Cecilia F. Mondaini

Curriculum Vitae

Mathematics Department
Drexel University
15 S 33rd St
Philadelphia, PA 19104

Office: Korman 265
Phone: (215) 895-6823
E-mail: cf823[at]drexel.edu

Research Interests

Analysis of partial differential equations, fluid dynamics, Navier-Stokes equations, stochastic processes, long-time statistics, ergodicity, Markov Chain Monte Carlo algorithms, Bayesian inverse problems, data assimilation, statistical solutions of evolution equations.

Employment history

Sep 2024 - present	**Associate Professor** Drexel University, Philadelphia, PA.
Sep 2019 - Aug 2024	**Assistant Professor** Drexel University, Philadelphia, PA.
Feb 2018 - Aug 2019	**Postdoctoral Fellow** Tulane University, New Orleans, LA.
Jun 2017 - Jan 2018	**Postdoctoral Research Associate** Texas A&M University, College Station, TX.
Jan 2017 - May 2017	**Postdoctoral Fellow** ICERM/Brown University, Providence, RI.
Mar 2015 - Dec 2016	**Postdoctoral Research Associate** Texas A&M University, College Station, TX.
Feb 2015	**Visiting Scholar** Instituto de Ciencias Matematicas - ICMAT, Madrid, Spain.

Education

2010-2014	**D.Sc. in Mathematics** Federal University of Rio de Janeiro, RJ, Brazil. Thesis title: *Abstract framework for the theory of statistical solutions*. Advisor: Ricardo Rosa. Scholarship: CNPq.
2008-2010	**M.Sc. in Mathematics** Federal University of Rio de Janeiro, RJ, Brazil. Dissertation title: *An abstract formulation for the study of statistical solutions of the Navier-Stokes equations*. Advisor: Ricardo Rosa. Scholarship: CNPq, 2008; FAPERJ, 2009.
2005-2007	**B.S. in Mathematics, *Magna Cum Laude*** Federal University of Rio de Janeiro, RJ, Brazil. Junior Research Projects: *Generalized solutions of the wave equation*, 2006; *Uniform stabilization for models of vibrations of beams*, 2007. Advisor: Ademir Pazoto. Scholarship: CNPq-PIBIC.

Funding

2023-2028 NSF CAREER Award, DMS-2239325, $481,439.
Title: CAREER: Analysis of uncertainty, long-time statistics and singularity formation in fluid flow models.

2020-2023 NSF Applied Mathematics Grant, DMS-2009859, $206,895.
Title: Determining degrees of freedom in nonlinear complex systems: deterministic and stochastic applications.

Honors and Awards

2015 AWM-NSF Travel grant.

2015 Nomination to CAPES Best Thesis Prize, UFRJ.

2009 Bolsa Nota 10 - FAPERJ (Special Master's Scholarship).

2006 Honorable Mention for work presented at "XXVIII Jornada Giulio Massarani de Iniciação Científica, Artística e Cultural", UFRJ. Title: *Generalized solutions of the wave equation*.

Teaching

2019 - present **Drexel University**, *Instructor*

- Applied Probability and Statistics I (MATH 510), Fall 2023.
- Applied Probability and Statistics II (MATH 511), Winter 2024.
- Calculus I (MATH 121), Fall 2020.
- Differential Equations (MATH 210), Fall 2019, Fall 2022, Fall 2023, Winter 2024.
- Partial Differential Equations I (MATH 620), Winter 2022.
- Partial Differential Equations II (MATH 621), Spring 2020.
- Probability and Statistics I (MATH 311), Fall 2021.
- Stochastic Differential Equations (MATH T880), Winter 2021, Spring 2023.

2018 **Tulane University**, *Instructor*
Ordinary Differential Equations (MATH 4240/6240), Fall 2018.

2016 **University of Kansas**, *Teaching assistant*
Teaching assistant during PI Summer Graduate Program - Mathematics and Climate, July 18th - August 04th. Group Project: *Data assimilation in reduced models*.

2013-2014 **Federal University of Rio de Janeiro**, *Instructor*

- Calculus I (MAC 128), 2013.1, 2013.2, 2014.1, 2014.2.
- Calculus II (MAC 128), 2013.1, 2013.2, 2014.1.
- Calculus III (MAC 238), 2014.2.

