Michael R. Lindstrom

School of Mathematical and Statistical Sciences
The University of Texas Rio Grande Valley

Mailing Address:
UTRGV School of Mathematical and Statistical Sciences
1201 W University Dr, Edinburg, TX, 78539
Office Location: EMAGC 3.734
Office Phone: (956) 665 7063
Email: mike[dot]lindstrom[at][the-school-initials][dot]edu
Homepage: https://www.mikel-aim.net/
Github: https://github.com/3k1m
Bitbucket: https://bitbucket.org/3k1m/

Academic Positions

- Assistant Professor, School of Mathematical and Statistical Sciences, The University of Texas Rio Grande Valley (2022–present)
- Assistant Adjunct Professor (Program in Computing), Department of Mathematics, University of California Los Angeles (2015–2022).

Education

- B.Sc. Physics and Mathematics (Hons.), University of British Columbia.
- M.Sc. Mathematics, University of British Columbia.
- PhD. Mathematics, University of British Columbia.

Research Areas

- mathematical modelling, partial differential equations, data science, formal asymptotics, scientific computing

Publications

Journal Papers

Accepted/Published

1. Joel T Williams, C Sean Bohun, Alberto Fornaci, Michael R Lindstrom. Generating Live Heatmaps of EDR Data through a Spatiotemporal Weighting. *Journal of Aircraft*, 2026.
2. Gangadhara Boregowda, Laurent Pujo-Menjouet, Zhaosheng Feng, and Michael R Lindstrom. Study of a Nonlinear Delayed Parabolic Model for Prion Disease Dynamics with the Unfolded Protein Response. *Communications in Nonlinear Science and Numerical Simulation*, 2026.
3. Gangadhara Boregowda, Omar Sharif, Daniel Gutierrez III, Allegra Simmons, Laurent Pujo-Menjouet, Tamer Oraby, and Michael R. Lindstrom. Theory and Simulations of Delayed Stochastic and Deterministic Models of Prion Diseases. *Journal of Mathematical Biology*, 2026.

4. Monique T Cano, Michael R Lindstrom, Oscar F Rojas Perez, , and Ricardo F Muñoz. Patterns of multimorbidity among low-income adults who smoke with implications for tailored interventions: a clusteranalysis using a Mixture of Bernoulli Model. *Frontiers in Medicine*, 2026.

5. Gangadhara Boregowda, and Michael R Lindstrom. Existence and Stability Theory of a Neurologically-Inspired Parabolic PDE Model with a Nonlinear Time-Delayed Boundary Condition. *International Journal of Bifurcation and Chaos*, 2025.

6. Monique Tenay Cano, Michael R Lindstrom, and Ricardo Felipe Munoz. The dialogue dilemma: The role of patient-clinician communication for low-income people who smoke and manage multiple conditions. *Frontiers in Medicine*, 12:1567725

7. Elliot M Miller, Tat Chung D Chan, Carlos Montes-Matamoros, Omar Sharif, Laurent Pujo-Menjouet, and Michael R Lindstrom. Oscillations in neuronal activity: a neuron-centered spatiotemporal model of the unfolded protein response in prion diseases. *Bulletin of Mathematical Biology*, 86(7):82, 2024

8. Michael R Lindstrom. Local existence of solutions to a nonlinear autonomous PDE model for population dynamics with nonlocal transport and competition. *Communications in Nonlinear Science and Numerical Simulation*, page 107815, 2024

9. Keyi Cheng, Stefan Inzer, Adrian Leung, Xiaoxian Shen, Michael Perlmutter, Michael R Lindstrom, Joyce Chew, Todd Presner, and Deanna Needell. Multi-scale hybridized topic modeling: A pipeline for analyzing unstructured text datasets via topic modeling. *SIAM Undergraduate Research Online*, 2023

10. Michael R Lindstrom, Xiaofu Ding, Feng Liu, Anand Somayajula, and Deanna Needell. Continuous semi-supervised nonnegative matrix factorization. *Algorithms*, 16(4):187, 2023

11. Marcelo Bongarti, Luke Diego Galvan, Lawford Hatcher, Michael R Lindstrom, Christian Parkinson, Chuntian Wang, and Andrea L Bertozzi. Alternative siar models for infectious diseases and applications in the study of non-compliance. *Mathematical Models and Methods in Applied Sciences*, pages 1–29, 2022

