Yilin YE

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Route de Saclay, 91120 Palaiseau

Education

École Polytechnique (X) - Institut Polytechnique de Paris (IP Paris) — Palaiseau, France
Laboratoire de Physique de la Matière Condensée (PMC, UMR 7643), CNRS — Oct. 2023 - Sept. 2026
PhD, Statistical Physics. Supervisor: Denis S. Grebenkov — Defense: Jun. 30, 2026

École Normale Supérieure (ENS) - Université Paris Sciences et Lettres (PSL) — Paris, France
Master 2 (M2), Physics (ICFP, Soft matter & Biophysics). Mention: Good (Bien). — Sept. 2022 - Jun. 2023
Master 1 (M1), Chemistry. — Sept. 2021 - Jun. 2022
Diplôme de l'ENS (DENS), Major/Minor: Physics/Chemistry. — Sept. 2019 - Jun. 2023

Xiamen University (XMU) — Xiamen, China
Bachelor, Chemistry. Honor: Outstanding Graduate. — Sept. 2015 - Jun. 2019

Publications

13. Grebenkov, D. S.; **Ye, Y.** Diffusion-controlled reactions with time-dependent reactivity. arxiv: 2610.23017
12. **Ye, Y.** Diffusion under competing bulk and surface stopping mechanisms. arxiv: 2609.05247
11. Grebenkov, D. S.; **Ye, Y.** Population dynamics of surface-mediated autocatalytic processes. arxiv: 2606.13498
10. Maïda, M.; Fahmy, A.; Fatras, J.-L.; **Ye, Y.** (2026) Large deviations in Coulomb gases: a mathematical perspective. *SciPost Physics Lecture Notes*, 120.
9. Grebenkov, D. S.; **Ye, Y.** (2026) The geometric control of boundary-catalytic branching processes. *Journal of Chemical Physics*, **164**, 104106. (Editor's Pick)
8. **Ye, Y.**; Grebenkov, D. S. (2026) Correlation between the first-reaction time and the acquired boundary local time. *Journal of Chemical Physics*, **164**, 084102.
7. **Ye, Y.**; Grebenkov, D. S. (2025) Local persistence exponent and its log-periodic oscillations. *Physica A: Statistical Mechanics and its Applications*, **680**, 131047.
6. **Ye, Y.**; Amarouchene, Y.; Sarfati, R.; Dean, D. S.; Salez, T. (2025) Brownian motion near a soft surface. *Comptes Rendus Physique*, **26**, 619-630.
5. **Ye, Y.**; Grebenkov, D. S. (2025) Boundary local time on wedges and prefractal curves. *Journal of Physics A: Mathematical and Theoretical*, **58**, 345002.
4. **Ye, Y.**; Chaigneau, A.; Grebenkov, D. S. (2025) Escape-from-a-layer approach for simulating the boundary local time in Euclidean domains. *Journal of Computational Physics*, **537**, 114099.
3. **Ye, Y.**; Chaigneau, A.; Grebenkov, D. S. (2025) First-passage times to a fractal boundary: Local persistence exponent and its log-periodic oscillations. *Physical Review E*, **111**, 014153. (Editors' Suggestion)
2. Zhang, F.; Niu, Y.; Hong, D.; **Ye, Y.**; Hua, Y.; Ding, S.; Zhang, Y. (2021) *Chinese Chemical Letters*, **32**, 668-671.
1. Li, J.; **Ye, Y.**; Zhang, Y. (2018) *Organic Chemistry Frontiers*, **5**, 864-892.

