

Wanyang Dai's Short CV



Department of Mathematics
Nanjing University
Nanjing 210093
China
Email: nan5lu8@nju.edu.cn

Wanyang Dai is a Distinguished Professor in Mathematics Department of Nanjing University, Chief Scientist at Su Xia Control Technology, President & CEO of U.S. based (Industrial 6.0) SIR Forum, President of Jiangsu Probability & Statistics Society, Chairman of Jiangsu Big Data-Blockchain and Smart Information Special Committee, Chief Scientist at Depths Digital Economy Research Institute, Editor-in-Chief of Journal of Advances in Applied Mathematics, editors of over 20 international journals ranging from pure mathematics to its applications (e.g., Wireless Engineering and Technology), General Chairs and plenary/keynote speakers of over 40 IEEE/ACM, mathematics & statistics, and international conferences; (Was) a Review Committee Chair in mathematics/stochastic analysis of National Natural Science Awards (the national highest awards),

His research includes stochastic processes related optimization and Pareto optimal control/game, admission/scheduling/routing protocols and performance analysis/optimization for BigData-Blockchain oriented quantum-cloud computing and wireless/wireline communication systems, forward/backward stochastic (ordinary/partial) differential equations and their applications to queueing systems, Internet of Things, energy and power engineering. His “influential” papers are published in “big name” journals, e.g., Operations Research, Operational Research, Computers & and mathematics with Applications, Communications in Mathematical Sciences, Journal of Computational and Applied Mathematics, Queueing Systems, Mathematical and Computer Modeling of Dynamical Systems. His researches were awarded as outstanding papers by academic societies, e.g., IEEE Top Conference Series.

He received his Ph.D degree in applied mathematics jointly with industrial engineering and systems engineering from Georgia Institute of Technology, U.S.A., in 1996, where he worked on stochastics and applied probability concerning network performance modeling and analysis, algorithm design and implementation via stochastic diffusion approximation. **The breakthrough** results and methodologies developed in his thesis were cited, used, and claimed as “contemporaneous and independent” achievements by other subsequent breakthrough papers that were presented as “45 minute invited talk in probability and statistics” in International Congress of Mathematicians (ICM) 1998, which is the most privilege honor in the mathematical society. The designed finite element-Galerkin algorithm to compute the stationary distributions of reflecting Brownian motions (weak solutions of general dimensional partial differential equations) is also well-known to the related fields.

He was an MTS (permanent) in End-to-End Network Architecture Department of AT&T Bell Labs (now called Nokia Bell Labs) in U.S.A. from 1996-1999, where he was principal investigators and developers of several projects in telecommunication network architecture and design, network performance and financial engineering, operating system and database development to support various intelligent engines/models for strategy planning and BigData analytics in a “Plug-in and Play” manner, with some (nowadays called cloud computing) project won “Technology Transfer”.

Wanyang Dai's CV



Department of Mathematics
Nanjing University
Nanjing 210093
China
Email: nan5lu8@nju.edu.cn

• Education

- **Ph.D.** (1992-1996) in Applied Mathematics jointly with Industrial Engineering and Systems Engineering, Georgia Institute of Technology, Atlanta, Georgia, U.S.A.
 - * **Thesis:** Brownian approximations for queueing networks with finite buffers: modeling, heavy traffic analysis and numerical implementations
 - **Important Impact:** The breakthrough results and methodologies developed in his thesis were cited, used, and claimed as “contemporaneous and independent” achievements by some other subsequent breakthrough papers that were presented as “45 minute invited talk in probability and statistics” in International Congress of Mathematicians (ICM) 1998, which is the most privilege honor in the mathematical society. The designed finite element-Galerkin algorithm to compute the stationary distributions of reflecting Brownian motions (weak solutions of general dimensional partial differential equations) is also well-known to the related fields.
- **M.S.** (1985-1988) in Operations Research and Control Theory, Shanghai University, Shanghai, China
 - * **Thesis:** Stochastic (optimal) adaptive control for time-varying systems
- **B.S.** (1981-1985) in Mathematics, Nanjing Normal University, Nanjing, China
 - * **Thesis:** Properties of some functional operators

• Employment History

- ((Special Hiring) **Class A**) **Distinguished Professor (Ph.D. Advisor)** (2020–), Department of Mathematics, Nanjing University, Nanjing, China
 - * Since 2020, Nanjing University classifies all the professors (who are Ph.D. Advisors with certain age) into three classes. The Class A is the highest one with distinguished scientific achievements.
- (**3rd-Level**) **Distinguished Professor (Ph.D. Advisor)** (2015–), Department of Mathematics Nanjing University, Nanjing, China
 - * In normal situation, a full professor (+ Ph.D. advisor) with outstanding scientific achievements and at least 12 years’ working experience of the level has the possibility to be awarded such a distinguished position from the university
- **Professor (Ph.D. Advisor)**, Department of Mathematics (2004–2015), Nanjing University, Nanjing, China
- **Associate Professor** (1999–2004), Department of Mathematics, Nanjing University, China

