CURRICULUM VITAE

YEKATERINA EPSHTEYN

http://www.math.utah.edu/~epshteyn/

March 2025

POSITION:

- Professor, Department of Mathematics, The University of Utah (07/2022 - present)
- Associate Professor, Department of Mathematics, The University of Utah (07/2015 - 06/2022)
- Assistant Professor, Department of Mathematics, The University of Utah (07/2010 - 06/2015)
- NSF RTG Postdoctoral Fellow, Department of Mathematical Sciences and Center for Nonlinear Analysis, Carnegie Mellon University Postdoctoral Mentor: Prof. David Kinderlehrer, (08/2007-07/2010).

SCIENTIFIC VISITS:

- Nihon University, Tokyo, Japan, October 2019
- Uppsala University, Sweden, August 2013, August-September 2016
- Imperial College London, UK, October 2015, May 2016
- Carnegie Mellon University, Pittsburgh, October 2010, December 2010

RESEARCH INTERESTS:

- Numerical Analysis, Applied Analysis, Mathematical and Computational Modeling of Materials: Modeling of Polycrystalline Materials; Grain Growth
- Numerical Methods for Partial Differential Equations, Numerical Analysis, Scientific Computing, Applied Mathematics, Applied Analysis

- Difference Potentials Method, Finite Difference Methods, Finite Volume Methods, Finite Element Methods, Particle Methods, Stochastic Galerkin and Uncertainty Quantification Methods
- Development and Analysis of Structure-Preserving Models and Numerical Algorithms
- Interdisciplinary Research and Collaboration
- Hyperbolic Balance/Conservation Laws. Shallow Water Models and Related Systems
- Biomedical Applications: Cells signaling, Chemotaxis Models, Blood Flow Models, Reaction-Diffusion Systems in Developmental Biology
- Computational Fluid Dynamics
- Flow in Porous Media, Multiphase Flow

EDUCATION:

- University of Pittsburgh, Pittsburgh, (Mathematics), Ph.D., 2002-2007.
  Advisor: Prof. Beatrice Rivière.
- Moscow Institute of Physics and Technology (MIPT), Moscow, Russia, (Applied Mathematics and Physics), B.S., 1996-2000.
  Advisor: Prof. Viktor S. Ryaben'kii.

PROFESSIONAL TRAINING:

- NSF RTG Postdoctoral Fellow, Department of Mathematical Sciences and Center for Nonlinear Analysis, Carnegie Mellon University
  Postdoctoral Mentor: Prof. David Kinderlehrer, (2007-2010).
- Research Assistant/Fellow (during undergraduate studies and post undergraduate), Keldysh Institute for Applied Mathematics of Russian Academy of Sciences (KIAM of RAS), Moscow, Russia
  Advisor: Prof. Viktor S. Ryaben'kii, (1999-2001).

SELECTED AWARDED GRANTS:

PI, Co-PI or Senior Personnel:

- NSF Conference Grant, University of Utah (**PI**: Y. Epshteyn)/(Co-PIs: A. Alekseenko, CSUN, J. Adler, Tufts University and L. Ruthotto, Emory University), DMS-2506531, "Conference: NSF Computational Mathematics Meeting 2025", $99,999, January 1 2025 - December 31 2025

- NSF Research Grant, University of Utah (**PI**: Y. Epshteyn, co-PI: A. Narayan), DMS-2207207, *"Structure-Preserving Algorithms for Hyperbolic Balance Laws with Uncertainty"*, $450,000, July 1 2022 - June 30 2025

- DMREF ("Designing Materials to Revolutionize and Engineer our Future") Collaborative Research, NSF, University of Utah (**PI:** Y. Epshteyn) /Columbia University (Lead PI: K. Barmak)/Illinois Institute of Technology (PI: C. Liu)/Lehigh University (PI: J. Rickman), DMS-2118172/2118206/2118181/2118197, *"Collaborative Research: DMREF: Microstructure by Design: Integrating Grain Growth Experiments, Data Analytics, Simulation and Theory"*. Total budget for the project is $1,798,856.00, September 1 2021 -August 31 2025 (University of Utah, PI, Share: $384,494). Supplemental Award, $100,000, August 2022. Total budget for the project with the supplemental award is $1,898,856.00, (University of Utah, PI, Share: $409,494).

- NSF Research Grant, University of Utah (**Lead PI**: Y. Epshteyn, Senior Personnel: L. Horvath)/Columbia University (PI: K. Barmak), DMS-1905463/DMS-1905492, *"Collaborative Research: Towards a Predictive Theory of Microstructure Evolution in Polycrystalline Materials"*, $700,002, September 1 2019 - August 31 2024 (Lead PI, Share: $250,002)

- Simons Foundation: Collaboration Grants for Mathematicians, University of Utah, No. 415673, **Single PI**, *"Coarsening and Texture Development in Polycrystalline Materials"*, $35,000, September 1 2016 - August

31 2019 (remaining amount was returned in 2019 to Simons Foundation due to the award of the NSF grant)

- NSF Research Grant, University of Utah, **Single PI**, DMS-1112984: *Chemotaxis Models in Biology and Texture Development in Materials: Numerical Methods, Analysis, and Modeling*, $149,581, September 2011 - August 31 2015

- NSF Conference Grant, University of Utah, **Co-PI**, (PI: Kenneth Golden; Co-PIs: Andrej Cherkaev, Yekaterina Epshteyn and Graeme Milton), DMS-1434212: *Thirteenth International Conference on Continuum Models and Discrete Systems, July 21-25, 2014*, $35,000, July 2014 - June 30 2015

- NSF Conference Grant (Lead Institution: Carnegie Mellon University), **Senior Personnel**, DMS-1601475: *Topics in Applied Nonlinear Analysis: Recent Advances and New Trends* (PI: Irene Fonseca (Carnegie Mellon University); Co-PI: Dejan Slepcev (Carnegie Mellon University); Senior Personnel: Maria Emelianenko, Yekaterina Epshteyn and Adrian Tudorascu), $31,600, April 2016 - March 31 2017

- NSF RTG Grant, University of Utah, **Senior Personnel**, DMS-1148230: *Research Training in Mathematical and Computational Biology* (PI: James Keener; Co-PI: Aaron Fogelson (Former Co-PI), Fred Adler, Paul Bressloff, Alla Borisyuk and Sean Lawley (Co-PI since 2016); Senior Personnel: Yekaterina Epshteyn and Christel Hohenegger), $2,496,299, August 2012 - July 31 2020

Affiliated Faculty:

- NSF RTG Grant, University of Utah, **Affiliated Faculty**, DMS-2136198: *RTG: Optimization and Inversion for the 21st Century Workforce* (PI: Kenneth Golden; Co-PI: Elena Cherkaev, Christel Hohenegger, Fernando Guevara-Vasquez and Akil Narayan), $2,498,692.00, July 2022 - June 2027

SELECTED AWARDS, HONORS AND TRAVEL GRANTS:

1. Simons Fellow in Mathematics 2025

2. Work in the Paper "Point Process Microstructural Model of Metallic Thin Films with Implications for Coarsening", (Nature Journals) npj Computational Materials, *is featured in multiple news releases, including EurekAlert! (AAAS) and ASM International ("the world's largest association of materials-centric engineers and scientists")*, Spring 2023
   https://www.asminternational.org/predicting-grain-growth-for-better-materials/

3. Work in the Paper "Relative Grain Boundary Energies from Triple Junction Geometry: Limitations to Assuming the Herring Condition in Nanocrystalline Thin Films", Acta Materialia, *is featured in news release "Materials Scientists and Mathematicians Challenge Central Hypothesis in Grain Growth Modelling for Thin Films" by Columbia University (New York, NY)*, Spring 2023
   https://www.apam.columbia.edu/

4. DMREF Award DMS-2118172/2118206/2118181/2118197 is featured in Columbia University, University of Utah, Illinois Institute of Technology and Lehigh University news releases

5. Multiple travel awards/grants from, e.g., AWM, SIAM, Berlin Mathematical School, Henri Poincaré Institute, Ki-Net, MSRI, US National Congress on Computational Mechanics, University of Pittsburgh Medical School, 2006 - 2020.

6. US Junior Oberwolfach Fellow, 2012.

7. Paper "Critical events, entropy, and the grain boundary character distribution" *is selected by the editors of Physical Review B to be highlighted as an Editors' Suggestion*, 2011.
   This work is also featured in "SIAM News" in 2010, featured in Physics in 2011 and in Carnegie Mellon University News in 2012.
   https://physics.aps.org/articles/v4/33

8. NSF RTG Postdoctoral Fellowship, August 2007 - July 2010: NSF RTG Training Grant DMS-0635983: "Center for Nonlinear Analysis: Research and Training in Applied Mathematics".

9. Andrew Mellon Predoctoral Fellowship, 2004-2005.

10. NSF Graduate Fellowship, Honorable Mention, 2004.

11. Red Diploma (s otlichiem/summa cum laude), Moscow Institute of Physics and Technology, 2000.

12. Research Assistantship, Keldysh Institute for Applied Mathematics of Russian Academy of Sciences (KIAM of RAS), Moscow, 1999-2001.