2009 **Federal University of Rio de Janeiro**, *Teaching Assistant*
Differential Equations (MAE 127), 2009.1.

Publications and Preprints

[1] *On the convergence of trajectory statistical solutions* (with A. Bronzi and R. Rosa), *submitted*, arXiv.

[2] *Sacred and Profane: the Involutive Theory of MCMC Explains Helpful Hamiltonian Hacks* (with N.E. Glatt-Holtz, A.J. Holbrook, J.A. Krometis, and A. Sheth), to appear as a chapter in Brooks, S., Gelman, A., Jones, G.L., and Meng, X.L. (Eds.). Handbook of Markov Chain Monte Carlo, Second Edition (2024): Chapman & Hall/CRC.

[3] On the locally self-similar blowup for the generalized SQG equation (with A. Bronzi and R. Guimaraes), Journal of Differential Equations 415 (2025), pp. 266–302.

[4] *Parallel MCMC algorithms: theoretical foundations, algorithm design, case studies* (with N.E. Glatt-Holtz, A.J. Holbrook, and J.A. Krometis), Transactions of Mathematics and its Applications 8 (2024), no. 2 (60 pp.).

[5] *Long-term accuracy of numerical approximations of SPDEs with the stochastic Navier-Stokes equations as a paradigm* (with N.E. Glatt-Holtz), IMA Journal of Numerical Analysis (2024), https://doi.org/10.1093/imanum/drae043.

[6] *On the accept-reject mechanism for Metropolis-Hastings algorithms* (with N.E. Glatt-Holtz and J.A. Krometis), Annals of Applied Probability 33 (2023), no. 6B, pp. 5279-5333.

[7] *Mixing Rates for Hamiltonian Monte Carlo Algorithms in Finite and Infinite Dimensions* (with N.E. Glatt-Holtz), Stochastics and Partial Differential Equations: Analysis and Computations (2021), pp. 1–74.

[8] *Uniform-in-time error estimates for fully discrete numerical schemes of a data assimilation algorithm* (with H. Ibdah and E.S. Titi), IMA Journal of Numerical Analysis 40 (2020), no. 4, pp. 2584–2625.

[9] *Downscaling data assimilation algorithm with applications to statistical solutions of the Navier-Stokes equations* (with A. Biswas, C. Foias, and E.S. Titi), Ann. Inst. H. Poincaré Anal. Non Linéaire 36 (2019), no. 2, pp. 295–326.

[10] *Uniform-in-time error estimates for the Postprocessing Galerkin method applied to a data assimilation algorithm* (with E.S. Titi), SIAM J. Numer. Anal. 56 (2018), no. 1, pp. 78–110.

[11] *A discrete data assimilation scheme for the solutions of the 2D Navier-Stokes equations and their statistics* (with C. Foias and E.S. Titi), SIAM J. Appl. Dyn. Syst. 15 (2016), no. 4, pp. 2109–2142.

[12] *Abstract framework for the theory of statistical solutions* (with A. Bronzi and R. Rosa), J. Differential Equations 260, no. 12, 8428–8484 (2016).

[13] *Trajectory statistical solutions for three-dimensional Navier-Stokes-like systems* (with A. Bronzi and R. Rosa), SIAM J. Math. Anal. 46, 1893–1921 (2014).

[14] *Entropy measures based method for the classification of protein domains into families and clans* (with N. Carels and R.P. Mondaini), BIOMAT 2013, World Sci. Publ. (2014), pp. 209–218.

Invited Talks

Oct 2024 *On the locally self-similar blowup for the generalized SQG equation*, Analysis Seminar, Temple University, October 28, 2024.

Sep 2024 *An involution framework for Metropolis-Hastings algorithms on general state spaces and applications*, Penn/Temple Probability Seminar, September 17, 2024.

July 2024 *Approximating the long-time statistics of SPDEs: general results and applications*, 44th Dynamics Days Europe, Minisymposium on Geophysical and Fluid Modeling with PDEs, Bremen, Germany, July 29 - August 2, 2024.

