FIRAS RASSOUL-AGHA

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EDUCATION

Ph.D., January 2003	New York University, Courant Institute of Mathematical Sciences
M.S., May 1999	New York University, Courant Institute of Mathematical Sciences
Magistère, June 1996	École Normale Supérieure de Cachan, Paris
Agrégation, June 1996	École Normale Supérieure de Cachan, Paris

POSITIONS HELD

2014 -   **Professor.** University of Utah, Department of Mathematics
Research interests: Probability theory, stochastic processes, random media, disordered systems, statistical mechanics, mathematical physics, stochastic climate and weather models, mathematical biology

2009 - 2014   **Associate Professor.** University of Utah, Department of Mathematics

2005 - 2009   **Assistant Professor.** University of Utah, Department of Mathematics

2004 - 2005   **Postdoctoral Researcher.** Ohio State Univ., Mathematical Biosciences Institute

2002 - 2004   **Visiting Assistant Professor.** Ohio State University, Department of Mathematics

1997 - 2002   **Research and Teaching Assistant.** New York University, Courant Institute

BOOKS, LECTURE NOTES, REVIEW ARTICLES, AND PROCEEDINGS

7. I. Corwin, M. Damron, J. Hanson, F. Rassoul-Agha, T. Seppäläinen, and P. Sosoe. Random growth models. Ed. by M. Damron, F. Rassoul-Agha, and T. Seppäläinen. Proceedings of Symposia in Applied Mathematics, **75**, 2018

6. F. Rassoul-Agha. Busemann functions, geodesics, and the competition interface for directed last-passage percolation. Lecture notes for the 2017 AMS short course on random growth models, 2017

5. M. Damron, F. Rassoul-Agha, T. Seppäläinen. Random growth models. Notices of the AMS, 63, 1004-1008, 2016

4. M. Damron, F. Rassoul-Agha, T. Seppäläinen. AMS short course in Atlanta, GA. Notices of the AMS, 63, 1087-1090, 2016

3. F. Rassoul-Agha, T. Seppäläinen. A course on large deviation theory with an introduction to Gibbs measures. Graduate Studies in Mathematics, 162, American Mathematical Society, Providence, 2015

2. R.C. Dalang, D. Khoshnevisan, C. Mueller, D. Nualart, Y. Xiao. A minicourse on stochastic partial differential equations, 2006. Ed. by D. Khoshnevisan and F. Rassoul-Agha. Lect. Notes in Math 1962. Springer, Berlin, 2009

1. D. Khoshnevisan, F. Rassoul-Agha. Introduction to probability. Lecture notes used for undergraduate probability, constantly updated

PAPERS

38. S. Groathouse, F. Rassoul-Agha, T. Seppäläinen, and E. Sorensen. Jointly invariant measures for the Kardar-Parisi-Zhang equation. Submitted, 2023

37. C. Janjigian, F. Rassoul-Agha, and T. Seppäläinen. Ergodicity and synchronization of the Kardar-Parisi-Zhang equation. Submitted, 2023

36. T. Alberts, C. Janjigian, F. Rassoul-Agha, and T. Seppäläinen. The Green's function of the parabolic Anderson model and the continuum directed polymer. Submitted, 2023

35. S. Groathouse, C. Janjigian, and F. Rassoul-Agha. Non-existence of non-trivial bi-infinite geodesics in Geometric last passage percolation. Submitted, 2023

34. S. Groathouse, C. Janjigian, and F. Rassoul-Agha. Existence of generalized Busemann functions and Gibbs measures for random walks in random potentials. Submitted, 2023

33. F. Rassoul-Agha, T. Seppäläinen, and X. Shen. Coalescence and total-variation distance of semi-infinite inverse-gamma polymers. *J. London Math. Soc.* To appear, 2024

32. A. Krishnan, F. Rassoul-Agha, and T. Seppäläinen. Geodesic length and shifted weights in first-passage percolation. *Comm. Amer. Math. Soc.*, **3**, 209-289, 2023

31. C. Janjigian, F. Rassoul-Agha, and T. Seppäläinen. Geometry of geodesics through Busemann measures in directed last-passage percolation. *J. Eur. Math. Soc.*, **25**, 2573-2639, 2023

30. C. Janjigian, S. Nurbavliyev, and F. Rassoul-Agha. A shape theorem and a variational formula for the quenched Lyapunov exponent of random walk in a random potential. *Ann. Inst. H. Poincaré Probab. Stat.*, **58**, 1010-1040, 2022

29. C. Janjigian and F. Rassoul-Agha. Uniqueness and ergodicity of stationary directed polymer models on the square lattice. *J. Stat. Phys.*, **179**, 672-689, 2020

