Liliana Borcea
Department of Mathematics, University of Michigan
2074 East Hall, 530 Church Street
Ann Arbor, MI 48109-1043, USA.
+1-734-647-6579
borcea@umich.edu
www-personal.umich.edu/∼borcea/

Education

1992-1996	**Stanford University** Ph.D. in Scientific Computing and Computational Mathematics (SCCM).
1982-1987	**University of Bucharest, Applied Physics**, Romania, "Diploma de inginer".

Honors and awards

2022	Rothschild Distinguished Visiting Fellowship (for the year 2023), Isaac Newton Institute of Mathematical Sciences, Cambridge University, UK.
2022	Plenary Speaker, SIAM Imaging Science Conference.
2020	Elected to the SIAM Board of Trustees for a 3 year term, starting January 2021.
2019	Editor in chief, SIAM Journal Multiscale Modeling and Simulations.
2018	SIAM Fellow.
2018	Distinguished Women in Mathematics lecture, University of Texas, Austin.
2017	2017 AWM-SIAM Sonia Kovalevsky Lecture.
2015	Simons Fellow in Mathematics.
2014	Elected to the SIAM Council. Served two terms: 2014-2017 & 2017-2020.
2013	Peter Field Collegiate chair, University of Michigan.
2012	SIAM SIGEST award.
2010	NSA Research Professorship, MSRI Berkeley.
2007	Noah Harding chair, Rice University.
2007	Plenary speaker, AMS West Section Meeting, Tucson, AZ.
2004	Invited topical speaker, SIAM Annual meeting, Portland, OR.
1996-1999	NSF Mathematical Sciences Postdoctoral Research Fellowship.
1994-1996	NSF Graduate Research Traineeship.
1992-1993	Stanford NASA Ames Global Change fellowship.
1983	Laureate of the national contest "Traian Lalescu" between all Romanian Physics Universities.
1982	Laureate of the Romanian national olympiad in Physics.

Employment

2013-present	**University of Michigan, Mathematics** Peter Field Collegiate Professor.
1996-2013	**Rice University, Computational and Applied Mathematics** Noah Harding Professor (2007-2013) Associate Professor (2001-2007) Assistant Professor (1996-2001)
1996-1997	**California Institute of Technology, Applied Mathematics** NSF Postdoctoral fellow.

1991-1993	**NASA Ames**, Moffet Field, California Research assistant.
1987-1990	**IPIM "13 Decembrie"**, Sibiu, Romania Computer programmer.

Visiting positions

2017	ICERM Brown University, Providence.
2013	Ecole Normale Superieure, Paris.
2010	MSRI, Berkeley.
2006 & 2000-2001	Stanford University.
2006	INRIA Rocquencourt, France, Project POEMS.
2005	Istituto per le Applicazioni del Calcolo, Firenze, Italy.
2003	IPAM, UCLA.

Editorial boards

- SIAM Journal on Multiscale Modeling and Simulations. Editor in chief. Completed first term 2020-2022, renewed for second term 2023-2025.
- Communications of the AMS.
- SIAM Journal on Uncertainty Quantification (until 2023).
- Inverse Problems.
- Inverse Problems and Imaging.
- Journal of Computational Physics (until 2022).
- Communications in Mathematical Sciences.
- Inverse Problems and its Applications book series. Co-editor in chief.

Professional activities

- **Current and recent advisory boards**
  - Scientific Advisory Board of the Johann Radon Institute for Computational and Applied Mathematics, Linz, Austria, 2017-2021. Renewed for second term, 2021-2026.
  - Scientific Advisory Board of the NSF - ICERM Institute, at Brown University, 2018-2021.
  - Strategic Basic Research expert panel, The Research Foundation - Flanders, Brussel, 2018-2021.
  - International Scientific Advisory Board of the National Academy of Finland, for the Center of Excellence in Inverse Problems Research, 2012-2017.
  - Scientific Review Panel for the Pacific Institute for the Mathematical Sciences, UBC, Vancouver, Canada 2014-2017.
- **Major national/international committees**
  - SIAM Board of Trustees, 2021-2024. SIAM Council, 2014-2017 and 2017-2020.
  - SIAM Annual meeting 2021 organizing committee.
  - SIAM Conference on Nonlinear Waves and Coherent Structures, 2022 organizing committee.
  - Gauss Prize Committee. Prize awarded at ICM 2022.
  - SIAM Coordinating Committee of Joint Mathematics Meeting 2014-2017, chair in 2015.
  - Prize committee CRM-Fields-PIMS Canada, Fall 2015 and 2016.

