

Richard Medina Rodríguez

Curriculum Vitae

CEREMADE, Université Paris Dauphine - PSL
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Education and Academic Positions

- 09/2025 – present **Teaching and Research Fellow**, *Université Paris Dauphine - PSL*, France.
- 09/2022 – 12/2025 **PhD in Applied Mathematics**, *Université Paris Dauphine - PSL*, France.
Thesis title: Hypocoercivity and geometric confinement.
PhD Advisors: Kleber Carrapatoso & Stéphane Mischler.
Defense date: 18 December 2025.
Jury: Véronique BAGLAND, Émeric BOUIN, José A. CAÑIZO, Arnaud GUILLIN, Frédéric HÉRAU.
- 02/2022 – 06/2022 **Master Internship**, CEREMADE, Université Paris Dauphine - PSL, France.
Advisors: Kleber Carrapatoso & Stéphane Mischler.
Objective: Extension of hypocoercivity techniques for linearized kinetic equations to non-smooth bounded domains.
- 09/2021 – 06/2022 **Master of Science in Applied and Theoretical Mathematics**, *Université Paris Dauphine - PSL*, France.
With Honors (Mention Bien).
- 09/2020 – 07/2021 **Assistant Professor**, *Department of Mathematics*, Universidad de La Habana, Cuba.
- 09/2016 – 07/2020 **Bachelor of Science in Mathematics**, *Universidad de La Habana*, Cuba.
Summa Cum Laude.
Bachelor thesis: Random Schrödinger operators in a 2D scheme.
Advisors: Rita Roldán Inguanzo & Laure Dumaz.

Long-term Research Stays

- 10/2024 – 11/2024 **University of Warwick, United Kingdom**, *Work in collaboration with Josephine Evans*.
Study of the effects of boundary thermostats on the long-time behavior of non-linear kinetic Fokker-Planck equations.

Publications

Submitted

- 2025 **R. Medina**, The Boltzmann equation on smooth and cylindrical domains with Maxwell boundary conditions, URL <https://arxiv.org/abs/2510.13260>.
Submitted to *Kinetic and Related Models*.
- 2025 **J. Evans and R. Medina**, Existence and stability of non-equilibrium steady states of a weakly non-linear Kinetic Fokker-Planck equation in a domain, URL <https://arxiv.org/abs/2506.03632>.
Submitted to the *Journal of Statistical Physics*.
- 2024 **K. Carrapatoso, P. Gabriel, R. Medina, and S. Mischler**, Constructive Krein-Rutman result for Kinetic Fokker-Planck equations in a domain, URL <https://arxiv.org/abs/2407.10530>.
Submitted to *Analysis & PDE*.

Invited Talks

Invited Talks at Conferences and Workshops

- Jun. 2024 **The Boltzmann equation in a cylinder near the hydrodynamic limit**, presented at the conference “Analysis of PDEs in Mathematical Physics”, University of Bath, United Kingdom.
- Feb. 2023 **'Cause I'll L-ove you to-infinity estimates for the Boltzmann equation**, presented at the MAFRAN Days, King's College, United Kingdom.
- Jun. 2019 **Fixed points in non-expansive maps**, presented at the International Congress COM-PUMAT 2019, Universidad de La Habana, Cuba.
- Mar. 2019 **Extrapolation Methods for Approximating a Fairness Functional**, presented at the International Workshop on Operations Research (IWOR), Universidad de La Habana, Cuba.
- Mar. 2018 **Restriction-based interpolation with cubic A-splines**, presented at the International Conference on Operations Research (ICOR), Universidad de La Habana, Cuba.

Invited Talks at Seminars

- Feb. 2026 **The Boltzmann equation with non-isothermal Maxwell boundary conditions**, presented at the SPIKE Seminar, Institut Henri Poincaré (IHP), France.
- Jan. 2025 **Brief introduction to the Boltzmann equation**, presented at the Young Researchers Seminar, Université Paris Dauphine - PSL, France.
- Nov. 2024 **Constructive Krein-Rutman result for kinetic Fokker-Planck equations in a domain (joint work with P. Gabriel, K. Carrapatoso and S. Mischler)**, presented at the Junior Analysis Seminar, Imperial College London, United Kingdom.
- Oct. 2024 **The Boltzmann equation on C^1 and cylindrical domains near the hydrodynamic limit**, presented at the Partial Differential Equations and their Applications Seminar, University of Warwick, United Kingdom.
- Nov. 2023 **Introduction to the kinetic Fokker-Planck equation and its long-time behavior**, presented at the Young Researchers Seminar, Université Paris Dauphine - PSL, France.
- May 2023 **Hypocoercivity estimates for some linearized kinetic operators**, presented at the Young Researchers Seminar, Université de Lille, France.
- Mar. 2023 **Hypocoercivity estimates for some linearized kinetic operators**, presented at the Young Researchers Seminar, Université Paris Dauphine - PSL, France.

