Haoxiang Luo

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Education:

- Ph.D., Mechanical Engineering, University of California, San Diego, December 2004
- M.E., Mechanical Engineering, Tsinghua University, Beijing, July 1999
- B.E., Mechanical Engineering, Tsinghua University, Beijing, July 1996

Employment:

- *September 2007 - present*, Assistant Professor of Mechanical Engineering
  (Research Assistant Professor during one month transition, *August 2007*)
  Department of Mechanical Engineering
  Vanderbilt University, Nashville, TN
- *2013 - present*, Assistant Professor of Otolayngology (Secondary appointment)
  Department of Otolaryngology, School of Medicine
  Vanderbilt University, Nashville, TN
- *May - July, 2010*, Summer Faculty
  Wright-Patterson Air Force Base / Air Force Research Lab, Dayton, OH.
- *October 2005 - July 2007*, Postdoctoral Research Scientist
  Department of Mechanical and Aerospace Engineering
  George Washington University, Washington, DC
  Advisor: Prof. Rajat Mittal
- *September 2004 - September 2005*, Postdoctoral Researcher
  Department of Mechanical and Aerospace Engineering
  University of California, San Diego, CA
  Advisor: Prof. Costas Pozrikidis
- *September 1999 - August 2004*, Graduate Research Student
  Department of Mechanical and Aerospace Engineering
  University of California, San Diego, CA
  Advisor: Prof. Thomas R. Bewley
- *Spring 2002*, Graduate Teaching Assistant
  Department of Mechanical and Aerospace Engineering
  University of California, San Diego, CA

- *September 1996 - August 1999*, Graduate Research Student
  Department of Precision Instruments and Mechanology
  Tsinghua University, Beijing

Awards & Honors:

- General H. H. Arnold Award. AIAA Tennessee Section, 2013.
- National Science Foundation Faculty Early Career Development (CAREER) Award, 2010.
- Junior Faculty Teaching Fellowship. Vanderbilt University Center for Teaching, 2010.
- Doctoral New Investigator Award, American Chemical Society Petroleum Research Fund, 2008.
- Dissertation Fellowship, Department of Mechanical and Aerospace Engineering, University of California, San Diego, Spring 2004.
- Fellowship from the Helmholtz Institute for Supercomputational Physics for the program *First Summer School: Tools to Simulate Turbulence on Supercomputers*, Potsdam, Germany. Summer 2001.
- Top-level *Gaotian* Scholarship for Graduate Students, Tsinghua University, 1997.
- Top-level Scholarship for Excellent Students, Tsinghua University, 1995.

Professional membership:

- Member of the American Physical Society (APS), Division of Fluid Dynamics (DFD)
- Member of the American Society of Mechanical Engineers (ASME)
- Associate member of the American Institute of Aeronautics and Astronautics (AIAA)
- Member of the American Society of Engineering Education (ASEE)

Sponsored Research

- CAREER: flapping in the wind - passive mechanisms in insect wings for flight stabilization. Sponsor: NSF. Total budget: $416,500. Indirect cost: $119K. Contract period: 08/15/2010 - 07/31/2015. My role: PI.
- Collaborative research: three-dimensional flow-structure interaction during phonation. Sponsor: NSF. PIs: H. Luo (Vanderbilt University, lead) and J.F. Doyle (Purdue University). Contract period: 08/15/2011 - 07/31/2014. Total budget for Vanderbilt: $270K.
- Molecular pathophysiology of acute phonotrauma. PI: Dr. Bernard Rousseau. Sponsor: NIH/NIDCD. Total budget: $1.8M (my share: ∼$150K). Indirect cost: $565K. Contract period: 12/01/2010 - 11/30/2015. My role: Co-Investigator.

- A high-fidelity computational tool for the laryngeal dynamics during phonation. Sponsor: Vanderbilt University (Discovery Grant). Contract period: 5/6/2011 - 6/30/2014 (with one year extension). Total budget: $100,000. My role: PI.
- Doctoral New Investigator (DNI): three-dimensional fragmentation of core-annular flow. Sponsor: American Chemical Society / Petroleum Research Fund. Contract period: 6/1/2009 - 8/31/2011. Total budget: $100,000. My role: PI.
- Novel capsule-patch for immunoprotection of pancreatic islets/beta cells. PI: Dr. Taylor Wang. My role: Co-Investigator. Sponsor: Juvenile Diabetes Research Foundation. Total budget: $1,155,000 (my share: ∼$27K). Indirect cost: $57,000. Contract period: 07/01/09 - 06/30/12.

