Curriculum Vitae: George Em Karniadakis, Professor, (h-index: 63)

Division of Applied Mathematics
Brown University
Providence, RI 02912

Tel no: (401) 863-1217
E-mail: george_karniadakis@brown.edu
Date: March 15, 2014

DEGREES

Doctor of Philosophy
Department of Mechanical Engineering, Minor in Applied Mathematics
Massachusetts Institute of Technology, 1987.

Master of Science in Mechanical Engineering,
Massachusetts Institute of Technology, 1984
(Bodossaki Foundation Fellow).

Diploma of Engineering in Mechanical Engineering and Naval Architecture
National Technical University of Athens, 1982 (Honors).

POSITIONS HELD SINCE OBTAINING FIRST DEGREE

July 2013 - present, Charles Pitts Robinson and John Palmer Barstow Professor of Applied Mathematics, Brown University.

July 1996 - 2013, Professor, Division of Applied Mathematics, Brown University.

Sept. 2000 - present: Visiting Professor/Senior Lecturer/Researh Scientist, MIT (Ocean/Mechanical Engineering).

Jan. 1994 - June 1996, Associate Professor, Division of Applied Mathematics, Brown University.

Fall quarters 2007 & 2013: Visiting Professor, College of Engineering, Peking University.

Spring quarter 1993: Visiting Professor, Dept. of Aeronautics and Applied Mathematics, Caltech.

Sept. 1988 - Dec. 1993: Assistant Professor, Dept. Mechanical and Aerospace Engineering, Princeton U.; also Associate Faculty of the Program in Applied and Computational Mathematics.

April 1988 - August 1988: Research Associate, MIT; Advisor: A.T. Patera.

Sept. 1987 - March 1988: Research Fellow at the Center for Turbulence Research at Stanford U./NASA Ames Research Center; Advisors: P. Moin and J. Kim.

June 1987 - August 1987: Lecturer, Dept Mechanical Engineering, MIT.

July 1984 - May 1987: Research Assistant, MIT; Advisors: A. T. Patera and B.B. Mikic.

Jan. 1983 - June 1984: Research Assistant, MIT; Advisor: W. Unkel.

June 1982 - Dec. 1982: Research Assistant, National Technical University of Athens; Advisor: T. Loukakis.

HONORS

- US Association of Computational Mechanics, J. Tinsley Oden Medal, 2013.
- US Association of Computational Mechanics, 2007 Computational Fluid Dynamics award.
- Fellow of the Society for Applied and Industrial Mathematics (SIAM), 2010-.

- Fellow of the American Physical Society (APS), 2004-.
- Fellow of the American Society of Mechanical Engineers (ASME), 2003-.
- Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA), 2006-.
- 17^{th} Robert Bruce Wallace Lecture award, MIT, 2003.
- Rheinstein junior faculty award, Princeton University, 1992.
- DOE/SCIDAC vizualization award, 2011, (with ANL researchers).
- Finalist, Gordon Bell Prize, Supercomputing'11, (with Grinberg, Morozov, et al.).
- Best poster in Supercomputing'08 (with L. Grinberg, J. Cazes) on "A Scalable Domain Decomposition Method for Ultra-Parallel Arterial Flow Simulation, SC08, Austin, TX, November 2008.

PATENTS

1. G.E. Karniadakis and Y. Du, "Method and Apparatus for Reducing Turbulent Drag", Patent No. 6,333,593 B1, Dec 25, 2001.
2. G.E. Karniadakis, K. Breuer and V. Symeonidis, "Method and Apparatus for Reducing Turbulent Drag (continuing part)", Patent No. 6,520,455 B2, Feb. 18, 2003.
3. C. Chryssostomidis, D. Sura, G.E. Karniadakis, C. Jaskolski, R. Kimbal, "Lorentz Acoustic Transmitter for Underwater Communications", Patent No. 7,505,365, March 17, 2009.