Apr 2024 *Approximating the long-time statistics of SPDEs: general results and applications*, Analysis Seminar, U Penn, Philadelphia, PA, April 25, 2024.

Apr 2024 *On the locally self-similar blowup for the generalized SQG equation*, Spring Eastern Sectional Meeting, Special Session on Stochastic Methods in Fluid Mechanics, Howard University, Washington, DC, April 6-7, 2024.

Mar 2024 *On the locally self-similar blowup for the generalized SQG equation*, Spring Southeastern Sectional Meeting, Special Session on Fluids: Analysis, Applications, and Beyond, FSU, Tallahassee, FL, March 23-24, 2024.

Mar 2024 *Long-time accuracy of numerical approximations of SPDEs*, Spring Southeastern Sectional Meeting, Special Session on Stochastic Analysis and Applications, FSU, Tallahassee, FL, March 23-24, 2024.

Feb 2024 *A general involution framework for Metropolis-Hastings algorithms and applications to Bayesian inverse problems*, SIAM UQ24, Minisymposium "Mostly Bayesian Methods for Uncertainty Quantification and Inverse Problems", Trieste, Italy, February 27 - March 1, 2024.

Nov 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, PDE/Applied Math Seminar, Indiana University, November 6th, 2023.

Oct 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, VI Workshop on Fluids and PDE, Campinas, Brazil, October 23-27, 2023.

Oct 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, 1st Annual Meeting SIAM-NNP, Special Session "Dynamics, Phase Transitions and Equilibria in Stochastic Systems", Newark, NJ, October 20-22, 2023.

Oct 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, 8th Annual Meetings of SIAM Central States Section, Special Session "Recent Developments in Deterministic and Stochastic PDEs: Theoretical and Numerical Analyses", Lincoln, NE, October 7-8, 2023.

Aug 2023 *An involution framework for Metropolis-Hastings algorithms on general state spaces*, ICIAM 2023, Special Session "Data-driven and physics-informed techniques in Data Assimilation", Tokyo, Japan, August 20-25, 2023.

June 2023 *An involution framework for Metropolis-Hastings algorithms on general state spaces*, FoCM 2023, Workshop "Mathematical Foundations of Data Assimilation and Inverse Problems", Paris, France, June 12-14, 2023.

May 2023 *A General Involution Framework for Metropolis-Hastings Algorithms and Applications to Bayesian Inverse Problems*, SIAM DS23, Special Session on "Rigorous and Computational Studies of Data Assimilation and Parameter Estimation", Portland, OR, May 14-18, 2023.

May 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, 48th Annual Spring Lecture Series - Transport, Mixing, and Fluids; University of Arkansas, AK, May 5-7, 2023.

Apr 2023 *Uniform-in-time numerical approximation of SPDEs: general result and application*, AMS Spring Central Sectional Meeting, Special Session "Recent Developments in the Study of Fluid flows, Turbulence, and its Applications", University of Cincinnati, Cincinnati, OH, April 15-16, 2023.

Mar 2023 *Long-time statistics of SPDEs: mixing and numerical approximation*, Second Drexel Waves Workshop, Drexel University, Philadelphia, PA, March 30-31, 2023.

Mar 2023 *On the locally self-similar blowup for the generalized SQG equation*, AMS Spring Southeastern Sectional Meeting, Special Session "Qualitative Aspects of Nonlinear PDEs: Well-posedness and Asymptotics", Georgia Tech, Atlanta, GA, March 18-19, 2023.

Mar 2023 *Uniform-in-time numerical approximation of SPDEs: general result and application*, AMS Spring Southeastern Sectional Meeting, Special Session "Stochastic Analysis and its Applications", Georgia Tech, Atlanta, GA, March 18-19, 2023.

Oct 2022 *An involution framework for Metropolis-Hastings algorithms on general state spaces*, AMS Fall Western Sectional Meeting, Special Session "Recent Advances in the Theory of Fluid Dynamics", University of Utah, UT, Oct 22-23, 2022.

Oct 2022 *An involution framework for Metropolis-Hastings algorithms on general state spaces*, AMS Fall Southeastern Sectional Meeting, Special Session "Deterministic and Stochastic PDEs: Theoretical and Numerical Analyses", University of Tennessee at Chattanooga, TN, Oct 15-16, 2022.

