

***TIMOTHY WEI***

PERSONAL: Birth Date: 26 May 1958  
Citizenship: United States of America

EDUCATION: Doctor of Philosophy Degree, May 1987  
Department of Aerospace Engineering  
The University of Michigan, Ann Arbor, MI  
Master of Science Degree, October 1982  
Department of Mechanical Engineering & Mechanics  
Lehigh University, Bethlehem, PA  
Bachelor of Science Degree, May 1980  
Sibley School of Mechanical & Aerospace Engineering  
Cornell University, Ithaca, NY

PRIMARY APPOINTMENTS: Dean June 2011 – present  
College of Engineering  
University of Nebraska-Lincoln  
Professor and Department Head July 2009 – May 2011  
Department of Mechanical, Aerospace & Nuclear Engineering  
Rensselaer Polytechnic Institute  
Interim Dean June 2008 – August 2009  
School of Engineering  
Rensselaer Polytechnic Institute  
Professor and Department Head January 2006 – May 2008  
Department of Mechanical, Aerospace & Nuclear Engineering  
Rensselaer Polytechnic Institute  
Professor July 2000 – December 2005  
Associate Professor July 1993 – June 2000  
Assistant Professor July 1987 - June 1993  
Department of Mechanical & Aerospace Engineering  
Rutgers; The State University of New Jersey  
Post-doctoral Research Assistant January 1987 - June 1987  
Department of Aerospace Engineering  
The University of Michigan  
VISITING APPOINTMENTS: Visiting Professor May 2000 – December 2000  
Energy and Process Engineering  
Tampere University of Technology  
Tampere, Finland  
Visiting Associate Professor September 1994 - May 1995  
Department of Ocean Engineering  
Massachusetts Institute of Technology  
Summer Faculty Fellow Summer 1990  
Flow Noise Branch; Code 1942  
David Taylor Research Center

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HONORS:

American Society of Mechanical Engineering - Fellow  
American Physical Society – Fellow  
Institution of Mechanical Engineers (UK) – Fellow  
American Society of Mechanical Engineering - Dedicated Service Award  
Henry Rutgers Research Fellow 1987 - 1989  
Douglas College (Rutgers) - Fellow 1998 – 2005

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REFEREED PUBLICATIONS:

- Russell, J., Legac, P., Connor, N. & Wei, T. 2011 Application of  $\mu$ -particle image velocimetry to *in vivo* measurement of capillary flow in a rat model. *Experiments in Fluids* (in review).
- Cohen, B., Krane, M.H. & T. Wei 2011 Measurements of the flow-induced vibration of a compliant duct obstruction. *Experiments in Fluids* (revision in review).
- Fish, F., Legac, P., Williams, T. & Wei, T. 2011 Exceptional force generation is behind dolphins' swimming prowess. *J. Experimental Biology* (revision in review).
- Borowsky, J. & Wei, T. 2011 Two-phase interactions through turbulent events as described by fluid-particle correlations. *Chemical Engineering Science* **66**, 128-134.
- Krane, M.H., Grega, L.M. & Wei, T. 2010 Structure of the near-wall region of a boundary layer over a wall with large transverse curvature. *J. Fluid Mech.* **664**, 33-50.
- Krane, M.H., Barry, M. & Wei, T. 2010 Dynamics of temporal variations in phonatory flow. *J. Acoustical Soc. of America* **128**, 372-383.
- Cohen, B., Vedel, S., Voorhees, A. & Wei, T. 2009 A mechanics-based framework for the diagnosis and treatment of hydrocephalus. *Cerebralspinal Fluid Research* **6**:12.
- Osman, K.B., McHugh, J.P. & Wei, T. 2008 Patterns in surface driven flows. *Physics of Fluids* **20**, article #103602.
- Legac, P., Mark, R., Hutchison, S., Fish, F. Williams, T. & Wei, T. 2008 Hydrodynamics of mammalian swimming. *Physics of Fluids* **20**, article #091105.
- Leong, C.M., Benaroya, H. & Wei, T. 2008 Two-degree-of-freedom VIV of a circular cylinder pinned at one end. *Proc. Royal Soc. London A* **464**, 2907-2927.
- Fish, F., Legac, P., Wei, T. & Williams, T. 2008 Vortex mechanics associated with propulsion and control in whales and dolphins. *Comp. Biochem. & Physicology A – Molecular & Integrative Physiology* **150**, S65-S66.
- Voorhees, A., Dong, P., Atsavapranee, P., Benaroya, H. & Wei, T. 2008 Three-dimensionality and beating of a circular cylinder mounted as an inverted pendulum. *J. Fluid Mech.* **610**, 217-247.
- Hsu, T.Y., Eloranta, H., Saarenrinne, P. & Wei, T. 2007 Flow through a rectangular duct with a partially blocked exit. *J. Fluid Mech.* **592**, 51-78
- Borowsky, J. & Wei, T. 2007 Kinematic and dynamic parameters of a liquid-solid pipe flow using DPIV/accelerometry. *J. Fluids Eng'g.* **129**, 1415-1421.
- Voorhees, A.V., Nackman, G.B. & Wei, T. 2007 Experiments show importance of flow-induced pressure on endothelial cell shape and alignment. *Proc. Royal Soc. London A*, **463**, 1409-1419.
- Krane, M.H., Barry, M. & Wei, T. 2007 Unsteady behavior of flow in a scaled-up vocal folds model. *J. Acoustical Soc. of America*, **122**, 3659-3670.
- Krane, M.H. & Wei, T. 2006 Theoretical assessment of unsteady aerodynamic effects during phonation. *J. Acoustical Soc. of America* **120**, 1578-1588.
- Borowsky, J. & Wei, T. 2006 Simultaneous velocimetry/accelerometry measurements in a turbulent two-phase pipe flow. *Expts. In Fluids* **41**, 13-20.
- Barry, M., Krane, M. & Wei, T. 2004 Flow characteristics in a scaled-up glottis model. *J. Acoustical Soc. of America*, **115**, 2611.

REFEREED PUBLICATIONS (cont'd.):