CONSULTING EXPERIENCE

Cooling of electronic components (AT & T Bell Labs, Fujitsu Ltd.), modeling of heat exchange in automobiles (GM Corp.), unsteady piston flows (CTI-Cryogenics), flow through pumps (EDO Co.), design of novel aluminum furnaces (ALCAN Can. Labs), mass transfer in paper-making (Union Camp), combustion (Sandia Labs), noise prediction and jet flows (AeroChem Labs, Inc.), crystal growth (G.E. Co.), bio-fluids (Allied), boiler fouling (AVCO Res. Labs), prediction of by- pass transition (NASA Lewis), applied numerical methods (Nuclear Regulatory Commission), flow-structure interactions (Norsk Hydro), Ocean Power Technology (energy-harvesting eel), Chevron (modeling of risers), PCMC, Inc. (microfluidics/turbulence), United Technologies (uncertainty quantification), DeepStar (vortex-indeuced vibrations of risers).

INVITED/KEYNOTE SEMINARS

University of Arizona, 1987; Brown University, 1987; Yale University, 1987; Johns Hopkins, 1987; Columbia University, 1987; Princeton University, 1987; Tufts University, 1987; Carnegie Mellon University 1987; UCSD, 1987; Caltech, 1987; Stanford University, 1987; Nasa Ames, 1987; University of Illinois at Urbana-Champaign, 1987; Stanford University, 1988; MIT, 1988; Princeton University, 1988; Nasa Langley, 1989; Naval Research Laboratory, 1989; University of Delaware, 1990; Brown University, 1990; Nasa Lewis, 1991; University of North Carolina, 1991; MIT, Sea Grant, 1991; CCNY, Levich Institute, 1991; Lehigh University, 1991; Naval Research Laboratory, 1991; Princeton, PPL, 1991; University of Colorado, Boulder, 1991; ICFD, Tokyo, 1991; Von Karman Institute, 1992; Sydney University, 1992; Melbourne University, 1992; CSIRO, course on CFD, 1992; Brown University, 1992; Wright Patterson Air Force Base, 1992; Princeton University, 1993; Yale University, 1993; INRIA, course on CFD, 1993; NSF, 1993; Caltech, 1993; ETH- Zurich, 1993; Clarkson University, 1993; Rutgers University, 1993; Brown University, 1994; IBM, 1994; MIT, 1994; PSC/Carnegie Mellon, 1995; University of Rhode Island, 1995; Boston University, 1995; Virginia Polytechnic Institute, 1995; Hong Kong University, 1995; Institute for Scientific Computing, Chinese Academy of Sciences, 1995; University of Tokyo, 1995; University of Notre Dame, 1995; Cornell Theory Center, 1995; MIT, 1996; CCNY, Levich Institute, 1996; UC Santa Barbara, 1996; Wright Patterson Air Force Base; AFOSR,Boiling Air Force Base, 1996; Nuclear Regulatory Commission, 1996; National Institute of Standards and Technology, 1996; AIAA 1996; University of Rhode Island, 1996; University of Maryland, 1996; University of Cincinnati, 1997; Worchester Polytechnic Institute, 1997; Penn State University, 1997; MHD Workshop, Dresden, Germany, 1997; First AFOSR Conference on DNS/LES, 1997; ASME Heat Transfer Conference, 1997; 10th Domain Decomposition Conference, 1997; 10th International Symposium

