospace Engineering, Iowa State University, Iowa, 2005-2006. Funded by Air Force. Advised by Prof. Zhijian Wang

Postdoc research fellow, Department of Mathematics, University of Glasgow, U.K., 2006-2007. Funded by British Heart Foundation. Advised by Prof. Xiaoyu Luo and Dr. Boyce Griffith

Postdoc research fellow, Department of Aeronautics and Astronautics, Stanford University, California, 2007-2009. Funded by NSF. Advised by Prof. Antony Jameson

Research and Professional Experience

Engineering Research Associate, Center for Turbulence Research, Stanford University, California, 2009-2010. Funded by DOE PSAAP, and NASA. Advised by Prof. Parviz Moin

Awards and Honors

Oak Ridge Associated Universities (ORAU) Ralph E. Powe Junior Faculty Enhancement Award, 2012-2013.

Editorial board member of Computers and Fluids, an Elsevier journal

JSPS invitation fellowship for short-term research in Japan, 2012.

EPSRC PhD Studentship, UK (2001-2004).

“Overseas Research Student” (ORS) Award, Universities UK (2002-2004).

Microsoft Certified System Engineer (MCSE) since April 2000.

Xi'an Jiaotong University Scholarships, 1996-97, 1997-98, 1999-2000.

Research Grant/Awards

PI of an Office of Naval Research (ONR) three-year research grant at US\$120,000 with award no. N000141210500.

PI of GW University Facilitating Fund, 2012-2013. Total funding amount is US\$25,000.

Oak Ridge Associated Universities (ORAU) Ralph E. Powe Junior Faculty Enhancement Award, 2012-2013. Total funding amount is US\$10,000.

Winner of the 2011-2012 Interdisciplinary Research Fund Competition of GW Institute for Biomedical Engineering. Total funding amount is US\$10,000.

Journal and Technical Publications

1. J. Chen, C. Liang and J. D. Lee (2012) Spectral difference method for compressible unsteady micropolar fluid flow, in press, Computers and Fluids.
2. X.Y. Luo, B.E. Griffith, X.S. Ma, M. Yin, T.J. Wang, Chunlei Liang, P.Watton & G.M. Bernacca (2012) Bending Effect of a Mitral Prosthesis During a Dynamic Cycle, in press, Biomechanics and Modeling in Mechanobiology.
3. C. Liang, A. S. Chan, and A. Jameson (2011) A p-multigrid spectral difference method for solving unsteady incompressible Navier-Stokes equations. Vol 51, pp 127-135, Computers and Fluids.
4. J. Chen and J. D. Lee and C. Liang (2011) Constitutive Equations of Micropolar Electromagnetic Fluids, Volume 166, pp. 867-874, Journal of Non-Newtonian Fluid Mechanics.
5. J. Chen, C. Liang and J. Lee (2011) Theory and Simulation of Micropolar Fluid Dynamics, Journal of Nanoengineering and Nanosystems, Vol. 224, 31-40, 2011.
6. E. Konstantinidis and C. Liang (2011) Dynamic response of a turbulent cylinder wake to sinusoidal inflow perturbations across the vortex lock-on range, Vol 23, 075102, Physics of Fluids. This paper is in the list of most downloaded articles of this journal.
7. A. Chan, P. Dewey, Antony Jameson, C. Liang and A. Smits (2011), Vortex suppression and drag reduction in the wake of counter-rotating cylinders, Journal of Fluid Mechanics, Vol 679, pp. 343-382.
8. C. Liang, K. Ou, S. Premasathan, A. Jameson and Z. J.Wang. High-order accurate simulations of unsteady flow past plunging and pitching airfoils. Computers and Fluids, Vol 40, Issue 1, 2011, pages 236-248.
9. A. H. Mohammad, Z. J. Wang and C. Liang. LES of turbulent flow past a cylinder using spectral difference method. Advances in Applied Mathematics and Mechanics, 2010, vol 2, pp. 451-466.
10. C. Liang, G. Papadakis and X. Y. Luo. Effect of tube spacing on the vortex shedding characteristics of laminar flow past an inline tube array; a numerical study. Computers and Fluids, 38:950-964,2009. This paper is in the list of most downloaded articles of this journal.
11. C. Liang, A. Jameson and Z. J. Wang. Spectral Difference method for two-dimensional compressible flow on unstructured grids with mixed elements. Journal of Computational Physics, vol 228, pp 2847-2858, 2009.