- Dong, P., Benaroya, H. & Wei, T. 2004 Integrating experiments into an energy-based reduced-order model for vortex-induced-vibrations of a cylinder mounted as an inverted pendulum, *J. Sound & Vibration* **276**, 45-63.
- Hsu, T.Y. & Wei, T. 2004 Generation of streamwise vortices in a slice knife model: Can streaks be generated at the slice exit? *TAPPI Journal* **3**, 3-8.
- Benaroya, H., Wei, T., Kuchnicki, S. & Dong, P. 2003 Extended Hamilton's Principle for Fluid-Structure Interaction, *J. Multi-Body Dynamics* **217**, 153-170.
- Grega, L.M., Hsu, T.Y. & Wei, T. 2002 Transport of streamwise vorticity in a corner formed by a solid wall and a free surface. *J. Fluid Mech.* **465**, 331-352.
- Dong, P., Hsu, T.Y., Atsavapranee, P. & Wei, T. 2001 Digital particle image accelerometry. *Expts. in Fluid* **30**, 626-632.
- Benaroya, H. & Wei, T. 2000 Hamilton's principle for external viscous fluid-structure interaction. *J. Sound & Vibration*, **238**, 113-145.
- Hsu, T.Y., Grega, L.M., Wei, T., & Leighton, R.I. 2000 Turbulent kinetic energy transport in a corner formed by a solid wall and a free surface. *J. Fluid Mech.* **410**, 343-366.
- Shah, P.N., Atsavapranee, P., Wei, T. & McHugh, J. 2000 The role of turbulent elongational stresses on deflocculation in paper sheet formation. *TAPPI Journal*, **83**, 70.
- Han, S.M., Benaroya, H., & Wei, T. 1999 Dynamics of transversely vibrating beams using four engineering theories. *J. Sound & Vibration*, **225**, 935-988.
- Shah, P., Atsavapranee, P., Hsu, T.Y., Wei, T., & McHugh, J. 1999 Turbulent transport in the core of a trailing delta wing vortex. *J. Fluid Mech.* **387**, 151-175.
- Karn, E.L. Beale, S., Cuitiño, A.M., Wei, T., Graham, A.M., & Nackman, G.B. 1998 Development of Wall Surface Tangent DPIV Measurement Techniques for Arterial Branch Models. *J. Biomech. Eng'g*, **120**, 784-787.
- Nackman, G.B., Fillinger, M.F., Shafritz, R., Wei, T., & Graham, A.M. 1998 Flow modulates endothelial regulation of smooth muscle cell proliferation: A new model. *Surgery* **124**, 353-361.
- Karn, E.L., Smith, G.B., & Wei, T. 1995 Three-dimensional reconstruction of coherent structures using image processing techniques. *Expts. in Fluids* **19**, 432-434.
- Grega, L.M., Wei, T., Leighton, R.I., & Neves, J.C. 1995 Turbulent mixed boundary flow in the corner formed by a solid wall and a free surface. *J. Fluid Mech.* **294**, 17-46.
- Lee, S.H.-K., SenGupta, S. & Wei, T. 1995 Effect of polymer additives on Görtler vortices in Taylor-Couette flow. *J. Fluid Mech.* **282**, 115-129.
- Smith, G.B. & Wei, T. 1994 Turbulent cascade in colliding off-axis vortex rings. *J. Fluid Mech.* **259**, 281-290.
- Wei, T., Kline, E.M., Lee, S.H.K., & Woodruff, S.L. 1992 Görtler vortex formation at the inner cylinder in Taylor-Couette flow. *J. Fluid Mech.* **245**, 47-68.
- Wei, T. & Willmarth, W.W. 1992 Modifying turbulent structure with drag reducing polymer additives in turbulent channel flows. *J. Fluid Mech.* **245**, 619-641.
- Wei, T. & Willmarth, W.W. 1991 Examination of v-velocity fluctuations in a turbulent channel flow in the context of sediment transport. *J. Fluid Mech.* **223**, 241-252.

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REFEREED PUBLICATIONS (cont'd.):

- Wei, T. & Willmarth, W.W. 1989 Reynolds number effects on the structure of a turbulent channel flow. *J. Fluid Mech.* **204**, 57-95.
- Willmarth, W.W., Wei, T., & Lee, C.O. 1987 Laser anemometer measurements of Reynolds stress in a turbulent channel flow with drag reducing polymer additives. *Phys. Fluids* **30**, 933-935.
- Wei, T. & Smith, C.R. 1986 The presence of secondary vortices in the wake of circular cylinders. *J. Fluid Mech.* **169**, 513-533.

REFEREED CONFERENCE PAPERS:

- Fish, F. E., Legac, P., Williams, T. M. & Wei T. 2009 Measurement of hydrodynamic force generation by swimming dolphins using bubble DPIV. *presented at the Annual Meeting of the Society of Marine Mammalogy, Quebec, CA, October 2009.*
- Fish, F. E., Legac, P., Williams, T. M. & Wei T. 2009 Exceptional force generation is behind dolphins' swimming prowess. *presented at the Annual Meeting of the Society for Integrative and Comparative Biology, Boston, MA, January 2009.*
- Krane, M., Wei, T. & Peltier, J. 2008 Aerodynamics of glottal flow. *presented at the International Conference on Voice Physiology and Biomechanics, Tampere, Finland, August 2008.*
- Wagshul, M.E., Egnor, M.R., Manzione, J., McCormack, E.J., Voorhees, A.V. & Wei, T. 2006 Measurement of subpixel motion of the lateral ventricular walls. *presented at the 14<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine, Seattle, WA, May 2006.*
- Krane, M., Barry, M. & Wei, T. 2006 Glottal jet structure measured in a scaled-up model. *invited lecture presented by M. Krane at the 5<sup>th</sup> World Congress of Biomechanics, Munich, Germany, Aug. 2006.*
- Voorhees, A.V., Nackman, G.B. & Wei, T. 2004 First measurements of mechanical cell loading. *presented at the 38<sup>th</sup> Annual Meeting of the Assn. For Academic Surgery, Houston, TX, Nov. 2004.*
- Krane, M., Wei, T., & Barry, M. 2004 Flow measurements in a scaled-up vocal folds model. *presented at the International Conference On Voice Physiology And Biomechanics, Marseilles, France, Aug. 2004.*
- Wei, T. 2004 Fundamental fluid dynamics and the US Olympic swimming movement. *presented at the Canadian Fluid Dynamics Symposium/Canadian Applied Mathematics Society, Halifax, NS, June 2004.*
- Benaroya, H. & Wei, T. 2003 Hamilton's principle for external viscous fluid-structure interaction. *presented at the ASME Int'l. Congress of Mechanical Engineering, Washington, DC, Nov. 2003.*
- McIntyre, E., Langrana, N.A., Voorhees, A., & Wei, T. 2003 Velocity profile in streamline swimming: drag quantification, *Proceedings of 2003 ASME Bioengineering Conference, Key Biscayne, FL, June 25-29, 2003*
- Leong, C.M., Benaroya, H. & Wei, T. 2003 Two-degree of freedom VIV of a circular cylinder pinned at one end. *IUTAM Symposium on Fluid-Structure Interactions, New Brunswick, NJ, June 2003.*

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REFEREED CONFERENCE PAPERS (cont'd.):

