Sunder Sethuraman

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Education

1995 Ph.D.	Courant Institute, New York University, New York, NY.	
1990 B.S.	Stanford University, Stanford, CA.	
1986 Diploma	Florida High School, Tallahassee, FL.	

Professional Experience

2011 –	Professor	Department of Mathematics University of Arizona.
2024 – 2025	Acting Associate Head of Postdoc Program	–
2008 – 2011	Professor	Department of Mathematics Iowa State University.
2002 – 2008	Associate Professor	–
1998 – 2002	Assistant Professor	–
1996 – 1998	Visiting Assistant Professor	School of Mathematics University of Minnesota.
1995 – 1996	Post-Doctoral Fellow	FIM, ETH-Zentrum Zürich, Switzerland.

Research Areas of Interest

Mostly probability, and connections to analysis, mathematical physics, and statistics: Stochastic analysis of interacting particle systems. Random walks, random graphs, and random media. Stick-breaking measures, data clustering and stochastic optimization.

Member: Statistics & Data Science, and Applied Math graduate interdisciplinary programs at University of Arizona.

Honors

07/2008   Prix de l'Institut Henri Poincare for best paper
            in *Ann. IHP Prob. Stat.* in 2007
04/2009   Lambert Award, Dept of Mathematics, Iowa State University
01/2018   Simons Foundation Fellowship
05/2018   Fellowship of the Institute of Mathematical Statistics
10/2018   Japan Society for the Promotion of Science Fellowship
01/2025   Simons Foundation Fellowship
6/2025   Schramm lecture,
            Institute of Mathematical Statistics and Bernoulli Society

PhD Students

• Zach Dietz. "Large deviations for a class of non-homogeneous Markov chains," Defended December 2002. Next: NSF-VIGRE post-doc at Tulane University.

• Dimitris Kontogiannis (joint with G. Lieberman). Defended July 2010. "Homogenization of partial differential equations in random media"

• Jihyeok Choi (joint with M. Axenovich), Defended April 2011. "On time-dependent preferential attachment." Next: Church postdoc at Syracuse University.

• Erik Davis, Defended May 2016, "Consistency of modularity clustering in random geometric graphs.' Bartlett prize. Next: Postdoc at U. Arizona; Conversant, Chicago, IL; Hughes Research Laboratories, Pasadena, CA.

• Doron Shahar, Defended Spring 2018, "Hydrodynamics for asymmetric long-range interacting particle systems." Bartlett prize. Next: Basis, New York, NY.

• William Lippitt, Defended Summer 2019, "Stick-breaking processes, clumping, and occupation laws of Markov chains." Bartlett prize. Next: Postdoc at U. Arizona; Postdoc at U. Colorado, Denver, CO.

• Derick Bishop, 'The solution of the d-string optimal stopping problem in certain Bernoulli sequences', Defended June, 2022. Next: Pima CC, Tucson, AZ.

• Alex Loomis, 'Higher energy state approximations in the 'Many Interacting Worlds' model', Defended Summer 2024. Next: Qbitsoft.

• Conner Hatton, 'Multi-range of RW', and topics in 'Satellite imagery analysis', Defended December 2024. Next: Postdoc at OakRidge National Laboratory

- Marcel Huidani, 'Singular diffusion limit of tagged particle in zero-range systems', and 'Convergence rates in SGD'. Defends March 2026. Next: Postdoc at Umea University, Sweden.

- Jacob Maibach, Current.

Postdocs mentored

- Jianfei Xue (2017-2020), 'Hydrodynamic limit of Young diagrams', 'Hydrodynamics in Sinai-type random environments'. Next: U. Missouri postdoc; Asst Prof Soochow U. China

- Michael Conroy (2021- 2023), 'Gumbel laws in symmetric exclusion'. Next: Clemson U. Asst. Prof.

Other PhD students helped mentor

- Sijia Liu, 2011. 'Random walk distances in data clustering and applications.' Next: Capital One.

- Alex Young, 2017. 'On collision times of self-sorting interacting particles in one-dimension with random initial positions and velocities.' Next: Postdoc at Duke U.

- Brady Gales, 2021, 'Norm agnostic linear bandits.'

- Tanner Reese, 2026, 'Crystal growth in locally finite partially ordered sets', Current.

MS Students

- John Njue. (co-major with Paul Sacks), MS Exam October 2003.

- Eric Blabac. "Some results in the determination of the basis of a convergent nonhomogeneous Markov chain," MS Exam July 2005. Next: Employed at SAP software company.

- Maximilian Wimmer. "A law of large numbers and central limit theorem for the leaves in a random graph model" MS Exam July 2006. Next: PhD student in Finance at University of Regensburg.

- Michael Phyzicky. "The structure of the limit tree in random graphs with super-linear preferential attachment" Oral Exam January 2014. Next: Employed by Chase Bank, Dallas, TX.

- Conner Hatton. 'From exactly once visited points of random walk to voter models with influencers.' Defended June, 2022.

- Owen MacDonald. 'Preferential attachment adjacent weights.' Defended May, 2022. Next: Messina Group Consulting, Chicago, IL.

