Mattia Martini

Postdoctoral researcher

Contact info

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Experience

Postdoctoral researcher   Sept 2025 – now

Centre de Mathématiques Appliquées (CMAP), École polytechnique
- Mentors: Mao Fabrice Djete and Huyên Pham
- Part of the ANR PEPR project MIRTE

Postdoctoral researcher   Apr 2023 - Aug 2025

Laboratoire J.A. Dieudonné (LJAD), Université Côte d'Azur
- Mentor: François Delarue
- Member of the ERC project ELISA

Education

PhD **Mathematical sciences**, Università degli studi di Milano   Oct 2019 – Mar 2023
- Thesis: *Advances in stochastic analysis on spaces of measures: Kolmogorov equations related to stochastic filtering and mean field optimal stopping*
- Supervisor: Marco Fuhrman

MSc **Mathematical engineering**, Politecnico di Milano (110/110 cum laude)   Sept 2017 – Oct 2019
- Thesis: *Kolmogorov Equations on Space of Measures Associated to Stochastic Filtering Processes*
- Supervisors: Sandro Salsa and Marco Furhman

BSc **Mathematical engineering**, Politecnico di Milano (110/110)   Sept 2014 – Sept 2017
- Thesis: *Quantum bits and superdense coding*
- Supervisor: Matteo Gregoratti

High school diploma, I.T.I.S Galileo Galilei, (100/100 cum laude)   2009 – 2014

Publications

Preprints

[1] F. Delarue, M. M., and G. E. Sodini. "HJB equations driven by the Dirichlet-Ferguson Laplacian in Wasserstein-Sobolev spaces". arXiv:2511.03522. 2025.

[2] A. Cosso, M. M., and L. Perelli. "Mean convergence rates for Gaussian-smoothed Wasserstein distances and classical Wasserstein distances". arXiv:2504.17477. 2025.

Published papers

[3] A. Cecchin, S. Daudin, J. Jackson, and M. M. "Quantitative convergence for mean field control with common noise and degenerate idiosyncratic noise". *Electron. J. Probab.* 30 (2025), pp. 1–62.

[4] G. Franzese, M. M., G. Corallo, P. Papotti, and P. Michiardi. "Latent Abstractions in Generative Diffusion Models". *Entropy* 27.4 (2025).

[5] F. Delarue and M. M. "Fourier Galerkin approximation of mean field control problems". *Nonlinear Differential Equations and Applications NoDEA* 32.1 (2024), p. 11.

[6] M. M. "Kolmogorov equations on the space of probability measures associated to the nonlinear filtering equation: the viscosity approach". *Stochastic Analysis and Applications* 42.6 (2024), pp. 987–999.

[7] A. Cosso and M. M. "On smooth approximations in the Wasserstein space". *Electronic Communications in Probability* 28 (2023), pp. 1–11.

[8] B. Djehiche and M. M. "Time-inconsistent mean-field optimal stopping: A limit approach". *Journal of Mathematical Analysis and Applications* 528.1 (2023).

[9] M. M. "Kolmogorov equations on spaces of measures associated to nonlinear filtering processes". *Stochastic Processes and their Applications* 161 (2023), pp. 385–423.

[10] M. M. and G. E. Sodini. "Numerical Methods for a System of Coupled Cahn-Hilliard Equations". *Commun. Appl. Ind. Math.* 12 (2021), pp. 1–12.

Given talks, seminars and posters

Seminari in Probabilità e Finanza, Università di Padova   Dec 2025
Seminar of the probability and finance group

Séminaire du Pôle Probabilités, École polytechnique (CMAP)   Oct 2025
Seminar of the probability group

Interacting Particle Systems and Applications, Università di Siena   Sept 2025
Invited talk

16th Viennese Conference Optimal Control and Dynamic Games, TU Wien   July 2025
In the invited session "Stochastic Control and Applications"

Durham Symposium on Mean Field Games, Durham University   March 2025
Invited talk

Optimal Transport: from robust pricing to model calibration, Folgarida, Trento   Feb 2025
Contributed talk

Probability and Statistics Seminar, University of Luxembourg   Jan 2025
Seminar of the probability and statistics group