- Benaroya, H. & Wei, T. 2003 Extended Hamilton's principle for fluid-structure interaction. *IUTAM Symposium on Fluid-Structure Interactions, New Brunswick, NJ, June 2003.*
- Krane, M., Dong, P. & Wei, T. 2003 Estimation of pressure fields using velocity measurements. *IUTAM Symposium on Fluid-Structure Interactions, New Brunswick, NJ, June 2003.*
- Hsu, T.Y. & Wei, T. 2003 Generation of streamwise vortices in a slice knife model: Can streaks be generated at the slice exit? *to be presented at the TAPPI 2003 Spring Technical Conference, Chicago, IL, May 2003.*
- Voorhees, A. & Wei, T. 2002 Three-dimensionality in the wake of a surface piercing cylinder mounted as an inverted pendulum. *presented at the 3<sup>rd</sup> Bluff Body Vortex Induced Vibration Conference, Queensland, Australia, Dec. 2002.*
- Eloranta, H., Hsu, T.Y., Wei, T. & Saarenrinne, P. 2002 A PIV student on the interaction between a forward-facing step and turbulent boundary layer; Application to a papermaking machine. *Presented at the 11<sup>th</sup> Int'l. Symposium on Applications of Laser Techniques to Fluid Mechanics, Libon, Portugal, July 2002.*
- Dong, P., Voorhees, A., Atsavapranee, P., Benaroya, H., & Wei, T. 2002 Energy balance in vortex induced vibration of an inverted pendulum. *presented at the ASME-Fluids Eng'g. Div. Meeting, Montreal, Canada, July 2002.*
- Wei, T. 2001 Hydrodynamics and control of a lateral force device. *presented at UDT Hawaii, Honolulu, HI, 30 Oct.- 1 Nov. 2001.*
- Benaroya, H., Kuchnicki, S., & Wei, T. 2001 Modeling Fluid-Structure Interaction. *presented at Euromech Colloquium 425: Nonlinear Dynamics, Control and Condition Monitoring, Aberdeen, Scotland, 20-24 August 2001.*
- Benaroya, H. & Wei, T. 2000 Hamilton's principle for external viscous fluid-structure interaction. *presented at the ASME Int'l. Congress, Orlando, FL.*
- Atsavapranee, P., Benaroya, H., & Wei, T. 1999 Lock-in regimes and vortex shedding modes on a freely oscillating cylinder. *presented at the ASCE Eng'g. Mech. Div. Conference, Baltimore, MD.*
- Han, S., Benaroya, H., & Wei, T. 1999 Nonlinear dynamics of an articulated tower. *presented at the ASCE Eng'g. Mech. Div. Conference, Baltimore, MD.*
- Kuchnicki, S., Benaroya, H., & Wei, T. 1999 A simplified model for the vortex-induced vibration of a compliant tower in the ocean. *presented at the ASCE Eng'g. Mech. Div. Conference, Baltimore, MD.*
- Grega, L.M., Farabee, T.M., & Wei, T. 1998 Noise generation due to turbulent flow over surface slots. *presented at the 1998 ASME Int'l. Congress & Exposition, Anaheim, CA.*
- Nackman, G.B., Stefan, T.M., Enteresz, I., Wei, T., Graham, A.M. 1998 Endothelial cell exposure to shear stress changes the MMP activity of co-cultured smooth muscle cells in a novel flow model. *presented at the Eighty-fourth Clinical Congress of the American College of Surgeons, Surgical Forum, Orlando, FL, October 25-30, 1998.*
- Nackman, G.B., Fillinger, M.F., Shafritz, R., Wei, T., & Graham, A.M. 1998 Flow modulates endothelial regulation of smooth muscle cell proliferation: a new model. *presented at the 59th Meeting of the Society of University Surgeons, Milwaukee, WI.*

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REFEREED CONFERENCE PAPERS (cont'd.):

- Atsavapranee, P., Benaroya, H., & Wei, T. 1998 Vortex dynamics in the near wake of a freely-oscillating cylinder. *presented at the 1998 ASME Fluids Eng'g. Conference, Washington, DC.*
- Hsu, T.Y., Grega, L.M., Wei, T., & Leighton, R.I. 1998 Turbulent transport in a mixed boundary corner flow. *presented at the 1998 US Nat'l. Congress of Applied Mech., Gainesville, FL.*
- Doshna, E. & Wei, T. 1997 Shadowgraph visualization of the wake of an impulsively started surface piercing cylinder. *presented at the 1997 ASME Fluids Eng'g. Conference, Vancouver, BC.*
- Karn, E.L., Wei, T., Neves, J.C., & Leighton, R.I. 1994 Comparing hairpin vortices with coherent structure in a mixed boundary corner. *presented at the 12th US National Congress of Applied Mech., Seattle, WA.*
- Leighton, R., Wei, T., & Neves, J.C. 1994 The secondary flow of the mixed boundary corner flow. *presented at the 1994 ASME Fluids Eng'g. Conference, Lake Tahoe, NV.*
- Karn, E., Wei, T., Neves, J.C. & Leighton, R.I. 1993 Evolution of hairpin vortices in a mixed boundary corner. *presented at the 1993 ASME Fluids Eng'g Conference, Washington, DC.*

INVITED LECTURES:

- University of Maryland*, A multiscale experimental approach to cerebral-spinal and vascular-flow disease. 2011
- Vanderbilt University*, Fluid dynamics of swimming and the US Olympic movement. 2010
- Lafayette College*, Fluid dynamics of swimming and the US Olympic movement. 2009
- The University of Michigan*, Fluid dynamics of swimming and the US Olympic movement. 2009
- Rutgers/Harvard University*, School of Engineering; Articulating a vision at Rensselaer for the 21<sup>st</sup> century. 2008
- Tampere University of Technology (Tampere, Finland)*, Fluid dynamics of swimming and the US Olympic movement. 2008
- Southwest Indian Polytechnic Institute*, Engineering at Rensselaer; Why not partner with the world? 2008.
- University of Illinois, Urbana-Champaign*, Fluid dynamics of swimming and the US Olympic movement. 2008.
- Worcester Polytechnic Institute*, Fluid dynamics of swimming and the US Olympic movement. 2007.
- US National Team Coaches Meeting (USA Swimming)*, Dynamic force measurements of swimmers. 2007.
- US National Team Coaches Meeting (USA Swimming)*, Fluid dynamics of swimming and the US Olympic movement. 2006.
- US Aquatic Sports Convention (USA Swimming Sports Medicine/Science Committee)*, Fluid dynamics of swimming and the US Olympic movement. 2005.

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INVITED LECTURES (cont'd.):

*Rensselaer Polytechnic Institute*, Linking fundamental fluid-structure interaction research with critical technology development. 2005.

*City College of New York*, Fluid dynamics of swimming and the US Olympic movement. 2004.

*The College of New Jersey*, Fluid dynamics of swimming and the US Olympic movement. 2004.

*Metso, Inc. (Jyväskylä, Finland)*, Improving headbox design and operation using fundamental fluid dynamics: a technology partnership success. 2003.

*Iowa State University*, Linking fundamental fluid-structure interaction research with critical technology development. 2003.

*University of California – Los Angeles*, Linking fundamental fluid-structure interaction research with critical technology development. 2003.

*Clemson University*, Fundamental turbulent flows in engineering applications. 2002.

*Cornell University*, Reduced order modeling of fluid-structure interactions. 2001.

*University of Melbourne (Melbourne, Australia)*, Fundamental turbulent flows in engineering applications. 2001.

*University of Warwick (Coventry, United Kingdom)*, Reduced order modeling of fluid-structure interactions. 2000.

*Lappeenranta University of Technology. (Lappeenranta, Finland)*, Measuring turbulence for engineering problem solving. 2000.

*Tampere University of Technology. (Tampere, Finland)*, Coherent structures in turbulence. 2000.

*University of Maryland*, Reduced order modeling of fluid-structure interactions. 1999.

*Tampere University of Technology. (Tampere, Finland)*, The role of turbulent elongational stresses on deflocculation in paper sheet formation. 1999.

*Valmet, Inc. (Jyväskylä, Finland)*, Thoughts on the hydrodynamics of papermaking. 1999.

*Columbia University*, An integrated approach to modeling fluid-structure interactions. 1998.

*Valmet, Inc. (Tampere, Finland)*, The role of turbulent elongational stresses on deflocculation in paper sheet formation. 1998.

*City University of New York; The Levich Institute*, Examination of secondary flows along a vertical wall / free surface corner. 1997.

*University of New Hampshire*, Examination of secondary flows along a vertical wall / free surface corner. 1996.

*Creare, Inc.*, Integrated approaches to technological problems involving complex fluid flows. 1996.

*Rutgers University; Institute of Marine and Coastal Sciences*, Examination of secondary flows along a vertical wall / free surface corner. 1994.

*Massachusetts Institute of Technology*, Experimental investigations of turbulence and its control. 1994.

*University of Kansas*, Experimental investigations of turbulence and its control. 1993.



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INVITED LECTURES (cont'd.):

*Brown University*, Turbulent flow along a vertical wall/free surface corner. 1993.

