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Chinese, 24/02/1992

Chenlin Gu

Work

09/2022– **Assistant Professor**, *Yau Mathematical Sciences Center, Tsinghua University*.

09/2021–08/2022 **Postdoctoral Instructor**, *New York University Shanghai*, Mentor: Wei Wu.

Education

09/2018–08/2021 **Ph.D.**, *École Normale Supérieure*, Paris, Supervisor: Jean-Christophe Mourrat.
Thesis: Quantitative homogenization on percolation clusters and interacting particle systems, defended at April 1st, 2021.

09/2017–08/2018 **Master**, *Université Paris-Sud*, Orsay, Grade: 17.53/20, Mention Très Bien.
M2 on probability and statistics

09/2014–08/2017 **Ingénieur**, *École Polytechnique*, Palaiseau, GPA: 3.90/4.0.
M1 on probability and statistics

09/2010–07/2014 **Bacehlor of Mathematics**, *Fudan University*, Shanghai, GPA: 3.60/4.0.
Honor graduation

Research Interests

Stochastic processes, stochastic homogenization, interacting particle systems, random graphs, statistical mechanics.

Publications/Preprints

[10] **Power law decay at criticality for the q-state antiferromagnetic Potts model on regular trees**, with Wei Wu and Kuan Yang, *arXiv:2112.00573* .

[9] **Smoothness of the diffusion coefficients for particle systems in continuous space**, with Arianna Giunti, Jean-Christophe Mourrat, and Maximilian Nitzschner, *Communications in Contemporary Mathematics*, to appear.

[8] **A growth-fragmentation-isolation process on random recursive trees**, with Vincent Bansaye and Linglong Yuan, *arXiv:2109.05760*.

[7] **Quantitative homogenization of interacting particle systems**, with Arianna Giunti and Jean-Christophe Mourrat, *Annals of Probability*, 50(5), 1885-1946 (September 2022).

[6] **Decay of semigroup for an infinite interacting particle system on continuum configuration spaces**, *arXiv:2007.04058*.

[5] **Mathematical recommendations to fight against COVID-19**, with Wei Jiang, Tianyuan Zhao, Ban Zheng, *available at SSRN 3551006. 2020 Mar 9*.

[4] **Quantitative homogenization of the parabolic and elliptic Green's functions on percolation clusters**, with Paul Dario, *Annals of Probability*, 49 (2), 556-636 (March 2021).

[3] **An efficient algorithm for solving elliptic problems on percolation clusters**, *Annals of Applied Probability*, 32(4), 2755-2810 (August 2022).

[2] **Forbidden transactions and black markets**, with Qingyun Wu and Alvin E. Roth, *Mathematics of Operations Research*, to appear.

[1] **Uniform estimate of an iterative method for elliptic problems with rapidly oscillating coefficients**, *Stochastics and Partial Differential Equations: Analysis and Computations*, 8 (4), 787-818 (2020).

Grants

01/2022–12/2026 **National Key R&D Program of China (No. 2021YFA1002700)**, *participant*.

Honors and Fellowships

07/2022 **6th ICCM Best Thesis Award**, *Nanjing*, China.
Doctor Thesis Award, Gold Prize

09/2021 **3rd Alibaba Global Mathematics Competition**, *Hangzhou*, China.
Excellence award (Major: probability and combinatorics. Minor: applied maths.)

03/2019 **1st Alibaba Global Mathematics Competition**, *Hangzhou*, China.
Excellence award for analysis and differential equations

06/2018 **Ph.D. Scholarship for Polytechniciens**, *Palaiseau*, France.

11/2017 **Prize for Research Internship**, *Palaiseau*, France.

05/2017 **Master Scholarship of Fondation mathématique Jacques Hadamard**, *Orsay*, France.

07/2013 **4th S.-T. Yau College Student Mathematics Contest**, *China*.
Mention of honors ranked 28th for analysis and PDE and 15th for applied mathematics

11/2011 **3rd National College Student Mathematics Contest**, *Shanghai*, China.
First prize

10/2009 **National Mathematics Olympiad Competition**, *Jiangsu*, China.
First prize

Visit/Exchange

06–07/2021 **Short academic visiting**, *Fudan University*, Shanghai.

01–06/2020 **Visiting scholar**, *Courant Institute, NYU*, New York.

09–12/2012 **Exchange student**, *Chinese University of Hong Kong*, Hong Kong.