12. Thomas E Valles, Hannah Shoenhard, Joseph Zinski, Sarah Trick, Mason A Porter, and Michael R Lindstrom. Networks of necessity: Simulating covid-19 mitigation strategies for disabled people and their caregivers. *PLOS Computational Biology*, 18(5):e1010042, 2022

13. Kaiyan Peng, Zheng Lu, Vanessa Lin, Michael R Lindstrom, Christian Parkinson, Chuntian Wang, Andrea L Bertozzi, and Mason A Porter. A multilayer network model of the coevolution of the spread of a disease and competing opinions. *Mathematical Models and Methods in Applied Sciences*, 31(12):2455–2494, 2021

14. Michael R Lindstrom, Manuel B Chavez, Elijah A Gross-Sable, Eric Y Hayden, and David B Teplow. From reaction kinetics to dementia: A simple dimer model of alzheimer's disease etiology. *PLoS computational biology*, 17(7):e1009114, 2021

15. Michael R Lindstrom, Hyuntae Jung, and Denis Larocque. Functional kernel density estimation: Point and fourier approaches to time series anomaly detection. *Entropy*, 22(12):1363, 2020

16. Michael R Lindstrom and Andrea L Bertozzi. Qualitative features of a nonlinear, nonlocal, agent-based pde model with applications to homelessness. *Mathematical Models and Methods in Applied Sciences*, 30(10):1863–1891, 2020

17. Dominic Diaz, Jessica Bojorquez, Joshua Crasto, Margaret Koulikova, Tameez Latib, Aviva Prins, Andrew Shapiro, Clover Ye, David Arnold, Claudia Falcon, Michael R. Lindstrom, and L. Bertozzi, Andrea. Investigation of constant volume and constant flux initial conditions on bidensity particle-laden slurries on an incline. *American Journal of Undergraduate Research*, 16(3):42–57, 2019

18. Jeffrey Wong, Michael Lindstrom, and Andrea L Bertozzi. Fast equilibration dynamics of viscous particle-laden flow in an inclined channel. *Journal of Fluid Mechanics*, 879:28–53, 2019

19. Saad Dara, Michael Lindstrom, Joseph English, Arman Bonakdarpour, Brian Wetton, and David P Wilkinson. Conversion of saline water and dissolved carbon dioxide into value-added chemicals by electrodialysis. *Journal of CO2 Utilization*, 19:177–184, 2017

20. Michael Lindstrom. Assessment of the effects of azimuthal mode number perturbations upon the implosion processes of fluids in cylinders. *Physica D: Nonlinear Phenomena*, 349:77–90, 2017

21. Michael Lindstrom, Alex C Y Fang, and Robert F Kiefl. Effect of surface roughness on the magnetic field profile in the meissner state of a superconductor. *Journal of Superconductivity and Novel Magnetism*, 29(6):1499–1507, 2016

22. Michael Lindstrom, Iain Moyles, and Kevin Ryczko. Electric ion dispersion as a new type of mass spectrometer. *Mathematics-in-Industry Case Studies*, 7(1):1–13, 2017

23. Michael Lindstrom. Asymptotic analysis of a magnetized target fusion reactor. *SIAM Journal on Applied Mathematics*, 75(5):2050–2071, 2015

24. Carmen Bruni, Christina Koch, Bernhard Konrad, Michael Lindstrom, Iain Moyles, and Will Thompson. From exam to education: The math exam/education resources. *PRIMUS*, 26(7):631–656, 2016

25. Michael Lindstrom, Sandra Barsky, and Brian Wetton. Investigation into fusion feasibility of a magnetized target fusion reactor: A preliminary numerical framework. *Journal of Fusion Energy*, 34(1):76–83, 2015

26. Michael Lindstrom and Brian Wetton. A comparison of fick and maxwell–stefan diffusion formulations in pemfc gas diffusion layers. *Heat and Mass Transfer*, 53(1):205–212, 2017

27. Bernhard P Konrad, Michael Lindstrom, Anja Gumpinger, Jielin Zhu, and Daniel Coombs. Assessing the optimal virulence of malaria-targeting mosquito pathogens: a mathematical study of engineered metarhizium anisopliae. *Malaria journal*, 13(1):1–10, 2014

