Mariana Smit Vega Garcia

Personal information

Nationalities Brazilian and Spanish

(Spanish name: Mariana Vega Smit)

Education

- 2009 2014 **Ph.D. Mathematics**, *advisor: Prof. Arshak Petrosyan*, Purdue University, USA, Dissertation title: Optimal regularity in the lower dimensional obstacle problem with variable coefficients.
- 2006 2008 M.S. Mathematics, *advisor: Prof. Paulo Cordaro*, Universidade de Sao Paulo, Brazil, Dissertation title: Division of tempered distributions by polynomials.
- 2003 2006 B.S. Mathematics, Universidade de Sao Paulo, Brazil.

Positions

- 2024 **Professor**, Western Washington University, Bellingham, USA, primary research interest: Analysis, Partial Differential Equations.
- 2021 2024 Associate Professor, Western Washington University, Bellingham, USA.
- 2018 2021 Assistant Professor, Western Washington University, Bellingham, USA.
- 2016 2018 Acting Assistant Professor, University of Washington, Seattle, USA. mentor: Prof. Tatiana Toro
- 2014 2016 **Post-doc**, initially at Heinrich Heine University (Düsseldorf), then my position was transferred to the University of Duisburg-Essen (Essen), Germany. mentor: Prof. Georg Weiss
- 2013 2014 Teaching Assistant, Mathematics Department, Purdue Universiy, USA.
- 2011 2013 Research Assistant, Mathematics Department, Purdue University, USA.
- 2009 2011 Teaching Assistant, Mathematics Department, Purdue Universiy, USA.

Grants, Scholarships, Awards, etc

- 2024-2027 NSF Analysis RUI Grant, Title: "Topics in Free Boundary Problems", Award number: 2348739, 09/01/2024 08/31/2027. Award amount: \$208,780
- 2021-2025 **NSF Analysis Standard Grant**, *Title: "Analysis and Geometry of Free Boundaries*", Award number 2054282, 08/15/2021 - 05/31/2025. Award amount: \$190.337.00
- 2024-2027 Karen EDGE Fellowship, https://www.edgeforwomen.org/ 2024-karen-edge-fellow/.
 - 2024 NSF Conferences and Workshops in the Mathematical Sciences, Conference: Geometry of Measures and Free Boundaries, a conference in honour of Tatiana Toro, co-PI, together with Matthew Badger (co-PI), Stefan Steinerberger (co-PI), Bobby Wilson (PI), funded, DMS 2403698.

- 2024 NSF Conferences and Workshops in the Mathematical Sciences, Conference: PDE in Moab: Advances in Theory and Application, co-PI, together with Mark Allen (PI), Blair Davey (co-PI), funded, DMS 2350128.
- 2023 Simons Laufer Mathematical Sciences Institute (SLMath, formerly MSRI), 2023 Summer Research in Mathematics program, (full support to work with a collaborator in Berkeley).
- 2023 Peter J. Elich Excellence in Teaching Award, one such award is given per year to a faculty member from either the College of Humanities and Social Sciences or the College of Science and Engineering, in recognition for their exemplary teaching practices, Western Washington University.
- 2018 AWM-NSF Travel Grant.
- 2018 Nominated as an outstanding faculty member, Panhellenic community at UW.
- 2018 UW Office of Postdoctoral Affairs Travel Award, University of Washington.
- Sep-Oct 2014 Institut Mittag-Leffler Postdoctoral fellowship grant.
 - Fall 2013 AMS Grad Student Travel Grant.
 - 2012 Committee for the Education of Teaching Assistants teaching award, Purdue University.
 - 2011 Purdue University Math Department Excellence in Teaching award for 2011-12.
 - 2009 Zoltners Scholarship, Purdue University.
 - 2006–2008 Grant from the State of Sao Paulo Research Foundation, 06/53020-5.
 - 2005-2006 Grant from the State of Sao Paulo Research Foundation, 2005/50187-3.
 - 2006 Graduated with honors, Universidade de Sao Paulo.

Publications

- 2025 B. Davey & M. Smit Vega Garcia, Fractional Parabolic Theory as a High-Dimensional Limit of Fractional Elliptic Theory, arXiv:2503.13757.
- 2024 B. Davey & M. Smit Vega Garcia, Variable-coefficient parabolic theory as a high-dimensional limit of elliptic theory, arXiv:2304.10731v1, Calc. Var. 63, 40 (2024).
- 2024 M. Allen & M. Smit Vega Garcia, Two-phase almost minimizers for a fractional free boundary problem, arXiv:2308.06357, Nonlinear Differ. Equ. Appl. 31, 45 (2024).
- 2024 S. Jeon, A. Petrosyan & M. Smit Vega Garcia, Almost minimizers for the thin obstacle problem with variable coefficients, Interfaces Free Bound. 26 (2024), no. 3, pp. 321–380, arXiv:2007.07349.
- 2024 M. Smit Vega Garcia, Almgren-type monotonicity formulas, Matemática Contemporânea, Volume 61 - ICMC Summer Meeting on Differential Equations Chapter 2024, 20-48.
- 2023 N. González, P. E. Harris, G. R. Kirby, M. Smit Vega Garcia & B. E. Tenner, Mesas of Stirling permutations, arXiv:2306.12158, to appear in "Journal of Combinatorics".
- 2023 M. Smit Vega Garcia & S. Steinerberger, An Almgren monotonicity formula for discrete harmonic functions, arXiv:2311.11887.

- 2023 N. González, P. E. Harris, G. R. Kirby, M. Smit Vega Garcia & B. E. Tenner, Pinnacle sets of signed permutations, Discrete Mathematics, Volume 346, Issue 7, 2023, arXiv:2301.02628v1.
- 2023 G. David, M. Engelstein, M. Smit Vega Garcia & T. Toro, Branch Points for (Almost-)Minimizers of Two-Phase Free Boundary Problems, Forum of Mathematics, Sigma, 11, E1, arXiv:2204.05367.
- 2023 M. Smit Vega Garcia, An overview of Almost Minimizers of Bernoulli-Type Functionals, A^3N^2M : Approximation, Applications, and Analysis of Nonlocal, Nonlinear Models, Proceedings of the 50th John H. Barrett Memorial Lectures, IMA Volumes in Mathematics and its Applications, volume 165, 2023, Springer.
- 2023 M. Smit Vega Garcia, Masters' students: this one is for you, Early Career Series of the AMS Notices, September 2023, DOI: 10.1090/noti2756.
- 2021 G. David, M. Engelstein, M. Smit Vega Garcia & T. Toro, Regularity for almost-minimizers of variable coefficient Bernoulli-type functionals, Mathematische Zeitschrift, 299(3), 2131-2169 2021, arXiv:1909.05043.
- 2021 M. Akman, A. Banerjee & M. Smit Vega Garcia, On a Bernoulli-type overdetermined free boundary problem, Ann. Fenn. Math., vol. 46, no. 2, pp. 601-618, Aug. 2021, arXiv:1911.02801.
- 2020 M. Allen & M. Smit Vega Garcia, The fractional unstable obstacle problem, Nonlinear Analysis, Vol 193, April 2020, arXiv:1811.12497.
- 2018 N. Garofalo, A. Petrosyan & M. Smit Vega Garcia, The singular free boundary in the Signorini problem for variable coefficients, Indiana Univ. Math. J. 2018 67: 5, pages 1893-1934.
- 2017 A. Banerjee, M. Smit Vega Garcia & A. K. Zeller, Higher regularity of the free boundary in the parabolic Signorini problem, Calc. Var. 2017 56: 7. doi:10.1007/s00526-016-1103-7, arXiv:1601.02976.
- 2017 N. Garofalo, A. Petrosyan, C. Pop & M. Smit Vega Garcia, Regularity of the free boundary for the obstacle problem for the fractional Laplacian with drift, Annales Henri Poincaré, Analyse Non Linéaire, Volume 34, Issue 3, May-June 2017, pages 533-570, arXiv:1509.06228.
- 2016 M. Smit Vega Garcia, E. Varvaruca & G. S. Weiss, Singularities in ElectroHydroDynamic Flows, Archive for Rational Mechanics and Analysis, Nov 2016, Volume 222, Issue 2, pages 573 - 601, arXiv:1512.04798.
- 2016 N. Garofalo, A. Petrosyan & M. Smit Vega Garcia, An epiperimetric inequality approach to the regularity of the free boundary in the Signorini problem with variable coefficients, Journal de Mathématiques Pures et Appliquées, Volume 105, Issue 6, June 2016, pages 745-787, arXiv:1501.06498.
- 2014 N. Garofalo & M. Smit Vega Garcia, New monotonicity formulas and the optimal regularity in the Signorini problem with variable coefficients, Advances in Mathematics, Volume 262, Sep 2014, pages 682-750.