- Chair of the SIAM Imaging Science Activity Group, 2010-2011.

- **Organizer of selected conferences and workshops**

  - ICERM Brown University semester program on radar and geophysics imaging, Fall 2017.
  - MSRI Semester Program, Fall 2010.
  - Oberwolfach: Workshop ID: 2050, December 6-12, 2020, Workshop ID 1720, May 14-20, 2017; Workshop ID 1243, October 21-27, 2012; Seminar ID 0623a, June 4-10, 2010.
  - NSF/CBMS Conference in Mathematical Sciences: Imaging in random media, Rice University, May 12-16, 2008.
  - Conference on Applied Inverse Problems, Vancouver, June 25-29, 2007.

Research grants over last 10 years (amounts listed only for the current grants):

1. Airforce Office of Research (AFOSR) award No. FA9550-22-1-0077, *Wave propagation and inverse scattering in heterogeneous media*, sole PI. Project Period: 01/01/2022-12/31/2024. Amount: $600,070.

2. Office of Naval Research (ONR) award No. N00014-21-1-2370, *Data driven reduced order models for inverse problems in heterogeneous media*, sole PI. Mamonov at University of Houston is sub-contractor on this grant. Project Period: 04/29/2021-04/28/2024. Amount: $377,400.

3. AFOSR award No. FA9550-21-1-0166, *High resolution coherent interferometric imaging in random media*, sole PI. Project Period: 04/01/2021-09/01/2021.

4. AFOSR award No. FA9550-18-1-0131, *Inverse Scattering Problems in Time Dependent Random Media, Waveguides and Cavities*, sole PI. Project Period: 2/1/2018-1/31/2021.

5. NSF award DMS-1510429, *Hyperbolic Inverse Problems in Random Environments*, sole PI. 09/01/2015-08/31/2019.

6. ONR award No. N00014-17-1-2057, *A computational and theoretical study of forward and inverse scattering problems in heterogeneous media*, sole PI. Mamonov at University of Houston is sub-contractor on this grant. Project Period: 01/01/2017-12/31/2020.

7. AFOSR award No. FA9550-15-1-0118, *Imaging with Electromagnetic Waves in Complex Environments*, sole PI. Project Period: 04/01/2015-09/30/2017.

8. AFOSR award No. FA9550-12-1-0117, *Mathematical Problems in Imaging in Random Media*, sole PI. Project Period: 01/04/2012-31/03/2015.

9. ONR award No. N000141410077, *Theory and Algorithms for Sensor Array Imaging and Motion Estimation in Random Media*, sole PI. Project Period: 01/01/2014-10/31/2015.

10. Simons Foundation, Mathematics and Physical Sciences-Simons Fellows in Mathematics, award No. 339153, *Analysis of electromagnetic wave propagation and imaging in random media*, sole PI. Project Period: 07/01/2015-12/31/2015.

11. NSF award DMS-0907746, *Mathematical Problems and Adaptive Algorithms for Imaging in Random Media*, sole PI. Project period: 09/15/2009-08/31/2013.

12. NSF award DMS-0934594, CMG Collaborative Research: *Subsurface Imaging and Uncertainty Quantification*, co-PI. Project period: 09/01/2009-08/31/2013.

Courses taught at University of Michigan

- Undergraduate: MATH 417 (Linear algebra with applications), MATH 451 (Analysis on the real line).
- Graduate: MATH 555 (Complex analysis), MATH 556 (Applied functional analysis), MATH 557 (Applied asymptotic analysis), MATH 571 (numerical linear algebra), MATH 651 (Imaging in random media).