13. Scholarships for high GPA, Moscow Institute of Physics and Technology, 1996-2000.

14. Silver Medal for outstanding achievements in study, 1996.

15. Diplomas, Russian Math and Physics Olympiads, 1994-1996.

PROFESSIONAL ACTIVITIES:

- *(Upcoming)* Invited Organizer (by the NSF DMS Computational Mathematics Program) of the National Science Foundation Computational Mathematics 2025 PI meeting, "NSF CompMath Meeting 2025", Salt Lake City, The University of Utah, May 8 - May 9, 2025

- Member, 2025 SIAG/APDE Early Career Prize Selection Committee, SIAM Activity Group on Analysis of Partial Differential Equations (SIAG/APDE)

- President, SIAM Northern States Section, 2023-2025 (*elected*)

- Member, Nominating Committee for the SIAM activity group on Mathematical Aspects of Materials Science (SIAG/MS), 2024

- Lead Organizer for the BIRS Workshop "Mathematics of Multiscale and Multiphysics Phenomena in Materials Science", Banff International Research Station, Canada, June 2024
  https://www.birs.ca/events/2024/5-day-workshops/24w5159

- Member of the Organizing Committee, "SIAM Conference on Mathematical Aspects of Materials Science" (SIAM-MS 2024), Pittsburgh, May 2024
  (major/primary international conference of the SIAM activity group on Mathematical Aspects of Materials Science, SIAM/MS)

- Co-organizer, SIAM-MS Mini-Symposium, "Mathematical and Computational Aspects of Multiscale Materials Structures: Advances and New Trends", at the SIAM Conference on Mathematical Aspects of Materials Science (SIAM-MS 2024), Pittsburgh, May 2024.

- Co-organizer, ICIAM Mini-Symposium, "Mathematical Aspects of Multiscale Phenomena in Materials and Complex Fluids" at the ICIAM 2023 (10th International Congress on Industrial and Applied Mathematics), Tokyo, Japan, August 2023

- Invited Organizer, NSF-SIAM Minisymposium on the NSF Program "Designing Materials to Revolutionize and Engineer our Future" (NSF DMREF), SIAM Annual Meeting, Pittsburgh, July 2022

- Local co-organizer of the conference, AMS Fall Western Sectional Meeting, Salt Lake City, UT (postponed to Fall 2022 due to COVID-19)

- Co-organizer, WCCM Mini-Symposium "New Developments in Polycrystalline Microstructures" at 14th World Congress in Computational Mechanics and ECCOMAS Congress, Paris, France, July 2020 - instead took place in January 2021 online due to COVID-19

- Co-organizer, SIAM Mini-Symposium "Polycrystalline Microstructures: Recent Advances and New Trends" at SIAM Conference on the Mathematical Aspects of Materials Science, Bilbao, Spain, May 2020 (due to

COVID-19 the conference and the mini-symposium took place virtually in May 2021 instead)

- Member, Nominating Committee for the SIAM Activity Group on Analysis of Partial Differential Equations (SIAG/APDE), 2020

- SIAG Officer-Secretary, Leadership of SIAM Mathematical Aspects of Materials Science Activity Group (SIAG/MS), 01/2019 - 12/2020, (*Elected by SIAG/MS Members*)

- Member, SIAM Committee on Programs and Conferences, SIAM, 2016-2022 (*Appointed by the SIAM President*)

- Invited Organizer, SIAM Special Session at JMM 2020 on "Recent Advances and New Trends in Modeling and Simulation of Systems with Multiple Scales, Coupled Phenomena and Interfaces", Denver, Colorado, January 2020

- Project Leader, Women in Mathematics of Materials (WIMM) Workshop, University of Michigan, Ann Arbor, MI, May 14-May 18 2018

- Co-organizer of Special Session on "Modeling, Analysis, and Simulation of PDEs with Multiple Scales, Interfaces, and Coupled Phenomena", at AMS Spring Western Sectional Meeting, Portland State University, Portland, OR April 14-15, 2018

- Co-organizer, AWM Research Symposium, UCLA, April 8-9, 2017

- Co-organizer of the International Conference "Topics in Applied Nonlinear Analysis: Recent Advances and New Trends", Conference in honor of David Kinderlehrer's 75th birthday, Carnegie Mellon University, July 18-20 2016.
  https://www.math.cmu.edu/CNA/kinderlehrer75/

- Co-organizer of "CMDS Investigators Workshop: At the Frontiers of Computation and Materials", Snowbird, Utah, USA, May 16, 2015

- Co-organizer of the Mini-symposium "Embedded Boundary and Interface Techniques" at SIAM Conference on Computational Science and Engineering (CSE15), Salt Lake City, March 2015
- Invited Co-organizer of the Career Panel mini-symposium at AWM Workshop at SIAM Conference on Computational Science and Engineering (CSE15), Salt Lake City, March 2015
- Invited Co-Mentor, "WhAM! A Research Collaboration Workshop for Women in Applied Mathematics: Numerical Partial Differential Equations", IMA Special Workshop, Minneapolis, August 11-15 2014.
- Co-organizer of the CMDS 2014: International Conference, Continuum Models Discrete Systems, Salt Lake City, July 21 - 25 2014.
- Co-organizer of the ICOSAHOM 2014: International Conference on Spectral and High Order Methods, Salt Lake City, June 23 - 27 2014.
- Mini-symposium co-organizer "Recent Developments in Numerical Methods for PDEs", SIAM Annual Meeting 2013, 4-sessions, July 2013
- Member of the program committee "Flow and Transport: Computational Challenges" - An International Workshop in conjunction with the International Conference on Computational Science, Tsukuba, Japan, June 2011
- Mini-symposium co-organizer "Theoretical and Computational Aspects of Discontinuous Galerkin Methods", MAFELAP June 8-12, 2009
- CNA working group co-organizer "Recent Advances in Analysis and Approximation of Fluids", Carnegie Mellon University, Fall 2009
- Reviewer and panelist, American Association of University Women (AAUW) Fellowships and Grants, 2018-2022
- NSF panelist and reviewer, (2015-present)
- Reviewer for Army

- Reviewer for EPSRC, UK
- Reviewer for Polish National Science Centre/Foundation
- Reviewer for the University of Utah Seed Grant
- Reviewer for Tenure and Promotion
- Invited External Reviewer for the position of Associate Senior Lecturer in Scientific Computing, Sweden, Uppsala University, Department of Information Technology, Fall 2013 - May 2014
- Guest Editor, Applied Numerical Mathematics, APNUM, 2013-2014
- Refereeing for: Archive for Rational Mechanics and Analysis, IMA Journal of Numerical Analysis, Springer US, SIAM Journal on Applied Mathematics, SIAM Journal on Numerical Analysis, SIAM Journal on Scientific Computing, SIAM Journal on Uncertainty Quantification, Mathematics of Computation, Numerische Mathematik, Journal of Computational and Applied Mathematics, Journal of Computational Mathematics, Journal of Mathematical Analysis and Applications, Journal of Numerical Mathematics, Computer Methods in Applied Mechanics and Engineering, Continuum Mechanics and Thermodynamics, Applied Numerical Mathematics, Journal of Scientific Computing, Journal of Computational Physics, Proceedings of the Royal Society A, Applied Mathematics and Computations, International Journal on Numerical Analysis and Modeling, Computers & Fluids, Numerical Methods for Partial Differential Equations, Scripta Materialia, Physical Review Materials

UNIVERSITY OF UTAH SERVICE:

- Elected Member of the University of Utah Senate Faculty Review Standards Committee, 2024-2028
- Member of the University of Utah Ad Hoc Committee for Tenured Faculty Reviews and Tenure Policy Revisions, 2024

- Member of the RPT Informal Review Committee, Department of Mathematics, University of Utah, 2024 - present
- Member of the Career Line (CL) Review Committee, Department of Mathematics, University of Utah, 2024 - present
- Chair of the Faculty Awards Committee, Department of Mathematics, University of Utah, 2020 - 2023
  Was instrumental in preparing successful nominations of outstanding colleagues for the highly competitive awards internal/from the University of Utah and external.
- Member of the Faculty Undergraduate Teaching Award Committee, Department of Mathematics, University of Utah, 2021 - 2024
- Member of the RPT Committees for Several Faculty, Department of Mathematics, 2022 - present
- Member of the Graduate Committee, Department of Mathematics, University of Utah, 2011 - 2017, 2020 - 2021, 2023 - 2024
- Member of the Graduate Recruitment Committee, Department of Mathematics, 2017-2018, 2022 - 2023
- Chair of the Graduate Recruitment Committee, 2014 - 2015
- Member of the Engineering Math Committee, 2023 - 2024
- Member of the Career Line Ad Hoc Committee, Department of Mathematics, 2022 - 2023
- Member of the Undergraduate Curriculum Committee, Department of Mathematics, University of Utah, 2021 - 2022
- Member of the Hiring Committee, Department of Mathematics, University of Utah, 2019 - 2020
- Member of the Development Committee, Department of Mathematics, University of Utah, 2018 - 2021

- Member of the Warnock Chair Committee, Department of Mathematics, University of Utah, 2019 - 2021
- Elected Member of the College of Science Council, University of Utah, 2019 - 2021, 2014 - 2016
- Member of the Library Committee, Department of Mathematics, University of Utah, 2018 - 2019
- Elected Member of the Senate Advisory Committee on Diversity, University of Utah, 2016 - 2020
- Elected Member of the Academic Senate, University of Utah, 2015 - 2018
- Elected Member of the Executive Committee, Department of Mathematics, University of Utah, 2015 - 2017
- Organizer of the Department Applied Mathematics Seminar, Department of Mathematics, University of Utah, Summer 2013 - Spring 2022
- Co-Chair of the Department Colloquium, Department of Mathematics, University of Utah, Fall 2010 - Spring 2011

STUDENTS AND POSTDOCS:

- **Undergraduate Students:**
- **Supervision of 7 REU students:** Grant Daniels, Kyle Kazemini, Preston Malen, Ryan Redd, Lia Smith, Sophie Stephens and Zhenzhao Tu, as a part of REU course Math 4800 *"Selected Numerical Algorithms and Their Analysis"*, Spring 2022.
- **Supervision of 10 REU students:** Nathan Briggs, Annie Cherkaev, Stephen Durtschi, Kyle Hiroyasu, Erika Loertscher, Sean O'Connor, Troy Raen, Justin Talbot, Hitesh Tolani and Ericson Weah, as a part of REU course Math 4800 *"Selected Numerical Algorithms and Their Analysis"*, Spring 2014.