Sep 2022 *An involution framework for Metropolis-Hastings algorithms on general state spaces*, INI Satellite programme "Geophysical fluid dynamics; from mathematical theory to operational prediction", University of Reading, UK, Aug 30 - Sep 23, 2022.

June 2022 *Mixing and weak convergence of numerical approximations of SPDEs*, AWM Research Symposium, Special Session "Deterministic and Probabilistic Approaches for Nonlinear PDEs", University of Minnesota, June 16-19, 2022.

April 2022 *Long-term accuracy of numerical approximations of SPDEs*, 12th IMACS International Conference, Special Session "Nonlinear Waves in Parabolic Evolution Problems", University of Georgia, March 30-April 1, 2022.

Mar 2022 *Long-term accuracy of numerical approximations of SPDEs*, Thematic Session in Analysis, XI Mathematics Summer School, UFS, Brazil, March 7-9, 2022, online.

Feb 2022 *Long-term accuracy of numerical approximations of SPDEs*, ICMC Summer Meeting on Differential Equations, Special Session on Fluid Dynamics, Jan 31 – Feb 2, 2022; USP, São Carlos, Brazil, online.

Oct 2021 *Long-term accuracy of numerical approximations of SPDEs*, Applied/PDE/Data Science seminar, UC Santa Barbara, Oct 15th, 2021, online.

Oct 2021 *Long-term accuracy of numerical approximations of SPDEs*, Analysis seminar, Oregon State University, Oct 4th, 2021, online.

Sep 2021 *Long-term accuracy of numerical approximations of SPDEs*, V Workshop on Fluids and PDEs, Unicamp, Brazil, Sep 20th - Oct 1st, 2021, online.

Apr 2021 *Rates of convergence to statistical equilibrium: a general approach and applications*, Probability, Analysis and Data Science Seminar, Iowa State University, April 7th, 2021, online.

Apr 2021 *Rates of convergence to statistical equilibrium: a general approach and applications*, Applied and Computational Math Seminar, UW Madison, April 2nd, 2021, online.

Mar 2021 *Rates of convergence to statistical equilibrium: a general approach and applications*, Center for Nonlinear Analysis Seminar, CMU, March 22nd, 2021, online.

Mar 2021 *Numerical approximation of the invariant measure for 2D stochastic Navier-Stokes equations*, SIAM CSE21, Minisymposium "Computational Dynamics meets Computational Statistics", March 3rd, 2021, online.

Jan 2021 *Hamiltonian Monte Carlo in infinite dimensions: mixing and generalizations*, Joint Mathematics Meetings, Special Session "Geophysical Fluid Dynamics, Turbulence, and Data Assimilation: A Rigorous and Computational Study", Jan 7th, 2021, online.

Oct 2020 *Numerical approximation of the invariant measure for 2D stochastic Navier-Stokes equations*, AMS Fall Western Sectional Meeting (formerly at University of Utah), Special Session on Recent Advances in the Theory of Fluid Dynamics, Oct 24-25, 2020, online.

Oct 2020 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, AMS Fall Western Sectional Meeting (formerly at University of Utah), Special Session on PDEs, Data and Inverse Problems, Oct 24-25, 2020, online.

Oct 2020 *Rates of convergence to statistical equilibrium: a general approach and applications*, Differential Equations Seminar, U of Maryland Baltimore County (UMBC), Oct 12th, 2020, online.

Sep 2020 *Rates of convergence to statistical equilibrium: a general approach and applications*, Analysis, Dynamics and Applications Seminar, University of Arizona, Sep 22, 2020, online.

Sep 2020 *Numerical Approximation of the invariant measure for 2D stochastic Navier-Stokes equations*, AMS Fall Central Sectional Meeting (formerly at University of Texas at El Paso), Special Session on Theoretical and Computational Studies of PDEs related to Fluid Mechanics, Sep 12-13, 2020, online.

Sep 2020 *Rates of convergence to statistical equilibrium: a general approach and applications*, Colloquium, New Jersey Institute of Technology (NJIT), Sep 11, 2020, online.