Summer courses

1. *Introduction to wave propagation in random media and application to inverse wave scattering* (4 lectures), Wave turbulence and beyond summer school sponsored by the Simons Foundation, Turin, Italy, July 18-22, 2022.
2. *Imaging in random media* (4 lectures), NSF summer school on Waves and Particles in Random Media: Theory and Applications, Colorado State University, May 21-25, 2018.
3. *Imaging and wave propagation in random waveguides* (3 lectures), Session "Etats de la Recherche", Inverse Problems and Imaging, Société Mathématique de France, Institut Henri Poincaré, February 20-22, 2013.
4. *Imaging in random waveguides* (3 lectures), June 7-15, 2012, Workshop on waves and imaging in random media, Heraklion, Greece.
5. *Imaging in random media*, Introductory workshop on Inverse Problems (4 lectures), July 25-29, 2011, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK.
6. *Discrete approaches to electrical impedance tomography* (6 lectures), Special trimester on Inverse Problems, June 13-17, 2011, University Autonoma, Madrid, Spain.
7. *Imaging in random waveguides* (4 lectures), Introductory workshop on Inverse Problems and Applications. MSRI, Berkeley, CA, August 23-27, 2010.
8. *Imaging in random waveguides* (4 lectures), Escuela Politécnica Superior, Universidad Carlos III de Madrid, Spain, June 2010.
9. *Discrete approaches to electrical impedance tomography* (4 lectures), Inverse Problems Graduate Student workshop, MSRI, Berkeley, CA, July 20-31, 2009.
10. *Imaging in Random Media* (4 lectures), Conference in honor of Alberto P. Calderón. IMPA, Rio de Janeiro, Brazil, January 10-19, 2007.
11. *Mathematical and Computational Problems in Interferometric Imaging*, Oberwolfach Seminar: with G. Papanicolaou and C. Tsogka, June 4 - 10, 2006 (6 lectures + problem sessions).
12. *Imaging in Random Media* (5 lectures), Summer course at Istituto per le Applicazioni del Calcolo, Firenze, Italy, June 2005.
13. *Coherent Interferometric Array Imaging in Random Media*, part of the AMS short course: "The Radon transform, inverse problems and tomography", the AMS annual meeting, Atlanta, January 3-4, 2005.
14. *Tutorial on Electrical Impedance Tomography* (4 lectures), September 11-12, 2003, IPAM, UCLA.
15. *An introduction to electrical impedance tomography*, Summer minicourse (10 hours lectures), August 18-22, 2003, University of Jyväskylä, Finland.
16. *Electrical Impedance Tomography* (5 lectures) in the Inverse Problems Workshop in MSRI, Berkeley, August 13-24, 2001.

Plenary lectures, workshops, colloquia, seminars (reverse chronological for the last 5 years)

1. *Waveform inversion with a data driven estimate of the internal wave*, Banff International Research Station, Workshop 22w5118, October 26, 2022. Online.
2. *Waveform inversion with a data driven estimate of the internal wave*, RICAM, Linz, Austria, Workshop 3 on Scattering and Inverse Scattering, November 2022. Online.
3. *Data Driven Reduced Order Modeling for Solving Inverse Wave Scattering Problems*, 10th International Conference "Inverse Problems: Modeling and Simulation", Malta, May 22-28, 2022. Plenary lecture. Online.
4. *Data Driven Reduced Order Modeling for Solving Inverse Wave Scattering Problems*, CMX Seminar, Caltech, May 26, 2022. Online.
5. *Data Driven Reduced Order Modeling for Solving Inverse Wave Scattering Problems*, The 2nd International Conference on Computational Methods and Applications in Engineering, May 7-8, 2022, Mississippi State, May 7-8, 2022. Plenary lecture. Online.
6. *Data Driven Reduced Order Modeling for Solving Inverse Wave Scattering Problems*, Spectral scattering seminar, Department of Mathematics, Purdue, April 4, 2022. Online.
7. *Data Driven Reduced Order Modeling for Solving Inverse Wave Scattering Problems*, SIAM Imaging Science Conference, March 21-25, 2022, (virtual). Plenary lecture.
8. *Waveform inversion via reduced order modeling*, Data-Driven Methods for Science and Engineering seminar, U. Washington, Seattle, March 4, 2022. Online.
9. *Waveform inversion via reduced order modeling*, Oden Institute Colloquium, UT Austin, February 24, 2022. Online.
10. *Waveform inversion via reduced order modeling*, Stanford Applied Mathematics seminar. February 8, 2022. Online.
11. *Waveform inversion via reduced order modeling*, Applied Mathematics seminar, Columbia University. February 1, 2022. Online.
12. *Data driven reduced order modeling for inverse scattering*, BIRS workshop: 21w5035: "Women in Inverse Problems", December 6-10, 2021. Online.
13. *Data driven reduced order modeling for inverse scattering*, Workshop on "Tomographic Reconstructions and their Startling Applications", Organized by University of Vienna, Austria and the Schrödinger institute, March 15-25, 2021. Online.
14. *Data driven reduced order modeling for inverse scattering,* Stanford Applied Mathematics Seminar, May 19, 2021. Online.
15. *Data driven reduced order modeling for inverse scattering*, Verification, Validation, and Uncertainty Quantification Across Disciplines workshop IMSI (Institute for Mathematical and Statistical Innovation, University of Chicago, May 10-14, 2021. Plenary lecture. Online.
16. *Power Exchange and onset of energy equipartition among surface and body waves*, University of Michigan PDE Seminar, April 15, 2021.
17. *Power Exchange and onset of energy equipartition among surface and body waves*, Oberwolfach workshop "Homogenization Theory: Periodic and Beyond", March 15-19, 2021. Online.
18. *Reduced order modeling for inverse problems*, International Zoom Inverse Problems seminar, August 20, 2020.
19. *Mathematical and computational aspects of wave imaging,* Caltech seminar, March 3, 2020.
20. *Mathematical and computational aspects of wave imaging*, UC Irvine seminar, March 2, 2020.
21. *Mathematical and computational aspects of wave imaging*, SCEE 2020 International Conference, Eindhoven, Netherlands, Feb 16-20, 2020. Plenary lecture.

