

# 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

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- 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** F. Delarue and **M. M.** (2024). "Fourier Galerkin approximation of mean field control problems". *To appear in Nonlinear Differential Equations and Applications NoDEA*.
- M. M.** (2024). "Kolmogorov equations on the space of probability measures associated to the nonlinear filtering equation: the viscosity approach". *To appear in Stochastic Analysis and Applications*.
- 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.
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## GIVEN TALKS, SEMINARS AND POSTERS

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|---|-------------|
| <b>PDE Seminar, Georgia Tech (online)</b>   | <b>2024</b> |
| <i>Presentation of [Delarue, M. 24] - seminar of the PDE group</i>  |             |
| <b>2nd AMS-UMI International Joint Meeting</b>  | <b>2024</b> |
| <i>Presentation of [Delarue, M. 24] - invited session "Mean Field Games and related topics"</i>                   |             |
| <b>Seminario di Probabilità e Statistica, Politecnico di Milano</b>   | <b>2024</b> |
| <i>Presentation of [Delarue, M. 24] - seminar of the probability and statistics group</i>                         |             |
| <b>Fourth Italian Meeting on Probability and Mathematical Statistics</b>  | <b>2024</b> |
| <i>Presentation of [Delarue, M. 24] - invited session "Stochastic optimal control of McKean-Vlasov equations"</i> |             |
| <b>Young Researchers in Stochastic Control and Games</b>  | <b>2023</b> |
| <i>Presentation of [Delarue, M. 24] - invited talk</i>  |             |
| <b>Séminaire de Probabilités et Statistique, LJAD</b>   | <b>2023</b> |
| <i>Presentation of [M. 23] - seminar of the probability and statistics group</i>                                  |             |
| <b>PGMO Days</b>  | <b>2023</b> |
| <i>Presentation of [M. 23] - invited session "Mean field games and control"</i>                                   |             |
| <b>A Random Walk in the Land of Stochastic Analysis and Numerical Probability</b>                                 | <b>2023</b> |
| <i>Presentation of [M. 23] - poster</i>   |             |
| <b>SPDEs, optimal control and mean field games</b>  | <b>2023</b> |
| <i>Presentation of [M. 23] - poster</i>   |             |
| <b>The 9th International Colloquium on BSDEs and Mean Field Systems</b>   | <b>2022</b> |
| <i>Presentation of [M. 23] - contributed talk</i>   |             |
| <b>Third Italian Meeting on Probability and Mathematical Statistics</b>   | <b>2022</b> |
| <i>Presentation of [M. 23] - contributed session "New trends in stochastic control"</i>                           |             |

<b>100 years UMI and First UMI meeting of PhD students</b>	<b>2022</b>
<i>Presentation of [M. 23] - contributed talk</i>	
<b>Università degli Studi Milano-Bicocca, Seminars cycle "Insalate di Matematica"</b>	<b>2021</b>
<i>Backward Kolmogorov equations: a link between PDEs and SDEs</i>	
<b>Trento-Wuppertal School on Stochastic Processes, Analysis and Semigroups</b>	<b>2021</b>
<i>Presentation of [M. 23] - contributed talk</i>	
<b>Working group on Optimal Transport and Mean Field Games, Università degli Studi di Milano - Università degli Studi di Milano Bicocca - Politecnico di Milano</b>	<b>2019</b>
<i>Two lectures on differentiation in Wasserstein spaces</i>	

## TEACHING

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

## VISITING PERIODS

<b>Imperial College, London</b>	<b>July 2024</b>
<i>1 Week   Collaboration with Ofelia Bonesini</i>	
<b>Università di Parma</b>	<b>February 2024</b>
<i>1 Week   Collaboration with Alessandro Calvia</i>	
<b>KTH, Stockholm</b>	<b>May 2022</b>
<i>1 Week   Collaboration with Boualem Djehiche</i>	

## ORGANIZATION

<b>Part of the organizers of "Workshop on Stochastic Processes, Stochastic Optimal Control, and their Applications"</b>	
<i>September 26 - 27th, 2024   Politecnico di Milano</i>	
<b>Contributed session "Mean Field Games and Mean Field Control I"</b>	
<i>4th Italian Meeting on Probability and Mathematical Statistics, 2024   Roma</i>	
<b>Conference "Phd Days 2021"</b>	
<i>December 14 - 17th, 2021   Università degli Studi di Milano</i>	

## OTHERS

<b>Abilitations</b>	Maître de conférences (26 - Mathématiques appliquées et applications des mathématiques)
<b>Referee activities</b>	Annals of Applied Probability, SICON, Stochastic Processes and Their Applications, Systems & Control Letters.
<b>Part of research projects</b>	<ul style="list-style-type: none"> <li>From 2023: member of the ERC project ELISA (Grant agreement No. 101054746), P.I. Prof. F. Delarue.</li> </ul>
<b>Memberships</b>	<ul style="list-style-type: none"> <li>From 2022: Unione Matematica Italiana (UMI)</li> <li>From 2020: Indam, GNAMPA</li> </ul>

## ATTENDED CONFERENCES, WORKSHOPS AND SCHOOLS

### Scholarships

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

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### 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

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### IT

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

### Languages

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

Mattia Martini

24/10/2024