on Unmanned Untethered Submersible Technology, 1997; Cornell Workshop on POD-Galerkin Models for the Dynamics and Control of Complex Flows, 1997; University of Michigan, 1997; AFOSR/Princeton Workshop, 1998; DOE/Oakridge Workshop, 1998; DARPA/NUWC Workshop, 1998; NSF Workshop, 1998; AIAA Fluid Dynamics Conference, 1998; DARPA/ONR Meeting, 1998; SIAM Symposium, 1998; ICOSAHOM'98 Symposium, 1998; ASME/FED, 1998; 30th Anniversary Japanese Society of Fluid Mechanics, 1998; University of Tokyo, 1998; Turkey Workshop on DNS/LES; ECCOMAS Symposium, 1998; University of Bergen, 1998; NCSA/NSF Meeting, 1998; Norsk Hydro, 1998; Caltech Symposium on Validation and Verification, 1998; Argonne National Labs, 1999; Boston University, 1999; Los Alamos 1999; University of Texas A & M, 1999; Americal Physical Society, 1999, Los Alamos, 1999; DeepStar/BP Amoco Workshop, 1999; MIT, 2000; Woods Hole Oceanographic Institute, 2000; JASON, 2000; SUNY/Buffalo, 2000; University of Pennsylvania, 2001; Modeling & Simulation of Microsystems, 2001; AFOSR Uncertainty Workshop, 2001; Nasa Langley/ICASE, 2001; ECCOMAS, 2001; DARPA Microfluidics Workshop, 2001; TAICDL, 2001; DoD/DOE/NASA Mission Comuting Conference, 2002; Northwestern University, 2002; WPI, 2002; MIT, 2002; BBVIV3, 2002; Wallace Lecture MIT, 2003; CSE-UIUC, 2003; WE-Heraeus-Seminar, Bad Honnef, 2003; Imperial College, 2003; Los Alamos, 2004; University of Pittsburgh, 2004; University of Tokyo, 2004; CFD2004 Canada, 2004; Johns Hopkins University, 2004; University of Rhode Island, 2004; Tufts University. 2004; University of Houston, 2005; Texas A&M University, 2005; University of Oklahoma, 2005; Oklahoma State University, 2005; 8th US National Congress on Computational Mechanics, 2005; ECCOMAS/Coupled Problems, 2005; HERCMA, 2005; NSF, 2005; Levich Institute, 2005; Northwestern University, 2006; University of Notre Dame, 2006; Illinois Institute of Technology, 2006; University of Illinois, Urbana-Champaign, 2006; Purdue University, 2006; ARO, North Carolina, 2006; Clemson University; University of Massachusetts; IUTAM General Assembly, 2006; Caltech, 2006; Tsinghua University, 2007; Peking University, 2007; Chinese Academy of Sciences (Institutes of Mechanics and of Scientific Computing), 2007; Shanghai University, 2007; Georgia Tech, 2008; Louisiana State University, 2008; Israel Symposium on Computational Mechanics, 2008; Tel-Aviv University, 2008; The Institute of Cyprus, 2008/2009; University of North Carolina, 2009; University of Minnessota (Straub lecture), 2009; FDA/NIH/NSF Workshop, 2009; MIT, 2009; NIH Workshop, 2010; NASPDE/Freiberg, 2010; Multiscale workshop/ETH, 2010, 6th ICCFD, 2010; IUTAM-BLUBOF, 2011; SCPDE, 2011; Isaac Newton/WIMCS, 2011; von Neumann Symposium/AMS, 2011; ECCOMAS Coupled Problems, 2011; International Symposium on UQ, 2011; 4th-SCPDE, 2011; MNF, 2011; Shanghai Jiao Tong University, 2011; Fudan University, 2011; Stanford University, 2012; University of British Columbia, 2012; University of Washington, 2012; Pacific Northwest National Lab, 2012; NENAD, 2012; INRIA, 2012; City University London, 2012; Engineering Mechanics/ASCE, 2012; University of Nebraska, 2012; Instituto Superior Tecnico, Lisbon, 2012; National University of Singapore, 2012; Xiamen University, 2012; Northwestern University, 2013; Lorenz Center, The Netherlands, 2013; Duke University, April 26; IEEE HiCOMB/IPDPDS, Cambrdge, USA, 2013; Int. Symposium on Modeling of Physiological Flow, Cagliari, Italy, 2013; ASME 2013 Fluids Engineering Division Summer Meeting Lake Tahoe, NV, 2013; SIAM Annual Meeting, San Diego, CA, 2013; USNCM12, Raleigh, NC, 2013; DOE Applied Math Program Meeting Albuquerque, NM; 2013; Louisiana State University Baton Rouge, LA, 2013; Fractional Calculus, Probability and Non-local Operators: Application and Recent Developments, Bilbao, Spain, 2013; Chinese Academy of Sciences, 2013; Int. Workshop on High Dimensional Data Approximation Sun Yat-sen University Gungzhou, China, 2013; Shanghai University, 2013; Southeast University, 2013; Hohai University, 2013; Tsinghua University, 2013; INRIA, Bordeaux, 2013; TU Munich, 2014; ETH, Zurich, 2014.

