Society for Industrial and Applied Mathematics

Annual Report 2022/23

July 24, 2023

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SUZANNE L. WEEKES SIAM CHIEF EXECUTIVE OFFICER

2023 SIAM BUSINESS MEETING

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*Newly Elected/Re-Elected

2023 SIAM Officers

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* Appointed in January 2023

2023 SIAM Council

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Natalia Alexandrov, NASA Langley Research Center

Sharon Arroyo, Boeing Company

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Samuel Gubins, Annual Reviews

Johnny Guzmán, Brown University

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Gitta Kutyniok, LMU Munich

Sven Leyffer, Argonne National Laboratory

Lois Curfman McInnes, Argonne National Laboratory

Susan Minkoff, University of Texas, Dallas

James Nagy, Emory University

Evelyn Sander, George Mason University

Carola-Bibiane Schoenlieb, University of Cambridge

Valeria Simoncini, Universita' di Bologna*

*Newly Elected/Re-Elected

Candidates – 2024 SIAM Officers

SIAM elections will run September to November.

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Juan C. Meza, University of California, Merced

Carol Woodward, Lawrence Livermore Nat'l Lab

Vice President at Large

Thomas A. Grandine, University of Washington

Xiaoye Sherry Li, Lawrence Berkeley Nat'l Lab

Secretary

Karen Devine, Sandia Nat'l Lab (retired)

Anusha Sekar, Chevron

Candidates – 2024 SIAM Board & Council Elections

SIAM elections will run September to November.

SIAM Board (3 seats)

Kevin Bongiovanni, Raytheon Technologies

Liliana Borcea, University of Michigan, Ann Arbor*

Dirk Hartmann, Siemens Digital Industry Software

Jan Hesthaven, EPFL*

Esmond Ng, Lawrence Berkeley Nat'l Lab*

Cynthia Phillips, Sandia Nat'l Lab

SIAM Council (4 seats)

John Abbott, Corning Inc., retired

Elizabeth Cherry, Georgia Tech*

Hans De Sterck, University of Waterloo*

Inderjit Dhillon, UT Austin & Google

Chang-Ock Lee, Korea Advanced Inst. of Science & Technology

Knut-Andreas Lie, SINTEF Digital, Norway

Andrea Walther, Humboldt-Universität zu Berlin

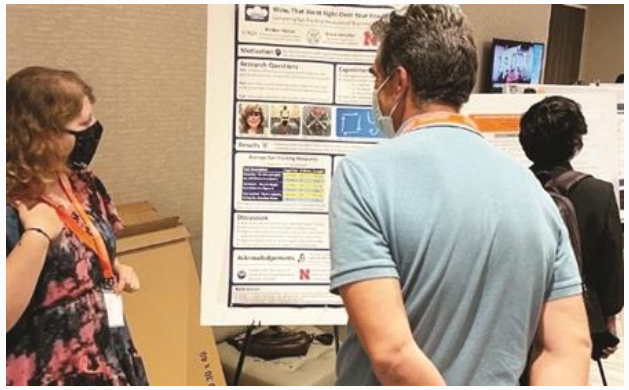
***Incumbent**

SIAM Conferences

Since we last met:

- **Nonlinear Waves & Coherent Structures (NWCS22)** – Aug/Sep 2022 – Bremen, Germany – *hybrid*
- **Mathematics of Data Science (MDS22)** – Sep 2022 – San Diego, CA – *hybrid*
- **Discrete Algorithms** (**SODA/SOSA/ALENEX/APOCS23)** - January 2023 – Florence, Italy - *hybrid*
- **Computational Science & Engineering (CSE23)** – Feb/Mar 2023 – Amsterdam, The Netherlands – *in person only*
- **Data Mining (SDM23)** - April 2023 – Minneapolis, MN – *in person only*
- **Dynamical Systems (DS23)** – May 2023 – Portland, OR – *in person only*
- **Optimization (OP23), ACDA23** – May/June 2023 – Seattle, WA – *in person only*
- **Financial Mathematics & Engineering (FM23)** – June 2023 – Philadelphia, PA – *in person only*
- **Geosciences (GS23)** – June 2023 – Bergen, Norway – *in person only*
- **Geometric Design (GD23)** – July 2023 – Genoa, Italy – *in person only*
- **Algebraic Geometry (AG23)** – July 2023 – Eindhoven, The Netherlands – *hybrid*

