

Youssef Hakiki

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RESEARCH INTERESTS & ABOUT ME

I am a Golomb visiting Assistant Professor at Purdue University. I hold a Ph.D. in Probability Theory from the Faculty of Sciences at Cadi Ayyad University, Morocco, in July 2024, under supervision of Professors Brahim Bofoussi and Mohamed Erraoui. My research focuses on the sample path properties of random fields, rough paths, and SPDEs. Currently, I am working on rough sheets integration and their application to singular SPDEs such as the Stochastic Wave Equation.

ACADEMIC APPOINTMENTS & RESEARCH

Purdue University <i>Golomb Visiting Assistant Professor (Postdoc)</i>	West Lafayette, IN, USA Sep 2024 – Present
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William Marsh Rice University <i>Research Assistant</i>	Houston, TX, USA Oct 2022 – Apr 2023
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TEACHING EXPERIENCE

Purdue University <i>Instructor (Linear Algebra)</i>	West Lafayette, IN, USA Fall 2024 – Spring 2026
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Private University of Marrakech <i>Instructor (Probability and Statistics)</i>	Marrakech, Morocco Fall 2023 – Spring 2024
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Cadi Ayyad University <i>Teaching Assistant (Calculus)</i>	Marrakech, Morocco Fall 2023 – Spring 2024
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Cadi Ayyad University <i>Teaching Assistant (Calculus and Algebra)</i>	Marrakech, Morocco Spring 2019 – Spring 2022
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EDUCATION

Cadi Ayyad University <i>Ph.D. in Probability Theory</i> Thesis title: "Sample Path Properties for Some Highly Irregular Gaussian processes" Advisors: Brahim Boufoussi and Mohamed Erraoui	Marrakech, Morocco January 2019 – July 2024
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Cadi Ayyad University <i>Master's Degree in Probability and Statistics</i>	Marrakech, Morocco 2016 – 2018
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Cadi Ayyad University <i>Bachelor's Degree in Mathematics</i>	Marrakech, Morocco 2013 – 2016
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Abi Abbas Essabti High School <i>High School Diploma</i>	Marrakech, Morocco 2012 – 2013
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AWARDS & HONORS

AMS-Simons Travel Grant – \$5,000 <i>American Mathematical Society (AMS) & Simons Foundation</i> Competitive travel grant awarded to early-career mathematicians to support participation in conferences, workshops, and research collaborations.	2026 – 2028
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CNRST Research Grant (Bourse d'Excellence) – 108,000 MAD ($\approx$ \$10,800) <i>National Center for Scientific and Technical Research (CNRST), Morocco</i>	2019 – 2022
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Highly competitive 36-month fellowship awarded annually to only 300 outstanding PhD students nationwide.

First-Ranked Graduate, Master of Probability and Statistics

2018

Cadi Ayyad University, Marrakech, Morocco

PUBLICATIONS & PREPRINTS

1. *On Itô-Stratonovich formula for rough sheets.* arxiv.org/abs/2606.20908 (with Samy Tindel)
2. *Polarity of points for Gaussian random fields in critical dimension.* arxiv.org/abs/2604.08129 (with Cheuk Yin Lee and Yimin Xiao)
3. *Irregularity scales for Gaussian processes: Hausdorff dimensions and hitting probabilities.* Accepted for publication in **Ann. Inst. Henri Poincaré (B) Probab. Stat.** (with Frederi Viens)
4. *Fractional Brownian motion with deterministic drift: Fractal codimension formulae.* **Electron. J. Probab.** **30: 1-37 (2025).** (with Mohamed Erraoui)
5. *Fractional Brownian motion with deterministic drift: How critical is drift regularity in hitting probabilities.* **Math. Proc. Cambridge Phil. Soc.** **178 (1): 103-132 (2025).** (with Mohamed Erraoui)
6. *Images of fractional Brownian motion with deterministic drift: Positive Lebesgue measure and non-empty interior.* **Math. Proc. Cambridge Phil. Soc.** **173 (3), (2022) 693-713.** (with Mohamed Erraoui)