- **MTS** (Permanent, 1996-1999), End-to-End Network Architecture Department, AT&T Bell Labs (now called Nokia Bell Labs), Warren, New Jersey and Atlanta, Georgia, U.S.A.
 - * **Won “Technology Transfer” Project: SimNet**
 - Principal investigator and developer
 - Multi-million U.S. dollar and multi-organization “lightning” research and development (R&D) project
 - Involves developing a network core system in initiating and creating platform/software as a service (nowadays called “cloud computing”) together with numerous computational and management intelligent engines/models for strategy planning and big data analysis in a “Plug-in and Play” manner
 - * **Listening Post**
 - Independent investigator and developer
 - An interactive system between end-users and network platform/software as a service (cloud computing service)
 - * **Other Major Projects**
 - Lucent network vision, participant
 - Lucent VPN (IP/ATM) network performance, participant
 - etc.
- **Teaching/Research Assistant** (1992-1996), School of Mathematics and School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, Georgia, U.S.A.
 - * Also worked as instructor to teach a course independently several times (1994-1996)
- **Assistant Professor** (1988-1992), Probability and Statistics Group, Department of Mathematics, Nanjing University, Nanjing, China
 - * Worked on stochastic adaptive optimal control, system identification, time series analysis and stochastic processes (especially martingale related convergence analysis)
 - * Worked on the project “Stochastic Stability and Control” supported by National Science Foundation of China (1989-1991, principal investigator and proposal writer of control part of the project)

• **Visiting Positions**

- **Visiting Professor** (March-May, 2007), Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong, Shatin, NT, Hong Kong
- **Research Scholar** (January-March, 2004), IMA (The Institute of Mathematics and Its Applications), University of Minnesota, USA
 - * Long Term Participant of IMA Annual Program of Probability and Statistics in Complex Systems: Financial Engineering, Communication Networks and Genomics
- **Visiting Associate Professor** (July-September, 2001), Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China

- **Editors-in-Chief, Editors** (appointed in appointment letter or directly listed in journal's website)

- **In International English Journals**

- * **Editors-in-Chief**

- Journal of Advances in Applied Mathematics (2015-)
 - International Journal of Information Engineering (2013-2016)

- * **Guest Editor**

- Special Issue on Mathematical Problems in Engineering, (Journal of) Engineering (2014)

- * **Editors**

- Wireless Engineering and Technology (2010-)
 - Open Journal of Optimization (2012-)
 - Journal of Man, Machine and Technology (2012-)
 - Science Road Journal (2013-)
 - Journal of Applied Mathematics and Physics (2013-)
 - German Journal of Advanced Mathematical Sciences (2014-)

- * **Co-Editor**

- Journal of Fundamental and Applied Sciences (2013-)

- * **Past Editors**

- Greener Journal of Computer Science (2011-2013)
 - Journal of Internet, Information and Communication Systems (2011-2013)

- **In International Chinese Journal**

- * **Editor**

- Journal of Statistics and Applications (2012-)

- **International Conference Chairs**

- **Honor Chair**

- * International Conference on Intelligent Cloud Computing (ICC 2016)

- **General Chairs/Chairs**

- * The Sixth International Conference on Physics, Mathematics and Statistics (ICPMS2023), May 20-22, 2023, Sanya, China
 - * 2023 IEEE 3rd Information Communication Technologies Conference (IEEE ICTC 2023), May 17-19, 2023, Nanjing, China
 - * 2022 International Conference on Frontiers of Artificial Intelligence and Statistics (CFAIS 2022), December 16-18, 2022, Beijing, China
 - * 2022 International Conference on Statistics, Applied Mathematics and Computing Science (CSAMCS 2022), November 25-27, 2022, Nanjing, China
 - * The Fifth International Conference on Physics, Mathematics and Statistics (ICPMS2022), May 21-23, 2022, Sanya, China
 - * IEEE 2022 3rd Information Communication Technologies Conference (IEEE ICTC 2022), May 6-8, 2022, Nanjing, China

- * 2021 International Conference on Statistics, Applied Mathematics and Computing Science (CSAMCS 2021), November 26-28, 2021, Nanjing, China
- * 2021 International Conference on Theories and Applications of Mathematics, Statistics and Physics, October 29-31, 2021, Changsha, China
- * The Fourth International Conference on Physics, Mathematics and Statistics (ICPMS2021), May 19-21, 2021, Kunming, China
- * IEEE 2021 2nd Information Communication Technologies Conference (IEEE ICTC 2021), May 7-9, 2021, Nanjing, China
- * (IEEE) 5th International Conference on Cryptography, Security and Privacy (ICCSP 2021) and (ACM) 6th International Conference on Multimedia and Image Processing (ICMIP 2021), January 8-10, 2020, Zhuhai, China
- * 2020 IEEE Information Communication Technologies Conference (IEEE ICTC 2020), May 29-31, 2020, Nanjing, China
- * The Third International Conference on Physics, Mathematics and Statistics (ICPMS2020) , May 20-22, 2020, Kunming, China
- * ACM 4th International Conference on Cryptography, Security and Privacy (ACM ICCSP 2020) and ACM 5th International Conference on Multimedia and Image Processing (ACM ICMIP 2020) , January 10-12, 2020, Nanjing, China
- * The 8th Spring World Congress on Engineering and Technology (SCET 2019), April 22-24, 2019, Xiamen, China
- * Quantum-Computing and Blockchain SIR-Q4'18 Forum-Nanjing Summit
- * 2018 Spring World Congress on Engineering and Technology
- * 2017 Spring World Congress on Engineering and Technology
- * 2016 Spring World Congress on Engineering and Technology
- * 2015 Spring World Congress on Engineering and Technology
- * 2014 Spring World Congress on Engineering and Technology
- * 2013 Spring World Congress on Engineering and Technology
- **Co-Chair**
 - * 2016 3rd International Conference on Computer Science and Application
- **General Chair or Chair of Technical Programm Committee (TPC)**
 - * 2018 4th IEEE International Conference on Computer and Communications
 - * 2013 International Conference on Recent Advances in Physics
- **(Invited) Special Session Organizers**
 - * Stochastic Systems, SDEs/SPDEs, Games, Quantum-Computing and Storages
 - under The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications , May 31 - June 4, 2023, Wilmington, NC, U.S.A.
 - * Stochastic Systems, SDEs/SPDEs, and Games with Numerics and Applications
 - under The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 5-July 9, 2018, Taipei, Taiwan

