ANTONIO OCELLO

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Employment

2023 – present **Assistant Professor** | CREST, ENSAE Paris, Institut Polytechnique de Paris (Palaiseau – France)
Topics: Diffusion models, Generative models, Sampling, Stochastic control, Mean Field Games, Mean Field Control, Actuarial science, Branching Processes

Previous employment

2023 – present **PostDoc in Statistics and Machine Learning** | Ecole Polytechnique (Palaiseau – France)
Funded by *ERC Synergy Grant "On intelligenCE And Networks" (OCEAN)*
Supervised by *Eric Moulines* (Professor, Ecole Polytechnique)

2021 – 2023 **PhD in Probability** | LPSM - Sorbonne Université (Paris – France)

Funded by	*École Doctorale de Sciences Mathématiques de Paris Centre 386*
Supervised by	*Idris Kharroubi* (Professor, Sorbonne Université)
Referees	Christa Cuchiero (Professor, University of Vienna), Francois Delarue (Professor, Université Côte d'Azur)
Examiners	Gilles Pagès (Professor, Sorbonne Université), Jean-Francois Chassagneux (Professor, Université de Paris Cité), Julien Claisse (AssistantProfessor, CEREMADE, Université de Paris Dauphine)
Committee President	Viet Chi Tran (Professor, Université Gustave Eiffel)

Publications

Journals

2025 **Controlled superprocesses and HJB equation in the space of finite measures**, A.O., arXiv:2306.15962, Journal of Mathematical Analysis and Applications (JMAA).

2025 **An analysis of the noise schedule for score-based generative models**, Stanislas Strasman, A. O., Claire Boyer, Sylvain Le Corff, Vincent Lemaire, arXiv:2402.04650, Transactions on Machine Learning Research (TMLR).

2024 **A stochastic target problem for branching diffusion processes**, Idris Kharroubi, A.O., arXiv:2206.13267, *Stochastic Processes and their Applications*.

Conferences

2025 **Wasserstein Convergence of Critically Damped Langevin Diffusions**, Stanislas Strasman, Sobihan Surendran, Claire Boyer, Sylvain Le Corff, Vincent Lemaire, A. O., The Thirty-ninth Annual Conference on Neural Information Processing Systems.

2025 **Beyond Log-Concavity and Score Regularity: Improved Convergence Bounds for Score-Based Generative Models in W2-distance**, Marta Gentiloni–Silveri, A. O., arXiv:2501.02298, The Forty-Second International Conference on Machine Learning (ICML).

2025 **Discrete Markov Probabilistic Models**, Le Tuyet Nhi Pham, Dario Shariatian, A. O., Giovanni Conforti, Alain Durmus, arXiv:2502.07939, The Forty-Second International Conference on Machine Learning (ICML).

2025 **Finite-Sample Convergence Bounds for Trust Region Policy Optimization in Mean-Field Games**, A. O., Daniil Tiapkin, Lorenzo Mancini, Mathieu Laurière, Éric Moulines, arXiv:2505.22781, The Forty-Second International Conference on Machine Learning (ICML)

Article drafts

2025 **Controlled Interacting Branching Diffusion Processes: A Viscosity Approach**, A.O.

2024 **Optimal Stopping of Branching Diffusion Processes**, Idris Kharroubi, A.O., arXiv:2401.12811

2023 **Controlled Interacting Branching Diffusion Processes: Relaxed Formulation in the Mean-Field Regime**, A.O., arXiv:2304.07064

Professional activities

2020 ***Off-cycle internship*** | BNP Paribas Asset Management - Quant Research Group (Paris, France) *6 months*
- Development of multi-factor models on the credit market to generate positive alpha. Model selection, data analysis, and backtesting.
- Responding quickly to client queries. Cashflow simulations that take into account the risk of default and the risk of reinvestment. Construction of a client-serve infrastructure and of a GUI via dash.

2019 **Internship** | LPSM - Sorbonne Université (Paris – France) *3 months*
Applications of statistical models and extreme values theory to explain the magnitude of marine risks in collaboration with geologists
Supervised by: *Maud Thomas* (Assistant professor, Sorbonne Université)

Mini-courses

June, 2025 ***Generative Models***, part of the doctoral course *Deep learning: an introduction and some mathematical results* by Elena Issoglio, PhD program *Modeling and Data Science,* Università degli Studi di Torino, Italy

September 2024 ***Mean Field Interactions in Stochastic Games***, *Mathematical insights from Markets, Control, and Learning*, Centre Paul Langevin, Aussois, France

July 2024 *Mean field games for Machine Learning*, ERC OCEAN Summer retreat, University of Ca' Foscari, Venice, Italy

Teaching experiences

2025 – 2026 - *Machine Learning for Climate Risk* (Advanced Master in Actuarial Science–*Mastère Spécialisé*, ENSAE Paris, main professor - 45 students, 15 hours)
- *Generative AI for Insurance and Actuarial Studies* (Advanced Master in Actuarial Science–*Mastère Spécialisé*, ENSAE Paris, main professor - 45 students, 18 hours)
- *C++* (2nd year, Engineering Cycle, ENSAE Paris, computer labs - 20 students, 12 hours)
- *M2 thesis supervision*, ENSAE Paris (academic supervisor of 3 students)