Aug 2020 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, Dynamics Days Digital (DDD2020), August 24-27, 2020, online.

Jun 2020 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, SIAM Conference on Mathematics of Data Science (MDS20), Minisymposium "Bridging Data Assimilation with Data-Driven Analysis", June 29-30, 2020, online.

Jun 2020 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, 13th Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis, June 8-10, 2020, online.

Feb 2020 *Rates of convergence to statistical equilibrium: a general approach and applications*, Applied Math Seminar, Hunter College/CUNY.

Feb 2020 *Rates of convergence to statistical equilibrium: a general approach and applications*, Analysis Seminar, Temple University, Feb 3rd, 2020.

Dec 2019 *Numerical Approximation of the invariant measure for 2D stochastic Navier-Stokes equations*, SIAM Conference on Analysis of Partial Differential Equations (PD19), Minisymposium "Recent Progress in Incompressible Fluid Dynamics", California, CA – Dec 11-14, 2019.

Nov 2019 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, Drexel Applied Math Seminar.

Oct 2019 *Mixing for Hamiltonian Monte Carlo in infinite dimensions*, AMS Fall Eastern Sectional Meeting, Special Session on Analysis and Applications of Deterministic and Stochastic Evolution Equations, Binghamton University, Binghamton, NY, Oct 12-13, 2019.

Mar 2019 *On the convergence of statistical solutions of evolution equations*, Workshop "Essence of $(u \cdot \nabla)u$: Reflections on Mathematical Fluid Dynamics", University of Virginia, VA, USA, March 15-17, 2019.

Oct 2018 *Space-time discrete numerical schemes for a feedback-control data assimilation algorithm*, AMS Sectional Meeting - Special Session on Analytical and Numerical Aspects of Turbulent Transport, University of Michigan, Ann Arbor, MI, USA, Oct 20-21, 2018.

Aug 2018 *A downscaling data assimilation algorithm - from finite to infinite dimensions and back*, International Workshop on Partial Differential Equations and Complex Analysis, Sao Carlos, SP, Brazil, Aug 13-17, 2018.

Jul 2018 *Analysis of a feedback-control data assimilation algorithm*, Workshop for Women in Differential Equations, Santo Andre, SP, Brazil.

Jul 2018 *A downscaling data assimilation algorithm – from finite to infinite dimensions and back*, seminar at Beijing Institute of Technology, Beijing, China.

Jul 2018 *A downscaling data assimilation algorithm – from finite to infinite dimensions and back*, seminar at Computational Science Research Center (CSRC), Beijing, China.

Jul 2018 *Space-time discrete numerical schemes for a feedback-control data assimilation algorithm*, AIMS 2018, Taipei, Taiwan.

Apr 2018 *A downscaling data assimilation algorithm – from finite to infinite dimensions and back*, PDE Seminar, Pennsylvannia State University, State College, PA, USA.

Mar 2018 *A downscaling data assimilation algorithm – from finite to infinite dimensions and back*, AWM/AMS Student Chapter at Tulane University, New Orleans, LA, USA.

Feb 2018 *Analysis of a feedback-control data assimilation algorithm*, University of Central Florida, Orlando, FL, USA.

Feb 2018 *Analysis of a feedback-control data assimilation algorithm*, Drexel University, Philadelphia, PA, USA.

Jan 2018 *Analysis of a feedback-control data assimilation algorithm*, Special Mathematics Colloquium, Florida State University, Tallahassee, FL, USA.

Jan 2018 *An ensemble data assimilation algorithm via feedback-control*, Joint Mathematics Meetings, San Diego, CA, USA, Jan 10-11, 2018.

Dec 2017 *Numerical Approximation of a Feedback-Control Data Assimilation Algorithm: Uniform in Time Error Estimates*, SIAM Conference on Analysis of Partial Differential Equations, Baltimore, MD, USA, Dec 9-12, 2017.

Sep 2017 *Numerical Approximation of a Feedback-Control Data Assimilation Algorithm: Uniform in Time Error Estimates*, 3rd Annual Meeting of SIAM Central States Section, Colorado State University, CO, USA, Sep 29 - Oct 1, 2017.

