MATTIA MARTINI

CONTACT INFO

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EXPERIENCE

POST-DOC RESEARCHER — Apr. 2023-present

Université Côte d'Azur | *Nice, France*
(Laboratoire de Mathématiques J.A. Dieudonné)

- Mentor: Prof. François Delaure
- Member of ERC project ELISA

EDUCATION

PhD IN MATHEMATICAL SCIENCES — Oct. 2019-Mar. 2023

Università degli Studi di Milano | *Milan, Italy*

- Thesis: Advances in stochastic analysis on spaces of measures: Kolmogorov equations related to stochastic filtering and mean field optimal stopping
- Supervisor: Prof. Marco Fuhrman

MSc IN MATHEMATICAL ENGINEERING — Sep. 2017-Oct. 2019

Politecnico di Milano | *Milan, Italy*
(110/110 cum laude)

- Thesis: Kolmogorov Equations on Space of Measures Associated to Stochastic Filtering Processes
- Supervisors: Prof. Sandro Salsa and Prof. Marco Fuhrman

BSc IN MATHEMATICAL ENGINEERING — Sep. 2014-Sep. 2017

Politecnico di Milano | *Milan, Italy*
(110/110)

- Thesis: Quantum bits and superdense coding
- Supervisor: Prof. Matteo Gregoratti

High School Diploma — 2009-2014

I.T.I.S Galileo Galileo | *San Secondo P.se, Italy*
(100/100 cum laude)

PUBLICATIONS

Preprints

A. Cosso, **M. M.**, and L. Perelli (2025). "Mean convergence rates for Gaussian-smoothed Wasserstein distances and classical Wasserstein distances". arXiv:2504.17477.

A. Cecchin, S. Daudin, J. Jackson, and **M. M.** (2024). "Quantitative convergence for mean field control with common noise and degenerate idiosyncratic noise". arXiv:2409.14053.

Articles

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

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

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

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

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

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

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

GIVEN TALKS, SEMINARS AND POSTERS

Durham Symposium on Mean Field Games — **2025**
Invited talk

Optimal Transport: from robust pricing to model calibration — **2025**
Contributed talk

Probability & Statistics Seminar, University of Luxembourg — **2025**
Seminar of the probability and statistics group

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

2nd AMS-UMI International Joint Meeting — **2024**
Invited session "Mean Field Games and related topics"

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

Fourth Italian Meeting on Probability and Mathematical Statistics — **2024**
Invited session "Stochastic optimal control of McKean-Vlasov equations"

Young Researchers in Stochastic Control and Games — **2023**
Presentation of [Delarue, M. 24] - invited talk

Séminaire de Probabilités et Statistique, LJAD — **2023**
Seminar of the probability and statistics group

PGMO Days — **2023**
Invited session "Mean field games and control"

A Random Walk in the Land of Stochastic Analysis and Numerical Probability 2023
Poster

SPDEs, optimal control and mean field games 2023
Poster

The 9th International Colloquium on BSDEs and Mean Field Systems 2022
Contributed talk

Third Italian Meeting on Probability and Mathematical Statistics 2022
Contributed session "New trends in stochastic control"

100 years UMI and First UMI meeting of PhD students 2022
Contributed talk

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

Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups 2021
Contributed talk

Working group on Optimal Transport and Mean Field Games, Milano 2019
Two lectures on differentiation in Wasserstein spaces

TEACHING

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

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

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

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

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

VISITING PERIODS

University of Luxembourg January 2025
1 Week | *Collaboration with Michele Stecconi*

Imperial College, London July 2024
1 Week | *Collaboration with Ofelia Bonesini*

Università di Parma February 2024
1 Week | *Collaboration with Alessandro Calvia*

KTH, Stockholm May 2022
1 Week | *Collaboration with Boualem Djehiche*

ORGANIZATION

Part of the organizers of "Workshop on Stochastic Processes, Stochastic Optimal Control, and their Applications"
September 26 - 27th, 2024 | *Politecnico di Milano*

Contributed session "Mean Field Games and Mean Field Control I"
4th Italian Meeting on Probability and Mathematical Statistics, 2024 | *Roma*

Conference "Phd Days 2021"
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.