28. T. Alberts, F. Rassoul-Agha, and M. Simper. Busemann functions and semi-infinite O'Connell-Yor polymers. *Bernoulli*, **26**, 1927-1955, 2020

27. C. Janjigian and F. Rassoul-Agha. Busemann functions and Gibbs measures in directed polymer models on $\mathbb{Z}^2$. *Ann. Probab.*, **48**, 778-816, 2020

26. M. Balázs, F. Rassoul-Agha, and T. Seppäläinen. Large deviations and wandering exponent for random walk in a dynamic beta environment. *Ann. Probab.*, **47**, 2186-2229, 2019

25. M. Joseph, F. Rassoul-Agha, and T. Seppäläinen. Independent particles in a dynamical random environment. In: Friz P., König W., Mukherjee C., Olla S. (eds) *Probability and Analysis in Interacting Physical Systems.* VAR75 2016. Springer Proceedings in Mathematics & Statistics, **283**, 75-121. Springer, Cham. Special Proceedings Volume in honor of Raghu Varadhan's 75th birthday, 2019

24. K. Smith, C. Strong, and F. Rassoul-Agha. Multisite generalization of the SHArP weather generator. *J. Appl. Meteor. Climatol.*, **57**, 2113-2127, 2018

23. N. Georgiou, F. Rassoul-Agha, and T. Seppäläinen. Geodesics and the competition interface for the corner growth model. *Probab. Th. Relat. Fields.* **169**, 223-255, 2017

22. N. Georgiou, F. Rassoul-Agha, and T. Seppäläinen. Stationary cocycles and Busemann functions for the corner growth model. *Probab. Th. Relat. Fields.* **169**, 177-222, 2017

21. F. Rassoul-Agha, T. Seppäläinen, and A. Yılmaz. Averaged vs. quenched large deviations and entropy for random walk in a dynamic random environment. *Electron. J. Probab.* **22**, 1-47, 2017

20. K. Smith, C. Strong, and F. Rassoul-Agha. A new method for generating stochastic simulations of air temperature. *J. Appl. Meteor. Climatol.* **56**, 953-963, 2017

19. F. Rassoul-Agha, T. Seppäläinen, and A. Yılmaz. Variational formulas and disorder regimes of random walks in random potentials. *Bernoulli*, **23**, 405-431, 2017

18. N. Georgiou, F. Rassoul-Agha, and T. Seppäläinen. Variational formulas and cocycle solutions for directed polymer and percolation models. *Commun. Math. Phys.*, **346**, 741-779, 2016

17. N. Georgiou, F. Rassoul-Agha, and T. Seppäläinen, and A. Yılmaz. Ratios of partition functions for the log-gamma polymer. *Ann. Probab.*, **43**, 2282-2331, 2015

16. A. Borisyuk and F. Rassoul-Agha. Quasiperiodicity and phase locking in stochastic circle maps: a spectral approach. *Phys. D: Nonlinear Phenomena*, **288**, 30-44, 2014

15. F. Rassoul-Agha and T. Seppäläinen. Quenched point-to-point free energy for random walks in random potentials. *Probab. Th. Relat. Fields*, **158**, 711-750, 2014

14. D. Campos, A. Drewitz, A.F. Ramírez A.F., F. Rassoul-Agha, and T. Seppäläinen. Level 1 quenched large deviation principle for random walk in dynamic random environment. *Bull. Inst. Math. Acad. Sin.*, **8**, 1-29. Special Issue in honor of the 70th birthday of Raghu Varadhan, 2013

13. F. Rassoul-Agha, T. Seppäläinen, and A. Yılmaz. Quenched free energy and large deviations for random walks in random potentials. *Comm. Pure Appl. Math.*, **66**, 202-244, 2013

12. M. Joseph, F. Rassoul-Agha. Almost sure invariance principle for continuous-space random walk in dynamic random environment. *ALEA Lat. Am. J. Probab. Math. Stat.*, **8**, 43-57, 2011

11. F. Rassoul-Agha, T. Seppäläinen. Process-level quenched large deviations for random walk in random environment. *Ann. Inst. H. Poincaré Probab. Stat.*, **45**, 214-242, 2011

10. F. Rassoul-Agha, T. Seppäläinen. Quenched invariance principle for ballistic random walk in random environment. *Ann. Inst. H. Poincaré Probab. Stat.*, **45**, 373-420, 2009

9. F. Rassoul-Agha, T. Seppäläinen. An almost sure invariance principle for additive functionals of Markov chains. *Statist. Probab. Lett.*, **78**, 854-860, 2008

8. M. Balázs, F. Rassoul-Agha, T. Seppäläinen, S. Sethuraman. Existence of the zero range process and a deposition model with superlinear growth rates. *Ann. Probab.*, **35**, 1-31, 2007