Sep 2017 *On the Convergence of Statistical Solutions of Evolution Equations*, 3rd Annual Meeting of SIAM Central States Section, Colorado State University, CO, USA, Sep 29 - Oct 1, 2017.

Jul 2017 *Analysis of a feedback-control data assimilation algorithm*, Mathematical Congress of the Americas, Montréal, Canada, July 24-28, 2017.

Jul 2017 *Analysis of a nudging-based algorithm for data assimilation*, SIAM Annual Meeting, Pittsburgh, PA, USA, July 10-14, 2017.

May 2017 *Numerical Approximation of a Data Assimilation Algorithm by a Post-processing Galerkin Method*, SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA, May 21-25, 2017.

May 2017 *On the convergence of statistical solutions of evolution equations*, Darmstadt Analysis Day Workshop, Technical University of Darmstadt, Germany, May 16th, 2017.

May 2017 *Analysis of a feedback-control data assimilation algorithm*, Geophysical Fluid Dynamics Workshop, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.

May 2017 *On the convergence of statistical solutions of evolution equations*, AMS Sectional Meeting - Special Session on Nonlinear and Stochastic Partial Differential Equations: Theory and Applications in Turbulence and Geophysical Flows, Hunter College, NY, USA, May 6-7, 2017.

May 2017 *Analysis of a feedback-control data assimilation algorithm*, AMS Sectional Meeting - Special Session on Hydrodynamic and Wave Turbulence, Hunter College, NY, USA, May 6-7, 2017.

Apr 2017 *Analysis of a feedback-control data assimilation algorithm*, Analysis and Applied Mathematics Seminar, University of Illinois at Chicago, IL, USA, April 17th, 2017.

Feb 2017 *Analysis of a feedback-control based data assimilation algorithm*, Colloquium, University of Texas at Dallas, TX, USA.

Dec 2016 *Numerical approximation of a data assimilation algorithm by a Post-processing Galerkin method*, Applied and Computational Mathematics seminar, Tulane University, LA, USA.

Nov 2016 *Data Assimilation via a Downscaling Algorithm*, Sextas Matematicas, UFRJ, Brazil.

May 2016 *A discrete data assimilation scheme for the solutions of the 2D Navier-Stokes equations and their statistics*, International Conference on Evolution Equations, Vanderbilt University, Nashville, TN, USA, May 16-20, 2016.

Mar 2016 *A discrete data assimilation scheme for the solutions of the 2D Navier-Stokes equations and their statistics*, Colloquium Talk, Texas Tech University, TX, USA, March 31st, 2016.

Jan 2016 *A discrete data assimilation scheme for the solutions of the 2D Navier-Stokes equations and their statistics*, Nonlinear PDEs Seminar, Texas A&M University, TX, USA.

Dec 2015 *On the Kolmogorov entropy of the weak global attractor of the 3D Navier-Stokes equations*, SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, USA, Dec 7-10, 2015.

Dec 2015 *A discrete data assimilation scheme for the solutions of the 2D Navier-Stokes equations and their statistics*, SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, USA, Dec 7-10, 2015.

Apr 2015 *Statistical solutions of general evolution equations*, Nonlinear Partial Differential Equations Seminar, Texas A&M University, College Station, TX, USA.

Feb 2015 *Statistical solutions: from the Navier-Stokes equations to general evolution equations*, Fluid Mechanics and PDE's Pizza Seminar, ICMAT, Madrid, Spain.

Jun 2014 *Statistical solutions from an abstract viewpoint*, IV Workshop on Fluids and PDE, IMPA, Rio de Janeiro, Brazil, May 26-30, 2014.