SIAM Section Meetings



- **Central States Section Annual Meeting** – Oct 2022
- **DC-Baltimore Section Annual Meeting** – Nov 2022
- **Texas Louisiana Section Annual Meeting** – Nov 2022
- **Southeastern Atlantic Section Annual Meeting –** Mar 2023
- **United Kingdom and the Republic of Ireland Section Annual Meeting** – Apr 2023
- **Northern States Section Annual Meeting –** April 2023
- **Argentina Section Annual Meeting** – May 2023
- **Mexico Section Annual Meeting** – Jun 2023

and more coming up!

SIAM Conferences Notes

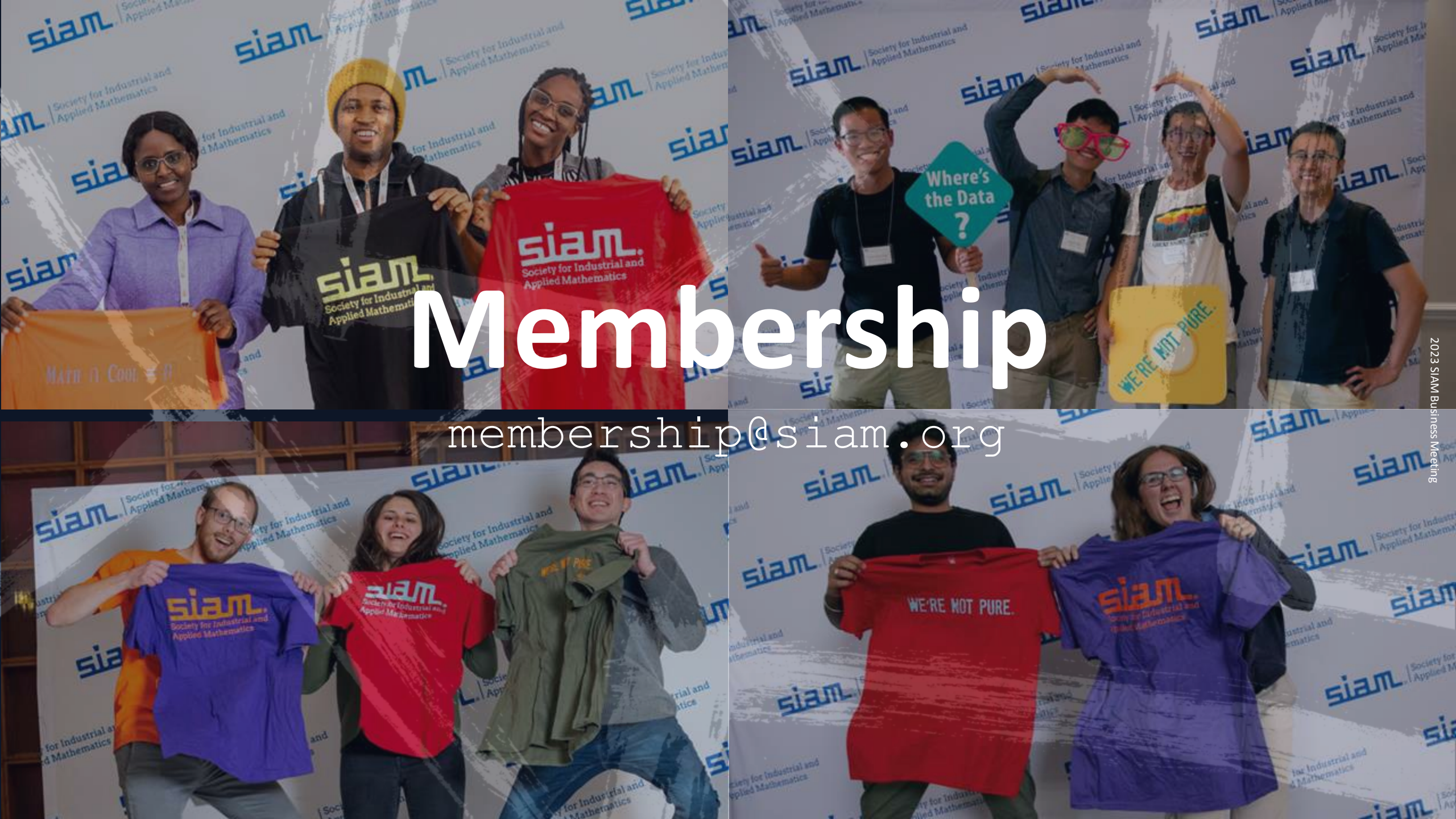
- **SIAM Conferences received financial support from**
  - the **US National Science Foundation** DMS 1757085, DMS 2244415, and DMS 2233032
    - *Workshop Celebrating Diversity* held at SIAM Dynamical Systems Conference in 2023
    - Travel support for invited presenters, students, early career researchers
    - Travel support for 100 U.S.-based students and researchers to attend **ICIAM 2023**
  - the **US Department of Energy** DE-SC0006811
  - **Conference sponsors**