28. Michael Lindstrom, Brian Wetton, and Rob Kiefl. Mathematical modelling of the effect of surface roughness on magnetic field profiles in type ii superconductors. *Journal of Engineering Mathematics*, 85(1):149–177, 2014

Peer-Reviewed Conference Papers

29. E Nyanney, J I Chowdhury, D Philips, and M R Lindstrom. Water in the rough: isolating neutron scattering intensities of water, 2023

30. Michael R Lindstrom, William J Swartworth, and Deanna Needell. Reconstructing piezoelectric responses over a lattice: Adaptive sampling of low dimensional time series representations based on relative isolation and gradient size. In *Smoky Mountains Computational Sciences and Engineering Conference*, pages 420–429. Springer, 2021

31. Michael Lindstrom, Brian Wetton, and Rob Kiefl. Modelling the effects of surface roughness on superconductors. *Physics Procedia*, 30:249–253, 2012

Industrial Workshop Reports

32. C S Bohun, I El Yassini, C Fan, A Harrabi, P Houedry, S Ibrahim, W Li, M R Lindstrom, R Liu, J Schulz, L Yang, and D Ye. Estimating turbulence duration and the likelihood of turbulence occurring, 2024

33. M Canche, A Ek, M R Lindstrom, C Lonjarret, P Mesana, M Montes, N Schonau, O Sharif, M Talebian, and L Willems. Determining the right moment for suggesting the creation of an account, 2023

34. Javier Almonacid, Sean Bohun, Douglas Bowen Bowen, Thomas Gkelsinis, Slim Ibrahim, Michael R Lindstrom, Joy Liu, and Kyle Onghai Onghai. Turbulence in the Air, 2022

35. P. Gawas, H Jung, D Larocque, M R Lindstrom, G Poirier, and S Ahmed. Predictive risk modelling in aviation incidents. *Comptes rendus du Dixième atelier de résolution de problèmes industriels de Montréal, 13–27 août 2020*, 2021

36. D Boursicot, M. Comeau, P Gagnon, C Gauvin, R Han, B Ferland-Raymond, M Lindstrom, N Razaaly, J Schulz, J. Shen, T. Wong, and R. Eghbalzadeh. Poisson regression for smooth geographic stratification of risk. *Comptes rendus du Neuvième atelier de résolution de problèmes industriels de Montréal, 19–23 août 2019*, 2020

Whitepapers

37. MR Lindstrom, MA Porter, H Shoenhard, S Trick, TE Valles, and JM Zinski. Networks of necessity: Preventing covid-19 among disabled people and their caregivers., 2020

Theses

38. Michael Lindstrom. Investigation into the feasibility and operation of a magnetized target fusion reactor, 2015 (PhD)

39. Michael Lindstrom. Asymptotic and numerical modeling of magnetic field profiles in superconductors with rough boundaries and multi-component gas transport in PEM fuel cells, 2010 (MSc)

40. Michael Lindstrom. Computation of Gluon Scattering Amplitudes in N=4 SYM Gauge Theory via AdS-CFT Duality, 2008 (BSc)

Research Funding

- NSF LEAPS-MPS Award, PI, 2023-2025 ($250,000 USD).
- NSERC Postdoctoral Fellowship, 2017-2019 ($90,000 CAD)
- AARMS Postdoctoral Fellowship, 2015 (declined offer).

