

Andrey Sarantsev

University of Nevada in Reno

Department of Mathematics & Statistics

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RESEARCH INTERESTS

Probability, Statistics, Stochastic Analysis, Biostatistics, Stochastic Finance

Particle systems interacting through ranks; Stability of stochastic processes; Concentration of measure; Systemic financial risk; Financial econometrics; Risk theory and ruin probability; Stochastic portfolio theory; Time series analysis of 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

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: Abraham Atsiwo, Kwame Boamah-Addo, Hayden Brown (current)

M.S. students: Hayden Brown (former)

Undergraduate students: 9 former students

PUBLISHED ARTICLES

1. Penalty Method for Obliquely Reflected Diffusions (2021).
To appear in *Lithuanian Math. J.* Available at arXiv:1509.01777
2. Optimal Portfolio with Power Utility for Absolute and Relative Wealth (2021).
Stat. Probab. Let. **179** 109225. Available at arXiv:2105.08139
3. A Stock Market Model Based on CAPM and Market Size (2021).
BRANDON FLORES, BLESSING OFORI-ATTA. *Ann. Finance* **17** (3), 405–424.
Available at arXiv:1907.08911
4. Sub-exponential Rate of Convergence to Equilibrium for Processes on the Half-line (2021).
Stat. Probab. Let. **175** 109115. Available at arXiv:2003.10614.
5. Time Series Analysis of Forest Dynamics at the Ecoregion Level (2020).
With OLGA RUMYANTSEVA and NIKOLAY STRIGUL. *Forecasting* **2** (3), 364–386.

6. Convergence Rate to Equilibrium in Wasserstein Distance for Reflected Jump–Diffusions (2020).
Stat. Probab. Let. **165** 108860. Available at arXiv:2003.10590.
7. Stationary Distributions and Convergence for M/M/1 Queues in Interactive Random Environment (2020). With YANA BELOPOLSKAYA, GUODONG PANG, and YURI SUHOV. *Queueing Systems* **94** (3–4), 357–392. Available at arXiv:1902.03941.
8. A Note on Jump Atlas Models (2020).
With CLAYTON BARNES. *Bernoulli* **34** (4), 844–857. Available at arXiv:1610.04323.
9. Autoregression Modeling of Forest Dynamics (2019).
With OLGA RUMYANTSEVA and NIKOLAY STRIGUL.
MDPI Forests **10** (12), 1074. Available at arXiv:1911.09182.
10. Exponential Convergence Rate of Ruin Probabilities for Level-Dependent Lévy-Driven Risk Processes (2019). With PIERRE-OLIVIER GOFFARD. *J. Appl. Probab.* **56** (4), 1244–1268.
Available at arXiv:1710.01845.
11. Talagrand Concentration Inequalities for Stochastic Partial Differential Equations (2019).
With DAVAR KHOSHNEVISAN. *SPDE Anal. Comp.* **7** (4), 679–698. Available at arXiv:1709.07098.
12. Stationary Distributions and Convergence of Walsh Diffusions (2018).
With TOMOYUKI ICHIBA. *Bernoulli* **25** (4A), 2439–2478. Available at arXiv:1706.07127.
13. Dynamic Contagion in a Banking System with Births and Defaults (2019).
With TOMOYUKI ICHIBA and MICHAEL LUDKOVSKI.
Ann. Finance **15** (4), 489–538. Available at arXiv:1807.08987.
14. Comparison Techniques for Competing Brownian Particles (2019).
J. Th. Probab. **32** (2), 545–585. Available at arXiv:1305.1653.
15. Brownian Particles with Rank-Dependent Drifts: Out-of-Equilibrium Behavior (2019).
With MANUEL CABEZAS, AMIR DEMBO, VLADAS SIDORAVICIUS.
Comm. Pure Appl. Math. **72** (7), 1424–1458. Available at arXiv:1708.01918.
16. Large Rank-Based Models with Common Noise (2019).
With PRAVEEN KOLLI. *Stat. Probab. Let.* **151**, 29–35. Available at arXiv:1802.06202
17. A Note on Transportation Cost Inequalities for Diffusions with Reflections (2019).
With SOUMIK PAL. *Electr. Comm. Probab.* **24** (21), 1–11. Available at arXiv:1808.02164.
18. Modeling Systemic Risk with Interbank Flows, Borrowing, and Investing (2018).
With ADITYA MAHESHWARI. *Risks* **6** (4), 1–26. Available at arXiv:1707.03542.
19. Weak Convergence of Obliquely Reflected Diffusions (2018).
Ann. Inst. H. Poincaré **54** (3), 1408–1431. Available at arXiv:1509.01778.
20. Multiple Collisions in Systems of Competing Brownian Particles (2018).
With CAMERON BRUGGEMAN. *Bernoulli* **24** (1), 156–201. Available at arXiv:1309.2621.
21. Infinite Systems of Competing Brownian Particles (2017).
Ann. Inst. H. Poincaré **53** (4), 2279–2315. Available at arXiv:1403.4229.
22. Yet Another Condition for Absence of Collisions for Competing Brownian Particles (2017).
With TOMOYUKI ICHIBA. *Electr. Comm. Probab.* **22** (8), 1–7. Available at arXiv:1608.07220.
23. Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles (2017).
With LI-CHENG TSAI. *Electr. J. Probab.* **22** (56), 1–20. Available at arXiv:1608.00628.
24. Reflected Brownian Motion in a Convex Polyhedral Cone: Tail Estimates for the Stationary Distribution (2017). *J. Th. Probab.* **30** (3), 1200–1223. Available at arXiv:1509.01781.
25. Two-Sided Infinite Systems of Competing Brownian Particles (2017).
ESAIM Probab. Stat. **21**, 317–349. Available at arXiv:1509.01859.
26. Explicit Rates of Exponential Convergence for Reflected Jump–Diffusions on the Half-Line (2016).
ALEA Lat. Am. J. Probab. Math. Stat. **13** (2), 1069–1093. Available at arXiv:1509.01783.

