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*, Paris, France.

09/2022 - 12/2025 **Ph.D. in Applied Mathematics**, *Université Paris Dauphine - PSL*, Paris, 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, Paris, 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*, Paris, 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*, 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, Bath, UK.

Feb. 2023 ***'Cause I'll L-ove you to-infinity estimates for the Boltzmann equation***, *presented at the MAFRAN Days*, King's College, Cambridge, UK.

Jun. 2019 ***Fixed points in non-expansives maps***, *presented at the International Congress COMPUMAT 2019*, Universidad de La Habana, 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, 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, La Habana, Cuba.

Invited Talks at Seminars

Feb. 2026 ***The Boltzmann equation with non-istohermal Maxwell boundary conditions***, *presented at the SPIKE Seminar*, Institut Henri Poincaré (IHP), Paris, France.

Jan. 2025 ***Brief introduction to the Boltzmann equation***, *presented at the Young Researchers Seminar*, Université Paris Dauphine - PSL, Paris, 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, London, UK.

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, Coventry, UK.

Nov. 2023 ***Introduction to the kinetic Fokker-Planck equation and its long-time behavior***, *presented at the Young Researchers Seminar*, Université Paris Dauphine - PSL, Paris, France.

May 2023 ***Hypocoercivity estimates for some linearized kinetic operators***, *presented at the Young Researchers Seminar*, Université de Lille, Lille, France.

Mar. 2023 ***Hypocoercivity estimates for some linearized kinetic operators***, *presented at the Young Researchers Seminar*, Université Paris Dauphine - PSL, Paris, 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, Marseille, 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, Marseille, France.

Participation on Conferences, Workshops and Schools

Jul. 2024 ***Summer school - Collective Behavior and Pattern Formation***, CIRM, Marseille, France.

Jun. 2024 ***Research school - Frontiers in Interacting Particle Systems Aggregation-Diffusion Equations & Collective Behavior***, CIRM, Marseille, France.

Nov. 2022 ***Research School - Kinetic Theory***, CIRM, Marseille, France.

Jul. 2022 ***Conference - When Kinetic Theory Meets Fluid Mechanics***, FIM, ETH Zürich, Zürich, Switzerland.

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

Fall 2025 **Analysis 1**, *lectures and problem-solving sessions for first-year Mathematics students*, Université Paris Dauphine - PSL, Paris, France.

May 2025 **Functional Analysis Summer School**, *problem-solving sessions for graduate level Mathematics students*, Universidad de La Habana, La Habana, Cuba.

Spring 2025 **Analysis 2**, *problem-solving sessions for first-year Mathematics students*, Université Paris Dauphine - PSL, Paris, France.

Spring 2024 **Analysis 2**, *problem-solving sessions for first-year Mathematics students*, Université Paris Dauphine - PSL, Paris, France.

Fall 2023 **Mathematical Methods**, *lectures and problem-solving sessions for first-year Economics students*, Université Paris Dauphine - PSL, Paris, France.

Spring 2021 **Complex Analysis**, *problem-solving sessions for third-year Mathematics students*, Universidad de La Habana, La Habana, Cuba.

Fall 2020 **Introduction to Mathematics**, *problem-solving sessions for first-year Mathematics students*, Universidad de La Habana, 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: LaTeX (advanced), TikZ/Beamer (advanced)

Languages

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

Referees

Dr Stéphane Mischler
Professor, CEREMADE
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Dr. Kleber Carrapatoso
Professor, CMLS
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Dr. Piere Gabriel
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Dr. Josephine Evans
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