- **Student Travel Awards to SIAM Conferences**
  - 2022: **286** 2023 YTD: **282**

*with support from the **SIAM Student Travel Fund.***

Thank you to donors for their gifts and to SIAM book authors for their generosity!

- **NSF Early Career Travel Awards to SIAM Conferences**
  - 2022: **71** 2023 YTD: **56**
- **Childcare Grants –** both virtual and in-person attendees eligible



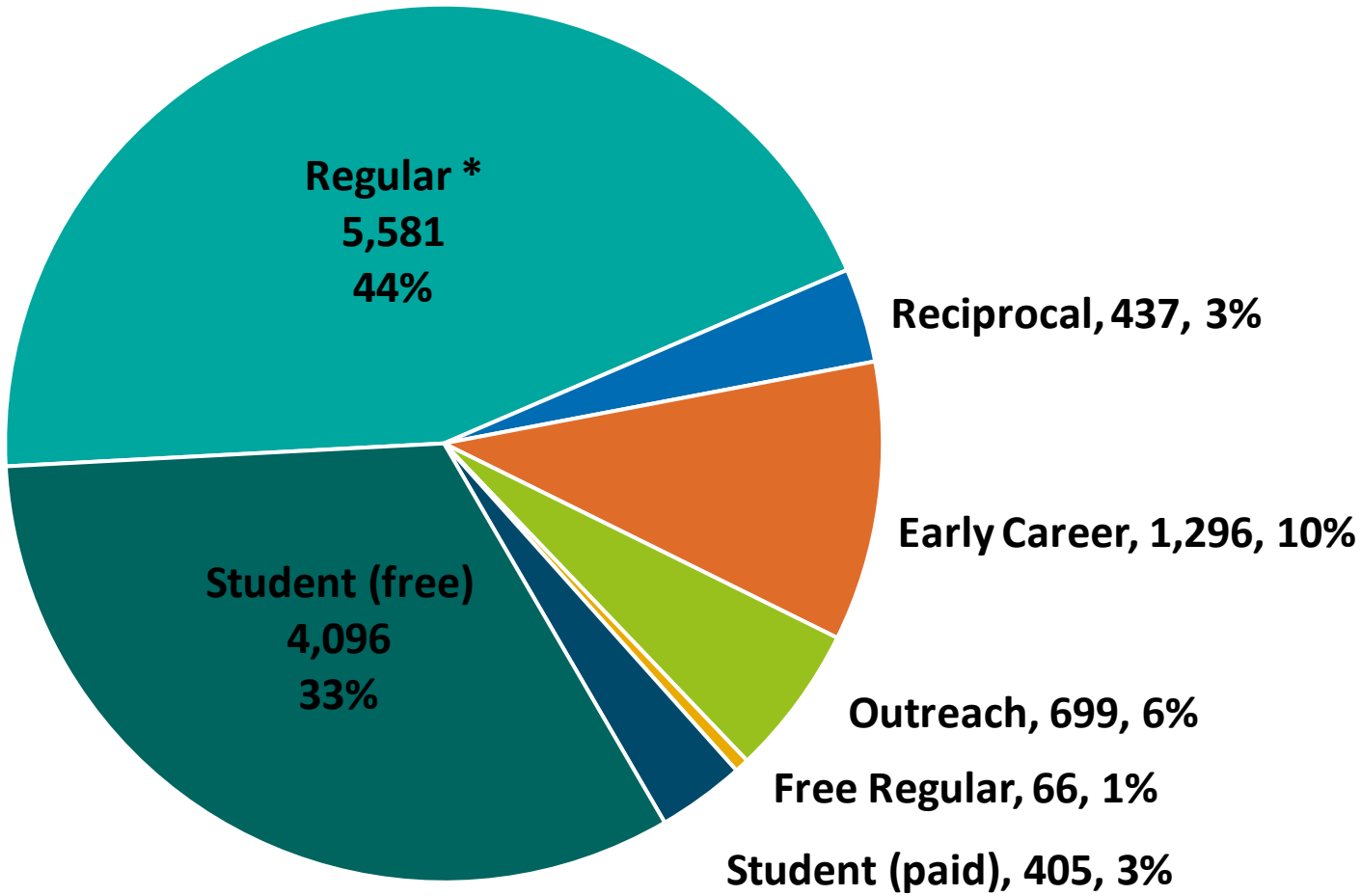
Membership

membership@siam.org

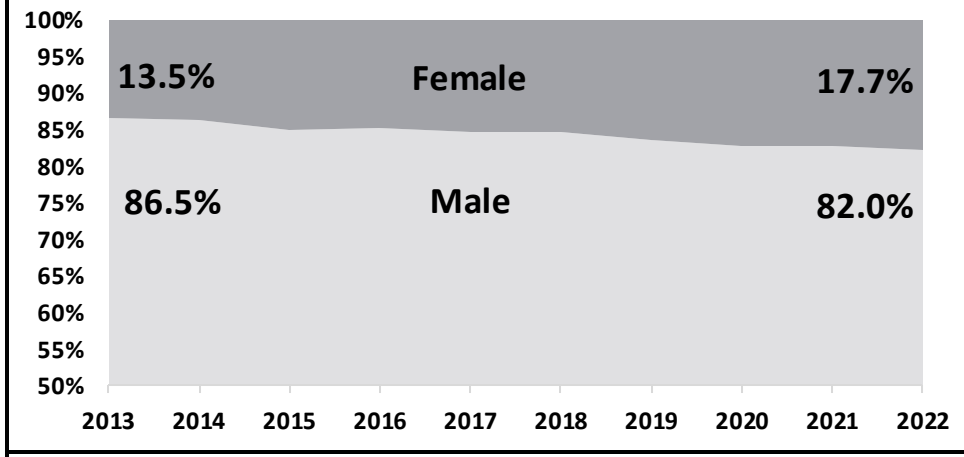
2023 SIAM Business Meeting

SIAM Membership