Advising/mentoring

- 2023 Master's advisor, *Student: Drake Woosley*, Project: "Heisenberg's Uncertainty Principle", WWU.
- 2023 Master's advisor, *Student: Sky Hester*, Project: "The Entropic Uncertainty Principle", WWU.

- 2023 Master's advisor, Student: Sara Stout, Project: "Julia Sets and Iteration Theory", WWU.
- 2022 Master's advisor, *Student: Maia Richards-Dinger*, Project: "SIR Models of Epidemics on Networks", WWU.
- 2022 Graduate Directed Independent Study advisor, Students: Zachary Wall & Caleb Stromberg, Project: "Mathematical Inequalities", WWU.
- 2021 Master's advisor, Student: Tyler Fallis, Project: "Pontryagin's Maximum Principle", WWU.
- 2021 **Senior project advisor**, *Student: Michael Dymek*, Project: "The Poincaré-Bendixon Theorem", WWU.
- 2020-2021 Master's advisor, Student: Monte Whalen, Project: "Uncertainty Principles and Gabor Frames", WWU.
 - 2020 Undergraduate project advisor, *Student: Max Cannella*, Project: "Topics in Advanced PDEs", WWU.
- 2019-2020 **Master's advisor**, *Student: Nicholas Harrison*, Project: "Geometry of Caccioppoli Sets and Perimeter Minimizers", WWU.
 - 2019 Undergraduate project advisor, *Student: Elias Bashir*, Project: "An Introduction to Mathematical reasoning", WWU.
- 2019-2020 Senior/Honor's Project advisor, Student: Michael Albert, Project: "Conformal mappings", WWU.
 - 2017 **Undergraduate project mentor**, *Student: Sebastian Torres*, Project: "Topics in Differential Equations", UW.
 - 2017 Mentor of a group, WXML: Washington Experimental Mathematics Lab.
 - 2013 Mentor of two new grad students, *AWMentor*, Department of Mathematics, Purdue University.

Talks

- 2025 An Almgren monotonicity formula for discrete harmonic functions, *PDE* Seminar, University of Minnesota.
- 2025 An Almgren monotonicity formula for discrete harmonic functions, Math Seminar, Montana State University.
- 2025 Almgren-type monotonicity formulas, *Joint Mathematics Meeting*, AMS Special Session on Analysis and Differential Equations at Undergraduate Institutions, Seattle, USA.
- 2025 What do picanha dishes have to do with differential equations?, Joint Mathematics Meeting, AWM Special Session on AWM Purdue Chapter: Over a Decade of Empowering Women in Math, Seattle, USA.
- 2024 Almost minimizers of a lower-dimensional free boundary problem, AMS Fall Western Sectional Meeting, Special Session on "Harmonic Analysis and Applications", University of California, Riverside, USA.
- 2024 Almgren-type monotonicity formulas, *PDEs in Tenerife: from theory to applications*, Universidad de La Laguna, Tenerife, Spain.
- 2024 Almgren-type monotonicity formulas, *ICMC Summer Meeting*, Special Session on "Problemas de Fronteiras livres e tópicos relacionados", ICMC Brazil (online).

- 2024 Almost minimizers of a lower-dimensional free boundary problem, New trends in Nonlinear PDEs, Physics and Geometry, Universidad de Granada, Spain.
- 2023 Almost minimizers of a lower-dimensional free boundary problem, Workshop in Analysis, Georgia Institute of Technology, Atlanta, USA.
- 2023 What connects the melting of ice, a Brazilian favorite dish, and walls?, AWM Speaker Series, University of Washington.
- 2023 Almgren-type monotonicity formulas, Conference of Ecuadorian Mathematicians in Paris.
- 2023 Almgren-type monotonicity formulas, Intersections in probability, partial differential equations and harmonic analysis, Guanajuato, México.
- 2023 Almost minimizers of a lower-dimensional free boundary problem, Regularity Theory for Free Boundary and Geometric Variational Problems III, Levico, Italy.
- 2023 Almgren type monotonicity formulas, 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Special Session on "Recent developments in Nonlinear PDEs, non-uniformly elliptic problems and related topics", Wilmington, USA.
- 2023 Branch points for (almost-)minimizers of two-phase free boundary problems, AMS Spring Central Sectional Meeting, Special Session "On the interface of geometric measure theory and harmonic analysis", University of Cincinnati.
- 2023 Almgren type monotonicity formulas, Brigham Young University, Applied Math Seminar.
- 2023 The heights of mountains, UW Math Day.
- 2023 Almgren type monotonicity formulas, Analysis and PDE seminar, University of Minnesota.
- 2023 Branch points for (almost-)minimizers of two-phase free boundary problems, Special Session on "Free Boundary Problems and Related Topics", ICMC Summer Meeting on Differential Equations - 2023 Chapter, ICMC-USP.
- 2022 Almgren-type monotonicity formulas, 2022 Pacific Rim Mathematical Association Congress, Special Session "Harmonic Functions and Laplace Eigenfunctions", Vancouver, Canada.
- 2022 Almgren-type monotonicity formulas, Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions, ICERM.
- 2022 Separation of a lower-dimensional free boundary for almost minimizers, Mathematisches Forschungsinstitut Oberwolfach, Workshop on Calculus of Variations.
- 2022 Cafe Matematico, Universidade Federal de Lavras.
- 2022 Branch points for (almost-)minimizers of two-phase free boundary problems, Regularity Theory for Free Boundary and Geometric Variational Problems II, Pisa, Italy.
- 2022 What do picanhas have to do with differential equations?, *LatinX in the Mathematical Sciences Conference*, Special Session on Harmonic Analysis and Partial Differential Equations, IPAM, USA.
- 2022 Branch points for (almost-)minimizers of two-phase free boundary problems, Center for Mathematical Modeling PDE Seminar, Universidad de Chile.

- 2022 The fractional unstable obstacle problem, *Joint Mathematics Meetings*, SIAM Minisymposium on "Nonlocal and fractional problems in Analysis and PDEs".
- 2022 On a Bernoulli-type overdetermined free boundary problem, Joint Mathematics Meetings, AMS Special Session on "Analysis in Metric Spaces (a Mathematics Research Communities Session)", USA.
- 2022 Almost-Minimizers of Two-Phase Free Boundary Problems, Nonlinear Analysis Seminar, Rutgers University.
- 2022 Almost minimizers for obstacle problems, Applied Analysis Seminar, Lousiana State University.
- 2022 The Free Boundary for Almost-Minimizers of Two-Phase Free Boundary Problems, SIAM 2022 Conference on Analysis of Partial Differential Equations, Minisymposium: Free Boundaries, Regularity Theory and Degenerate Models: Synergies and Novelties.
- 2022 Almost minimizers for obstacle problems, Trimester Program "Interactions between Geometric measure theory, Singular integrals, and PDEs", Hausdorff Research Institute for Mathematics, Bonn, Germany.
- 2022 The free boundary for almost-minimizers of two-phase free boundary problems, B_{-}^{1} : PDE from the South, Advanced School.
- 2021 **Regularity of almost minimizers with free boundary**, Special Session in "Theoretical and Applied Aspects of Nonlocal Equations", AMS Fall Central Sectional Meeting, Creighton University, USA.
- 2021 On a Bernoulli-type overdetermined free boundary problem, Special Session in "Analysis and Differential Equations at Undergraduate Institutions", AMS Fall Central Sectional Meeting, Creighton University, USA.
- 2021 Almost minimizers for obstacle problems, *Math Seminar*, Montana State University.
- 2021 Almost minimizers for obstacle problems, Special Session in "Harmonic Analysis" at the 33rd Brazilian Mathematical Colloquium.
- 2021 O que conecta o derretimento do gelo, picanha e muros?, Cibercoloquio Latinoamericano de Matemàticas.
- 2021 **Regularity of almost minimizers with free boundary**, Lisbon Webinar in Analysis and Differential Equations.
- 2021 **Regularity of almost minimizers with free boundary**, 50th Barrett Memorial Lectures: Approximation, applications and analysis of nonlocal, nonlinear models, University of Tennessee, USA.
- 2021 Almost minimizers for obstacle problems, *HA-GMT-PDE Seminar*, University of Minnesota/University of Missouri, USA.
- 2021 **Regularity of almost minimizers with free boundary**, Web Seminar on Linear PDEs and Related Topics, ICMC USP São Carlos, Brazil.
- 2021 On a Bernoulli-type overdetermined free boundary problem, *ICMC USP* São Carlos, Summer Meeting on Differential Equations, Special Session on "Linear Equations", Brazil.
- 2021 Almost minimizers for obstacle problems, *Mini-symposium "Recent Advances in Partial Differential Equations"*, SIDIM XXXVI, Seminario Interuniversitario de Investigación en Ciencias Matemáticas.