7. F. Rassoul-Agha, T. Seppäläinen. Quenched invariance principle for multidimensional ballistic random walk in random environment with a forbidden direction. *Ann. Probab.*, **35**, 1209-1249, 2007

6. M. Balázs, F. Rassoul-Agha, T. Seppäläinen. The random average process and random walk in a space-time random environment in one dimension. *Commun. Math. Phys.*, **266**, 499-545, 2006

5. F. Rassoul-Agha, T. Seppäläinen. Ballistic random walk in random environment with a forbidden direction. *ALEA Lat. Am. J. Probab. Math. Stat.*, **1**, 111-147, 2006

4. F. Rassoul-Agha, T. Seppäläinen. An almost sure invariance principle for random walks in a space-time random environment. *Probab. Th. Relat. Fields*, **133**, 299-314, 2005

3. F. Rassoul-Agha. On the zero-one law and the law of large numbers for a random walk in a mixing random environment. *Electron. Comm. in Probab.*, **10**, 36-44, 2005

2. F. Rassoul-Agha. Large deviations for random walks in a mixing random environment and other (non-Markov) random walks. *Comm. Pure Appl. Math.*, **57**, 1178-1196, 2004

1. F. Rassoul-Agha. The point of view of the particle on the law of large numbers for random walks in a mixing random environment. *Ann. Probab.*, **31**, 1441-1463, 2003

CONFERENCES (since 2015)

August 2023	Southeastern Probability Conference, University of Virginia. *Speaker*
May 2023	Random Growth Models and KPZ Universality, Banff, Canada. *Organizer*
June 2022	Conference in Honor of S.R.S. Varadhan's 80th Birthday, Jeju Island, Seoul. *Speaker*
November 2022	MSRI Program on Universality and Integrability in Random Matrix Theory and Interacting Particle Systems. *Seminar Speaker*
May 2020	Stochastic Analysis Related to Hamilton-Jacobi PDEs, IPAM. *Speaker*
March 2020	Integrable Probability, Columbia. *Speaker* (Canceled due to COVID-19)
March 2020	Seminar on Stochastic Processes, Michigan State University. *Speaker*
July 2019	Brazilian School of Probability, São Carlos. *Speaker*
March 2019	Seminar on Stochastic Processes, University of Utah. *Organizer*
October 2018	Midwest Probability Colloquium, Northwestern University. *Speaker*
June 2018	Recent Trends in Continuous and Discrete Probability, Georgia Tech. *Speaker*
March 2018	Frontier Probability Days, Oregon State University. *Organizer*
April 2017	Qualitative Methods Around KPZ, CIRM, Lumini, Marseille. *Speaker*
January 2017	Mini Course on Random Growth Models, National AMS Meeting, Atlanta. *Organizer and Speaker*
May 2016	Frontier Probability Days, University of Utah. *Organizer*
August 2016	Raghu Varadhan' 75th Birthday conference, Berlin Technical University. *Speaker*
October 2015	AMS Central Fall Sectional Meeting, Loyola University. *Speaker*
August 2015	First Passage Percolation and Related Models, AIM. *Speaker*
May 2015	Random Polymers and Algebraic Combinatorics, Clay Math Institute, Oxford.
April 2015	Random Motion in Random Media, Eurandom, Eindhoven. *Speaker*

AWARDS

Fall 2021	**MSRI Research Professorship**
2019	**Fellow of the Institute of Mathematical Statistics.**
2014, 2021	**Simons Foundation Fellowship.**
2008 - 2015	**NSF CAREER Award.** Random Walk in Random Environment
Fall 2001 - Spring 2002	**Dean's dissertation fellowship.** New York University
Fall 1997 - Spring 2001	**Teaching and Research Assistantship.** Courant Institute, New York University
Summer 1999 and 2000	**Research Assistantship.** Courant Institute, New York University

GRANTS

2021 - 2024	**National Science Foundation.** Random Polymer Measures
2021 - 2022	**Simons Foundation Fellowship.**
2020	**National Science Foundation.** Support for "Frontier Probability Days", University of Nevada, 2021.
2019	**National Science Foundation.** Support for "Seminar on Stochastic Processes", University of Utah, March 2019.
2018 - 2021	**National Science Foundation.** Random Polymer Measures
2018	**National Science Foundation.** Support for "Frontier Probability Days", Oregon State University, March 2018.

