

Andrey Sarantsev

University of Nevada, Reno

Department of Mathematics & Statistics

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RESEARCH INTERESTS

Probability Theory, Mathematical Statistics, Quantitative Finance

Random particle systems interacting through ranks; long-term stability of stochastic processes; concentration of measure for stochastic equations; systemic financial risk; financial econometrics; retirement planning; risk theory and ruin probability; stochastic portfolio theory; forest dynamics

EMPLOYMENT

University of Nevada, Reno (UNR)

Department of Mathematics and Statistics

Assistant Professor (tenure-track), 2018–now

University of California, Santa Barbara (UCSB)

Department of Statistics and Applied Probability

Visiting Assistant Professor, 2015–2018

Mentor: JEAN-PIERRE FOUQUE. Partially supported by his NSF grant DMS 1409434

EDUCATION

University of Washington, Seattle (UW)

Ph.D. in Mathematics, 2010–2015

Adviser: SOUMIK PAL. **Thesis:** Competing Brownian Particles

Lomonosov Moscow State University, Moscow, Russia

Specialist (Master's equivalent) with Honors in Mathematics, 2005–2010

Undergraduate Mentor: VLADIMIR PITERBARG

57th mathematics high school

Top math high school in Moscow, Russia, 2001–2005

RESEARCH ADVISING

Ph.D. students (current):

Abraham Atsiwo, Jihyun Park (Statistics & Data Science), Hayden Brown (Applied Mathematics)

M.S. students (former):

Kwame Boamah-Addo (Statistics & Data Science), Hayden Brown (Applied Mathematics)

Undergraduate students (former): 12 students, undergraduate research in Quantitative Finance (Lissa Callahan, Melissa Eid, Brandon Flores, Claire Gan, Taran Grove, Peter Kilonzo, Jacob Lovato, Chyna Metz, Mohagoney Moore, Michael Reyes) and Politics (Jaucelyn Canfield, Franklin Fuchs)

TEACHING EXPERIENCE

UNR Undergraduate Classes

Ordinary Differential Equations, Statistics & Probability for Engineers, Probability Theory, Stochastic Processes

UNR Graduate Classes

Probability Theory (Qualifying Exam Class), Time Series

UCSB Undergraduate Classes

Probability Theory, Stochastic Processes

UW Undergraduate Classes

Multivariable and Vector Calculus (III and IV), Differential Equations, Matrix Algebra, Linear Analysis (PDE, systems of ODE), Probability Theory

UW Teaching Assistant

Multivariable Calculus (III), REU Inverse Problems

UW Homework Grader

Real Analysis (Ph.D. level)

SUBMITTED MANUSCRIPTS

All authors are listed in alphabetical order.

1. ADRIAN FISCHER, ROBERT E. GAUNT, ANDREY SARANTSEV (2023). The Variance-Gamma Distribution: A Review. Available at arXiv:2303.05615.
2. ANDREY PILIPENKO, ANDREY SARANTSEV (2023). Boundary Approximation for Sticky Jump-Reflected Processes on the Half-Line. Available at arXiv:2303.02771.
3. ADRIAN FISCHER, ROBERT E. GAUNT, ANDREY SARANTSEV (2023). Modified Method of Moments for Generalized Laplace Distributions. Available at arXiv:2203.10775.
4. ANDREY SARANTSEV (2023). A New Stock Market Valuation Measure with Applications to Retirement Planning. Available at arXiv:1905.04603

PUBLISHED & ACCEPTED ARTICLES

All authors are listed in alphabetical order.

