

# Lorena Aguirre Salazar

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## Education

- 2016 - 2021 **Ph.D. in Mathematics**, *McMaster University - Canada*, Supervisors: Drs. Stan Alama and Lia Bronsard, Thesis title: Solutions and limits of the Thomas-Fermi-Dirac-Von Weizsäcker energy with background potential
- 2012 - 2014 **M.Sc in Applied Mathematics**, *Technion - Israel*, Supervisor: Dr. Itai Shafrir, Thesis title: On Semi-linear elliptic systems exhibiting critical behavior
- 2010 **Exchange student**, *Ingeniería Civil Matemática - Universidad de Chile, Santiago*, Courses taken: Fourier Analysis, Partial Differential Equations, Optimization
- 2010 **Summer school**, *Measure Theory*, Universidade Federal de Rio de Janeiro (UFRJ), Brazil
- 2010 **Summer school**, *Functional Analysis*, Instituto de Matemática Pura y Aplicada (IMPA), Rio de Janeiro, Brazil
- 2009 - 2011 **B.Sc in Mathematics**, *Universidad Nacional de Colombia*

## Research Interests

Pattern formation in the Calculus of Variations and PDEs. Community and belonging in higher education in Mathematics.

## Publications

- 2025 **Aguirre Salazar, L., Lu, X.Y. and Wei, J.-c.**, "An Ohta-Kawasaki model set on the space", *Bulletin London Mathematical Society (BLMS)*, published online, <https://doi.org/10.1112/blms.70105>
- 2021 **L. Aguirre Salazar, S. Alama, and L. Bronsard**, "Convergence of the TFDW Energy to the Liquid Drop Model", *SIAM J. Math. Anal.*, **53**(3), pp. 3493-3519
- 2020 **L. Aguirre Salazar, S. Alama, and L. Bronsard**, "Mass splitting in the Thomas-Fermi-Dirac-von Weizsäcker model with background potential", *Journal of Mathematical Physics*, **61** 021502
- 2017 **L. Aguirre, H. Contreras and C.D. Acosta**, "Numerical solution to a nonlocal and nonlinear Black-Scholes model by discrete mollification" (Spanish), *Revista Colombiana de Matemáticas*, **51**(2), pp. 195-220
- 2015 **L. Aguirre Salazar and S. Reich**, "A remark on weakly contractive mappings", *Journal of Nonlinear Convex Analysis* **16**(4), pp. 767-773

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## Professional Development

- May/2025 **Directed study**, *Training to support social and emotional learning for teaching and learning Mathematics in Corpus Christi, TX, US*
- 2022-2023 **One year program**, *TPSE Leadership institute*, Leadership in transforming post-secondary education in Mathematics. Project: Building community and belonging in Mathematics at Valdosta State University through group work and reflections
- 2021 **Online Specialization**, *University of Colorado*, The Teacher and Social and Emotional Learning
- 2020 **Online Specialization**, *University of California*, Virtual Teacher
- 2020 **Online Certificate**, *University of Michigan*, Leading for Equity, Diversity and Inclusion in Higher Education
- 2020 **Online Certificate**, *University of Illinois*, An introduction to Accessibility and Inclusive Design
- 2020 **Certificate**, *McMaster University*, Professor Hippo-on-Campus Student Mental Health Education Program for Educators and Navigators
- 2018-2019 **Certificate**, *McMaster University*, Teaching and Learning Scholar
- 2018 **Certificate**, Instructional Skill Workshop (ISW)
- 2017-2018 **Certificate**, *McMaster University*, Teaching and Learning Foundations

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## Current Memberships

- 2025 **SIAM**, *Material Science, PDEs, Mathematics Education*

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## Activities

- Sep/2025 **E-talk**, *3rd UCG Virtual PDE Conference*
- April/2025 **Poster**, *Visit from Department of Energy National Labs to Texas A& M Corpus Christi, Corpus Christi, TX, US*
- April/2025 **Speaker**, *Coastal Bend Math and Stats Workshop, Laredo, TX, US*
- July/2024 **Speaker**, *BIRS Workshop "Mathematical Analysis of Soft Matter"*, Banff, Alberta, Canada
- Dec/2023 **Speaker**, *CMS Winter Meeting*, Montréal, Québec, Canada
- June/2023 **Speaker**, *"Emerging trends in Variational Models of Materials"*, Centre de Recherches Mathématiques, Montréal, Québec, Canada
- May/2023 **Attendee**, *First-Year Math and Stats in Canada*, Online
- July/2022 **Attendee**, *BIRS Workshop "Theoretical and Applied Aspects for Nonlocal Models"*, Banff, Alberta, Canada
- May/2022 **Attendee**, *"IMD 2nd Annual Conference in Mathematics and Politics"*, The institute for Mathematics and Democracy
- April/2022 **Attendee**, *"Graduate Research Symposium"*, VSU, Valdosta, Georgia, U.S

