

CURRICULUM VITAE

DANIEL E. GOLDSTEIN

Phone: (573) 256-1011
E-Mail: dan@cora.nwra.com

PERSONAL INFORMATION

Citizenship: USA
Foreign Languages: French

EDUCATION

University of Colorado at Boulder

PH.D. Mechanical Engineering
May 2004, GPA 4.0/4.0
Dissertation Title: Stochastic Coherent Adaptive Large Eddy Simulation Method

University of Massachusetts

M.S. Mechanical Engineering
January 1999, GPA 4.0/4.0

Purdue University

B.S. Mathematics Honors Program
December 1995, GPA 3.69/4.0

PROFESSIONAL EXPERIENCE

POSITIONS HELD

October 2005- Present Research scientist, NorthWest Research Associates, Inc., Colorado Research Associates Division, Colorado, U.S.A.

October 2004- July 2005 Post Doctoral Scientist, Minnesota Supercomputing Institute, University of Minnesota, Minneapolis, Minnesota, U.S.A.

August 2002 - September 2004 Research Assistant,
University of Colorado, Boulder, Colorado, U.S.A.

September 1999 - August 2002 Research Assistant, Department of Mechanical Engineering,
University of Missouri, Columbia, Missouri

September 1996 - August 1999 Research Assistant, Department of Mechanical Engineering,
University of Massachusetts, Amherst, Massachusetts

February 1987 - May 1989 Programmer Analyst, Engineering Computer Network
Purdue University, West Lafayette, Indiana

Visiting Scientist

July 2004, July 2000 Summer Program, Center for Turbulence Research, Stanford University,
Stanford, California, U.S.A.

GRADUATE AND POSTDOCTORAL ADVISORS

- James Manwell, University of Massachusetts, Amherst, Massachusetts (MS)
- Oleg Vasilyev, University of Colorado, Boulder, Colorado, U.S.A. (PhD)
- David Yuen, University of Minneapolis, Minnesota, U.S.A. (PostDoc)

ACADEMIC HONORS

- Awarded NASA Graduate Student Researchers Program Fellowship, 2000-2003
- Inducted into Phi Beta Kappa Honor Society, 1995
- Inducted into Golden Key Honor Society, 1995
- Deans List and Semester Honors at Purdue University every semester from fall 1992 through graduation in December 1995.
- Graduated from Mathematics Honors Program in December 1995.
- Graduated from University of Massachusetts with a MS in Mechanical Engineering in December 1999 with a 4.0 grade point average (4.0 base).

RESEARCH INTERESTS

- Computational Fluid Dynamics
- Adaptive Large Eddy Simulations of Turbulent Flows
- Wavelet Methods for Modeling and Simulation of Complex Multi-Scale Phenomena
- Geophysical Fluid Dynamics
- Renewable Energy/ Wind energy

PROFESSIONAL SOCIETIES MEMBERSHIP

- American Institute of Aeronautics and Astronautics (AIAA), 2001-Present
- American Physical Society (APS), 2001-Present
- American Society of Mechanical Engineers (ASME), 2001-Present

FUNDED RESEARCH

- Coherent Vortex Simulation Method for Modeling Turbulent Three-Dimensional Flows, GSRP Fellowship, National Aeronautics and Space Administration Grant No NGT-1-52239, \$22,000, 2000-2001.
- Coherent Vortex Simulation Method for Modeling Turbulent Three-Dimensional Flows, GSRP Fellowship, National Aeronautics and Space Administration Grant No NGT-1-01017, \$22,000, 2001-2002.
- Coherent Vortex Simulation Method for Modeling Turbulent Three-Dimensional Flows, GSRP Fellowship, National Aeronautics and Space Administration Grant No NGT-1-02022, \$24,000, 2002-2003.

