# Sunder Sethuraman

Brief Vitæ

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## Education

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| 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

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| 2011 – | Professor | Department of Mathematics, University of Arizona. Statistics GIDP |
| 2008 – 2011 | Professor | Department of Mathematics, Iowa State University. |
| 2002 – 2008 | Associate Professor | Department of Mathematics, Iowa State University. |
| 2006 – 2007 | Visiting Associate Professor | Mathematical Sciences, University of Cincinnati. |
| 1998 – 2002 | Assistant Professor | Department of Mathematics, Iowa State University. |
| 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

Probability, both applied and theoretical, and as it relates to other fields such as Analysis, Mathematical Physics, and Statistics.

–Large scale scaling limits in complex systems.
–Stochastic analysis of interacting particle models.
–Random walks, random graphs and other random media.
–Data clustering and stochastic optimization.

## Awards

July 2008 Prix de l'Institut Henri Poincare for the best paper in *Annales IHP Prob. Stat.* in the year 2007.

April 2009 Lambert Award, Dept of Mathematics, Iowa State University

## Current Grant

Support for research from grant ARO W911NF-14-1-0179 (2014 - 2017) is gratefully appreciated.

## 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.' Next: Postdoc at U. Arizona; Conversant, Chicago, IL.

• Doron Shahar, Current, "Hydrodynamics for asymmetric long-range interacting particle systems."

## Other PhD students helped mentor

• Sijia Liu (advisor T. Matzavinos), 2011. See [32], 'Random walk distances in data clustering and applications.'

• Alex Young (advisor J. Lega), 2017. See [41], 'On collision times of self-sorting interacting particles in one-dimension with random initial positions and velocities.'

## 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. MS to be completed. Next: Employed by Chase Bank, Dallas, TX.

• Derick Bishop. Current, "Optimal stopping in a sequence of record times."

## Recent Talks

*Lectures in Conferences.*

Large deviation in preferential attachment random graphs. Conference in honor of SRS Varadhan, Taipei, Taiwan, July 2011

A conservative KPZ equation from zero-range and other interactions. Interacting Particle Systems conference in Florence, Italy. August 26-September 2, 2012.

On additive functionals in simple exclusion processes. Particle systems and PDE's, Braga, Portugal. December 5-7, 2012

A stochastic Burgers equation from zero-range interactions. AMS session on probability, Tucson, October 27-28, 2012.

Fluctuations of occupation times in simple exclusion and KPZ exponents. SPA, Boulder, CO. July 29 - August 3, 2013.

A stochastic Burgers equation from zero-range particle interactions. CBMS conference, MSU, East Lansing August 23, 2013.

Occupation times in long-range asymmetric simple exclusion and KPZ exponents. Large scale stochastic dynamics, Oberwolfach, October 27 - November 2, 2013.

Fractional KPZ stochastic Burgers equations arising from microscopic dynamics. AMS Sectional conference, MSU, East Lansing, March 13, 2015.

On deriving stochastic Burgers equations from a class of particle systems. SIAM conference on PDE, Scottsdale Dec 7 - 10, 2015.

Deriving a long-range stochastic Burgers equation. Conference in honor of Prof SRS Varadhan, TU Berlin, August 15-19, 2016

On KPZ-Burgers equation and stochastic particle systems. Asia Pacific Rim IMS conference, CUHK, Hong Kong, June 27-30, 2016

Consistency of modularity clustering and the Kelvin tiling problem. Discrete Geometry and Statistics, Chulalongkorn Univ., Bangkok, Jan 31- Feb 4, 2017.

*Seminars/Colloquia*

On large deviations in interacting particle systems and random graphs. University of Arizona, Feb 22, 2011.

Scaling limit in a zero-range system. University of Arizona, Feb 23, 2011.

KPZ equation from microscopic interactions. UC Irvine, Feb 24, 2012.

KPZ equation from zero-range dynamics. Tokyo University, June 13, 2012.

KPZ equation from zero-range dynamics. Bangalore Probability seminar, IISc, June 29, 2012.

On the degree distribution in preferential attachment random graphs, IMPA, PUC, July 2013.

A scaling limit in preferential attachment random graphs. U. Houston Dynamics seminar, Feb 10, 2014

A scaling limit for evolving preferential random graphs. ISI Kolkata, India, July 11, 2014.

An introduction to preferential attachment schemes I, II. IISc Bangalore, India, July 15, 2014

Continuum SPDEs from microscopic systems. U. Tokyo, July 26, 2014.

On deriving stochastic Burgers equations from microscopic interactions. U. Michigan, Mar 18, 2015.

Scaling limits in Stochastic Processes. CIMAT, Guanajuato, MX, Jan. 18, 2016

Consistency of Modularity clustering. ISI Delhi, July 14, 2016

Consistency of Modularity clustering. Bangalore Probability seminar ISI, July 25, 2016.

Modularity clustering, random geometric graphs and Kelvin's tiling problem. Iowa State University, April 21, 2017.