Researches

Probabilistic Approach to Diffusion-Mediated Surface Phenomena (M2, PhD thesis) — Palaiseau, France
Supervisor | Denis S. Grebenkov, PMC (UMR 7643), CNRS, École Polytechnique — Apr. 2023 - Oct. 2026
> First-passage time (FPT) to fractal boundaries with scaling laws emerging from complex geometry [3, 7];
> Versatile computational framework on boundary local time (BLT) for diverse interface environments [4, 5];
> Diffusion-controlled local time correlations [8] & catalytic reaction kinetics [9, 11];

Brownian Motion near a Soft Surface (M1) — Talence, France
Supervisor | Thomas SALEZ, LOMA (UMR 5798), CNRS, Université de Bordeaux — Feb. - Jul. 2022
> Theoretical and numerical approaches to model non-linear ElastoHydroDynamic interactions; [6]

Study of $\eta^{(\prime)} \to \pi^+\pi^-\gamma^{(*)}$ Decays by Effective Field Theory Changsha, China
Supervisor | Lingyun DAI, Hunan University Mar. - Aug. 2021
Simulation of Vibrational ICD on Model Systems with Reduced Dimensions (DENS) *Remote*
Supervisor | Jérémie CAILLAT, LCPMR (UMR 7614), CNRS, Sorbonne Université Jun. - Jul. 2020
Organic Total Syntheses
Atkamine [2]. Supervisor | Yandong ZHANG (XMU) Jan. 2018 - May 2019, Xiamen, China
Phainanoid A. Supervisor | Guangbin DONG, University of Chicago Jul. - Sept. 2018, Chicago, USA
(–)-Actinophyllic Acid [1]. Supervisor | Yandong ZHANG (XMU) Jul. 2016 - Jan. 2018, Xiamen, China

Conferences, Seminars, Schools

Classical and quantum non-equilibrium statistical physics Nice, France.
Poster: The geometric control of boundary-catalytic branching processes [9] May 26-29, 2026
Journées de Physique Statistique (45th) Paris, France.
Oral: Correlations between first-reaction times and boundary local times [8] Jan. 29-30, 2026
Journnée Systèmes & Matière Complexes (8th) Gif-sur-Yvette, France.
Oral: FPT to a fractal boundary [3,7] Nov. 14, 2025
National Conference on Statistical Physics and Complex System (NCSP, 8th) Ningbo, China.
Poster: FPT to a fractal boundary [3,7] **Best Poster** (Top 20/111) Jul. 30-Aug. 1, 2025
International Conference on Statistical Physics (29th) Florence, Italy.
Poster: FPT to a fractal boundary [3,7] Jul. 13-18, 2025
Statistical Aspects of Nonlinear Physics (IHES Summer School) Bures-sur-Yvette, France.
Oral: FPT to a fractal boundary [3,7] Jun. 23-Jul. 4, 2025
School on Non-Equilibrium Statistical Physics Barcelona, Spain. Apr. 7-11, 2025
Journées de Physique Statistique (44th) Paris, France.
Oral: FPT to a fractal boundary [3] Jan. 30-31, 2025
Conference of Condensed Matter Physics (CCMP) Liyang, China.
Poster: EFL approach for simulating the BLT [4] **Best Poster** (Top 10/199) Aug. 4-9, 2024
Theory of Large Deviations and Applications (Summer school) [10] Les Houches, France.
Poster: EFL approach for simulating the BLT [4] Jul. 1-26, 2024
Journées de Physique Statistique (43rd) Paris, France.
Oral: Encounter-based approach for diffusion-mediated surface phenomena Jan. 25-26, 2024
Journées de Physique Statistique (42nd) Paris, France.
Oral: Brownian motion near a soft surface Jan. 26-27, 2023
Journées de la Matière Condensée (18th) Lyon, France.
Oral: Brownian motion near a soft surface (MC24: Simulation des colloïdes) Aug. 22-26, 2022

Selected Awards

Award for Outstanding Overseas Study Elite Jul. 2026
Doctoral Scholarship, IP Paris (ED 626) Jun. 2023
Normalien Scholarship, ENS (International Selection) Sept. 2019
China National Scholarship ($\times 3$) Nov. 2016 & 2017 & 2018
Wenqing Scholarship (Top 18/14181), XMU Apr. 2018

Languages

Chinese (Native), English (C1), French (B2)
C ($\star$), Fortran ($\star\star\star$), LaTeX($\star\star\star$), Mathematica ($\star\star$), Matlab ($\star\star$), Pascal ($\star$), Python ($\star\star\star$), R ($\star$)