

Curriculum Vitae

Guang Lin

1. Contact Information

Associate Professor, Department of Mathematics, School of Mechanical Engineering,
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2. Education

- Ph.D, 2007, Applied Mathematics, Brown University
- M.S., 2004, Applied Mathematics, Brown University
- M.S., 2000, Mechanics and Engineering Science, Peking University, P.R. China
- B.S., 1997, Mechanics, Zhejiang University, P.R. China

3. Professional Experience

- 01/2019-, Director of Data Science Consulting Services, Purdue University
- 12/14/2018-, Associate Professor, Department of Statistics Courtesy Appointment, Purdue University
- 04/2017-, Associate Professor, Department of Mathematics, School of Mechanical Engineering, Purdue University
- 08/2014-04/2017, Assistant Professor, Department of Mathematics, School of Mechanical Engineering, Purdue University
- 01/2013-8/2014, Adjunct Associate Professor, Department of Mathematics, University of North Carolina, Chapel Hill, NC
- 04/2012-8/2014, Affiliated Faculty, Department of Applied Mathematics, University of Washington, Seattle, WA
- 11/2009-8/2014, Adjunct Associate Professor, Department of Mathematics, University of Notre Dame, Notre Dame, IN
- 03/2008-08/2014, Senior Staff Scientist, Computational Mathematics Group, Pacific Northwest National Laboratory, Richland, WA
- 2007-03/2008 Postal Doctoral Researcher, Computational Mathematics Group, Pacific Northwest National Laboratory, Richland, WA
- **Associate Editor, SIAM Multiscale Modeling and Simulations, 2019-Present.**
- Member of the Editorial Board of the International Congress on Uncertainty Quantification, July 6th-10th, 2020.
- **Guest Editor: Special Issue** “Shock waves, Discontinuities and Singularities in Natural Phenomena”, Mathematical Modeling of Natural Phenomena, 2017.
- Serve in the editorial board of “*International Journal of Uncertainty Quantification*”, 2010- 2015.
- Serve in the editorial board of “*Journal of Stochastics*”, 2013- Present.

- Serve in the editorial board of “*Scientific World Journal*”, 2013- Present.
- Serve in the editorial board of “*Austin Statistics*”, 2013- Present.
- Serve in the editorial board of “*Advances in Fluid Mechanics*”, 2018-Present.

4. Research Description:

Guang Lin’s research interests include diverse topics in computational and data science both on algorithms and applications. A main current thrust is data-driven modeling, stochastic simulation (in the context of uncertainty quantification and beyond), and multiscale modeling of interconnected, physical and biological systems (e.g., blood flow).

Guang Lin’s research goal is to develop data-driven high-order numerical algorithms to promote innovation with significant potential impact and design highly-scalable numerical solvers on petascale supercomputers to investigate new knowledge discovery in complex interconnected, physical and biological complex systems.

Guang Lin received NSF faculty early career development award in recognition of his work on uncertainty quantification and big data analysis in smart grid and other complex interconnected systems. Guang Lin has developed advanced optimization algorithms to calibrate complex global and regional climate models. For this work, he received a Ronald L. Brodzinski Award for Early Career Exception Achievement in 2012. Guang Lin also received 2010 ASCR Leadership Computing Challenge (ALCC) award in recognition of his work in analyzing big climate data using extreme-scale supercomputers. Guang Lin has also received Outstanding Performance Award at Pacific Northwest National Laboratory in 2010, and Ostrach Fellowship at Brown University in Fall 2005.

5. Honors and Awards

[A1] *University Faculty Scholars, Purdue University, 2019.*

[A2] *2016 National Science Foundation (NSF) Faculty Early Career Development (CAREER) award from NSF Division of Mathematical Science, 2016.*

[A3] Mentor in Wentao Chen’s Purdue undergraduate team, awarded the **Prize of Finalist in the MCM math modeling contest** in 2016

[A4] *2015 Mathematical Biosciences Institute Early Career Award, Fall 2015*

[A5] *2012 Ronald L. Brodzinski Award for Early Career Exception Achievement* (two awards each year in the whole PNNL with 5000 researchers), April 2012.

[A6] **Department of Energy Pacific Northwest National Laboratory Early Career Award, Scalable Solvers for Uncertainty Quantification of Large-scale Stochastic Partial Differential Systems, PI: Guang Lin, 2012-2013, \$100,000.00.**

[A7] *2010 Department of Energy Advanced Scientific Computing Research Leadership Computing Challenge (ALCC) award* with 2010 Allocation Amount: 5,000,000 processor hours at OLCF, ORNL.

[A8] *Brown University Ostrach Fellowship, Division of Applied Math, Brown University, Fall 2005.*

[A9] *Outstanding Performance Award, Pacific Northwest National Laboratory, 2010.*

- [A10] [G. Lin, C.-H. Su and G.E. Karniadakis, Predicting shock dynamics in the presence of uncertainties, *Journal of Computational Physics*, 217 (1), 260-276, 2006.] was ranked as **one of the Top 25 Hottest Articles** in *Journal of Computational Physics*, July to September 2006.
- [A11] IMA travel grant for attending IMA-HK-IAS Joint Program on “Statistics and Computational Interface to Big Data”, Jan 4-16, 2015.
- [A12] IMA travel grant for attending IMA Workshop: “Uncertainty Quantification in Industrial and Energy Applications: Experiences and Challenges”, June 2-4, 2011, Minneapolis, MN.
- [A13] SAMSI travel grant for attending “Complex Networks Opening Tutorials & Workshop”, Research Triangle Park, NC, August, 29-September 2, 2010.
- [A14] IMA travel grant for attending IMA Workshop: “Computing with Uncertainty: Mathematical Modeling, Numerical Approximation and Large Scale Optimization of Complex Systems with Uncertainty”, October 18-22, 2010, Minneapolis, MN.
- [A15] Travel grant for attending Invited only conference "Mapping Out Future Directions for Uncertainty Quantification in Scientific Inference", November 4-6, 2010, Santa Fe, NM.
- [A16] ICERM travel grant for attending “Computational Challenges in Probability Workshop: Uncertainty Quantification”, October 9-13, 2012, Providence, RI.
- [A17] Travel grant for attending “Second Workshop on Computational Methods for Applied Sciences”, December 2, 2012, New York City, NY.

6. Bibliography

Bibliography Summary:

- ***Total 142 Published or Accepted Refereed Publications (2 Books + 111 published or Accepted Journal Papers + 28 Referred Conference Proceeding papers+1 PhD Dissertation), 5 Formal Reports and 30 Submitted Journal Papers.***
- ***Received total 35 Research Projects with \$106M Research Grants (personal manages: \$15.4M) in the Past Eight Years (\$13.25M Research Grants per Year, personal manages \$1.93M per Year)***
- ***Total 86 Invited Presentations in Past Eight Years***
- ***Mentored 10 Post-Doctoral/Post-Master Scholars in Past Eight Years***
- ***Current mentoring 12 Ph.D and Master Students, Supervised 30 Graduate, undergraduate, High-School Summer Interns and Students in Past Eight Years (High-School Science Intern Katrina Hui was named a semifinalist in the 2011 Siemens Competition, and a semifinalist in the 2012 Intel Science Talent Search based on the sickle cell anemia research she did with her mentor, G. Lin; Also served as mentor in Wentao Chen’s Purdue undergraduate team, awarded the **Prize of Finalist in the MCM math modeling contest** in 2016 and 2018)***

6.1 Recent and Current Research Grants Received in the Past Ten Years (Received Total 37 Research Projects with \$106M Total Research Grants (personal manages: \$15.4M) in the Past 10 Years (\$13.25M Research Grants per Year, personal manages \$1.93M per Year))

6.1.1 Current Research Grants

- [G1] 2018 NVIDIA GPU Grant.