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- 2021 Almost minimizers for obstacle problems, 2021 Joint Mathematics Meetings, Special session on "Analysis and Differential Equations at Undergraduate Institutions", USA.
- 2020 Almost minimizers for obstacle problems, Geometric Analysis Seminar, CUNY, USA.
- 2020 **Regularity of almost minimizers with free boundary**, Online seminar: PUC-Rio Webinars on Analysis and PDEs, Pontifical Catholic University of Rio de Janeiro, Brazil.
- 2020 On a Bernoulli-Type Overdetermined Free Boundary Problem, Analysis/Probability seminar, University of Connecticut, USA.
- 2020 The fascinating world of metric spaces, Carleton College, USA.
- 2020 Analysis and geometry of free boundaries: recent developments, Colloquium, Oregon State University, USA.
- 2020 **Regularity of almost minimizers with free boundary**, Joint Mathematics Meeting, Special Session on Interfaces between PDEs and geometric measure theory (Associated with AMS Maryam Mirzakhani Invited Address Tatiana Toro), Denver, USA.
- 2019 Analysis and geometry of free boundaries: recent developments, Colloquium, University of Minnesota, USA.
- 2019 Analysis and geometry of free boundaries: recent developments, Applied Math And Analysis Seminar, Duke University, USA.
- 2019 Analysis and geometry of free boundaries: recent developments, Analysis Seminar, Cornell University, USA.
- 2019 Analysis and geometry of free boundaries: recent developments, Analysis Seminar, University of Toronto, Canada.
- 2019 Free boundary problems, *Mathematics Seminar*, The Abdus Salam International Centre for Theoretical Physics, Italy.
- 2019 **Regularity of almost minimizers with free boundary**, Nonlinear PDEs Meeting, KTH, Sweden.
- 2019 **The fractional unstable obstacle problem**, 32° Colóquio Brasileiro de Matemática, Special Session on Equações Diferenciais Parciais e Aplicações, IMPA, Brazil.
- 2019 **The fractional unstable obstacle problem**, Analytic and Geometric Aspects of *PDEs*, Politecnico di Milano, Italy.
- 2019 **The fractional unstable obstacle problem**, Computational and Applied Math and PDE seminar, The University of Chicago, USA.
- 2019 The fractional unstable obstacle problem, AMS Spring Eastern Sectional Meeting, Special Session on Regularity Theory of PDEs and Calculus of Variations on Domains with Rough Boundaries, University of Connecticut Hartford, USA.
- 2019 The fractional unstable obstacle problem, AMS Spring Central and Western Joint Sectional Meeting, Special Session on Topics at the Interface of Analysis and Geometry, University of Hawaii at Manoa, USA.
- 2019 **The fractional unstable obstacle problem**, *Geometry-Topology Seminar*, Oregon State University, USA.
- 2019 Free boundary problems, Colloquium, Oregon State University, USA.

- 2019 **The fractional unstable obstacle problem**, *Geometric Measure Theory and Free Boundary Problems*, Hausdorff Research Institute for Mathematics, Germany.
- 2019 Recent developments in the thin obstacle problem, Joint Mathematics Meetings, AMS Special Session on Latinx in Math, USA.
- 2018 Higher regularity of the free boundary in the parabolic Signorini problem, AMS Fall Central Sectional Meeting, Special Session on Recent Advances in Nonlinear PDE, University of Michigan, USA.
- 2018 **Recent developments in the thin obstacle problem**, Geometric Analysis Seminar, The University of Tennessee, Knoxville, USA.
- 2018 The fascinating world of metric spaces, Summer Institute for Mathematics at the University of Washington, University of Washington, USA.
- 2018 **Recent developments in the thin obstacle problem**, Nonlocal interactions in partial differential equations and geometry, Mittag-Leffler Institute, Sweden.
- 2018 Higher regularity of the free boundary in the parabolic Signorini problem, AMS Spring Eastern Sectional Meeting, Special Session on Regularity of PDEs on Rough Domains, Northeastern University, USA.
- 2018 Higher regularity of the free boundary in the parabolic Signorini problem, Ohio River Analysis Meeting 2018, University of Kentucky in Lexington, USA.
- 2017 **The singular free boundary in the Signorini problem**, *IV International Symposium on Nonlinear PDEs and Free Boundary Problems, Facultad de Ciencias Exactas y Naturales of the University of Buenos Aires, Argentina.*
- 2017 The singular free boundary in the Signorini problem, Colloquium, Western Washington University, USA.
- 2017 The singular free boundary in the Signorini problem, Analysis Seminar, University of Pennsylvania, USA.
- 2017 The singular free boundary in the Signorini problem, Analysis Seminar, Temple University, USA.
- 2017 Melting of Ice, Obstacles & Walls: An Introduction to Free Boundary Problems, Colloquium, Reed College, USA.
- 2017 The singular free boundary in the Signorini problem, AMS Fall Southeastern Sectional Meeting, Special Session on Nonlinear Elliptic Partial Differential Equations, University of Central Florida, USA.
- 2017 The singular free boundary in the Signorini problem, *Prairie Analysis Seminar* 2017, Kansas State University, USA.
- 2017 An exploration of change over time: the world of differential equations, Summer Institute for Mathematics at the University of Washington, University of Washington, USA.
- 2017 **The singular free boundary in the Signorini problem**, Mathematical Congress of the Americas, Special Session Advances in Analysis, PDE's and Related Applications, McGill University, Montreal, Canada.
- 2017 The singular free boundary in the Signorini problem, Nonlinear Analysis Conference, Notre Dame's Rome Global Gateway, Rome, Italy.
- 2017 Melting of ice, meatloaf and wall problems: an introduction to free boundary problems, *Current Topics Seminar*, University of Washington, USA.