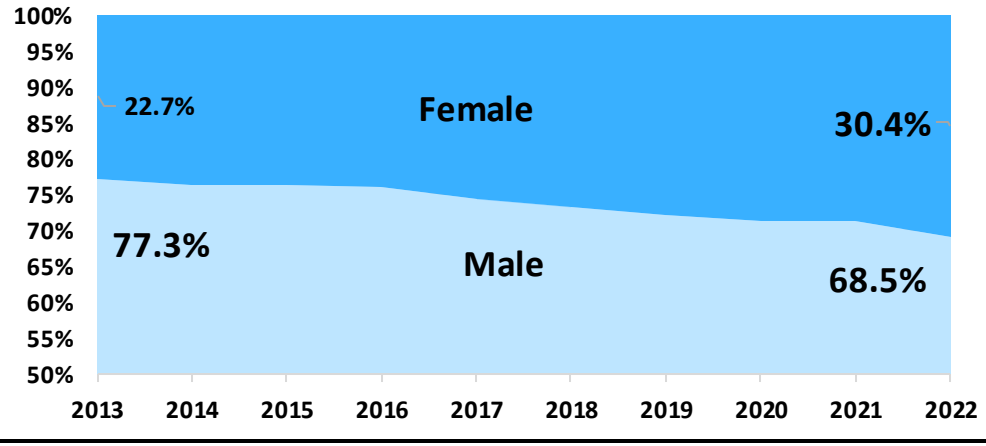
2022 Membership by Type



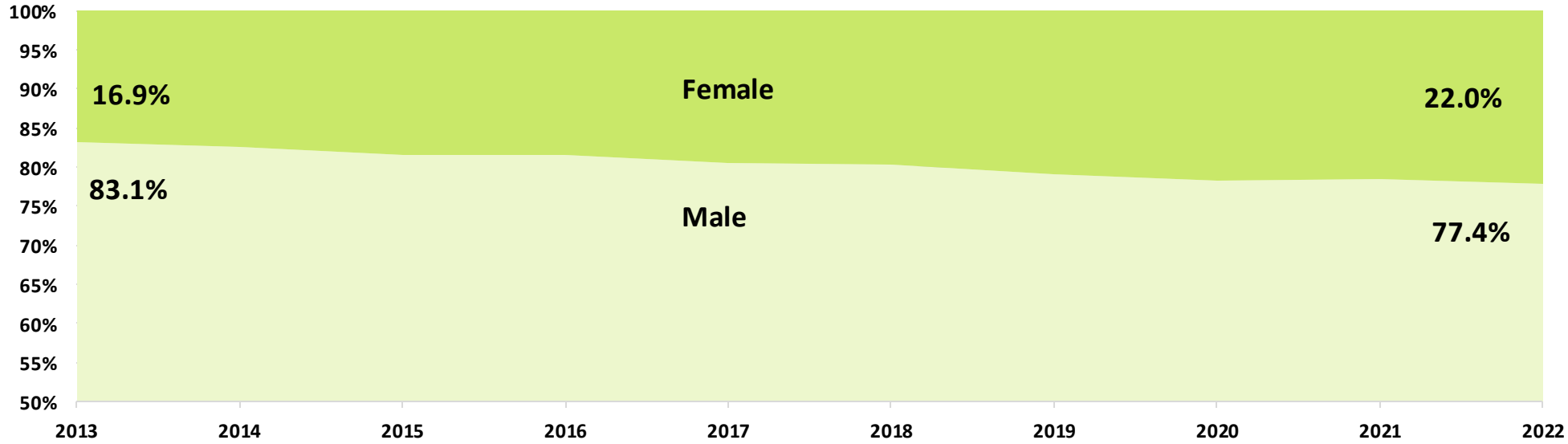
Known Nonstudent Gender Breakdown



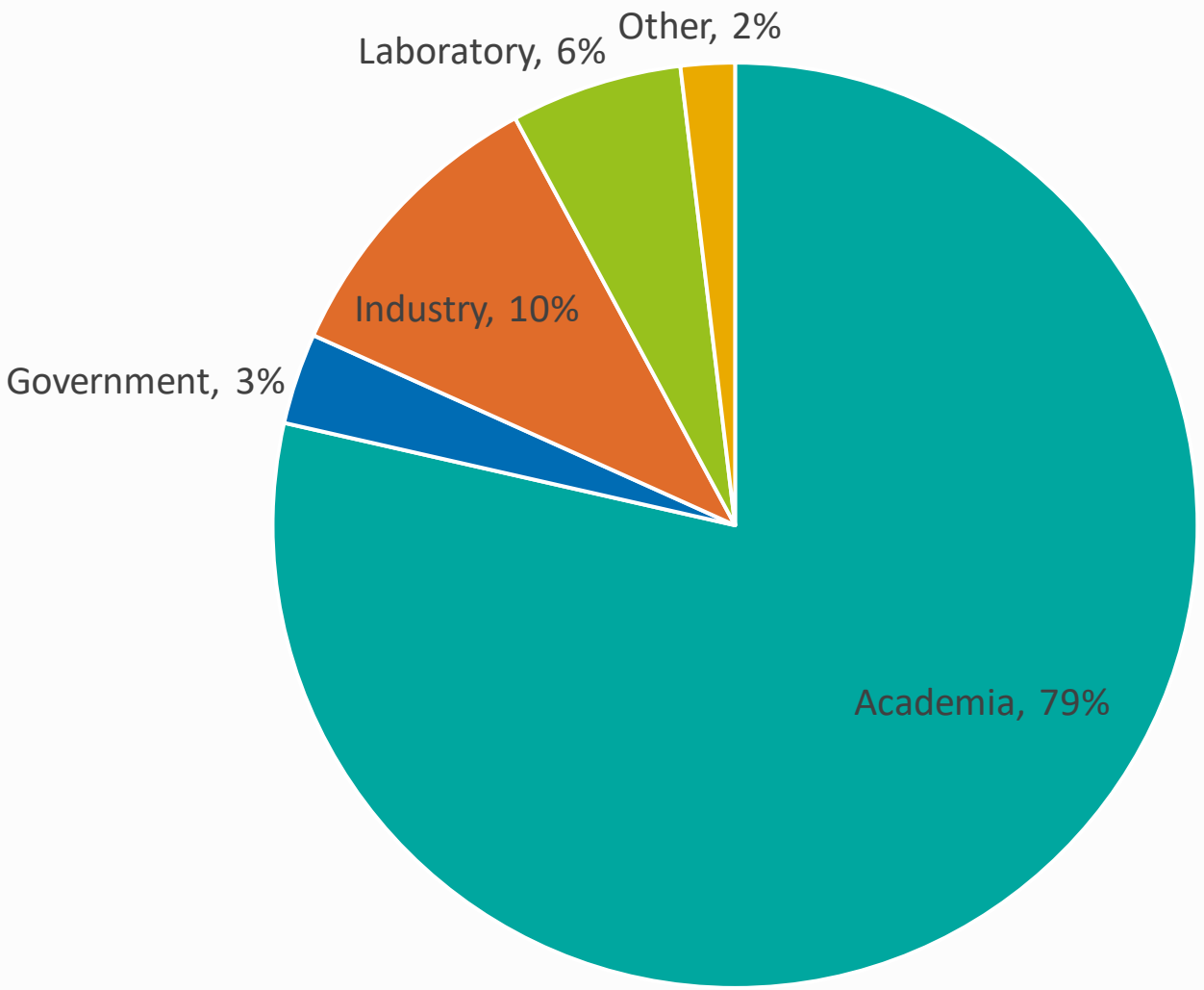
Known Student Gender Breakdown



Total Known Gender Breakdown



Employer Type (Excluding Students)