- * SPDEs/SDEs and Stochastic Systems with Control/Optimization and Applications
 - under The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 1-5, 2016, Orlando, Florida, USA
- * Theory, Numerical Methods, and Applications of Stochastic Systems and SDEs/SPDEs
 - under The 10th AIMS (American Institute of Mathematical Sciences) Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, 2014
- **(Invited) Minisymposium Organizer**
 - * SPDEs/SDEs, Queues, and Optimization with Applications
 - under 8th International Congress on Industrial and Applied Mathematics (ICIAM), 2015
- **(Invited) Session Chairs**
 - * Intelligent Resource Allocations and Competitions in Networks and Systems with Big Data
 - under 2018 International Meeting, June 17-20, 2018, Taipei, Taiwan
 - * Queues and Operations Management
 - under The 8th International Annual Conference of Chinese Scholars Association for Management Science and Engineering (CSAMSE), July 25-27, 2015, Shenyang, China
 - * Mathematics in Science and Technology (SC17-05)
 - under International Congress of Mathematicians (ICM) 2014, August 13-21, 2014, Coex, Seoul, Korea

• **Major Funded Projects and Awards**

- Optimal resource competition game and equilibrium controls in Generalized Internet of Things driven by Big Data and smart cloud computing, National Natural Science Foundation of China (2018-2021, project leader and principal investigator)
- Stochastic systems and optimal resource-performance controls in future wireless communication networks, National Natural Science Foundation of China (2014-2017, project leader and principal investigator)
- Optimal scheduling and resource allocation for the next generation ($4G^+$) wireless networks, National Natural Science Foundation of China (2010-2012, project leader and principal investigator)
- Stochastic optimal scheduling and resource allocation for wireless systems with base-station cooperation, State Key Laboratory of Novel Software Technology of China (2009–2011, project leader and principal investigator)
- Theory, method and applications of stochastic networks in modern informational systems, National Natural Science Foundation of China (2004-2006, project leader and principal investigator)
- Network modeling and implementation for multiclass queueing networks with finite buffers, Educational Ministry of China and Nanjing University (2000-2002, project leader and principal investigator)

- SimNet (won “Technology Transfer”), Multi-million U.S. dollar/multi-organization “lightning” research and development (R&D) project, (Alcatel-)Lucent Technologies Bell Labs/Newotrk Systems (1996-1998, principal investigator and developer, also technically coordinating and partially leading overall project system integration)
- IMA awarded funds for long term participant and 9 workshops (or tutorials) in the years of 1994, 2004, and 2012
- Outstanding Paper Award (First Class), 2008 Annual Conference on Probability and Statistics, International Institute for General Systems Studies in China
- etc.

- **Talks**

- **Invited Keynote and Plenary Speakers (around 50 minutes)**
 - * 2023 International Conference on Pure, Applied and Computational Mathematics (PACM 2023), January 6-8, 2023, Suzhou, China
 - * The 6th Int’l Symposium on Computational and Applied Mathematics (ISCAM 2022), December 16-18, 2022, Guilin, China
 - * The 11th International Genetics and Genomics Conference (GC 2022), December 9-11, 2022, Gulin, China
 - * 2022 International Conference on Statistics, Applied Mathematics and Computing Science (CSAMCS 2022), November 25-27, 2022, Nanjing, China
 - * 2022 International Conference on Artificial Intelligence, Internet of Things and Cloud Computing Technology (AIoTC 2022), October 21-23, 2022, Fuzhou, China
 - * The 5th Int’l Conference on Statistics, Mathematical Modelling and Analysis (SMMA 2022), May 27-29, 2022, Xi’an, China.
 - * The 6th Int’l Symposium on Computational and Applied Mathematics (ISCAM_D 2021), December 24-26, 2021, Sanya, China
 - * (IEEE) 2021 3rd International Conference on Information Technology and Computer Application, December 10-12, 2021, Guangzhou, China
 - * 2021 International Conference on Statistics, Applied Mathematics and Computing Science (CSAMCS 2021), November 26-28, 2021, Nanjing, China
 - * 4th Int’l Conference on Statistics, Mathematical Modelling and Analysis (SMMA 2021), May 29-31, 2021, Guilin, China
 - * The Fourth International Conference on Physics, Mathematics and Statistics (ICPMS2021), May 19-21, 2021, Kunming, China
 - * IEEE 2nd Information Communication Technologies Conference (ICTC 2021), May 7-9, 2021, Nanjing, China
 - * The 5th Int’l Symposium on Computational and Applied Mathematics (ISCAM 2021), January 5-7, 2021, Sanya, China
 - * The 6th Conference on Advances in Biochemistry and Molecular Biology (CABMB 2020), December 5-7, 2020, Sanya, China
 - * The 3rd Int’l Conference on Statistics, Mathematical Modelling and Analysis (SMMA 2020), November 6-8, 2020, Xiamen, China