Talks

29/08/2022 **Heat kernel on the infinite percolation cluster**.
7th Annual Conference on Probability, Weihai

19/08/2022 **Random recursive trees and contact tracing**.
8th Workshop on Branching Processes and Related Topics (Online)

28/06/2022 **Random recursive trees and contact tracing**.
The 42nd Conference on Stochastic Processes and their Applications, Wuhan

02/06/2022 **Heat kernel on the infinite percolation cluster**.
Lanzhou University (Online)

04/01/2022 **Heat kernel on the infinite percolation cluster**.
Shanghai Jiao Tong University (Online)

10/12/2021 **Heat kernel on the infinite percolation cluster**.
East China Normal University, Shanghai

24/11/2021 **A growth-fragmentation-isolation process on random recursive trees**.
Fudan University, Shanghai

18/11/2021 **An iterative algorithm for Dirichlet problem with random conductance**.
Shanghai University of Finance and Economics, Shanghai

21/10/2021 **A growth-fragmentation-isolation process on random recursive trees**.
THU-PKU-BNU Probability Webinar (Online)

18/10/2021 **A growth-fragmentation-isolation process on random recursive trees**.
Peking University (Online)

14/09/2021 **A growth-fragmentation-isolation process on random recursive trees**.
CRM-ISM Probability Seminar, McGill University (Online)

28/07/2021 **An iterative algorithm for Dirichlet problem with random conductance**.
University of Science and Technology of China, Hefei

20/07/2021 **An iterative algorithm for Dirichlet problem with random conductance**.
One Day Probability Event at BICMR, Peking University, Beijing

15/06/2021 **An iterative algorithm for Dirichlet problem with random conductance**.
Zhejiang University, Hangzhou

21/05/2021 **Heat kernel on the infinite percolation cluster**.
I2M, Aix-Marseille Université (Online)

06/05/2021 **Heat kernel on the infinite percolation cluster**.
IRMA, Université de Strasbourg (Online)

27/04/2021 **Heat kernel on the infinite percolation cluster**.
Fudan University (Online)

23/03/2021 **Heat kernel on the infinite percolation cluster**.
Student Probability Seminar, NYU Courant (Online)

28/12/2020 **An iterative algorithm for Dirichlet problem with random conductance**.
The 9th East Lake International Forum, Center for Mathematical Sciences, Huazhong University of Science and Technology (Online)

24/08/2020 **Decay of semigroup for an infinite interacting particle system on continuum configuration spaces**.
Bernoulli-IMS One World Symposium 2020 (Prerecorded talk and poster)

30/07/2020 **Decay of semigroup for an infinite interacting particle system on continuum configuration spaces**.
Academy of Mathematics and Systems Science, Chinese Academy of Science (Oneline)

15/05/2020 **Introduction on Wigner's semicircle law**.
Seminar of PhD students at IMO Université Paris-Saclay (Online)

11/05/2020 **An efficient algorithm for solving elliptic problems on percolation clusters**.
Les probabilités de demain 2020 (Oneline)

13/12/2019 **Heat kernel on the infinite percolation cluster**.
Seminar on the theory of Markov semigroups and Schrödinger operators at Wrocław University of Technology, Wrocław, Poland

04/11/2019 **Heat kernel on the infinite percolation cluster**.
Seminar of PhD students at LPSM Université Sorbonne, Paris, France

28/08/2019 **An introduction of Calderón-Zygmund decomposition on percolation clusters**.
- also with a presentation on the stochastic representation of Riesz transform after the work of R. Banuelos

Workshop of harmonic analysis 2019, Saint-Nazaire, France

13/07/2019 **A stochastic neural network approximates Derrida-Retaux model**.
49th Saint-Flour Probability Summer School, Saint-Flour, France

25/06/2019 **An iterative algorithm for Dirichlet problem with random conductance**.
Journées de Probabilités 2019, Dourdan, France

13/05/2019 **A mathematical model on black market**.
Seminar of PhD students at LPSM Université Sorbonne, Paris, France

01/04/2019 **An iterative algorithm for Dirichlet problem with random conductance**.
Fudan University, Shanghai, China

20/07/2018 **Uniform bound of an iterative algorithm for homogenization**.
48th Saint-Flour Probability Summer School, Saint-Flour, France

15/10/2017 **How to draw imaginary geometry ?**.
Scaling Limits of Random Planar Maps and Liouville Quantum Gravity, Oberwolfach, Germany

17/11/2015 **Expander Graph**.
Seminar of students at Ecole Polytechnique, Palaiseau, France

Conferences Attended

29/08/2022 **7th Annual Conference on Probability**, Weihai.

31/07/2022-05/08/2022 **The 9th International Congress of Chinese Mathematicians**, Nanjing.

27/06/2022-01/07/2022 **The 42nd Conference on Stochastic Processes and their Applications**, Wuhan, (Online).

30/05/2022-03/06/2022 **100 Years of the Ising Model**, *IHES*, Paris, (Online).

16/05/2022-27/05/2022 **Unifying Concepts in PDEs with Randomness**, *CRM*, Montreal, (Online).

14/03/2022-25/03/2022 **Interacting Particle Systems and Hydrodynamic Limits**, *CRM*, Montreal, (Online).