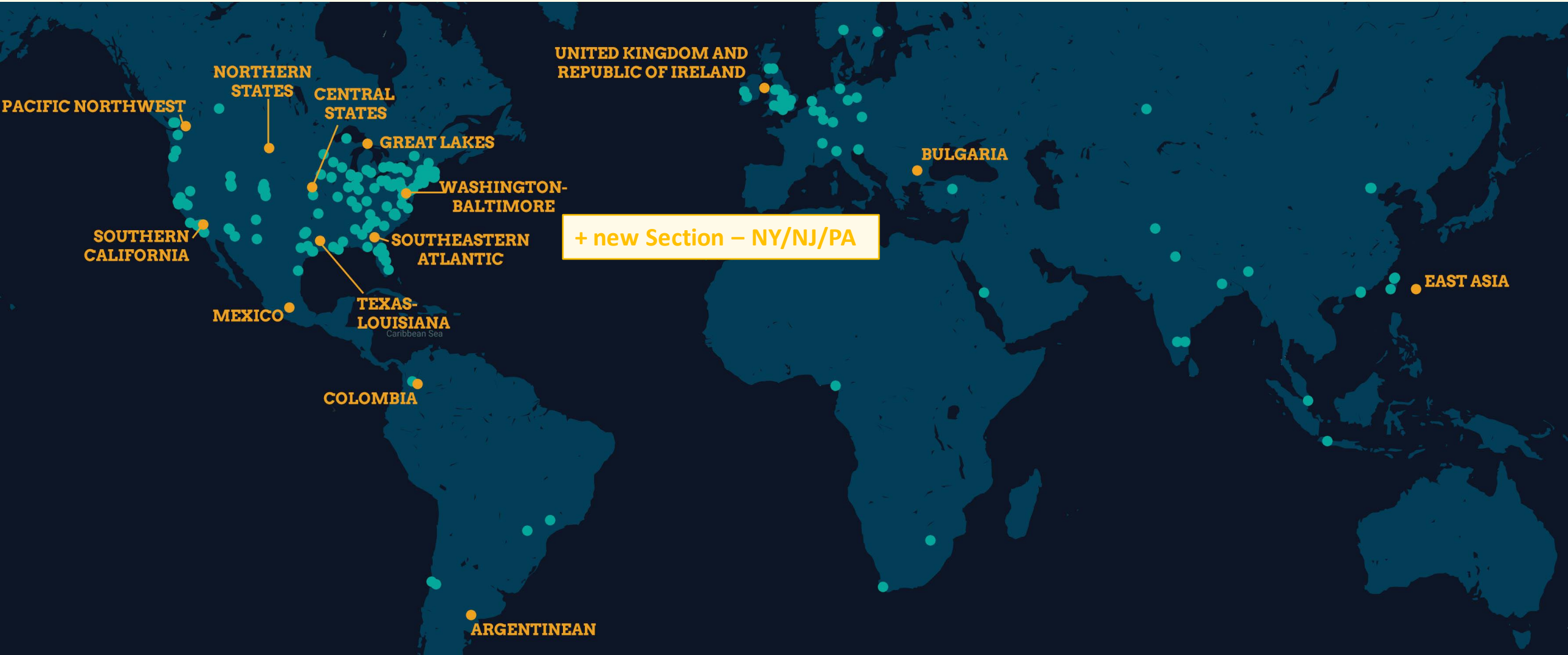


SIAM Members are in 103 Countries

Top 10 by Total Members					
1	USA	7715	6	China	222
2	Germany	581	7	Japan	217
3	United Kingdom	565	8	Italy	192
4	Canada	380	9	France	155
5	India	295	10	Switzerland	154