- **REU Undergraduate Students (individual REU study):**
  Guang Yang, (Fall 2022 - Summer 2023), project *"Numerical Algorithms for Stochastic Models of Grain Growth".*

  James Eckstein, (January 2020 - Summer 2021), project *"Numerical Algorithms for Automated Dynamic Grain Boundary Network Identification".*
  James is the Ph.D. student in Applied Physics at Columbia University since Fall 2023.

  Liam Hayes, (January 2020 - March 2021, Columbia University, Co-advisor. Advisor: K. Barmak), project *"Numerical Algorithms for Automatically Processing Data with Application to Grain Growth".*

  Camille Humphries, (January 2019 - December 2019, co-advised jointly with Qing Xia), project *"Fast Numerical Algorithms for Models with Nonlinear Diffusion"*

  Charlotte Blake, (August 2018 - May 2019), project *"Numerical Algorithms with Application to Data Processing in Materials Science".*
  Charlotte is the Ph.D student in Mathematics at the University of Illinois at Urbana-Champaign since Fall 2019.

  Gabrielle Legaspi, (January 2019 - May 2019), project "Coarsening Models"
  Gabrielle Legaspi, (May 2017 - September 2017, co-advised jointly with Kyle Steffen and Qing Xia), project *"Fast Numerical Algorithms Based on Difference Potentials Method." Recipient of Keith Reed Memorial Scholarship, April 2018.*
  Biostatistician, New York.

  Alex Henabray, (May 2014 - September 2014, co-advised jointly with Jason Albright), project *"Numerical Solution of 1D Stefan Problem".*

Camille Humphries (May 2013 - May 2014, co-advised jointly with Jason Albright in Fall 2013 - Spring 2014), project *"Central-Upwind Schemes for Shallow Water Models".*

Spencer Phippen (May 2013 - January 2014), project *"Difference Potentials Method for Interface Problems". Recipient of Susan C. Christiansen Memorial Scholarship for our REU project, April 2014.*
Software Engineer at Google.

- **Ph.D. Students:**
  Caleb Albers (Summer 2023 - current), Ph.D. advisor, research area *"Mathematical and Computational Modeling of Polycrystalline Materials."*
  Caleb was supported during Summer 2023 via research assistantship on the NSF-DMS Grant 1905463.
  Caleb is supported during Spring, Summer and Fall 2024 via research assistantship on the NSF-DMS Grant 2118172.

  Batuhan Bayir (Fall 2023 - current), Ph.D. advisor with William Feldman (Will is a Ph.D. co-advisor), research area *"Analysis of PDEs: Nonlinear Fokker-Planck Models of Grain Growth."*
  Batuhan is supported during Spring - Summer 2024, Spring 2025 via research assistantship on the NSF-DMS Grant 2118172.

  Dongwan Kim (Fall 2023 - current), Ph.D. advisor, research area "Structure-Preserving Algorithms for the Chemotaxis and Fokker-Planck models"
  Dongwan is supported during Summer 2024 and Spring 2025 via research assistantship on the NSF-DMS Grant 2207207.

  Yinqian Yu (Fall 2023 - current), Ph.D. advisor with Akil Narayan (Akil is a Ph.D. co-advisor), research area *"Energy Stable and Structure-Preserving Schemes for the Stochastic Galerkin Models of Conserva-*

tion/Balance Laws"
Yinqian is supported during Spring, Summer and Fall 2024 via research assistantship on the NSF-DMS Grant 2207207.

Kaitlin O'Dell (Fall 2021 - Fall 2023), Ph.D. advisor, research project *"Particle Method for Fokker-Planck Models."*
Kaitlin was supported during Spring 2022 via research assistantship on the NSF-DMS Grant 1905463.
Kaitlin was supported via NSF Graduate Research Fellowship Fall 2022 -Fall 2023. Decided to graduate with MS due to personal reasons.
First job: Applied Mathematician at Boeing, July 2024 - Current.

Dihan Dai (Fall 2016 - Spring 2022, Ph.D. advisor. Ph.D. co-advisor: Akil Narayan), thesis *"Structure-Preserving Numerical Methods for Shallow Water Equations with Uncertainty".*
Recipient of the Department Summer Research Fellowship 2021.
First Job after Ph.D.: Applied Scientist I (L4) at Amazon, July 2022 - Current.

Thuong Nguyen (Fall 2016 - Summer 2022, Ph.D. advisor), thesis *"Adaptive Central-Upwind Methods for Shallow Water Models."* Additional research project in the Fall 2021: "Computational Models of Grain Growth in Polycrystalline Materials."
Thuong was supported during Fall 2021 via research assistantship on the NSF-DMS Grant 1905463.
Recipient of the Vietnamese Government Fellowship for the Graduate Study, 2016-2018.
First Job after Ph.D.: Postdoctoral Fellow, UT Southwestern Medical Center, August 2022 - Current.

Qing Xia (Fall 2014 - Spring 2019, Ph.D. advisor), Ph.D. thesis *"Robust Numerical Algorithms with Applications to Interface Problems and Chemotaxis Models in Biology".*

Recipient of the Outstanding Graduate Student Award, April 2016 and the Department Summer Research Fellowship 2017.
First Job after Ph.D.: Postdoctoral Fellow at the Department of Mathematical Sciences at Rensselaer Polytechnic Institute (RPI), July 2019 - June 2021.
Dahlquist Research Fellow at KTH Royal Institute of Technology, Stockholm, Sweden, Fall 2021 - Fall 2023.
Currently: Tenure-Track Assistant Professor, Wenzhou-Kean University, China, starting Fall 2024.

Kyle Steffen, (2013 - 2018, Ph.D. advisor. Ph.D. co-advisor: Kenneth Golden), Ph.D. thesis *"The Difference Potentials Method for Problems with Evolving Geometry and Modeling Fluid Flow in Sea Ice"*
First Job after Ph.D.: Peter O'Donnell Postdoctoral Fellow at the Oden Institute for Computational Engineering & Sciences at the University of Texas at Austin.

Jason Albright (2012 - 2016, Ph.D. advisor), Ph.D. thesis *"Numerical Methods based on Difference Potentials for Models with Material Interfaces"*.
Recipient of the Outstanding Graduate Student Award, April 2014.
Recipient of the University of Utah Graduate Research Fellowship, 2015-2016.
Jason was also supported during January 2015 - May 2015 via research assistantship on the NSF-DMS Grant 1112984.
First Job after Ph.D.: Postdoctoral fellow at the Theoretical Division at Los Alamos National Laboratory (LANL).
R&D Staff Scientist 2 at the Theoretical Division at Los Alamos National Lab (LANL).
Currently: Senior Research Scientist, COSM Advanced Manufacturing Systems, Beverly, MA.

Patrick Bardsley (2012 - 2016, Ph.D. advisor. Ph.D. co-mentor: Fer-

nando Guevara Vasquez), Ph.D. thesis *"Intensity-only imaging with waves, restarted inverse Born series, and the analysis of coarsening in polycrystalline materials".*
Recipient of Rushing Research Fellowship, April 2015. Recipient of Best MSTAT student of the year award, April 2016.
First Job after Ph.D.: Peter O'Donnell Postdoctoral Fellow at the Department of Mathematics and Oden Institute for Computational Engineering & Sciences at the University of Texas Austin.
Currently: Machine Learning Engineer at Cirrus Logic.

- **Graduate students research project supervision and graduate research training:**
  Chong Wang (August 2022 - December 2022 (defended MS project). MS advisor. MS co-advisor: Jingyi Zhu), research project *"Grain growth modeling and simulation via vertex model".*
  Chong was supported during Fall 2022 via research assistantship on the NSF-DMS Grant 1905463.

  Elias Clark (Fall 2018 - Spring 2021, Advisor on the research project. Co-advisor: Lajos Horvath), research project *"Data-Driven Numerical Simulation and Modeling of Grain Growth in Polycrystalline Materials". Elias was supported during August 2019 - May 2020 via research assistantship on the NSF-DMS Grant 1905463.* Elias graduated with the Ph.D. in 2023 (Ph.D. advisor Sean Lawley).

  Vira Babenko, Spring 2014, advisor for the project on the selected numerical methods for PDEs. Vira graduated with the Ph.D. in 2016 (Ph.D. advisor Peter Alfeld).

- **Mentorship of Visiting International Ph.D. Students:**
  Gustav Ludvigsson and Simon Sticko, Spring 2017 (visiting from Uppsala University, Sweden)

- **Postdoctoral Mentees:**
  Bohyun Kim (Fall 2023 - Spring 2024) *"High-Order Finite Difference*

Scheme for Fokker-Planck System."

Chang (Kamala) Liu (Fall 2021 - Fall 2022) *"Models of Grain Growth and Numerical Simulations."*
Family Medical Leave, Spring 2023. Left University due to family emergency.

Michael Medvinsky (Fall 2013 - Spring 2015), *"Difference Potentials Methods for the Elliptic Interface Problems in* $2D$*."*
Currently: Research Assistant Professor at the Department of Mathematics, North Carolina State University.