- [G2] *IMA PI conference grant \$5000 for the workshop on “Approximation Theory and Machine Learning Conference”, Purdue University, Sep. 29-30, 2018.*
- [G3] *Purdue Mathematics Department CCAM grant \$6000 for the workshop on “Current Trends and Challenges in Data Science and Uncertainty Quantification”, Purdue University, Mar 31, 2018.*
- [G4] *Collaborative Research: Design and Analysis of Data-Enabled High-Order Accurate Multiscale Schemes and Parallel Simulation Toolkit for Studying Electromagnetohydrodynamic Flow, awarded from Division of Mathematical Sciences, CDS&E-MSS program, 2018-2019, \$50,000 (DMS-1821233), 2018.*
- [G5] *Collaborative Research: AMPS: Multi-Fidelity Modeling via Machine Learning for Real-time Prediction of Power System Behavior, awarded from NSF Division of Mathematical Science, 2017-2020, \$240,000. (DMS-1736364), 2017.*
- [G6] *Career: Uncertainty Quantification and Big Data Analysis in Interconnected Systems: Algorithms, Computations, and Applications, **2016 National Science Foundation (NSF) Faculty Early Career Development (CAREER) award** from NSF Division of Mathematical Science, 2016-2021, \$400,759.91 (DMS-1555072)*
- [G7] DOE LLNL Subcontract B627599 \$19,962.00, 2018.
- [G8] Startup Fund from Purdue University

6.1.2 Past Research Grants

- [G9] *2015 Mathematical Biosciences Institute Early Career Award, PI: Guang Lin, Sep.-Dec., 2015, \$17,322*
- [G10] *Subcontract from Department of Energy Pacific Northwest National Laboratory, \$170,000, Nov. 2014-Nov. 2017.*
- [G11] *Scalable Solvers for Uncertainty Quantification of Large-scale Stochastic Partial Differential Systems, **PNNL Early Career Award, PI: Guang Lin,** 2012-2013, \$100,000.00 (Personal manages: \$100,000.00).*
- [G12] *Modeling and Simulation of High Dimensional Stochastic Multiscale PDE Systems at the Exascale, **PI: Guang Lin,** DOE - Office of Advanced Scientific Computing Research, 10/01/10-09/30/13, \$1,483,863.00. (Six projects were funded from 90 competitive proposals) (Personal manages: \$1,483,863.00).*
- [G13] *Stochastic nonlinear data-reduction methods with detection & prediction of critical rare events, **PI: Guang Lin,** DOE - Office of Advanced Scientific Computing Research, 10/01/09-09/30/12, \$1,436,000.00. (10 projects were funded from 86 competitive proposals) (Personal manages: \$1,436,000.00)*

- [G14] *Uncertainty Quantification Pipeline*, Carbon Sequestration Initiative, Laboratory Directed Research and Development Program, **PI, Guang Lin**, 01/01/11-09/30/13, \$650,000.00 (Personal manages: 650,000.00).
- [G15] *Scalable Hierarchical Validation & Calibration for Robust Distributed Control of Large-scale Complex Systems under Uncertainty*, Control of Complex Systems Initiative, Laboratory Directed Research and Development Program, **Co-PI, Guang Lin**, 10/01/14-09/30/17, \$450,000.00 (Personal manages: 240,000.00).
- [G16] *The Multifaceted Mathematics Center for Complex Energy Systems*, PI: Mihai Anitescu, **Stochastic Modeling Task Lead: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 2012-2017, \$15,000,000.00 (Personal manages: \$1,000,000.00)
- [G17] *Modeling Mesoscale Processes of Scalable Synthesis*, PI: George Karniadakis, **Stochastic Modeling Task 4 Lead: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 2012-2017, \$15,000,000.00 (Personal manages: \$1,500,000.00).
- [G18] *Climate Science for a Sustainable Energy Future*, PI: David Bader, ORNL, **Atmosphere and Land Uncertainty Quantification Tasks PNNL Lead: Guang Lin**, 06/01/11-09/30/13, \$16,000,000.00 (Personal manages: \$1,250,000.00).
- [G19] *Carbon Capture and Simulation Initiative (CCSI)*, **Uncertainty Quantification Task Co-Chair: Guang Lin**, DOE – Fossil Energy, 10/01/10-09/30/13, \$14,000,000.00 (Personal manages: \$1,230,000.00).
- [G20] *Multiscale Methods for Accurate, Efficient, and Scale-Aware Models of the Earth System*, PI: Williams Collins, Berkley National Laboratory, **PNNL Uncertainty Quantification Lead: Guang Lin**, DOE – Office of Biological and Environmental Research (SciDAC 3 Program), 2012-2017, \$20,500,000.00 (Personal manages: \$400,000.00).
- [G21] *High Order Model, Computation, and Stochastic Hybrid Coupling Continuum-Particle Algorithm with Application to Micro-propulsion*, PI: Zhiliang Xu, University of Notre Dame, **Co-PI: Guang Lin**, National Science Foundation, 2011-2014, \$38,738.00 (Personal manages: \$38,738.00).
- [G22] *Towards understanding interfacial chemistry at reactive solid/liquid interphases*, PI: Maria Sushko, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 2012-2013, \$800,000.00 (Personal manages: \$200,000.00).
- [G23] *Simulating Interface Growth and Defect Generation in CZT*, PI: Chuck Henager, **Co-PI: Guang Lin**, 2011-2012, Domestic Nuclear Detection Office, Department of Homeland Security, \$149,776.00 (Personal manages: \$40,000.00).
- [G24] *Multiscale Modeling of Energy Storage Materials*, PI: Maria Sushko, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/11-09/30/12, \$400,000.00 (Personal manages: \$200,000.00).

- [G25] *A Multi-Modal Integration Framework for Chemical Imaging*, PI: Kerstin Kleese Van Dam, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/10-09/30/12, \$1,179,000.00 (Personal manages: \$300,000.00).
- [G26] *Multi-Resolution Data Model and Directed Data Reduction, Reconstruction and Aggregation*, PI: Kerstin Kleese Van Dam, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/10-09/30/12, \$975,000.00 (Personal manages: \$200,000.00).
- [G27] *Modeling of Distributed Energy Resources in the Smart Grid*, PI: Shuai Lu, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/10-09/30/12, \$750,000.00 (Personal manages: \$350,000.00).
- [G28] *A Statistical State Prediction Methodology to Improve Reliability and Efficiency of Power System Operation*, PI: Ning Zhou, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/10-09/30/12, \$1,100,000.00 (Personal manages: \$240,000.00).
- [G29] *Scalable Sensor Data Management Middleware*, PI: Jian Yin, **Task Lead: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/10-09/30/12, \$1,050,000 (Personal manages: \$200,000.00).
- [G30] *Real-time Model Validation and Calibration for Large Interconnected Time-variant Systems Using Online Measurement Data*, PI: Shuai Lu, **Co-PI: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 10/01/09-09/30/12, \$1,707,000.00 (Personal manages: \$400,000.00).
- [G31] *Property Improvement in CZT via Modeling and Processing Innovation*, PI: Charles H Jr Henager, **Co-PI: Guang Lin**, DOE - Office of Nonproliferation Research and Engineering (NA-22), 10/01/09-09/30/12, \$2,400,000.00 (Personal manages: \$600,000.00).
- [G32] *Hybrid Model for Ice Sheet Dynamics*, PI: Alexandre M. Tartakovsky, **Co-PI: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 10/01/09-09/30/12, \$931,000.00 (Personal manages: \$200,000.00).
- [G33] *Stochastic analysis of advection-diffusion-reaction systems with application to reactive transport in porous media*, PI: Alexandre M. Tartakovsky, **Co-PI: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 10/01/2009-09/30/2012, 549, 000.00 (Personal manages: \$265,000.00).
- [G34] *Advanced Scalability for STOMP: Subsurface Simulation and Characterization at Extreme Resolution*, PI: Steve Yabusaki, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/08-09/30/11, \$750,000.00 (Personal manages: \$250,000.00).
- [G35] *Multiscale investigations of CO2 behavior in subsurface under extreme conditions*, PI: Alexandre M. Tartakovsky, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/08-09/30/11, \$1,389,567.00 (Personal manages: \$460,000.00).