Contributed Talks and Poster Presentations

Sep 2018 *Space-time discrete numerical schemes for a feedback-control data assimilation algorithm*, FoMICS-DADSi Summer School on Data Assimilation, Lugano, Switzerland, Sep 11-15, 2018. (Contributed talk)

Sep 2012 *An abstract framework for the theory of statistical solutions*, International Conference on Nonlinear Partial Differential Equations, Oxford, UK, Sep 10-13, 2012. (Contributed talk and poster)

Nov 2011 *Some results on statistical solutions of the Navier-Stokes squations for an extended class of external forces*, SIAM Conference on Analysis of Partial Differential Equations, San Diego, CA, USA, Nov 14-17, 2011. (Contributed talk)

Jan 2010 *An abstract formulation for the study of statistical solutions of the Navier-Stokes equations*, First Franco-Brazilian Fluids Summer School, IMECC-UNICAMP, Campinas, Brazil. (Poster)

Professional Service and Activities

Mentoring

- Undergraduate students:
  - *Mathilda Nguyen*, Drexel, Summer 2021. Project: Investigation of optimal integration times for Hamiltonian Monte Carlo methods in statistical sampling.
  - *Raymond Langer*, Western U, Canada, Summer 2021 (jointly mentored with Olga Trichtchenko, Western U, Canada). Project: Numerical simulations of a control-type data assimilation algorithm for the KdV equation.
  - *Jonathan Parlett*, Drexel, Spring-Summer 2023 co-op. Project: Comparison of performance of various MCMC algorithms applied to the Bayesian inverse problem of recovering an unknown forcing term in the Lorenz 63 model from sparse and noisy data of a reference solution.
- M.S. students:

- *Robert Scholle*, Drexel, 2019 – 2021 (co-advised by N. Glatt-Holtz, Tulane). Project: MCMC algorithms applied to Bayesian inverse ODE problems.

- Ph.D. students:
  - *Ricardo Martins Guimarães*, Unicamp, Brazil, 2019 – 2024 (jointly advised with Anne Bronzi, Unicamp, Brazil). Project: Locally self-similar scenario for the surface quasi-geostrophic equation.
  - *Juliane Dalben*, Drexel, 2022 – present (expected graduation in 2026). Project: Exponential mixing rates for stochastic hydrodynamic models.

Graduate defense committees

- Ph.D. defense committees:
  - *Wonsang Cho*, Drexel, June 3, 2024.
  - *Emily Kelting*, Drexel, May 23, 2024.
  - *Joshua McGinnis*, Drexel, June 6th, 2023.
  - *Luke Brown*, Drexel, May 23rd, 2023.
  - *Alex Yaroslavskiy*, Drexel, June 16th, 2020.
  - *Felix Jones*, Drexel, June 16th , 2020.
- Ph.D. candidacy exam committees:
  - *Philip Zaleski*, NJIT, August 2024.
  - *Kayode Oluwasegun*, Drexel, Sep 20th, 2023.
  - *Juliane Dalben*, Drexel, Sep 15th, 2023.
  - *Hunter Wages*, Drexel, Sep 14th, 2023.
  - *Sultan Aitzhan*, Drexel, Sep 14th, 2022.
  - *Amanda Johnson*, Drexel, Sep 13th, 2022.
  - *Liam Doherty*, Drexel, Sep 8th, 2022.
  - *Wonsang Cho*, Drexel, Sep 10th, 2021.
  - *Luke Brown*, Drexel, May 21st, 2021.
  - *Robert Scholle*, Drexel, Sep 16th, 2020.
  - *Hyeju Kim*, Drexel, Sep 15th, 2020.
  - *Emily Kelting*, Drexel, Sep 10th, 2020.
- Masters' defense committees:
  - *Juliane Dalben*, Unicamp, Brazil, May 31st, 2021.
  - *Ricardo Guimarães*, Unicamp, Brazil, Feb 28th, 2019.

Organization of Seminars and Conference Sessions

- Co-organizer of the special session "New Developments in Mathematical Fluid Dynamics" at the Mathematical Congress of the Americas, July 21-25, 2025. Co-organizers: A. Bronzi (Unicamp), N. Glatt-Holtz (Indiana U), J. Gomez-Serrano (Brown U), I. Kukavica (USC), and W. Ozanski (FSU).
- Co-organizer of the PDEs and Applied Math Seminar at Drexel University, Fall 2019 - current.
- Co-organizer of the MCMC/Statistical Sampling online reading/working seminar, Fall 2020 - Summer 2022. Co-organizers: N. Glatt-Holtz (Tulane U), and J. Krometis (Virginia Tech).
- Co-organizer of the special session "Mathematical Advances in Bayesian Statistical Inversion and Markov Chain Monte Carlo Sampling Algorithms" at the AMS Spring Western Sectional Meeting, May 14-15, 2022 (online). Co-organizers: N. Glatt-Holtz (Tulane U), and J. Krometis (Virginia Tech).