- 2017 The singular free boundary in the Signorini problem, Rocky Mountain Partial Differential Equations, Provo, Utah, USA.
- 2017 The singular free boundary in the Signorini problem, The Seventh Ohio River Analysis Meeting, University of Cincinnati, USA.
- The obstacle problem for the fractional Laplacian with drift, Connections 2017 For Women: Harmonic Analysis, MSRI, USA.
- 2016 The singular free boundary in the Signorini problem, PDE seminar, University of Minnesota, USA.
- 2016 The obstacle problem for the fractional Laplacian with drift, AMS Fall Central Sectional Meeting, Special Session on New developments in the analysis of nonlocal operators, University of St. Thomas, USA.
- 2016 The singular free boundary in the Signorini problem, Rainwater Seminar, University of Washington, USA.
- 2016 The obstacle problem for the fractional Laplacian with drift, Analysis seminar, University of Wisconsin-Madison, USA.
- 2016 The obstacle problem for the fractional Laplacian with drift, XIII-éme Colloque Franco-Roumain de Mathématiques Appliquées, thematic session: Problèmes à frontiére libre, Alexandru Ioan Cuza University of Iasi, Romania.
- 2016 The obstacle problem for the fractional Laplacian with drift, Justus Liebig University Giessen, Germany.
- 2016 New developments in the lower dimensional obstacle problem, Ohio University, USA.
- 2016 The obstacle problem for the fractional Laplacian with drift, DM-UFSCar Conference on Analysis of PDEs, Brazil.
- 2015The obstacle problem for the fractional Laplacian with drift, 30th Colóquio Brasileiro de Matemática, thematic session: Equações Diferenciais Parciais, IMPA, Brazil.
- 2015 An epiperimetric inequality approach to the regularity of the free boundary in the Signorini Problem, Workshop for Women in Analysis and PDE, Institute for Mathematics and its Applications in Minneapolis, USA.
- 2015 New developments in the lower dimensional obstacle problem, Focus session on Free Boundary Problems, X Americas Conference, Argentina.
- 2015 An epiperimetric inequality approach to the regularity of the free boundary in the thin obstacle problem, Meeting of the European Women in Mathematics -German Chapter, Section on Analysis, Castle Rauischholzhausen, Germany.
- 2014 New developments in the lower dimensional obstacle problem, I Brazilian Congress of Young Researchers in Pure and Applied Mathematics, Partial Differential Equations Special Session, IME-USP, Brazil.
- 2014 Optimal regularity of the solution and an epiperimetric inequality approach to the regularity of the free boundary in the Signorini problem, Seminário de Equações Diferenciais, UNICAMP, Brazil.
- 2014 New developments in the lower dimensional obstacle problem, Graduate Seminar on Advanced Topics in PDE, University of Bonn, Germany.
- 2014 New developments in the lower dimensional obstacle problem, Analysis Seminar, University of Reading, UK.

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- 2014 New developments in the lower-dimensional obstacle problem with Lipschitz coefficients, Homogenization and Random Phenomenon program, Institut Mittag-Leffler, Sweden.
- 2014 New developments in the lower dimensional obstacle problem, Topics in Geometric Analysis, Albert-Einstein-Institut Potsdam, Germany.
- 2014 The lower dimensional obstacle problem, Oberseminar Analysis, Heinrich Heine University, Germany.
- 2014 Some important ideas in free boundaries, Anaylsis Mitarbeiterseminar, Heinrich Heine University, Germany.
- 2014 New monotonicity formulas and the optimal regularity in the Signorini problem with variable coefficients, Joint Mathematics Meetings, AMS Special Session on Advances in Analysis and PDEs, USA.
- 2013 New developments in the thin obstacle problem with Lipschitz coefficients, Partial Differential Equations Seminar, Ohio State University, USA.
- 2013 The Signorini problem with Lipschitz coefficients: optimal regularity and new monotonicity formulas, Faculty and Graduate Research Colloquium, Ball State University, USA.
- 2013 New monotonicity formulas and the optimal regularity in the thin obstacle problem with Lipschitz coefficients, Analysis Seminar, Temple University, USA.
- 2013 Optimal regularity in the thin obstacle problem with Lipschitz coefficients and new monotonicity formulas, Complex Analysis and Geometry Seminar, Rutgers University, USA.
- 2013 The thin obstacle problem: new monotonicity formulas and optimal regularity, PDE, Complex Analysis and Differential Geometry seminar, University of Notre Dame, USA.
- 2013 Optimal regularity in the Signorini problem with Lipschitz variable coefficients, VII Workshop on Geometric Analysis of PDEs and Several Complex Variables, Brazil.
- 2013 Optimal regularity in the Signorini problem with variable coefficients and new monotonicity formulas, AMS Western Fall Sectional Meeting, Special Session on From Harmonic Analysis to Partial Differential Equations: In Memory of Victor Shapiro, University of California, Riverside, USA.
- 2013 New developments in the thin obstacle problem with Lipschitz coefficients, Nonlinear PDEs Learning Seminar, University of California, Irvine, USA.
- 2013 New monotonicity formulas and the optimal regularity in the Signorini problem with variable coefficients, 33rd Southeastern-Atlantic Regional Conference on Differential Equations, The University of Tennessee, USA.
- 2013 Optimal regularity in the Signorini problem with Lipschitz variable coefficients, PDE seminar, Vanderbilt University, USA.
- 2013 The salad bowl problem, ants and PDEs, Student Colloquium, Purdue University.
- 2013 Optimal regularity in the Signorini problem with Lipschitz variable coefficients, Midwest WIMS, University of Illinois at Chicago, USA.
- 2013 The Grad Student Guide to PDEs, Student Colloquium, Purdue University, USA.

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- 2012 Optimal interior regularity in the obstacle problem and Hausdorff measure estimate of the free boundary, *Student PDE Seminar*, Purdue University, USA.
- 2011 **The intriguing and elusive Bernstein problem**, *Student Colloquium*, Purdue University, USA.
- 2007 The Theorems of Seidenberg-Tarski and Puiseux, III Symposium of Undergraduate and Graduate Research of IME-USP, Universidade de Sao Paulo, Brazil.
- 2005 **Convergence of the Fourier Series**, *I Symposium of Undergraduate and Graduate Research of IME-USP*, Universidade de Sao Paulo, Brazil.

Workshops, Colloquia, Schools, Meetings, Conferences

Attended

- 2025 LatMath, IPAM, USA.
- 2025 Joint Mathematics Meeting, Seattle, WA, USA.
- 2024 AMS Fall Western Sectional Meeting, University of California, Riverside, USA.
- 2024 **PDEs in Tenerife: from theory to applications**, Universidad de La Laguna, Tenerife, Spain.
- 2024 Geometry of Measures and Free Boundaries; a Conference in Honor of Tatiana Toro, University of Washington, USA.
- 2024 PDE in Moab: Advances in Theory and Applications, Moab, USA.
- 2024 Regularity Theory for Free Boundary and Geometric Variational Problems IV, Italy.
- 2024 New trends in Nonlinear PDEs, Physics and Geometry, Universidad de Granada, Spain.
- 2023 Workshop in Analysis, Georgia Institute of Technology, Atlanta, USA.
- 2023 Conference of Ecuadorian Mathematicians in Paris.
- 2023 SACNAS NDISTEM Conference, Portland, USA.
- 2023 Potential Theory: Intersections in probability, partial differential equations and harmonic analysis, Guanajuato, México.
- 2023 Regularity Theory for Free Boundary and Geometric Variational Problems III, Levico, Italy.
- 2023 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Wilmington, USA.
- 2023 AMS Spring Central Sectional Meeting, University of Cincinnati, USA.
- 2023 ICMC Summer Meeting on Differential Equations 2023 Chapter, Brazil (online).
- 2022 2022 Pacific Rim Mathematical Association Congress, Vancouver, Canada.
- 2022 Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions, *ICERM*, USA.
- 2022 Geometric aspects of nonlinear partial differential equations, Institut Mittag-Leffler (online).
- 2022 Calculus of Variations, Mathematisches Forschungsinstitut Oberwolfach, Germany.
- 2022 **Theoretical and Applied Aspects for nonlocal Models**, Banff Workshop (online).