12. C. Liang, S. Premasathan and A. Jameson. High-order accurate simulation of flow past two side-by-side cylinders with Spectral Difference method. *Computers and Structures*, vol 87, pp. 812-817, 2009.
13. C. Liang, R. Kannan and Z. J. Wang. A p-Multigrid Spectral Difference Method with explicit and implicit smoothers on unstructured triangular grids. *Computers and Fluids*, 38:254-265,2009.
This paper is in the list of most cited articles of this journal.
14. C. Liang and G. Papadakis. Large Eddy Simulation of Flow over a Staggered Tube Bundle. *Journal of Fluids and Structures*, 23:1215-1230, 2007.
This paper is in the list of most downloaded articles of this journal.
15. C. Liang and G. Papadakis. Large Eddy Simulation of Pulsating Flow over a circular Cylinder at Subcritical Reynolds Number. *Computers and Fluids*, 36:299-312, 2007.
This paper is in the list of most downloaded articles of this journal.
16. V. Olshevsky, C. Liang, F. Ham, N. Mansour and A. Kosovichev, Turbulent convection and differential rotation in spherical shells. *Annual Research Briefs, Center for Turbulence Research, Stanford*, 2010.
17. C. Liang, F. Ham, E. Johnsen, Discontinuous Galerkin method with WENO limiter for flows with discontinuity. *Annual Research Briefs, Center for Turbulence Research, Stanford*, 2009.

Conference presentations

1. C. Liang, W. Li, K.-F. Wong and C. Yuan, "Extracting Temporal Events from Hong Kong Financial News", In *Proceedings 19th International Conference on Computer Processing on Oriental Languages (ICCPOL01)*, Seoul, Korea, May 14-16 2001, pp 47-52.
2. C. Liang and G. Papadakis. A study of kinetic energy conserving scheme using finite volume collocated grid for LES of a channel flow *Proceedings of the fourth International Conference on Fluid Mechanics*, Dalian, China, 2004.
3. C. Liang, and Papadakis, G.: Large eddy simulation of cross flow over inline and staggered tube bundles. *Proceedings of the 8th International Conference on Flow-Induced Vibration*, Paris, 6-9 July 2004 pp 247-252, 2004.
4. C. Liang and G. Papadakis. Study of the Effect of Flow Pulsation on the Flow Field and Heat Transfer Over an Inline Cylinder Array Using LES. *Proceedings of the ERCOFTAC International Symposium on Engineering Turbulence Modelling and Measurements* pp. 813-822, edited by Wolfgang Rodi.
5. T. Stoesser, C. Liang, W. Rodi and G. Jirka. Large Eddy Simulation of Fully-developed Turbulent Flow Through Submerged Vegetation. *River Flow 2006*, pp. 227-234, edited by A.M. Cardoso.
6. Z. J. Wang, Yuzhi Sun, C. Liang and Y. Liu. Extension of the SD Method to Viscous Flow on Unstructured Grids, *Computational Fluid Dynamics 2006*. pp. 119-124, edited by Herman Deconinck and E. Dick.
7. S. Balabani, E. Konstantinidis, C. Liang and G. Papadakis, Numerical study of the effect of velocity perturbations on the mechanics of vortex shedding in synchronised bluff-body wakes. *BBVIV5 (5th Conference on Bluff Body Wakes and Vortex Induced Vibrations)*, Costa do Sauipe, Bahia, Brazil, 12-15 December 2007.
8. C. Liang, R. Kannan And Z. Wang, p-Multigrid Spectral Difference Method With Explicit and Implicit Smoothers On Unstructured Grids, *AIAA-2007-4326, AIAA CFD Meeting*.