Undergraduate Students

- Jayadev S. Athreya. Senior undergraduate thesis, May 2000, "On the asymptotic limits of discrete maximal order statistics." Next: Graduate student, Mathematics, University of Chicago.
- Thomas Doehrman. Senior undergraduate thesis, May 2017, "The range of random walks up to the time of exit from a domain." Harvill Award. Next: PhD student, Mathematics, University of Arizona.
- Lexi Garrabrant, Tristin Solarzano. Undergraduate research poster presented at UBRP conference, Jan 2020, "Records: Assessing change in temperature and other data". Next: L.G. to Fusion Academy, Scottsdale.
- Saresh Paradkar, Senior undergraduate thesis, May 2023, 'Stein's equation and Cramer-Rao lower bounds.' Next: MS student in data science, Carnegie-Mellon U.

Highschool Outreach

- Ran an online summer 2020 program 'Math of Neural Networks' with 7 Tucson area highschool junior students, June 10-July 20, 2020. Funding: HSAP Army Research Office.
- Ran an online summer 2021 program 'Math Models of Opinions and Epidemics' (with Shankar Venkataramani) with 5 Tucson highschool students, June 9 - July 19, 2021. Funding: HSAP Army Research Office.

Editorial Work

Associate Editor of Journal of Theoretical Probability, 1/23 -

Associate Editor of Rocky Mountain Mathematics Journal, 6/15 - 1/21, 4/26 –

Associate Editor of Electronic Journal of Probability, Electronic Communications in Probability, 1/09 - 12/14

Associate Editor of Statistics and Probability Letters, 11/02 - 6/2011

Recent Conference Organization

Frontier Probability Days 2018. May 29-31, 2018, Corvallis, OR (with T. Alberts, D. Khoshnevisan, Y. Kovchegov, F. Rassoul-Agha).

Session 'Scaling limits and interacting particle systems' at SPA June 11-15, 2018, Gothenberg, Sweden

Frontier Probability Days 2020. Dec. 3-5, 2021, Las Vegas, NE (with T. Alberts, L. Chen, Y. Kovchegov, F. Rassoul-Agha).

Seminar in Stochastic Processes 2023. Mar 8-11, 2023, Tucson, AZ (local: with S. Choi, I. Fatkullin, T. Kennedy)

Session 'Stochastic analysis and large scale interacting systems' at AIMS June 1-5, 2023, Wilmington, NC (with D. Hilhorst, B. Xie).

Interacting particle systems and related fields. Sep 22-26, 2025, CIRM, Marseilles (with C. Bernardin, T. Franco, D. Gabrielli, P. Goncalves, M. Jara, M. Sasada, S. Sethuraman, M. Simon).

Recent lectures in Conferences

Approximating geodesics via random points. JMM Spatial Stochastic Models. Denver, Co., Jan 16, 2020.

SPDE hydrodynamic limit in Sinai-type random environments, Bernoulli-IMS One-World Symposium, August 24-31, 2020

On microscopic derivation of a mean-curvature flow. 10th International Conference on Stochastic Analysis and its Applications (ICSAA), Kyoto University, Japan, Sep 6-10, 2021

Boundary behaviors, condensation, and effects of slow sites in zero-range systems, Montreal Workshop Probability and PDE, March, 2022.

On atypical motions of a tagged particle in asymmetric simple exclusion. Probability Conference (in honor of Raghu Varadhan), Seoul National University, South Korea, Jun 13-17, 2022.

On atypical motions of a tagged particle in asymmetric simple exclusion. Probability Conference (in honor of Herbert Spohn), Muenster, Germany, Jun 20-25, 2022.

On asymptotics of a tagged particle in simple exclusion, Topics in High Dimensional Probability, ICTS, Bangalore, India, Jan 2 - 23, 2023.

Atypical behaviors of a tagged particle in ASEP. Workshop on Random Growth Models in honor of Timo Seppäläinen, BIRS, Canada, May 29 - June 3, 2023

Connections between stick-breaking measures and Markov chains. International Indian Statistical Association annual meeting, June 1- 4, 2023, Golden, CO, Colorado School of Mines.

Hydrodynamic limit in a 'Sinai'-type random environment. AIMS Conference on Dynamical Systems and Differential Equations, June 1-5, 2023, Wilmington, NC.

Mini-course: An introduction to scaling limits in interacting particle systems. Stochastic Methods in Finance and Physics IV, Crete, July 17-21, 2023.

On the motion of a tagged particle in simple exclusion, Conference in honor of Wlodek Bryc and Magda Peligrad, University of Cincinnati, May 1-4, 2024.

Mini-course: Studies around hydrodynamic limits in interacting particle systems. IMPA, June 3-14, 2024

An spde as a hydrodynamic limit in a random environment. Advances in probability theory and interacting particle systems: in honor of SRS Varadhan, Harvard U, August 26-28, 2024

An spde as a hydrodynamic limit in a random environment. Workshop on probability and mathematical physics, Gimhae, Korea Dec 16-19, 2024.

On derivation of mean-curvature flow and related mass fluctuations from particle systems, SPA, Wroclaw, Poland July 14-18, 2025

Extremes in symmetric exclusion on Z^d, Oberwolfach, 'Large Scale Stochastic Dynamics', Aug 31- Sep 5, 2025.

Mini-course: On fluctuations in interacting particle systems, November 10-14, 2025 XV Symposium on Probability and Stochastic Processes; Hermosillo, Mexico.

Coupled KPZ equations and their decoupleability, SLMath Recent Trends in Stochastic Partial Differential Equations, Dec. 17, 2025.