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- 2022 Regularity Theory for Free Boundary and Geometric Variational Problems II, Pisa, Italy.
- 2022 LatinX in the Mathematical Sciences Conference, IPAM, USA.
- 2022 Joint Mathematics Meeting, USA (online).
- 2022 PNW MAA Section Meeting, Western Washington University, USA.
- 2022 SIAM PDE Conference, (online).
- 2022 Trimester Program "Interactions between Geometric measure theory, Singular integrals, and PDEs", Hausdorff Research Institute for Mathematics, Bonn, Germany (online).
- 2022 ICMC-USP Summer Meeting, (online).
- 2021 Blackwell Tapia Conference 2021, USA (online).
- 2021 Field of Dreams Conference, USA (online).
- 2021 AMS Fall Central Sectional Meeting, Creighton University, USA (online).
- 2021 15th International Conference on Free Boundary Problems: Theory and Applications 2020), Berlin, Germany (online).
- 2021 33rd Brazilian Mathematical Colloquium, (online).
- 2021 Latinx Mathematicians Research Community, American Institute of Mathematics (online), USA.
- 2021 50th Barrett Memorial Lectures: Approximation, applications and analysis of nonlocal, nonlinear models, *(online)*.
- 2021 paraDIGMS Spring Conference, (online).
- 2021 ICMC USP São Carlos Summer Meeting on Differential Equations, (online).
- 2021 Seminario Interuniversitario de Investigación en Ciencias Matemàticas, (online).
- 2021 2021 Joint Mathematics Meetings, (online).
- 2020 Summer school on geometric measure theory and partial differential equations, (online).
- 2020 One World PDE Seminar, (online). https://people.bath.ac.uk/mw2319/owpde/
- 2020 PDE Seminar via Zoom, (online). https://nguyenquochung1241.wixsite.com/qhung/post/pde-seminar-via-zoom
- 2020 **PUC-Rio Webinars on Analysis and PDEs**, (online). https://sites.google.com/view/webinarpde/home
- 2020 paraDIGMS Fall Conference, (online).
- 2020 Field of Dreams, (online).
- 2020 Advocating for Students of Color: There's More You Can Do, (online).
- 2020 Joint Mathematics Meeting, Denver, USA.
- 2019 Geometric Measure Theory and Applications: From Geometric Analysis to Free Boundary Problems, CIME Summer School, Italy.
- 2019 Nonlinear PDEs, KTH, Sweden.
- 2019 32° Colóquio Brasileiro de Matemática, IMPA, Brazil.
- 2019 Analytic and Geometric Aspects of PDEs, Politecnico di Milano, Italy.

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- 2019 AMS Spring Eastern Sectional Meeting, University of Connecticut Hartford, USA.
- 2019 AMS Spring Central and Western Joint Sectional Meeting, University of Hawaii at Manoa, USA.
- 2019 Geometric Measure Theory and Free Boundary Problems, Hausdorff Center for Mathematics, Germany.
- 2019 Joint Mathematics Meeting, Baltimore, USA.
- 2018 AMS Fall Central Sectional Meeting, University of Michigan, Ann Arbor, USA.
- 2018 Calculus of Variations, Mathematisches Forschungsinstitut Oberwolfach, Germany.
- 2018 PCMI Research Program in Mathematics 2018, Harmonic Analysis, Park City, USA.
- 2018 Nonlocal interactions in partial differential equations and geometry, *Mittag-Leffler Institute*, Sweden.
- 2018 AMS Spring Eastern Sectional Meeting, Northeastern University, Boston, USA.
- 2018 AMS Spring Western Sectional Meeting, Portland State University, Portland, USA.
- 2018 Ohio River Analysis Meeting 2018, University of Kentucky, Lexington, USA.
- 2018 Latinx in the Mathematical Sciences Conference 2018, UCLA, Los Angeles, USA.
- 2017 IV International Symposium on Nonlinear PDEs & Free Boundary Problems, Facultad de Ciencias Exactas y Naturales of the University of Buenos Aires, Argentina.
- 2017 Harmonic Analysis and Geometric measure Theory, CIRM, Luminy, France.
- 2017 AMS Fall Southeastern Sectional Meeting, Orlando, USA.
- 2017 Prairie Analysis Seminar 2017, Kansas State University, Manhattan, USA.
- 2017 Mathematical Congress of the Americas, McGill University, Montreal, Canada.
- 2017 Nonlinear Analysis Conference, Notre Dame's Rome Global Gateway, Rome, Italy.
- 2017 Calculus of Variations and Nonlinear Partial Differential Equations, University of California, Berkeley, Berkeley, USA.
- 2017 Rocky Mountain Partial Differential Equations, Provo, Utah.
- 2017 Rivière-Fabes Symposium 2017, University of Minneapolis, Minneapolis, USA.
- 2017 **The Seventh Ohio River Analysis Meeting**, University of Cincinnati, Cincinnati, USA.
- 2017 Introductory Workshop: Harmonic Analysis, MSRI, Berkeley, USA.
- 2017 Connections For Women: Harmonic Analysis, MSRI, Berkeley, USA.
- 2016 AMS Fall Central Sectional Meeting, Minneapolis, USA.
- 2016 Madison Workshop in Analysis and PDE, University of Wisconsin-Madison, Madison, USA.
- 2016 XIII-éme Colloque Franco-Roumain de Mathématiques Appliquées, Alexandru Ioan Cuza University of Iasi, Iasi, Romania.
- 2016 Recent Trends in Nonlinear Evolution Equations, CIRM, Marseille, France.

- 2016 DM-UFSCar Conference on Analysis of PDEs, UFSCar, Sao Carlos, Brazil.
- 2015 VIII Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra, Brazil.
- 2015 **30th Colóquio Brasileiro de Matemática**, Thematic session: Equações Diferenciais Parciais, IMPA, Rio de Janeiro, Brazil.
- 2015 Geometric Analysis, Free Boundary Problems and Measure Theory, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany.
- 2015 Meeting of the European Women in Mathematics German Chapter, Section on Analysis, Castle Rauischholzhausen, Germany.
- 2015 Workshop for Women in Analysis and PDE, Institute for Mathematics and its Applications, Minneapolis, MN.
- 2015 Focus session on Free Boundary Problems, X Americas Conference, Buenos Aires, Argentina.
- 2014 I Brazilian Congress of Young Researchers in Pure and Applied Mathematics, Partial Differential Equations Special Session, USP, Sao Paulo, Brazil.
- 2014 Homogenization and Random Phenomenon program, Institut Mittag-Leffler, Djursholm, Sweden.
- 2014 Joint Mathematics Meetings, Baltimore, USA.
- 2013 72nd Midwest PDE Seminar, Purdue University, West Lafayette, USA.
- 2013 AMS Western Fall Sectional Meeting, University of California, Riverside, Riverside, USA.
- 2013 ERC-Workshop on Geometric Measure Theory, Analysis in Metric Spaces and Real Analysis, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy.
- 2013 ERC School on Geometric Measure Theory and Real Analysis, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy.
- 2013 Southeastern-Atlantic Regional Conference on Differential Equations 2013, The University of Tennessee, Knoxville, USA.
- 2013 VII Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra, Brazil.
- 2013 **2013 CNA Summer School**, Topics in Nonlinear PDEs and Calculus of Variations, and Applications in Materials Science, Carnegie Mellon University, Pittsburgh, USA.
- 2013 Recent Advances in Nonlinear Partial Differential Equations, The Courant Institute, NY, USA.
- 2013 **Conference on Nonlinear Elliptic Equations**, *Rutgers University*, New Brunswick, USA.
- 2013 **71st Midwest Partial Differential Equations Seminar**, University of Michigan, Ann Arbor, USA.
- 2013 Midwest WIMS, University of Illinois at Chicago, Chicago, USA.
- 2013 **11th Annual Graduate Student Topology and Geometry Conference**, Notre Dame University, South Bend, USA.
- 2013 AWM Research Symposium 2013, Santa Clara University, Santa Clara, USA.
- 2012 Workshop for women in Analysis and PDE, IMA, Minneapolis, USA.

- 2012 **5th Symposium on Analysis and PDEs**, *Purdue University*, West Lafayette, USA.
- 2012 Concentration month on nonlinear elliptic PDEs, University of Chicago, Chicago, USA.
- 2011 68th Midwest PDE Seminar, Notre Dame University, South Bend, USA.
- 2011 7th School on Analysis and Geometry in Metric Spaces, Levico Terme, Italy.
- 2009 **III Brazilian School of Differential Equations**, Universidade de Sao Paulo, Sao Paulo, Brazil.
- 2009 Workshop on Geometric Analysis of PDE and Several Complex Variables, Serra Negra, Brazil.
- 2007 Workshop on Geometric Analysis of PDE and Several Complex Variables, Serra Negra, Brazil.
- 2007 III Symposium of Undergraduate and Graduate Research of IME-USP, Universidade de Sao Paulo, Sao Paulo Brazil.
- 2005 25 Brazilian Colloquium of Mathematics, IMPA, Rio de Janeiro, Brazil.
- 2005 I Symposium of Undergraduate and Graduate Research of IME-USP, Universidade de Sao Paulo, Sao Paulo, Brazil.