RESEARCH VISITS

- **Michigan State University**, Dept. Probability and Statistics, USA November 18– 19, 2025
- **Rice University**, Dept. Statistics, USA June 12– 27, 2024
- **Rice University**, Dept. Statistics, USA February 27– March 25, 2024
- **University of Utah**, Dept. Mathematics, USA June 22–25, 2023
- **Purdue University**, Dept. Mathematics, USA February 21–23, 2023
- **Michigan State University**, Dept. Statistics & Probability, USA June 21 – August 09, 2022
- **Côte d’Azur University**, J.A. Dieudonné Laboratory, France September 03–15, 2018

SELECTED TALKS & PRESENTATIONS

- **SPDEs Workshop at OSU**, Ohio State University, USA (June 2-4, 2026).
Talk: Fractional Brownian Sheet: Rough-Young Integration and Change of Variable Formula.
- **Vanguard Seminar**, University Mohammed 6 Polytechnic, Rabat, Morocco (Apr 8, 2026).
Talk: Fractional Brownian Sheet: Rough-Young Integration and Change of Variable Formula.
- **Joint Moroccan and Mexican Sciences Academies Workshop on Mathematics**, Hassan II Academy of Science and Technology, Rabat, Morocco (Apr 6-7, 2026).
Talk: Fractional Brownian Sheet: Rough-Young Integration and Change of Variable Formula.
- **Seminar of Stochastic Processes (SSP 2026)**, Union College, USA (Mar 25-28, 2026).
Poster and Talk: Fractional Brownian Sheet: Rough-Young Integration and Change of Variable Formula.
- **Northeast Probability Seminar**, CUNY, USA (Nov 20–21, 2025).
Talk: Polarity of points for Gaussian random fields in the critical dimension.
- **Probability Seminar**, Michigan State University, USA (Nov 19, 2025).
Talk: Polarity of points for Gaussian random fields in the critical dimension.
- **Seminar of Stochastic Processes (SSP 2025)**, Indiana University, USA (Mar 19-22, 2025).
Poster: Hitting probabilities of fractional Brownian motion with drift.
- **Probability Seminar**, Purdue University, USA (Apr 16, 2025).
Talk: Fractal codimension formulae for fractional Brownian motion.
- **Seminar of Stochastic Processes (SSP 2024)**, Rice University, USA (Mar 13-16, 2024).
Poster: Codimension formulae for the fractional Brownian motion’s image.
- **Probability Seminar**, University of Utah, USA (Jun 23, 2023).
Talk: Irregularity scales for Gaussian processes.
- **Seminar of Stochastic Processes (SSP 2023)**, University of Arizona, USA (Mar 8-11, 2023).
Poster and Talk: Path Properties of Gaussian Processes with General Covariance Structure.

- **Probability Seminar**, Purdue University, USA (Feb 22, 2023).
Talk: Fractal properties of Gaussian processes beyond the Hölder scale.
- **Ph.D. Student Seminar**, Rice University, USA (Feb 3, 2023).
Invited Talk: Fractal Behavior of Stochastic Processes.

READING GROUPS

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| • Regularity Structures , organized by Prof. Ajay Chandra | Summer 2026 |
| • Stochastic Quantization Equation , organized by Prof. Ajay Chandra | Spring 2026 |
| • Stochastic Heat Flow , organized by Prof. Christopher Janjigian | Fall 2025 – Spring 2026 |
| • Stochastic Navier Stokes Equation , organized by Prof. Samy Tindel | Fall 2024 – Spring 2025 |

SKILLS & LANGUAGES

- **Languages:** Arabic (Native), French (Advanced), English (Advanced).
- **Programming:** C, C++, RStudio, Python.
- **Software:** LaTeX, Microsoft Office.
- **Operating Systems:** Windows, Linux, iOS.