PUBLICATIONS**ARTICLES IN REFEREED JOURNALS**

1. Vasilyev, O.V. and Goldstein, D.E., "Local Spectrum of Commutation Error in Large Eddy Simulations," *Physics of Fluids*, **16**(2), pp. 470-473, 2004.
2. Yuen, D.A., Erlebacher, G., Vasilyev, O.V., Goldstein, D.E., and Fuentes, M., "Role of Wavelets in the Physical and Statistical Modeling of Complex Geological Processes," *Pure and Applied Geophysics*, 2004. 161(11-12), pp. 2231-2244, 2004.
3. Goldstein, D.E. and Vasilyev, O.V., "Stochastic Coherent Adaptive Large Eddy Simulation Method," *Physics of Fluids*, **16**(7), pp. 2497-2513, 2004.
4. De Stefano, G., Goldstein, D.E. and Vasilyev, O.V., "On the Role of Sub-grid Scale Coherent Modes in Large Eddy Simulation," *Journal of Fluid Mechanics*, **525**, pp. 263-274, 2005.

5. De Stefano, G., Vasilyev, O.V., Goldstein, D.E., “A-priori dynamic test for deterministic/stochastic modeling in LES of turbulent flow,” *Computer Physics Communication*, **169**(3), pp. 210-213, 2005
6. Goldstein, D.E., Vasilyev, O.V., and Kevlahan, N.K.-R., “CVS and SCALES simulation of 3D isotropic turbulence,” *Journal of Turbulence*, **06**(37), 2005.

CONFERENCE AND SYMPOSIUM PAPERS

1. Goldstein, D., Manwell, J., Rogers, A., “Development of a Wind Turbine Controller Testing Environment,” In *Proceedings of the American Wind Energy Association’s Annual Conference*, Bakersfield, California, pp. 41-50 1998.
2. Manwell, J., Rogers, A., Ellis, A., Goldstein, D., “Operational Experience With a 250 kW Teetered Rotor Wind Turbine on an Inland New England Ridge Top,” Joint 17th ASME Wind Energy Symposium/36th AIAA Aerospace Sciences Meeting and Exhibit, January 12-15, 1998, Reno, Nevada. AIAA paper 98-0047
3. Goldstein, D.E., Vasilyev, O.V., Rogallo, R.S., and Wray, A.A., “Evaluation of the Use Of Second Generation Wavelets in the Coherent Vortex Simulation Approach,” In *Proceedings of the 2000 Summer Program*, Center for Turbulence Research, NASA Ames/Stanford Univ., pp. 293-304, 2000.
4. Goldstein, D.E., Vasilyev, O.V., Kevlahan, N.K.-R., “Feasibility Study of an Adaptive Large Eddy Simulation Method,” *16th AIAA Computational Fluid Dynamics Conference*, Orlando, Florida, 2003, AIAA Paper 2003-3551
5. Kevlahan, N.K.-R., Vasilyev, O.V., Goldstein, D.E., and Jay, A., “A Three-Dimensional Adaptive Wavelet Method for Fluid-Structure Interaction,” In *Proceedings of Direct and Large-Eddy Simulation Workshop 5*, Technical University of Munich, Germany, 2003.
6. Goldstein, D.E., Vasilyev, O.V., Kevlahan, N.K.-R., “Adaptive LES of 3D decaying isotropic turbulence,” In *Proceedings of the 2004 Summer Program*, Center for Turbulence Research, NASA Ames/Stanford Univ., 2004.
7. Goldstein, D.E., Vasilyev, O.V., De Stefano, G., Bodony, D., You, D., Shunn, L., “Assessment of local dynamic subgrid scale models for Stochastic Coherent Adaptive Large Eddy Simulation,” In *Proceedings of the 2006 Summer Program*, Center for Turbulence Research, NASA Ames/Stanford Univ., 2006.
8. Kadlec, B.J., Goldstein, D.E., Yuen, D.A., Vezolainen, A., “Visualization of Wavelet Compressed Mantle Convection Data,” In *Physics of the Earth and Planetary Interiors (2007)*, doi:10.1016/j.pepi.2007.03.009

REPORTS

1. Yuen, D.A., Erlebacher, G., Vasilyev, O.V., Goldstein, D.E., and Fuentes, M., “Role of Wavelets in the Physical and Statistical Modeling of Complex Geological Processes,” University of Minnesota Supercomputing Institute Research Report UMSI 2002/156, 2002.

SHORT PAPERS AND ABSTRACTS

1. Goldstein, D.E., Vasilyev, O.V., Rogallo, R.S., and Wray, A.A., “Evaluation of the Use of Second Generation Wavelets in the Coherent Vortex Simulation Approach,” *Bulletin of the American Physical Society*, **45**(9), p. 44, 2000.
2. Goldstein, D.E. and Vasilyev, O.V., “Toward the Modeling of Coherent Subgrid Structures,” *Bulletin of the American Physical Society*, **46**(10), p. 20, 2001.