2016 - 2017	**National Science Foundation.** Support for "Frontier Probability Days", University of Utah, May 2016.
2014 - 2018	**National Science Foundation.** Random Polymer Measures.
2014 - 2015	**Simons Foundation Fellowship.**
2014 - 2015	**National Science Foundation.** Support for "Frontier Probability Days", Univ. of Arizona, May 2014.
2008 - 2015	**NSF CAREER Award.** Random Walk in Random Environment
2005 - 2008	**National Science Foundation.** Stochastic Interactions between Particles and Environments. Joint with M. Balázs, University of Wisconsin-Madison.

PROFESSIONAL ACTIVITIES

May 2023	**Organizer.** Workshop on Random Growth Models and KPZ Universality. Banff Research Station
2015 - 2020	**Associate Editor.** Electron. J. Probab., Electron. Comm. Probab.
May 2020	**Organizer.** Frontier Probability Days. Department of Mathematics, U Nevada
March 2019	**Organizer.** Seminar on Stochastic Processes. Department of Mathematics, U Utah
March 2018	**Organizer.** Frontier Probability Days. Department of Mathematics, Oregon State U
January 2017	**Organizer.** Course on Random Growth Models, National AMS Meeting, Atlanta.
May 2016	**Organizer.** Frontier Probability Days. Department of Mathematics, U Utah
May 2014	**Organizer.** Frontier Probability Days. Department of Mathematics, U Arizona
2006 - 2012	**Organizer.** Stochastics Seminar. Department of Mathematics, U Utah
May 2011	**Organizer.** Random Environments. Department of Mathematics, Cornell U
March 2009/2011	**Organizer.** Frontier Probability Days. Department of Mathematics, U Utah
2010	**Speaker.** Science Night Live. College of Science, U Utah
2009 - 2013	**Course Coodinator.** *Math 1070 (Introductory Statistics)*
2011 - 2013	**MStat Committee Member.** *Math Track Representative*
2006 - present	**Departmental Committee Member.** *College Retention and Tenure, Executive, Hiring, Instructorship, Statistics Search, Equity-Diversity-Inclusion, Graduate, Undergraduate Curriculum, Library*
October 2006	**Organizer.** Special Session on Random Motion in Random Media, AMS Sectional meeting. Department of Mathematics, U Utah
July 2006	**Organizer.** A Minicourse on Stochastic Partial Differential Equations. Department of Mathematics, U Utah
2002 - present	**Referee.** *Ann. Math., Inventiones, Acta Math., Comm. Pure Appl. Math., Ann. Probab., Ann. Appl. Probab., Probab. Th. Relat. Fields, Commun. Math. Phys., J. Eur. Math. Soc., J. Appl. Probab., Proc. R. Soc., Ann. Inst. H. Poincaré, Electron. Comm. Probab., Electron. J. Probab., Stoch. Proc. Appl., Ser. A, J. Stat. Phys., J. Mat. Phys., Mathematical Reviews*
2003 - present	**Grant Reviewer.** ICTP, NSF, AMS/NSA, Simons Foundation

STUDENTS

2022-2026	Mikhail Sweeny (Ph.D.)
2019-2023	Sean Groathouse (M.Stat. and Ph.D.)
2019-2020	Gray Marchese (M.Stat.)
2016-2020	Sergazy Nurbavliyev (Ph.D.)
2015-2016	Yushan Gu (REU)
2015-2016	Laurel Baeder (M.Stat.)
2011-2016	Tony Lam (Ph.D.)
2014-2015	Hanlei Zhu (M.Stat.)
2013-2014	Aurora Jensen (M.Stat.)
2013-2014	Wuxin Yang (UROP)
2012-2013	Derek Doel (M.Stat.)
2009-2012	Anna Schoening (Ph.D.)
2012	Kate Roylance (REU)

2010-2011	Jim Sferas (M.Stat.)
2011	Keyang Zhang (UROP)
2009	Ning Xie (UROP)
2008	Y. Chu, D. Grimshaw, M. Parker, T. Peterson, N. Simonsen (REU)
2007-2008	Zsuzsanna Horváth (M.Sci.)

POSTDOCTORAL FELLOWS

2021-2024	Xiao Shen
2017-2020	Christopher Janjigian (Assistant Professor at Purdue University)
2014-2017	Arjun Krishnan (Assistant Professor at the University of Rochester)
2011-2014	Nicos Georgiou (Senior Lecturer at the University of Sussex)
2009-2012	Mathew Joseph (Associate Professor at the Indian Statistical Institute in Bangalore)

TEACHING EXPERIENCE (University of Utah)

Special Topics in Probability (Random Walk in Random Environment, Large Deviations, Random Polymer Measures), Graduate Statistics, Graduate Probability, Graduate Stochastic Processes, Introductory Stochastic Processes and Simulation, Linear Models, Statistical Inference, Introductory Probability, Introductory Statistics