1. ANDREY SARANTSEV (2023). IID Time Series Testing. To appear in *Theory of Stochastic Processes* (Ukrainian National Academy of Sciences). Available at arXiv:2203.10405.
2. GUODONG PANG, ANDREY SARANTSEV, YURI SUHOV (2022). Birth and Death Processes in Interactive Random Environments. *Queueing Systems* **102** (1–2), 269–307. arXiv:2203.10411.
3. GUODONG PANG, ANDREY SARANTSEV, YURI SUHOV (2022). Transient Behaviors of Single-Server Queues with Diffusive Rates. *Queueing Systems* **100** (3–4), 333–335.
4. ANDREY SARANTSEV (2021). Penalty Method for Obliquely Reflected Diffusions. *Lithuanian Mathematical Journal* **61** (4), 518–549. arXiv:1509.01777.
5. ANDREY SARANTSEV (2021). Optimal Portfolio with Power Utility for Absolute and Relative Wealth. *Statistics & Probability Letters* **179** 109225. arXiv:2105.0813.
6. BRANDON FLORES, BLESSING OFORI-ATTA, ANDREY SARANTSEV (2021). A Stock Market Model Based on CAPM and Market Size. *Annals of Finance* **17** (3), 405–424. arXiv:1907.08911.
7. ANDREY SARANTSEV (2021). Sub-exponential Rate of Convergence to Equilibrium for Processes on the Half-line. *Statistics & Probability Letters* **175** 109115. arXiv:2003.10614.
8. OLGA RUMYANTSEVA, ANDREY SARANTSEV, NIKOLAY STRIGUL (2020). Time Series Analysis of Forest Dynamics at the Ecoregion Level. *Forecasting* **2** (3), 364–386.
9. ANDREY SARANTSEV (2020). Convergence Rate to Equilibrium in Wasserstein Distance for Reflected Jump-Diffusions. *Statistics & Probability Letters* **165** 108860. arXiv:2003.10590.
10. YANA BELOPOLSKAYA, GUODONG PANG, ANDREY SARANTSEV, YURI SUHOV. Stationary Distributions and Convergence for M/M/1 Queues in Interactive Random Environment. *Queueing Systems* **94** (3–4), 357–392. arXiv:1902.03941.
11. CLAYTON BARNES, ANDREY SARANTSEV (2020). A Note on Jump Atlas Models. *Brazilian Journal of Probability & Statistics* **34** (4), 844–857. arXiv:1610.04323.
12. OLGA RUMYANTSEVA, ANDREY SARANTSEV, NIKOLAY STRIGUL (2019). Autoregression Modeling of Forest Dynamics. *MDPI Forests* **10** (12), 1074. arXiv:1911.09182.
13. PIERRE-OLIVIER GOFFARD, ANDREY SARANTSEV (2019). Exponential Convergence Rate of Ruin Probabilities for Level-Dependent Lévy-Driven Risk Processes. *Journal of Applied Probability* **56** (4), 1244–1268. arXiv:1710.01845.
14. DAVAR KHOSHNEVISAN, ANDREY SARANTSEV (2019). Talagrand Concentration Inequalities for Stochastic Partial Differential Equations. *Stochastic Partial Differential Equations: Analysis & Computations* **7** (4), 679–698. arXiv:1709.07098.
15. TOMOYUKI ICHIBA, MICHAEL LUDKOVSKI, ANDREY SARANTSEV (2019). Dynamic Contagion in a Banking System with Births and Defaults. *Annals of Finance* **15** (4), 489–538. arXiv:1807.08987.

16. ANDREY SARANTSEV (2019). Comparison Techniques for Competing Brownian Particles. *Journal of Theoretical Probability* **32** (2), 545–585. arXiv:1305.1653.
17. MANUEL CABEZAS, AMIR DEMBO, ANDREY SARANTSEV, VLADAS SIDORAVICIUS (2019). Brownian Particles with Rank-Dependent Drifts: Out-of-Equilibrium Behavior. *Communications in Pure & Applied Mathematics* **72** (7), 1424–1458. arXiv:1708.01918.
18. PRAVEEN KOLLI, ANDREY SARANTSEV (2019). Large Rank-Based Models with Common Noise. *Statistics & Probability Letters* **151**, 29–35. arXiv:1802.06202
19. SOUMIK PAL, ANDREY SARANTSEV (2019). A Note on Transportation Cost Inequalities for Diffusions with Reflections. *Electronic Communications in Probability* **24** (21), 1–11. arXiv:1808.02164.
20. TOMOYUKI ICHIBA, ANDREY SARANTSEV (2018). Stationary Distributions and Convergence of Walsh Diffusions. *Bernoulli* **25** (4A), 2439–2478. arXiv:1706.07127.
21. ADITYA MAHESHWARI, ANDREY SARANTSEV (2018). Modeling Systemic Risk with Interbank Flows, Borrowing, and Investing. *MDPI Risks* **6** (4), 1–26. Available at arXiv:1707.03542.
22. ANDREY SARANTSEV (2018). Weak Convergence of Obliquely Reflected Diffusions. *Annals of Institute Henri Poincaré Probability & Statistics* **54** (3), 1408–1431. arXiv:1509.01778.
23. CAMERON BRUGGEMAN, ANDREY SARANTSEV (2018). Multiple Collisions in Systems of Competing Brownian Particles. *Bernoulli* **24** (1), 156–201. arXiv:1309.2621.
24. ANDREY SARANTSEV (2017). Infinite Systems of Competing Brownian Particles. *Annals of Institute Henri Poincaré Probability & Statistics* **53** (4), 2279–2315. arXiv:1403.4229.
25. TOMOYUKI ICHIBA, ANDREY SARANTSEV (2017). Yet Another Condition for Absence of Collisions for Competing Brownian Particles. *Electronic Communications in Probability* **22** (8), 1–7. arXiv:1608.07220.
26. ANDREY SARANTSEV, LI-CHENG TSAI (2017). Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles. *Electronic Journal of Probability* **22** (56), 1–20. arXiv:1608.00628.
27. ANDREY SARANTSEV (2017). Reflected Brownian Motion in a Convex Polyhedral Cone: Tail Estimates for the Stationary Distribution. *Journal of Theoretical Probability* **30** (3), 1200–1223. arXiv:1509.01781.
28. ANDREY SARANTSEV (2017). Two-Sided Infinite Systems of Competing Brownian Particles. *European Society for Applied & Industrial Mathematics Probability & Statistics* **21**, 317–349. arXiv:1509.01859.
29. ANDREY SARANTSEV (2016). Explicit Rates of Exponential Convergence for Reflected Jump-Diffusions on the Half-Line. *ALEA Latin American Journal of Probability & Statistics* **13** (2), 1069–1093. arXiv:1509.01783.
30. CAMERON BRUGGEMAN, ANDREY SARANTSEV (2016). Penalty Method for Reflected Diffusions on the Half-Line. *Stochastics* **89** (2), 485–509. arXiv:1509.01776.
31. IOANNIS KARATZAS, ANDREY SARANTSEV (2016). Diverse Market Models of Competing Brownian Particles with Splits and Mergers (2016). *Annals of Applied Probability* **26** (3), 1329–1361. arXiv:1404.0748.
32. ANDREY SARANTSEV (2015). Triple and Simultaneous Collisions of Competing Brownian Particles. *Electronic Journal of Probability* **20** (29), 1–28. arXiv:1401.6255.
33. ANDREY SARANTSEV (2014). On a Class of Diverse Market Models. *Annals of Finance* **10** (2), 291–314. arXiv:1301.5941.