Teaching

Special mini-course

2024 For Ph.D. students called "Introduction to Free Boundary Problems", Geometry of Measures and Free Boundaries; a Conference in Honor of Tatiana Toro, University of Washington, USA.

At Western Washington University

- Fall 2024 MATH 421/521 Methods of Mathematical Analysis I, 27 students.
- Fall 2024 MATH 226 Limits and infinite Series, 19 students.
- Spring 2024 MATH 438/538 Introduction to Complex Variables, 15 students.
- Winter 2024 MATH 226 Limits and infinite Series, 17 students.
- Winter 2024 MATH 312 Proofs in Elementary Analysis, 22 students.
 - Fall 2023 MATH 304 Linear algebra, 15 students.
 - Fall 2023 MATH 226 Limits and infinite Series, 19 students.
- Spring 2023 MATH 226 Limits and infinite Series, 12 students.
- Spring 2023 MATH 312 Proofs in Elementary Analysis, 18 students.
- Winter 2023 MATH 422/522 Methods of Mathematical Analysis II, 11 students.
- Winter 2023 MATH 331 Ordinary Differential Equations, 25 students.
- Fall 2022 MATH 438/538 Introduction to Complex Variables, 19 students.
- Fall 2022 MATH 331 Ordinary Differential Equations, 27 students.
- Spring 2022 MATH 331 Ordinary Differential Equations, 16 students.
- Spring 2022 MATH 204 Elementary Linear Algebra, 16 students.
- Winter 2022 MATH 226 Limits and infinite Series, 19 students.
- Winter 2022 MATH 312 Proofs in Elementary Analysis, 16 students.
 - Fall 2021 MATH 421/521 Methods of Mathematical Analysis I, 19 students.

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Fall 2021 MATH 331 - Ordinary Differential Equations, 29 students. Spring 2021 MATH 331 - Ordinary Differential Equations, 30 students. Spring 2021 MATH 432 - Systems of Differential Equations, 25 students. Winter 2021 MATH 331 - Ordinary Differential Equations, 33 students. Winter 2021 MATH 524 - Topics in Analysis, 5 students. Fall 2020 MATH 204 - Elementary Linear Algebra, 35 students. Fall 2020 MATH 226 - Limits and infinite Series, 28 students. Spring 2020 MATH 226 - Limits and infinite Series, 24 students. Spring 2020 MATH 432 - Systems of Differential Equations, 27 students. Winter 2020 MATH 331 - Ordinary Differential Equations, 37 students. Winter 2020 MATH 204 - Elementary Linear Algebra, 30 students. Fall 2019 MATH 430/530 - Fourier Series and Applications to Partial Differential Equations, 26 students. Spring 2019 MATH 527 - Real Analysis, 17 students. Winter 2019 MATH 204 - Elementary Linear Algebra, 31 students. Winter 2019 MATH 331 - Ordinary Differential Equations, 34 students. Fall 2018 MATH 331 - Ordinary Differential Equations, 27 students. Fall 2018 MATH 224 - Multivariable Calculus and Geometry I, 35 students. At the University of Washington, as the instructor Spring 2018 MATH 309 - Linear Analysis, 100 students in 2 sections. Winter 2018 MATH 300 - Introduction to Mathematical Reasoning, 30 students. Fall 2017 MATH 424 - Fundamental Concepts of Analysis, 40 students. Winter 2017 Minicourse on Free Boundary Problems, 5 PhD students. Spring 2017 MATH 324 - Advanced Multivariable Calculus I, 50 students. Winter 2017 MATH 307 - Introduction to Differential Equations, 47 students. Fall 2016 MATH 324 - Advanced Multivariable Calculus I, 67 students (in 2 sections). At the University of Duisburg-Essen Spring 2016 An Introduction to free boundary problems, Weekly seminar, An Introduction to free boundary problems, 5 graduate students. Spring 2016 Analysis II, second analysis course for Math students, Recitation Instructor, 5 students. At Purdue University Spring 2011 MA22400 - Introductory Analysis II, Instructor, 57 students (in 2 sections).

- Fall 2010 MA15300 Algebra and Trigonometry I, Instructor, 75 students (in 2 sections).
- Spring 2010 MA16200 Plane Analytic Geometry And Calculus II, Recitation Instructor, 68 students (in 2 sections).
 - Fall 2009 MA26100 Multivariate Calculus, Recitation Instructor, 69 students (in 2 sections).

Students Evaluations from Winter 2023 onwards

All grades are averages out of 5 of each of my sections (5 being the highest).

Course	(1)	(2)
MATH 421/521 (Fall 2024)	4.9	4.8
MATH 226 (Fall 2024)	4.9	4.8
MATH 438/538 (Spring 2024)	5	4.9
MATH 312 (Winter 2024)	4.9	4.8
MATH 226 (Winter 2024)	4.9	4.6
MATH 304 (Fall 2023)	5.0	5.0
MATH 226 (Fall 2023)	4.9	4.9
MATH 226 (Spring 2023)	5.0	5.0
MATH 312 (Spring 2023)	4.8	4.9
MATH 422/522 (Winter 2023)	5.0	5.0
MATH 331 (Winter 2023)	4.9	4.9

- (1) The instructors' contribution overall to the course was:
- (2) The instructor's effectiveness in teaching the subject matter was:

Students Evaluations for Fall 2022

All grades are averages out of 5 of each of my sections (1 being the highest).

Course	(1)	(2)
MATH 538 (Fall 2022)	1.0	1.0
MATH 438 (Fall 2022)	1.2	1.2
MATH 331 (Fall 2022)	1.1	1.1

- (1) The instructors' contribution overall to the course was:
- (2) The instructor's effectiveness in teaching the subject matter was:

Students Evaluations for Winter, Spring 2022

All grades are averages out of 5 of each of my sections (5 being the highest).

Course	(1)
MATH 204 (Spring 2022)	5
MATH 331 (Spring 2022)	4.85
MATH 226 (Winter 2022)	4.81
MATH 312 (Winter 2022)	4.92

(1) Overall the instructor's contribution was:

Students Evaluations up to Winter 2020

All grades are means out of 5 of each of my sections (5 being the highest).

Course	(1)	(2)
MATH 331 (Winter 2020)	4.81	4.88
MATH 204 (Winter 2020)	4.59	4.78
MATH 430/530 (Fall 2019)	4.90	4.75
MATH 527 (Spring 2019)	4.80	4.82
MATH 331 (Winter 2019)	4.81	4.61
MATH 204 (Winter 2019)	4.46	4.32
MATH 331 (Fall 2018)	4.55	4.30
MATH 224 (Fall 2018)	4.28	3.92

- (1) The instructors' contribution overall to the course was:
- (2) The instructor's effectiveness in teaching the subject matter was:

Students Evaluations at UW

All grades are adjusted combined medians out of 5 of each of my sections.

Course	(1)	(2)
MATH 324 (Fall 2016)	4.8, 5.0	4.8, 5.0
MATH 307 (Winter 2017)	5.0	5.0
MATH 324 (Spring 2017)	5.0	5.0
MATH 424 (Fall 2017)	5.0	5.0
MATH 300 (Winter 2018)	5.0	5.0
MATH 309 (Winter 2018)	4.9, 5.0	4.9, 4.9

- (1) The instructors' contribution to the course was:
- (2) The instructor's effectiveness in teaching the subject matter was:

Students Evaluations at Purdue

All grades are group medians out of 5 of each of my sections.