27. Penalty Method for Reflected Diffusions on the Half-Line (2016).
With CAMERON BRUGGEMAN. *Stochastics* **89** (2), 485-509. Available at arXiv:1509.01776.
28. Diverse Market Models of Competing Brownian Particles with Splits and Mergers (2016).
With IOANNIS KARATZAS. *Ann. Appl. Probab.* **26** (3), 1329-1361. Available at arXiv:1404.0748.
29. Triple and Simultaneous Collisions of Competing Brownian Particles (2015).
Electr. J. Probab. **20** (29), 1-28. Available at arXiv:1401.6255.
30. On a Class of Diverse Market Models (2014).
Ann. Finance **10** (2), 291-314. Available at arXiv:1301.5941.

OTHER MANUSCRIPTS

1. A New Valuation Measure for Stock Market Returns (2021).
Available at arXiv:1905.04603
2. Partisan Lean of States: Electoral College and Popular Vote (2019).
Available at arXiv:1905.04444.
3. Laguerre and Jacobi Analogues of the Warren Process (2017).
Appendix for the paper by YI SUN. Available at arXiv:1610.01635.

FELLOWSHIPS AND AWARDS

2010	Academic Excellence Award, McKibben & Merner Fellowship for passing Preliminary Exams
2010	Top Report Award on the 17th International Conference "Lomonosov-2010"
2005–2010	Academic Fellowship, Lomonosov Moscow State University (7 times)
2002, 2005	Honorable Mention, Moscow Mathematical Olympiad

RESEARCH TALKS

2020	University of Montana; Joint Mathematics Meeting; University of Mississippi; Washington State University; Penn State University; European Seminar in Computing; Computational & Methodological Statistics
2019	American Statistical Association Nevada Sectional Meeting; INFORMS Annual Meeting
2018	Florida State University; Cornell University; Carnegie Mellon University; California State University, Los Angeles; University of Nevada, Reno; Frontier Probability Days; University of Minnesota; UCSB; University of Washington; AMS Western and Eastern Fall Sectional Meetings
2017	AMS Western, Southwestern, and Central Fall Sectional Meetings; INFORMS Annual Meeting in Houston; Center for Financial Mathematics & Actuarial Research (UCSB) 10th anniversary conference; University of Utah; UCSB; Boston University; 9th Western Conference in Mathematical Finance; Seminar on Stochastic Processes; University of Maryland, College Park; University of Delaware; AMS Central Spring Sectional Meeting; University of Washington
2016	SIAM Conference in Financial Mathematics; 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; University of Southern California; UCSB
2014	Columbia University; Seminar on Stochastic Processes; UCSB

TEACHING EXPERIENCE**University of Nevada, Reno:**

Probability Theory, Stochastic Processes (undergraduate), Probability & Measure, Time Series (Ph.D. level)

University of California, Santa Barbara:

Probability Theory, Stochastic Processes (undergraduate)

University of Washington:

Instructor: Multivariable and Vector Calculus (III and IV), Differential Equations, Matrix Algebra, Linear Analysis, Probability I (undergraduate)

Teaching Assistant: REU Program in Inverse Problems

Homework Grader: Real Analysis (Ph.D. level)

Quiz Sections Instructor: Multivariable Calculus (Calculus III)

LANGUAGES AND SOFTWARE

Languages: English (fluent), Russian (native)

Coding: MATLAB, C, Python, R

Editors: \LaTeX , HTML

PERSONAL INFORMATION

Born October 9, 1989, in Moscow, Russia

Citizenship: Russian

USA Permanent Resident (Green Card)

Updated September 20, 2021