- * IEEE International Conference on Artificial Intelligence and Computer Engineering (ICAICE2020), Oct. 23-25, 2020, Beijing, China
- * The Third International Conference on Physics, Mathematics and Statistics (ICPMS2020) , May 20-22, 2020, Kunming, China
- * ACM 4th International Conference on Cryptography, Security and Privacy (ACM ICCSP 2020) and ACM 5th International Conference on Multimedia and Image Processing (ACM ICMIP 2020) , January 10-12, 2020, Nanjing, China
- * The 15th International Conference on Wireless Communications, Networking and Mobile Computing (WiCOM 2019) , October 26-28, 2019, Guilin, China
- * Future Advancements in Mobile Cloud Computing and Applications, October 23-24, 2019, Toronto, Canada
- * 2nd International Conference on Electronics and Electrical Engineering (ICEEE-2019), July 22-23, 2019, Rome, Italy
- * The 3rd Int'l Conference on Partial Differential Equations (ICPDE 2019), July 19-21, 2019, Guilin, China
- * 2nd World Conference & Expo on Biomedical Engineering, July 8-9, 2019, Las Vegas, USA
- * The 8th Spring World Congress on Engineering and Technology (SCET 2019), April 22-24, 2019, Xiamen, China
- * The 3rd International Symposium on Computational and Applied Mathematics (ISCAM 2019), January 5-7, 2019, Sanya, China
- * IEEE 8th International Conference on Power and Energy Systems, December 21-22, 2018, Colombo, Sri Lanka
- * 2018 4th IEEE International Conference on Computer and Communications (ICCC), December 7-10, 2018, Chengdu, China
- * Quantum-Computing and Blockchain SIR-Q418 Forum-Nanjing Summit, November 29, 2018, Nanjing, China
- * The 7th IEEE International Conference on Communications, Networks and Satellite (IEEE COMNETSAT 2018), November 15-17, 2018, Medan, Indonesia
- * International Conference on Statistics, Mathematical Modelling and Analysis (SMMA 2018), September 15-17, 2018, Chongqing, China
- * 2018 Spring World Congress on Engineering and Technology (SCET 2018), April 23-25, 2018, Quilin, China
- * The 2nd Int'l Symposium on Computational and Applied Mathematics (ISCAM 2018), January 13-15, 2018, Sanya, China
 - **Title:** Cloud Strategy Computations in Internet of Things with BigData-Blockchain and Artificial Intelligence
- * IEEE 7th International Conference on Power and Energy Systems, November 1-3, 2017, Toronto, Canada
- * 2017 International Symposium on Applied Mathematics and Statistics (AMS 2017), September 24-26, 2017, Suzhou, China
- * 2017 Spring World Congress on Engineering and Technology (SCET 2017), April 18-20, 2017, Chengdu, China

- **Title:** Scheduling Game with Cloud-Computing Pools for Big Data: Fairness and Pareto Optimality
- * 2017 International Symposium on Computational and Applied Mathematics (ISCAM 2017), February 26-28, 2017, Sanya, China
 - **Title:** MIMO Mutual Information Computation and Pareto Optimality of Scheduling Game by Reflecting SDEs
- * International Conference on Intelligent Cloud Computing (ICC 2016), December 17-18, 2016, Wuhan, China
- * 3rd International Conference on Computer Science and Application, November 12-13, 2016, Changsha, China
- * International Conference on Wireless Communications and Network Technology (ICWCNT2016), June 25-27, 2016, Guangzhou, China
- * International Conference on Network and Communication Security (NCS 2016), June 11-12, 2016, Beijing, China
- * 2016 Spring World Congress on Engineering and Technology, April 17-19, Suzhou, China
- * 5th Int'l Conference on Signal and Image Processing (CSIP 2016), March 2-4, 2016, Beijing, China
- * 2015 Co-located and Interacted International Conferences on: Partial Differential Equations, Functional Analysis, Ordinary Differential Equations and Dynamical Systems, Groups and Algebras, Probability and Stochastic Analysis, Statistics and its Applications, July 19-21, 2015, Sanghai, China
 - **Title:** A Unified B-SPDE with Jumps vs. A System of Coupled FB-SDEs with Skew Reflections: Theory and Applications
- * 2015 Spring World Congress of Engineering and Technology, 2015
 - **Title:** A unified B-SPDE with Lévy jumps: well-posedness, algorithm with numerics, and applications
- * 2014 Spring World Congress of Engineering and Technology, 2014
 - **Title:** Adapted solution, numerical methods and analysis via Malliavin calculus for a unified B-SPDE and their applications in finance
- * 2013 Spring World Congress of Engineering and Technology, 2013
 - **Title:** Optimal rate scheduling via utility-maximization for J -user MIMO Markov fading wireless channels with cooperation
- * 1th Annual Conference on Probability and Statistics, International Institute for General Systems Studies in China, 2008
- * 7th Annual Conference of Chinese Probability and Statistics Society, 2002
- * etc.
- **Specially Invited Session Talks (around 30 minutes)**
 - * Probability Theory and Related Fields, December 26-29, 2016, Shenzhen, China
 - **Title:** Functional Limits for TSRRPs and SDEs with Skew Reflections
 - * SPDEs/SDEs and Stochastic Systems with Control/Optimization and Applications

