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# Yassine Nachit

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Postdoctoral researcher

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## Biography

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I am a researcher in probability theory, focusing on generalizing some probability aspects from Gaussian to non-Gaussian settings. I am currently a postdoctoral researcher in Professor Ciprian Tudor group at the University of Lille, working mainly on developing new tools in Malliavin calculus to investigate densities of non-Gaussian processes, Stein method, and local times.

## Research interest

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Gaussian/non-Gaussian Probability Theory. Stochastic Analysis. Stochastic (partial) differential equations driven by Gaussian/non-Gaussian processes. Malliavin calculus. (Malliavin) Stein method. Sample path properties. local times for Gaussian/non-Gaussian processes. Besov regularity of stochastic processes. Gaussian density estimates.

## Education

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- **Ph.D. in Applied Mathematics (Analysis and Probability)** 2016–2022\*  
Cadi Ayyad University, Marrakesh, Morocco.  
Thesis: *Local times and Besov regularity of the solution to the stochastic heat equation.*  
Supervisor: Brahim Boufoussi.
- **Master's degree in Probability and Statistics** 2014–2016  
Cadi Ayyad University, Marrakesh, Morocco.

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Master's thesis: *Local times for Gaussian processes*. Supervisor: Brahim Boufoussi.

- **Bachelor of Fundamental Studies in Mathematics** 2010–2013  
Cadi Ayyad University, Marrakesh, Morocco.
- **Scientific Baccalaureate** 2009–2010  
Marrakesh, Morocco.

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\* Doctoral timeline includes two medical leaves (one year each).

## Work experience

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- **Postdoctoral researcher**, University of Lille, Lille, France 2024–present  
Supervisor: Ciprian Tudor.
- **Postdoctoral researcher**, University of Luxembourg, Luxembourg 2023<sup>†</sup>–2024  
Supervisor: Ivan Nourdin.

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<sup>†</sup> The period 2022–2023 corresponds to visa processing and administrative formalities related to the start of the Luxembourg postdoc.

## Publications<sup>†</sup>

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### Preprints

- [1] **Yassine Nachit**, Ciprian Tudor. *Joint independence from a Gaussian random variable*. Preprint (2025).
- [2] Laurent Loosveldt, **Yassine Nachit**, Ivan Nourdin, Ciprian Tudor. *Malliavin smoothness of the Rosenblatt process*. Preprint arXiv:[2511.10299](#) (2025).
- [3] Laurent Loosveldt, **Yassine Nachit**, Ivan Nourdin, Ciprian Tudor. *Absolute continuity of finite-dimensional distributions of Hermite processes via Malliavin calculus*. Preprint arXiv:[2509.21169](#) (2025).

### Published / accepted

- [4] Brahim Boufoussi, **Yassine Nachit**. *On the uniform Besov regularity of local times of general processes*. *Journal of Fractal Geometry* (2026). DOI: [10.4171/JFG/181](#).
- [5] Iulian Cîmpean, **Yassine Nachit**, Ciprian Tudor. *Quartic variation of the solution to the semilinear stochastic heat equation: limit behavior and asymptotic independence with respect to the data*. *Journal of Mathematical Analysis and Applications* (2025). DOI: [10.1016/j.jmaa.2025.130258](#).
- [6] Brahim Boufoussi, **Yassine Nachit**. *Besov regularity and local time of the solution to the stochastic heat equation*. *Stochastics* (2023). DOI: [10.1080/17442508.2022.2164696](#).

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- [7] Brahim Boufoussi, **Yassine Nachit**. *Local times for systems of nonlinear stochastic heat equations. SPDE: Analysis and Computations* (2022). DOI: [10.1007/s40072-021-00231-9](https://doi.org/10.1007/s40072-021-00231-9).
- [8] Brahim Boufoussi, **Yassine Nachit**. *Besov regularity of bifractional Brownian motion. Probability and Mathematical Statistics* (2021). DOI: [10.37190/0208-4147.41.2.6](https://doi.org/10.37190/0208-4147.41.2.6).

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<sup>‡</sup> Preprints and publications are listed in reverse chronological order.

## Grants and awards

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- Seal of Excellence (88%): *Sample path properties of Hermite sheets and related random fields* (SPP HS-RRF), MSCA-PF-2023 High Quality Project, 101155495 (European Commission). 2023
- Seal of Excellence Laureate — Initiative d'excellence, Université de Lille (SoE-IE): support program for MSCA-PF Seal of Excellence holders at the University of Lille. 2025
- Seal of Excellence (89.20%): *Quantitative conditionally Gaussian approximations in deep neural networks* (CANDIDE), MSCA-PF-2025 High Quality Project (European Commission). 2025

## Teaching

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- Lecturer, Mathematics Software (Bachelor's), University of Luxembourg. Summer 2023
- Lecturer, Linear Algebra 2 (Bachelor's), University of Luxembourg. Summer 2023
- Lecturer, Optimization and Numerical Probability (Master in Data Science), University of Luxembourg. Winter 2024
- Tutor, Optimization and Numerical Probability (Master in Data Science), University of Luxembourg. Winter 2024
- Lecturer, Mathematics Software (Bachelor's), University of Luxembourg. Summer 2024
- Teaching assistant, University of Lille: some probability tutorials (Bachelor level) and some lectures/tutorials in Itô calculus for the MFCA Master's program. 2024–2025

## Mentoring and supervision

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- Bachelor's thesis supervision (University of Luxembourg): *Illustration of the Central Limit Theorem and simulations of random variables in  $R$* .