Publications and Scholarship

Peer-Reviewed Journal Articles (My students and postdocs are in italic):

1. *Tian, F.-B.*, *Dai, H.*, **Luo, H.**, Doyle, J.F., Rousseau, B. (2013) Fluid-structure interaction involving large deformations: 3D simulations and applications to biological systems. Submitted to Journal of Computational Physics. In revision.
2. *Chang, S., Tian, F.-B.,* **Luo, H.**, Doyle, J.F., Rousseau, B. (2013) The role of finite displacements in vocal fold modeling. Revision submitted to ASME Journal of Biomechanical Engineering.
3. *Yin, B.*, **Luo, H.** (2013) Numerical simulation of drops inside an asymmetric microchannel with protrusions. Computers and Fluids, 82, 14-28.
4. *Yin, B.*, **Luo, H.** (2013) Hydrodynamic interaction of oblique sheets in tandem arrangement. Physics of Fluids, 25, 011902 (15 pages).
5. *Dai, H.*, **Luo, H.**, *Ferreira de Sousa, P.*, Doyle, J. F. (2012) Thrust performance of a flexible low-aspect-ratio pitching plate. Physics of Fluids, 24, 101903 (9 pages).
6. *Tian, F.-B.*, **Luo, H.**, *Song, J.*, Lu, X.-Y. (2012) Force production and asymmetric deformation of a flexible flapping wing in forward flight. Journal of Fluids and Structures, 36, 149-161.
7. Tian, F.-B., Lu, X.-Y., **Luo, H.** (2012) Propulsive performance of a body with a traveling-wave surface. Physical Review E, 86, 016304.
8. *House, D.L.*, **Luo, H.**, *Chang, S.* (2012) Numerical study on dielectrophoretic chaining of two ellipsoidal particles. Journal of Colloid and Interface Science, 374, 141-149.
9. *Dai, H.*, **Luo, H.**, Doyle, J. F. (2012) Dynamic pitching of an elastic rectangular wing in hovering motion. Journal of Fluid Mechanics, 693, 473-499.
10. **Luo, H.**, *Dai, H., Ferreira de Sousa, P., Yin, B.* (2012) On numerical oscillation of the direct-forcing immersed-boundary method for moving boundaries. Computers and Fluids, 56, 61-76

11. *Tian, F.-B.*, Lu, X.-Y., **Luo, H.** (2012) Onset of instability of a flag in uniform flow. Theoretical and Applied Mechanics Letters, 2(2), 022005 (5 pages).

12. *House, D.L.*, **Luo, H.** (2011) Effect of DC dielectrophoresis on the trajectory of a non-conducting colloidal sphere in a bent pore. Electrophoresis, 32(22) 3277-3285.

13. *Tian, F.-B.*, **Luo, H.**, Zhu, L., Lu, X.-Y. (2011) Coupling modes of three filaments in side-by-side arrangement. Physics of Fluids, 23, 111903 (14 pages).

14. *Tian, F.-B.*, **Luo, H.**, Zhu, L., Liao, J.C., Lu, X.-Y. (2011) An efficient immersed boundary-lattice Boltzmann method for the hydrodynamic interaction of elastic filaments. Journal of Computational Physics, 230, 7266-7283.

15. *Yin, B.* & **Luo, H.** (2010) Effect of wing inertia on hovering performance of flexible flapping wings. Physics of Fluids, 22, 111902 (10 pages).

16. *Tian, F.-B.*, **Luo, H.**, Zhu, L., & Lu, X.-Y. (2010) Interaction between a flexible filament and a downstream rigid body. Physical Review E, 82, 026301.

17. *House, D.* & **Luo, H.** (2010) Electrophoretic mobility of a colloidal cylinder between two parallel walls. Engineering Analysis with Boundary Elements, 34, 471-476.

18. Pozrikidis, C. & **Luo, H.** (2010) A note on the buckling of an elastic plate under the influence of simple shear flow. Journal of Applied Mechanics, 77(2), No. 021007.