Selected Talks, Conferences, and Workshops

- Joint Mathematics Meetings, Washington DC, 2026 (talk).
- Brain and Beyond Seminar, UTRGV School of Medicine, 2025 (talk).
- SIAM Annual Meeting, Montreal, Canada, 2025 (talk).
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2025 (participant: Air Canada cargo locks problem).
- Coastal Bend Conference, Laredo, TX, 2025 (talk)
- AMS Central Meeting, San Antonio, Texas, 2024 (talk).
- CAIMS Meeting, Kindston, Ontario, Canada, 2024 (talk).
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2024 (coordinator: IATA problem).
- Coastal Bend Conference, Kingsville, TX, 2024 (talk)
- The University of West Indies, Jamaica, 2024 (virtual)
- Texas A&M University Corpus-Christi, 2024 (virtual)
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2023 (coordinator: Radio Canada problem).
- Turbulence Aware, 2023 (virtual talk)
- CAIMS Meeting, Fredericton, NB, Canada, 2023 (talk).
- Coastal Bend Conference, Brownsville, TX, 2023 (talk).
- University of Arizona Early Career Seminar, 2023 (virtual talk).
- Alamo Symposium, San Antonio, TX, 2023 (talk).
- University of Texas Rio Grande Valley, Edinburg, TX, 2022, Graduate Research Seminar (talk).
- University of Texas Rio Grande Valley, Edinburg, TX, 2022, Research and Advisement Seminar (invited talk).
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2022 (coordinator: IATA air turbulence problem).
- Cal State University, Long Beach, 2022 (invited talk)
- UC Irvine Math Seminar, online, 2022 (invited talk)
- The University of Texas Rio Grande Valley Computational Applied Math Colloquium, online, 2022 (invited talk)
- Portland State University Applied Math Colloquium, 2022 (invited talk)
- University of Texas at San Antonio Applied Math Seminar, online, 2021 (invited talk)
- Texas Tech University Math Colloquium, online, 2021 (invited talk)
- BIRS Workshop: New Trends in Nonlinear Diffusion: a Bridge between PDEs, Analysis and Geometry, online, 2021 (attendee)
- CRM Industrial Problem Solving Workshop, online, 2021 (mentor)

- CAIMS 2021, virtual conference (invited talk).
- Oakland University Applied Math Colloquium, virtual presentation, 2021 (invited talk).
- UC Riverside PDE and Applied Math Seminar, virtual presentation, 2020 (invited talk).
- CRM Industrial Problem Solving Workshop, online, 2020 (particpant: IATA anomaly detection problem).
- Portland State University Applied Math Colloquium, virtual presentation, 2020 (invited talk).
- UC Merced Applied Colloquium, Merced, California, USA, 2020 (invited talk).
- UCLA Applied Math Colloquium, Los Angeles, USA, 2019 (talk).
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2019 (particpant: insurance risk stratification problem).
- Mount Allison University Math Colloquium, Sackville, New Brunswick, Canada, 2017 (invited talk).
- UCLA Undergraduate Math Students Association Professor Talk, Los Angeles, USA, 2017 (invited talk).
- UBC Math Department Colloquium, Vancouver, Canada, 2014 (invited talk).
- Fields-MPrime Industrial Problem Solving Workshop, Toronto, Canada, 2014 (participant: mass spectrometry problem).
- Simon Fraser University Applied Math Colloquium, Burnaby, Canada, 2013 (invited talk).
- CRM Industrial Problem Solving Workshop, Montreal, Canada, 2013 (participant: Brittle Bone Disease problem).
- μSR2011, Cancun, Mexico, 2011 (poster).

Mentoring Experience

- UTRGV Math REU/summer research mentor, 2023-2025.
- South Texas ISD Externship mentor, 2023-2024.
- Coordinator for CRM Industrial Problem Solving Workshop, Montreal, 2023.
- High Scholar program mentor, 2023.
- UTRGV Math REU mentor, 2023.
- Coordinator for CRM Industrial Problem Solving Workshop, Montreal, 2022.
- Supervising graduates and undergraduates in building PDE models and running experiments for bidisperse viscous suspension flows, 2022.
- Supervising undergraduates in using data science to understand Holocaust testimonies, 2022.
- Mentor for CRM Industrial Problem Solving Workshop, online, 2021.
- Supervising undergraduates on sampling methods for the homeless population, 2021.
- Supervising undergraduates on models of prion diseases, 2021.
- Supervising graduates and undergraduates on multiple models for COVID-19, 2020.
- Supervising undergraduate research on a network model of COVID-19, 2020.

- Supervising undergraduates and graduates in studying homicide data, 2019.
- Supervising undergraduates in modelling Alzheimer's Disease, 2019.
- Supervising undergraduates and graduates in analyzing and finding patterns within Twitter data from Los Angeles, 2018.
- Supervising undergraduates in studying the effectiveness of a gang reduction intervention program, 2018.
- Supervising undergraduates in modelling homeless movement patterns, 2017-2018.
- Supervising undergraduates in modelling homeless crime, 2017.
- Supervising undergraduates in fluid dynamics modelling and experimentation for bidensity slurries, 2017.
- Supervising undergraduates and graduates in fluid dynamics modelling and experimentation for monodisperse slurries, 2016.
- Supervising undergraduate research on superconductivity, 2014.