- [G36] *From molecular reactions to catalytic reactors: Multiscale modeling*, PI: Michael Dupuis, **Co-PI: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 04/01/09-03/30/12, \$1,200,000.00 (Personal manages: \$400,000.00).
- [G37] *Analytical approaches for integrated assessments of grid operations & planning*, PI: Ning Zhou, **Key Contributor: Guang Lin**, PNNL Laboratory Directed Research and Development Program, 10/01/09-10/30/10, \$200,000.00 (Personal manages: \$50,000.00).
- [G38] *Materials Discovery Tool for Radiation Detection Materials: From Crystal Structure and Property Data to Processing Predictions*, PI: Charles H Jr Henager, **Key Contributor: Guang Lin**, DOE - Office of Nonproliferation Research and Engineering (NA-22), 10/01/2006-09/30/2009, \$3,192,000.00 (Personal manages: \$800,000.00).
- [G39] *Stochastic analysis of advection-diffusion-reaction systems with application to reactive transport in porous media*, PI: Alexandre M. Tartakovsky, **Key Contributor: Guang Lin**, DOE - Office of Advanced Scientific Computing Research, 10/01/2006-09/30/2009, \$537, 000.00 (Personal manages: \$260,000.00).

6.2 Publications (* represents the corresponding author)

6.2.1 Doctoral Dissertation:

Parallel High-Order Methods for Deterministic and Stochastic CFD and MHD Problems, Advisor: George Em Karniadakis, Brown University, 2007.

6.2.2 Book Chapters:

G. Lin, G. Karniadakis, “**Stochastic Systems**” Chapter in **Encyclopedia of Applied and Computational Mathematics**, ed. Björn Engquist, Springer, New York, 2015.

G. Lin, “**Big Data Application in Power Grid Systems**” chapter in **CRC Handbook on Big Data**, CRC Press, Taylor & Francis Group, 2016.

6.2.3 112 Published or Accepted & 31 Submitted Journal Papers in Refereed Journals

(1) 111 Published or Accepted Papers in Archival Refereed Journals

2004

- [P1] **G. Lin**, C.-H. Su and G.E. Karniadakis, The stochastic piston problem, Proceedings of the National Academy of Sciences of the United States of America, 101(45):15840-15845, 2004.

2006

- [P2] **G. Lin**, C.-H. Su and G.E. Karniadakis, Predicting shock dynamics in the presence of uncertainties, *Journal of Computational Physics*, special issue in stochastic uncertainty prediction, 217(1) 260-276, 2006.
- [P3] **G. Lin** and G.E. Karniadakis, A discontinuous Galerkin method for two-temperature plasmas, *Computer Methods in Applied Mechanics and Engineering*, special issue in Discontinuous Galerkin Methods. 195(25-28): 3504-3527, 2006.
- [P4] **G. Lin** and L. Grinberg and G.E. Karniadakis, Numerical studies of the stochastic Korteweg-de Vries equation, *Journal of Computational Physics*, 213(2): 676-703, 2006.

2007

- [P5] **G. Lin**, C.-H. Su and G.E. Karniadakis, Random Roughness Enhances Lift in Supersonic Flow, *Physical Review Letters*, 99:104501, 2007.
- [P6] **G. Lin**, X. Wan, C.-H. Su and G.E. Karniadakis, Stochastic computational fluid mechanics, *IEEE Computing in Science and Engineering (CiSE)*, 9:21-29, 2007.

2008

- [P7] **G. Lin**, C.-H. Su and G.E. Karniadakis, Stochastic modeling of random roughness in shock scattering problems: Theory and simulations, *Comput. Methods Appl. Math. Eng.*, 197(43-44): 3420-3434, 2008.

2009

- [P8] Z. Xu and **G Lin**. Hierarchical reconstruction for spectral/hp element methods for solving hyperbolic conservation laws, *Acta Mathematica Scientia*, 29(6): 1737-1748, 2009.
- [P9] W. Wu, **G. Lin**, Basic function scheme of polynomial type, *Applied Mathematics and Mechanics*, 30(9): 1091–1103, 2009.
- [P10] **G. Lin** and G.E. Karniadakis, Sensitivity Analysis and Stochastic Simulations of Non-equilibrium Plasma Flow, *International Journal for Numerical Methods in Engineering*, 80(6-7): 738 – 766, 2009.
- [P11] **G. Lin*** and A. M. Tartakovsky, An efficient, high-order probabilistic collocation method on sparse grids for three-dimensional flow and solute transport in randomly heterogeneous porous media, *Advances in Water Resources*, 32(5): 712-722, 2009.

2010

- [P12] **G. Lin*** and A. M. Tartakovsky, Numerical studies of three-dimensional stochastic Darcy's equation and stochastic advection-diffusion-dispersion equation, *Journal of Scientific Computing*, 43(1): 92-117, 2010.
- [P13] **G. Lin***, D. M. Tartakovsky, and A. M. Tartakovsky, Uncertainty quantification via random domain decomposition and probabilistic collocation on sparse grids, *Journal of Computational Physics*, 229(19): 6995-7012, 2010.

2011

- [P14] D. Mei, **G. Lin**. Effects of heat and mass transfer on the reaction kinetics of CO oxidation on the RuO₂(110) catalyst, *Catalysis Today*, 165: 56-63, 2011.
- [P15] Z. Xu, Y. Liu, H. Du, **G. Lin**, and CW. Shu, Point-wise Hierarchical Reconstruction for Discontinuous Galerkin and Finite Volume Methods for Solving Conservation Laws, *Journal of Computational Physics*, 230 (17): 6843-6865, 2011.

2012

- [P16] X. Yang, M. Choi, **G. Lin**, G.E. Karniadakis, Adaptive ANOVA Decomposition of Incompressible and Compressible Flows, *Journal of Computational Physics*, 231(4): 1587–1614, 2012.
- [P17] A. Balter, **G. Lin**, and A.M. Tartakovsky, The Effect of Nonlinearity in Hybrid Kinetic Monte Carlo-Continuum models, *Physical Review E*, 85: 016707, 2012.
- [P18] B. Yang, Y. Qian, **G. Lin**, R. Leung, Y. Zhang, Some issues in uncertainty quantification and parameter tuning: a case study of convective parameterization scheme in the WRF regional climate model, *Atmospheric Chemistry and Physics*, 12(5): 2409-2427, 2012.
- [P19] Z. Hou, M Huang, LYR Leung, **G. Lin**, and DM Ricciuto, Sensitivity of Surface Flux Simulations to Hydrologic Parameters Based on an Uncertainty Quantification Framework Applied to the Community Land Model, *Journal of Geophysical Research*. D. (Atmospheres), 117(D15): D15108, 2012.

2013

- [P20] I. Bright, **G. Lin**, N. Kutz, Compressive Sensing Based Machine Learning Strategy for Characterizing The Flow Around A Cylinder With Limited Pressure Measurements, *Physics of Fluids*, 25: 127102, 2013.
- [P21] B. Yang, Y Qian, **G Lin**, LYR Leung, PJ Rasch, GJ Zhang, SA McFarlane, C Zhao, Y Zhang, H Wang, M Wang, and X Liu, Uncertainty Quantification

and Parameter Tuning in the CAM5 Zhang-McFarlane Convection Scheme and Physical Impact of Improved Convection on the Global Circulation and Climate, *Journal of Geophysical Research. D. (Atmospheres)*, 118: 395-415, 2013.

