Alexander V. Mamonov *Curriculum Vitae*

CONTACT
INFORMATION

University of Houston
Department of Mathematics
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Houston, TX 77204-3008 USA

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RESEARCH
INTERESTS

Inverse problems: Full Waveform Inversion (FWI), Controlled Source Electromagnetic (CSEM) method, Electrical Impedance Tomography (EIT), hybrid imaging modalities, resistor networks, optimal grids, regularization, partial and incomplete data. Applications to seismic prospecting, medical ultrasound and radar imaging.

Model order reduction: reduced models for inversion, imaging and data filtering, forward solvers for wave propagation, matrix rational approximation and interpolation, low rank tensor decomposition and completion, machine learning and deep network based methods for model reduction.

EDUCATION

Rice University
Department of Computational and Applied Mathematics (CAAM)
Advisor: Prof. Liliana Borcea
Ph.D. **April, 2009 - July, 2010**
Master of Arts **August, 2005 - April, 2009**

Lomonosov Moscow State University
Department of Mechanics and Mathematics, Mechanics of Composites
Diploma with Distinction **September, 1998 - June, 2003**
   Equivalent to Master of Arts, Summa cum laude.

PROFESSIONAL
EXPERIENCE

University of Houston, Department of Mathematics
Associate Professor **September, 2021 - present**
Assistant Professor **August, 2015 - August, 2021**

Schlumberger
Research Scientist, PetroTechnical Services (Houston, TX) **October, 2013 - December, 2014**
Research Scientist, Moscow Research Center (Moscow, Russia) **June, 2013 - September, 2013**
Intern, Schlumberger-Doll Research Center (Cambridge, MA) **May, 2009 - July, 2009**
Intern, Abingdon Technology Center (Abingdon, UK) **May, 2008 - August, 2008**
Intern, Schlumberger-Doll Research Center (Cambridge, MA) **May, 2007 - August, 2007**
Intern, Schlumberger-Doll Research Center (Ridgefield, CT) **May, 2006 - August, 2006**

University of Texas at Austin
Institute for Computational Engineering and Sciences (Austin, TX)
Postdoctoral fellow **January, 2011 - May, 2013**

Mathematical Sciences Research Institute
Inverse Problems and Applications Program (Berkeley, CA)
Postdoctoral fellow **August, 2010 - December, 2010**

Lebedev Institute of Precision Mechanics and Computer Engineering
of the Russian Academy of Sciences (Moscow, Russia)
Junior Research Scientist **October, 2004 - August, 2005**
Senior Laboratory Assistant **February, 2002 - January, 2004**

VISITING POSITIONS	**Institute for Computational and Experimental Research in Mathematics (ICERM)**
	Brown University (Providence, RI)
	Research fellow **September, 2017 - December, 2017**
	University of Coimbra
	Department of Mathematics (Coimbra, Portugal)
	Visiting scholar **June, 2012 - July, 2012**

RESEARCH GRANTS

[5] **National Science Foundation DMS-2309197** ($268K, 07/15/2023 – 06/30/2026)
Project title: "Tensorial Reduced Order Models: Development, Analysis, and Applications" (PI)

[4] **Office of Naval Research N00014-21-1-2370** ($136K out of $377K, 04/29/2021 – 04/28/2024)
Project title: "Data driven reduced order models for inverse problems in heterogeneous media" (Co-PI)

[3] **Office of Naval Research N00014-17-1-2057** ($126K out of $299K, 01/01/2017 – 12/31/2020)
Project title: "A computational and theoretical study of forward and inverse scattering in heterogeneous media" (Co-PI)

[2] **National Science Foundation DMS-1619821** ($209K, 06/15/2016 – 05/31/2020)
Project title: "Reduced order models for imaging and inversion with waves and diffusive fields" (PI)

[1] **University of Houston New Faculty Research Program** ($6K, 01/08/2016 – 08/31/2016)
Project title: "Reduced order models for medical ultrasound imaging" (PI)