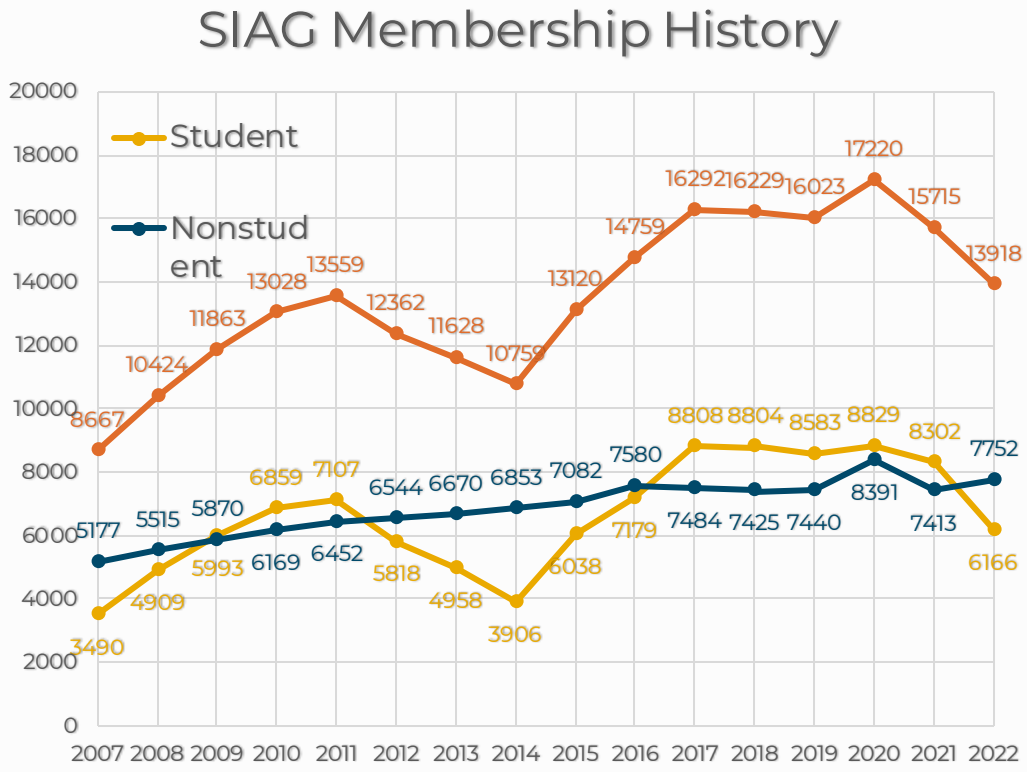
15 SIAM Sections