*Clarkson University*, Turbulent flow along a vertical wall/free surface corner. 1993.

*Princeton University*, Turbulent flow along a vertical wall/free surface corner. 1992.

*University of California-Berkeley*, Turbulent flow along a vertical wall/free surface corner. 1992.

*Rensselaer Polytechnic Institute*, Experimental investigations of turbulence and its control. 1991.

*David Taylor Research Center*, Thoughts on turbulent boundary layer generated noise. 1990.

*University of Southern California*, The effect of drag reducing polymer additives on wall-bound streamwise vortices. 1990.

*Brown University*, The effect of drag reducing polymer additives on wall-bound streamwise vortices. 1990.

*Lehigh University*, The effect of drag reducing polymer additives on wall-bound streamwise vortices. 1990.

*Naval Research Laboratory*, The effect of drag reducing polymer additives on wall-bound streamwise vortices. 1989.

*Cornell University*, Polymer drag reduction in channel flow. 1988.

*University of Maryland*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*University of Southern California*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*Rutgers University*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*Massachusetts Institute of Technology*, Laser anemometry measurements in a turbulent channel flow with polymer additives. 1987.

*University of Missouri-Rolla*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*Syracuse University*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*McDonnell Douglas Research Laboratories*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1987.

*Brown University*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1986.

*University of Iowa*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1986.

*NASA-Ames Research Center*, Reynolds number effects on the small scale structure of a turbulent channel flow. 1986.

ADDITIONAL PAPERS AND PRESENTATIONS:

- Sherman, E., Zhang, L., Wang, X.S., Krane, M. & Wei, T. 2010 Examination of flow in a scaled-up vocal fold model for diseased conditions. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Long Beach, CA.*
- Cohen, B., Voorhees, A., Madsen, J., Anor, T. & Wei, T. 2010 Control volume based hydrocephalus research; analysis of human data. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Long Beach, CA.*
- Halvorson, L., Sherman, E., Leong, C.M. & Wei, T. 2010 Examination of scuba fin designs using simultaneous force and DPIV measurements. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Long Beach, CA.*
- Wang, X.S., Sherman, E., Krane, M., Wei, T. & Zhang, L. 2010 Numerical study of the fluid-solid interactions in human vocal folds using finite element method. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Long Beach, CA.*
- Cohen, B., Anor, T., Madsen, J., Voorhees, A. & Wei, T. 2010 Extracting the fundamental fluid dynamics of CSF and blood from phase contrast MR imaging. *presented at the 1<sup>st</sup> NeuroTalk Conference, Singapore.*
- Sherman, E., Krane, M., Zhang, L. & Wei, T. 2009 Measurement of glottal flow across scaled up dynamic vocal fold motion. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Minneapolis, MN.*
- Cohen, B., Voorhees, A., Madsen, J. & Wei, T. 2009 Control volume based hydrocephalus research; a phantom study. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Minneapolis, MN.*
- Moon, Y.E., Digiulio, D., Peters, S. & Wei, T. 2009 Simultaneous drag and flow measurements of Olympic skeleton athletes. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Minneapolis, MN.*
- Leong, C.M., Russell, J., Connor, N., Honkanen, M. & Wei, T. 2009 In vivo  $\mu$ PIV measurements of blood velocity in small vessels of a rat model. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Minneapolis, MN.*
- Sherman, E., Krane, M. & Wei, T. 2008 Measurement of glottal flow across scaled up dynamic vocal fold motion. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Antonio, TX.*
- Cohen, B. & Wei, T. 2008 Control volume based hydrocephalus research. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Antonio, TX.*
- Moon, Y.E., Sherman, E., Legac, P., Fish, F., Williams, T. & Wei, T. 2008 DPIV measurements of dolphins performing tailstands. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Antonio, TX.*
- Leong, C.M., Nackman, G.B. & Wei, T. 2008 Measuring morphological response of endothelial cells in shear flow. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Antonio, TX.*
- Legac, P., Wei, T., Fish, F., Williams, T., Mark, R. & Hutchison, S. 2007 DPIV of mammalian swimming. *winning video entry in the Gallery of Fluid Motions at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*
- Legac, P., Fish, F., Williams, T. & Wei, T. 2007 DPIV measurements on dolphins: Examining Gray's paradox. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Leong, C.M., Nackman, G.B., Wei, T. 2007 Micro-PIV measurements of pulsatile flow over endothelial cells. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*
- Wei, T., Conner, N., Russell, J. & Legac, P. 2007 Micro-PIV measurements of blood flow in small vessels of a rat model. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*
- Cohen, B., Vedels, S., Wagshul, M., Egnor, M. Voorhees, A. & Wei, T. A mechanics-based framework leading to improved diagnosis and treatment of hydrocephalus. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*
- Peterson, K., Krane, M. & Wei, T. 2007 Fluid-structure interactions in a scaled-up human vocal fold model. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Salt Lake City, UT.*
- Legac, P., Wei, T., Mark, R. & Hutchison, S. 2006 Time-resolved, two-component force analysis of a swimmer's kick. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Leong, C.M., Voorhees, A.V., Wei, T. & Nackman, G.B. 2006 In vitro measurements of pulsatile flow over endothelial cells. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Peterson, K., Wei, T. & Krane, M.H.. 2006 Scaled-up in vitro experiments of vocal fold paralysis. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Cohen, B., Wei, T. & Krane, M.H. 2006 Experimental study of the flow-induced vibration of a flexible duct. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Barry, M., Krane, M.H. & Wei, T. 2006 Starting vortex behavior in flow through a time-varying rectangular slit. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Krane, M.H., Barry, M. & Wei, T. 2006 Vortex formation in a model glottal jet. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Tampa, FL.*
- Leong, C.M., Voorhees, A., Wei, T. & Nackman, G.B. 2004 Stress distribution over endothelial cells in shear flow. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*
- Cohen, B., Krane, M. & Wei, T. 2004 Flow induced vibrations of a dynamically scaled vocal fold model. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*
- Barry, M., Krane, M. & Wei, T. 2004 Flow in a scaled up model of the human glottis. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*
- Grega, L.M., Krane, M. & Wei, T. 2004 Axisymmetric turbulent boundary layers at small  $\alpha$ . *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*
- Mittal, R., Loebbeck, A., Singh, H., Mark, R. & Wei, T. 2004 Fluid dynamics of competitive swimming: An experimental study. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Wei, T., Voorhees, A., Mark, R. & Mittal, R. 2004 Fluid dynamics of competitive swimming: An experimental study. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Seattle, WA.*
- Borowsky, J. & Wei, T. 2003 Simultaneous two-phase DPIV measurements in a turbulent pipe flow. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- M. Krane, Cipolla, K.M., Keith, W.L. & Wei, T. 2003 Transverse curvature effects on turbulent boundary layer structure. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- Voorhees, A., Nackman, G.B. & Wei, T. 2003 Micro-PIV in a bioreactor: micro-resolution flow measurements over cultured endothelial cells. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- Dong, P., Voorhees, A., Atsavapranee, P., Benaroya, H. & Wei, T. 2003 Beating of a circular cylinder mounted as an inverted pendulum. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- Leong, C.M., Benaroya, H. & Wei, T. 2003 Two degree-of-freedom VIV of a circular cylinder pinned at one end. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- Barry, M., Krane, M. & Wei, T. 2003 Measurements of scaled-up glottal flow: Experiment design. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Meadowlands, NJ.*
- M. Krane, Keith, W.L., Cipolla, K.M. & Wei, T. 2002 Axisymmetric turbulent boundary layers over small radius cables. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Dallas, TX.*
- H. Eloranta & Wei, T. 2002 Turbulent boundary layer flow under a sudden contraction. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Dallas, TX.*
- M. Monda, Keith, W.L., Cipolla, K.M. & Wei, T. 2002 Separation of a thick turbulent boundary layer on a small diameter cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Dallas, TX.*
- Dong, P. & Wei, T. 2001 Momentum and energy balances in a vortex induced vibrating cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Diego, CA.*
- Voorhees, A. & Wei, T. 2001 Free-surface interactions in the wake of an inverted cylindrical pendulum. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Diego, CA.*
- Hsu, T.Y.. & Wei, T. 2001 Streamwise vortex formation upstream of a rectangular nozzle. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Diego, CA.*
- Cipolla, K.M., Keith, W.L. & Wei, T. 2001 Turbulent boundary layers on small diameter cables. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, San Diego, CA.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Adelgren, R., Kasper, S., Adams, J., Horvath, M., McNaboe, J., Muhlberger, J, Mandzy, A., Wescott, K., Ogot, M., Wei, T., Cipolla, K.M., Keith, W.L. 2001 Hydrodynamics of a lateral force device. *NUWC-NPT. Tech. Rept. 11,278.*
- Voorhees, A., Benaroya, H. & Wei, T. 2000 Axial flows in Kármán vortices due to amplitude modulation and a free surface. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Dong, P., Benaroya, H. & Wei, T. 2000 Phase averaged energy transport in the vortex induced oscillation of a cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Borowsky, J. & Wei, T. 2000 Applying digital particle image accelerometry to two-phase flows. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Hsu, T.Y. & Wei, T. 2000 Streamwise vortices generated in a partially blocked 2-D jet. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Wei, T., Saarenrinne, P, Hsu, T.Y. & Haapala, S. 2000 Flow induced vibrations of splitter plates in a paper machine headbox. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Saarenrinne, P., Eloranta, H. & Wei, T. 2000 Identification and analysis of near wall coherent structures in a papermachine headbox. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Washington, DC.*
- Wei, T. & Voorhees, A.V. 2000 Free-surface effects on three-dimensional wake structure behind an inverted cylindrical pendulum. *presented at the ONR Workshop on Free Surface Turbulence and Bubbly Flows, Pasadena, CA.*
- Wei, T. & Dong, P. 1999 Kinetic energy transport in stationary and freely-oscillating cylinder wakes. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, New Orleans, LA.*
- Dong, P. & Wei, T. 1999 Kinetic energy transport and the amplitude response of a cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, New Orleans, LA.*
- Voorhees, A. & Wei, T. 1999 Free-surface induced axial flows in oscillating cylinder wakes. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, New Orleans, LA.*
- Hsu, T.Y. & Wei, T. 1999 Streamwise vortices generated upstream of a 2-D jet nozzle. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, New Orleans, LA.*
- Dong, P. & Wei, T. 1998 Digital particle image accelerometry. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Philadelphia, PA.*
- Hsu, T.Y., Wei, T., Grega, L.M., & Leighton, R.I. 1998 Turbulent vorticity transport in a mixed boundary corner. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Philadelphia, PA.*
- Atsavaprane, P., Voorhees, A., & Wei, T. 1998 “Reverse” lock-in regime on a freely oscillating cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Philadelphia, PA.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Voorhees, A., Atsavapranee, P., & Wei, T. 1998 Flow visualization study on a freely oscillating cylinder. *presented at the American Physical Society; Division of Fluid Dynamics Meeting, Philadelphia, PA.*
- Hsu, T.Y., Wei, T., & Leighton, R.I. 1998 Turbulent energy and streamwise vorticity transport in the mixed boundary corner. *presented at the ONR Workshop on Free Surface Turbulence and Bubbly Flows, Pasadena, CA.*
- Richard, A., Atsavapranee, P., Hsu, T.Y., & Wei, T. 1998 Hydrodynamic studies of multiline towed array lifting devices. *Rutgers Univ., Dept. of Mech. & Aero. Eng'g. Rept. # RU-TR-202-MAE-F.*
- Shah, P.N., Atsavapranee, P., Wei, T., & McHugh, J. 1998 Generation of streamwise vortices for deflocculation in paper sheet formation. *Rutgers Univ., Dept. of Mech. & Aero. Eng'g. Rept. # RU-TR-201-MAE-F.*
- Richard, A.M., Atsavapranee, P., & Wei, T. 1997 Fluid-structure interaction of an oscillating cylinder. *presented at the American Physical Society; Division of Fluid Dynamics meeting, San Francisco, CA.*
- Atsavapranee, P. & Wei, T. 1997 DPIV and hot-film measurements in the near wake of an oscillating cylinder. *presented at the American Physical Society; Division of Fluid Dynamics meeting, San Francisco, CA.*
- Wei, T., Shah, P.N., Atsavapranee, P., Hsu, T.Y., & McHugh, J. 1997 Vorticity transport in a developing delta wing vortex. *presented at the American Physical Society; Division of Fluid Dynamics meeting, San Francisco, CA.*
- Hsu, T.Y., Wei, T., & Leighton, R.I. 1997 Turbulent kinetic energy transport in a mixed boundary corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, San Francisco, CA.*
- Grega, L.M., Wei, T., Hsu, T.Y., & Shah, P.N. 1997 Fluid transport between a turbulent boundary layer and a cavity. *presented at the American Physical Society; Division of Fluid Dynamics meeting, San Francisco, CA.*
- Hsu, T.Y., Shah, P.N., & Wei, T. 1997 Experimental validation of hydroacoustic models: Turbulent flow over a louver covered cavity. *Rutgers Univ., Dept. of Mech. & Aero. Eng'g. Rept. # RU-TR-200-MAE-F.*
- Shah, P. & Wei, T. 1996 Turbulent strain field measurements in a trailing vortex. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Syracuse, NY.*
- Hsu, T.Y., Grega, L.M., Wei, T., & Leighton, R.I. 1996 Turbulent kinetic energy transport in a mixed boundary corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Syracuse, NY.*
- Grega, L.M., Hsu, T.Y., Wei, T., & Leighton, R.I. 1996 Vorticity generation in turbulent flow along a corner formed by a solid wall and a free surface. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Syracuse, NY.*
- Karn, E.L. & Wei, T. 1996 Three dimensional wall shear in an arterial bifurcation model. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Syracuse, NY.*
- Grega, L.M., Hsu, T.Y., Tambokan, G., Wei, T., & Leighton, R.I. 1995 Turbulent kinetic energy transport in a mixed boundary corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Irvine, CA.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Smith, G.B. & Wei, T. 1995 Vorticity and turbulent transport in moderate to high Reynolds number vortex rings. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Irvine, CA.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1995 Identification of secondary flows in a mixed boundary corner. *presented at the 6th Annual ONR Free Surface Turbulence Workshop, Pasadena, CA.*
- McKenna, S., Triantafyllou, M.S., Yue, D.K.P., & Wei, T. 1995 Effects of hull geometry on the structure of a ship wake. *presented at the 6th Annual ONR Free Surface Turbulence Workshop, Pasadena, CA.*
- Smith, G.B., Wei, T., Anderson, J., Triantafyllou, M., & Yue, D.K.P. 1994 Velocity and vorticity distributions in moderate to high Reynolds number vortex rings. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Atlanta, GA.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1994 LDA Measurements of turbulent flow along a vertical wall/free surface corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Atlanta, GA.*
- Karn, E.L., Smith, G.B., & Wei, T. 1994 Three-dimensional reconstruction of a coherent structure using image processing techniques. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Atlanta, GA.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1994 Examination of secondary flows along a vertical wall/free surface corner. *presented at the 5th Annual ONR Free Surface Turbulence Workshop, Pasadena, CA.*
- Wei, T., Karn, E.L., Neves, J.C., & Leighton, R.I. 1993 Evolution of hairpin vortices in a mixed boundary corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Albuquerque, NM.*
- Grega, L.M., Wei, T., Leighton, R.I., & Neves, J. 1993 Visualization of coherent structures along a vertical wall/free surface corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Albuquerque, NM.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1993 Examination of secondary flows along a vertical wall/free surface corner. *presented at the 4th Annual ONR Free Surface Turbulence Workshop, Pasadena, CA.*
- Wei, T. & SenGupta, S. 1992 Stabilization of Görtler vortices in Taylor-Couette flow using drag reducing polymer additives. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Tallahassee, FL.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1992 Turbulent flow along a vertical wall/free surface corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Tallahassee, FL.*
- Grega, L.M., Wei, T., & Leighton, R.I. 1992 Turbulent flow along a vertical wall/free surface corner. *presented at the 3rd Annual ONR Free Surface Vorticity Workshop, La Jolla, CA.*
- Wei, T. 1991 The role of secondary vortices on the transition to turbulence in Taylor-Couette flow. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Phoenix, AZ.*
- Smith, G.B., & Wei, T. 1991 Turbulent cascade in colliding off-axis vortex rings. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Phoenix, AZ.*

