

Qiang YAO

School of Statistics,
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Professional Employment

East China Normal University (July 2009–present)
School of Statistics, Assistant Professor (2009–2013), Associate Professor (2014–present)

NYU Shanghai (December 2016–present)
NYU–ECNU Institute for Mathematical Sciences at NYU Shanghai, Affiliated Member

University of Warwick (February 2026)
Department of Statistics, Visiting Scholar

University of Michigan (August 2018–July 2019)
Department of Statistics, Visiting Scholar

Curtin University (January 2015–February 2015)
Department of Mathematics, Visiting Scholar

National University of Singapore (July 2011–August 2012)
School of Business & The Logistics Institute, Asia–Pacific (TLIAP), Research Fellow

École Polytechnique Fédérale de Lausanne (March 2011–May 2011)
Institut de Mathématiques, Visiting Scholar

Education

Peking University (September 2004–July 2009)
School of Mathematical Sciences, Ph.D. in Mathematics
Advisor: Dayue Chen

Shandong Normal University (September 2000–July 2004)
Department of Mathematics, B.S. with honors in Mathematics

Research Interests

Discrete stochastic models (such as interacting particle systems, random walks, percolation), stochastic processes and their applications in machine learning, stochastic analysis and its applications in mathematical finance, risk measures and their applications in stochastic programming, etc.

Research Projects

Publications

- Z. Wan, Y. Ouyang, **Q. Yao**, L. Xie, F. Fang, H. Zha and G. Cheng: Error analysis of discrete flow with generator matching, *Proceedings of the 43rd International Conference on Machine Learning (ICML)*, Seoul, South Korea, PMLR 306 (2026).
- S. Song and **Q. Yao**: The construction of two kinds of bijections in simple random walk paths, *Chinese J. Appl. Probab. Statist.* **42** 307-316 (2026).

- C. Li, S. Yang, S. Zhao and **Q. Yao**: Research on speech age recognition methods using the GMM-UBM Model, *2025 IEEE 3rd International Conference on Sensors, Electronics and Computer Engineering (ICSECE)*, pp 1761-1765 (2025).
- Y. Li and **Q. Yao**: Large and moderate deviations for record numbers in some non-nearest neighbor random walks, *Electron. Comm. Probab.* **27** Article 57 (2022).
- S. Song and **Q. Yao**: A new method for computing the expected hitting time between arbitrary different configurations of the multiple-urn Ehrenfest model, *J. Math. Study* **55** 254-270 (2022).
- Y. Li and **Q. Yao**: Deviations for weak record numbers in simple random walks, *Chinese J. Appl. Probab. Statist.* **37** 515-522 (2021).
- **Q. Yao**: Phase transition for the contact process in a random environment on $\mathbb{Z}^d \times \mathbb{Z}^+$. In *Genealogies of Interacting Particle Systems*, pp 341-352, World Scientific (2020).
- J. Sun, X. Yang, **Q. Yao** and M. Zhang: Risk minimization, regret minimization and progressive hedging algorithms, *Math. Program.* **181** 509-530 (2020).
- C. Xin, M. Zhao, **Q. Yao** and E. Cui: On the distribution of the hitting time for the N -urn Ehrenfest model, *Stat. Prob. Letters* **157** 108625, 11pp (2020).
- L. Zhu and **Q. Yao**: An elementary proof for the recurrence of the product graph $\mathbb{Z}^2 \times \{0, 1, \dots, l-1\}$ (in Chinese), *Chinese J. Appl. Probab. Statist.* **34** 275-283 (2018).
- J. Sun and **Q. Yao**: On coherency and other properties of MAXVAR, *Vietnam J. Math.* **46** 87-94 (2018).
- M. Ang, J. Sun and **Q. Yao**: On the dual representation of coherent risk measures, *Ann. Oper. Res.* **262** 29-46 (2018).
- T. Mountford, J-C Mourrat, D. Valesin and **Q. Yao**: Exponential extinction time of the contact process on finite graphs, *Stoch. Proc. Appl.* **126** 1974-2013 (2016).
- G. Qiao and **Q. Yao**: Weak convergence of equity derivatives pricing with default risk, *Stat. Prob. Letters* **103** 46-56 (2015).
- T. Mountford, D. Valesin and **Q. Yao**: Metastable densities for the contact process on power law random graphs, *Electron. J. Probab.* **18** Article 103 (2013).
- **Q. Yao** and X. Chen: The complete convergence theorem holds for contact processes in a random environment on $\mathbb{Z}^d \times \mathbb{Z}^+$, *Stoch. Proc. Appl.* **122** 3066-3099 (2012).
- **Q. Yao**: A proof of the complete convergence theorem for contact processes on some product graphs (in Chinese), *Acta Math. Scientia* **30A** 97-102 (2010).
- **Q. Yao** and Q. C. Li: Contact process on hexagonal lattice, *Acta Math. Scientia* **30B** 769-790 (2010).
- **Q. Yao**: The existence of an intermediate phase for the contact process on some product graphs (in Chinese), *Acta Math. Sinica* **52** 1055-1066 (2009).
- X. Chen and **Q. Yao**: The complete convergence theorem holds for contact processes on open clusters of $\mathbb{Z}^d \times \mathbb{Z}^+$, *J. Statist. Phys.* **135** 651-680 (2009).