Ph.D. Committee Member:

- Sean Johnson, Ph.D. student, Department of Physics and Astronomy, University of Utah, 2022-present
- Matthew Patrick, Ph.D. student, Department of Applied Physics and Applied Mathematics with Materials Science and Engineering, Columbia University, 2021-present
- Curtis Miller, Ph.D. student, Mathematics, Graduated 2020
- Hanlei Zhu, Ph.D. student, Mathematics. Graduated 2019
- Erin Linebarger, Ph.D. student, Mathematics. Graduated 2019
- Tyler Johnson, Ph.D. student, Mathematics, 2017-2018
- Jing Ma, Ph.D. student, Physics, Graduated 2017
- Cheryl Zapata-Allegro, Ph.D. student, Mathematics, Graduated 2016
- Brent Kerby, Ph.D. student, Mathematics, Graduated 2016
- Yeonjong Shin, Ph.D. student, Mathematics, 2015-2016 (moved to Ohio State University)

- Joe Eason, Ph.D. student, Mathematics, Graduated 2017
- Victor Camacho, Ph.D. student, Mathematics, since 2014
- Predrag Krtolica, Ph.D. student, Mathematics, Graduated 2015
- Mingfeng Qiu, Ph.D. student, Mechanical Engineering, May 2013 - May 2015 (moved to the University of British Columbia, Canada, graduated 2020)
- Michal Kordy, Ph.D. student, Mathematics, Graduated 2014
- Brittany Bannish, Ph.D. student, Mathematics, Graduated 2012
- **Visiting Professor (for more than a month):** Masashi Mizuno, Spring 2018 (visiting from Nihon University, Tokyo, Japan)

LIST OF PUBLICATIONS:

Papers and Book Chapters:

1. Batuhan Bayir, Yekaterina Epshteyn and William M Feldman, Global Well-Posedness of a Nonlinear Fokker-Planck Type Model of Grain Growth, submitted, 2025
2. Yekaterina Epshteyn, Chun Liu and Masashi Mizuno, Longtime Asymptotic Behavior of Nonlinear Fokker-Planck Type Equations with Periodic Boundary Conditions, submitted, 2024
3. Y. Epshteyn, A. Narayan and Y. Yu, Energy Stable and Structure-Preserving Algorithms for the Stochastic Galerkin System of 2D Shallow Water Equations, accepted to *Computer Methods in Applied Mechanics and Engineering (CMAME)*, 2025
4. D. Dai, Y. Epshteyn and A. Narayan, Energy Stable and Structure-Preserving Schemes for the Stochastic Galerkin Shallow Water Equations, *ESAIM: Mathematical Modelling and Numerical Analysis (ESAIM: M2AN)*, Vol 58, 2, 723-757, 2024

5. J. Rickman, K. Barmak, Y. Epshteyn and C. Liu, Point Process Microstructural Model of Metallic Thin Films with Implications for Coarsening, *(Nature Journals) npj Computational Materials 9, 27*, 2023
(*this work is featured in multiple news releases, including EurekAlert! (AAAS) and ASM International, among others*)

6. Y. Epshteyn, C. Liu, C. Liu and M. Mizuno, Local Well-Posedness of a Nonlinear Fokker-Planck Model, *Nonlinearity, (London Mathematical Society)*, 36, 1890-1917, 2023

7. Y. Epshteyn and T. Nguyen, Adaptive Central-Upwind Scheme on Triangular Grids for the Saint-Venant System, *Communications in Mathematical Sciences (CMS)*, Volume 21, Issue 3, Pages 671-708, 2023

8. D. Dai, Y. Epshteyn and A. Narayan, Non-Dissipative and Structure-Preserving Emulators via Spherical Optimization, *Information and Inference: A Journal of the IMA*, Volume 12, Issue 1, Pages 494-523, March 2023

9. M. Patrick, G. Rohrer, O. Chirayutthanasak, S. Ratanaphan, E. Homer, G. Hart, Y. Epshteyn and K. Barmak, Relative Grain Boundary Energies from Triple Junction Geometry: Limitations to Assuming the Herring Condition in Nanocrystalline Thin Films, *Acta Materialia* 242, 2023, 118476
(*this work is featured in the Department of Applied Mathematics and Physics, Columbia University news release*)

10. Y. Epshteyn, C. Liu, C. Liu and M. Mizuno, Nonlinear inhomogeneous Fokker-Planck models: energetic-variational structures and long time behavior, Volume 20, 6, pp. 1295-1356, *Analysis and Applications*, 2022

11. Y. Epshteyn, C. Liu and M. Mizuno, A stochastic model of grain boundary dynamics: A Fokker-Planck perspective, *Mathematical Models and Methods in Applied Sciences (M3AS)*, Volume No. 32, Issue No. 11, pp. 2189 - 2236, 2022

12. *Book chapter:* K. Barmak, A. Dunca, Y. Epshteyn, C. Liu and M. Mizuno, Grain Growth and the Effect of Different Time Scales, Volume 31, *Springer AWM series volume "Research in the Mathematics of Materials Science"*, 2022

13. D. Dai, Y. Epshteyn and A. Narayan, Hyperbolicity-Preserving and Well-Balanced Stochastic Galerkin Method for Two-Dimensional Shallow Water Equations, *Journal of Computational Physics*, Volume 452, 1 March 2022

14. Y. Epshteyn, C. Liu and M. Mizuno, Large Time Asymptotic Behavior of Grain Boundaries Motion with Dynamic Lattice Misorientations and with Triple Junctions Drag, *Communications in Mathematical Sciences (CMS)*, Vol. 19, No. 5, 1403-1428, 2021

15. Y. Epshteyn, C. Liu and M. Mizuno, Motion of Grain Boundaries with Dynamic Lattice Misorientations and with Triple Junctions Drag, *SIAM Journal on Mathematical Analysis (SIMA)*, 53(3), 3072-3097, 2021

16. D. Dai, Y. Epshteyn and A. Narayan, Hyperbolicity-Preserving and Well-Balanced Stochastic Galerkin Method for Shallow Water Equations, *SIAM Journal on Scientific Computing (SISC)*, 43(2), A929-A952, 2021

17. Y. Epshteyn and Q. Xia, Difference Potentials Method for Models with Dynamic Boundary Conditions and Bulk-Surface Problems, *Advances in Computational Mathematics* 46, 67, 2020

18. Y. Epshteyn and Q. Xia, Efficient numerical algorithms based on difference potentials method for chemotaxis systems in 3D, *Journal of Scientific Computing*, Volume 80, Issue 1, 26-59, 2019

19. X. Liu, J. Albright, Y. Epshteyn and A. Kurganov, Well-Balanced Positivity Preserving Central-Upwind Scheme with a Novel Wet/Dry Reconstruction on Triangular Grids for the Saint-Venant System, *Journal of Computational Physics*, 374, 213-236, 2018

20. G. Ludvigsson, K. Steffen, S. Sticko, S. Wang, Q. Xia, Y. Epshteyn, and G. Kreiss, High-order numerical methods for 2D parabolic problems in single and composite domains, *Journal of Scientific Computing*, Volume 76, Issue 2, 812-847, 2018

21. K. Steffen, Y. Epshteyn, J. Zhu, M. J. Bowler, J. W. Deming, and K. M. Golden, Network modeling of fluid transport through sea ice with entrained exopolymeric substances, *SIAM Journal on Multiscale Modeling and Simulation*, 16-1, 106-124, 2018
June 2019 Featured Article in SIAM Journal on Multiscale Modeling and Simulation

22. A. Chertock, Y. Epshteyn, H. Hu and A. Kurganov, High-Order Positivity-Preserving Hybrid Finite-Volume-Finite-Difference Methods for Chemotaxis Systems, *Advances in Computational Mathematics*, Volume 44, Issue 1, pp 327-350, 2018

23. P. Bardsley, K. Barmak, E. Eggeling, Y. Epshteyn, D. Kinderlehrer, S. Ta'asan, Towards a Gradient Flow for Microstructure, *Rendiconti Lincei - Matematica e Applicazioni (European Mathematical Society Publishing)*, 28, 777-805, 2017
(*Invited paper, Dedicated to the Memory of Prof. Ennio De Giorgi.*)

24. J. Albright, Y. Epshteyn, Q. Xia, High-Order Accurate Methods Based on Difference Potentials for 2D Parabolic Interface Models, *Communications in Mathematical Sciences*, Volume 15, Number 4, pages 985-1019, 2017

25. J. Albright, Y. Epshteyn, M. Medvinsky and Q. Xia, High-order numerical schemes based on difference potentials for 2D elliptic problems with material interfaces, *Applied Numerical Mathematics*, Volume 111, pages 64-91, 2017

26. S.K. Godunov, V.T. Zhukov, M.I. Lazarev, I.L. Sofronov, V.I. Turchaninov, A.S. Kholodov, S.V. Tsynkov, B.N. Chetverushkin and Y. Epshteyn, Viktor Solomonovich Ryaben'kii and his school (on his 90th

birthday), *Uspekhi Mat. Nauk (Russian Math. Surveys)*, 70:6(426), 213-236, 2015

27. *Book chapter:* Y. Epshteyn and M. Medvinsky, On the Solution of the Elliptic Interface Problems by Difference Potentials Method, *Springer Volume of Lecture Notes in Computational Science and Engineering (LNCSE) Series*, Volume 106, pages 197-205, 2015

28. Y. Epshteyn, I. Sofronov and S. Tsynkov, Professor V. S. Ryaben'kii. On the occasion of the 90th birthday, *Applied Numerical Mathematics (Editorial)*, Volume 93, pages 1 - 2, 2015

29. J. Albright, Y. Epshteyn and K. Steffen, High-Order Accurate Difference Potentials Methods for Parabolic Problems, *Applied Numerical Mathematics*, (*Special Issue in Honor of Prof. Viktor Ryaben'kii 90th Birthday*), Volume 93, Pages 87-106, 2015

30. Y. Epshteyn and S. Phippen, High-Order Difference Potentials Methods for 1D Elliptic Type Models, *Applied Numerical Mathematics*, (*Special Issue in Honor of Prof. Viktor Ryaben'kii 90th Birthday*), Volume 93, Pages 69-86, 2015

31. Y. Epshteyn, Algorithms Composition Approach based on Difference Potentials Method for Parabolic Problems, *Communications in Mathematical Sciences*, Volume 12, Number 4, pages 723 - 755, 2014

32. *Book chapter:* K.Barmak, E.Eggeling, M.Emelianenko, Y. Epshteyn, D.Kinderlehrer, R.Sharp and S. Ta'asan, A Theory and Challenges for Coarsening in Microstructure, *Springer INdAM Series, "In Analysis and Numerics of Partial Differential Equations" in Memory of Enrico Magenes*, 2013

33. Y. Epshteyn, Upwind-Difference Potentials Method for Patlak-Keller-Segel Chemotaxis Model, *Journal of Scientific Computing*, Volume 53, Issue 3, Pages 689-713, 2012