Poster Presentations

- Jul. 2024 **Constructive Krein-Rutman result for kinetic Fokker-Planck equations in a domain (joint work with P. Gabriel, K. Carrapatoso and S. Mischler)**, presented at the summer school “Collective behavior and Pattern formation”, CIRM, France.
- Jun. 2024 **Constructive Krein-Rutman result for kinetic Fokker-Planck equations in a domain (joint work with P. Gabriel, K. Carrapatoso and S. Mischler)**, presented at the summer school “Frontiers in Interacting Particle Systems, Aggregation-Diffusion Equations & Collective Behavior”, CIRM, France.

Participation on Conferences, Workshops and Schools

- Jul. 2024 **Summer school - Collective Behavior and Pattern Formation**, CIRM, France.
- Jun. 2024 **Research school - Frontiers in Interacting Particle Systems Aggregation-Diffusion Equations & Collective Behavior**, CIRM, France.
- Nov. 2022 **Research School - Kinetic Theory**, CIRM, France.
- Jul. 2022 **Conference - When Kinetic Theory Meets Fluid Mechanics**, FIM, ETH Zürich, Switzerland.

Jun. 2019 **CIMPA Research Summer School - “Mathematical Models in Biology and Related Applications of Partial Differential Equations”**, Universidad de La Habana, Cuba.

Awards, Fellowships & Grants

- 2022 **MathInParis2020 COFUND Fellowship** — PhD grant awarded by the Fondation de Sciences Mathématiques de Paris (FSMP).
- 2021 **PSL PhD Track Grant 2021** — Master's Excellence Scholarship awarded by the Université Paris Science et Lettres.
- 2020 **Prize to the Scientific Merit** awarded by the Universidad de La Habana for outstanding scientific work during the Bachelor studies.

Organization of Seminars and Conferences

- Jun. 2024 Co-organizer of the **Young Researchers Days** conference, held at *Domaine de la Tour*, Saint-Pierre-Canivet, France. Three-day conference for PhD students to present and discuss their research. Supported by the Dauphine Doctoral School.
- 2023-2024 Co-organizer of the **Young Researchers Seminar** at the Université Paris Dauphine - PSL.

Teaching Experience

- Spring 2026 **Algebra 4 & Numerical methods, problem-solving sessions for second-year Mathematics students**, Université Paris Dauphine - PSL, France.
- Fall 2025 **Analysis 1, lectures and problem-solving sessions for first-year Mathematics students**, Université Paris Dauphine - PSL, France.
- May 2025 **Functional Analysis Summer School, problem-solving sessions for graduate level Mathematics students**, Universidad de La Habana, Cuba.
- Spring 2025 **Analysis 2, problem-solving sessions for first-year Mathematics students**, Université Paris Dauphine - PSL, France.
- Spring 2024 **Analysis 2, problem-solving sessions for first-year Mathematics students**, Université Paris Dauphine - PSL, France.
- Fall 2023 **Mathematical Methods, lectures and problem-solving sessions for first-year Economics students**, Université Paris Dauphine - PSL, France.
- Spring 2021 **Complex Analysis, problem-solving sessions for third-year Mathematics students**, Universidad de La Habana, Cuba.
- Fall 2020 **Introduction to Mathematics, problem-solving sessions for first-year Mathematics students**, Universidad de La Habana, Cuba.
- 2017 - 2019 **Tutorship, assisting in problem-solving sessions for Mathematics students**, Universidad de La Habana, La Habana, Cuba.
Subjects: Topology, Analysis 4 (series and Fourier analysis), Analysis 3 (analysis of functions of several variables), Analysis 2 (analysis of functions of one variable), and Introduction to Mathematics.

Outreach

- May 2024 Volunteer Stand Animator at the **Salon de Culture et Jeux Mathématiques** at Place Saint-Sulpice, Paris, France.
- March 2024 Volunteer judge at the **Math en Jeans 2024 Congress** at Université Paris Dauphine - PSL, Paris, France.
- 2016-2019 Instructor for high-school students in a fast-track mathematics program, preparing them for the Cuban National Mathematics Competitions, La Habana, Cuba.

Editorial Service

Referee for international journals (*Communications in Mathematical Physics*).

Competitions

- 2019 **Ibero-American University Mathematics Olympiad** - Silver medal.
- 2018 **Ibero-American University Mathematics Olympiad** - Bronze medal.
- 2017 **Raimundo Reguera National Mathematics Olympiad** - Silver medal.
- 2017 **Ibero-American University Mathematics Olympiad** - Honorable Mention.
- 2016 **Raimundo Reguera National University Mathematics Olympiad** - Honorable Mention.
- 2015 **Cuban National High School Mathematics Olympiad** - Gold medal (ranked 3rd).
- 2014 **Cuban National High School Mathematics Olympiad** - Silver medal.

Computer Skills

- Programming Languages PYTHON (advanced), C# (intermediate), HTML (intermediate)
- Scientific software WOLFRAM MATHEMATICA (advanced), Matlab (intermediate)
- Typesetting & visualization L^AT_EX (advanced), TikZ/Beamer (advanced)

Languages

- Español Native speaker
- English Bilingual proficiency – TOEIC C1 (June 2022)
- French Bilingual proficiency

Referees

Dr Stéphane Mischler

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Dr Kleber Carrapatoso

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Dr Pierre Gabriel

Professor, Institut Denis Poisson
Université de Tours
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Dr Josephine Evans

Professor, Warwick Mathematics Institute
University of Warwick
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