2024 – 2025 - *Non-life insurance* (1st year, Master in Actuarial science, ISUP, main professor - 60 students, 30 hours)
- *Data Science* (CPES L2, Lycée International de Palaiseau, main professor - 45 students, 90 hours)
- *M2 thesis supervision*, Sorbonne Université, ISUP, Master Actuariat (academic supervisor of 4 students)

2023 – 2024 - *Random phenomena modeling: introduction to Markov chains and martingales* (Ingénieur 2A, Ecole Polytechnique, tutoring)
- *Mathematics* (Diplôme Universitaire de Retour aux Études Supérieures des Personnes Exilées - DU RESPE, Sorbonne Université)
- *M2 thesis supervision*, Sorbonne Université, ISUP, Master Actuariat (academic supervisor of 4 students)

2021 – 2022 - *Numerical probability and computational statistics* (1st year, Master in Mathematics, Sorbonne Université, computer labs)
- *Statistical modelling* (1st year, Master in Mathematics, Sorbonne Université, computer labs)
- *Stochastic calculus* (1st year, Master in Actuarial science, ISUP, exercise classes)

2021 – 2022 - *Numerical probability* (1st year, Master in Mathematics, Sorbonne Université, computer labs)
- *Stochastic calculus* (1st year, Master in Actuarial science, ISUP, exercise classes)

2017 – 2018 - *Affine, Euclidean, Hermitian and Projective Geometry* (1st year, Bachelor in Mathematics, Università degli Studi di Padova, exercice classes)

Scientific activities

Seminars

2022–ongoing **Co-organiser of *Les Probabilités de Demain*** | Paris, France

Les Probabilités de Demain *is a conference that aims to bring together probabilists from the Paris region. It is based on presentations by doctoral students from Île-de-France, with an introduction by a renowned researcher.*

2024–ongoing **Member of the *Young Statisticians Group* at SFdS (Société Française de Statistique)** | France

The Young Statisticians Group aims to build a professional network and promote exchanges, both scientific and otherwise, among the young members of the association, organizing the *Young Statisticians and Probabilists* (YSP) event in January and leading part of the *Journées de Statistiques* in June.

Conferences and workshops

March 2026 **Co-organiser of the workshop *Generative AI for Extreme Values*** | Paris, France

September 2024 **Co-organiser of the conference *Mathematical insights from Markets, Control, and Learning*** | Centre Paul Langevin, Aussois, France

Previous scientific activities

2024 – 2025 **Co-organiser of *Surfing the OCEAN*** | Paris, France

Surfing the OCEAN *is the ERC synergy grant* OCEAN *monthly seminar aimed at fuelling collaboration and sharing fresh ideas about ongoing projects within the consortium.*

2024 – 2025 **Co-organiser of the *Seminar of the Statistics Unit* at CMAP, Ecole Polytechnique** | Palaiseau, France

2021 – 2023 **PhD students representative** | École Doctorale de Sciences Mathématiques de Paris Centre 386, Paris, France

Representative of the doctoral students in all the École doctorale (ED) 386 *bodies (Council, etc…), bringing up requests or proposals and their criticisms about funding, training, scientific animation or ED policy. Member of the comity for the attribution of ED386 doctoral contracts to the following year's candidates. Mediator between the doctoral student and the ED to bring to the attention of the ED a complaint or a request related to the non-respect of the thesis charter.*

2021 – 2023 **PhD students representative** | LPSM - Sorbonne Université, Paris, France

Representative of PhD students in the Council of LPSM

2022 – 2023 **Co-organizer of InfoMaths** | Sorbonne Université, Paris, France

InfoMaths is a seminar about informatics tools for mathematicians

2021 – 2023 **Co-organiser of the PhD students seminar** | LPSM - Sorbonne Université, Paris, France

2016 – 2018 **Bachelor and Master students representative** | Università degli Studi di Padova, Padova, Italy

Link between students and faculty members, including participation in meetings with professors and researchers; member of Gruppo per l'accreditamento e la valutazione *(GAV), group for pedagogical evaluation in the Mathematics Department*

Education

2019 – 2020 **Master 2 – Probability and Finance (ex-DEA *El Karoui*)** | École Polytechnique – Sorbonne Université (Paris – France)

Courses: Introduction to diffusion processes, Numerical probability for finance, Optimization and stochastic control, Machine learning, neural networks and deep learning, Risk measurements and extreme values theory, Stochastic processes and derivatives, High-frequency trading, Introduction to Jump Models, Evolution of Practices and Regulation, Valuation and Risk Management in Energy Markets, Stochastic Algorithms

Mention: *Bien*

2018 – 2019 **Master 1 – Mathematics and Applications** | Sorbonne Université (Paris – France)

Average: 18.47/20

2015 – 2018 **Bachelor's degree in Mathematics**| Università degli Studi di Padova (Padova – Italy)

Mark: 110/110 cum laude

2010 – 2015 **High School** (Italy)

Mark: 100/100 cum laude

Academic honours

2018 - 2020 Fondation Sciences Mathématiques de Paris | **Scholarship PGSM for the Master's degree**

2017 - 2018 Università degli Studi di Padova | **Scholarship "Mille e una lode"**

Scholarship awarded to the top 3% of the University's best students

Skills

LANGUAGES ITALIAN (*native speaker*); FRENCH (*level C2*); ENGLISH (*level C1*) ; SPANISH (*level C1*);

IT Python, R, LaTeX, MATLAB, C++, Mathematica, HTML