JOURNAL PUBLICATIONS

[26] *Reduced Order Modeling for First Order Hyperbolic Systems with Application to Multiparameter Acoustic Waveform Inversion.* L. Borcea, J. Garnier, A.V. Mamonov, J. Zimmerling, SIAM Journal on Imaging Sciences 18(2):10.1137/24M1699784, 2025. doi:10.1137/24M1699784

[25] *A Priori Analysis of a Tensor ROM for Parameter Dependent Parabolic Problems.* A.V. Mamonov, M.A. Olshanskii, SIAM Journal on Numerical Analysis 63(1):10.1137/23M1616844, 2025. doi:10.1137/23M1616844, preprint arXiv:2311.07883 [math.NA]

[24] *When data driven reduced order modeling meets full waveform inversion.* L. Borcea, J. Garnier, A.V. Mamonov, J. Zimmerling, SIAM Review 66(3):10.1137/23M1552826, 2024. doi:10.1137/23M1552826, preprint arXiv:2302.05988 [math.NA]

[23] *Tensorial parametric model order reduction of nonlinear dynamical systems.* A.V. Mamonov, M.A. Olshanskii, SIAM Journal on Scientific Computing 46(3):10.1137/23M1553789, 2024. doi:10.1137/23M1553789, preprint arXiv:2302.08490 [math.NA]

[22] *Waveform inversion via reduced order modeling.* L. Borcea, J. Garnier, A.V. Mamonov, J. Zimmerling, Geophysics, 88(2):R175-R191, 2023. doi:10.1190/geo2022-0070.1, preprint arXiv:2202.01824 [math.NA]

[21] *Waveform inversion with a data driven estimate of the internal wave.* L. Borcea, J. Garnier, A.V. Mamonov, J. Zimmerling, SIAM Journal on Imaging Sciences, 16(1):280-312, 2023. doi:10.1137/22M1517342, preprint arXiv:2208.11051 [math.NA]

[20] *Interpolatory tensorial reduced order models for parametric dynamical systems.* A.V. Mamonov, M.A. Olshanskii, Computer Methods in Applied Mechanics and Engineering, 397:115122, 2022. doi:10.1016/j.cma.2022.115122, preprint arXiv:2111.00649 [math.NA]

[19] *Distance Preserving Model Order Reduction of Graph-Laplacians and Cluster Analysis.* V. Druskin, A.V. Mamonov, M. Zaslavsky, Journal of Scientific Computing, 90:32, 2022. doi:10.1007/s10915-021-01660-3, preprint arXiv:1809.03048 [cs.LG]

[18] *Reduced order model approach for imaging with waves.* L. Borcea, J. Garnier, A.V. Mamonov,

J. Zimmerling, Inverse Problems, 38(2):025004, 2022.
doi:10.1088/1361-6420/ac41d0, preprint arXiv:2108.01609 [math.NA]

[17] *Reduced Order Model Approach to Inverse Scattering.* L. Borcea, V. Druskin, A.V. Mamonov, M. Zaslavsky, J. Zimmerling, SIAM Journal on Imaging Sciences, 13(2):685–723, 2020. doi:10.1137/19M1296355, preprint: arXiv:1910.13014 [math.NA]

[16] *Reduced order models for spectral domain inversion: Embedding into the continuous problem and generation of internal data.* L. Borcea, V. Druskin, A.V. Mamonov, S. Moskow, M. Zaslavsky, Inverse Problems, 36(5):055010, 2020.
doi:10.1088/1361-6420/ab750b, preprint: arXiv:1909.06460 [math.NA]

[15] *Robust nonlinear processing of active array data in inverse scattering via truncated reduced order models.* L. Borcea, V. Druskin, A.V. Mamonov, M. Zaslavsky, Journal of Computational Physics 381:1–26, 2019. doi:10.1016/j.jcp.2018.12.021, preprint: arXiv:1805.03747 [math.NA]

