Rudy Morel

PhD student in Mathematics

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Education

2020-2023 **PhD student**, *École Normale Supérieure, PSL University*, Center for Data Science, Paris, France.
On the modelling of multi-scale processes, with application to Finance, Physics, Seismology.
Under the supervision of Stéphane Mallat, in close collaboration with Jean-Philippe Bouchaud.

2018–2019 **MSc in Mathematics**, *Sorbonne Université*, Paris, France.
One of the top-ranking MSc in Probability and Finance (ex DEA El Karoui).
With highest honours, rank: 1^{st}/80.

2018 **"Agrégation" in Mathematics**, *major in Probability and Statistics*, France.
The highest competitive exam in Mathematics in France. Rank: 6^{th} (315 admitted, 1529 candidates).

2015-2018 **École Normale Supérieure of Rennes, Department of Mathematics**, *Rennes, France.*
One of the top-ranking university in Mathematics in France. Prepares its students to research and innovation.
-MSc in Mathematics, with highest honours, rank: 1^{st}/50.
-BSc in Mathematics, with highest honours, rank: 1^{st}/132.

Experience

2021-2023 **Lecturer in Mathematics**, *CPES*, PSL University, Paris, France.
Teaching Fundamental Mathematics at undergraduate level.

2019-2021 **Main organizer of the "Challenge Data"**, Paris, France.
A French competition over data challenges gathering more than 10000 participants.
Organizing call for projects, beta-testing proposed problems, relations with companies and participants.

2019-2020 **Research Engineer**, *École Normale Supérieure, PSL University*, Paris, France.
Under the supervision of Stéphane Mallat in close collaboration with Jean-Philippe Bouchaud.

Apr.-Sep. 2019 **Equity Derivatives Strat Intern**, *Morgan Stanley*, Exotic derivatives team, London, UK.
Pricing models, trading support, statistical tools, new payoffs.

May-June 2017 **Research internship**, *Università degli studi di Tor Vergata*, Rome, Italy.
Long time behavior of optimal control over PDEs. Supervised by Piermarco Cannarsa and Alessio Porretta.

May-June 2016 **Research internship**, *Mathematics Institute of Jussieu*, Paris, France.
Critical points of Morse's functions and manifold decomposition. Supervised by Hélène Eynard-Bontemps.

Publications and Talks

R. Morel, G. Rochette, R. Leonarduzzi, J.-P. Bouchaud, and S. Mallat, "Scale dependencies and self-similarity through wavelet scattering covariance," *arXiv*, 2022.

Sept 2022 **SIAM conference on Mathematics of Data Science**, San Diego, US
Sept 2022 **FARF4 conference on fractals and related fields**, Porquerolles, France
June 2022 **Geo-Mathematical Imaging group**, Houston, US
June 2022 **ML Theory Summer School**, Princeton, US
Mar 2022 **AI generation 2030 colloquium**, EU, Brussels, Belgium.
Jan 2022 **Multifractal analysis seminar**, Créteil, France.
Nov 2021 **AI doctoral workshop**, Toulouse, France.
Nov 2021 **Random Matrix theory seminar**, Paris, France.
Sep 2021 **CFM Econophysics retreat**, Verrières, France.

Languages

French	Mother tongue
Anglais	Fluent written and spoken, TOEIC 905/990 (a commonly known English certification in France)
Espagnol	Basic communication skills

Computer skills

Python	Very good	C++	Basic
Matlab	Basic	Java	Basic