[P22] Bilonis I, N. Zabaras, B Konomi, and **G Lin**. Multi-output separable Gaussian process: Towards an efficient, fully Bayesian paradigm for uncertainty quantification, *Journal of Computational Physics*, 241: 212-239, 2013.

[P23] X. Shi, **G. Lin***, J. Zhou, D. Fedosov, A Lattice Boltzmann Fictitious Domain Method for Modeling Red Blood Cell Deformation and Multiple-Cell Hydrodynamic Interaction in Flow, *International Journal for Numerical Methods in Fluids*, 72 (8): 895-911, 2013.

[P24] Z. Zhang, X. Yang, **G. Lin**, G. Karniadakis, Numerical solution of the Stratonovich- and Ito-Euler equations: Application to the stochastic piston problem, *Journal of Computational Physics*, 236: 15-27, 2013.

[P25] K. Hui, **G Lin***, W Pan, Understanding the Mechanisms of Sickle Cell Disease by Simulations with a Discrete Particle Model, *Computational Science & Discovery*, 6(1): 015004, 2013.

[P26] Ryu S, **G Lin**, X Sun, MA Khaleel, and D Li, Adaptive Multiple Super Fast Simulated Annealing for Stochastic Image Reconstruction, *International Journal of Theoretical and Applied Multiscale Mechanics*, 2(4): 287-297, 2013.

[P27] J. Bao, Z. Xu, **G. Lin**, Y. Fang, Evaluating the impact of aquifer layer properties on geo-mechanical response during CO₂ geological sequestration, *Computers & Geosciences*, 54: 28-37, 2013.

[P28] Z. Hou, DW Engel, **G Lin**, Y Fang, and Z Fang, An Uncertainty Quantification Framework for Studying the Effect of Spatial Heterogeneity in Reservoir Permeability on CO₂ Sequestration, *Mathematical Geosciences*, 45(7): 799-817, 2013.

[P29] X. Wan, **G. Lin**, Hybrid parallel computing of minimum action method, *Parallel Computing*, 39: 638-651, 2013.

[P30] J. Bao, Z. Hou, Y. Fang, H. Ren, **G. Lin**, Uncertainty quantification for evaluating impacts of caprock and reservoir properties on geomechanical responses during geologic CO₂ sequestration, *Greenhouse Gases: Science and Technology*, 3(5): 338-358, 2013.

[P31] C. Zhao, X. Liu, Y. Qian, J. Yoon, Z. Hou, **G. Lin**, S. McFarlane, H. Wang, B. Yang, P.-L. Ma, H. Yan, J. Bao, A Sensitivity Study of Radiative Fluxes at the Top of Atmosphere to Cloud-Microphysics and Aerosol Parameters in the

Community Atmosphere Model CAM5, *Atmos. Chem. Phys.*, 13: 10969-10987, 2013

2014

- [P32] G. Xu, **G. Lin***, J. Liu, Rare Event Simulation for Stochastic Korteweg-de Vries Equation, *SIAM/ASA Journal on Uncertainty Quantification*, 2 (1): 698-716, 2014.
- [P33] Guo Z, M Wang, Y Qian, VE Larson, SJ Ghan, M Ovchinnikov, P Bogenschutz, C Zhao, **G. Lin**, and T Zhou, A Sensitivity Analysis of Cloud Properties to CLUBB Parameters in the Single Column Community Atmosphere Model (SCAM5), *Journal of Advances in Modeling Earth Systems*, 6 (3): 829-858, 2014.
- [P34] M. J. Del Razo, W. Pan, H. Qian, **G. Lin**, Fluorescence Correlation Spectroscopy and Nonlinear Stochastic Reaction-Diffusion, *Journal of Physical Chemistry B*, 118 (25): 7037-7046, 2014.
- [P35] **G. Lin***, J. Bao, Z. Xu, A three-dimensional phase field model coupled with lattice kinetics solver for modeling crystal growth in furnaces with accelerated crucible rotation and traveling magnetic field, *Computers and Fluids*, 103: 204-214, 2014.
- [P36] X. Shi, **G. Lin***, Modeling the Sedimentation of Red Blood Cells in Flow under Strong External Magnetic Body Force using a Lattice Boltzmann Fictitious Domain Method, *Numer. Math. Theor. Meth. Appl.* 72014: 512-523, 2014.
- [P37] **G. Lin***, J. Liu, F. Sadre-Marandi, A comparative study on the weak Galerkin, discontinuous Galerkin, and mixed finite element methods, *Journal of Computational and Applied Mathematics*, 273: 346-362, 2015.
- [P38] Z. Zhang, X. Hu, T.Y. Hou*, **G. Lin***, P. Yan, An adaptive ANOVA-based data-driven stochastic method for elliptic PDE with random coefficients, *Communications in Computational Physics*, 16: 571-598, 2014.
- [P39] H. Yan, Y. Qian, **G. Lin**, L.R. Leung, B. Yang, Q. Fu, Parametric Sensitivity and Calibration for the Kain-Fritsch Convective Parameterization Scheme in the WRF Model, *Climate Research*, 59: 135-147, 2014.
- [P40] F. Liang, Y. Cheng, and **G. Lin**, Simulated Stochastic Approximation Annealing for Global Optimization with a Square-Root Cooling Schedule, *Journal of the American Statistical Association*, 109(506): 847-863, 2014.

- [P41] S. Shao, N. Abdolrahim, D. F. Bahr, **G. Lin**, and H.M. Zbib, Stochastic Effects in Plasticity in Small Volumes, *International Journal of Plasticity*, 52: 117-132, 2014.
- [P42] Z. Hou, D.W. Engel, D.H. Bacon, **G. Lin**, Y. Fang, H. Ren, Z. Fang, Uncertainty Analyses of CO₂ Plume Expansion subsequent to Wellbore CO₂ Leakage into Aquifers, *International Journal of Greenhouse Gas Control*, 27:69-80, 2014.
- [P43] **G. Lin***, J. Liu, L. Mu, X. Ye, Weak Galerkin Finite Element Methods for Darcy Flow: Anisotropy and Heterogeneity, *Journal of Computational Physics*, 276: 422-437, 2014.
- [P44] W. Li, **G. Lin***, D. Zhang, An Adaptive-ANOVA-based PCKF for High-Dimensional Nonlinear Inverse Modeling, *Journal of Computational Physics*, 258: 752–772, 2014.
- [P45] D. Meng, Q. Zhang, X. Gao, S. Wu, **G. Lin**, LipidMiner: a software for automated identification and quantification of lipids from multiple liquid chromatography-mass spectrometry data files, *Rapid Communications in Mass Spectrometry*, 28 (8): 981-985, 2014.
- [P46] D. Meng, B. Zheng, **G. Lin***, M.L. Sushko, Numerical Solution of 3D Poisson-Nernst-Planck Equations Coupled with Classical Density Functional Theory for Modeling Ion and Electron Transport in Confined Environment, *Communications in Computational Physics*, 16(5): 1298-1322, 2014.
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- [P48] G. Karagiannis, **G. Lin***, Selection of Polynomial Chaos Bases via Bayesian Model Uncertainty Methods with Applications to Sparse Approximation of PDEs with Stochastic Inputs, *Journal of Computational Physics*, 259: 114–134, 2014.
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- [C24] S.K. White, L.J. Gosink, C. Sivaramakrishnan, G.D. Black, S. Purohit, D.H. Bacon, J. Hou, **G. Lin**, I. Gorton, A. Bonneville, Implementations of a Flexible Framework for Managing Geologic Sequestration Modeling Projects, *Energy Procedia*, 37: 3971–3979, 2013.
- [C25] Elizondo MA, S Lu, **G Lin**, and S Wang, Dynamic Response of Large Wind Power Plant Affected by Diverse Conditions at Individual Turbines, *In IEEE Power and Energy Society General meeting*, July 27-31, 2014, National Harbor, MD, USA.