ADDITIONAL PAPERS AND PRESENTATIONS (cont'd.):

- Grega, L.M., Wei, T., & Leighton, R.I. 1991 Turbulent flow along a vertical wall/free surface corner. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Phoenix, AZ.*
- Wei, T., Spina, E.F., Alving, A.E., & Hussein, H. 1991 Report of the working group on junior faculty development. *Proc. of the New Approaches to Expt. Turbulence Research workshop, Princeton, NJ.*
- Smith, G.B., & Wei, T. 1990 Reconnection phenomena in impinging vortex rings. *poster presented at the American Physical Society; Division of Fluid Dynamics meeting, Ithaca, NY.*
- Smith, G.B., Rapp, L.M., Wei, T., & Zagarola, M.V. 1990 End view visualization of turbulent boundary layers in the new Rutgers free surface water tunnel. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Ithaca, NY.*
- Leibolt, M., Pezeshki, C., & Wei, T. 1990 Bispectra of wall pressure measurements. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Ithaca, NY.*
- Wei, T., & Willmarth, W.W. 1990 The effects of drag reducing polymer additives on the v-velocity fluctuations in a turbulent channel flow. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Ithaca, NY.*
- Wei, T. 1990 Thoughts on turbulent boundary layer generated noise. *Rutgers Univ., Dept. of Mech. & Aero. Eng'g. Rept. # RU-TR-175-MAE-F.*
- Wei, T. & Willmarth, W.W. 1989 Examination of v-velocity fluctuations in a turbulent channel flow in the context of sediment transport. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Palo Alto CA.*
- Kline, E., Lee, S., & Wei, T. 1989 The effect of polymer additives on Görtler vortices in Taylor-Couette flow. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Palo Alto CA.*
- Wei, T. & Willmarth, W.W. 1987 Improved polymer drag reduction by varying injection conditions. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Eugene OR.*
- Willmarth, W.W., Wei, T., & Lee, C.O. 1986 Laser anemometer measurements of Reynolds stress in a turbulent channel flow with drag reducing polymer additives. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Columbus OH.*
- Wei, T. & Willmarth, W.W. 1986 The Reynolds number effect on the small scale structure of a turbulent channel flow. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Columbus OH.*
- Willmarth, W.W. & Wei, T. 1983 Time resolved measurements of velocity and pressure in large scale turbulence. *presented at the American Physical Society; Division of Fluid Dynamics meeting, New Brunswick, NJ.*
- Wei, T. 1983 Static pressure distribution on long cylinders as a function of angle of yaw and Reynolds number. *Univ. of Mich., Dept. of Aerospace Eng'g. Rept. #014439-1-T.*
- Wei, T. & Smith, C.R. 1980 The appearance of axial vortices in vortex shedding from a cylinder. *presented at the American Physical Society; Division of Fluid Dynamics meeting, Ithaca NY.*



TIMOTHY WEI - 17  
FUNDING HISTORY:

*Current Support:*

NRC	\$450,000	Faculty Development Grant Program ( <i>PI with W. Ji &amp; L. Liu</i> ); FY2009 - 2010
NSF	\$2,800,000	GK-12 Building Bridges at the Crossroads from Grade School to Grad School and Beyond ( <i>Co-PI with D. Kaminski, B. Ruel, L. Castillo &amp; D. Borca-Tasciuc</i> ); FY2008 – 2012.
NIH	\$396,526	Laryngeal Blood Flow Measurement via micro Particle Image Velocimetry ( $\mu$ PIV) ( <i>Rensselaer PI with N. Connor; Wisconsin</i> ); FY2009 – 2011.
NIH	\$750,000	Glottal Jet Aerodynamics ( <i>Co-PI with L. Zhang; Rensselaer &amp; M. Krane (PI); Penn State</i> ); FY2011 - 2013.

*Past Support:*

NIH	\$750,000	Glottal Jet Aerodynamics ( <i>Rensselaer PI with M. Krane; Penn State</i> ); FY2007 - 2009.
Johnson Foils	\$15,000	DPIV Measurements of Turbulence Generation in Head Box Tube Bundles; Jan. – June 2007.
USA Swimming	\$15,000	Design and Construction of a Two-Component Force Balance; Jan. 2006 Jan. 2007.
Bard, Inc.	\$18,000	DPIV Measurements of Arterial Graft Implants; July 2004 – May 2005.
NIH	\$591,203	Glottal Jet Aerodynamics ( <i>Co-PI with M. Krane</i> ); FY2003 - 2005.
ONR	\$550,000	Modeling Fluid-Structure Interactions: Analysis and Experiment ( <i>Joint-PI with H. Benaroya</i> ); FY2003 - 2005.
ONR	\$50,000	Modeling Fluid-Structure Interactions: Analysis and Experiment (supplement); FY 2005.
Metso, Inc.	\$70,000	Fundamental Studies into the Hydrodynamics of Streak Formation; June 2001 - May 2003.
ONR/NUWC	\$20,000	Control of Multiline Towed Arrays; Modeling and Experimentation; June – Dec. 2002.
Vascular Architects, Inc.	\$21,500	Visualization of Flow Past Arterial Stents; Oct. 2001 – May 2002.
ONR	\$485,000	Modeling Fluid-Structure Interactions: Analysis and Experiment ( <i>Joint-PI with H. Benaroya</i> ); FY2000 - 2002.
ONR/NUWC	\$20,000	Control of Multiline Towed Arrays; Modeling and Experimentation; FY2002.
TEKES	~\$70,000	Visiting Professorship Tampere Univ. of Technology; May – Nov. 2000
ONR/NUWC	\$20,000	Control of Multiline Towed Arrays; Modeling and Experimentation; FY2001.
Valmet, Inc.	\$70,000	Hydrodynamics of Streak Formation; June 1999 - May 2001.