Referee Experience By Topic

- Accessible Healthcare
- Scientific Computing
- Mathematical Modelling
- Mechanical Engineering

Selected Honours, Awards, and Fellowships

- Smoky Mountains Computational Sciences and Engineering Conference Best Solution, 2023.
- Smoky Mountains Computational Sciences and Engineering Conference Best Solution Runner Up (Advanced Category), 2021.
- UBC Math Department Graduate Research Award in Applied Mathematics, 2014.
- Westcoast Energy Inc. Jack Davis Scholarship in Energy Studies, 2012-2013.
- MITACS Industrial Scholarship, 2010.
- NSERC PGS-M Scholarship, 2008–2010.

Selected Department Service and Academic Roles

- Cocreator of and advisor for the Accelerated Mathematics Honors Program at UTRGV, 2025–present (co-chair)
- Cofounder of and advisor to Mathematical Society at UTRGV, UTRGV, 2023–present (co-chair)
- Calculus II Coordinator, UTRGV, 2022–pressent (chair)
- PhD Committee, 2024–present
- Postdoctoral Search Committee UTRGV, 2024-2025 (member) and 2023-2024 (chair)

- SMSS Newsletter Committee, 2024–present
- Numerical Analysis Qualifying Exam Committee, 2025–present
- Colloquium Committee, 2024–present
- Math and Stats Social Committee, UTRGV, 2023–present (chair)
- MCM-ICM Faculty Advisor, UTRGV, 2023–present
- Undergraduate Studies committee member UCLA, 2020–2021
- Math Learning Centre committee member, 2014–2015.
- Review session facilitator for Math 100&180 (differential calculus - physics and engineering), UBC, 2013.
- Review session facilitator for Math 104 (differential calculus - commerce and social sciences), UBC, 2013.
- WebWorK (online open source homeworks) Problem Creator/Developer, Math and Stats Department, UBC, 2013.
- Review session facilitator for Math 105 (integral calculus - commerce and social sciences), UBC, 2013.

Teaching Development and Accomplishments

- Developed curricula for UCLA courses, 2016-2022.
- TA Accreditation Program, 2012.
- ISW Facilitator Development Workshop (FDW), 2012.
- Instructional Skills Workshop (ISW), 2011.

Courses Taught

- Math 8387, Advanced Mathematical Modeling, UTRGV (one semester)
- Math 6340, Computing for Math and Data Science, UTRGV (two semesters)
- Math 2414, Calculus II, UTRGV (three semesters)
- Math 3343, Intro to Math Software, UTRGV, 2022 (one semester)
- Math 4390, Math Project, UTRGV (two semesters)
- Math 32A, Multivariable Calculus, UCLA, 2022 (one quarter)
- Math 199, Directed Research, UCLA, 2017-2022 (ten quarters)
- PIC 10C, Advanced Programming (C++), UCLA, 2020-2022 (four quarters)
- PIC 10B, Intermediate Programming (C++), UCLA, 2016-2021 (nine quarters)
- Math 142, Mathematical Modelling, UCLA, 2016-2017 (four quarters)
- PIC 40A, Introduction to Web Programming, UCLA, 2016, 2018-2019 (six quarters)
- PIC 10A, Introduction to Programming (C++), UCLA, 2015-2016 (seven quarters)
- Math 448, Directed Studies in Mathematics, UBC, 2014 (one term)

- Math 215, Elementary Differential Equations, UBC, 2014 (one term)
- Math 104, Differential Calculus with Applications to Commerce and Social Sciences, UBC, 2012 (one term)
- Math 105, Integral Calculus with Applications to Commerce and Social Sciences, UBC, 2012, 2015 (two terms)
- Math 103, Integral Calculus with Applications to Life Sciences, UBC, 2011 (one term)
- Math 101, Integral Calculus with Applications to Physical Sciences and Engineering, UBC, 2010 (one term)