

# Andrey Sarantsev

University of Nevada in Reno

Department of Mathematics & Statistics

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## RESEARCH INTERESTS

### **Probability, Statistics, Stochastic Analysis, Biostatistics, Stochastic Finance**

Brownian and Lévy particle systems interacting through ranks; Reflected diffusions and jump-diffusions; Concentration of measure for stochastic ordinary and partial differential equations; Systemic risk and financial contagion in banking systems; Statistical analysis of stock and bond markets; Risk theory and ruin probability; Stochastic portfolio theory; Regression 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

## PUBLISHED PAPERS

1. Exponential Convergence Rate of Ruin Probabilities for Level-Dependent Levy-Driven Risk Processes (2019).  
With PIERRE-OLIVIER GOFFARD. *J. Appl. Probab.* **56** (4), 1244–1268. Available at arXiv:1710.01845.
2. Talagrand Concentration Inequalities for Stochastic Partial Differential Equations (2019).  
With DAVAR KHOSHNEVISAN. *SPDE Anal. Comp.* **7** (4), 679–698. Available at arXiv:1709.07098.
3. Stationary Distributions and Convergence of Walsh Diffusions (2018).  
With TOMOYUKI ICHIBA. *Bernoulli* **25** (4A), 2439–2478. Available at arXiv:1706.07127.
4. 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.
5. Comparison Techniques for Competing Brownian Particles (2019).  
*J. Th. Probab.* **32** (2), 545–585. Available at arXiv:1305.1653.
6. 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.

7. Large Rank-Based Models with Common Noise (2019).  
With PRAVEEN KOLLI. *Stat. Probab. Lett.* **151**, 29–35. Available at arXiv:1802.06202
8. 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.
9. Modeling Systemic Risk with Interbank Flows, Borrowing, and Investing (2018).  
With ADITYA MAHESHWARI. *Risks* **6** (4), 1–26. Available at arXiv:1707.03542.
10. Weak Convergence of Obliquely Reflected Diffusions (2018).  
*Ann. Inst. H. Poincare* **54** (3), 1408–1431. Available at arXiv:1509.01778.
11. Multiple Collisions in Systems of Competing Brownian Particles (2018).  
With CAMERON BRUGGEMAN. *Bernoulli* **24** (1), 156–201. Available at arXiv:1309.2621.
12. Infinite Systems of Competing Brownian Particles (2017).  
*Ann. Inst. H. Poincare* **53** (4), 2279–2315. Available at arXiv:1403.4229.
13. 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.
14. 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.
15. 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.
16. Two-Sided Infinite Systems of Competing Brownian Particles (2017).  
*ESAIM Probab. Stat.* **21**, 317–349. Available at arXiv:1509.01859.
17. 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.
18. Penalty Method for Reflected Diffusions on the Half-Line (2016).  
With CAMERON BRUGGEMAN. *Stochastics* **89** (2), 485–509. Available at arXiv:1509.01776.
19. 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.
20. Triple and Simultaneous Collisions of Competing Brownian Particles (2015).  
*Electr. J. Probab.* **20** (29), 1–28. Available at arXiv:1401.6255.
21. On a Class of Diverse Market Models (2014).  
*Ann. Finance* **10** (2), 291–314. Available at arXiv:1301.5941.

## ACCEPTED PAPERS

1. Stationary Distributions and Convergence for M/M/1 Queues in Interactive Random Environment (2019).  
With YANA BELOPOLSKAYA, GUODONG PANG, and YURII SUHOV. To appear in *Brazilian J. Probab. Stat.*  
Available at arXiv:1902.03941.
2. Stable Systems of Competing Levy Particles (2019).  
With CLAYTON BARNES. Available at arXiv:1610.04323.

## OTHER PAPERS

1. A Note on Bayesian Long-Term S&P 500 Factor Investing (2019).  
With TARAN GROVE and AKRAM RESHAD. Available at arXiv:1905.04603.
2. The Size Effect Revisited (2019).  
With BRANDON FLORES, TARAN GROVE, and YI LIU. Available at arXiv:1907.08911.
3. Partisan Lean of States: Electoral College and Popular Vote (2019).  
Available at arXiv:1905.04444.
4. Penalty Method for Obliquely Reflected Diffusions (2019).  
With CHARLES AMPONSAH. Available at arXiv:1509.01777.
5. 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 (2-year), for passing Preliminary (Qualifying) Exams at the beginning of the first year of the PhD program
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

TEACHING EXPERIENCE**Assistant Professor, University of Nevada, Reno**

2018–2019	<b>Instructor:</b> Probability Theory, Stochastic Processes
2019	<b>Mentor:</b> Undergraduate Research in Quantitative Finance

**Visiting Assistant Professor, University of California, Santa Barbara**

2015–2018	<b>Instructor:</b> Probability Theory, Stochastic Processes
2017–2018	<b>Mentor:</b> Undergraduate Research in Quantitative Finance

**Ph.D. Student, University of Washington, Seattle**

2012–2015	<b>Instructor:</b> Multivariable Calculus, Vector Calculus, Differential Equations, Matrix Algebra, Linear Analysis (PDE, systems of ODE), Probability I
2011, 2013	<b>Teaching Assistant:</b> REU Program in Inverse Problems
2011–2012	<b>Homework Grader:</b> Real Analysis (graduate level)
2010–2012	<b>Quiz Sections Instructor:</b> Multivariable Calculus (Calculus III)

INVITED TALKS

2019	INFORMS Annual Meeting in Seattle (two talks)
2018	Florida State University; Cornell University; Carnegie Mellon University; California State University, Los Angeles; University of Nevada, Reno; Frontier Probability Days; University of Minnesota, Twin Cities; UCSB (twice); University of Washington, Seattle; 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 (short talk); University of Maryland, College Park; University of Delaware; AMS Central Spring Sectional Meeting (three talks); University of Washington, Seattle
2016	SIAM Conference in Financial Mathematics; Michigan State University; Carnegie Mellon University; Oregon State University; University of Washington, Seattle (twice); 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 (short talk); UCSB

LANGUAGES AND SOFTWARE

English (fluent), Russian (native); MATLAB, C, Python, R,  $\text{\LaTeX}$ , HTML.

PERSONAL INFORMATION

Born October 9, 1989, in Moscow, Russia. Citizenship: Russian.