Preprints on Arxiv

- P. Lu, Y. Li and **Q. Yao**: Limit properties of record numbers in random walks. *Preprint*, current version available at <https://arxiv.org/pdf/2401.15445.pdf>.

Grants (as PI)

- The program of China Scholarships Council (No.201806145024), August 2018–July 2019
- National Natural Science Foundation of China (No.11201150), January 2013–December 2015
- National Natural Science Foundation of China (No.11126236), January 2012–December 2012
- The Fundamental Research Funds for the Central Universities (No.239201278210075), January 2011–December 2012
- Sino-Swiss Science and Technology Cooperation (SSSTC) Grant (No.EG 55-032010), March 2011–May 2011
- Start-up grant (No.77102706), East China Normal University, September 2009–December 2010

Presentations

Invited

- Shanghai Probability Meeting (NYU Shanghai) November 2024
- Probability Seminar (Xiamen University) May 2023
- Joint Seminar on Probability and Statistics (Hangzhou Normal University) May 2023
- Joint Seminar on Probability and Statistics (Zhejiang University) November 2019
- Probability Seminar (Peking University) October 2019
- The 4th Workshop on Branching Processes and Related Topics (East China Normal University) May 2018
- Program on Genealogies of Interacting Particle Systems (National University of Singapore) August 2017
- Joint Seminar on Probability and Statistics (Fudan University) June 2017
- The 2016 Forum on Stochastic Process Theory and Its Applications (Peking University) August 2016
- The 2015 Forum on Probability for Young Researchers (Peking University) July 2015
- Mathematics Seminar (Curtin University) February 2015
- Probability Seminar (NYU Shanghai) December 2014
- International Conference on Probability Theory and Mathematical Statistical Physics (NYU Shanghai) May 2014
- Probability Seminar (Shanghai Jiaotong University) December 2013
- Probability Day (National University of Singapore) September-2011
- Probability Seminar (National University of Singapore) January 2010
- The 1st Graduate Innovation Forum (Peking University) November 2008

Contributed/Others

- The 8th National Conference on Probability (Fujian Normal University) August 2023
- Joint International Meeting of Chinese Mathematical Society and American Mathematical Society (Fudan University) June 2018
- The 11th Cross-Strait Conference on Probability and Statistics (National Taipei University) June 2018
- Chinese Mathematical Society 2017 Annual Conference (Xiangtan University) October 2017
- The 2nd International Conference on Optimization and Control (Chongqing Normal University) December 2015
- The 10th National Conference on Probability and Statistics (Shandong University)

October 2014

- The 2013 Workshop on Random Graphs and Complex Networks (East China Normal University) November 2013
- The 3rd National Conference on Probability and Statistics for Young Researchers (Jiangsu Normal University) November 2013
- The IMS-China International Conference on Statistics and Probability (Southwestern University of Finance and Economics) July 2013
- The 9th National Conference on Probability and Statistics (Nankai University) October 2010
- The 187th Forum for Ph.D. Students (Tsinghua University) October 2008
- UBC/PIMS 2008 Summer School in Probability (University of British Columbia) June 2008
- The 12th Workshop on Probability and Statistics for Youths in Beijing-Tianjin Area (Peking University) May 2008
- The 11th Workshop on Probability and Statistics for Youths in Beijing-Tianjin Area (Peking University) May 2007

Teaching Experiences

- (undergraduate) Advanced Algebra I (Autumn 2015, Autumn 2016, Autumn 2017, Autumn 2019, Autumn 2020, Autumn 2021, Autumn 2022, Autumn 2026)
- (undergraduate) Advanced Algebra II (Spring 2016, Spring 2017, Spring 2018, Spring 2020, Spring 2021, Spring 2022, Spring 2023)
- (undergraduate) Applied Stochastic Processes (Spring 2017)
- (undergraduate) Differential Equations (Spring 2013, Spring 2014, Spring 2018)
- (undergraduate) Linear Algebra (Autumn 2009, Autumn 2010, Spring 2013, Spring 2014, Spring 2015, Autumn 2019, Autumn 2020)
- (undergraduate) Methods of Statistical Investigation (Autumn 2013)
- (undergraduate) Operations Research (Autumn 2013)
- (undergraduate) Probability and Mathematical Statistics (Spring 2010, Autumn 2012, Spring 2013, Autumn 2013)
- (undergraduate) Selected Topics on Mathematical Analysis (Autumn 2014)
- (undergraduate) Stochastic Processes (Spring 2020, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025, Spring 2026)
- (graduate) Stochastic Analysis I (Autumn 2023, Autumn 2024, Autumn 2025)
- (graduate) Stochastic Analysis II (Spring 2024, Spring 2025, Spring 2026)
- (graduate) Stochastic Processes (Autumn 2021, Autumn 2022, Autumn 2023, Autumn 2024, Autumn 2025, Autumn 2026)
- (graduate) Theory of Stochastic Processes (Autumn 2014)

Honors & Awards

- Most Outstanding Teacher in Students' Minds Award, East China Normal University (2025)
- The 7th Outstanding Undergraduate Instructor of East China Normal University (2013)
- Outstanding Graduate in School of Mathematical Sciences, Peking University (2009)
- Outstanding Graduate of Shandong Province (2004)