

Joint Mathematics Meetings

January 6–9, 2016

Washington Convention Center, Seattle, Washington, USA

The Society for Industrial and Applied Mathematics is a participant in the Joint Mathematics Meetings. SIAM sponsors an invited speaker and several minisymposia. The SIAM Coordinating Committee for the JMM (with members Liliana Borcea, Juan Meza, and Edriss S. Titi) invites you to attend these exciting activities.

SIAM Invited Address

Stochastic facilitation and sensitivities in discontinuous dynamics

Rachel Kuske, Department of Mathematics, University of British Columbia



Time: Thursday, January 7, 2016, 11:10 a.m.–12:00 p.m.

Location: Ballroom 6BC, Washington State Convention Center

Rachel Kuske is a Professor of Mathematics at the University of British Columbia, since 2006. Before coming to Canada, she was a postdoc at Stanford and University of Utrecht and held faculty appointments at Tufts University and University of Minnesota. In 2002 Kuske joined UBC, where in addition to being a faculty member she also held positions of Department Head (2007–2011) and as the Senior Advisor to the Provost on Women Faculty (2011–2015).

Kuske received her PhD in 1992 from Northwestern University, and since then her research interests have covered applied stochastic dynamics and nonlinear modeling with applications in biology, engineering, and climate systems. Most recently she has led new areas of interest in stochastic dynamics, including stochastic analysis in delayed or non-smooth systems, noise-driven order in complex systems, and analysis of stochastic transitions or “tipping points” in the diverse fields of optics, biology, mechanics, and climate systems. She was elected SIAM Fellow in 2015, and has received a number of other awards including a Canada Research Chair (2002–2012) and the Canadian Mathematical Society’s Krieger-Nelson prize (2011).

Kuske has worked with a variety of mathematical institutes and professional organizations in applied mathematics and has been expert and mentor for events covering topics from industrial mathematics to women in mathematics. She was awarded the Association for Women in Mathematics Service Award in 2013. Over the last ten years she has served on the editorial boards for the SIAM J on Applied Math, SIAM Review, the European J. of Applied Math, the IMA J. of Applied Math, and Discrete and Continuous Dynamics - B. Highlights of her service to the mathematical sciences community includes SIAM Council, the NSERC-Math-Stats Long Range Planning Committee, Scientific Advisory Panel of the Fields Institute, Associate Director of Program Diversity at the American Institute of Mathematics, and co-chair of the bi-annual SIAM Applied Dynamical Systems meeting.

Abstract: While there have been recent advances for analyzing the complex deterministic behavior of systems with discontinuous dynamics, there are many open questions around understanding and predicting noise-driven and noise-sensitive phenomena in the non-smooth context. Familiar concepts from smooth systems such as escapes, resonances, and bifurcations appear in unexpected forms for non-smooth systems, so that effective analyses typically depend on the creative combination of multiple scales techniques, probabilistic models, and nonlinear methods. The appropriate strategy is often not immediately obvious from the area of application or model type, yet we gain intuition from seemingly unrelated canonical models of biophysics, mechanics, and chemical dynamics. Combining the geometrical perspective with asymptotic approaches in physical and phase space is critical for characterizing the stochastic dynamics, robustness, and sensitivity to noisy fluctuations. Models in biology, engineering, and the environment are discussed.

This presentation accompanies the SIAM Minisymposium on
Probability Meets Dynamics in Biology, Thursday January 7, 2016, 8:00 a.m.

More on reverse

SIAM Minisymposia @ Joint Mathematics Meetings

All minisymposia are located in Room 3A, Washington State Convention Center.

SIAM Minisymposium on Optimization

Organizers:

Juan Meza, University of California, Merced
Roummel Marcia, University of California, Merced
Cosmin Petra, Argonne National Laboratory
Noemi Petra, University of California, Merced

Wednesday January 6, 2016, 8:00 a.m.–10:55 a.m.

SIAM Minisymposium on Inverse Problems and Applications, I and II

Organizer:

Gunther Uhlmann, University of Washington

Wednesday January 6, 2016, 2:15 p.m.–6:00 p.m.

Friday January 8, 2016, 8:00 a.m.–10:55 a.m.

SIAM Minisymposium on Probability Meets Dynamics in Biology

Organizer:

Rachel Kuske, University of British Columbia

Thursday January 7, 2016, 8:00 a.m.–11:00 a.m.

SIAM Minisymposium on K–8 Applied Mathematics Outreach Activities

Organizers:

Rachel Levy, Harvey Mudd College
Suzanne Lenhart, University of Tennessee

Thursday January 7, 2016, 1:00 p.m.–4:10 p.m.

SIAM Minisymposium on Trends in the Mathematics of Signal Processing and Imaging

Organizers:

Willi Freeden, University of Kaiserslautern
Zuhair Nashed, University of Central Florida

Friday January 8, 2016, 1:00 p.m.–6:00 p.m.

SIAM Minisymposium on Graphical Models for High Dimensional Data

Organizer:

Andrea Bertozzi, University of California, Los Angeles

Saturday January 9, 2016, 8:00 a.m.–12:00 p.m.

SIAM Minisymposium on Applied analysis of partial differential equations

Organizers:

Gautam Iyer, Carnegie Mellon University
Anna Mazzucatto, Penn State University

Saturday January 9, 2016, 1:00 p.m.–5:30 p.m.

AMS-MAA-SIAM Gerald and Judith Porter Public Lecture

Network Science: From the Online World to Cancer Genomics

Jennifer Chayes, Microsoft Research

Time: Saturday January 9, 2016, 3:00 p.m.–4:00 p.m.

Location: Ballroom 6BC, Washington State Convention Center

Don't forget to visit SIAM's booth #202 in the exhibit hall.

Join SIAM at www.siam.org/joinsiam.



Society for Industrial and Applied Mathematics

3600 Market Street, 6th Floor • Philadelphia, PA 19104-2688 USA

Phone: +1-215-382-9800 x364 • Fax: +1-215-386-7999 • pao@siam.org • www.siam.org