- under The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, July 1 - July 5, 2016, Orlando, Florida, USA
- **Title:** A Unified System of SPDEs with Lévy Jumps vs. Stochastic Differential Games
- * 8th ICIAM (International Congress of Industrial and Applied Mathematics), Beijing, China, 2015
- * The 8th International Annual Conference of Chinese Scholars Association for Management Science and Engineering (CSAMSE) July 25-27, 2015, Shenyang, China
 - **Title:** Queues and Stochastic Differential Games by Coupled FB-SPDEs/FB-SDEs with Jumps and Skew Reflections
- * Institute of Mathematical Statistics (IMS)-China, Kunming, China, 2015
- * Workshop on Markov Processes and Stochastic Models, Changsha, China, 2015
 - **Title:** A Unified B-SPDE with Jumps, Queues, and Stochastic Differential Games
- * 4th Annual World Congress of Advanced Materials, Chongqing, China, 2015
 - **Title:** Unified SPDEs with Applications in Advanced Semiconductors and Smart IT Materials
- * The 10th AIMS (American Institute of Mathematical Sciences) Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, 2014
- * IMS (Institute of Mathematical Statistics)-China 2013
- * INFORMS International Beijing 2012
- * INFORMS International Hong Kong 2006
- * International Conference of Management Science and Applications, 2005
- * 12th Informs Applied Probability Conference, Beijing, 2004
- * 8th Informs Applied Probability Conference, Atlanta, U.S.A., 1995
- * etc.

– **Other Recent Invited Talks and Presentations**

- * International Congress of Mathematicians (ICM) 2014, August 13-21, 2014, Coex, Seoul, Korea
- * 20th Conference of The International Federation of Operations Research Societies (IFORS 2014), Barcelona, Spain, 2014
- * IMA Workshop on Theory and Applications of Stochastic PDEs, Minneapolis, U.S.A., 2013
- * 8th World Congress in Probability and Statistics, Istanbul, Turkey, 2012
- * IMA Workshop on Random Dynamical Systems, Minneapolis, U.S.A., 2012
- * IEEE/EII 2011 Conference on Applied and Engineering Mathematics, 2011
- * IEEE/EII 2011 World Congress of Engineering and Technology, 2011
- * 2011 International Conferences on Network Computing and Information Security and on Multimedia and Signal Processing, 2011
- * 9th Annual Conference of Chinese Probability and Statistics Society, 2010

- * WRI International Conference on Communication and Mobile Computing, 2009
- * International Conference on Bioinformatics and Biomedical Engineering, 2009
- * 8th Annual Conference of Chinese Probability and Statistics Society, 2006
- * 12th INFORMS/APS (Applied Probability Society) Conference, 2004
- * Stochastic Networks Conference, Stanford University, U.S.A., 2002
- * 10th International Congress on Computational and Applied Mathematics, University of Leuven, Belgium, 2002
- * International Congress of Mathematicians (ICM) 2002, Beijing, China
- * etc.

• Selected Publications

- “Fast simulation for Gaussian random fields on compact Riemannian manifolds”. Communications in Nonlinear Science and Numerical Simulation, Vol 118 107002, 23 pages, 2023 (jointly with Q. Jiang)
- “Optimal policy computing for blockchain based smart contracts via federated learning”. Operational Research, Vol. 22, pp. 5817-5844, 2022.
- “Convolutional neural network based simulation and analysis for backward stochastic partial differential equations”. Computers and Mathematics with Applications, Vol. 119, pp. 21-58, 2022.
- “Reflecting time-space Gaussian random field on compact Riemannian manifold and excursion probability”. Stochastics: An International Journal of Probability and Stochastic Processes, Vol. 94, No. 6, pp. 865-890, 2022 (jointly with Q. Jiang)
- “Estimating intensity functions of spatial inhomogeneous Poisson point processes via a Stein estimator”. Communications in Statistics: Simulation and Computation, 33 pages, 2021 (jointly with Y. Lu)
- “A non-conservation stochastic partial differential equation driven by anisotropic fractional Levy random field, Stochastics and Dynamics, Vol. 21, No. 5, 2150028 (20 pages), 2021 (jointly with X. Lu)
- “Quantum-Computing with AI & Blockchain: Modeling, Fault Tolerance, and Capacity Scheduling”, Mathematical and Computer Modelling of Dynamical Systems, Vol. 25, No. 6, pp. 523-559, 2019.
- “A white noise approach to stochastic partial differential equations driven by the fractional Levy noise”, Advances in Difference Equations 2018:420, 2018 (jointly with X. Lu)
- “A unified system of FB-SDEs with Levy jumps and double completely-S skew reflections”, Communications in Mathematical Sciences, Vol. 16, No. 3, pp. 659-704, 2018
- “Platform Modeling and Scheduling Game with Multiple Intelligent Cloud-Computing Pools for Big Data, Mathematical and Computer Modeling of Dynamical Systems, Vol. 24, No. 5, pp. 506-552, 2018
 - * Early short conference version published in Proceedings of QTNA 2017, 223-226, 2017