- April/2022 **Attendee**, “VSU-USG Teaching & Learning Conference regional event welcome”, VSU, Valdosta, Georgia, U.S
- April/2022 **Attendee**, *USG Teaching & Learning Conference 2022*, Valdosta, GA, U.S
- Dec/2021 **Speaker and co-organizer of a session**, *2021 CMS Winter Meeting*, online
- June/2021 **Attendee**, *BIRS Workshop Novel Mathematical Methods in Material Science: Applications to Biomaterials*, online
- May/2021 **Attendee**, *SIAM Conference on Mathematical Aspects of Material Science - MS21*, online
- April/2021 **Speaker**, *Seminar*, Virginia Commonwealth University, online
- Feb/2021 **Attendee**, *Mathematical and Computational Materials Science Workshop*, online
- Jan/2021 **Attendee**, *One nonlocal World*, online
- Dec/2020 **Attendee**, *CMS Virtual Winter Meeting*, online
- Jul/2020 **Attendee**, *CMS COVID-19 Research and Education Meeting (CCREM)*, online
- July/2020 **Speaker**, *Second Joint CAIMS-SIAM Annual Meeting*, Toronto, ON, Canada, online
- May/2020 **Attendee**, *First-Year Math and Stats in Canada: Creating Epsilons of Improvement*, University of Toronto, Mississauga, ON, Canada
- Dec/2019 **Speaker**, *SIAM Conference on Analysis of Partial Differential Equations*, La Quinta, CA, U.S
- Sep/2019 **Speaker**, *Seminar*, University of British Columbia, and the University of Victoria
- Jul/2019 **Attendee**, *UCT Teaching and Learning Conference*, University of Cape Town, South Africa
- Jun/2019 **Speaker**, *Workshop on New Trends in Variational Models: From Superconductors to Liquid Crystals*, The Fields Institute, Toronto, ON, Canada
- May/2019 **Attendee**, *First-Year University Mathematics across Canada*, University of Alberta, Edmonton, AB, Canada
- Mar/2019 **Poster**, *Workshop on Mathematical Pattern Formation*, Carnegie Mellon University, Pittsburgh, PA, U.S
- May/2018 **Attendee**, *Topics in the Calculus of Variations: Recent Advances and New Trends*, Banff, AB, Canada
- Jul/2015 **Attendee**, *XX Colombian Congress of Mathematics*, Manizales, Colombia
- Jun/2014 **Summer School**, *Partial Differential Equations and Geometric Measure Theory*, Fondazione CIME Centro Internazionale Matematico Estivo, Cetraro, Italy
- Jan- **Summer school**, *Measure Theory*, Universidade Federal de Rio de Janeiro (UFRJ), Brazil
- Feb/2010 **Summer school**, *Functional Analysis*, Instituto de Matemática Pura y Aplicada (IMPA), Rio de Janeiro, Brazil
- Jul/2008 **Attendee**, *XXII Coloquio Distrital de Matemáticas y Estadística*, Bogotá, Colombia

Jul/2007 **Attendee**, *XVI Congreso de Matemáticas*, Medellín, Colombia

## Experience

- 2024- **Faculty at the Department of Mathematics and Statistics**, *Texas A&M Corpus Christi*, in-person, Fall 2025: Statistical Modeling and Data (MATH 3345), Fundamentals of Mathematics I (SMTE 1350), Fundamentals of Mathematics III (SMTE 3352). Spring 2025: Calculus III (MATH 2415), Fundamentals of Mathematics I (SMTE 1350), Fundamentals of Mathematics II (SMTE 1351), Fundamentals of Mathematics III (SMTE 3352)
- 2023-2024 **Part-time instructor**, *Niagara College Canada*, online, Taught: Mathematics of Finance (MATH 1206)
- 2023-2024 **Limited term Assistant Professor**, *Lakehead University*, in-person, Taught: Calculus I for Engineers (MATH 1210), Calculus II for Engineers (MATH 1230), Matrix Methods and Differential Equations (MATH 2090), Vector Analysis (MATH 3012), Complex Functions and Partial Differential Equations (MATH 3032)
- 2022-2023 **Tenure-track Assistant Professor**, *Valdosta State University*, in-person or online, Taught: Analytic geometry & Calculus I (MATH 2261 in person), Analytic geometry & Calculus II (MATH 2262 in person), Introduction to Linear Algebra (MATH 2150 in person), Numerical Analysis (MATH 4561 in person), Introduction to Mathematical Modeling (MATH 1101 online)
- 2017-2021 **Instructor**, *McMaster University*, in-person or online, Introduction to Differential Equations (2C03 in-person and online), Engineering Mathematics II A (1ZB3 online)
- 2016-2021 **Teaching Assistant**, *McMaster University*, in-person or online, Calculus for Mathematics and Statistics I (1X03 online), Engineering Mathematics III (2Z03 in person), Advanced Calculus I (2X03 online), Advanced Calculus II (2XX3 in person), Introduction to Differential Equations (2C03 in person), Partial Differential Equations for Engineers (3I03 in person), and Real Analysis (3A03 in person)
- 2015-2016 **Researcher**, *Universidad Nacional de Colombia*, Researcher in the academic group "Scientific Calculus and Mathematical Modelling", Partially mentored Masters students
- 2016 **Instructor**, *Universidad de Caldas, Colombia*, in-person, Differential and Integral Calculus, Descriptive Statistics
- 2014-2016 **Instructor**, *Universidad Nacional de Colombia*, in-person, Numerical Analysis and Methods, Linear Algebra, Complex Analysis, Integral Calculus, Differential Calculus