[14] *Polyp detection with computer-aided diagnosis in white light colonoscopy: comparison of three different methods.* P.N. Figueiredo, I.N. Figueiredo, L. Pinto, S. Kumar, Y.-H. R. Tsai, A.V. Mamonov, Endoscopy International Open 07(02):E209–E215, 2019.
doi:10.1055/a-0808-4456

[13] *Untangling the nonlinearity in inverse scattering with data-driven reduced order models.* L. Borcea, V. Druskin, A.V. Mamonov, M. Zaslavsky, Inverse Problems 34(6):065008, 2018. doi:10.1088/1361-6420/aabb16, preprint: arXiv:1704.08375 [math.NA]

[12] *A nonlinear method for imaging with acoustic waves via reduced order model backprojection.* V. Druskin, A.V. Mamonov, M. Zaslavsky, SIAM Journal on Imaging Sciences, 11(1):164–196, 2018. doi:10.1137/17M1133580, preprint: arXiv:1704.06974 [math.NA]

[11] *A discrete Liouville identity for numerical reconstruction of Schrödinger potentials.* L. Borcea, F. Guevara Vasquez, A.V. Mamonov, Inverse Problems and Imaging 11(4):623–641, 2017. doi:10.3934/ipi.2017029, preprint: arXiv:1601.07603 [math.NA]

[10] *Second-Harmonic Imaging in Random Media.* L. Borcea, W. Li, A.V. Mamonov, J.C. Schotland, Inverse Problems 33(6):065004, 2017.
doi:10.1088/1361-6420/aa6ab1, preprint: arXiv:1611.02774 [math.NA]

[9] *Multi-scale S-fraction reduced-order models for massive wavefield simulations.* V. Druskin, A.V. Mamonov, M. Zaslavsky, Multiscale Modeling and Simulation 15(1):445—475, 2017. doi:10.1137/16M1072103, preprint: arXiv:1604.06750 [math.NA]

[8] *Direct, nonlinear inversion algorithm for hyperbolic problems via projection-based model reduction.* V. Druskin, A.V. Mamonov, A.E. Thaler and M. Zaslavsky, SIAM Journal on Imaging Sciences 9(2):684–747, 2016. doi:10.1137/15M1039432, preprint: arXiv:1509.06603 [math.NA]

[7] *A model reduction approach to numerical inversion for a parabolic partial differential equation.* L. Borcea, V. Druskin, A.V. Mamonov and M. Zaslavsky, Inverse Problems 30(12):125011, 2014. doi:10.1088/0266-5611/30/12/125011, preprint: arXiv:1210.1257 [math.NA]

[6] *Automated polyp detection in colon capsule endoscopy.* A.V. Mamonov, I.N. Figueiredo, P.N. Figueiredo and Y.-H. R. Tsai, IEEE Transactions on Medical Imaging 33(7):1488–1502, 2014.
doi:10.1109/TMI.2014.2314959, preprint: arXiv:1305.1912 [cs.CV]

[5] *Quantitative photoacoustic imaging in radiative transport regime.* A.V. Mamonov and K. Ren, Communications in Mathematical Sciences 12(2):201–234, 2014. doi:10.4310/CMS.2014.v12.n2.a1, preprint: arXiv:1207.4664 [math.NA]

[4] *Study of noise effects in electrical impedance tomography with resistor networks.* L. Borcea, F. Guevara Vasquez and A.V. Mamonov, Inverse Problems and Imaging 7(2):417–443, 2013. doi:10.3934/ipi.2013.7.417, preprint: arXiv:1105.1183 [math-ph]

[3] *Point source identification in non-linear advection-diffusion-reaction systems.* A.V. Mamonov and Y.-H. R. Tsai, Inverse Problems 29(3):035009, 2013. doi:10.1088/0266-5611/29/3/035009, preprint: arXiv:1202.2373 [math-ph]

