SIAM Sessions at the Joint Mathematics Meetings

January 10–13, 2018 / San Diego, California, USA

The Society for Industrial and Applied Mathematics (SIAM) is a participant in the Joint Mathematics Meetings (JMM). SIAM sponsors an invited speaker and several minisymposia.

SIAM Invited Address

Tensor Decompositions: A Mathematical Tool for Data Analysis

Tamara G. Kolda
Sandia National Laboratories

Thursday, January 11, 2018 / 11:10 a.m–12:00 p.m.
Room 6AB, Upper Level
San Diego Convention Center

Abstract: Tensors are multiway arrays, and tensor decompositions are powerful tools for data analysis. In this talk, we demonstrate the wide-ranging utility of the canonical polyadic (CP) tensor decomposition with examples in neuroscience and chemical detection. The CP model is extremely useful for interpretation, as we show with an example in neuroscience. However, it can be difficult to fit to real data for a variety of reasons. We present a novel randomized method for fitting the CP decomposition to dense data that is more scalable and robust than the standard techniques. We further consider the modeling assumptions for fitting tensor decompositions to data and explain alternative strategies for different statistical scenarios, resulting in a *generalized* CP tensor decomposition.

Tamara Kolda *is a Distinguished Member of Technical Staff at Sandia National Laboratories in Livermore, California. Her research is generally in the area of computational science and data analysis, with specialties in multilinear algebra and tensor decompositions, graph models and algorithms, data mining, optimization, nonlinear solvers, parallel computing and the design of scientific software.*

Kolda has received a Presidential Early Career Award for Scientists and Engineers (PECASE) and been named a Distinguished Scientist of the Association for Computing Machinery (ACM) and a Fellow of the Society for Industrial and Applied Mathematics (SIAM). She was the winner of an R&D100 award and three best paper prizes at international conferences.

Kolda is currently a member of the SIAM Board of Trustees and serves as associate editor for both SIAM Journal on Scientific Computing *and* SIAM Journal on Matrix Analysis and Applications.

siam More SIAM sessions on reverse.

SIAM Minisymposia @ Joint Mathematics Meetings

All minisymposia are located in Room 11A, Upper Level, San Diego Convention Center.

SIAM Minisymposium on Data Science in the Mathematics Curriculum
Organizer:
Suzanne Weekes, Worcester Polytechnic Institute
Wednesday, January 10, 2018 / 8:00 a.m.–10:55 a.m

SIAM Minisymposium on Numerical Linear Algebra
Organizers:
Daniel B. Szyld, Temple University
Eugene Vecharynski, Lawrence Berkeley National Laboratory
Wednesday, January 10, 2018 / 2:15 p.m–3:40 p.m.

SIAM Minisymposium on Advances in Imaging Science
Organizers:
Misha Kilmer, Tufts University
Eric de Sturler, Virginia Tech
Eric Miller, Tufts University
Avind Saibaba, North Carolina State University
Thursday, January 11, 2018 / 8:00 a.m.–10:50 a.m.

SIAM Minisymposium on Tensors! Mathematical Challenges and Opportunities
Organizers:
David Gleich, Purdue University
Tamara G. Kolda, Sandia National Laboratories
Luke Oeding, Auburn University
Thursday, January 11, 2018 / 1:00 p.m.–4:00 p.m.

SIAM Minisymposium on Advances in Finite Element Approximation
Organizers:
Constantin Bacuta, University of Delaware
Ana Maria Soane, United States Naval Academy
Friday, January 12, 2018 / 8:00 a.m.–10:55 a.m.

SIAM Minisymposium on Mimetic Multiphase Subsurface and Oceanic Transport
Organizers:
Jose Castillo, San Diego State University
Chris Paolini, San Diego State University
Friday, January 12, 2018 / 1:00 p.m. - 6:10 p.m.

SIAM Minisymposium on Recent Advances in Modeling, Analysis, and Control in Epidemiology, Spatial Ecology and Evolution
Organizers:
Aijun Zhang, Oregon State University
Vrushali Bokil, Oregon State University
Patrick Deleenheer, Oregon State University
Carrie Manore, Los Alamos National Laboratory
Saturday, January 13, 2018 / 8:00 a.m.–5:00 p.m.

SIAM Minisymposium on Problems in Quasilinear Despersive PDE
Organizers:
David Ambrose, Drexel University
Jeremy Marzuola, University of North Carolina
Saturday, January 13, 2018 / 1:00 p.m.–5:50 p.m.

AMS-MAA-SIAM Gerald and Judith Porter Public Lecture

Political Geometry: Voting Districts, "Compactness," and Ideas About Fairness
Moon Duchin, Tufts University
Saturday, January 13, 2018 / 3:00 p.m.–4:00 p.m.
Ballroom 6AB, Upper Level, San Diego Convention Center

Don't forget to visit SIAM's booth #404 in the exhibit hall.

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Society for Industrial and Applied Mathematics
3600 Market Street, 6th Floor • Philadelphia, PA 19104-2688 USA
Phone: +1-215-382-9800 • Fax: +1-215-386-7999 • siam@siam.org • www.siam.org

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