3. Vasilyev, O.V. and Goldstein, D.E., "Local Spectrum of Commutation Error for LES of Inhomogeneous Turbulent Flows," *Bulletin of the American Physical Society*, **46**(10), p. 162, 2001.
4. Goldstein, D.E. and Vasilyev, O.V., "Stochastic Coherent Adaptive Large Eddy Simulation Method," *Bulletin of the American Physical Society*, **47**(10), p. 59, 2002.
5. Kevlahan, N.K.-R., Goldstein, D.E. and Vasilyev, O.V., "Three-Dimensional Simulations Using an Adaptive Wavelet Collocation Method--Part I: Theory and Application to Fluid-Bluff Body Interaction," *Bulletin of the American Physical Society*, **48**(10), p. 46, 2003
6. Goldstein, D.E., Vasilyev, O.V., and Kevlahan, N.K.-R., "Three-Dimensional Simulations Using an Adaptive Wavelet Collocation Method--Part II: Application to 3D Homogeneous Turbulence," *Bulletin of the American Physical Society*, **48**(10), p. 46, 2003
7. De Stefano, G., Goldstein, D.E. and Vasilyev, O.V., "A-priori Dynamic Testing of Stochastic/Coherent Modeling for Large Eddy Simulation," *Bulletin of the American Physical Society*, **48**(10), p. 196, 2003
8. Alam, J., Kevlahan, N.K.-R., Vasilyev, O.V., and Goldstein, D.E., "Simultaneous Space-Time Adaptive Wavelet Solution of Turbulence," *Bulletin of the American Physical Society*, **49**(9), p. 48, 2004
9. De Stefano, G., Goldstein, D.E. and Vasilyev, O.V., "A-priori Dynamic Study of Subgrid-Scale Energy Transfer in Large Eddy Simulation," *Bulletin of the American Physical Society*, **49**(9), p. 56, 2004
10. Goldstein, D.E., Vasilyev, O.V., and Kevlahan, N.K.-R., "Adaptive LES of Decaying 3D Homogeneous Isotropic Turbulence," *Bulletin of the American Physical Society*, **49**(9), p. 68, 2004
11. Kadlec, B. J., Goldstein, D.E., Yuen, D.A., Vezolainen, A., "3D Visualization of Turbulence and Multiscale Energy Structures on Temporally Adaptive Wavelet Collocation Grids", *Eos, Trans. AGU*, 87(36), Western Pacific Geophysics Meeting Supplement, Abstract U34A-0004

INVITED SEMINARS

1. "Stochastic Coherent Adaptive Large Eddy Simulation Method", Mechanical Engineering Department, Johns Hopkins University, June 9, 2004.

Meeting Presentations

1. "Development of a Wind Turbine Controller Testing Environment," American Wind Energy Association's Annual Conference, Bakersfield California, May 1998.
2. "Operational Experience With a 250 kW Teetered Rotor Wind Turbine on an Inland New England Ridge Top," Joint 17th ASME Wind Energy Symposium/36th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 12-15, 1998. (Presented by J. Manwell)
3. "Wavelet Transforms for the Analysis of Wind Data," European Wind Energy Conference, Nice France, March 1999 (Presented by R. Kirchhoff)
4. "Evaluation of the Use of Second Generation Wavelets in the Coherent Vortex Simulation Approach," Fifty-Third Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Washington, D.C., November 19-21, 2000.
5. "Toward the Modeling of Coherent Subgrid Structures," Fifty-Fourth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, San Diego, November 18-20, 2001. (Presented by O.V. Vasilyev)