COMMITTEES and CONFERENCE ORGANIZATION

- Member of the APS Cyberfluids Committee (2008 - 2010).
- Member of Scientific Committee of the annual SIAM conference (2004).
- Scientific Committee of International Conference on Tranport Phenomena in Micro and Nanodevices, (2004).
- Member of Scientific Committee of FIV2004/FIV2008 conferences (2004/2008).
- Member of Scientific Committee of BBVIV3 Conference on Wakes 2002/2005;
- Member of Scientific Committee of IUTAM Conference on Unsteady Flows 2002;
- Member of Scientific Committee of FEM in Flow Problems 2000;
- Member of Scientific Committee of IUTAM Conference on Wakes 2000;
- Member of Scientific Committee of ICOSAHOM, 1998 - present.
- Member of Scientific Committee of 1st-3nd AFOSR Conferences on DNS/LES, 1997, 1999, 2001.
- Member of Scientific Committee of 11th International Parallel Processing Symposium, 1997;
- Member of Scientific Committee of 2nd International Colloquium on Bluff Body Aerodynamics and Applications, Melbourne, 1992;
- Member of the Editorial Board for the Computational Fluid Dynamics Journal, 1992-;

- Member of the Editorial Board for the International Journal of Computational Engineering Science, 2005- ;
- Member of the Editorial Board for Communications in Computational Physics, 2005-;
- Associate Editor of Acta Mechanica Sinica, 2004 - ;
- Member of the Editorial Board for International Journal for Uncertainty Quantification , 2010-;
- Member of the Editorial Board for Computer Methods in Applied Mechanics and Engineering (CMAME) , 2010-;
- Associate Editor of Journal of Computational Physics, 2006-;
- Associate Editor of J. Fluids Engineering, 1993-96; 2000-2003;
- Member and chairman of the Peer Review Board of NSF (PSC/NCSA) supercomputing Centers, 1993-96;
- Member of the Users Advisory Board for Supercomputing: NCSA, 1998- ; PSC; 2000- . NPACI Allocations Committee: 2001- .
- Member and chair of the Teragrid NSF panel 2000-04.
- Member of the WTEC panel to evaluate the status of computational science, 2007-2008.
- Member of the Editorial Board of M2AN (Mathematical Modeling and Numerical Analysis), 2008-2012.

-Organizer of the first "International Symposim on Fractional PDEs: Theory, Numerics and Applications", June 3-5, 2013.

- Organizer of Workshop on "Peridynamics, Dissipative Particle Dynamics and the Mori-Zwanzig Formulation", April 10-11, 2011.
- Co-organizer of the ICERM Workshop on Uncertainty Quantification, October 9-12, 2012.
- Chief Organizer of ICOSAHOM'04, June 2004 (with Gottlieb, Shu & Hestahven).
- Organizer of Symposium on Microfluidics, WCCM V, July 2002 (with N. Aluru).
- Organizer of Symposium on Instability/Transition, IUTAM, April 2002.
- Organizer of Symposium on Microfluidics, AIAA, January 2001 (with A. Beskok).
- Organizer of Symposium on FEM & LES, FEM 2000, April 2000, Austin, TX.
- Organizer of "International Symposium of Discontinuous Galerkin Methods", May 24-26, 1999, Newport, RI (with C.-W. Shu and B. Cockburn).
- Organizer of Symposium on "High-Order Methods for Compressible Flow Calculations", SIAM Conference, Stanford University, July 1997 (with C.-W. Shu);
- Organizer of ONR Workshop on "Flow/Wave-Structure Interactions", Brown University, June 1997 (with T.F. Swean);
- Organizer of Symposium on "HP/Spectral finite elements in computational mechanics" ICES'95, July 30-August 3, 1995, Mauna Lani, Hawaii, (with B. Guo);
- Organizer of International Symposium on "Parallel Computing for Multi-phase Flows", ASME, Chicago, November 1994 (with S. Kim and M. Vernon);
- Organizer of Symposium on "Spectral Methods and Applications", 2nd U.S. National Congress on Computational Mechanics, Washington, D.C., August 1993;
- Organizer of Symposium on "High-Order Schemes for Shock Wave Calculations", SIAM Conference, July 1993 (with C.-W. Shu);