34. *The paper is selected by the editors of Physical Review B to be highlighted as an Editors' Suggestion and our work featured in Physics, SIAM News and Carnegie Mellon News:*
K. Barmak, E. Eggeling, M. Emelianenko, Y. Epshteyn, D. Kinderlehrer, R. Sharp and S. Ta'asan, Critical Events, Entropy, and the Grain Boundary Character Distribution, *Physical Review B*, B 83 134117, 2011

35. K. Barmak, E. Eggeling, M. Emelianenko, Y. Epshteyn, D. Kinderlehrer, R. Sharp and S. Ta'asan, An Entropy Based Theory of the Grain Boundary Character Distribution, *Discrete and Continuous Dynamical Systems - Series A (DCDS-A)*, Volume 30, Issue 2, 427-454, 2011
(*Invited Paper, Special Issue in Honor of Prof. Louis Nirenberg 85th Birthday.*)

36. S. Bryson, Y. Epshteyn, A. Kurganov and G. Petrova, Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System, *ESAIM: Mathematical Modelling and Numerical Analysis (ESAIM: M2AN)*, Volume 45, Issue 3, 423-446, 2011

37. *Book chapter:* Scheme of Algorithms Composition for Problems in Composite Domains Based on Difference Potentials Method
(with V.S. Ryaben'kii and V. Turchaninov), *in V.S. Ryaben'kii, "Difference Potentials Method and its Applications"*, Moscow, Russia, Chapter 5, p. 290-311, Fizmatlit 2010

38. K.Barmak, E.Eggeling, M.Emelianenko, Y.Epshteyn, D.Kinderlehrer and S. Ta'asan, Geometric Growth and Character Development in Large Metastable Networks, *Rendiconti di Matematica*, Serie VII, Volume 29, 65-81, Roma 2009

39. Y. Epshteyn and A. Izmirlioglu, Fully Discrete Analysis of a Discontinuous Finite Element Method for the Keller-Segel Chemotaxis Model, *Journal of Scientific Computing*, Volume 40, Issue 1-3, 211-256, 2009

40. B. Riviere, Y.Epshteyn, D.Swigon, Y.Vodovotz, A Simple Mathematical Model of Signaling Resulting from the Binding of Lipopolysaccharide

with Toll-like Receptor 4 Demonstrates Inherent Preconditioning Behavior, *Mathematical Biosciences*, 217, no. 1, 19-26, 2009

41. Y.Epshteyn and A.Kurganov
New Interior Penalty Discontinuous Galerkin Methods for the Keller-Segel Chemotaxis Model, *SIAM Journal on Numerical Analysis*, 47, no. 1, 386-408, 2008/09

42. Y. Epshteyn, and B. Rivière
Analysis of hp Discontinuous Galerkin Methods for Incompressible Two-Phase Flow, *Journal of Computational and Applied Mathematics*, Volume 225, Issue 2, 487–509, 2009

43. Y.Epshteyn
Discontinuous Galerkin Methods for the Chemotaxis and Haptotaxis Models, *Journal of Computational and Applied Mathematics*, Volume 224, Issue 1, 168–181, 2009

44. Y. Epshteyn, T. Khan and B. Rivière
Inverse Problem in Optical Tomography Using Discontinuous Galerkin Method, *Mathematics and Computers in Simulation*, Volume 79, Issue 7, 1989–2000, 2009

45. Y.Epshteyn and B.Rivière
Convergence of High Order Methods for Miscible Displacement, *International Journal on Numerical Analysis and Modeling*, 5, suppl., 47-63, 2008

46. Y. Epshteyn and B. Rivière
Estimation of Penalty Parameters for Symmetric Interior Penalty Galerkin Methods, *Journal of Computational and Applied Mathematics*, Volume 206, Issue 2, p. 843-872, 2007

47. Y. Epshteyn and B. Rivière
Fully Implicit Discontinuous Finite Element Methods for Two-Phase Flow, *Applied Numerical Mathematics*, Volume 57, Issue 4, p.383-401, 2007

48. Y. Epshteyn and B. Rivière
On the Solution of Incompressible Two-Phase Flow by a p-version Discontinuous Galerkin Method, *Communications in Numerical Methods in Engineering*, Volume 22, Issue 7, p 741-751, 2006

49. A. Dunca and Y.Epshteyn
On the Stolz-Adams Deconvolution Model for the Large-Eddy Simulation of Turbulent Flows, *SIAM Journal on Mathematical Analysis*, Volume 37, Issue 6, p 1890-1902, 2006

50. V.S. Ryaben'kii, V. Turchaninov and Y. Epshteyn
Algorithm Composition Scheme for Problems in Composite Domains based on the Difference Potential Method, *Computational Mathematics and Mathematical Physics*, Volume 46, Issue 10, p 1768-1784, 2006 (*translation from Russian*)

51. V.S. Ryaben'kii, V. Turchaninov and Y. Epshteyn
The Numerical Example of Algorithms Composition for Solution of the Boundary-Value Problems on Compound Domain Based on Difference Potential Method, Preprint No.3, Moscow, *Keldysh Institute for Applied Mathematics, Russia Academy of Sciences*, 2003
http://library.keldysh.ru/preprint.asp?lg=e&id=2003-3
(*translation from Russian*)

Conference Proceedings:

52. K.Barmak, E.Eggeling, M.Emelianenko, Y.Epshteyn, D.Kinderlehrer, R.Sharp and S. Ta'asan, Recent Developments in Material Microstructure: A theory of Coarsening, *Mater. Res. Soc. Symp. Proc.* Vol. 1753, Materials Research Society, 2015

53. K.Barmak, E.Eggeling, M.Emelianenko, Y.Epshteyn, D.Kinderlehrer, R.Sharp and S. Ta'asan, Materials Microstructures: Entropy and Curvature-Driven Coarsening, volume 1881, pages 71-91. *RIMS, Research Institute for Mathematical Sciences, U. Kyoto*, 2014

54. K. Barmak, E. Eggeling, M. Emelianenko, Y. Epshteyn, D. Kinderlehrer, R. Sharp and S. Ta'asan, Predictive Theory for the Grain Boundary Character Distribution, *in the proceedings of "International Conference on Recrystallization and Grain Growth (REX GG 2010)"*, Vols 715-716, pp. 279-285, 2012

55. Y.Epshteyn, Upwind-Difference Potentials Method for Chemotaxis Models, *proceedings of "European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)"*, 2012

56. Y.Epshteyn, Recent Developments in the Numerical Methods for the Chemotaxis Models, Oberwolfach report 10/2012, p.10-12, the *proceedings of the workshop "Theory and Applications of Discontinuous Galerkin Methods", Mathematisches Forschungsinstitut Oberwolfach*,
Germany, February 19-25 2012

57. S. Bryson, Y.Epshteyn, A. Kurganov and G. Petrova, Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water Equations, *The American Institute of Physics (AIP) Conference Series*, Volume 1389, Issue 1, pp. 686-689, 2011

58. Y.Epshteyn, B. Rivière, D. Swigon, Y. Vodovotz
A Simple Mathematical Model of Lipopolysaccharide Signaling Through Toll-Like Receptor 4 Results in Complex Insights on Preconditioning, *Journal of Critical Care*, Volume 22, Issue 4, in the proceedings of Conference "6th International Conference on Complexity in Acute Illness", 2007

59. Y.Epshteyn and B.Rivière
Fully Implicit Discontinuous Galerkin Scheme for Two-Phase Flow, *in the proceedings of MSRI Conference "The Legacy of Ladyzhenskaya and Oleinik"*, p.125-128, 2006

IN PREPARATION:

- Yekaterina Epshteyn, Chun Liu and Masashi Mizuno, Structure-Preserving Numerical Methods for Fokker-Planck Models of Grain Growth, in preparation, 2024

INVITED COLLOQUIUM AND SEMINAR TALKS:

1. "New Perspectives on Modeling, Simulation and Analysis of Grain Growth in Polycrystalline Materials", Department of Mathematics, Temple University, April 2024

2. "Grain Boundaries in Polycrystals: Modeling, Analysis and Simulation", MIF++ Seminar, University of Liverpool, UK, December 2023

3. "New Perspectives on Modeling and Analysis of Grain Growth in Polycrystals", Department of Mathematics, Oregon State University, January 2023

4. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Mathematics, Tufts University, October 2022

5. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, October 2022

6. "Numerical Methods for Shallow Water Models", Department of Mathematics, Numerical Analysis Group, KTH, Royal Institute of Technology, Stockholm, Sweden, May 2022

7. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Mathematics, University of Minnesota, March 2022

8. "Numerical Methods for Shallow Water Models", Department of Mathematics, Old Dominion University, February 2021.

9. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network in Polycrystalline Materials: Theory, Simulations and Experiments", Department of Mathematics, University of Nebraska-Lincoln, October 2020.

10. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network in Polycrystalline Materials: Theory, Simulations and Experiments", Department of Mathematics and Statistics University of Massachusetts Amherst, July 2020.

11. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Mathematics, University of Utah, November 2019.

12. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Mathematics, Nihon University, Tokyo, Japan, October 2019.

13. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Applied Physics and Applied Mathematics, Columbia University, April 2019.

14. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", Department of Applied Mathematics, Illinois Institute of Technology, March 2019.

15. "Polycrystalline Materials and Evolution of Grain Boundaries Network", Los Alamos National Laboratory (LANL), December 2018.

16. "Coarsening in Polycrystalline Materials and the Grain Boundary Character Distribution", Department of Mathematics, Penn State, April 2017.

17. "Microstructure, Coarsening, and the Grain Boundary Character Distribution", Department of Mathematics, Penn State, April 2017.

18. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System", Department of Information Technology, Scientific Computing Group, Uppsala University, Sweden, August 2016.