- [C26] W. Li, D. Zhang, **G. Lin**, A surrogate-based adaptive sampling approach for history matching and uncertainty quantification, SPE Reservoir Simulation Symposium, SPE 173298, Houston, Texas, Feb. 23-25, USA, 2015.
- [C27] L. Chen, Y. Cao, **G. Lin**, W. Sun, W. Zhang, P. Ming, Study on the simulation method of compressor aerodynamic noise based on CFD and IBEM, Proceedings of the ASME 2016 Internal Combustion Fall Technical Conference, in review, Greenville, SC, Oct. 9-12, 2016.
- [C28] J. Wang, X. Liu, H. Shen, **G. Lin**, Multi-resolution Climate Ensemble parameter analysis with nested parallel coordinates plots, IEEE VIS Conference, Visual Analytics Science and Technology program (VAST), Oct. 23-28, 2016, Baltimore, MD, USA.
- [C29] A. Biswas, **G. Lin**, X. Liu, H. Shen, Visualization of Time-Varying Weather Ensembles Across Multiple Resolutions, IEEE VIS Conference, Scientific Visualization program (SciVis), Oct. 23-28, 2016, Baltimore, MD, USA.

6.2.5 Referred Formal Reports

- [R1] **G. Lin**, DW Engel, and PW Eslinger. “Survey and Evaluate Uncertainty Quantification Methodologies”. PNNL-20914, Pacific Northwest National Laboratory, Richland, WA, 2012.
- [R2] CH Henager, Jr., F Gao, SY Hu, **G Lin**, EJ Bylaska, N Zabarar, “Simulating interface growth and defect generation in CZT-simulation state of the art and known gaps”, PNNL-189638, Pacific Northwest National Laboratory, Richland, WA, 2012.
- [R3] P. Ramuhalli, **G. Lin**, S.L. Crawford, B. Konomi, B.G. Braatz, J.B. Coble, B. Shumaker, H. Hashemian, Uncertainty Quantification Techniques for Sensor Calibration Monitoring in Nuclear Power Plants, Pacific Northwest National Laboratory, Richland, WA, 2013.
- [R4] N.A. Baker, G.E. Karniadakis, **G. Lin**, W. Pan, G.K. Schenter, 2013 Collaboratory on Mathematics for Mesoscopic Modeling of Materials (CM4) Annual Report, Pacific Northwest National Laboratory, Richland, WA, 2013.
- [R5] Ramuhalli P, **G. Lin**, SL Crawford, BA Konomi, JB Coble, B Shumaker, and H Hashemian, Uncertainty Quantification Techniques for Sensor Calibration Monitoring in Nuclear Power Plants, Pacific Northwest National Laboratory, Richland, WA, 2014.

6.2.5 Selected 98 Invited Presentations in Past Eight Years

- [IT1] Colloquium at Department of Mathematics, IIT, Nov. 16, 2018.
- [IT2] Invited talk at NSF ATD/AMPS workshop, Oct. 11-12, 2018

- [IT3] Invited seminar at Department of Mathematics, IUPUI, August 25, 2017.
- [IT4] Invited talk at Midwest Workshop on Mechanics of Materials and Structures, Purdue University, August 11, 2017.
- [IT5] Invited talk at International Conference on Uncertainty Quantification in Computational Fluid Dynamics, Shanghai, China, on July 24-27, 2017.
- [IT6] Invited talk at Workshop on Mathematical Approaches to Interfacial Dynamics in Complex Fluids, Banff International Research Station, Banff, CA, on June 26-30, 2017.
- [IT7] Invited seminar at Division of Applied Mathematics, Brown University, Providence, RI, March 17, 2017.
- [IT8] Invited seminar at Math Biology seminar series, Purdue University, West Lafayette, IN, Feb. 23, 2017.
- [IT9] Invited seminar at Probability seminar, Purdue University, West Lafayette, IN, Feb. 7, 2017.
- [IT10] Invited seminar at Probability seminar, Purdue University, West Lafayette, IN, Jan. 31, 2017.
- [IT11] Invited seminar at INFORMS seminar, Department of Industrial Engineering, Purdue University, West Lafayette, IN, Nov. 16, 2016.
- [IT12] Invited seminar at Department of Electric Engineering, Southeast University, Nanjing, China, June 28, 2016.
- [IT13] Invited seminar at Department of Mathematics, Nanjing Information Engineering University, Nanjing, China, June 27, 2016.
- [IT14] Invited seminar at Institute of Information Science, ShanghaiTech University, Shanghai, China, June 25, 2016.
- [IT15] Invited seminar at Department of Mathematics, Zhejiang University, Hangzhou, China, June 22, 2016.
- [IT16] Invited talk at Workshop on Modeling and Analysis in Molecular Biology and Electrophysiology, Suzhou, China, June 17, 2016.
- [IT17] Invited seminar Invited seminar at Naritech Company, Nanjing, China, June 7, 2016.
- [IT18] Invited seminar at Department of Mechanical Engineering, Southeast University, Nanjing, China, June 6, 2016.
- [IT19] Invited talk at the International Conference on Applied Mathematics 2016 at CityU, Hong Kong, May 30-June 2, 2016.
- [IT20] Invited seminar at Department of Mathematics, Michigan State University, East Lansing, MI, April 29, 2016.
- [IT21] Invited seminar at Spatial Statistics Seminar series, Purdue University, West Lafayette, IN, April 23, 2016.
- [IT22] Invited seminar at Department of Mathematics, Ohio State University, Columbus, OH, Dec. 3, 2015.

- [IT23] Invited seminar at Department of Mathematics, Ohio State University, Columbus, OH, Nov. 12, 2015.
- [IT24] Invited seminar at Department of Mathematics, Penn State University, State College, PA, Oct. 26, 2015.
- [IT25] Invited seminar at Department of Mathematics, Indiana University–Purdue University Indianapolis, Indianapolis, IN, Sep. 18, 2015.
- [IT26] Invited seminar at Department of Statistics, University of Minnesota, Minneapolis, MN, Feb. 26., 2015.
- [IT27] Invited seminar at Science and Technology for Aquifer Recharge Workshop, Doha, Qatar, Feb. 9, 2015
- [IT28] Invited seminar at Department of Mathematics Colloquium, Ohio State University, Columbus, OH, Nov. 18, 2014.
- [IT29] Invited seminar at Southeast University, Nanjing, China, Nanjing, China on May 11, 2014.
- [IT30] Invited seminar at Department of Mathematics, Shanghai University, China, Shanghai, China on July 16, 2013.
- [IT31] Invited talk at Workshop on Scientific Computing With Applications, Kunming, China on July 20, 2013.
- [IT32] Invited seminar at Southeast University, Nanjing, China, Nanjing, China on July 25, 2013.
- [IT33] Invited seminar at Department of Mathematics, Colorado State University, Fort Collins, CO on November 21, 2013.
- [IT34] Invited talk at IMA Hot Topics Workshop on Uncertainty Quantification in Materials Modeling, Minneapolis, MN on December 16, 2013.
- [IT35] Invited talk at the 2012 International workshop on Recent Advances in Scientific and Engineering Computing, Shanghai, China, 2012.
- [IT36] Invited talk at the Second Workshop on Computational Methods for Applied Sciences at Columbia University, New York City, Dec. 2, 2012.
- [IT37] Invited talk at the Computational Challenges in Probability Workshop: Uncertainty Quantification, Providence, RI on October 9, 2012.
- [IT38] Invited seminar at the ACMS Colloquium at University of Notre Dame, Notre Dame, IN on October 4, 2012.
- [IT39] Invited seminar at Applied and Computational Mathematics and Statistics, Univ. of Notre Dame, Notre Dame, IN on October 4-5, 2012
- [IT40] Invited seminar at the Mechanics and Computation Seminar Series at Stanford University, San Francisco, CA on September 27, 2012
- [IT41] Invited talk at the DOE Multifaceted Mathematics Center for Complex Energy Systems Kick-off Meeting, ANL, Lemont, IL, September 13, 2012
- [IT42] Invited talk at the DOE Collaboratory on Mathematics for Mesoscopic Modeling of Materials Kick-off Meeting, Seattle, September 10, 2012.