22. *Mathematical and computational aspects of imaging with waves*, Peter Field Collegiate lecture, University of Michigan, February 6, 2020.
23. *Wave propagation and imaging in moving random media*, Inverse kinetic theory workshop, University of Wisconsin Madison, Oct 25-27, 2019. Plenary lecture.
24. *Quantitative inverse scattering via reduced order modeling*, Oberwolfach Workshop Computational Multiscale Methods 28 July - 3 August 2019.
25. *Reduced order modeling approach to inversion for parabolic partial differential equations*, Applied Mathematics Colloquium, Ecole Polytechnique, France, June 19, 2019.
26. *Quantitative inverse scattering via reduced order modeling*, Women In Analysis conference, Banff International Research Station (BIRS), Canada, June 9 - 14, 2019. Plenary lecture.
27. *Quantitative inverse scattering via reduced order modeling*, Hong Kong Inverse Problems, Imaging and PDEs conference, Institute of Advanced Studies, HKUST, Hong Kong, May 20-24, 2019. Plenary lecture.
28. *Reduced order model approach for inverse scattering*, Applied Mathematics Colloquium, Department of Statistics, University of Chicago, March 7, 2019.
29. *Reduced order model approach for inverse scattering*, Applied Mathematics Colloquium, Columbia University, March 5, 2019.
30. *Reduced order model for active array data processing in inverse scattering*, Applied Mathematics Colloquium, University of Arizona, Tucson, November 30, 2018.
31. *Reduced order model for active array data processing in inverse scattering*, Clements Scientific Computing Seminar, Southern Methodist University, Dallas, November 29, 2018.
32. *Nonlinear processing of active array data in inverse scattering via reduced order models*, University College of London, London, October 5, 2018.
33. *Reduced order model for active array data processing in inverse scattering*, Computational Mathematics, Science and Engineering Colloquium, Michigan State, September 10, 2018.
34. *Nonlinear processing of active array data in inverse scattering via reduced order models*, Conference on Mathematics of Wave Phenomena, Karlsruhe, July 23-27, 2018. Plenary lecture.
35. *Wave propagation and imaging in waveguides with turning points*, INdAM Workshop 2018: Reconstruction methods for inverse problems, Rome, May 28 -June 1, 2018. Plenary lecture.
36. *Wave propagation in waveguides with turning points*, plenary lecture, Workshop: Transport and Localization in random media: theory and applications, Columbia University, New York, May 1-3, 2018.
37. *Laser beam imaging*, Inverse problems in the Alps II Conference, Obergurgl, Austria, March 18-23, 2018. Plenary lecture.
38. *Untangling the nonlinearity in inverse scattering with data-driven reduced order models*, Distinguished Women in Mathematics lecture, University of Texas at Austin, February 5, 2018.
39. *Pulse reflection in random waveguides with turning points*, ICES seminar, University of Texas at Austin, February 6, 2018.
40. *Untangling the nonlinearity in inverse scattering with data-driven reduced order models*, seminar POEMS, at Ecole Polytechnique, France, December 7, 2017.
41. *Laser beam imaging*, Applied Physics seminar, Yale University, New Haven, November 15, 2017.
42. *Untangling the nonlinearity in inverse scattering with data-driven reduced order models*, Mathematics colloquium, Dartmouth University, Hanover, October 27, 2017.
43. *Untangling the nonlinearity in inverse scattering with data-driven reduced order models*, Numerical analysis and scientific computing seminar, Courant Institute, New York, October 6, 2017.