19. "Coarsening in Polycrystalline Materials and the Grain Boundary Character Distribution", Department of Mathematics, Imperial College London, UK, October 2015.

20. "High-Order Accurate Numerical Methods for Elliptic and Parabolic Interface Problems", Department of Mathematics, Towson University, May 2015.

21. "Difference Potentials Method and Applications", talk to REU students in Computational Mathematics, Department of Applied Mathematics, Brown University, June 2014.

22. "Difference Potentials Method and its Applications to Interface/Composite Domain Problems", Department of Computational and Applied Mathematics, Rice University, April 2014.

23. "Difference Potentials Method and its Applications to Composite Domains Problems and to Chemotaxis Models in Biology", Department of Information Technology, Scientific Computing Group, Uppsala University, Sweden, August 2013.

24. "Numerical Methods for Chemotaxis Models", Department of Mathematical Sciences, Rensselaer Polytechnic Institute, April 2012.

25. " Polycrystalline Microstructures, Critical Events, Entropy and the Grain Boundary Character Distribution", Department of Mathematics, University of Pittsburgh, December 2011.

26. "Microstructure, Critical Events, Entropy and the Grain Boundary Character Distribution", Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, November 2011.

27. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", Center for Nonlinear Analysis (CNA) seminar, Carnegie Mellon University, October 2010.

28. "Theory for the Grain Boundary Character Distribution", Department of Mathematics, University of Utah, February 2010.

29. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, University of Utah, February 2010.

30. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Applied and Computational Mathematics, Southern Methodist University, February 2010.

31. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, University of Arizona, February 2010.

32. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, Temple University, January 2010.

33. "Chemotaxis and Numerical Methods for Chemotaxis Models", Sandia National Laboratory, January 2010.

34. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, Georgia Tech, January 2010.

35. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, Statistics and Computer Science, University of Illinois, Chicago, January 2010.

36. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics and Statistics, McGill University, Canada, January 2010.

37. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Applied Mathematics, University of Colorado Boulder, November 2009.

38. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, University of Maryland College Park, October 2009.

39. "Chemotaxis and Numerical Methods for Chemotaxis Models", Department of Mathematics, Iowa State University, October 2009.

40. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System", Department of Mathematics, University of Pittsburgh, April 2009.

41. "The Method of Difference Potentials and Application to the Domain Decomposition Problem", Department of Mathematics, Tulane University, March 2009.

42. "Mathematical modeling and simulations with applications to flow in porous media, biomedical problems and grain growth in complex materials", Material Science Seminar, Carnegie Mellon University, April 2008.

43. "New Discontinuous Galerkin Methods for the Chemotaxis Model and Related Biomedical Problems", Department of Mathematics, George Mason University, February 2008.

44. "Discontinuous Galerkin Methods for Chemotaxis and Haptotaxis Models", Center for Nonlinear Analysis (CNA) seminar, Carnegie Mellon University, November 2007.

45. "New Discontinuous Galerkin Methods for Chemotaxis and Haptotaxis Models", Department of Mathematics, University of Pittsburgh, October 2007.

46. "hp Discontinuous Galerkin Finite Element Methods for Two-Phase Flow Models in Porous Media", Department of Applied Mathematics and Physics, Columbia University, January 2007.

47. "hp Discontinuous Galerkin Finite Element Methods for Two-Phase Flow Models in Porous Media", Department of Mathematics, University of Arizona, January 2007.

48. "hp Discontinuous Galerkin Finite Element Methods for Two-Phase Flow Models in Porous Media", Department of Mathematics, University of Tennessee, January 2007.

49. "hp Discontinuous Galerkin Finite Element Methods for Two-Phase Flow Models in Porous Media", Lawrence Berkeley National Laboratory, January 2007.

50. "hp Discontinuous Galerkin Finite Element Methods for Two-Phase Flow Models in Porous Media", Department of Mathematics, Michigan State University, December 2006.

SEMINAR TALKS:

1. "Shallow Water Models", Mathematics Undergraduate Colloquium, University of Utah, April 2013.

2. "Numerical Scheme for Saint-Venant System of Shallow Water Equations", Biofluids and Biogels seminar, Department of Mathematics, University of Utah, April 2012.

3. "Numerical Methods for Chemotaxis Models", ERD (Early Research Directions) seminar, Department of Mathematics, University of Utah, April 2011.

4. "hp-DG Finite Element Methods for Incompressible Two-Phase Flow Models in Porous Media", Department of Mathematics, University of Pittsburgh, October 2006.

5. "Symmetric Interior Penalty Galerkin methods for elliptic problems" , Department of Mathematics, University of Pittsburgh, February 2006.

6. "High Order Discretization of the Multiphase Flow", Department of Mathematics, University of Pittsburgh, April 2005.

7. "Difference Potentials Method for domain decomposition", Department of Mathematics, University of Pittsburgh, November 2002.

CONFERENCE TALKS:

1. "Microstructure by Design: Integrating Grain Growth Experiments, Data Analytics, Simulation and Theory", Materials Genome Initiative (MGI) PI Meeting, Johns Hopkins University Bloomberg Center, Washington, DC, July 2024, Katayun Barmak, Yekaterina Epshteyn, Chun Liu and Jeffrey Rickman, invited joint poster presentation.

2. "Structure-Preserving Numerical Algorithms for Hyperbolic and Related PDE-based Models with Uncertainty", NSF CompMath PI Meeting, July 2024, University of Washington, Seattle, invited talk.

3. Community Discussion"Numerical Methods for Differential Equations", NSF CompMath PI Meeting, July 2024, University of Washington, Seattle, invited panelist member.

4. "Microstructure by Design: Integrating Grain Growth Experiments, Data Analytics, Simulation, and Theory", SIAM-MS 2024 (SIAM Conference on Mathematical Aspects of Materials Science), May 2024, Pittsburgh, Katayun Barmak, Yekaterina Epshteyn, Chun Liu and Jeffrey Rickman, invited joint talk.

5. "Dynamic Boundary Conditions and Evolution of Grain Boundary Networks", SIAM-MS 2024 (SIAM Conference on Mathematical Aspects of Materials Science), May 2024, Pittsburgh, Yekaterina Epshteyn, Chun Liu and Masashi Mizuno, invited joint talk.

6. "Numerical simulation/modeling as a crucial tool in the understanding of grain growth in polycrystalline materials", SIAM-MS 2024 (SIAM Conference on Mathematical Aspects of Materials Science), May 2024, Pittsburgh, invited talk.

7. "New Perspectives on Multiscale Modeling, Simulation and Analysis of Grain Growth in Polycrystalline Materials", Scale Bridging Workshop, Los Alamos National Laboratory, April 2024, invited speaker.

8. "Grain Boundaries in Polycrystals: Modeling, Analysis and Simulation", SIAM-USNCTAM Minisymposium on Mathematical Modeling of Complex Materials Systems, Joint Mathematical Meeting (JMM), January 2024, San Francisco, invited talk.

9. "New Perspectives on Modeling and Analysis of Grain Growth in Polycrystals", ICIAM 2023 (10th International Congress on Industrial and Applied Mathematics), Tokyo, Japan, August 2023, invited talk.

10. "New Perspectives on Multiscale Modeling and Analysis of Grain Growth in Polycrystalline Materials", Workshop II: "Scale-Bridging Materials Modeling at Extreme Computational Scales", IPAM, UCLA, Los Angeles, April 2023, invited speaker.

11. "Structure-Preserving Numerical Algorithms for Hyperbolic and Related Models with Uncertainty", SIAM Conference on Computational Science and Engineering, Amsterdam, The Netherlands, February-March, 2023, invited talk.

12. "Numerical Methods for Shallow Water Models", AMS-Fall Western Sectional Meeting, Salt Lake City, October 2022, invited talk.

13. "Dynamics of Grain Boundaries in Polycrystals: Modeling, Analysis, Simulation and Experiments", SIAM Annual Meeting, Pittsburgh, July 2022, invited talk.

14. "Recent Advances in Modeling, Analysis and Simulation of Grain Growth in Polycrystalline Materials", SIAM Annual Meeting, NSF-SIAM minisymposium, Pittsburgh, July 2022, Katayun Barmak, Yekaterina Epshteyn, Chun Liu and Jeffrey Rickman, invited joint talk.

15. "Microstructure by Design: Integrating Grain Growth Experiments, Data Analytics, Simulation and Theory", Materials Genome Initiative (MGI) PI Meeting, College Park, Maryland, June 2022, Katayun Barmak, Yekaterina Epshteyn, Chun Liu and Jeffrey Rickman, invited joint poster presentation and participation.

16. "Numerical Methods for Shallow Water Models", BIRS-CMO Workshop, Oaxaca, August 2021, invited talk and participation (online due to COVID-19).

17. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", SIAM Conference on Mathematical Aspects of Materials Science, Bilbao, Spain, May 2021, invited talk (online due to COVID-19).

18. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network in Polycrystalline Materials: Theory, Simulation and Experiments", 14th World Congress in Computational Mechanics and ECCOMAS Congress, Paris, France, January 2021, invited talk (online due to COVID-19).

19. "Central-Upwind Schemes for Shallow Water Models", AMS-Fall Western Virtual Sectional Meeting, October 2020, invited talk.

20. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network in Polycrystalline Materials: Theory and Simulation", NSF-SIAM Minisymposium on the NSF Program "Designing Materials to Revolutionize and Engineer our Future" (NSF DMREF), SIAM Annual Meeting, Toronto, July 2020, invited talk (online due to COVID-19).

21. "Grain Growth in Polycrystalline Materials", AWM Minisymposium, SIAM Annual Meeting, Toronto, July 2020, invited talk (online due to COVID-19).

22. "Grain Structure, Grain Growth and Evolution of the Grain Boundary Network", JMM 2020, Denver, January 2020, invited talk.

23. "Dynamics of Grain Boundaries with Evolving Lattice Orientations and Triple Junctions", given by collaborator Masashi Mizuno, SIAM Conference on Analysis of Partial Differential Equations (SIAM-APDE 2019), California, December 2019, invited talk.