-Organizer of Symposium on Theoretical and Computational Fluid Dynamics, 29th Annual Meeting of the Society of Engineering Science at UCSD, La Jolla, September 1992 (with C. Pozrikidis and Y. Kevrekidis);

- Organizer of Symposium on "Parallel Aspects of High-Order Method", ICOSAHOM, Montpellier, June 1992;
- Organizer of DARPA-ONERA USA-French Conference on "Wavelets and Turbulence", Princeton, June 1991;

RESEARCH ACCOMPLISHMENTS

First simulation of the human arterial tree on the Teragrid.

Development of generalized polynomial chaos methods for modeling uncertainty in unsteady flows.

First direct (DNS) and large-eddy simulation (LES) of turbulence in complex geometries.

First theoretical/numerical work on gas micro-flows.

Discovery of secondary instability/transition in wake flows.

Discovery of a new drag reduction technique using electromagnetic forcing (two patents).

Development of high-order methods on unstructured meshes.

Development of high-order discontinuous Galerkin methods for compressible/supersonic flows.

Development of a new expansion basis: Singular Stokes eigenfunctions.

Work featured on the covers of: Physics Today (March 1993); Parity (Japanese - November 1993); Scientific Computing & Automation (June 1994), MHPCC'97 (November 1997), ACCESS/NCSA (November 1998), Cover of Book on "Recent Advances in DNS and LES" (Kluwer, 1999); work featured in Science and reports in New Scientist, Industrial Physicist, and several popular magazines/newspapers around the world; Aerospace America 2001; NCSA Access 2002 and on Power Wall in SC'02, cover of Phys. Rev. Lett. (2004); NCSA Access 2006.

PUBLICATION LIST
(* indicates a PhD student supervised by George Karniadakis)

A. Books/Chapters in Books/General

1. G.E. Karniadakis, A. Beskok* and N. Aluru, "Microflows and Nanoflows: Fundamentals and Simulation, Springer 2005.
2. G.E. Karniadakis and R.M. Kirby*, "Parallel Scientific Computing in C++ and MPI", Cambridge University Press, March 2003.
3. G.E. Karniadakis and A. Beskok*, "Microflows: Fundamentals and Simulation", Springer, 2001. (first textbook/monograph in this field).
4. G.E. Karniadakis & S.J. Sherwin*, "Spectral/hp Element Methods for CFD," Oxford University Press, New York, 1999. (first monograph in this field); second edition, Oxford, 2005.
5. D.A. Fedosov*, I.V. Pivkin, W. Pan*, M. Dao, B. Caswell and G.E., Karniadakis, "Multiscale modeling of hematologic disorders", in *Modeling of Physiological Flows* edited by D. Ambrosi, A. Quarteroni and G. Rozza, Springer, Milan, Italy, 2011.
6. I.V. Pivkin*, B. Caswell and G.E. Karniadakis, "Dissipative Particle Dynamics", Chapter 2 in *Reviews in Computational Chemistry*, Vol. 27, edited by Kenny B. Lipkowitz, John Wiley & Sons, Inc., 2011.
7. D.A. Fedosov*, B. Caswell and G.E., Karniadakis, "Dissipative particle dynamics modeling of red blood cells", in *Computational Hydrodynamics of Capsules and Biological Cells*, edited by C. Pozrikidis, CRC Press, Boca Raton, FL, 2010.
8. N. Aluru and G.E. Karniadakis, "Numerical simulation of microflows and nanoflows", Chapter 3 in *Micro/Nano Technology Systems for Biomedical Applications*, edited by C.-M. Ho, Oxford University Press, 2010.
9. X. Wan and G.E. Karniadakis, "Adaptive numerical solutions of stochastic differential equations", Computer Mathematics & its Applications (1994-2005), pp. 561-573, 2006.
10. "Spectral Interpolation in Non-Orthogonal Domains: Algorithms and Applications", special issue of Journal of Engineering Mathematics, guest editor (co-editor: Jan Hesthaven).
11. "Uncertainty Quantification in Simulation Science", special issue of Journal of Computational Physics, vol. 217, no. 1, 2006, guest editor (co-editor: James Glimm).
12. V. Symeonidis*, G.E. Karniadakis and B. Caswell, "Simulation of λ-phage DNA in microchannels using dissipative particle dynamics, Bulletin of the Polsih Academy of Sciences, vol. 53 (4), pp. 395-403, 2005.
13. D. Xiu* and G.E. Karniadakis, "Generalized polynomial chaos: Performance evaluation and applications", chapter in Dynamic Data Driven Applications Simulations (DDDAS), editor F. Darema, Kluwer, 2004.
14. R.M. Kirby* and G.E. Karniadakis, "Spectral Element and *hp* Methods", Encyclopedia of Computational Mechanics, John Wiley & Sons Ltd, 2004.