- “Mean-variance hedging based on an incomplete market with external risk factors of non-Gaussian OU processes”, *Mathematical Problems in Engineering*, Volume 2015 (Regular Issue), Article ID 625289, 20 pages, 2015
 - * “Optimal hedging and its performance based on a Lévy driven volatility model”, *Proceedings of International Conference on Applied Mathematics and Sustainable Development - Special track within 2012 Spring World Congress of Engineering and Technology*, Scientific Research Publishing, 44-49 (related conference paper), 2012.
- “Optimal control with monotonicity constraints for a parallel-server loss channel serving multi-class jobs”, *Mathematical and Computer Modeling of Dynamical Systems*, Vol. 20, No. 3, 284-315, 2014
 - * “Constrained optimal control for a parallel-server channel serving multi-class jobs in zero-buffer regime”, *Proceedings of 2011 World Congress of Engineering and Technology*, Vol. 1, 249-254 (related conference paper), IEEE Computer Society Press, 2011
- “Product-form solutions for integrated services packet networks and cloud computing systems”, *Mathematical Problems in Engineering*, Volume 2014 (Regular Issue), Article ID 767651, 16 pages, 2014
 - * “Product-form solutions for integrated services packet networks”, *Proceedings of MICAI 2006*, IEEE Computer Society Press, pp. 296-308 (short conference version), 2006
- “Optimal rate scheduling via utility-maximization for J -user MIMO Markov fading wireless channels with cooperation”, *Operations Research*, Vol. 61, No. 6, 1450-1462 (with additional 26 page proof of online e-companion (Supplemental)), 2013
 - * “Functional limit theorems based on doubly stochastic renewal processes and optimal controls for wireless systems under random environment” (an alternative title used in some Probability and Statistics Conference)
- “Stochastic integration for fractional Lévy process and stochastic differential equation driven by fractional Lévy noise”, *ACTA Mathematica Scientia (A): Chinese Series (Journal of Mathematical Physics, Series A)*, Vol. A33, No. 6, 1022-1034, 2013 (jointly with Lü)
 - * English version available at <http://arxiv.org/abs/1307.4173>
- “Heavy traffic limit theorems for a queue with Poisson ON/OFF long-range dependent sources and general service time distribution”, *Acta Mathematicae Applicatae Sinica, English Series*, Vol. 28, No. 4, 807-822, 2012
- “On the conflict of truncated random variable vs. heavy-tail and long range dependence in computer and network simulation”, *Journal of Computational information Systems* Vol.7, No. 5, 1488-1499, 2011
- “Mean-variance portfolio selection based on a generalized BNS stochastic volatility model”, *International Journal of Computer Mathematics*, Vol. 88, No. 16, 3521-3534, 2011
- “Generalized fractional Lévy random fields on Gelfand triple: a white noise approach”, *Front. Math. China*, Vol. 9, No. 3, 493-506, 2011 (jointly with Lü and Huang)

- “Stochastic optimal controls for parallel-server channels with zero waiting buffer capacity and multiclass customers”, *Journal of Advances in Systems Science and Applications*, Vol. 9, No. 4, pp. 627-646, 2009 (jointly with Feng)
- “On the traveling neuron nets (human brains) controlled by a satellite communication system”, *Proceedings of International Conference on Bioinformatics and Biomedical Engineering (iCBBE 2009)*, pp. 1-4, IEEE Computer Society Press, 2009
- “Optimal control based on a generalized exponential scheduling rule for a generalized switch”, *Proceedings of International Conference on Communications and Mobile Computing 2009*, IEEE Computer Society Press, Vol. 2, pp. 332-336, 2009 (jointly with Wang)
- “Stochastic optimal control of ATO systems with batch arrivals via diffusion approximation”, *Probability in the Engineering and Informational Sciences*, Vol. 21, pp. 477-495, 2007 (jointly with Jiang)
- “Diffusion approximations for multiclass queueing networks under preemptive priority service discipline”, *Applied Mathematics and Mechanics*, Vol. 28, No. 10, pp. 1331-1342, 2007
- “Finite element density estimator with multi-stage adaptive filters”, *Chinese Journal of Engineering Mathematics*, Vol. 6, pp. 1068-1074, 2006
- “The finite element method for computing the stationary distribution of an SRBM in a hypercube with applications to finite buffer queueing networks”, *Queueing Systems*, Vol. 42, pp. 33-62, 2002 (jointly with Chen, J.G. Dai and Shen)
- “A Brownian model for multiclass queueing networks with finite buffers”, *Journal of Computational and Applied Mathematics*, Vol. 144, No. 1-2, pp. 145-160, 2002
- “A heavy traffic limit theorem for a class of open queueing networks with finite buffers”, *Queueing Systems*, Vol. 32, pp. 5-40, 1999 (jointly with J.G. Dai)
- “Brownian approximations for queueing networks with finite buffers: modeling, heavy traffic analysis and numerical implementations”, Ph.D Thesis, Georgia Institute of Technology, 1996, also published by UMI Dissertation Services, A Bell & Howell Company, 300 N. Zeeb Road, Ann Arbor, Michigan 48106, U.S.A. 1997
- “A heavy traffic limit theorem for queueing networks with finite capacity”, *Proceedings of Third International Workshop on Queueing Networks with Finite Capacity*, West Yorkshire, U.K., July 6-7, 1995 (jointly with J.G. Dai)
- “Estimating time-variable parameters by the least squares algorithm with a variable forgetting factor: convergence and stability”, *Proceedings of Asia-Pacific Conference on Measurement and Control*, Vol. 2, pp. 544-547, 1991
- “Stochastic adaptive control for time-varying systems convergent at the rate of $1/t$ ”, *IFAC Proceedings Series*, Vol. 1, No. 8, pp. 179-184, Pergamon Press, Elmsford, NY, U.S.A. 1989