24. "High-Resolution Central-Upwind Schemes on Unstructured Meshes for Shallow Water Models", SIAM Conference on Analysis of Partial Differential Equations (SIAM-APDE 2019), California, December 2019, invited talk, (unfortunately could not attend due to time conflict with my final exams schedule, cancelled).

25. "Polycrystalline Materials and Evolution of the Grain Boundary Network: Modeling, Analysis and Simulation", International Congress on Industrial and Applied Mathematics, ICIAM 2019, Valencia, Spain, July 15 - July 19, 2019, invited talk.

26. "High-Resolution Central-Upwind Scheme on Unstructured Meshes for Shallow Water Models", International Congress on Industrial and Applied Mathematics, ICIAM 2019, Valencia, Spain, July 15 - July 19, 2019, invited talk.

27. "Well-Balanced Positivity Preserving Central-Upwind Scheme with a Novel Wet/Dry Reconstruction on Triangular Grids for the Saint-Venant System", SIAM Central States Section, The University of Oklahoma, October 5 - October 7, 2018, invited talk.

28. "Well-Balanced Positivity Preserving Central-Upwind Scheme with a Novel Wet/Dry Reconstruction on Triangular Grids for the Saint-Venant System", BIRS-CMO Workshop, Oaxaca, July/August 2018, invited participation and talk (unfortunately could not attend due to schedule conflict, cancelled).

29. "Polycrystalline Materials and Evolution of Grain Boundaries Network", SIAM Annual Meeting/SIAM Mathematical Aspects of Materials Science, Portland, OR, July 2018, invited talk.

30. "Polycrystalline Materials and Evolution of Grain Boundaries Network.", AMS Spring Western Sectional Meeting, Portland, OR, April 2018, invited talk.

31. "High-Order Accurate Numerical Methods for Elliptic and Parabolic Interface Models", Banff International Research Station, Banff, Canada, June 2017, invited participation and talk.

32. "High-Order Accurate Numerical Methods for Elliptic and Parabolic Interface Models", Institute Mittag-Leffler, Stockholm, Sweden, May 2017, invited participation and talk.

33. "Numerical Methods for the Chemotaxis Models", SIAM Conference on Computational Science and Engineering, SIAM CSE, February 2017, invited talk.

34. "Numerical Methods for the Chemotaxis Models", 11th AIMS Conference in Orlando, Florida, July, 2016, invited talk.

35. "Grain Boundary Character Distribution and Mass Transport Paradigm", SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, May 2016, invited talk.

36. "Grain Boundary Character Distribution and Mass Transport Paradigm", "Prairie Analysis Seminar 2015", Kansas State University, September 2015, invited main speaker.

37. "Difference Potentials Method for Interface/Composite Domain Problems", "International Congress on Industrial and Applied Mathematics" ICIAM 2015, Beijing, China, August 10-14 2015, invited talk.

38. "High-Order Accurate Numerical Methods for Elliptic and Parabolic Interface Problems", SIAM CSE 2015, Salt Lake City, March 2015, invited talk.

39. "Difference potentials for interface/composite domain problems", Conference "Pacific Northwest Numerical Analysis Seminar (PNWNAS)", Portland State University, October 18, 2014, invited speaker.

40. "Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water Equations", at "IMA Hot Topics Workshop: Impact of Waves Along Coastlines", IMA, Minneapolis, October 14-17 2014, invited speaker.

41. "A Theory and Challenges for Coarsening in Microstructure", International Conference "Continuum Models Discrete Systems" CMDS-13, Salt Lake City, July 2014, invited talk.

42. "High-Order Accurate Difference Potentials Approach for Variable Coefficient Parabolic Interface Problems", Conference "International Conference on Spectral and High Order Methods" ICOSAHOM 2014, Salt Lake City, UT, June 2014, invited talk given by Jason Albright about our joint work.

43. "Difference Potentials Methods for Elliptic and Parabolic Problems with Variable Coefficients", Conference ICOSAHOM 2014, Salt Lake City, UT, June 2014, invited talk given by Kyle R. Steffen about our joint work.

44. "A Theory and Challenges for Coarsening in Microstructure", Ki-Net Conference in Honor of Prof. Eitan Tadmor's 60th Birthday "Collective Behavior: Macroscopic versus Kinetic Descriptions", London, UK, May 2014, contributed talk.

45. Invited Guest Lecturer (gave 3 lectures) "Chemotaxis Models and Numerical Methods for Chemotaxis and Related Models", at 2013 Summer Graduate Program of the Institute for Mathematics and its Applications (IMA): "Flow, Geometric Motion, Deformation and Mass Transport in Physiological Processes", July 15 - August 2, 2013.

46. "Algorithms Composition Approach Based on Difference Potentials Method", SIAM Annual Meeting 2013, San Diego, CA, July 2013, invited talk.

47. "Algorithms Composition Approach Based on Difference Potentials Method", at International Conference "Difference Schemes and Applications" in Honor of 90th Birthday of Prof. Viktor Ryaben'kii, Moscow, Russia, May 27-31 2013, invited plenary speaker.

48. "Algorithms Composition Approach Based on Difference Potentials Method", AWM Research Symposium 2013, Santa Clara University, CA, March 2013, invited talk and participation.

49. Ki-Net Workshop "Transport Models for Collective Dynamics in Biological Systems", January, 2013, North Carolina State University, invited participation.

50. "Numerical Methods for Shallow Water Models", December, 2012, Frontiers in Computational Physics, Boulder, contributed talk.

51. "Microstructure, Coarsening, Entropy and the Grain Boundary Character Distribution", at the UCLA Workshop: Mesoscale and Continuum Scale Modeling of Materials Defects, UCLA, November 13 - November 16 2012, invited speaker.

52. "Upwind-Difference Potentials Method for Chemotaxis Models", "European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)", September 2012, Vienna, Austria, invited talk.

53. "Numerical Methods for Shallow Water Models", July 11, 2012, SIAM Annual Meeting, Minneapolis, invited talk.

54. "Upwind-Difference Potentials Method for Patlak-Keller-Segel Chemotaxis Model", Midwest Numerical Analysis Days, May 12 - 13, 2012, University of Notre Dame, talk and invited participation (chair of the session).

55. "Recent Developments in Numerical Methods for the Chemotaxis Models", Meeting at Mathematisches Forschungsinstitut Oberwolfach on Theory and Applications of Discontinuous Galerkin Methods, February 19-25, 2012, Oberwolfach, Germany, invited talk and invited participation.

56. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", AMS Western Section Meeting, October 2011, University of Utah, Salt Lake City, invited talk.

57. "On the Stolz-Adams Deconvolution Model for the Large-Eddy Simulation of Turbulent Flows", CNA Conference "Incompressible Fluids, Turbulence and Mixing" In honor of Prof. Peter Constantin's 60th birthday October 13-16, 2011, Pittsburgh, contributed talk.

58. "An Entropy Based Theory of the Grain Boundary Character Distribution", SES 2011, October 2011, Northwestern University, Evanston, invited talk.

59. "Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water Equation", ICNAAM 2011, September 2011, Halkidiki, Greece, invited talk.

60. "Numerical Methods for the Classical Patlak-Keller-Segel Chemotaxis Model", ICIAM 2011 (International Congress on Industrial and Applied Mathematics), July 18 - July 22 2011, Vancouver, Canada, invited talk.

61. "On the Stolz-Adams Deconvolution Model for the Large-Eddy Simulation of Turbulent Flows", ICIAM 2011 (International Congress on Industrial and Applied Mathematics), July 18 - July 22 2011, Vancouver, Canada, invited talk.

62. "An Entropy Based Theory of the Grain Boundary Character Distribution", CNA Workshop on Macroscopic Modeling of Materials with Fine Structure, May 26 - May 28 2011, Carnegie Mellon University, Pittsburgh, invited participation and contributed talk.

63. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", Modeling and Computations of Shallow-Water Coastal Flows, CSCAMM Workshop, University of Maryland College Park, October 18-October 22 2010.

64. "Numerical Methods for Chemotaxis Models", SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, August 16 - August 19, 2010, invited talk.

65. "hp Primal Discontinuous Galerkin Methods For Two-Phase Flow in Porous Media", SIAM Annual Meeting, July 12-July 16 2010, Pittsburgh, invited talk.

66. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", SIAM Annual Meeting, July 12-July 16 2010, Pittsburgh, invited talk.

67. "Theory for the Grain Boundary Character Distribution", SIAM Annual Meeting, July 12-July 16 2010, Pittsburgh, invited talk.

68. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", May 24-May 26 2010, Conference "Computational and Mathematical Methods in Science and Engineering (CMMSE2010)", University of Wisconsin-Madison, invited talk.

69. "Predictive Theory for the Grain Boundary Character Distribution", SIAM Conference on Mathematical Aspects of Materials Science, May 22-May 26 2010, Philadelphia, invited talk.

70. "Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System of Shallow Water", USNCCM 10, July 16-July 19 2009, Columbus, invited talk and poster presentation.

71. "Chemotaxis and Numerical Methods for Chemotaxis Models", Multiscale Analysis of Self-Organization in Biology workshop, Banff International Research Station, Canada, July 12-17, 2009, invited participation and poster presentation.

72. "Chemotaxis and Numerical Methods for Chemotaxis Models", MAFELAP, Brunel University, UK, June 8-12, 2009, invited talk.

73. "Discontinuous Galerkin Methods for the Chemotaxis Model and Closely Related Biomedical Problems", SIAM Annual Meeting, San Diego, July 7-11, 2008, invited talk.

74. "Discontinuous Galerkin Methods for the Chemotaxis Model and Closely Related Biomedical Problems", World Congress on Computational Mechanics (WCCM 8 - ECCOMAS 5), Venice, Italy, June 30 - July 4, 2008, invited talk.