44. *Laser beam imaging*, Random media workshop, ICERM, Brown University, Providence, September 25-29, 2017. Plenary lecture.
45. *Introduction to array imaging*, Introductory workshop, ICERM, Brown University, Providence, September 11, 2017. Plenary lecture.
46. *Pulse reflection in random waveguides with turning points*, applied analysis seminar, Penn State, August 30, 2017.
47. *Mitigating the uncertainty in imaging*, SIAM annual meeting, Pittsburgh, July 2017. Sonia Kovalevsky prize lecture.
48. *Pulse reflection in random waveguides with turning points*, Conference on New Mathematics for a Safer World: Wave Propagation in Heterogeneous Materials, Edinburgh, Scotland, June 12-16, 2017. Plenary lecture.
49. *Pulse reflection in random waveguides with turning points*, IMA for Novel Optical Materials workshop, Minneapolis, March 13-17, 2017. Plenary lecture.
50. *Pulse reflection in random waveguides with turning points*, seminar, Mathematics Department, University of Houston, March 2, 2017.

Refereed publications (reverse chronological)

1. L. Borcea, J. Garnier, A. Mamonov, J Zimmerling, *Waveform inversion with a data driven estimate of the internal wave*, SIAM J. Imaging Science, accepted in November 2022. In press.
2. L. Borcea, J. Garnier, K. Solna, *Paraxial wave propagation in random media with long-range correlations*, SIAM J. Applied Math, accepted in October 2022. In press.
3. L. Borcea, J. Garnier, A. Mamonov, J. Zimmerling, *Waveform inversion via reduced order modeling*, accepted by Geophysics in October, 2022. Just appeared online: https://library.seg.org/doi/10.1190/geo2022-0070.1
4. A. Mamonov, L. Borcea, J. Garnier, J. Zimmerling, *Velocity estimation via model order reduction*, Second International Meeting for Applied Geoscience & Energy, 752-756, 2022.
5. L. Borcea, J. Garnier, A. Mamonov, J. Zimmerling, *Reduced order model approach for imaging with waves*, Inverse Problems, 38(2), 2022, p. 025004, 40 pp.
6. L. Borcea, V. Druskin, J. Zimmerling, *A reduced order model approach to inverse scattering in lossy layered media*, Journal of Scientific Computing, 89(1), 2021, p.1–36.
7. L. Borcea, J. Garnier, *Imaging in random media by two-point coherent interferometry*, SIAM J. Imaging Science, 14(4), 2021, p. 1635-1668.
8. L. Borcea, J. Garnier, K. Solna, *Onset of energy equipartition among surface and body waves*, Proceedings of the Royal Society A, 477, 2021, 20200775, 28pp.
9. L. Borcea, B. Riviere, Y. Wang, *Nonoverlapping domain decomposition method with preconditioner from asymptotic analysis of steady flow in high contrast media*, International Journal of Computer Mathematics, 98(10), 2021, p. 2008–2024.
10. L. Borcea, J. Garnier, K. Solna, *Multimode communication through the turbulent atmosphere*, JOSA A, 37(5), 2020, p. 720-730.
11. L. Borcea, V. Druskin, A. Mamonov, S. Moskow, M. Zaslavsky, *Reduced order models for spectral domain inversion: embedding into the continuous problem and generation of internal data*, Inverse Problems 36(5), 2020, p. 055010, 24pp.
12. L. Borcea, E Karasmani, C. Tsogka, *Incoherent source localization in random acoustic waveguides*, Waves in Random and Complex Media, 30 (1), 2020, p. 81-106.
13. L. Borcea, V. Druskin, A. Mamonov, M. Zaslavsky, J Zimmerling, *Reduced Order Model Approach to Inverse Scattering*, SIAM J. Imaging Science, 13(2), 2020, p. 685-723.