9. E. Konstantinidis,, C. Liang, G. Papadakis and S. Balabani, Control of the separated flow behind a circular cylinder by flow forcing, IUTAM Symposium on Unsteady Separated flows and their control, Corfu 18-22 June 2007.
10. C. Liang, X. Y. Luo and G. Papadakis. Effect of Tube Spacing on the Vortex Shedding Characteristics of Laminar Flow Past an Inline Tube Array, ASME PVP 2008, Chicago, USA
11. S. Premasuthan, C. Liang and A. Jameson. A Spectral Difference Method for Viscous Compressible Flows With Shocks, AIAA Paper, San Antonio, 2009-3785.
12. C. Liang and F. Ham, Shock induced mixing of SF6 and air, 21st CENTURY CHALLENGES IN COMPUTATIONAL ENGINEERING and SCIENCE, An International Symposium on the occasion of the 75th Birthday of Antony Jameson, November, 2009.
13. C. Liang, S. Premasuthan, A. Jameson and Z. J. Wang. Large Eddy Simulation of Compressible Turbulent Channel Flow with Spectral Difference Method, AIAA Paper, AIAA Aerospace Science Meeting, Orlando, 2009-402
14. E. Konstantinidis and C. Liang. Dynamic response of a turbulent cylinder wake to forced excitation, ASME PVP meeting, 2009, Prague, Czech Republic.
15. K. Ou, C. Liang and A. Jameson. High-order Spectral Difference Method for the Navier-Stokes Equations on Unstructured Moving Deformable Grids, AIAA Paper, Orlando, 2010-0541.
16. P. Castonguay, C. Liang and A. Jameson. Simulation of Transitional Flow over Airfoils Using the Spectral Difference Method, AIAA Paper, Chicago, 2010-4626.
17. S. Premasuthan, C. Liang and A. Jameson. Computation of Flows with Shocks using spectral difference scheme with artificial viscosity, AIAA Paper, Orlando, 2010-1449.
18. X. Luo, B. Griffith, X.S.Ma, M.Yin, T. J. Wang, C. Liang and P. Watton. Bending effect of a thin mitral prosthesis during a dynamic cycle, 6th World Congress on Biomechanics, Singapore, 2010.
19. C. Liang, A. Chan, X. Liu and A. Jameson (2011) An artificial compressibility method for the spectral difference solution of unsteady incompressible Navier-Stokes equations on multiple grids. AIAA-2011-48. January, 2011, Orlando, FL, USA.
20. C. Liang, J. Chen, and J. D. Lee (2012), Spectral Difference Solution of Unsteady 2D Compressible Micropolar Equations on Moving and Deformable Grids, AIAA-2012-294, AIAA Aerospace Science Meeting, Nashville, TN.
21. J. Wang, C. Liang, Study of the 2D laminar flapping wing case using the Spectral Difference method, the first International Workshop on High-Order CFD Methods, Jan 2012, Nashville, TN.
22. C. Cox, C. Liang and M. Plesniak (2011), Spectral difference solution of incompressible flow over an inline tube bundle with oscillating cylinder, ASME PVP conference paper in Toronto, PVP2012-78122.

Chaired conference sessions

1. The fourth International Conference on Fluid Mechanics, Dalian, China, 2004.
2. The 47th AIAA Aerospace Sciences Meeting, Orlando, FL, 2009.
3. The 49th AIAA Aerospace Sciences Meeting, Orlando, FL, 2011.