[2] *Pyramidal resistor networks for electrical impedance tomography with partial boundary measurements.* L. Borcea, V. Druskin, A.V. Mamonov and F. Guevara Vasquez, Inverse Problems 26(10):105009, 2010. doi:10.1088/0266-5611/26/10/105009

[1] *Circular resistor networks for electrical impedance tomography with partial boundary measurements.* L. Borcea, V. Druskin and A.V. Mamonov, Inverse Problems 26(4):045010, 2010. doi:10.1088/0266-5611/26/4/045010

PREPRINTS

[3] *Inverse scattering for Schrödinger equation in the frequency domain via data-driven reduced order modeling.* A. Tataris, T. van Leeuwen, A.V. Mamonov, submitted, 2025. arXiv:2503.11034 [math.NA]

[2] *Autoencoded UMAP-Enhanced Clustering for Unsupervised Learning.* M. Chavooshi, A.V. Mamonov, submitted, 2025. arXiv:2501.07729 [cs.LG]

[1] *Model order reduction of parametric dynamical systems by slice sampling tensor completion.* A.V. Mamonov, M.A. Olshanskii, submitted, 2024. arXiv:2411.07151 [math.NA]

REFEREED PROCEEDINGS

[5] *Velocity estimation via model order reduction.* A.V. Mamonov, L. Borcea, J. Garnier, J. Zimmerling, Second International Meeting for Applied Geoscience & Energy, pp. 752–756, 2022. doi:10.1190/image2022-3746066.1, preprint: arXiv:2208.01209 [math.NA]

[4] *Nonlinear seismic imaging via reduced order model backprojection.* A.V. Mamonov, V. Druskin, M. Zaslavsky, SEG Technical Program Expanded Abstracts, pp. 4375–4379, 2015. doi:10.1190/segam2015-5830429.1, preprint: arXiv:1504.00094 [math.NA]

[3] *Multiscale mimetic reduced-order models for spectrally accurate wavefield simulations.* M. Zaslavsky, V. Druskin, A.V. Mamonov, SEG Technical Program Expanded Abstracts, pp. 3710–3715, 2015. doi:10.1190/segam2015-5872011.1, preprint: arXiv:1406.6923 [math.NA]

[2] *S-fraction Multiscale Finite-volume Method for Spectrally Accurate Wavefield Simulations.* A.V. Mamonov, V. Druskin, M. Zaslavsky, 77th EAGE Conference and Exhibition, Madrid, Spain, 2015. doi:10.3997/2214-4609.201413311

[1] *Optimal Grid Coarsening: A Fast Proxy for Large Reservoir Optimization.* A.V. Mamonov, B. Couet, W.J. Bailey, M. Prange, H.A. Djikpesse and V. Druskin, SPE/EAGE Reservoir Characterization and Simulation Conference, Abu Dhabi, UAE, October 2007. doi:10.2118/111378-MS

BOOK CHAPTER

[1] *Resistor network approaches to electrical impedance tomography.* L. Borcea, V. Druskin, F. Guevara Vasquez, A.V. Mamonov, Inverse Problems and Applications: Inside Out II, Cambridge University Press, 2012. ISBN: 9781107032019, preprint: arXiv:1107.0343 [math-ph]

REPORTS

[5‡] *Data-to-Born transform for inversion and imaging with waves.* A.V. Mamonov joint with L. Borcea, V. Druskin and M. Zaslavsky.

[4‡] *Back-projected reduced-order models for solving inverse acoustic scattering problems.* M. Zaslavsky joint with V. Druskin and A. Mamonov, ‡Oberwolfach Reports 14(2):1463–1549, 2017. doi:10.4171/OWR/2017/24

[3†] *Model reduction method for a parabolic inverse resistivity problem.* A.V. Mamonov joint with L. Borcea, V. Druskin and M. Zaslavsky.