14. L. Borcea, J. Garnier, *High-resolution interferometric synthetic aperture imaging in scattering media*, SIAM J. Imaging Science, 13(1), 2020, p. 291-316.
15. L. Borcea, J. Garnier, *Wave propagation in randomly perturbed weakly coupled waveguides*, SIAM Multiscale Modeling Simul., 18(1), 2020, p. 44-78.
16. L. Borcea, J. Garnier, K. Solna, *Sound propagation in a weakly turbulent flow in a waveguide*, SIAM J. Applied Math., 79(6), 2019, p. 2663–2687.
17. L. Borcea, *Imaging with waves in random media*, Notices of the AMS, 66(11), 2019, p. 1800-1812.
18. L. Borcea, S. Meng, *Factorization method versus migration imaging in a waveguide*, Inverse Problems 35(12), 2019, p. 124006, 33pp.
19. L. Borcea, F. Cakoni, S. Meng, *A direct approach to imaging in a waveguide with perturbed geometry*, Journal of Computational Physics, 392, 2019, p.556-577.
20. L. Borcea, V. Druskin, A. Mamonov, M. Zaslavsky, *Robust nonlinear processing of active array data in inverse scattering via truncated reduced order models*, Journal of Computational Physics, 381, 2019, p.1-26.
21. L. Borcea, J. Garnier, K. Solna, *Wave propagation and imaging in moving random media*, SIAM Multiscale Modeling Simul. 17(1), 2019, p. 31-67.
22. L. Borcea, J. Garnier, *A ghost imaging modality in a random waveguide*, Inverse Problems, 34(12), 2018, p. 124007, 33pp.
23. L. Borcea, V. Druskin, A. Mamonov, M. Zaslavsky, *Untangling the nonlinearity in inverse scattering with data-driven reduced order models*, Inverse Problems 34(6), 2018, p. 065008, 35pp.
24. L. Borcea, I. Kocyigit, *Passive array imaging in random media*, IEEE Transactions on Computational Imaging, 4(3), 2018, p. 459-469.
25. L. Borcea, J. Garnier, *Laser beam imaging from the speckle pattern of the off-axis scattered intensity*, SIAM J. Applied Math., 78(2), 2018, p. 677-704.
26. L. Borcea, I. Kocyigit, *A Multiple Measurement Vector approach to Synthetic Aperture Radar imaging*, SIAM J. Imaging Sciences, 11(1), 2018, p. 770-801.
27. L. Borcea, J. Garnier, *Pulse reflection in a random waveguide with a turning point*, SIAM Multiscale Modeling Simul., 15(4), 2017, p. 1472-1501.
28. L. Borcea and I. Kocyigit, *Imaging in random media with convex optimization*, SIAM J. Imaging Science, 10(1), 2017, p. 147-190.
29. L. Borcea, G. Papanicolaou, C. Tsogka, *Time and direction of arrival detection and filtering for imaging in strongly scattering random media*, Waves in Random and Complex Media, 27 (4), 2017, p. 664-689.
30. L. Borcea, J. Garnier, G. Papanicolaou, K. Solna, C. Tsogka, *Resolution analysis of passive synthetic aperture imaging of fast moving objects*, SIAM J. Imaging Science, 10(2), 2017, p. 665-710.
31. L. Borcea, W. Li, A. Mamonov, J. Schotland, *Second-Harmonic imaging in random media*, Inverse Problems, 33(6), 2017, p. 065004, 37pp.
32. L. Borcea, F. Guevara Vasquez, A. Mamonov, *A discrete Liouville transform for numerical reconstruction of Schrödinger potentials*, Inverse Problems and Imaging, 11(4), 2017, p. 623-641.
33. L. Borcea, J. Garnier, D. Wood, *Transport of power in random waveguides with turning points*, Commun. Math. Sci., 15 (8), 2017, p. 2327-2371.
34. L. Borcea, DL Nguyen, *Imaging with electromagnetic waves in terminating waveguides*, Inverse problems and imaging, 10, 2016, p.915-941.
35. L. Borcea, J. Garnier, *Robust imaging with electromagnetic waves in noisy environments*, Inverse Problems, 32(10), 2016, p. 105010, 30pp.