19. **Luo, H.**, Mittal, R., Bielamowicz, S. (2009) Analysis of flow-structure interaction in the larynx during phonation using an immersed-boundary method. Journal of Acoustic Society of America, 126(2), 816-824.

20. **Luo, H.** & Pozrikidis, C. (2009) Numerical simulation of particle encapsulation due to liquid thread breakup. Computers and Fluids, 38, 564-571.

21. Zheng, X., Bielamowicz, S., **Luo, H.**, Mittal, R. (2009) A computational study of the effect of false vocal folds on glottal flow and vocal fold vibration during phonation. Annals of Biomedical Engineering, 37(3), 625-642.

22. **Luo, H.**, Mittal, R., Zheng, X., Bielamowicz, S., Walsh, R., & Hahn, J. (2008) An immersed-boundary method for flow-structure interaction in biological systems with application to phonation. Journal of Computational Physics, 227, 9303-9332.

23. **Luo, H.**, Blyth, M.G., & Pozrikidis, C. (2008) Two-layer flow in a corrugated channel. Journal of Engineering Mathematics, 60, 127-147.

24. **Luo, H.** & Pozrikidis, C. (2008) Buckling of circular plate resting over an elastic foundation in simple shear flow. Journal of Applied Mechanics, 75(5), 051007.

25. **Luo, H.** & Pozrikidis, C. (2008) Effect of slip on the motion of a spherical particle in infinite flow and near a plane wall. Journal of Engineering Mathematics, 62(1), 1-21.

26. **Luo, H.** & Pozrikidis, C. (2007) Buckling of a pre-compressed or pre-stressed membrane. International Journal of Solids and Structures, 44, 8074-8085.

27. **Luo, H.** & Pozrikidis, C. (2007) Interception of two spheres in linear flow. Journal of Fluid Mechanics, 581, 129-156.

28. **Luo, H.** & Pozrikidis, C. (2007) Gravity-driven film flow down an inclined wall with three-dimensional corrugations. Acta Mechanica, 188, 209-225.

29. **Luo, H.** & Pozrikidis, C. (2006) Effect of inertia on film flow over oblique and three-dimensional corrugations. Physics of Fluids, 18, 078107 (4 pages).

30. Blyth, M.G., **Luo, H.**, & Pozrikidis, C. (2006) A comparison of interpolation grids over the triangle and the tetrahedron. Journal of Engineering Mathematics, 56(3), 263-272.

31. **Luo, H.** & Pozrikidis, C. (2006) Buckling of a flush mounted plate in simple shear flow. Archive of Applied Mechanics, 76, 549-566.

32. **Luo, H.** & Pozrikidis, C. (2006) Shear-driven and channel flow of a liquid film over a corrugated or indented wall. Journal of Fluid Mechanics, 556, 167-188.

33. **Luo, H.** & Pozrikidis, C. (2006) A Lobatto interpolation grid in the tetrahedron. IMA Journal of Applied Mathematics, 71, 298-313.

34. Blyth, M.G., **Luo, H.** & Pozrikidis, C. (2006) Stability of axisymmetric core-annular flow in the presence of an insoluble surfactant. Journal of Fluid Mechanics, 548, 207-235.

35. **Luo, H.** & Bewley, T.R. (2004) On the contravariant form of the Navier-Stokes equation in time-dependent curvilinear coordinate systems. Journal of Computational Physics, 199 (1), 355-375.

Other technical publication:

1. **Luo, H.** (2007) Immersed boundary method. *Encyclopedia of Microfluidics and Nanofluidics* (D. Li, Ed.), Springer.

Refereed Conference Articles:

1. Tian, F.-B., Dai, H., **Luo, H.**, Doyle, J.F., Rousseau, B. (2013) Computational fluid–structure interaction for biological and biomedical flows. The ASME 2013 Fluids Engineering Division Summer Meeting. FEDSM 2013-16408.

2. Tian, F.-B., Chang, S., **Luo, H.**, Rousseau, B. (2013) A 3D numerical simulation of wave propagation on the vocal fold surface. Proceedings of the 10th International AQL Conference and Student Workshops: Advances in Quantitative Laryngology, Voice and Speech Research. **Best Paper Award at the conference.**

3. Dai, H., **Luo, H.**, Song, J., Doyle, J. F. (2013) Effect of the pre-existing camber on fluid-structure interaction of cicada wings. AIAA Paper 2013-0952.