## Talks

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### Conference talks

- Plenary speaker, Journées RT<sup>2</sup> ANAIS–MAIAGES 2025: *Aléatoire et Fractales*, Université Bretagne Sud, Vannes (France).

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- Title: *Local times for systems of non-linear stochastic heat equations.* Apr. 2–4, 2025
  - Fractional Brownian Motion and its Applications, University of Luxembourg (Luxembourg).  
Title: *Densities for solutions of SDEs driven by non-Gaussian processes.* Apr. 23–24, 2024
  - Stochastic Dynamics and Stochastic Equations, Bernoulli Center program at EPFL, Lausanne (Switzerland).  
Title: *Malliavin calculus for SDEs driven by non-Gaussian processes.* Mar. 25–27, 2024
  - Marrakesh International Workshop on Random Fractals and Markov Processes, Marrakesh (Morocco).  
Title: *Local times for systems of non-linear stochastic heat equations.* Nov. 21–26, 2022
  - NSF/CBMS Conference: Gaussian Random Fields, Fractals, SPDEs, and Extremes, University of Alabama in Huntsville (USA).  
Title: *Local times for systems of non-linear stochastic heat equations.* Aug. 2–6, 2021
  - ICRAMCS 2021, Casablanca (Morocco). Title: *Local time for the stochastic heat equation.* Mar. 26–27, 2021
  - SM2A Congress, Beni Mellal (Morocco). Title: *On the local time of the solution of the non-linear stochastic heat equation.* Nov. 7–9, 2019

## Seminar talks

- Doctoral & Postdoctoral Seminar, University of Luxembourg (Luxembourg).  
Title: *Malliavin processes: the genesis of a new paradigm.* Dec. 9, 2025
- Probability and Statistics Seminar, University of Lille (France).  
Title: *Densities for solutions of SDEs driven by non-Gaussian processes.* Nov. 12, 2024
- Probability and Statistics Seminar, University of Luxembourg (Luxembourg).  
Title: *Local times and Besov regularity of the solution to the stochastic heat equation.* Oct. 20, 2022
- Probability and Statistics Seminar, Faculty of Sciences Semlalia, Cadi Ayyad University (Marrakesh, Morocco).  
Title: *On the Besov regularity of some processes.* Mar. 5, 2020
- Probability and Statistics Seminar, Faculty of Sciences Semlalia, Cadi Ayyad University (Marrakesh, Morocco).  
Title: *Walsh's stochastic integral and stochastic heat equation.* Dec. 1, 2016

## Professional activities

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### Participation in conferences

- 20 Years of the Fourth Moment Theorem, University of Luxembourg (Luxembourg).  
Dec. 11–12, 2025
- Luxembourg Workshop in Stochastic Analysis (2nd edition), University of Luxembourg (Luxembourg).  
Feb. 10–12, 2025
- International conference on Malliavin calculus and related topics, University of Luxembourg (Luxembourg).  
Jun. 12–16, 2023

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- Luxembourg Workshop in Stochastic Analysis, University of Luxembourg (Luxembourg).  
Feb. 15–17, 2023
  - Probability and Statistics Day, National School of Applied Sciences, Cadi Ayyad University (Marrakesh, Morocco).  
Sep. 27, 2016

## Research schools

- École Mathématique Africaine (EMA2015): *Théorie générale des processus stochastiques et introduction au calcul de Malliavin*, Cadi Ayyad University, Marrakesh (Morocco). Oct. 12–23, 2015
- Research School on Stochastic Analysis and its Applications (SSAA'2017), Faculty of Sciences Semlalia, Cadi Ayyad University, Marrakesh (Morocco). Apr. 3–13, 2017

## Service and refereeing

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- Referee for *Statistics & Probability Letters* and *Journal of Fractal Geometry*.

## Research visits

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- Research visit (1 week), Department of Mathematics, University of Luxembourg (host: Ivan Nourdin). Oct. 2022
  - Research visit, Department of Mathematics, University of Liège (host: Laurent Loosveldt). Jan. 26–28, 2025

## Skills

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- Mathematical: probability and statistics; analysis; algebra; financial mathematics; stochastic analysis; Malliavin calculus.
  - Programming: C, C++, R, Scilab, L<sup>A</sup>T<sub>E</sub>X, Python, SageMath.
  - Languages: Arabic; English, French.