15. G.E. Karniadakis and K.-S. Choi, "Mechanisms on transverse motions in turbulent wall flows", Annual Review of Fluid Mechanics, vol. 35, 45-62, 2003.

16. G.E. Karniadakis, "Quantifying Uncertainty in CFD", Managing Editor of special issue of J. Fluids Engineering, March 2002.

17. R.M. Kirby* and G.E. Karniadakis, "Under-Resolution and Diagnostics in Turbulent Simulations of Complex-Geometry Flows", Turbulent Flow Computations, Kluwer, 2002.

18. R.M. Kirby*, G.E. Karniadakis, O. Mikulchenko and K. Mayaram, "Integrated Simulation for MEMS: Coupling Flow-Structure-Thermal-Electrical Domains", Chapter 5, The MEMS Handbook, CRC Press.

19. "Spectral, Spectral Element and hp Methods for CFD", guest editor of C.M.A.M.E., (co-editors: M. Ainsworth and C. Bernardi), vol. 175.

20. "Discontinuous Galerkin Methods: Theory Computation and Applications", (editors: B. Cockburn, G.E. Karniadakis and C.-W. Shu), Springer-Verlag, February 2000.

21. G.E. Karniadakis and R.D. Henderson*, "Spectral Element Methods for Incompressible Flows", chapter 29 in Handbook of Fluid Dynamics, edited by R.W. Johnson, CRC Press, 1998.

22. G.E. Karniadakis, "Towards a numerical error bar in CFD," Editorial Article, J. Fluids Engineering, March 1995.

23. G.E. Karniadakis & S.A. Orszag, "Nodes, Modes, and Flow Codes," Physics Today, p. 34-42, March 1993.

24. G.E. Karniadakis & S.A. Orszag, "Some novel aspects of spectral methods," Algorithmic Trends in Computational Fluid Dynamics," eds. M.Y. Hussaini, A. Kumar, M.D. Salas, p. 245, Springer-Verlag, 1993.

25. G.E. Karniadakis, S.A. Orszag, E.M. Ronquist and A.T. Patera, "Spectral element and lattice gas methods for incompressible fluid dynamics," chapter 8 in Incompressible Fluid Dynamics, eds. M.D. Gunzburger and R.A. Nicolaides, Cambridge University Press, 1993.

26. R.D. Henderson* & G.E. Karniadakis, "A hybrid spectral element-finite difference method for parallel computers," p. 221, Unstructured Scientific Computation on Scalable Multi- Processors, ed. P. Mehrotra, J. Saltz, and R. Voigt, M.I.T. Press, 1992.

27. G.E. Karniadakis & S.A. Orszag, "Parallel spectral computations of complex engineering flows," chapter 9 in Supercomputing in Engineering Analysis, New Generation Computing, ed. H. Adeli, 1990.

B. Articles in Refereed Journals

Stochastic PDEs/Uncertainty Quantification

1. D. Venturi and G.E. Karniadakis, "Convolutionless Nakajima-Zwanzig equations for stochastic analysis in nonlinear dynamical systems", Proc. R. Soc. A, In press, 2014.