- [IT43] Invited talk at the 2012 DOE PNNL Computational Sciences and Mathematics All Hands Meeting, Richland, WA, August 16, 2012.
- [IT44] Invited talk at the Carbon Sequestration Initiative Annual Review, Richland, WA, August 18, 2012.
- [IT45] Invited talk at the DOE ASCR Exascale Research Conference, Portland, OR on April 17, 2012.
- [IT46] Invited seminar at Beijing Computational Science Research Center, Beijing, China on May 21, 2012.
- [IT47] Invited Seminar at the State Key Laboratory of Scientific and Engineering Computing, Beijing, China on May 21, 2012.
- [IT48] Invited seminar at the Second International Conference on Scientific Computing, Nanjing, China on May 24, 2012.
- [IT49] Invited seminar at the conference on “Challenges in Geometry, Analysis, and Computation: High-Dimensional Synthesis”, New Haven, CT.
- [IT50] Invited talk at the 2012 Joint CMSD/CSMD session on PNNL FCSD Directorate Advisory Committee Meeting in Richland, WA, June 12, 2012.
- [IT51] Invited talk at the Joint Session CSMD and CMSD Material Genome, Directorate Advisory Committee Meeting, Richland, WA, June 12, 2012.
- [IT52] Invited poster at the FCSD Joint Poster Session, Directorate Advisory Committee Meeting, Richland, WA, June 12, 2012.
- [IT53] Invited seminar in Department of Mathematics at Univ. of South Carolina, Columbia, SC on April 6, 2012.
- [IT54] Invited seminar in Department of Mathematics at Louisiana State University, Baton Rouge, LA, March 13, 2012.
- [IT55] Invited seminar at the Undergraduate Mathematical Sciences Seminar at University of Washington, Feb. 16, 2012, Seattle, WA.
- [IT56] Invited talk at the 1st CESM UQ and Analysis Interest Group Meeting, Jan 31, 2012, Boulder, WA.
- [IT57] Invited talk at the 1st Sim-SEQ Workshop, San Francisco, CA on December 6, 2011.
- [IT58] Invited seminar at the Society of Petroleum Engineering Golden Gate Section Distinguished Lecture, San Francisco, CA on December 8, 2011
- [IT59] Invited seminar at the Seminar in Aeronautics & Astronautics Department, University of Washington, Dec. 2, 2011, Seattle, WA.
- [IT60] Invited seminar at the Department of Applied Mathematics Colloquium, Penn. State University, Nov. 4, 2011, University Park, PA.
- [IT61] Invited seminar at the Department of Applied Mathematics Pizza Seminar, Penn. State University, Nov. 4, 2011, University Park, PA.
- [IT62] Invited seminar 1 at the 2011 DOE Applied Math Program PI Meeting, October 17-19, Washington D.C.

- [IT63] Invited seminar 2 at the 2011 DOE Applied Math Program PI Meeting, October 17-19, Washington D.C.
- [IT64] Invited talk at the 2011 DOE Climate PI Meeting, September 19-22, Washington D.C.
- [IT65] Invited talk “Uncertainty Quantification for CCSI”, at the 2011 Carbon Capture Simulation Initiative Industry Workshop, September 26-28, 2011, Morgantown, WV.
- [IT66] Invited talk “Uncertainty Quantification Methods and Software for Carbon Capture Simulation”, at the 2011 Carbon Capture Simulation Initiative Industry Workshop, September 26-28, Morgantown, WV.
- [IT67] Invited talk “A Software System for Uncertainty Quantification and its Application to the CCSI MEA Process Model”, at the 2011 Carbon Capture Simulation Initiative Industry Workshop, September 26-28, Morgantown, WV.
- [IT68] Invited talk “Solid Sorbent Simulation: Early Development and UQ Evaluation Tools”, at the 2011 Carbon Capture Simulation Initiative Industry Workshop, September 26-28, Morgantown, WV.
- [IT69] Invited seminar at the Department of Mathematics, Colorado State University, July 15, 2011, Fort Collins, Colorado.
- [IT70] Invited poster at the Department of Energy SciDAC 2011 PI meeting, July 10-14 2011, Denver, Colorado.
- [IT71] Invited talk at the “Uncertainty Quantification in Computational Fluid Dynamics” invited session, 20th AIAA Computational Fluid Dynamics Conference, Honolulu, Hawaii, June 27-30, 2011.
- [IT72] Invited talk at the workshop "Uncertainty Quantification in Industrial and Energy Applications: Experiences and Challenges", June 2-4 2011, at the Institute for Mathematics and its Applications (IMA) in Minneapolis, MN.
- [IT73] Invited seminar at the Applied and Computational Mathematics Seminar, California Technology Institute, May 9th 2011, Pasadena, CA.
- [IT74] Invited seminar at Applied Mathematics Colloquium, University of Washington, April 21 2011, Seattle, WA.
- [IT75] Invited talk at the IAMCS Workshop in Large-Scale Inverse Problems and Uncertainty Quantification, February 25th, 2011, Texas A&M University, College Station, Texas.
- [IT76] Invited seminar at the Petroleum Engineering Department Colloquium, Colorado School of Mines, February 11th, 2011, Golden, Colorado.
- [IT77] Invited seminar in the Mathematics Department at University of North Carolina Charlotte, Charlotte, NC on February 7, 2011.
- [IT78] Invited seminar at the Division of Applied Mathematics, Brown University, December 17th, 2010, Providence, RI.
- [IT79] Invited seminar at the Department of Mathematics Colloquium, Iowa State University, December 7th, 2010, Ames, IA.

- [IT80] Invited seminar at the Department of Civil Engineering, University of Southern California, December 1th, 2010, Los Angeles, CA.
- [IT81] Invited seminar at the Department of Applied Mathematics, University of Washington, November 22nd, 2010, Seattle, WA.
- [IT82] Invited talk at the "Mapping Out Future Directions for Uncertainty Quantification in Scientific Inference" conference, November 5, 2010, Santa Fe, NM.
- [IT83] Invited seminar at the Department of Department of Applied Mathematics, SUNY Stony Brook University, September 8th, 2010, Stony Brook, NY.
- [IT84] Invited talk at the FY 2011 Nuclear Energy University Programs Workshop, July 27-28, 2010, Rockville, MD.
- [IT85] Invited talk at CMSD Division Advisory Committee Meeting, June 15th, 2010, Richland, WA
- [IT86] Invited talk at CSM Division Advisory Committee Meeting, June 15th, 2010, Richland, WA
- [IT87] Invited seminar at the PNNL Brown Bag Seminar, May 27, 2010, Richland, WA.
- [IT88] Invited talk at the 2010 DOE Applied Mathematics Program Meeting, May 4, 2010, Berkeley, CA.
- [IT89] Invited seminar at the Aerospace computational design lab, MIT, December 4th, 2009, Boston, MA.
- [IT90] Invited talk at Princeton Plasma Physics Laboratory, November 30th, 2009, Princeton, NJ.
- [IT91] Invited talk at the Mini-Symposium on Uncertainty Quantification in Simulations of Fluid Flow, Presented at the 62nd Annual Meeting of the APS Division of Fluid Dynamics, November 22nd, 2009, Minneapolis, Minnesota.
- [IT92] Invited talk at the Real-time Model Validation and Calibration (RTMV) kick-off meeting, November 11th, 2009, Richland, WA.
- [IT93] Invited talk at DOE ASCR Applied Math Program' PNNL visit, September 2nd, 2009, Richland, WA.
- [IT94] Invited seminar at the Applied Mathematics Colloquium, in the Department of Applied Mathematics, University of Washington, March 12th 2009, Seattle, WA.
- [IT95] Invited seminar at the PNNL CSM Development Brown Bag, Dec. 18th, 2008, Richland, WA.
- [IT96] Invited seminar at the Center for Applied Mathematics Colloquium, University of Notre Dame, November 10th, 2008, Notre Dame, IN.
- [IT97] Invited seminar at the 2008 DOE Summer School in Multiscale Mathematics and High Performance Computing, Washington State University-Tri-Cities, August 5th, Richland, WA.