4. **Luo, H.**, Dai, H., Doyle, D.F. (2012) Three-dimensional simulations of fluid and elasticity for flapping wings and fins. Fluids & Elasticity 2012.

5. **Luo, H.**, Dai, H., Mohd Adam Das, Shahrizan Syawal, Song J., Doyle, J. F. (2012) Toward high-fidelity modeling of the fluid-structure interaction for insect wings. AIAA Paper 2012-1212.

6. Myers, M. R., **Luo, H.** (2012) A challenge-based unit with a hands-on demonstration for teaching momentum in undergraduate fluid mechanics. AIAA Paper 2012-885.

7. Nathan Tardiff, Muhammad Shafiq Hanif Mohamad Hamdan, Ben Bradshaw, Keith Becker, Seyi Senbore, Su Cong, Haoxiang Luo. (2011) A biomimetic wing-actuation mechanism for micro air vehicles. The Spring International Micro Air Vehicle (IMAV) Conference and Flight Competition. **Best Student Paper Award at the conference.**

8. **Luo, H.**, Dai, H., & Doyle, J. (2010) Three-dimensional flow-structure interaction in dragonfly wings. AIAA Paper 2010-556.

9. Doyle, J. & **Luo, H.** (2010) Structural dynamics during insect flight. Proceedings of the 10th International Conference on Recent Advances in Structural Dynamics. Southampton University, UK, July 12-14, 2010.

10. **Luo, H.** & Bewley, T.R. (2003) Design, modeling, and optimization of tensegrity compliant surface for reduction of drag induced by the turbulent flow. Smart structures and materials 2003: modeling, signal processing, and control (SPIE proceedings series).

11. **Luo, H.** & Bewley, T.R. (2005) Accurate simulation of near-wall turbulence over a compliant tensegrity fabric. Smart structures and materials 2005: modeling, signal processing, and control (SPIE proceedings series).

Conference Abstracts, Presentations, and Posters:

1. Tian, F.-B., Chang, S., **Luo, H.**, Rousseau, B. A 3D numerical simulation of wave propagation on the vocal fold surface. The 10th International AQL Conference and Student Workshops: Advances in Quantitative Laryngology, Voice and Speech Research. June 3-4, 2013. University of Cincinnati, OH.

2. Tian, F.-B., Chang, S., **Luo, H.**, Rousseau, B. Computational modeling of flow-induced vocal fold vibration. The BSEC 2013 Conference: Collaborative Biomedical Innovations Program May 21-23, 2013. Oak Ridge, TN.

3. **Luo, H.**, Dai, H., Doyle, D.F. Three-dimensional simulations of fluid and elasticity for flapping wings and fins. Fluids & Elasticity 2012, November 14-16, 2012, La Jolla, CA.

4. Tian, F.-B., **Luo, H.**, Song, J., Lu, X.-Y. Aerodynamic cause of the asymmetric wing deformation of insect wings. The 65th Annual Meeting of APS/DFD, November 18-20, 2012. San Diego, CA.

5. Song, J., **Luo, H.**, Hedrick, T.L. Three-dimensional flow around a hovering hummingbird. Poster presentation. The 65th Annual Meeting of APS/DFD, November 18-20, 2012. San Diego, CA.

6. Chang, S., Tian, F.-B., **Luo, H.**, Kojima, T., Rousseau, B. Toward an integrated approach for modeling evoked rabbit phonation. The Fall Voice Conference. October 4-7, 2012, NYU School of Medicine.

7. **Luo, H.**, Dai, H., Ferreira de Sousa, P. Thrust production of a flexible low-aspect-ratio foil. Poster presentation. The 23rd International Congress of Theoretical and Applied Mechanics, ICTAM2012, August 19-24, 2012. Beijing, China.

8. **Luo, H.**, Dai, H., Mohd Adam Das, Shahrizan Syawal, Song J., Doyle, J. F. Toward high-fidelity modeling of the fluid-structure interaction for insect wings. The 50th AIAA Aerospace Sciences Meeting. Jan. 9-12, 2012. Nashville, TN.