75. "Discontinuous Galerkin Methods for the Chemotaxis Model and Closely Related Biomedical Problems", conference "Frontiers in Applied and Computational Mathematics", New Jersey Institute of Technology, May 19-21, 2008, contributed talk.

76. "DG Methods for Chemotaxis and Haptotaxis Models", Conference "Finite Element Circus", Cornell University, October 2007.

77. "A Simple Mathematical Model of Lipopolysaccharide Signaling Through Toll-Like Receptor 4 Results in Complex Insights on Preconditioning", Conference "6th International Conference on Complexity in Acute Illness", Los Angeles, October 2007, invited poster presentation.

78. "hp Primal Discontinuous Galerkin Methods For Two-Phase Flow in Porous Media", Conference "Modeling, Analysis and Simulation of Multiscale Nonlinear Systems", Oregon State University, June 2007, invited talk.

79. "hp Primal Discontinuous Galerkin Methods For Two-Phase Flow", Conference "14th International Conference on Finite Element Methods for Flow Problem", Santa Fe, March 2007, invited talk.

80. "High Order Fully Coupled Discontinuous Finite Element Methods for Two-Phase Flow", Conference "AWM Workshop at the Joint Mathematical Meetings (JMM)", New Orleans, January 2007, invited poster presentation.

81. "hp Discontinuous Galerkin FEM for Incompressible Two-Phase Flow Problems in Porous Media ", Conference "Finite Element Circus", Penn State, November 2006.

82. "High Order Fully Implicit Method For Two-Phase Flow", Conference "Seventh World Congress on Computational Mechanics", Los Angeles, July 2006, invited talk.

83. "Adaptive and implicit high order methods for two-phase flow", Conference "SIAM Annual Meeting", Boston, July 2006, invited talk

84. "Application Of Interior Penalty Galerkin Method to Inverse Problem", Conference " SIAM Annual Meeting", Boston, July 2006, invited talk.

85. "On The Choice Of The Penalty Parameters For Symmetric Interior Penalty Galerkin Method", Conference MAFELAP, Brunel University, UK, June 2006, invited talk.

86. "Fully Implicit Discontinuous Finite Element Method for Two-Phase Flow" , MSRI Conference "The Legacy of Ladyzhenskaya and Oleinik ", University of California, Berkeley, May 2006, invited poster presentation.

87. "Stable Interior Penalty Galerkin Methods for elliptic problems" , Conference "Finite Element Circus", UMBC, March 2006.

88. "Adams-Stolz Deconvolution LES Models", Conference "Frontiers of Applied Analysis", Carnegie Mellon University, September 2005, contributed talk.

89. "Fully Implicit Scheme for the Two-Phase Flow", Conference "Finite Element Circus", University of Delaware, April 2005.

OTHER CONFERENCES ATTENDED:

1. 2010 CNA Summer School : New Vistas in Image Processing and PDEs, June 2010, Carnegie Mellon University

2. "Frontiers in Mathematical Biology", April 2010, University of Maryland College Park

3. "Mathematics of Multiscale Phenomena", 2008 Summer School, Free University of Berlin, Berlin, September 2008, invited participant

4. Center for Nonlinear Analysis 2008 Summer School - Contemporary Topics in Nonlinear PDEs.

5. Conference "Finite Element Circus", University of Pittsburgh, May 2004.

6. Conference "Finite Element Circus", Penn State, October 2002.

UNIVERSITY OF UTAH TEACHING EXPERIENCE:

- Instructor, Graduate Course, Numerical Solutions of Partial Differential Equations: Selected Advanced Topics in PDEs and in Numerical Methods for PDEs, Math 6630 jointly with Math 6910-044, Spring 2025
- Instructor, Graduate Course, Analysis of Numerical Methods II, Math 6620, Spring 2025
- Instructor, Graduate Course, Analysis of Numerical Methods I, Math 6610, Fall 2024 (8 students)
- Instructor, Graduate Course, Numerical Solutions of Partial Differential Equations: Selected Numerical Methods, Math 6630, Spring 2024 (7 students)
- Instructor, Graduate Course, Analysis of Numerical Methods I, Math 6610, Fall 2023 (9 students)
- Instructor, Undergraduate Course, Calculus III, Math 2210, Fall 2023 (58 students)
- Instructor, Graduate Course, Analysis of Numerical Methods II, Math 6620, Spring 2023 (12 students)
- Instructor, Undergraduate/Graduate Course, Introduction to Partial Differential Equations, Math 5440-6850, Fall 2022 (18 students)
- Instructor, Undergraduate Course, Calculus III, Math 2210, Fall 2022 (55 students)
- Instructor, Graduate Course, Numerical Solutions of Partial Differential Equations: Selected Numerical Methods, Math 6630, Spring 2022 (6 students)
- Instructor, REU-Undergraduate Course, Selected Numerical Algorithms and their Analysis, Math 4800, Spring 2022 (7 students)
- Instructor, Graduate Course, Analysis of Numerical Methods I, Math 6610, Fall 2021 (8 students)

- Instructor, Graduate Course, Analysis of Numerical Methods II, Math 6620, Spring 2021 (7 students)
- Instructor, Undergraduate Course, Calculus III, Math 2210, Fall 2020 (73 students)
- Instructor, Undergraduate/Graduate Course, Introduction to Partial Differential Equations, Math 5440-6850, Fall 2020 (13 students)
- Instructor, Graduate Course, Numerical Solutions of PDE: Finite Element Methods (FEM), Math 6630, Spring 2020 (4 students)
- Instructor, Undergraduate/Graduate Course, Introduction to Partial Differential Equations, Math 5440-6850, Fall 2019 (16 students)
- Instructor, Undergraduate Course, Calculus III, Math 2210-004, Fall 2019 (57 students)
- Instructor, Graduate Course, Analysis of Numerical Methods II, Math 6620, Spring 2019 (9 students)
- Instructor, Graduate Course, Analysis of Numerical Methods I, Math 6610, Fall 2018 (8 students)
- Instructor, Undergraduate/Graduate Course, Introduction to Partial Differential Equations, Math 5440-6850, Fall 2018 (15 students)
- Instructor, Graduate Course, Numerical Methods for PDE: FEM, Math 6630, Spring 2018 (8 students)
- Instructor, Two Undergraduate Courses, Calculus III, Math 2210-002 and Math 2210-004, Fall 2017 (138 students)
- Instructor, Graduate Course: Analysis of Numerical Methods II, Spring 2017, (9 students)
- Instructor, Graduate Course: Analysis of Numerical Methods I, Fall 2016 (11 students)

- Instructor, Undergraduate Course, Accelerated Engineering Calculus I, Math 1311-001, Fall 2016 (20 students)
- Instructor, Two Undergraduate Courses, Engineering Calculus II, Math 1320-006 and Math 1320-009, Spring 2016 (80 students)
- Instructor, Graduate Course: Selected Topics in Numerical Methods for PDE, Math 7875, Fall 2015 (6 students)
- Instructor, Graduate Course: Analysis of Numerical Methods II, Math 6620, Spring 2015 (17 students)
- Instructor, Undergraduate Course, Accelerated Engineering Calculus I, Fall 2014
- Instructor, Graduate Course: Analysis of Numerical Methods I, Math 6610 Fall 2014
- Instructor, REU Course, Math 4800: Undergraduate Research in Mathematics: "Selected Numerical Algorithms and Their Analysis". The course successfully introduced 10 REU students to the research in modern Computational Mathematics, Spring 2014: http://www.math.utah.edu/newsletter/aftermath/2014-04.pdf, page 3.
- Instructor, Upper Level Undergraduate Course, Introduction to Numerical Analysis II, Spring 2014
- Instructor, Undergraduate Course, Accelerated Engineering Calculus I, Fall 2013
- Instructor, Graduate Course: Numerical Methods for Partial Differential Equations, Spring 2013
- Instructor (and I designed the modeling course for the Case Studies CES), Graduate Course: "Mathematics and Materials" (March 2012)
- Instructor, Upper Level Undergraduate/Graduate Course: Optimization, Fall 2012

- Instructor, Graduate Course: Analysis of Numerical Methods I - II (Fall 2011- Spring 2012)
- Instructor, Graduate Course: Analysis of Numerical Methods I-II (Fall 2010-Spring 2011)

EXTRACURRICULAR AND OUTREACH ACTIVITIES:

- Invited Speaker, "Inspiring Girls in STEM Day", Salt Lake City, Utah, November 2023
- Judge, Semi-Finals of Sterling Scholar Competition for High-School Students in Utah, http://www.sterlingscholar.org/, February 2019
- Invited presentations, Access Course, June 2018, June 2019
- Instructor, Access Course, August 1 - August 5, 2016
  http://www.math.utah.edu/newsletter/aftermath/2016-10.pdf, p.8
- Participated in Project Youth and gave lectures about Applied Mathematics to 6-th graders from Title I local schools in Salt Lake City, University of Utah
- Together with F. Guevara-Vasquez created and maintain website for MAC group: Multiscale Analysis and Computations Group, Mathematics Department, University of Utah, 2013-current
- Affiliated faculty, AWM chapter, Mathematics Department, University of Utah

COMPUTER SKILLS:

- Languages: C, C++, Fortran.
- Software: LATeX, Matlab, Mathematica, Tecplot, Paraview, Python, Word, Excel.
- Operating Systems: UNIX, Linux, Windows

PROFESSIONAL AND SOCIETY MEMBERSHIPS:

- Member of the American Mathematical Society (AMS)
- Member of the Society for Industrial and Applied Mathematics (SIAM), Member of SIAG/APDE, Member of SIAG/MS, Member of SIAG/GS, Member of SIAG/UQ and Member of SIAG/EDI
- Member of the American Association for the Advancement of Science (AAAS)
- Member of the Association for Women in Mathematics (AWM)
- Member of Women in Mathematics of Materials (WIMM) and Member of Women in Numerical Analysis and Scientific Computing (WINASc)