6. "Local Spectrum of Commutation Error for LES of Inhomogeneous Turbulent Flows," Fifty-Fourth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, San Diego, November 18-20, 2001. (Presented by O.V. Vasilyev)
7. "Role of Wavelets in the Physical and Statistical Modeling and Visualization of Complex Geological Processes," Third International ACES Meeting, Maui, Hawaii, May 5-10, 2002. (Presented by D.A. Yuen)
8. "Stochastic Coherent Adaptive Large Eddy Simulation Method," Fifty-Fifth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Dallas, November 24-26, 2002.
9. "Feasibility Study of an Adaptive Large Eddy Simulation Method," 16th AIAA Computational Fluid Dynamics Conference, 23-26 June 2003, Orlando, Florida
10. "Three-Dimensional Simulations Using an Adaptive Wavelet Collocation Method--Part I: Theory and Application to Fluid-Bluff Body Interaction," Fifty-Sixth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, East Rutherford, New Jersey, November 23-25, 2003. (Presented by O.V. Vasilyev)
11. "Three-Dimensional Simulations Using an Adaptive Wavelet Collocation Method--Part II: Application to 3D Homogeneous Turbulence," Fifty-Sixth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, East Rutherford, New Jersey, November 23-25, 2003.
12. "A-priori dynamic testing of stochastic/coherent modeling for large eddy simulation," Fifty-Sixth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, East Rutherford, New Jersey, November 23-25, 2003. (Presented by G. De Stefano)
13. "A three-dimensional adaptive wavelet method for fluid-structure interaction," Direct and Large-Eddy Simulation Workshop 5, Technical University of Munich, Germany, 2003. (Presented by N.K.-R. Kevlahan)
14. "An adaptive wavelet collocation method for turbulence calculations," Large Eddy Simulation, Coherent Vortex Simulation and Vortex Methods for Turbulent Flows, Euromech Colloquium 454, Marseilles, France, April 14-16, 2004.
15. "Adaptive wavelet simulation of fluid—structure interaction in 2D and 3D," Large Eddy Simulation, Coherent Vortex Simulation and Vortex Methods for Turbulent Flows, Euromech Colloquium 454, Marseilles, France, April 14-16, 2004. (Presented by N.K.-R. Kevlahan)
16. "Simultaneous Space-Time Adaptive Wavelet Solution of Turbulence," Fifty-Seventh Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Seattle, Washington, November 21-23, 2004. (Presented by J. Alam)
17. "A-priori Dynamic Study of Subgrid-Scale Energy Transfer in Large Eddy Simulation," Fifty-Seventh Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Seattle, Washington, November 21-23, 2004. (Presented by G. De Stefano)
18. "Adaptive LES of Decaying 3D Homogeneous Isotropic Turbulence," Fifty-Seventh Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Seattle, Washington, November 21-23, 2004.
- 19.

COURSE INSTRUCTION AT THE UNIVERSITY OF MISSOURI

Substitute taught: Fluid Mechanics (MAE 251)

Semesters: Fall 2000, Winter 2001, Fall 2001, Winter 2002

Text: B.R. Munson, D. F. Young, and T. H. Okishi, *Fundamentals of Fluid Mechanics*, John Wiley & Sons, Inc., New York, 4th Edition (2002).

REFERENCES**Oleg Vasilyev**

Professor
Dept. of Mechanical Engineering
University of Colorado
427 UCB
Boulder CO 80309-0427
Phone: (303) 492-4717
Fax: (303) 492-3498
E-mail: Oleg.Vasilyev@Colorado.EDU

Thomas B. Gatski

Senior Research Scientist
Aerodynamic and Acoustic Methods Branch
NASA Langley Research Center
Hampton, VA 23681-0001
Phone: (757) 864 5552
Fax: (757) 864 8816
E-mail: t.b.gatski@larc.nasa.gov

Nicholas Kevlahan

Professor
Department of Mathematics & Statistics
McMaster University
Hamilton, Ontario, CANADA L8S 4K1
Phone: (905) 525 9140 x23412
Fax: (905) 522 0935
E-mail: kevlahan@mcmaster.ca

Giuliano De Stefano

Dipartimento di Ingegneria
Aerospaziale e Meccanica
Seconda Università degli studi di Napoli
via Roma 29, I-81031 Aversa, Italy
Phone: (39) 081.5010265
Fax: (39) 081.5010204
E-mail: giuliano.destefano@unina2.it

David A. Yuen

Professor
Minnesota Supercomputing Institute and
Department of Geology and Geophysics
University of Minnesota
23 Pillsbury Hall
Minneapolis, MN 55415
Phone: (612) 624-9801
Fax: (612) 625-3819
E-mail: *davey@krissy.msi.umn.edu*