9. Myers, M. R., **Luo, H.** A challenge-based unit with a hands-on demonstration for teaching momentum in undergraduate fluid mechanics. The 50th AIAA Aerospace Sciences Meeting. Jan. 9-12, 2012. Nashville, TN.

10. Tian, F.-B., **Luo, H.**, Lu, X.-Y. Flexibility and inertia of flapping wings in forward flight. The 64th Annual Meeting of APS/DFD, November 20-22, 2011. Baltimore, Maryland.

11. Dai, H., Mohd Adam Das, Shahrizan Syawal, **Luo, H.** Observation of the wing deformation and CFD study of cicadas. The 64th Annual Meeting of APS/DFD, November 20-22, 2011. Baltimore, Maryland.

12. Yin, B., **Luo, H.** Energy-harvesting potential of multiple elastic structures in tandem arrangement. The 64th Annual Meeting of APS/DFD, November 20-22, 2011. Baltimore, Maryland.

13. Nathan Tardiff, Muhammad Shafiq Hanif Mohamad Hamdan, Ben Bradshaw, Keith Becker, Seyi Senbore, Su Cong, Haoxiang Luo. A biomimetic wing-actuation mechanism for micro air vehicles. The Spring International Micro Air Vehicle (IMAV) Conference and Flight Competition. May 23-27, 2011. Huntsville, AL.

14. Ferreira de Sousa, P., Dai, H., **Luo, H.**, Doyle, J. Thrust performance and wake structure of a pitching flexible plate at low aspect ratios. The 63rd APS/DFD Annual Meeting, Nov. 21-23, 2010. Long Beach, California.

15. Tian, F.-B., **Luo, H.**, Zhu, L., Lu, X.-Y. Flapping modes of three filaments placed side by side in a free stream. The 63rd APS/DFD Annual Meeting, Nov. 21-23, 2010. Long Beach, California.

16. **Luo, H.**, Tian, F.-B., Lu, X.-Y. Effect of mass ratio for a flexible flapping wing during forward flight. The 63rd APS/DFD Annual Meeting, Nov. 21-23, 2010. Long Beach, California.

17. House, D., **Luo, H.** Effect channel turn on the trajectory of an electrophoretic particle. The 63rd APS/DFD Annual Meeting, Nov. 21-23, 2010. Long Beach, California.

18. Yin, B., **Luo, H.** Numerical simulation of two-phase flows in complex geometries by combining two different immersed-boundary methods. The 63rd APS/DFD Annual Meeting, Nov. 21-23, 2010. Long Beach, California.

19. **Luo, H.**, Dai, H., Doyle, J. Three-dimensional flow-structure interaction in dragonfly wings. The 48th AIAA ASM Meeting, Jan 4-7, 2010. Orlando, FL.

20. **Luo, H.**, Dai, H., Ferreira de Sousa, P. A hybrid formulation to suppress the numerical oscillations caused by immersed moving boundaries. The 62nd APS/DFD Annual Meeting, Nov. 22-24, 2009. Minneapolis, MN.

21. Ferreira de Sousa, P., **Luo, H.**, Evans, H. The Rufous Hummingbird in hovering flight – full-body 3D immersed boundary simulation. The 62nd APS/DFD Annual Meeting, Nov. 22-24, 2009. Minneapolis, MN.

22. Dai, H., **Luo, H.**, Deng, X. Flapping counter force - a unique flight stabilizing mechanism enabled by flapping wings. The 62nd APS/DFD Annual Meeting, Nov. 22-24, 2009. Minneapolis, MN.

23. **Luo, H.**, Dai H. Unsteady flow motions in the supraglottal region during phonation. The 61st APS/DFD Annual Meeting, Nov. 23-25, 2008. San Antonio, TX.

24. **Luo, H.**, Mittal, R. Computational flow-structure interaction on Cartesian grids and its application to phonation. The SES Annual Meeting, Oct. 12-15, 2008. Urbana-Champaign, IL.

25. Bodony, D., **Luo, H.**, Mittal, R. Prediction of sound from human vocal folds. The 60th APS/DFD Annual Meeting, Nov. 18-20, 2007. Salt Lake City, UT.