4. The 50th AIAA Aerospace Sciences Meeting, Nashville, TN, 2012.

Invited Talks

1. 10/17/2006, MOSTLY BIOMATHEMATICS LUNCHTIME SEMINAR at Courant Institute of New York University.
Title: Large Eddy Simulation of Open Channel Flow through Emergent and Submerged Vegetation using Immersed Boundary Method. http://www.cims.nyu.edu/events/archive/fall_06.html
2. 9/11/2009, Seminars in Engineering Science, Lehigh University
Title: High-Order Spectral Difference Method For Moving Boundary Viscous Flow Problems On Unstructured Meshes http://lehighcalendar.activedatax.com/LehighU/EventList.aspx?view=EventDetails&eventidn=19764&information_id=15995&type=&rss=rss
3. 4/28/2009, Affiliates meeting, Department of Aeronautics and Astronautics, Stanford University.
4. 06/4/2010 Naval Architect & Marine Engineering department seminar at University of Michigan.
Title: High-Order Spectral Difference Method for Both Incompressible and Compressible Flow Problems On Moving Unstructured Meshes
5. 10/18/2011 Applied and Computational Mathematics Seminar, National Institute of Standards and Technology, Maryland.
Title: High-order Spectral Difference Solution of Unsteady Compressible Micropolar Equations on Moving and Deformable Grids <http://math.nist.gov/mcsd/Seminars/2011/2011-10-18-Liang.html>
6. 2/15/2012 Hydrocolloquium of Naval Surface Warfare Center, Combatant Craft Division (NSWCCD) at Carderock MD.
Title: Massively parallel and high-order accurate simulation of transitional flow around a flapping wing
7. 3/8/2012 Applied Math seminar of George Washington University,
Title: A high-order method for simulating turbulent flow on moving and deforming unstructured grids. <http://home.gwu.edu/~ren/seminar/appliedmath.html>

Synergistic Activities

Senior member of American Institute of Aeronautics and Astronautics

Steering Committee member of the George Washington Institute for Massively Parallel Applications and Computer Technologies (IMPACT)

Organizing committee member, American Physical Society - 64th Annual DFD Meeting, November 20-22, 2011, Baltimore, Maryland.

Session developer of the ASME 2012 Pressure Vessels & Piping Conference, 16th International Symposium on Emerging Technologies for Fluids, Structures and Fluid-Structure Interactions.

Summer faculty at the High Altitude Observatory, the National Center for Atmospheric Research, Boulder, Colorado, 2011 and 2012.

Review Activities

- Reviewed six manuscripts for Computers & Fluids journal,
- Reviewed three manuscripts for Journal of Computational Physics,
- Reviewed five manuscripts AIAA Journal,
- Reviewed 1 manuscript for Int. Journal of Heat and Fluid Flow,
- Reviewed 1 manuscript for Progress in Aerospace Sciences, an Elsevier review journal.
- Reviewed 1 manuscript for Journal of Fluids and Structures.
- Review panelist of 7 proposals for Department of Energy, Small Business Innovation Research (SBIR) program,
- Review panelist of 7 proposals for National Science Foundation, Fluid Dynamics Program.

Academic advising activities

Successfully completed supervision of one PhD student.

Examiners and committee members of two PhD students' thesis defense.

Examiners and committee member of one Master's student thesis defense.

Currently advising two PhD students and two Master's students.

Three PhD students are joining my research group in the Fall of 2012.

- Co-supervised James Chen (07/2010 - 05/2011) with Prof. James Lee. Dr Chen successfully defended his PhD dissertation on March 11, 2011. He will be an assistant professor from Fall 2012 at Penn State University Altoona.
- Mr Christopher Cox (MSc from Stanford University), full-time PhD student from May 2011. received a five-year George Washington Presidential Merit Fellowship.
- Mr. Daniel Junfeng Wang (MSc from University of Southern California), full-time PhD student from April 2011. received a three-year Newkirk Graduate Fellowship from the National Center of Atmospheric Research.
- Mr. Bin Zhang (MSc from Notre Dame), full-time PhD student from August 2012.
- Mr Starson Li (BSc from Sun Yat-Sen University), full-time Master student (August 2011- present).
- Mr Andrew DeJong full-time Master student (GWU August 2010- May 2012), admitted for PhD program from Fall 2012.
- Ms Meryll Grace Castro, full-time BSc student (August 2011- present).