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

Delarue, F. and **M. Martini** (2024). "Fourier Galerkin approximation of mean field control problems". arXiv:2403.15642.

Articles

M. Martini (2022). "Kolmogorov equations on the space of probability measures associated to the nonlinear filtering equation: the viscosity approach". *To appear in Stochastic Analysis and Applications*.

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

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

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

M. Martini 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

PDE Seminar, Georgia Tech (online) — **2024**
Presentation of [Delarue, M. 24] - seminar of the PDE group

2nd AMS-UMI International Joint Meeting — **2024**
Presentation of [Delarue, M. 24] - invited session "Mean Field Games and related topics"

Seminario di Probabilità e Statistica, Politecnico di Milano — **2024**
Presentation of [Delarue, M. 24] - seminar of the probability and statistics group

Fourth Italian Meeting on Probability and Mathematical Statistics — **2024**
Presentation of [Delarue, M. 24] - 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**
Presentation of [M. 23] - seminar of the probability and statistics group

PGMO Days — **2023**
Presentation of [M. 23] - invited session "Mean field games and control"

A Random Walk in the Land of Stochastic Analysis and Numerical Probability — **2023**
Presentation of [M. 23] - poster

SPDEs, optimal control and mean field games — **2023**
Presentation of [M. 23] - poster

The 9th International Colloquium on BSDEs and Mean Field Systems — **2022**
Presentation of [M. 23] - contributed talk

Third Italian Meeting on Probability and Mathematical Statistics — **2022**
Presentation of [M. 23] - contributed session "New trends in stochastic control"

100 years UMI and First UMI meeting of PhD students — **2022**
Presentation of [M. 23] - contributed talk

Università degli Studi Milano-Bicocca, Seminars cycle "Insalate di Matematica" 2021
Backward Kolmogorov equations: a link between PDEs and SDEs

Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups 2021
Presentation of [M. 23] - contributed talk

Working group on Optimal Transport and Mean Field Games, Università degli Studi di Milano - Università degli Studi di Milano Bicocca - Politecnico di 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

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 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

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

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

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

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

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

A Random Walk in the Land of Stochastic Analysis and Numerical Probability
Sept. 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

03/09/2024