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FUNDING HISTORY (cont'd.):

ONR/NUWC	\$41,200	Control of Multiline Towed Arrays; Modeling and Experimentation; FY2000.
NUWC	\$13,000	Design and Analysis of a Lateral Force Device for Multiline Towed Arrays; FY2000.
NSWC	\$12,000	Assembly of a High Resolution DPIV System; August - September 1999.
Rutgers	\$155,000	Laboratory on Multiphase and Interfacial Flows ( <i>PI w/ G. Elliott, N. Glumac, &amp; A. Pelegri</i> ); FY1999.
Rutgers	\$100,000	Laboratory on Multiphase and Interfacial Flows ( <i>PI w/ G. Elliott &amp; N. Glumac</i> ); FY1998.
NUWC	\$15,000	Hydrodynamics Studies of Multiline Towed Array Lifting Devices; August - December 1997.
ONR	\$495,000	Modeling Fluid-Structure Interactions: Analysis and Experiment ( <i>Joint-PI with H. Benaroya</i> ); FY1997 - 1999.
NSWC	\$35,000	The Hydrodynamics of Turbulent Flow Over a Porous Plate; July 1996 -April 1997.
TAPPI	\$40,000	Generation of Streamwise Vortices for Deflocculation in Paper Sheet Formation; FY1996 - 1998
State of Rutgers	\$650,000	Industrial and Scientific Productivity for the 21st Century: University Department of Mechanical & Aerospace Undergraduate Laboratory Space Renovation Project; FY1995 - 1997
New Jersey Engineering		
ONR	\$30,000	Turbulent Processes at a Turbulent Boundary Layer/Free Surface Interface (expansion); FY1995.
Hewlett Packard Foundation	\$38,000	Industrial and Scientific Productivity for the 21st Century: Rutgers University Department of Mechanical & Aerospace Engineering Undergraduate Laboratory Plan; FY1995
State of Rutgers	\$400,000	Industrial and Scientific Productivity for the 21st Century: University Department of Mechanical & Aerospace Undergraduate Laboratory Plan; FY1995
New Jersey Engineering		
ONR	\$100,000	Turbulent Processes at a Turbulent Boundary Layer/Free Surface Interface (expansion); FY1994.
NASA	\$22,000	The Role of Vortex Interactions in the Decay of Aircraft Tip Vortices: NASA Graduate Student Researcher Program(w/ G.B. Smith); FY1994.
ONR	\$60,660	Turbulent Processes at a Turbulent Boundary Layer/Free Surface Interface (expansion); FY1993.
NASA	\$22,000	The Role of Vortex Interactions in the Decay of Aircraft Tip Vortices: NASA Graduate Student Researcher Program(w/ G.B. Smith); FY1993.
ONR	\$135,000	Turbulent Processes at a Turbulent Boundary Layer/Free Surface Interface; FY1992 - 1994.

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FUNDING HISTORY (cont'd.):

NASA	\$22,000	The Role of Vortex Interactions in the Decay of Aircraft Tip Vortices: NASA Graduate Student Researcher Program (w/ G.B. Smith); FY1992.
U.S. Navy	\$25,000	The Effects of Roughness on Turbulent Wall Pressure Fluctuations; July-Sept. 1991.
ASEE	\$10,000	U.S. Navy / ASEE Summer Faculty Fellowship, David Taylor Research Center; Summer 1990
NSF	\$70,000	The Effect of Drag Reducing Polymer Additives on Wall-Bound Streamwise Vortices; FY 1989 &1990.
FAA	\$25,000	An Investigation of the Persistence of Wing Tip Vortices in Varying Atmospheric Conditions; FY 1989.
Rutgers	\$30,000	Henry Rutgers Research Fellow; FY 1987 &1988.

Ph.D. DISSERTATIONS SUPERVISED:

Sherman, E.		<i>in progress</i>
Cohen, B.	2011	Integrating control volume analysis with magnetic resonance imaging to detect and study cerebral flow related disease ( <i>to be completed May 2011</i> ).
Leong, C.M.	2008	In vitro measurements of flow over endothelial cells.
Borowsky, J.	2005	An experimental investigation of liquid-solid two-phase pipe flow by simultaneous, two-color digital particle image velocimetry/accelerometry.
Voorhees, A.	2004	Measurement of total mechanical loading on endothelial cells <i>in vitro</i> using micron-resolution particle image velocimetry.
Peng, D.	2002	Phase averaged energy transport in the vortex-induced oscillation of a cylinder.
Hsu, T.Y.	2002	Hydrodynamic stability at the exit of a papermachine headbox.
Smith, G.B.	1996	Transport processes in moderate to high Reynolds number vortex rings.
Grega, L.M.	1995	Generation of secondary vortices in turbulent flow along a solid wall-free surface corner.

M.S. THESIS SUPERVISED:

Halvorson, L.		<i>in progress</i>
Sherman, E.	2011	Investigation of dysphonic phonation using physiologically similar vocal fold models ( <i>to be completed May 2011</i> ).
Legac, P.	2008	Mechanics and thrust production of mammalian swimmers.
Peterson, K.	2007	Experimental investigation into the aerodynamic consequences associated with dysphonic conditions.

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M.S. THESIS SUPERVISED (cont'd.):

- Cohen, B. 2006 Flow induced vibration of a model vocal fold.
- Barry, M. 2005 Glottal jet aerodynamics .
- Leong, C.M. 2005 Effects of mass-ratio on the frequency-amplitude response of two degree-of-freedom vortex-induced-vibration of a cylinder pinned at one end.
- Voorhees, A. 2002 Three dimensional effects in the wake of a freely-oscillating inverted pendulum cylinder.
- Eloranta, H. 2000 Examination of near-wall coherent structures in the papermachine headbox slice with PIV (*examiner: Tampere University of Technology*).
- Hsu, T.Y. 1999 Turbulent transport processes in a mixed boundary corner.
- Shah, P. 1997 The near wake development of the core of a turbulent trailing vortex shed from a delta wing.
- Karn, E.L. 1997 Three-dimensional hemodynamics in the iliac branch of the aorta.
- Grega, L.M. 1993 Turbulent flow along a vertical wall/free surface corner.
- Smith, G.B. 1992 Collisional excitation of instabilities in impinging vortex rings.
- Kline, E. 1991 The evolution of secondary vortices during the transition from laminar Taylor vortices to fully turbulent flow.
- Lee, S.H.-K. 1990 The effect of drag reducing polymer additives on Taylor-Couette flows.

UNDERGRADUATE INDEPENDENT STUDY PROJECTS SUPERVISED:

- Moon, Y.E. 2008 Design and Construction of a Force Balance for Skeleton Sled  
2009 Aerodynamics.
- Chen, V. 2007 Processing and Analysis of DPIV Measurements Around Swimmers.
- Sherman, E. 2007 Raman Spectroscopy of Flow Over Endothelial Cells.
- Legac, P. 2006 Time-Resolved Two-Component Force Measurements of Olympic Swimmers.
- Bracken, P. 2006 Organization and Leadership of the Design/Build/Fly Competition Team.
- Brown, J. 2005 Digital Particle Image Velocimetry Measurements Around a Swimmer  
Ramp, M. (Project SUPER).
- Cohen, B. 2004 Flow Induced Vibration in a Scaled-Up Vocal Fold Model. (Slade Scholar Honors Thesis).
- Jenkins, M. 2004 Flow Induced Vibration of Paper-Machine Headbox Vanes. (Slade Scholar Honors Thesis).
- Ahmeddi, N. 2004 Digital Particle Image Velocimetry Measurements Around a Swimmer  
Myers, N. (Project SUPER).
- Joiner, D. 2004 Examination of Flow-Induced Headbox Vane Vibrations (Minority Academic Careers senior thesis).
- Barry, M. 2003 Glottal Jet Aerodynamics (Slade Scholar Honors Thesis).