[2†] *Efficient Reconstruction Algorithms for Inverse Problems in Quantitative Photoacoustic Imaging.* K. Ren joint with H. Gao, A.V. Mamonov and H. Zhao.

[1†] *Solution of large scale PDE inverse problems in model reduction framework.* V. Druskin joint with L. Borcea, A.V. Mamonov, V. Simoncini and M. Zaslavsky, †Oberwolfach Reports 9(4):3061–3127, 2012. doi:10.4171/OWR/2012/51

CITATION DATABASES	- Google Scholar: GJkXDKsAAAAJ - Scopus Author ID: 25958215400 - Web of Science ResearcherID: M-5315-2014 - MathSciNet MR Author ID: 258309 - ORCID: 0000-0002-1270-7535

TEACHING EXPERIENCE

University of Houston, Department of Mathematics

Associate Professor	**September, 2021 - present**
Assistant Professor	**August, 2015 - August, 2021**

- Linear Algebra (MATH 2318, 2331)
- Vector Analysis (MATH 3335)
- Introduction to PDE (MATH 3363)
- Introduction to Numerical Analysis in Scientific Computing (MATH 4364)
- Advanced Linear Algebra I–II (MATH 4377–4378/6308–6309)
- Applicable Analysis (MATH 6360)
- Selected Topics: Numerical Linear Algebra (MATH 6397)

University of Texas at Austin, Department of Mathematics

Lecturer	**August, 2012 - May, 2013**

- Differential Calculus (M 408K)
- Integral Calculus (M 408L)

Rice University, CAAM

Teaching Assistant	**August, 2005 - May, 2006**

- Partial Differential Equations (CAAM 336)
- Analysis (CAAM 401–402)
- Functional Analysis (CAAM 540)

CONFERENCE AND WORKSHOP TALKS

- NSF CompMath Meeting 2025, University of Utah, Salt Lake City, UT, May 2025.
- SIAM Conference on Imaging Science, Atlanta, GA, May 2024.
- SIAM TX-LA Section 6th Annual Meeting, Lafayette, LA, November 2023.
- 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, Japan, August 2023.
- Multiple scattering in engineering and applied sciences (MWSW04), Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, May 2023.
- SIAM Conference on Computational Science and Engineering, Amsterdam, The Netherlands, March 2023.
- SIAM TX-LA Section 5th Annual Meeting, University of Houston, TX, November 2022.
- New Ideas in Computational Inverse Problems (22w5118), Banff International Research Station (BIRS), Banff, Canada, October 2022.
- Second International Meeting for Applied Geoscience & Energy (IMAGE'22), Houston, TX, August 2022.
- SIAM Conference on Imaging Science, Berlin, Germany, March 2022.
- SIAM TX-LA Section 4th Annual Meeting, UT Rio Grande Valley, South Padre Island, TX, November 2021.
- SIAM 6th Annual Meeting of Central States Section, University of Kansas, Lawrence, KS, October 2021.
- SIAM Conference on Computational Science and Engineering, Fort Worth, TX, March 2021.
- SIAM TX-LA Section 3rd Annual Meeting, Texas A&M University, October 2020.
- Computational Methods for New Directions in Inverse Problems Workshop, IAMCS, Texas A&M University, February 2020.
- SIAM TX-LA Section 2nd Annual Meeting, Southern Methodist University, Dallas, TX, November 2019.