- Co-organizer of the special session "New Developments in Mathematical Fluid Dynamics" at the MCA 2021 conference, July 12-23 (online). Co-organizers: A. Bronzi (Unicamp, Brazil), J. Gómez-Serrano (Brown U.), and N. Glatt-Holtz (Tulane U.).
- Co-organizer of the special session "Mathematics of Fluids: Analysis and Computations" at the SIAM DS21 conference, May 23-27 (online). Co-organizer: V. Martinez (CUNY/Hunter).
- Co-organizer of the mini-symposium "Recent Advances in Infinite Dimensional Stochastic Analysis"at the 9th International Congress on Industrial and Applied Mathematics – ICIAM 2019, July 15-19, 2019, Valencia, Spain. Co-organizer: N. Glatt-Holtz (Tulane U.).
- Co-organizer of the Special Session "Intersections in Probability and Nonlinear PDEs" at the 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 5–9, 2018, Taipei, Taiwan. Co-organizers: Y.-M. Chung (UNCG), N. Glatt-Holtz (Tulane U.) and V. Martinez (Tulane U.).
- Co-organizer of the AMS Special Session "Nonlinear and Stochastic Partial Differential Equations and Applications" at the Spring Eastern AMS Sectional Meeting, April 21–22, 2018, Boston, MA, USA. Co-organizers: N. Glatt-Holtz (Tulane U.) and V. Martinez (Tulane U.).
- Co-organizer of the mini-symposium "Recent developments in data assimilation" at the SIAM Conference on Applications of Dynamical Systems, May 21–25, 2017, Snowbird, UT, USA. Co-organizers: J. Maclean (UNC-Chapel Hill) and V. Martinez (Tulane U.).

Departmental and University Service

- Diversity, Equity, and Inclusion committee, 2023–2024.
- Tenure track search committee, 2022–2023.
- Graduate Program committee, 2019–2020, 2022–2023, 2023–2024.
- Search Committee for the Associate Dean of Research of the College of Arts and Sciences, 2021.
- Major grants committee, 2021–2022.
- Graduate Admissions committee, 2020–2022.
- Remote teaching help committee, 2020–2021.

Peer Review Service

- Grant proposals
  - 2 NSF panels, 2021 and 2022.
  - Instituto Serrapilheira, Brazil, 2020.
- Journals:
  - *Advances in Mathematical Physics*
  - *Annales Polonici Mathematici*
  - *Applied Numerical Mathematics*
  - *Applied Probability*
  - *Computers & Mathematics with Applications*
  - *Discrete and Continuous Dynamical Systems - Series B*
  - *European Journal of Control*
  - *Evolution Equations and Control Theory*
  - *IMA Journal of Numerical Analysis*
  - *Journal of Dynamics and Differential Equations*
  - *Journal of Evolution Equations*
  - *Journal of Functional Analysis*
  - *Journal of Mathematical Analysis and Applications*
  - *Journal of Nonlinear Science*
  - *Journal of Statistical Physics*
  - *Nonlinearity*
  - *Pure and Applied Functional Analysis*

- *Qualitative Theory of Dynamical Systems*
- *SIAM Journal on Applied Dynamical Systems (SIADS)*
- *SIAM Journal on Mathematical Analysis (SIMA)*
- *SIAM Journal on Numerical Analysis (SINUM)*
- *SIAM Journal on Scientific Computing (SISC)*
- *Studies in Applied Mathematics*
- *Zeitschrift für angewandte Mathematik und Physik (ZAMP)*

Professional Career Development Panels

- Panelist at INCTMat roundtable discussion, "Writing proposals", Nov 4th, 2020.
- Panelist at CUNY DRP Career Panel for undergraduates, online, March 26th, 2023.

Miscellaneous

- **Languages**
  - Portuguese: mother-tongue.
  - English: advanced.
  - French: intermediate.
  - Spanish: intermediate.
- **Computer skills**
  - Latex, Python, Matlab, Maple.