UNDERGRADUATE INDEPENDENT STUDY PROJECTS SUPERVISED (cont'd.):

- Jefferson, A. 2003 Digital Particle Image Velocimetry Measurements Around a Swimmer  
Vincent, C., Popp, R. (Project SUPER).
- Vogelsang, N. 2002 Design and Construction of a Headbox Vane Vibration Experiment
- Varghese, R. 2001 Design and Construction of a Pulp Fiber Flocculation Control Experiment.
- Joiner, D. & 2001 Design of a Lateral Force Device Control System (Project SUPER).  
Vogelsang, N.
- Kasper, S. 2000 Response of a Towed Array Sensor Cable to Periodic Forcing (Project  
SUPER).
- Voorhees, A. 1998 Simultaneous Two Phase Sedimentation Measurements.
- Wollner, H. 1997 Design and Construction of a Two Phase Flow Pipe Facility.
- Richard, A. 1997 Flow Visualization of a Cylinder Subject to Flow Induced Vibration.
- Geissele, W. 1997 Design and Construction of a Turbomachinery Water Table Facility.
- Beale, S. 1997 The Role of Three Dimensional Wall Shear in Intimal Hyperplasia  
(Project SUPER).
- Doshna, E. 1996 Attenuation of Waves in the Wake of a Surface Piercing Circular Cylinder
- Ambrose, J. 1996 Formation and Evolution of Hairpin Vortices (Slade Scholar)
- Tambokan, G. 1995 Reynolds Pipe Experiment (paid undergraduate assistant)
- Hsu, T.-Y. 1995 Mixed Boundary Corner Flows (paid undergraduate assistant)
- Price, B.B. 1994 Design of a Mach 4 Wind Tunnel (paid undergraduate assistant)
- Karn, E.L. 1993 Interaction of Hairpin Vortices With a Free Surface (paid undergraduate  
assistant)
- Liu, D.J. & 1993 Airfoil Stall Delay Through Slotted Edge Flaps  
Hillberger, M.
- Sen Gupta, S. 1992 Effect of Drag Reducing Polymer Additives on Wall Bound Streamwise  
Vortices
- Beckerman, L. 1990 Near Wake Stability of a Finite Circular Cylinder Pivoting About One End
- Rapp, L.M. 1990 Effects of Roughness on Turbulent Boundary Layer Pressure Fluctuations
- Harrity, K. 1990 Design of a Scanning Laser Sheet Flow Visualization System
- Zagarola, M.V. 1989 Development of a Laser Doppler Velocimeter
- Smith, G.B. 1989 Design and Construction of a Large Free Surface Water Tunnel (paid  
undergraduate assistant)
- Biggs, E.F. 1988 Design of Pumping System for a Large Flow Facility (paid undergraduate  
assistant)

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COURSES TAUGHT:

*Rutgers*

Mech. 221 Statics (Course Supervisor)  
Mech. 291 Honors Statics  
ME 312 Fluid Mechanics  
ME 342 Design of Mechanical Components  
ME 349 Mechanical Engineering Measurements Laboratory  
ME 350 Mechanical Engineering Measurements  
ME 351 Elements of Thermodynamics  
ME 431/2/3 Mechanical Engineering Laboratory  
ME 460 Aerodynamics  
ME 463 Compressible Flows  
ME 491/2 Special Problems  
ME 501 Turbulence  
ME 513 Experimental Methods in Mechanical Engineering  
ME 530 Fluid Mechanics I  
ME 630 Fluid Mechanics II  
ME 691/2 Colloquium

*Rensselaer*

MANE 2060 Fundamentals of Flight  
MANE 4020 Thermal and Fluids Laboratory  
MANE 4040 Mechanical Systems Laboratory  
MANE 4910 Fluid Dynamics Laboratory

PROFESSIONAL SERVICE:

2010 Member – *Graduate Program Advisory Panel; Pennsylvania State University Dept. of Mechanical Eng’g.*

2009 – present Member-at-Large – *ASME Strategic Management Sector Board of Governors*

2008 – present Member-at-Large – *ASME Mechanical Engineering Department Heads Executive Committee.*

2006 – present Member – *Proceedings of the Royal Society of London A Editorial Board.*

2006 – present Member – *External Advisory Board; Lehigh University Dept. of Mechanical Eng’g. & Mechanics.*

2003 – present Member – *American Physical Society; Division of Fluid Dynamics K-12 Outreach Poster Project Committee*

2002 – present Coordinator – *American Physical Society; Division of Fluid Dynamics Membership.*

2009 – present Faculty Advisor – *Rensselaer Formula SAE Hybrid Car Team*

2008 Faculty Advisor – *Rensselaer Formula SAE Team*

2006 – 2008 Faculty Advisor – *Rensselaer Design/Build/Fly Team*

2006 – 2009 Chair – *ASME Board on Government Relations Public Policy Committee.*

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PROFESSIONAL SERVICE (cont'd.):

- 2003 – 2009 Member-at-Large – *ASME Board on Government Relations.*
- 2005 – 2007 Panelist – *NSF Graduate Research Fellow Program.*
- 2006 External Review Committee – *Naval Research Laboratory; Remote Sensing Division.*
- 1999 – 2005 NSF Task Force Leader – *ASME Inter-Council Committee on Federal Research and Development.*
- 1993 – 2004 Lead & Co-Organizer – *Forum on Unsteady Flows; ASME Fluids Engineering Division Conferences.*
- 2001 – 2004 Member-at-Large – *American Physical Society; Division of Fluid Dynamics Executive Committee.*
- 2003 Co-Lead Organizer – *International Union for Theoretical and Applied Mechanics; Symposium on Fluid-Structure Interactions. 2-6 June 2003.*
- 1998 Guest Editor – *Annual Review of Fluid Mechanics (Volume 33)*
- 1998 NASA Task Force Leader – *ASME Inter-Council Committee on Federal Research and Development.*
- 1998 Co-Lead Organizer – *American Physical Society; Division of Fluid Dynamics 51st Annual Meeting, Philadelphia, PA. 23-25 Nov. 1998.*
- 1998 - 2000 Adjunct Member – *ASME Board on Government Relations*
- 1996 - 1997 ASME Minority Leadership Intern – *ASME Board on Government Relations*
- 1994, '96, '99 Program Reviewer – *Naval Undersea Warfare Center, New London CT.*
- 1993 - 2004 Member – *ASME Fluids Engineering Division; Fluid Mechanics Technical Committee.*
- 1989 - 2005 Faculty Advisor – *Rutgers AIAA Student Chapter.*
- Reviewer – *National Science Foundation, Department of Energy, Department of Agriculture, MIT Sea Grant Program.*
- Reviewer – *Journal of Fluid Mechanics, Physics of Fluids, AIAA Journal, ASME Journal of Biomechanical Engineering, ASME Journal of Fluids Engineering, Experiments in Fluids, ASME Journal of Applied Mechanics, Journal of Fluids and Structures, Proceedings of the Royal Society of London Series A*

PROFESSIONAL SOCIETIES:

American Physical Society; Division of Fluid Dynamics (APS-DFD)  
American Institute of Aeronautics and Astronautics (AIAA)  
American Society of Mechanical Engineering (ASME)  
Technical Association of the Pulp and Paper Industries (TAPPI)  
American Society of Engineering Educators (ASEE)