Course	(1)	(2)	(3a)	(3b)
MA26100	4.3, 4.5	4.4, 4.6	4.2, 4.3	N/A
MA16200	4.8, 5.0	4.8, 4.9	4.7, 4.9	N/A
MA15300	4.4, 4.8	4.8, 4.9	N/A	4.7, 4.8
MA22400	4.6, 4.7	4.9, 4.9	N/A	4.8, 4.8

- (1) Overall, I rate this instructor as:
- (2) My instructor was well-prepared and organized in class:
- (3a) My Recitation Instructor helped me understand the material:
- (3b) My instructor gave clear and helpful explanations:

Participation in academic committees

- 2025 **PhD external referee for Giovanna Andreucci**, Università di Roma Sapienza, Italy.
- 2024 Master's committee of Darmon Ghanbari, WWU, USA.
- 2024 Master's committee of Gianluca Gisolo, WWU, USA.
- 2024 Senior project committee of Owen Montefisher, WWU, USA.
- 2023 Master's committee of Leyia Johnson, WWU, USA.
- 2023 Master's committee of Carinna Ostrovsky-Snider, WWU, USA.
- 2023 Master's committee of Michael Dymek, WWU, USA.
- 2023 Master's committee of Gideon Tveten, WWU, USA.
- 2022 Senior project committee of Kassio Halsinger, WWU, USA.
- 2022 Master's committee of Zach Wall, WWU, USA.
- 2021 Master's committee of Will Murray, WWU, USA.
- 2021 Master's committee of Matthew Scoggins, WWU, USA.
- 2020 Master's committee of David Seaman, WWU, USA.
- 2019 Master's committee of Jordan McCaslin, WWU, USA.

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2016 Qualifying exam committee of Giane Rampasso, UNICAMP, Brazil.

Service for the Profession

Grant Proposal Reviewing

- 2025 NSF reviewer and panelist, 2 occasions.
- 2021-2024 Banff International Research Station reviewer, evaluated the equity, diversity and inclusion merit of proposals.
 - 2024 NSF Committee of Visitors.
 - 2024 Swiss National Science Foundation reviewer, SNSF Swiss Postdoctoral Fellowships.
 - 2023 **NSF** reviewer and panelist.
 - 2022 NSF reviewer and panelist, 3 occasions.
 - 2021 NSF reviewer and panelist, 3 occasions.
 - 2020 NSF reviewer and panelist.
 - 2019 NSF reviewer and panelist. Conference/Meeting organization
 - 2025 Co-organizer of the special session "Harmonic Analysis, PDEs & Differential Geometry", 2025 Latinx in the Mathematical Sciences Conference (LatMath).
 - 2024 Co-organizer of the AWM STEM Symposia, SACNAS NDISTEM Conference.
 - 2024 Co-organizer of the special session "Lower dimensional free boundary problems" in the "Free Boundary Problems: Theory and Applications" conference, Brazil.
 - 2024 Co-organizer of "Geometry of Measures and Free Boundary Regularity: A conference in honor of Tatiana Toro", University of Washington.
 - 2024 Co-organizer of "PDE in Moab: Advances in Theory and Applications".
 - 2023 Co-organizer of the AWM STEM Symposia, SACNAS NDISTEM Conference.
 - 2023 Organizer of Jumpstart 2023, Math workshop for undergrads interested in Math, Western Washington University, https://sites.google.com/wwu.edu/ jumpstart2023.
 - 2023 Co-organizer of the AWM-MAA Invited Paper Session, Geometric Measure Theory, Harmonic Analysis, and Partial Differential Equations, MAA MathFest.
 - 2023 Co-organizer of the Special Session "Geometric and Analytic methods in **PDE**", AMS Sectional Meeting at the University of Cincinnati.
 - 2023 Co-organizer of the Special Session "Free Boundary Problems and Related Topics", ICMC-USP Summer Meeting.
 - 2022 Co-organizer of the 2022 PNW MAA Section Meeting, Western Washington University.
 - 2022 Co-organizer of the Special Session "Recent trends in free boundary problems and related topics", ICMC-USP Summer Meeting.
 - 2020 Co-organizer of the AMS Special session "Free Boundary Problems Arising in Applications", AMS Fall Western Sectional Meeting, University of Utah.

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- 2021 **Co-organizer of a minisimposium in free boundary regularity**, 15th International Conference on Free Boundary Problems: Theory and Applications 2020, Humboldt University, Berlin, Germany.
- 2019 Co-organizer of the AMS Special Session on "Interactions between Geometric Measure Theory, PDE, and Harmonic Analysis", AMS Spring Central and Western Joint Sectional Meeting, University of Hawaii at Manoa.
- 2018 Co-organizer of the Special Session "Tópicos Atuais de Análise Global e Equações Diferenciais Parciais", III Congresso Brasileiro de Jovens Pesquisadores em Matemática Pura, Aplicada e Estatística, Parana, Brazil.
- 2018 Co-organizer of the AMS Special Session on "Geometric Measure Theory and Partial Differential Equations", AMS Spring Western Sectional Meeting, Portland State University.

Association for Women in Mathematics (AWM)

- 2023-2026 AWM MathFest Committee.
- 2020-2025 AWM Essay Contest judge.
- 2021-2024 **AWM SACNAS Liaison Committee**, (SACNAS is the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science).
 - 2024 AWM/MAA Playing Cards project "Notable Women in Mathematics" set 3, Reviewer Committee.
- 2020-2023 AWM Media Committee.
 - 2022 AWM/MAA Playing Cards project "Notable Women in Mathematics" sets 1 & 2, Bio Writer, Selection Committee, Data Selection Committee.
- 2022-now Mentor for the AWM Mentor Network.
- 2011-2012 Vice-president/founding member of the Purdue Chapter of the Association for Women in Mathematics, Purdue University.
 - 2012 Article at the AWM Newsletter, N. Hernandez Ceron, L. Mrad, M. Smit Vega Garcia & Katia Vogt Geisse, Student Chapter Column, Volume 42, Number 5, September-October 2012.

Lathisms/SACNAS

- 2024 "Cafe con Leche" talk as part of the Lathisms Lecture series, "The melting of ice, a Brazilian favourite dish, and partial differential equations" and chat, https://www.youtube.com/watch?v=P8EkEQ7n3cE.
- 2023 Host of a "Cafe con Leche" event, live/virtual informal chat with Dr. Carrie Diaz Eaton about their research.
- 2022 AMS Latinxs & Hispanics in the Mathematical Sciences Poster I, showcased in the poster.
- 2019-2022 WWU SACNAS Chapter, Faculty advisor and panelist, events "REU + summer internship resume workshop" "Research Experiences for STEM Undergrads info session + Workshop," "Internship Application Workshop," "Info Session: STEM Internships and Research," "STEM into Grad School," "REU in STEM workshop".
 - 2018 **2018 Lathisms Calendar**, the calendar showcases the contributions of Latinxs and Hispanics in Mathematical Sciences, http://lathisms.org/documents/ Mariana-Smit-Vega-Garcia.pdf.IwasfeaturedonOctober6th.

Other mentoring

- 2025 Panel "Graduate School: training to be a research mathematician", LatMath.
- 2020-now **Mentor**, The National Alliance for Doctoral Studies in the Mathematical Sciences (Math Alliance).
- 2024, 2025 Faculty mentor, π -day events at the Family Partnership Program in Bellingham serving students from K-8.
 - 2021 Undergraduate Poster Session judge, Mathematical Association of America (MAA), Joint Mathematics Meetings.
- 2017, 2018, Talks given at the Summer Institute for Mathematics at the University of
 2021 Washington (SIMUW), a Summer camp for high school students.

Editorial work

- 2025-2029 Editorial Board, Proceedings of the AMS.
 - 2022- Editorial Board, Analysis and Mathematical Physics.
 - 2023- Assistant Editor, Problems Section of Mathematics Magazine.

Acting Editor, Topical Collection for the journal SN Partial Differential Equations and Applications.

Reviewer for

Notices of the AMS.

Universidad de Puerto Rico-Rio Piedras Campus' Institutional Research Fund.

Mathematische Annalen.

Advances in Nonlinear Analysis.

Analysis and Mathematical Physics.

Communications in Mathematical Physics.

Swiss National Science Foundation.

International Mathematics Research Notices.

Inventiones Mathematicae.

Nonlinear Analysis.

Journal of Functional Analysis.

Journal of Differential Equations.

Discrete and Continuous Dynamical Systems.

Calculus of Variations and Partial Differential Equations.

Duke Math Journal.

Mathematika.

Mathematics in Engineering.

Advances in Mathematics.

Analysis & PDE.

Journal of Mathematical Analysis and Applications.

Acta Mathematica Scientia.

De Gruyter Series in Nonlinear Analysis and Applications. Matemática Contemporâea - ICMC Summer Meeting 2022. Mathscinet.