[IT98] Invited graduate seminar in the Department of Aeronautics & Astronautics, University of Washington, January 18th, 2008, Seattle, WA.

7. Current Ph.D & MS students at Purdue University:

Moonseop Kim, Sheng Zhang, Jiahao Zhang, Shiqi Zhang, Nicholas D. Winovich, Wei Deng, Ziyang Huang, Yifan Du, Dung-Yi Chao, Yixuan Sun, Bingbin Yang, Sabareesh Mamidipaka, Pranavv A. Jain, Ningyu Ma, Lang Zhao, Bangde Liu.

8. Past Graduate and High-School Summer Interns and Students Supervised/Co-advised in Past Ten Years

- [S1] Purdue undergraduates: Yiyi Chen, Xuan Dan Liu, Ruotong Ji, Zixuan Liu (May-August, 2015)
- [S2] Purdue undergraduates: Tian Qiu, Lefei Liu (May-August, 2016)
- [S3] Purdue undergraduates: Wentao Chen, Yuting Guo (2015-2016) (awarded the **Prize of Finalist in the MCM math modeling contest** in 2016)
- [S4] Visiting student, Zongren Zou from Peking University (July-Sep. 2016)
- [S5] Visiting student, Jiangjiang Zhang from Zhejiang University (2015-2016)
- [S6] Visiting student, Zhaopeng Hao from Southeast University (2015-2016)
- [S7] High-School Science Intern, Katrina Hui from Richland High School, (2011-2012), *who was named a semifinalist in the 2011 Siemens Competition, and a semifinalist in the 2012 Intel Science Talent Search based on the sickle cell anemia research she did with her mentor, G. Lin.*
- [S8] Graduate Summer Intern, Huijing Du from University of Notre Dame, (June-August, 2010)
- [S9] Graduate Summer Intern, Yichen Chen from Texas A&M University, (June-August, 2011)
- [S10] Graduate Summer Intern, Jia Wei from Texas A&M University, (June-August, 2011)
- [S11] Graduate Summer Intern, Jin Xu from Cornell University, (June-August, 2011)
- [S12] Graduate Summer Intern, Vasileios Fountoulakis from Cornell University, (June-August, 2011)
- [S13] Summer Intern, Ruifeng Wang from University of Washington, (June-August, 2011)
- [S14] Graduate Summer Intern, Eder Sousa from University of Washington, (April-July, 2011)
- [S15] Graduate Summer Intern, Xin Hu from California Institute of Technology, (September-December 2011)
- [S16] Graduate Summer Intern, Weixuan Li from University of Southern California, (June-August, 2012)
- [S17] Graduate Summer Intern, Simi Wang from University of North Carolina at Chapel Hill, (August, 2012)

- [S18] Graduate Summer Intern, Bill Shi from University of North Carolina at Chapel Hill, (August, 2012)
- [S19] Graduate Summer Intern, Gregory Herschlag from University of North Carolina at Chapel Hill, (August, 2012)
- [S20] Graduate Summer Intern, Hee Sun Lee from Stanford University, (June-August, 2012)
- [S21] Long-Term Visiting Student, Ben Yang from Nanjing University, China through PNNL AFS fellowship program, (2010-2012)
- [S22] Long-Term Visiting Student, Huiping Yan from Lanzhou University through PNNL AFS fellowship program, (2011-2013)
- [S23] Long-Term Visiting Student, Ming Hu from Institute of Atmospheric Physics Chinese Academy of Sciences through PNNL AFS fellowship program, (2011-2013)

9. Past Post-Doctoral/Post-Master Scholars Mentored in Past Five Years

- [PD1] Post-Doctoral Scholar, Yannan Sun, (2010-2012)
- [PD2] Post-Doctoral Scholar, Da Meng, (2011-2014)
- [PD3] Post-Doctoral Scholar, Bin Zheng, (2012 Jan-2014)
- [PD4] Post-Doctoral Scholar, Bledar Konomi, (2011-2014)
- [PD5] Post-Doctoral Scholar, Georgios Karagiannis, (2012 March-2016)
- [PD6] Post-Doctoral Scholar, Knut Waagan, (2011-2012)
- [PD7] Post-Doctoral Scholar, Ido Bright, (2011-2013)
- [PD8] Post-Doctoral Scholar, Ryu Seun, (2011-2012)
- [PD9] Post-Master Scholar, Zhufeng Fang, (2010-2011)
- [PD10] Post-Master Scholar, Huiying Ren, (2012-2013)

10. Selected Academic Activities & Service in Past Eight Years

- [AA1] Director of Purdue Data Science Consulting Services, 2019-Present
- [AA2] Organizer for Purdue CCAM Lunch seminar, 2017-Present
- [AA3] Serve on the Purdue Astronaut Scholarship Board, 2018-Present
- [AA4] Co-chair the conference on “Workshop on Fast Direct Solvers”, Purdue CCAM, 2018.
- [AA5] Serve in the “Data Science Cluster Search” Purdue Faculty Search Committee in 2018-2019.
- [AA6] Serve in the Department of Mathematics Primary Committee, 2018-Present.
- [AA7] Serve in the Department of Mathematics Computer Committee, 2018-Present.
- [AA8] Organize Annual Meeting of the American Physics Society Division of Fluid Dynamics, Indianapolis, IN, 2022.

- [AA9] Organize IMA PI conference on Approximation Theory and Machine Learning, Purdue University, September 18-20, 2018.
- [AA10] Organize the workshop on “Current Trends and Challenges in Data Science and Uncertainty Quantification”, Purdue University, Mar 31, 2018.
- [AA11] Serve in the primary committee at Department of Mathematics, Purdue, 2017-2018.
- [AA12] Serve as mentor for Purdue Network for Computational Nanotechnology Summer Undergraduate Research Fellowship, 2014-Present. Mentored 5 undergraduates: Yiyi Chen, Ruotong Ji, Zixuan Liu, Tian Qiu, Lefei Liu.
- [AA13] Co-chair the conference on “Workshop on Fast Direct Solvers”, Purdue CCAM, 2016.
- [AA14] Serve in the “Predictive Science Clustering Hiring” Purdue Faculty Search Committee in 2015-2016
- [AA15] Serve as mentor in Wentao Chen’s Purdue undergraduate team, who was awarded the prize of finalist in the MCM math modeling contest in 2016, which is one of 22 finalist teams out of 7421 teams around the world.
- [AA16] Serve as mentor at Purdue Campus for the Society for Collegiate Leadership & Achievement
- [AA17] Serve as NSF CISE proposal reviewer, 2016.
- [AA18] **Associate Editor: “SIAM MMS”, 2019-.**
- [AA19] **Guest Editor:** Special Issue "Mathematical Models and Computational Methods in Biofilm Research (MMCM)", BioMed Research International, 2016.
- [AA20] **Journal Editor:** Serve in the editorial board of “*International Journal of Uncertainty Quantification*”, 2010-present.
- [AA21] **Journal Editor:** Serve in the editorial board of “*Journal of Stochastics*”, 2013
- [AA22] **Journal Editor:** Serve in the editorial board of “*Scientific World Journal*”, 2013
- [AA23] **Journal Editor:** Serve in the editorial board of “*Austin Statistics*”, 2013-
- [AA24] *Department of Energy Nuclear Energy University Program Proposal Review*, April, 2011, Bethesda, MD.
- [AA25] *Department of Energy’s Early Career Research Program panel review*, January 12, 2010, Bethesda, MD
- [AA26] Serving in the Internal Proposals and Whitepapers Review Panel at PNNL, 2007-2014.
- [AA27] Minisymposium Chair, “Uncertainty Quantification for Complex System”, Minisymposium, *2010 SIAM Annual Meeting*, July 12-16, 2010, Pittsburgh, Pennsylvania.
- [AA28] Co-organizer for “*Math for Power Systems*” workshop, August 17th 2010, Richland, WA.