26. Zheng, X., Mittal, R., **Luo, H.** High-fidelity modeling of the biophysics of phonation using a coupled IBM-FEM method. The 60th APS/DFD Annual Meeting, Nov. 18-20, 2007. Salt Lake City, UT.

27. **Luo, H.**, Zheng, X., Mittal, R., Bielamowicz, S. Coupled aero-structural dynamics in the human larynx during phonation. The 60th APS/DFD Annual Meeting, Nov. 18-20, 2007. Salt Lake City, UT.

28. Zheng, X., **Luo, H.**, Mittal, R. Computational analysis of glottal aerodynamics and vocal fold vibrations during phonation. The 59th APS/DFD Annual Meeting, Nov. 19-21, 2006. Tampa Bay, FL.

29. **Luo, H.**, Zheng, X., Mittal, R., & Bielamowicz, S. An immersed-boundary method for fluid-structure interaction in the human larynx. The 59th APS/DFD Annual Meeting, Nov. 19-21, 2006. Tampa Bay, FL.

30. Mittal, R., **Luo, H.**, Zheng, X., Dong, H., Bielamowicz, S., Walsh, R., & Hahn, J. Development of a high-fidelity biophysical model of vocal fold vibration and glottal aerodynamics. The 5th International Conference on Voice Physiology and Biomechanics, July 12-14, 2006, Tokyo, Japan.

31. **Luo, H.**, Zheng, X., Mittal, R., Dong, H., Bielamowicz, S., Walsh, R., & Hahn, J. Numerical analysis of the glottal dynamics using an immersed-boundary method. The American Society of Biomechanics Annual Meeting, Sep. 6-9, 2006. Blacksburg, VA.

32. Zheng, X., **Luo, H.**, Mittal, R., Dong, H., Bielamowicz, S., Walsh, R., & Hahn, J. Toward a high fidelity biophysical model of vocal fold vibration and glottal aerodynamics. 2006 Summer Bioengineering Conference, June 21-25, 2006. Amelia Island, FL.

33. **Luo, H.** & Bewley, T.R. Interaction of a turbulent channel flow and a tensegrity fabric. AFOSR Workshop on Feedback Flow Control, July 18-19, 2005. Jackson Hole, WY.

34. **Luo, H.** & Bewley, T.R. Accurate simulation of near-wall turbulence over a compliant tensegrity fabric. Smart structures and materials 2005: modeling, signal processing, and control (SPIE conference), March 7-9, 2005. San Diego, CA.

35. **Luo, H.** & Bewley, T.R. Interaction of a turbulent channel flow with a compliant tensegrity fabric. The 57th APS/DFD Annual Meeting. Nov. 21-23, 2004, Seattle, WA.

36. **Luo, H.** & Bewley, T.R. Design, modeling, and optimization of tensegrity compliant surface for reduction of drag induced by the turbulent flow. Smart structures and materials 2003: modeling, signal processing, and control (SPIE conference). March 3-6, 2003. San Diego, CA.

37. **Luo, H.** & Bewley, T.R. Optimization of compliant surfaces for reduction of turbulence-induced drag. The 56th APS/DFD Annual Meeting. Nov. 23-25, 2003. East Rutherford, NJ.

38. **Luo, H.** & Bewley, T.R. Numerical simulation of the turbulent flow over a tensegrity fabric. The 55th APS/DFD Annual Meeting. Nov. 24-26, 2002. Dallas, TX.

39. **Luo, H.** & Bewley, T.R. On the utility of the global TKE equation for turbulence control. The 54th APS/DFD Annual Meeting. Nov. 18-20, 2001. San Diego, CA.

Invited Talks:

1. Computational modeling of vocal fold vibration for basic and clinical applications in laryngology. With B. Rousseau. VISE Seminar. May 30, 2013, Vanderbilt University.

2. Computational modeling of glottal aerodynamics and vocal fold vibration. Vanderbilt University Institute of Imaging Science (VUIIS). October 12, 2012. Nashville, TN

3. Fluid-Structure Interaction in Insect Flight. The Annual Meeting of the State Key Laboratory of Nonlinear Mechanics (LNM), Institute of Mechanics, Chinese Academy of Sciences. December 18, 2012, Beijing.

4. Immersed boundary methods for biological and biomedical flows. University of Tennessee, Knoxville. Knoxville, TN. April 15, 2010.