36. L. Borcea and K. Solna, *Pulse propagation in time dependent randomly layered media*, SIAM Multiscale Modeling Simul., 14(1), 2016, p. 265-300.
37. L. Borcea and J. Garnier, *Derivation of a one-way radiative transfer equation in random media* , Phys. Rev. E 93, 022115, 2016, 12pp.
38. L. Borcea and Josselin Garnier, *Polarization effects for electromagnetic wave propagation in random media*, Wave Motion, 63, 2016, p. 179-208.
39. L. Borcea, M. Moscoso, G. Papanicolaou and C. Tsogka, *Synthetic aperture imaging of direction and frequency dependent reflectivities*, SIAM J. Imaging Science, 9(1), 2016, pp. 52-81.
40. L. Borcea, I. Kocyigit, *Resolution analysis of imaging with ℓ_1 optimization*, SIAM J. Imaging Science, 8(4), 2015, p. 3015-3050.
41. S. Acosta, R. Alonso, L. Borcea, *Source estimation with incoherent waves in random waveguides*, Inverse Problems, 31(3), 2015, p. 035013, 35pp.
42. L. Borcea, *Imaging in random media*, solicited review, Handbook of Mathematical Methods in Imaging, Volume 2, Springer, 2015.
43. R. Alonso, L. Borcea, *Electromagnetic wave propagation in random waveguides*, SIAM Multiscale Modeling Simul., 13(3), 2015, p. 847-889.
44. L. Borcea, *Imaging and wave propagation in random waveguides*, Lecture notes from session "Etats de la Recherche" at Institut Henri Poincaré, Panoramas et Synthéses 44, Société mathématique de France, 2014, p. 1-61.
45. L. Borcea, J. Garnier, C. Tsogka, *A quantitative study of source imaging in random waveguides*, Comm. Math. Sci., 13(3), 2015, p. 749-776.
46. L. Borcea, Y. Gorb, Y. Wang, *Asymptotic approximation of the Dirichlet to Neumann map of high contrast conductive media*, SIAM Multiscale Modeling Simul., 12(4), 2014, p. 1494-1532.
47. L. Borcea and J. Garnier, *Paraxial coupling of propagating modes in three-dimensional waveguides with random boundaries*, SIAM Multiscale Modeling Simul., 12 (2), 2014, p. 832-878.
48. L. Borcea, V. Druskin, A. Mamonov, M. Zaslavsky, *A model reduction approach to numerical inversion for a parabolic partial differential equation*, Inverse Problems, 30(12), 2014, p. 125011, 33pp.
49. L. Borcea, T. Callaghan, G. Papanicolaou, *Motion Estimation and Imaging of Complex Scenes with Synthetic Aperture Radar*, Inverse Problems, 29(5), 2013, p. 054011, 29pp.
50. L. Borcea, T. Callaghan, G. Papanicolaou, *Synthetic Aperture Radar imaging and motion estimation via Robust Principal Component analysis*, SIAM J. Imaging Science, 6(3), 2013, p. 1445-1476.
51. L. Borcea, A.V. Mamonov, F. Guevara-Vasquez, *Study of noise effects in electrical impedance tomography with resistor networks*, Inverse Problems and Imaging, 7(2), 2013, p. 417-443.
52. R. Alonso, L. Borcea, J. Garnier, *Wave propagation in waveguides with random boundaries*, Comm. Math. Sci., 11(1), 2013, p. 233-267.
53. L. Borcea, F. González del Cueto, G. Papanicolaou, and C. Tsogka. *Filtering Deterministic Layer Effects in Imaging*, SIAM Review 54(4), 2012, p. 757-798. SIGEST SIAM Prize.
54. L. Borcea, V. Druskin, F. Guevara Vasquez, A. V. Mamonov, *Resistor network approaches to electrical impedance tomography*, solicited review, Inside Out II, MSRI Publications, Volume 60, 2012, p. 55-118.
55. L. Borcea, T. Callaghan, G. Papanicolaou, *Synthetic Aperture Radar Imaging with Motion Estimation and Autofocus*, Inverse Problems 28(4), 2012, p. 045006, 31pp.
56. L. Borcea, J. Garnier, G. Papanicolaou, C. Tsogka, *Enhanced statistical stability in coherent interferometric imaging*, Inverse Problems, 27(8), 2011, p. 085003, 33pp.
57. L. Borcea, J. Garnier, G. Papanicolaou, C. Tsogka, *Coherent interferometric imaging, time gating and beam forming*, Inverse Problems, 27(6), 2011, p. 065008, 16pp.