2. D. Venturi, X. Wan, R. Mikulevicius, B. Rozovskii and G.E. Karniadakis, "Wick-Malliavin approximation to nonlinear stochastic PDEs: Analysis and Simulation", Proc. R. Soc. A, 34:157-167, 2014.

3. M. Zayernouri* and G.E. Karniadakis, "Fractional spectral collocation methods", SIAM J. Sci. Comput. 36(1):A40-A62, 2014.

4. M. Zayernouri* and G.E. Karniadakis, "Exponentially accurate spectral and spectral element methods for fractional ODEs", J. Comput. Phys., 247:460-480, 214.

5. M. Choi*, T. Sapsis and G.E. Karnidakis, "A convergence study for SPDEs using combined polynomial chaos and dynamically-orthogonal schemes," J. Comp. Phys. 245, 281-301, 2013.

6. M. Zayernouri* and G.E. Karniadakis, "Fractional Sturm-Liouville eigen-problems: Theory and numerical approximation", J. Comp. Phys., 252, 495-517, 2013.

7. H. Cho, D. Venturi and G.E. Karniadakis, "Karhunen-Loeve expansion for multi-correlated processes", Probabilistic Engineering Mechanics, 34:157-167, 2013.

8. H. Cho, D. Venturi and G.E. Karniadakis, "Adaptive discontinuous Galerkin method for response-excitation PDF equations", SIAM J. Sci. Comput., vol. 35(4), pp. B890-B911, 2013.

9. M. Zayernouri, S-W. Park, D.M. Tartakovsky and G.E. Karniadakis, "Stochastic smoothed profile method for modeling random roughness in flow problems", Comput. Methods Appl. Mech. Engrg., vol. 263, pp. 99-112, 2013.

10. D. Venturi, D.M. Tartakovsky, A.M. Tartakovsky and G.E. Karniadakis, "Exact PDF equations and closure approximations for advective-reactive transport", J. Comp. Phys., vol. 243, pp. 323-343, 2013.

11. X. Yang and G.E. Karniadakis, "Reweighted l_1 minimization method for stochastic elliptic differential equations", J. Comp. Phys., vol.i 248, pp. 87-108, 2013.

12. Z. Zhang, X. Yang, G. Lin and G.E. Karniadakis, "Numerical solution of the Stratonovich- and Ito-Euler equations: Application to the stochastic piston problem", J. Comp. Phys., vol. 236, pp. 15-27, 2013.

13. Z. Zhang*, B. Rosvoskii, M.V. Tretyakov and G.E. Karniadakis, "A multi-stage Wiener chaos expansion method for stochastic advection-diffusion reaction equations", SIAM J. Sci. Comput., 34(2), A914-A936, 2012.

14. D. Venturi and G.E. Karniadakis, "New evolution equations for the joint response-excitation probability density function of stochastic solutions to first-order nonlinear PDEs", J. Comp. Phys., vol. 231, pp. 7450-7474, 2012.

15. D. Venturi, T. Sapsis, H. Cho and G.E. Karniadakis, " A computable evolution equation for the joint response-excitation probability density function of stochastic dynamical systems", Proc. Roy. Soc. A, vol. 468, pp. 759-783, 2012.

16. Z. Zhang*, M. Choi* and G.E. Karniadakis, "Error estimates for the ANOVA method with polynomial chaos interpolation: Tensor product functions", SIAM J. Sci. Comp., vol. 34(2), pp. A1165-A1186, 2012.

17. D. Venturi, M. Choi* and G.E. Karniadakis, "Supercritical quasi-continuum states in stochastic Rayleigh-Bernard convection", Int. J. Heat & Mass Transfer, vol. 55, pp. 3732-3743, 2012.

18. X. Yang*, M. Choi* and G. Lin and G.E. Karniadakis, "Adaptive ANOVA decomposition of stochastic incompressible and compressible flows", J. Comp. Phys., vol. 231, pp. 1587-1614, 2012.

19. D. Venturi and G. E. Karniadakis, "Differential constraints for the probability density function of stochastic solutions to the wave equation", International Journal for Uncertainty tainty Quantification, vol. 2(3), pp. 195-213, 2012.

