2022 SIAG/UQ

Hybrid: SIAM Conference on Uncertainty Quantification

Uncertainty Quantification Business Meeting

Wednesday, April 13th, 6:30-7:30 pm ET
Peachtree C&D - 8th Floor
Westin Peachtree Plaza
Atlanta, Georgia, U.S.
SIAG/UQ Officers

Chair:
Ralph Smith

Vice Chair:
Elisabeth Ullmann

Program Director:
Daniela Calvetti

Secretary:
Rebecca Morrison
SIAG/UQ Announcements

- SIAM Engage:
  - https://engage.siam.org/communities/siag-uq-home?CommunityKey=cc2f5a14-a5c1-41e1-9fa8-0b71492544cb

- SIAG/UQ websites:
  - https://www.siam.org/membership/activity-groups/detail/uncertainty-quantification
  - SIAM News: Story Ideas

- SIAM Blogs

- SIAG/UQ Leadership Suggestion Form:
  - https://www.siam.org/forms/siam-activity-group-leadership-form
SIAG/UQ Fellows

Class of 2021
Habib Najm

Class of 2022
James Crowley
Houman Owhadi
SIAG/UQ Conference History

- 2012, Raleigh, NC: 506 attendees
- 2014, Savannah, GA: 539 attendees
- 2016, Lausanne, Switzerland: 811 attendees
- 2018, Garden Grove, CA: 678 attendees
- 2020, Garching, Germany: 349 attendees (cancelled)
- 2022, Atlanta, GA: 521 attendees
SIAG/UQ Conference 2022

Organizing Committee Co-Chairs

Daniela Calvetti, Case Western Reserve University, U.S.
Heikki Haario, Lappeenranta University of Technology, Finland
Douglas Nychka, Colorado School of Mines, U.S.

Organizing Committee

Mihai Anitescu, Argonne National Laboratory, U.S.
Derek Bingham, Simon Fraser University, Canada
Andres Christen, Centro de Investigación en Matemáticas, Mexico
Julianne Chung, Virginia Tech, U.S.
Christopher Drovandi, Queensland University of Technology, Australia
Gianluca Iaccarino, Stanford University, U.S.
Peter Lawrence, National Center for Atmospheric Research, U.S.
Jessica Matthews, North Carolina State University, U.S.
Noémi Petra, University of California, Merced, U.S.
Stephan Sain, Jupiter Intelligence, U.S.
Sebastian Reich, Universität Potsdam, Germany
Tanja Tarvainen, University of Eastern Finland, Finland
Computer experiments are ubiquitously used in science and engineering, yet the computational complexity can prohibit its applications for many large-scale systems. In this talk, we will introduce the Gaussian process emulator as a surrogate model for approximating computer model simulations and uncertainty quantification. The new results concern emulating computer models with massive coordinates, high-dimensional inputs and functionals. We will review the stochastic differential equation representation of Gaussian processes with Matern covariance, and applications of Kalman filter, as exact, computationally efficient alternatives. Our extensions include the generalized probabilistic principal component analysis and Gaussian orthogonal latent factor processes, for modeling incomplete matrix observations of correlated data. We have developed software packages in R and MATLAB that implement the Gaussian process emulator and some of the computationally scalable alternatives. Applications include emulating the TITAN2D model of pyroclastic flows, ground deformation simulation by COMSOL Multiphysics, ab initio molecular dynamics simulations, and cellular migration simulations.

Mengyang Gu
University of California, Santa Barbara, U.S.
The Annual Meeting provides a broad view of the state of the art in applied mathematics, computational and data science, and their applications through invited presentations, prize lectures, minitutorials, minisymposia, contributed presentations, and posters.

Organizing Committee Co-Chairs
Sunčica (Sunny) Čanić, University of California, Berkeley, U.S.
Edmond Chow, Georgia Institute of Technology, U.S.
July 11\textsuperscript{th} – July 15\textsuperscript{th}, 2022
David L Lawrence Convention Center
Pittsburgh, Pennsylvania, U.S.  \textit{HYBRID}

\textbf{Held Jointly with:}

- SIAM Conference on Applied Mathematics Education (ED22)
- SIAM Conference on the Life Sciences (LS22)
- SIAM Conference on Mathematics of Planet Earth (MPE22)

\textbf{Tracks of Sessions by SIAM SIAGs:}

- Applied Linear Algebra
- Materials Science

\textbf{Registration Deadline:}

- June 13th, 2022

\textbf{Hotel Registration Deadline:}

- June 13th, 2022

\textbf{Travel Fund Application Deadline:}

- April 11, 2022

\textbf{For all hybrid conferences, support will be prioritized for students attending the conference in-person.}

More information available at:
https://www.siam.org/conferences/cm/conference/an22
SIAM Career Fair

*Wednesday, April 20, 2022, 11 a.m. to 5 p.m. Eastern*

https://www.siam.org/careers/resources/siam-career-fairs

- Job seekers can register for free!
- Have an opening? Booth packages starting at $695
- Previous participants include:

  - Amazon
  - Amgen
  - Argonne National Laboratory
  - Astellas
  - The Boeing Company
  - Cadence
  - Cerebras
  - Chinese Academy of Science
  - ExxonMobil
  - Jane Street
  - Krell Institute
  - Lawrence Berkeley National Laboratory
  - Lawrence Livermore National Laboratory
  - Los Alamos National Laboratory
  - MathWorks
  - Medpace
  - Merck
  - NASA Langley Research Center
  - National Security Agency
  - Naval Nuclear Laboratory
  - Oak Ridge National Laboratory
  - Pacific Northwest National Laboratory
  - Pfizer
  - Sandia National Laboratories
  - SAS
  - SigOpt, an Intel Company
  - Simulations Plus
Gene Golub SIAM Summer School

Financial Analytics: Networks, Learning, and High Performance Computing

August 1–12, 2022

Gran Sasso Science Institute (GSSI), L’Aquila, Italy

The school will offer an introduction to Quantitative Risk Management in Finance, Energy and Commodity Markets, Machine Learning and Financial Technology, and Mean field Games. Students will be exposed to the economic and managerial implications of these subjects, and to tools of applied probability, optimization, and computational techniques.

For more information visit: https://www.siam.org/students-education/programs-initiatives/gene-golub-siam-summer-school
Future conferences?

LOCATION
DATES
THEMES
Join SIAM Today!

Benefits of SIAM Membership Include........

- SIAM Review (Print & Electronic)
- SIAM News (Print)
- 30% Off SIAM Books
- $15 / Activity Group Membership
- 20% - 30% Off Registrations
- 80% Off Journals (up to 4)
- 95% Off e-Access to Journals
- Spouse may join as Associate Member
- SIAM Unwrapped
- Vote in SIAM Elections
- Eligible to Hold Office
- Eligible for Committee Appointments
- Nominate SIAM Fellows
- Be Nominated as a SIAM Fellow
- Eligible for Group Insurance
- Nominate 2 Students for Free Membership
- Qualifying Student Members can join 2 SIAGs for free!

Nonmember attendees can save up to $155 their 2022 membership!
2022 SIAG/UQ
Membership Report
(data as of December 31, 2021)
SIAG/UQ Membership Demographics

- Nonstudent members
- Student members
- Total

Yearly membership counts from 2010 to 2021.
SIAG/UQ Membership Demographics

- Nonstudent: 454 (61.3%)
- Student: 287 (38.7%)
## SIAG/UQ Membership by Geography

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Non-US</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonstudent</td>
<td>284</td>
<td>170</td>
<td>454</td>
</tr>
<tr>
<td>Student</td>
<td>181</td>
<td>106</td>
<td>287</td>
</tr>
<tr>
<td>Total</td>
<td>465</td>
<td>276</td>
<td>741</td>
</tr>
<tr>
<td>Nonstudent (%)</td>
<td>38.3</td>
<td>22.9</td>
<td>61.3</td>
</tr>
<tr>
<td>Student (%)</td>
<td>24.4</td>
<td>14.3</td>
<td>38.7</td>
</tr>
<tr>
<td>Total (%)</td>
<td>62.8</td>
<td>37.2</td>
<td>100</td>
</tr>
</tbody>
</table>
SIAG/UQ Membership by Gender

Nonstudents

- Woman: 78 (17.2%)
- Not Indicated: 12 (2.6%)
- Prefer Not to Disclose: 8 (1.8%)
- Nonbinary: 2 (<1%)
- Man: 354 (78%)

Students

- Woman: 65 (22.6%)
- Not Indicated: 13 (4.5%)
- Prefer Not to Disclose: 2 (<1%)
- Nonbinary: 1 (<1%)
- Man: 206 (71.8%)
SIAG/UQ Membership by Employer Type

- Academia: 292 (72.6%)
- Laboratory: 46 (11.4%)
- Industry: 30 (7.5%)
- Government: 27 (7.0%)
- Other: 7 (1.7%)
SIAG/UQ Membership by Department Type

Mathematics: 134 (61.8%)
Engineering: 45 (20.7%)
Statistics: 14 (6.5%)
Other: 9 (4.1%)
Computer Science: 6 (2.8%)
Other (Physical Science): 6 (2.8%)
Physics: 3 (1.4%)
Other Business

SIAM SESSIONS: ORGANIZED AT JOINT MATH MEETINGS
INCREASED SIAM COLLABORATION WITH INTERNATIONAL SOCIETY OF PHARMACOMETRICS (ISOP)
Contacts

Chair  Ralph Smith  rsmith@ncsu.edu
Vice Chair  Elisabeth Ullmann  elisabeth.ullmann@tum.de
Program Director  Daniela Calvetti  dxc57@case.edu
Secretary  Rebecca Morrison  rebeccam@Colorado.edu