• Selected Recent Researches

- “N-qubit operations on sphere and queueing scaling limits for programmable quantum computer”, 2022 (under review)

- **Major Supervising and Teaching Experiences**

- **Post-Doctor Fellow Supervised**

- * Xuebin Lü
 - * Title of Defense Talk
 - Fractional Lévy Noises and Stochastic (Ordinary and Partial) Differential Equations (December, 2011, Nanjing University)

- **Funded Kernel Graduate-Level Course for Excellence**

- * Stochastic Processes
 - Funded by and Practised in Nanjing University

- **Graduate-Level and Undergraduate-Level Courses Taught**

- * Stochastic Differential Equations
 - Teach in every Spring term since 2007
 - * Stochastic Processes
 - Teach in every Fall since 2000
 - * Applied Stochastic Processes
 - * Probability Theory
 - * Probability Measure Theory
 - * Stochastic Operations Research
 - * Integral Global Optimization
 - * Time Series Analysis
 - Taught 3 times
 - * Statistical Computing and Softwares
 - Taught 3 times
 - * Mathematical Statistics
 - * Probability and Statistics
 - * etc.

- **Honors and Duties in Academic Societies**

- **President & CEO:** U.S. Based (Quantum Computing & Blockchain Industrial 6.0) SIR Forum
 - **President:** Jiangsu Society of Probability and Statistics
 - **Vice President & Chairman of Jiangsu Big-Data and Smart Information Special Committee:** Jiangsu Society of Applied Statistics
 - **Member and Group Leader:** Judge Committee of National Natural Science Awards of China
 - * A member of Judge Committee in Mathematics of National Natural Science Awards of China
 - * The leader of Stochastic Analysis Group of Judge Committee in Mathematics of National Natural Science Awards of China

- * A review expert for National Natural Science Awards of China
 - **Review Expert of Key Projects:** National Natural Science Foundation of China
 - * including National Outstanding/Excellent Young Research Fund Projects
 - **Director:** Chinese Society of Probability and Statistics
 - **Standing Director:** Chinese Society of Engineering Probability and Statistics
 - **Standing Director:** Chinese Society of Stochastic Service and Operations Management (formerly Chinese Society of Queueing Theory)
 - **Standing Director:** Chinese Society of Intelligent Industrial Data Analytics and Optimization
 - **Standing Director & Member of Academic Committee:** International Institute for General Systems Studies–Probability and Statistics Society in China
 - etc.
- **More Editorial Experiences**
 - **In International English Journals**
 - * **Member of Editorial Board** (since 2013)
 - American Open Statistics & Probability Journal
 - International Journal of Statistics and Mathematics
 - International Open Journal of Statistics Research
 - Open Research Journal of Statistical Design and Analysis
 - International Journal of Wireless Networks and Communications
 - World Journal of Wireless Networks and Applications
 - Journal of Wireless and Mobile Communication Engineering
 - International Journal of Computational & Neural Engineering
 - International Journal of Operations Research
 - Open Journal of Information Technology & Operations Management
 - Global Journal of Operations Management and Services
 - International Journal of Game Theory
 - Journal of Control Science and Engineering
 - International Journal of Mechanic Systems Engineering
 - International Journal of Information Science
 - Research Open Journal of Information Science and Application
 - International Journal of Telecommunication Engineering
 - International Journal of Computer Science and Application
 - American Journal of Computer Technology and Application
 - International Journal of Networking & Computer Engineering Research
 - International Journal of Circuits and Systems
 - Modeling and Simulation
 - World Journal of Mathematical Modeling and Applied Computing
 - International Open Journal of Finance