PDE Seminar, Georgia Tech (online)   Sept 2024
Seminar of the PDE group

2nd AMS-UMI International Joint Meeting , Università degli Studi di Palermo   July 2024
In the invited session "Mean Field Games and related topics"

Seminario di Probabilità e Statistica, Politecnico di Milano — June 2024
Seminar of the probability and statistics group

Fourth Italian Meeting on Probability and Mathematical Statistics, Roma — June 2025
In the invited session "Stochastic optimal control of McKean-Vlasov equations"

Young Researchers in Stochastic Control and Games , Universität Bielefeld — Dec 2023
Invited talk

Séminaire de Probabilités et Statistique, Université Côte d'Azur (LJAD) — Dec 2023
Seminar of the probability and statistics group

PGMO Days, EDF Lab Paris-Saclay — Nov 2023
In the invited session "Mean field games and control"

A Random Walk in the Land of Stochastic Analysis and Numerical Probability, CIRM Luminy — Sept 2023
Poster

SPDEs, optimal control and mean field games , Universität Bielefeld — July 2023
Poster

The 9th International Colloquium on BSDEs and Mean Field Systems, IAE Savoie Mont Blanc — July 2022
Contributed talk

Third Italian Meeting on Probability and Mathematical Statistics, Università di Bologna — June 2022
In the contributed session "New trends in stochastic control"

100 years UMI and First UMI meeting of PhD students , Università di Padova — May 2022
Contributed talk

Seminars cycle "Insalate di Matematica", Università degli Studi Milano-Bicocca — Nov 2021
Seminar organized by the PhD students

Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups, Università di Trento — Sept 2021
Contributed talk

Teaching

Stochastic differential equations, Politecnico di Milano — 2022 - 2023
Teaching assistant | MSc Mathematical Engineering

Stochastic differential equations, Politecnico di Milano — 2021 - 2022
Teaching assistant | MSc Mathematical Engineering

Basics of Statistics, Politecnico di Milano — 2020 - 2021
Teaching assistant | BSc Biomedical Engineering

Stochastic differential equations, Politecnico di Milano — 2020 - 2021
Teaching assistant | MSc Mathematical Engineering

Probability and Statistics, Politecnico di Milano — 2019 - 2020
Teaching assistant | BSc Management Engineering

Visiting periods

University of Luxembourg, 1 Week — Jan 2025
Collaboration with Michele Stecconi

Imperial College, London, 1 Week — Jul 2024
Collaboration with Ofelia Bonesini

Università di Parma, Italy, 1 Week   Feb 2024

Collaboration with Alessandro Calvia

KTH, Stockholm, 1 Week   May 2022

Collaboration with Boualem Djehiche

Organization

Workshop on Stochastic Processes, Stochastic Optimal Control, and their Applications, among the organizers

September 26 - 27th, 2024 | Politecnico di Milano

Contributed session "Mean Field Games and Mean Field Control I", with Jodi Dianetti

4th Italian Meeting on Probability and Mathematical Statistics, 2024 | Roma

Phd Days 2021, among the organizers

December 14 - 17th, 2021 | Università degli Studi di Milano

Others

Abilitations: Maître de conférences (26 - Mathématiques appliquées et applications des mathématiques)

Referee activities:

- Annals of Applied Probability, SICON, Stochastic Processes and Their Applications, Systems & Control Letters, Journal of Differential Equations
- ANR (French grant)

Participation to research projects:

- Sept 2025 - now: part of the ANR PEPR project MIRTE
- Apr 2023 - Aug 2025: member of the ERC ADV project ELISA (Grant agree- ment No. 101054746), P.I. F. Delarue.

Mamberships:

- From 2025: Gruppo UMI Prisma (PRobability In Statistics, Mathematics and Applications)
- From 2022: Unione Matematica Italiana (UMI)
- From 2020: Indam, GNAMPA

Scholarships:

- 2016 - 2018: Scholarship for the best off-site students, Politecnico di Milano
- 2015: Scholarship for the best freshmen of A.Y. 2014/2015, Politecnico di Milano

Languages: Italian (Native) | English (Full professional proficiency) | French (Intermediate)

November 12, 2025
Mattia Martini