Zentralblatt MATH.

Service for the University and College of Science and Engineering

- 2023-2024 Strategic Planning Task Force, College of Science and Engineering, WWU.
 - 2024 Peter J. Elich Excellence in Teaching Award Committee, WWU.
- 2020-2024 Selection of applicants, Washington NASA Space Grant Consortium Summer Research Internship, WWU.
- 2021-2025 Academic Honesty Board, WWU.
 - 2022 Faculty advisor, WWU SACNAS Chapter event "REU + summer internship resume workshop".
 - 2021 College of Science and Engineering Personnel Committee, Math representative for the ProLeave applications.
- 2019-2021 College of Science and Engineering Faculty Ambassador for the department of Mathematics, WWU.
- 2021-2022 Faculty advisor of the WWU Chapter of SACNAS, WWU.
 - 2021 **Panelist/Advisor**, WWU SACNAS Chapter event "Research Experiences for STEM Undergrads info session + Workshop".
 - 2020 Office of Research and Sponsored Programs, Selection committee for a new staff member to work with the Office of Research and Sponsored Programs, WWU.
 - 2020 Faculty adviser, WWU SACNAS Chapter event "Internship Application Workshop".
 - 2019 **Panelist**, WWU SACNAS Chapter event "Info Session: STEM Internships and Research".
 - 2019 Panelist, WWU SACNAS Chapter event "STEM into Grad School".
 - 2019 Faculty advisor, WWU SACNAS Chapter event "REU in STEM workshop".

• Service for the Department

- 2022- Chair of the Curriculum Committee, WWU.
- 2024 Co-organizer of the Fall 2024 Grad School Application Workshop, WWU.
- 2022 MATH 331 Curriculum development, Summer curriculum development work funded by the Advancing Equity and Excellence in Science program (AEES), WWU.
- 2021 Field of Dreams Conference Grad School Fair, ran WWU Math department's booth, with David Hartenstine.
- 2021 WAM graduate school information session, Panelist, WWU.
- 2021 Co-writer of the Winter Math qualifying exam, WWU.
- 2021 Selection Committee, Math Fellows, WWU.
- 2020 Selection Committee, undergraduate Math scholarships, WWU.
- 2020 Selection Committee, Math Fellows, WWU.
- 2020 Selection Committee, Bond and Greene awards for graduate students, WWU.
- 2020 **Development of an undergraduate research program proposal**, *jointly with* Dr. K. Noguchi and students A. Uribe, P. Carroll and A. Kuhn, WWU.
- 2019-2020 Subcommittee to rethink graduate admissions, WWU.
 - 2019 Elected students to receive an AWM Free Student Membership, WWU.

- 2019 Sub-committee to rethink the choice of textbook for MATH 331, Mathematics Department, Western Washington University.
- 2020- Undergraduate Committee, WWU.
- 2018- Graduate Committee, WWU.
- 2018- Curriculum Committee, WWU.
- 2018 Co-writer of a new Vision and Mission Statement, WWU.
- $2016\ \text{--}\ 2018\ \text{--}\ \text{Co-creator/co-organizer of a mentoring program for grad students},\ UW.$
 - 2013 Blackboard facilitator, Purdue University.
 - 2013 Co-organizer of the Recruitment Weekend, Purdue University.
- 2012 2013 Graduate Student representative, Purdue University.
 - 2012 Co-creator/co-organizer of a mentoring program for new grad students, the AWMentor, Purdue University.
 - 2011 Screener of new TAs/session leader in the Orientation week for new TAs, Purdue University.
- 2011 2012 Vice president/founding member of the Purdue Chapter of the Association for women in Mathematics, *Purdue University*.

Seminars organized

- 2017 2018 Co-organizer of the Rainwater Seminar, Dept of Math, UW.
 - 2013 Co-organizer of the Graduate Research Day, Dept of Math, Purdue University.
- 2012 2013 Co-organizer of the Bridge to Research Seminar, Dept of Math, Purdue University.
- 2011 2013 Co-organizer of the Student Colloquium, Dept of Math, Purdue University.
- 2012 2013 Co-organizer of the Basic Notions Seminar, Dept of Math, Purdue University.

Professional development

- 2022 The Inclusive STEM Teaching Project, edX, NSF project, 6 week course.
- 2020 Online Equal Opportunity & Affirmative Action Training Resources for Search Committees, Western Washington University.
- 2020 Engaging Students in Online Environments, Western Washington University.
- 2020 Blended/Online Course Revision and Redesign, Western Washington University.
- 2020 Canvas Advanced Applications, Western Washington University.
- 2020 Zoom Advanced Applications (for faculty), Western Washington University.
- 2020 Principles of Online Teaching and Learning 1, Western Washington University.
- 2019 **Diversity & Inclusion in the Modern Workplace**, Western Washington University.
- 2019 Managing Bias, Western Washington University.
- 2018 Sexual Harassment Prevention, Western Washington University.
- 2018 **QPR Suicide Prevention Gatekeeper program**.
- 2009 Teaching workshop: Being a Teaching Assistant Duties, responsibilities, etc, Department of Mathematics, Purdue University.

- 2009 **Teaching workshop: Involving students during class**, Department of Mathematics, Purdue University.
- 2009 Teaching workshop: Evaluating your students, grading, writing quizzes, etc, Department of Mathematics, Purdue University.
- 2009 **Teaching workshop: Deal well with problems**, Department of Mathematics, Purdue University.
- 2009 Teaching workshop: Getting ready to teach Algebra on your own, Department of Mathematics, Purdue University.
- 2009 **Teaching workshop: Writing and grading quizzes**, Department of Mathematics, Purdue University.
- 2009 **Teaching workshop: Conducting recitation**, Department of Mathematics, Purdue University.
- 2009 Teaching Assistant Workshop, Purdue University.

References

- Professor Tatiana Toro
 Position: Professor of Mathematics at the University of Washington
 e-mail: toro@math.washington.edu
 phone: +1 206-543-1173
- Professor Georg Weiss
 Position: Professor of Mathematics at the University of Duisburg-Essen
 e-mail: georg.weiss@uni-due.de
 phone: +49 0201/183-7429
- Professor Arshak Petrosyan
 Position: Professor of Mathematics at Purdue University
 e-mail: arshak@math.purdue.edu
 phone: +1 765 49-41932
- Professor David Collingwood (concerns teaching) Position: Professor of Mathematics at the University of Washington e-mail: colling@u.washington.edu phone: +1 206-543-1905
 Dr. Rita Saerens (concerns teaching)
- ODT. Rita Saerens (concerns teaching) Position: Former Assistant to the Head, Purdue University e-mail: saerens@purdue.edu

Memberships

Member of the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science.

Member of the American Mathematical Society.

Languages

English	fluent	
Portuguese	fluent	native from Brazil
German	advanced level	
French	intermediate level	
Spanish	intermediate level	

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Proficiency in English

Oct 2008 **TOEFL iBT**, *Score: 117/120*, Reading 30, Listening 30, Speaking 29, Writing 28. Jan 2008 **CPE (Certificate of Proficiency in English)**, *Score: A*.

Videos/News

- 2022 Video, of my talk "Almgren type monotonicity formulas", given at the Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions workshop at ICERM, available at https://icerm.brown.edu/video_archive/?play=3006.
- 2022 Video, of my talk "Branch points for (almost)-minimizers of two-phase free boundary problems", given at the PDE Seminar at the Universidad de Chile, available at https://www.youtube.com/watch?v=7F_1MwaAUWs.
- 2022 Video, of my talk "The free boundary for almost-minimizers of two-phase free boundary problems", given at the $B^1_:$ PDE from the South Advanced School, available at https://www.youtube.com/watch?v=WfW_-zLsE2E.
- 2021 Article, on Western Today about my NSF grant 2054282, available at https://westerntoday.wwu.edu/news/ nsf-awards-new-grant-to-maths-mariana-smit-vega-garcia.
- 2021 Video, of my talk "O que conecta o derretimento do gelo, picanha e muros?", given online at the Cibercoloquio Latinoamericano de Matemàticas, available at https: //www.youtube.com/watch?v=dtr9dT6SF2A&t=3346s.
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