20. M. Gerritsma, J-B. van der Steen, P. Vos and G.E. Karniadakis, "Time-dependent generalized polynomial chaos", J. Comput. Phys., 229:8333-8363, 2010.

21. P. Prempraneerach, F. Hover, M. Triantafyllou, and G.E. Karniadakis, "Uncertainty quantification in simulations of power systems: Multi-element polynomial chaos methods", Reliability Engineering and System Safety, vol. 95, pp. 632-646, 2010.

22. J. Foo* and G.E. Karniadakis, "Multi-element probabilistic collocation method in high dimensions", J. Comp. Phys., vol. 229(5), pp. 1536-1557, 2010.

23. D. Venturi, X. Wan and G.E. Karniadakis, "Stochastic bifurcation analysis of Rayleigh-Benard convection", J. Fluid Mech., vol. 650, pp. 391-413, 2010.

24. G. Lin* and G.E. Karniadakis, "Sensitivity analysis and stochastic simulations of non-equilibriun plasma flow", Int. J. Num. Meth. Engng., vol. 80, pp. 738-766, 2009.

25. X. Wan*, B. Rozovskii and G.E. Karniadakis, "A stochastic modeling methodology based on weghted Wiener chaos and Malliavin calculus", Proc. Nat. Acad. Sciences, vol. 106, no. 34, pp. 14189-14194, 2009.

26. G. Lin*, C.-H. Su and G.E. Karniadakis, "Stochastic modeling of random roughness in shock scattering problems: Theory and simulations", Computer Methods in Applied Mechanics and Engineering, vol. 197, pp. 3420-3434, 2008.

27. X. Wan* and G.E. Karniadakis, "Error control in multi-element generalized polynomial chaos method for elliptic problems with random coefficients", Communication in Computational Physics, vol. 5, pp. 793-820, 2009.

28. X. Wan* and G.E. Karniadakis, "Solving elliptic problems with non-Gaussian spatially-dependent random coefficients: algorithms, error analysis and applications", Comput. Methods Appl. Mech. Engr., vol. 198, pp. 1985-1995, 2009. .

29. J. Foo*, X. Wan* and G.E. Karniadakis, "The multi-element probabilistic collocation method: error analysis and simulation", J. Comp. Phys., vol. 227, pp. 9572-9595, 2008.

30. D. Venturi, X. Wan and G.E. Karniadakis, "Stochastic low dimensional modeling of random laminar wake past a circular cylinder", Journal of Fluid Mechanics, vol. 606, pp. 339-367, 2008.

31. G. Lin, X. Wan, C.-H. Su and G.E. Karniadakis, "Stochastic fluid mechanics", IEEE Computing in Science and Engineering (CiSE), vol. 9, pp. 21-29, 2007.

32. G. Lin*, C.-H. Su and G.E. Karniadakis, "Random roughness enhances lift in supersonic flow", Phys. Rev. Let., vol 99, (10), 104501, 2007.

33. J. Foo*, Z. Yosibash and G.E. Karniadakis, "Stochastic simulation of riser-sections with uncertain measured pressure loads and/or uncertain material properties", Comput. Methods Appl. Mech. Engr., vol. 196, pp. 4250-4271, 2007.

34. G. Lin*, C.-H. Su and G.E. Karniadakis, "Predicting shock dynamics in the presence of uncertainties, J. Comp. Phys., vol. 217, pp. 260-276, 2006.

35. X. Wan* and G.E. Karniadakis, "Stochastic heat transfer enhancement in a grooved channel", J. Fluid Mech., vol. 565, pp. 255-278, 2006.

36. X. Wan* and G.E. Karniadakis, "Beyond Wiener-Askey expansions: Handling arbitrary PDFs", Journal of Scientific Computing, vol. 27, pp. 455-464, 2006.

37. X. Wan* and G.E. Karniadakis, "Multi-element generalized polynomial chaos for arbitrary probability measures", SIAM Journal of Scientific Computing, vol. 28(3), pp. 901-928, 2006.

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