FELLOWSHIPS AND AWARDS

2010	Academic Excellence Award, McKibben & Merner Fellowship for passing Preliminary Exams
2005–2010	Academic Fellowship, Lomonosov Moscow State University (7 times)
2002, 2005	Honorable Mention, Moscow Mathematical Olympiad

SERVICE DUTIES

- Accessibility for visually impaired students
- Department research library: Created it from scratch
- Graduate-level comprehensive and qualifying exams in Statistics and Probability: write, grade, proctor
- Statistics & Data Science graduate committee
- Graduate committee member for graduate students
- Recommendation letters for graduate applications
- Python workshops for students
- Refereeing research manuscripts

RESEARCH TALKS

- 2023 Society for Industrial & Applied Mathematics Conference in Financial Mathematics, Philadelphia
- 2022 University of Texas, Dallas; University of Utah
- 2021 UNR Statistics Seminar (online); UNR Departmental Colloquium (online); Frontier Probability Days (University of Nevada Las Vegas)
- 2020 Joint Mathematics Meeting, Denver; University of Montana; UNR Matrix Theory Seminar (online); European Seminar in Computing, University of West Bohemia (online); University of Mississippi (online); Washington State University (online); Computational & Methodological Statistics, King's College London (online)
- 2019 American Statistical Association Nevada Sectional Meeting (University of Nevada Reno); Institute for Operations Research & Management Sciences (INFORMS) Annual Meeting, Seattle (2 talks)
- 2018 Joint Mathematics Meeting, San Diego; Florida State University; Cornell University; Carnegie Mellon University; California State University, Los Angeles; University of Nevada Reno; Frontier Probability Days, Oregon State University; University of Minnesota; University of California, Santa Barbara (UCSB); American Mathematical Society (AMS) Western (San Francisco State University) and Eastern (University of Delaware) Fall Sectional Meetings; University of Washington;
- 2017 AMS Western (UC Riverside), Southeastern (University of Central Florida), Central (University of North Texas) Fall Sectional Meetings; INFORMS Annual Meeting, Houston; Center for Financial Mathematics & Actuarial Research (UCSB) 10th anniversary conference; University of Utah; Boston University; 9th Western Conference in Mathematical Finance, University of Washington; Seminar on Stochastic Processes, University of Virginia; University of Maryland, College Park; University of Delaware; AMS Central Spring Sectional Meeting (University of Indiana Bloomington); University of Washington
- 2016 SIAM Conference in Financial Mathematics, Austin; Michigan State University; Carnegie Mellon University; Oregon State University; University of Washington; University of Illinois, Chicago; Princeton University; Columbia University; City University of New York
- 2015 Southern California Probability Symposium (UC Irvine); University of Southern California; UCSB
- 2014 Columbia University; Seminar on Stochastic Processes, UC San Diego; UCSB

LANGUAGES AND SOFTWARE

Languages: English (fluent), Russian (native)

Coding: C, Python, R, SQL; \LaTeX , HTML

PERSONAL INFORMATION

Born October 9, 1989, in Moscow, Russia

Citizenship: Russian; USA Permanent Resident (Green Card)

Updated August 10, 2023