13/01/2020-17/01/2020 **Spectra, Algorithms and Random Walks on Random Networks**, *CIRM*, Marseille.

02/12/2019-06/12/2019 **Particle Systems and PDE's VIII**, *University of Lisbon*, Lisbon.

03/06/2019-07/06/2019 **Workshop of harmonic analysis 2019**, *Université Nates*, Saint-Nazaire.

03/06/2019-07/06/2019 **Walking through the Brownian zoo**, *IMO*, Orsay.
A conference in honor of Jean-François Le Gall's 60th birthday

20/05/2019-22/05/2019 **Spectral Theory and probability in Mathematical physics**, *IRMA*, Strasbourg.

11/04/2018 **Journées Cartes**, *IMO*, Orsay.

10/12/2018-14/12/2018 **États de la recherche SMF: mécanique statistique**, *IHP*, Paris.

11/04/2018 **Journées Cartes**, *IMO*, Orsay.

15/10/2017-21/10/2017 **Oberwolfach Seminar: Scaling Limits of Random Planar Maps and Liouville Quantum Gravity**, *MFO*, Oberwolfach.

17/07/2017-28/07/2017 **Spectral properties of large random objects**, *IHES*, Bures-sur-Yvette.

15/05/2017-09/06/2017 **Trimester ProbabLyon**, *ENS Lyon & Université de Lyon*, Lyons.
- Mini-school on Random Maps and the Gaussian Free Field
- Conference on Statistical Mechanics, random planar geometry and interacting random walks

11/05/2017 **Les probabilités de demain 2017**, *IHES*, Bures-sur-Yvette.

24/01/2017 **Systèmes Aléatoires Inhomogènes 2017**, *IHP*, Paris.
Sujet de 2017: Random geometry

16/01/2017–20/01/2017 **Combinatorics and Interactions**, *IHP*, Paris.
Workshop on Large Random Structures in Two Dimensions

13/10/2016 **6ème Séminaire Itzykson**, *IHES*, Bures-sur-Yvette.
Physique statistique hors équilibre

07/09/2016 **Rentrée Masters IHES 2016**, *IHES*, Bures-sur-Yvette.

17/05/2016 **Les probabilités de demain 2016**, *IHES*, Bures-sur-Yvette.

09/05/2016–10/05/2016 **Journées mathématiques X-UPS 2016**, *Ecole Polytechnique*, Palaiseau.
Sujet de 2016: Arbres et marches aléatoires

26/01/2016 **Systèmes Aléatoires Inhomogènes 2016**, *IHP*, Paris.
Sujet de 2016: Phase transitions in percolation-type models

Students Mentored

06/2021–05/2022 **Jinhao Dong**, *Master*, Fudan University.
Thesis titled "Electronic network, circle packing, and local convergence", jointly supervised with Jiansheng Xie

09–12/2021 **Yinyihong Liu, Yanxin Zhou**, *Undergraduate*, NYU Shanghai.
Project titled "Random Forests", jointly supervised with Wei Wu

Teaching Experience/Diffusion

22/01/2022 **Tutor for ParisMaths**, *Coloring problem*, ENS, Online.
3 hours, maths activities for motivated high school students

09–12/2021 **Part-time teaching assistant**, *Honors probability theory*, Fudan University.

09–12/2021 **Teaching assistant**, *Probability limit theorems, Honors ODE*, NYU Shanghai.
12 hours every week including recitation, homework, quiz and office hours

09/2020–05/2021 **Remote grader**, *Calculus, Linear algebra*, NYU Shanghai, online.
12 hours every week

01–05/2020 **Adjunct instructor**, *Vector analysis*, NYU, New York.
42 hours and organization of course, including the teaching online during COVID-19 pandemic lockdowns

23/11/2019 **Tutor for ParisMaths**, *Introduction of number theory*, ENS, Paris.
4 hours, maths activities for motivated high school students

21/07/2019 **Tutorial**, *Some theoretical basis of probability for computer science*, Changzhou Senior High School of Jiangsu Province, Changzhou.
3 hours, for high school students preparing Olympiad in informatics

26/01/2019 **Tutor for ParisMaths**, *Simulation of random events*, ENS, Paris.
4 hours, maths activities for motivated high school students

2018–2019 **Teaching assistant**, *Probability, Numerical analysis*, Sorbonne Université, Paris.
60 hours, for undergraduate of the third year

2013–2014 **Teaching assistant**, *Real analysis and functional analysis*, Fudan University, Shanghai.
40 hours, for undergraduate of the second year

Computer Skills

- Java, Matlab, Scilab, C, C++, Python

Languages

- Chinese(Mother tongue), English(Fluent), French(Fluent)

Interests

- Basketball(member of team l'X), Running(39th Paris-Versaille finisher, 16km in 1h26m)
- Founder of official page of Polytechnique on Wechat