

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 Galilei | San Secondo P.se, Italy
(100/100 cum laude)

PUBLICATIONS

Preprints

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
<i>Presentation of [Delarue, M. 24] - invited talk</i>	
Optimal Transport: from robust pricing to model calibration	2025
<i>Presentation of [Cecchin, Daudin, Jackson, M. 24] - contributed talk</i>	
Probability & Statistics Seminar, University of Luxembourg	2025
<i>Presentation of [Delarue, M. 24] - seminar of the probability and statistics group</i>	
PDE Seminar, Georgia Tech (online)	2024
<i>Presentation of [Delarue, M. 24] - seminar of the PDE group</i>	
2nd AMS-UMI International Joint Meeting	2024
<i>Presentation of [Delarue, M. 24] - invited session "Mean Field Games and related topics"</i>	
Seminario di Probabilità e Statistica, Politecnico di Milano	2024
<i>Presentation of [Delarue, M. 24] - seminar of the probability and statistics group</i>	
Fourth Italian Meeting on Probability and Mathematical Statistics	2024
<i>Presentation of [Delarue, M. 24] - invited session "Stochastic optimal control of McKean-Vlasov equations"</i>	
Young Researchers in Stochastic Control and Games	2023
<i>Presentation of [Delarue, M. 24] - invited talk</i>	
Séminaire de Probabilités et Statistique, LJAD	2023
<i>Presentation of [M. 23] - seminar of the probability and statistics group</i>	
PGMO Days	2023
<i>Presentation of [M. 23] - invited session "Mean field games and control"</i>	

A Random Walk in the Land of Stochastic Analysis and Numerical Probability <i>Presentation of [M. 23] - poster</i>	2023
SPDEs, optimal control and mean field games <i>Presentation of [M. 23] - poster</i>	2023
The 9th International Colloquium on BSDEs and Mean Field Systems <i>Presentation of [M. 23] - contributed talk</i>	2022
Third Italian Meeting on Probability and Mathematical Statistics <i>Presentation of [M. 23] - contributed session "New trends in stochastic control"</i>	2022
100 years UMI and First UMI meeting of PhD students <i>Presentation of [M. 23] - contributed talk</i>	2022
Università degli Studi Milano-Bicocca, Seminars cycle "Insalate di Matematica" <i>Backward Kolmogorov equations: a link between PDEs and SDEs</i>	2021
Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups <i>Presentation of [M. 23] - contributed talk</i>	2021
Working group on Optimal Transport and Mean Field Games, Università degli Studi di Milano - Università degli Studi di Milano Bicocca - Politecnico di Milano <i>Two lectures on differentiation in Wasserstein spaces</i>	2019

TEACHING

Stochastic differential equations <i>Teaching assistant MSc Mathematical Engineering, Politecnico di Milano</i>	2022-2023
Stochastic differential equations <i>Teaching assistant MSc Mathematical Engineering, Politecnico di Milano</i>	2021-2022
Basics of Statistics <i>Teaching assistant BSc Biomedical Engineering, Politecnico di Milano</i>	2020-2021
Stochastic differential equations <i>Teaching assistant MSc Mathematical Engineering, Politecnico di Milano</i>	2020-2021
Probability and Statistics <i>Teaching assistant BSc Management Engineering, Politecnico di Milano</i>	2019-2020

VISITING PERIODS

University of Luxembourg <i>1 Week Collaboration with Michele Stecconi</i>	January 2025
Imperial College, London <i>1 Week Collaboration with Ofelia Bonesini</i>	July 2024
Università di Parma <i>1 Week Collaboration with Alessandro Calvia</i>	February 2024
KTH, Stockholm <i>1 Week Collaboration with Boualem Djehiche</i>	May 2022

ORGANIZATION

Part of the organizers of "Workshop on Stochastic Processes, Stochastic Optimal Control, and their Applications" <i>September 26 - 27th, 2024 Politecnico di Milano</i>
Contributed session "Mean Field Games and Mean Field Control I" <i>4th Italian Meeting on Probability and Mathematical Statistics, 2024 Roma</i>

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	<ul style="list-style-type: none">• From 2023: member of the ERC project ELISA (Grant agreement No. 101054746), P.I. Prof. F. Delarue.
Memberships	<ul style="list-style-type: none">• From 2022: Unione Matematica Italiana (UMI)• From 2020: Indam, GNAMPA
Scholarships	<ul style="list-style-type: none">• 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-Ubuntu, 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

07/04/2025