58. L. Borcea and G. Papanicolaou and C. Tsogka, *Adaptive time-frequency detection and filtering for imaging in heavy clutter*, SIAM J. Imaging Science, 4(3), 2011, p. 827-849.
59. R. Alonso, L. Borcea, G. Papanicolaou, C. Tsogka, *Detection and Imaging in strongly backscattering randomly layered media*, Inverse Problems, 27(2), 2011, p. 025004, 43pp.
60. L. Borcea, L. Issa, C. Tsogka, *Source localization in random waveguides*, SIAM Multiscale Modeling Simul., 8(5), 2010, p. 1981-2022.
61. L. Borcea, V. Druskin, A.V. Mamonov, F. Guevara-Vasquez, *Pyramidal resistor networks for electrical impedance tomography with partial boundary measurements*, Inverse Problems, 26(10), 2010, p. 105009, 36pp.
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Postdoctoral adviser:

- Hai Le 2022-2025. Works on waves in random media with long range correlations.
- Jörn Zimmerling 2018-2022. Currently tenure track assistant professor at Upssala University, Sweden.

- Shixu Meng 2018-2020. Currently assistant professor at the Chinese Academy of Science, Beijing.
- Ilker Kocyigit 2013-2017. Currently assistant professor at Koc University, Istanbul.
- Dinh-Liem Nguyen 2013-2017. Currently associate professor at Kansas State.
- Ricardo Alonso 2009-2013. Currently associate professor at PUC, Rio de Janeiro, Brazil and Texas A&M University at Qatar.
- Thomas Callaghan 2010-2013. Currently at Nash Corporation, Nassau, Bahamas.

Graduate Students:

- Yiyang Liu, Applied and Interdisciplinary Mathematics PhD student at University of Michigan. Expected graduation May 2024.
- Derek Wood, Phd 2017 in Mathematics, University of Michigan. Currently research scientist at Systems & Technology Research (STR) in Woburn, MA.
- Wei Li, PhD 2016 (co-advised with John Schotland), Applied and Interdisciplinary Mathematics University of Michigan. Currently assistant professor of mathematics at DePaul University, Chicago.
- Yingpei Wang, PhD 2014, Computational and Applied Mathematics, Rice University. Currently at Google, Mountain View, CA.
- Sebastian Acosta, PhD 2014, Computational and Applied Mathematics, Rice University. Currently assistant professor at Baylor College of Medicine, Houston, TX.
- Leila Issa, PhD 2010, Computational and Applied Mathematics, Rice University. Currently associate professor of mathematics at the Lebanese American University, Beirut, Lebanon.
- Alexander Mamonov, PhD 2010. Currently associate professor of mathematics at University of Houston, TX.
- Fernando Gonzalez del Cueto, PhD 2009, Computational and Applied Mathematics, Rice University. Currently research scientist, Shell, Houston.
- Fernando Guevara-Vasquez, PhD 2007, Computational and Applied Mathematics, Rice University. Currently associate professor of mathematics, University of Utah.
- Erric Dussaud (co-advised with Bill Symes), PhD 2006. Currently at Total, France.
- Genetha Gray, PhD 2002, Computational and Applied Mathematics, Rice University. Currently permanent staff member at Sandia, Livermore, CA.

Industry Collaborations: Schlumberger Doll Research Center, Cambridge, Massachusetts.