- SIAM Conference on Mathematical and Computational Issues in the Geosciences, Houston, TX, March 2019.
- SIAM Conference on Computational Science and Engineering, Spokane, WA, February 2019.
- Joint Mathematics Meetings, Baltimore, MD, January 2019.
- Red Raider Minisymposium, Texas Tech University, Lubbock, TX, October 2018.
- SIAM TX-LA Sectional Meeting, Louisiana State University, Baton Rouge, LA, October 2018.
- SIAM Annual Meeting, Portland, OR, July 2018.
- SIAM Conference on Imaging Science, Bologna, Italy, June 2018.
- Inverse Problems in the Alps II, Obergurgl, Austria, March 2018.
- SIAM Conference on Analysis of Partial Differential Equations, Baltimore, MD, December 2017.
- Recent Advances in Seismic Modeling and Inversion: From Analysis to Applications, ICERM, Brown University, Providence, RI, November 2017.
- Houston Imaging Sciences Symposium (SIAM TX-LA Section), Rice University, Houston, TX, October 2017.
- Computational Inverse Problems for Partial Differential Equations (1720), Mathematical Research Institute of Oberwolfach, Germany, May 2017.
- Full Waveform Inversion and Velocity Analysis, Institute for Pure and Applied Mathematics (IPAM), Los Angeles, CA, May 2017.
- Saudi Aramco i-Quest: Frontiers in Seismic Depth Imaging, Houston, TX, October 2016.
- 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, July 2016.
- SIAM Conference on Imaging Science, Albuquerque, NM, May 2016.
- SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 2016.
- SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, December 2015.
- Computational and Analytical Aspects of Image Reconstruction, Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, July 2015.
- Hybrid Methods in Imaging (15w5012), Banff International Research Station (BIRS), Banff, Canada, June 2015.
- 77th EAGE Conference and Exhibition, Madrid, Spain, June 2015.
- Inverse Problems Workshop, University of Michigan, Ann Arbor, March 2015.
- Continuum Models Discrete Systems Conference (CMDS-13), University of Utah, July 2014.
- SIAM Conference on Imaging Science, Hong Kong, May 2014.
- Theoretical and Applied Computational Inverse Problems Workshop, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, May 2014.
- SIAM Conference on Computational Science and Engineering, Boston, MA, February 2013.
- Inverse Problems: Practical Applications and Advanced Analysis, Schlumberger WesternGeco Center, Houston, TX, November 2012.
- Computational Inverse Problems (1243), Mathematical Research Institute of Oberwolfach, Germany, October 2012.
- Waves and imaging in complex media, Archimedes Center for Modeling, Analysis and Computation (ACMAC), Heraklion, Greece, June 2012.
- Pan-American Advanced Studies Institute - Inverse Problems and PDE Control (PASI-CIPPDE), Santiago, Chile, January 2012.
- AMS Western Section meeting, University of Utah, October 2011.
- Computational Aspects in Medical Imaging, University of British Columbia, Vancouver, Canada, October 2011.
- Workshop on Inverse Problems, Texas A&M University, October 2011.
- 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, Canada, July 2011.
- Applied Inverse Problems Conference, Texas A&M University, May 2011.
- Inverse Problems: Theory and Applications, MSRI, Berkeley, CA, November 2010.
- Summer School on Computational Solution of Inverse Problems (FICS), University of Helsinki, Finland, July 2010.

- Computational and Mathematical Methods in Science and Engineering, University of Wisconsin-Madison, May 2010.
- SIAM Conference on Imaging Science, Chicago, IL, April 2010.
- Texas Applied Mathematics Meeting for Students, University of Houston, March 2010.
- SIAM Conference on Analysis of Partial Differential Equations, Mesa, AZ, December 2007.