- [AA29] Minisymposium Chair, “Mathematical and Numerical Aspects of Uncertainty Quantification” Minisymposium, *7th International Congress on Industrial and Applied Mathematics (ICIAM) 2011 Meeting*, July 18-22, 2011, Vancouver, British Columbia, Canada.
- [AA30] Minisymposium Chair, “Numerical Methods for Complex Flows” Minisymposium, *7th International Congress on Industrial and Applied Mathematics (ICIAM) 2011 Meeting*, July 18-22, 2011, Vancouver, British Columbia, Canada.
- [AA31] Invited Session Chair, “Uncertainty Quantification in Computational Fluid Dynamics” invited session, *20th AIAA Computational Fluid Dynamics Conference*, Honolulu, Hawaii, June 27-30, 2011.
- [AA32] Minisymposium Chair, “Climate Uncertainty Quantification” Minisymposium, *SIAM Conference on Uncertainty Quantification*, Raleigh, North Carolina, April 2-5, 2012.
- [AA33] Reviewer for *Journal of Computational Physics*, *SIAM Journal on Scientific Computing*, *ESAIM: Mathematical Modeling and Numerical Analysis*, *Computer Methods in Applied Mechanics and Engineering*, *AIAA Journal*, *Applied Numerical Mathematics*, *Journal of Heat Transfer*, *Journal of Applied Mathematics and Physics*, *Advances in Water Resources*, *Society of automotive engineers International*, *Communications in Computational Physics*, *Fluid Dynamics Research*, *International Journal for Uncertainty Quantification*
- [AA34] Organizer of the *Frontier in Uncertainty Quantification Seminar Series* at PNNL, 2010-2011 and invited Professor Yannis Kevrekidis (Princeton), Nicholas Zabaras (Cornell), Roger Ghanem (USC), Dion Vlachos (Univ. of Delaware), Randall J. Leveque (Univ. of Washington).
- [AA35] Help to establish a *PNNL/University of Washington joint Research Center for Modeling and Data-Intensive Computing*
- [AA36] Participate in *PNNL/University of Utah joint Center for Extreme Data Management Analysis and Visualization*
- [AA37] Serving as a thesis reader for PhD candidate Qianli Su from University of Washington Electric Engineering Department, June, 2010.
- [AA38] Building an Uncertainty Quantification Team and Research Center at PNNL, 2007-2014

11. Teaching Record

Dr. Guang Lin has made major contributions to curriculum development in the uncertainty quantification and data sciences with important applications in modeling climate, environmental and biological systems at Purdue University. He has taught a variety of undergraduate, and graduate math courses. At Purdue, he developed two new courses on “Uncertainty Quantification” and “Machine Learning and Uncertainty

Quantification for Data Science” in both Department of Mathematics and School of Mechanical Engineering.

Dr. Lin has participated in a variety of teaching programs at Brown University aimed at improving the quality of undergraduate education. Additionally, he has given many short courses and invited lectures on various research topics at international conferences and department colloquiums, which have helped to improve his teaching skills. He also has extensive experience in mentoring junior researchers and young students. In the past five years, he has mentored 26 summer interns and students, and 10 postdoctoral or post-master scholars.

Over 10 undergraduate students have worked as part of Dr. Lin’s research group. He has served as mentor for Purdue Network for Computational Nanotechnology Summer Undergraduate Research Fellowship (SURF) program since 2014. He has mentored 5 undergraduates: Yiyi Chen, Ruotong Ji, Zixuan Liu, Tian Qiu, Lefei Liu through SURF program. In addition, he also served as mentor in Wentao Chen’s Purdue undergraduate team, who was awarded the prize of finalist in the MCM math modeling contest in 2016, which is one of 22 finalist teams out of 7421 teams around the world. Besides his teaching responsibilities, Dr. Lin was actively involved at Purdue University in undergraduate advising, serving as mentor at Purdue Campus for the Society for Collegiate Leadership & Achievement.

List of Courses that Dr. Lin has taught:

Purdue undergraduate vertically integrated projects on “Deep Reinforcement Learning based Optimal Control of Complex Systems”, Spring 2019.

<https://engineering.purdue.edu/VIP/teams/drloccs/index.html>

The Vertically Integrated Projects (VIP) Program unites undergraduate education and faculty research in a team-based context. Undergraduate VIP students earn academic credits, while faculty and graduate students benefit from the design/discovery efforts of their teams. VIP extends the academic design experience beyond a single semester, with students participating for up to three years. It provides the time and context to learn and practice professional skills, to make substantial contributions, and experience different roles on large multidisciplinary design/discovery teams. The long-term nature of VIP creates an environment of mentorship, with faculty and graduate students mentoring teams, experienced students mentoring new members, and students moving into leadership roles as others graduate. VIP attracts students from many disciplines and enables the completion of large-scale design/discovery projects, strengthening and expanding faculty research portfolios.

MA303 Differential Equations and Partial Differential Equations for Engineering and the Sciences, Purdue University, Fall 2018.

ME309 Introduction to Fluid Mechanics, Spring 2018.

MA303 Differential Equations and Partial Differential Equations for Engineering and the Sciences (2 Sections), Purdue University, Fall 2017.

MA265 Linear Algebra, Purdue University, Spring 2017.

MA598-550 Machine Learning and Uncertainty Quantification for Data Science (Created New Course), Purdue University, Fall 2016.

MA265 Linear Algebra, Purdue University, Fall 2016.

ME 597 Uncertainty Quantification (Created New Course), Purdue University, Spring 2016

MA266 Section 052 Ordinary Differential Equations, Purdue University, Spring 2015.

MA266 Section 091 Ordinary Differential Equations, Purdue University, Spring 2015.

Short Courses on Sensitivity Analysis and Uncertainty Quantification,	University of Notre Dame Notre Dame, IN September, 2012
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Lectures on Hybrid Particle Simulations At 2008 DOE Summer School in Multiscale Mathematics and High-Performance Computing	Washington State Univ. Richland, WA August, 2008
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Participated the teaching certificate program seminar series in the Sheridan Center for Teaching and Learning at Brown University. The Sheridan Center is an organization at Brown University devoted to the improvement of the teaching at the university. The Center recognizes the diversity of learning styles and encourages reflective, independent, life-long learning.

Brown University, Division of Applied Mathematics Teaching Assistant & Co-Instructor AM117: Introduction of Numerical Analysis. Professor Undergraduate and Graduate Course	Providence, RI, USA Fall 2004 George Em Karniadakis.
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Brown University, Division of Applied Math. Teaching Assistant AM65: Essential Statistics. Professor Donald McClure.	Providence, RI, USA Spring 2004 Undergraduate Course
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Brown University, Division of Applied Mathematics Computer Teaching Assistant	Providence, RI, USA Fall 2004
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Computer Assistant for all undergraduate courses opened by Division of Applied Mathematics

Brown University, One-on-One Math Tutor
2001-2007

Providence, RI, USA,