5. Flow-structure interaction using the immersed boundary method for MAV applications. WPAFB/AFRL, Dayton, OH. July 8, 2010.

6. Immersed-boundary methods for biological and biomedical flows. Department of Biomedical Engineering, Vanderbilt University, Nashville, TN. Oct. 20, 2008.

7. Computational fluid dynamics based tools for phonosurgery planning. University of Tennessee Space Institute. Tullahoma, TN. Oct. 17, 2007.

8. Modeling and simulation of the flow/structure interaction during phonation. University of Iowa. Iowa City, IO. March 21, 2007.

9. Modeling and simulation of the flow/structure interaction during phonation. Mechanical Engineering Department, Vanderbilt University. Nashville, TN. March 19, 2007.

10. Computational fluid dynamics (CFD) based tools for planning phonosurgery. GWU Symposium on High-Performance Computing and Applications, George Washington University. Washington, DC. Oct. 18, 2006.

11. From compliant coatings to vocal fold vibration: dealing with complex moving boundaries in fluid-structure interaction. MAE Department Seminar, George Washington University. Washington, DC. Feb. 9, 2006.

12. Interaction of near-wall turbulence with compliant tensegrity fabrics: modeling, simulation, and optimization. Center for Turbulence Research, Stanford University. Stanford, CA. Nov. 5, 2004.

Teaching and Advising

Courses Taught:

- ME 224 Fluid Mechanics
- ME 263 Computational Fluid Dynamics and Multiphysics Modeling (Formerly *Intermediate Fluid Mechanics*)
- ME 392, Special Topics: Advanced Fluid Dynamics
- ME 391, Special Topics: Introduction to Computational Fluid Dynamics

Current and Past Graduate Students:

- Siyuan Chang (2nd year PhD student)
- Jialei Song (2nd year PhD student)
- Casey Brock (1st year Master's student)
- Chi Zhu (1st year Master's student)
- Bo Yin (PhD, 2013)
- Hu Dai (PhD, 2013, Pegasus Vertex, Inc.)
- Dustin House (PhD, 2012, Abbot Diagnostics)
- Fang-Bao Tian (visiting PhD student, 2009-2010)
- Brandon Travis (Master's, 2008, co-advised with D. Li. Smith Seckman Reid, Inc.)

Current and Past Postdocs:

- Dr. Fang-Bao Tian, postdoc, 2011 - present
- Dr. Guibo Li, postdoc, 2011 - 2012 (now a postdoc at University of Louisville)
- Dr. Paulo J.S.A. Ferreira de Sousa, postdoc, 2009 - 2011 (now a postdoc at Universidade de Évora, Évora, Portugal)

Professional Services

Referee for Journal/Conference Manuscripts

- Journal of Computational Physics
- Journal of Fluid Mechanics
- Physics of Fluids
- Journal of Fluids and Structures

- Proceedings of the Royal Society A
- AIAA Journal
- Aeronautical Journal
- Journal of Acoustic Society of America
- Computers and Mathematics with Applications
- Computers and Fluids
- Microfluidics & Nanofluidics
- Journal of Engineering Mathematics
- ASME Journal of Fluids Engineering
- Journal of Biomechanics
- Medical Engineering & Physics
- Journal of Experimental Biology
- Journal of Insect Science
- Journal of Bionic Engineering
- AIAA and ASME conferences

Proposal Review:

- NSF proposal review panel
- ARO proposal reviewer

Technical Committee & Conference Organization:

- AIAA Fluid Dynamics Technical Committee, 2013-present.
- Track co-organizer, Symposium on Development and Applications of Immersed Boundary Methods. ASME 2013 Fluids Engineering Division Summer Meeting. July 7-11, 2013. Incline Village, Nevada.
- Session chair, the 64th Annual Meeting of APS/DFD, November 21-23, 2010. November 2022, 2011. Baltimore, Maryland.
- Session chair, the 63rd Annual Meeting of APS/DFD, November 21-23, 2010. Long Beach, California.
- Session chair, the AIAA 48th Aerospace Sciences and Meeting, January 4-7, 2010. Orlando, Florida.
- Session chair, SES Annual Conference 2008, Urbana-Champaign, IL.
- Session chair, APS/DFD Annual Conference 2008, San Antonio, TX.