COLLOQUIUM AND SEMINAR TALKS

- Computational Mathematics, Science and Engineering Seminar, Michigan State University, East Lansing, MI, December 2023.
- Department of Mathematics & Statistics Seminar, Texas A&M University, Corpus Christi, TX, April 2021.
- EM Seminar, Department of Electrical and Computer Engineering, University of Houston, February 2020.
- Orbital Debris Research Seminar, NASA Johnson Space Center, Houston, TX, January 2020.
- CAAM Colloquium, Rice University, November 2019.
- Mathematical Sciences Colloquium, Worcester Polytechnic Institute, Worcester, MA, May 2019.
- ICES Seminar, University of Texas at Austin, February 2018.
- Geophysical Society of Houston (GSH) Data Processing and Acquisition SIG, Houston, TX, January 2018.
- IT-Lectorium, Higher School of Economics, Faculty of Comupter Science, Moscow, Russia, January 2018.
- Schlumberger-Tufts Computational and Applied Math Seminar, Cambridge, MA, December 2017.
- Friday Informal Seminar Hour (FISH), MIT Earth Resources Laboratory, Cambridge, MA, October 2017.
- Numerical Analysis Seminar, Department of Mathematics, KTH Royal Institute of Technology, Stockholm, Sweden, March 2016.
- Moscow Rock Physics Seminar, Schmidt Institute of Physics of the Earth, Moscow, Russia, January 2016.
- CDISE Seminar, Skolkovo Institute of Science and Technology, Russia, December 2015.
- ICES Seminar, University of Texas at Austin, November 2015.
- CAAM Colloquium, Rice University, October 2015.
- The Rice Inversion Project (TRIP) seminar, CAAM, Rice University, September 2015.
- Department of Mathematics Colloquium, Texas A&M University, January 2015.
- Department of Mathematics Colloquium, University of Houston, January 2015.
- Applied Mathematics Seminar, University of Utah, January 2015.
- CAAM Colloquium, Rice University, November 2014.
- ICES Seminar, University of Texas at Austin, October 2014.
- Mechanics of Composites Seminar, Moscow State University, Russia, September 2013.
- Applied Mathematics Seminar, University of Utah, March 2013.
- Department of Mathematics Colloquium, University of Tulsa, February 2013.
- Department of Mathematics Colloquium, Dartmouth College, February 2013.
- CAAM Colloquium, Rice University, September 2012.
- Applied Mathematics Seminar, University of Utah, March 2012.
- Applied Mathematics/Physics Seminar, University of California, Merced, March 2011.

POSTER PRESENTATIONS

- ONR Program Review, IPAM, UCLA, Los Angeles, CA, September 2017.
- SEG Annual Meeting, New Orleans, LA, October 2015.
- Inverse Problems and Spectral Theory Conference, Texas A&M University, October 2014.
- DTRA/NSF Algorithms Workshop, Boston, MA, June 2011.
- IAMCS Workshop in Large-Scale Inverse Problems and Uncertainty Quantification, Texas A&M University, February 2011.
- Material Research Society Spring meeting, San Francisco, CA, April 2010.

RESEARCH VISITS
- University of Michigan, Ann Arbor, MI:
  March 2015, June 2016, May 2018, December 2019, March 2020, August 2022, March 2023, August 2023, December 2023, March 2024.
- École Polytechnique, Palaiseau, France: October 2024.
- Schlumberger-Doll Research Center, Cambridge, MA:
  June 2016, June 2017, May 2018, May 2019, May 2022.
- University of Utah, Salt Lake City, UT:
  March 2012, March 2013, January 2015, April 2016.