Part of research projects
- From 2023: member of the ERC project ELISA (Grant agreement No. 101054746), P.I. Prof. F. Delarue.

Memberships
- From 2022: Unione Matematica Italiana (UMI)
- From 2020: Indam, GNAMPA

Scholarships
- 2016 to 2018: Scholarship for the best off-site students
- 2015: Scholarship for the best freshmen of A.Y. 2014/2015

ATTENDED CONFERENCES, WORKSHOPS AND SCHOOLS

Mean Field Games, Mean Field Control and Applications in Economics and Finance
April 9 - 11, 2025 | *Università di Pavia (workshop)*

Durham Symposium on Mean Field Games
March 25 - 28, 2025 | *Durham University (conference)*

Winter School "Optimal Transport: from robust pricing to model calibration"
January 26 - 31, 2025 | *Folgarida, Trento (school)*

Statistical and probabilistic analysis of random networks and processes
September 9 - 13, 2024 | *Université Côte d'Azur (conference)*

2nd AMS-UMI International Joint Meeting
July 23 - 26, 2024 | *Università degli Studi di Palermo (conference)*

Fourth Italian Meeting on Probability and Mathematical Statistics
June 10 - 14, 2024 | *Rome (conference)*

Mean-Field Interaction, Singular Kernels, and Approximation
December 18 - 22, 2023 | *Institut Henri Poincaré, Paris (conference)*

Young Researchers in Stochastic Control and Games
December 14 - 15, 2023 | *Universität Bielefeld (workshop)*

PGMO Days
November 28 - 29, 2023 | *EDF Lab Paris-Saclay (conference)*

A Random Walk in the Land of Stochastic Analysis and Numerical Probability
September 4 - 8, 2023 | *CIRM Luminy (conference)*

SPDEs, optimal control and mean field games
July 10 - 14, 2023 | *Universität Bielefeld (workshop)*

Summer School on Mean Field Models
June 12 - 16, 2023 | *Centre Henri Lebesgue, Université de Rennes (school)*

Two-day workshop on deterministic and stochastic control
September 6 - 7, 2022 | *Politecnico di Milano (workshop)*

9th International Colloquium on BSDEs and Mean Field Systems
June 27 - July 1, 2022 | *IAE Savoie Mont Blanc, Annecy (conference)*

Third Italian Meeting on Probability and Mathematical Statistics
June 13 - 16, 2022 | *Università di Bologna (conference)*

100 years UMI & First UMI meeting of PhD students
May 23 - 27, 2022 | *Università di Padova (conference)*

Stochastic Games and Martingale Optimal Transport
May 5 - 6, 2022 | *Università degli Studi di Milano (workshop)*

3rd Spring Colloquium on Probability and Finance
April 28 - 29, 2022 | *Università di Padova, online (workshop)*

Schrödinger Problem and Mean-field PDE Systems: Computational and Theoretical Advances
November 15 - 19, 2021 | *CIRM Luminy (conference)*

Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups
August 30 - September 3, 2021 | *Università di Trento (school)*

Stochastic games with partial and asymmetric information
July 6 - 7, 2021 | *Collegio Carlo Alberto, online (workshop)*

Stochastic Processes and their Friends
March 18 - 19, 2021 | *University of Leeds, online (conference)*

Mean field games in economics
September 7 - 8, 2020 | *LUISS University and Einaudi Institute for Economics and Finance, online (workshop)*

13th European Summer School in Financial Mathematics
August 31 - September 4, 2020 | *University of Vienna (school)*

Stochastic analysis brats
June 23 - 26, 2020 | *Università di Pisa, online (workshop)*

OTHER SKILLS

IT

- **Operating systems**: Microsoft Windows, Linux-Unix, MacOS
- **Office**: LaTeX, Microsoft Office
- **Languages**: C++, C, MPI
- **Scientific programming**: Matlab, R, FreeFem

Languages

- Italian (native)
- English (Full professional proficiency)
- French (Basic)

Mattia Martini

25/04/2025