- Research Open Journal of Finance and Management
- World Open Journal of Finance and Economics
- International Journal of Mathematical Finance
- International Open Journal of Mathematics
- International Journal of Advanced Mathematics
- International Journal of Advanced Mathematics and Physics
- International Open Journal of Mathematics and Physical Science
- International Journal of Advanced Calculus
- **In International English-Chinese Journal**
 - * **Member of Editorial Board**
 - Application of Information and Communication Technology (2012-)
 - Scientific Journal of Mechanic Engineering (2013-)
- **In International Conferences**
 - * **Member of Organizing Committee**
 - 10th World Congress on Healthcare & Technologies, July 17-18, 2017, Lisbon, Portugal
 - 7th World Congress on Healthcare and Technologies (Healthcare Summit 2016), September 26-27, 2016, London, UK
 - (IEEE/EII) 2011 International Conference on Applied and Engineering Mathematics
 - * **Member of TPC**
 - The 10th International Conference on Smart Cities and Green ICT Systems (SMARTGREENS), April 28-30, 2021, Prague, Czech Republic
 - 14th International Conference on Queueing Theory and Network Applications (QTNA2019), August 27-29, 2019, Ghent, Belgium
 - 11th International Conference on Communication Software and Networks (ICCSN 2019), June 12-15, 2019, Chongqing, China
 - 8Th International Conference on Smart Cities and Green ICT Systems (SMARTGREEN 2019), May 3-5, 2019, Heraklion, Ctete-Greece
 - The Fourteenth International Conference on Digital Telecommunications (ICDT 2019), March 24, 2019 to March 28, 2019, Valencia, Spain
 - 2018 8th International Conference on Power and Energy Systems, December 21-22, 2018, Colombo, Sri Lanka
 - Fourth International Symposium on Intelligent Systems Technologies and Applications (ISTA'18), September 19-22, 2018, Bangalore, India
 - The 13th International Conference on Queueing Theory and Network Applications (QTNA2018), July 25-27, 2018, Tsukuba, Japan
 - The Thirteenth International Conference on Digital Telecommunications (ICDT 2018), April 22-26, 2018, Athens, Greece
 - IEEE 7th International Conference on Power and Energy Systems, November 1-3, 2017, Toronto, Canada
 - The 12th International Conference on Queueing Theory and Network Applications (QTNA2017), August 21-23, 2017, Qinhuangdao, China

- The Twelfth International Conference on Digital Telecommunications (ICDT 2017), April 23 - 27, 2017, Venice, Italy
- 17th IEEE International Conference on Communication Technology (ICCT 2017), Oct 27-30, 2017, Chengdu, China
- 6th International Conference on Power and Energy Systems (ICPES 2016), November 15-18, 2016, Paris, France
- The 2nd Int'l Conference on Partial Differential Equations (ICPDE 2016), July 25-27, 2016, Suzhou, China
- 2016 3rd International Conference on Computer Science and Application, November 12-13, 2016, China
- IEEE ICC 2016 - Cognitive Radio and Networks Symposium, 2016
- The 12th International Conference on Wireless Communications, Networking and Mobile Computing (WiCOM 2016), September 25-27, 2016
- The Second International Symposium on Computer Vision and the Internet (VisionNet 2015), Kerala, 2015
- International Conference on Information Engineering (ICIE 2015), Beijing, 2015
- International Conference on Electrical, Control and Automation (2014)
- The 1st International Conference on Computer Science and Application (ICOCSA 2014)
- International Conference on Applied Mathematics and Statistics Research (2014)
- The International Conference on Automatic Control Theory and Application (ACTA 2014), Bangkok, 2014 (<http://www.actaconf.org/>)
- The 2nd International Conference on Mathematics Research and Application (ICMRA2014)
- 2013 International Conference on Management and Information Technology
- 2nd International Conference on Control Engineering and Communication Technology (2013)
- 2013 International Conference on Materials Science and Applied Mechanics
- 2013 Conference on Computational Mechanics
- International Conference on Mathematics and System Science (2013)
- 2012 (IEEE/EII) Spring World Congress on Engineering and Technology
- 2012 IEEE International Conference on Electronics, Information and Electrical Engineering
- 2012 IEEE International Conference on Electronics Design, Systems and Applications
- 2012 IEEE Conference on Control, Systems & Industrial Informatics
- 2012 IEEE Symposium on Wireless Technology & Applications
- 2012 IEEE International Conference on Control Engineering and Communication Technology

- 1st International Conference on Mechanical Engineering and Material Science (MEMS 2012)
- 2011 (IEEE/EII) World Congress on Engineering and Technology
- **Reviewer for Journals and International Conferences**
 - * IEEE Transactions on Automatic Control
 - * IEEE Transactions on Mobile Computing
 - * Operations Research
 - * Queueing Systems
 - * Dynamic Games and Applications
 - * Journal of Applied Probability and Statistics
 - * Mathematical and Computer Modeling of Dynamic Systems
 - * Performance Evaluation
 - * Zentralblatt MATH
 - * Mathematical Reviews
 - * Mathematical Journal
 - * Journal of Applied Mathematics and Computing
 - * Engineering Mathematics
 - * Journal of Systems Science and Complexity
 - * Systems Engineering: Theory and Practice
 - * IEEE INFOCOM Workshop on Cognitive & Cooperative Networks
 - * American Control Conference
 - * European Control Conference
 - * WRI International Conference on Communication and Mobile Computing
 - * International Conference on Bioinformatics and Biomedical Engineering
 - * International Conference on Network Computing and Information Security
 - * International Conference on Multimedia and Signal Processing
 - * IEEE Asia-Pacific Conference on Applied Electromagnetics
 - * IEEE Symposium on Wireless Technology & Applications
 - * IEEE International RF and Microwave Conference
 - * etc.