

Runzhe Yang

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↗ Homepage

Personal Details

Date of Birth December 31st, 2001

Citizenship Chinese

Gender Male

Educations

- 10/2024 – **M.Sc./Phase I in Math (Stochastics & Finance)**, Berlin Mathematical School & TU Berlin,
2/2026 Berlin, Berlin, German (Awarded with BMS Phase I Scholarship),
(Expected) Thesis Title: Weak Rate and Error Bound for Rough and Quadratic Rough Heston Model
Advisor: Prof. Dr. Peter Friz & Dr. Christian Bayer.
- 3/2024 – **Visiting Internship Student for Research**, Department of Mathematics, The Hong Kong
5/2024 University of Science and Technology, Hong Kong SAR,
Host: Prof. Dr. Maximilian Nitzschner.
- 9/2020 – **Bachelor of Science in Math (Probability & Statistics)**, School of Mathematics and Statistics,
6/2024 Wuhan University, Wuhan, Hubei, China,
Thesis Title: Moderate Deviation of Gaussian Fluctuations for Coulomb Gases at Any Temperature,
Advisor: Prof. Dr. Fuging Gao
Overall GPA: 89.8/100.
- 9/2017 – **Abitur**, Huizhou No.1 Middle School, Huizhou, Guangdong, China,
6/2020 Final Grade: Top 0.13% Provincewide.

Research Interests

My primary research interests lie in the area involving Probability and Analysis.

- Mathematical Finance, Rough Volatility, Computational Finance and Machine Learning
- Stochastic Analysis and Stochastic (Partial) Differential Equations
- Rough analysis and its applications

Research Projects

- 6/2023 – **Lower Bound for Disconnection of Vacant Set in Loop Percolations**,
5/2024 Advisor: Prof. Dr. Maximilian Nitzschner,

The principal aim of this project is to derive asymptotic lower bound on the probability that in a certain model of random walk loops on the integer lattice, a macroscopic set is disconnected from infinity by the trace of the loops. We further study the large deviations of the occupation-time field for the loop soup and characterize its supercritical behavior..

- Ongoing **On the Rough and Quadratic Rough Heston Model**,

Advisors: Dr. Christian Bayer,

In this project, we mainly investigate the Rough and Quadratic Rough Heston Model. So far, I've studied the weak Markovian approximation for the Rough Heston model and proved that the weak scheme introduced by Bayer and Breneis indeed achieves the second-order weak rate they didn't establish. And I've also extended the PPDE method by developing Malliavin calculus for stochastic Volterra equations, which allows us to obtain the path-dependent Feynman–Kac equation and the functional Itô formula, and thereby derive the error bound for the Quadratic Rough Heston model.

Academic Experiences

- 7/2023 **Summer School Series on Probability and Related Fields: Masterclass in Random Geometry**, funded by Beijing International Center For Mathematical Research (BICMR), Peking University, Beijing, China.

Honors and Awards

- 12/2021 First Prize, Rank 16th, *the 13th China National Mathematics Competition for College Students, Wuhan*
- 5/2022 Finalist, Top 1%, *the 4th Alibaba Global Mathematics Competition*
- 7/2022 Winner's Prize, Rank 19th Nationwide, *the 13th S.-T. Yau College Student Mathematics Contest, Statistics and Probability track (individual)*
- 11/2022 First Class, Top 3%, *WHU Outstanding Mathematics Student Scholarship, Wuhan University, 2021-2022 Academic Year*
- 3/2023 Third Prize, *Finals of the 13th China National Mathematics Competition for College Students, Shanghai*
- 1/2024 Laureate, *Scholarship for Research Internship Student at HKUST (15,000 HKD/Month), Spring Semester*
- 2/2024 Laureate, *Phase I Scholarship for Student at Berlin Mathematical School (1,000 Euros/Month), 2024 - 2026*
- 5/2024 Merit Undergraduate, Top 20%, *Wuhan University*
- 6/2024 Laureate, Top 3%, *Outstanding Bachelor's Degree Thesis Award, Wuhan University*

Technical Proficiencies

Computer C/C++, R, L^AT_EX

Language Mandarin/Cantonese (Native), English (Fluent), German (Beginer)