SERVICE
- Graduate Student Advising
  - Theodore Vo (Fall 2024 – present). Research project: "Network-encoded Full Waveform Inversion".
  - Malihehsadat Chavooshi, PhD defended in May 2024 (Spring 2019 – Summer 2024). Thesis topic: "Unsupervised Learning via Autoencoded UMAP-Enhanced Clustering". Currently postdoctoral fellow at Baylor College of Medicine.
  - Oleg Ostashov (Fall 2018). Research project: "Reduced Order Models for Imaging and Inversion with Diffusive Fields".
- Member of the Graduate Studies Committee, Department of Mathematics, University of Houston, Fall 2016 – Spring 2017, Fall 2019 – Fall 2021
  - Graduate web site redesign
- Member of the Data Science/Analytics Undergraduate Option Committee, Department of Mathematics, University of Houston, Spring 2018
- Organizer of the seminar on "Computational Mathematics in Oil & Gas Exploration and Imaging" (with M.A. Olshanskii), Department of Mathematics, University of Houston, Spring 2016.
- Managing the "Numerical Analysis and Scientific Computing Preprint Seria", Department of Mathematics, University of Houston, January 2016 – present
- Thesis committee member:
  - Yerbol Palzhanov (Ph.D.) Mathematics, University of Houston, April 2024.
  - Alexander Zhiliakov (Ph.D.) Mathematics, University of Houston, April 2022.
  - Qi Sun (Ph.D.) Mathematics, University of Houston, April 2022.
  - Rita Stanaityte (Ph.D.) Mathematics, University of Houston, April 2020.
  - Hosein Neeli (M.S.) Computer Science, University of Houston, November 2019.
  - Patrick Bardsley (Ph.D.) Mathematics, University of Utah, April 2016.
- Minisymposium organizer:
  - SIAM TX-LA Section 6th Annual Meeting, Lafayette, LA, November 2023.
  - 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, Japan, August 2023.
  - SIAM TX-LA Section 5th Annual Meeting, Houston, TX, November 2022.
  - SIAM TX-LA Section 4th Annual Meeting, South Padre Island, TX, November 2021.
  - Joint Mathematics Meeting, Atlanta, GA, January 2017.
  - SIAM Annual Meeting, Boston, MA, July 2016.
  - SIAM Conference on Imaging Science, Albuquerque, AZ, May 2016.
  - 8th International Congress on Industrial and Applied Mathematics (ICIAM 2015), Beijing, China, August 2015.
  - Applied Inverse Problems Conference, Texas A&M University, May 2011.
- Workshop organizer:
  - Recent Advances in Seismic Modeling and Inversion: From Analysis to Applications, ICERM, Brown University, Providence, RI, November 2017.
  - Advances in Model Reduction with Application to Inverse Scattering Problems, ICERM, Brown University, Providence, RI, November 2017.

Referee service	• Communications in Mathematical Sciences
	• Computer Physics Communications
	• International Journal of Computer Mathematics
	• Inverse Problems
	• Inverse Problems and Imaging
	• Journal of Computational Physics
	• Mathematical Methods in the Applied Sciences
	• National Science Foundation, Division of Mathematical Sciences
	• Networks and Heterogeneous Media
	• Numerical Algorithms
	• Physiological Measurement
	• Research in the Mathematical Sciences (RMSB)
	• SIAM/ASA Journal on Uncertainty Quantification
	• SIAM Journal on Applied Dynamical Systems
	• SIAM Journal on Applied Mathematics
	• SIAM Journal on Imaging Sciences
	• SIAM Journal on Mathematical Analysis
	• SIAM Journal on Scientific Computing

Awards

- US Junior Oberwolfach Fellow, 2017.
- SIAM Conference on the Computational Science and Engineering travel award, 2013.
- US Junior Oberwolfach Fellow, 2012.
- SIAM International Congress on Industrial and Applied Mathematics travel award, 2011.
- DTRA/NSF Algorithms Workshop travel award, 2011.
- Applied Inverse Problems Conference travel award, 2011.
- Rice University Engineering Fellowship, 2005.
- Second Place, Robotics Contest, Festival International des Sciences et Technologies, Vierzon, France, 2000.
- Increased stipend for academic excellence, Moscow State University, 1998-2003.

Computer Skills

- Languages: proficient with C/C++, Matlab (GNU Octave) language, Intel MCS51 assembly language, working knowledge of C#.
- Standard numerical packages: dlib, BLAS, LAPACK, etc.
- Software development: MS Visual Studio (C++/C#), GCC.
- Parallel computing: experienced with MPI on GNU/Linux PC clusters.
- GPU programming: CUDA.
- Algorithms: numerical PDEs (FD, FE, DG), inverse problems, numerical optimization (discrete and continuous), large-scale linear algebra: parallel solvers (direct and iterative), preconditioners, real-time control and networking.
- Operating Systems: GNU/Linux, MS Windows.

Citizenship   Citizen of Russia and the USA.

Languages   English (fluent), Russian (native).