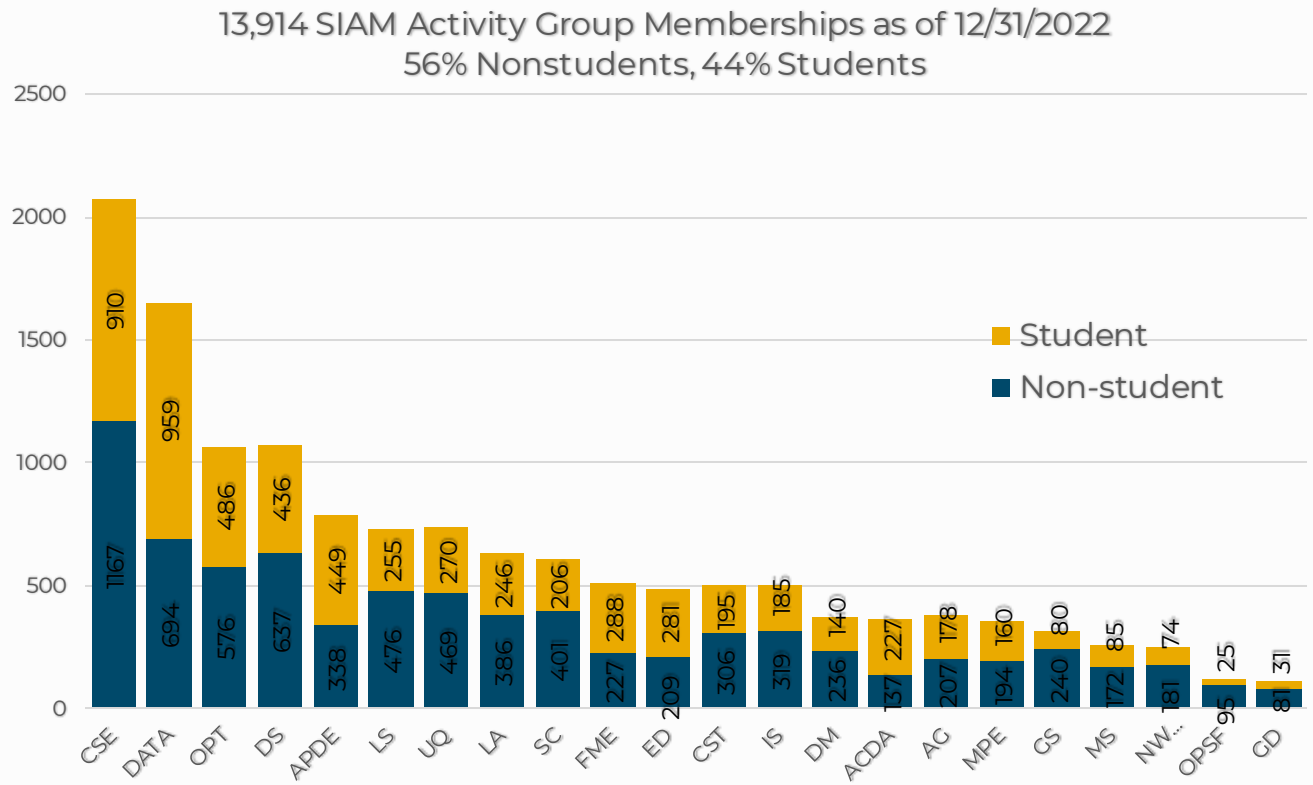
Thank you to the Section Officers and volunteers!



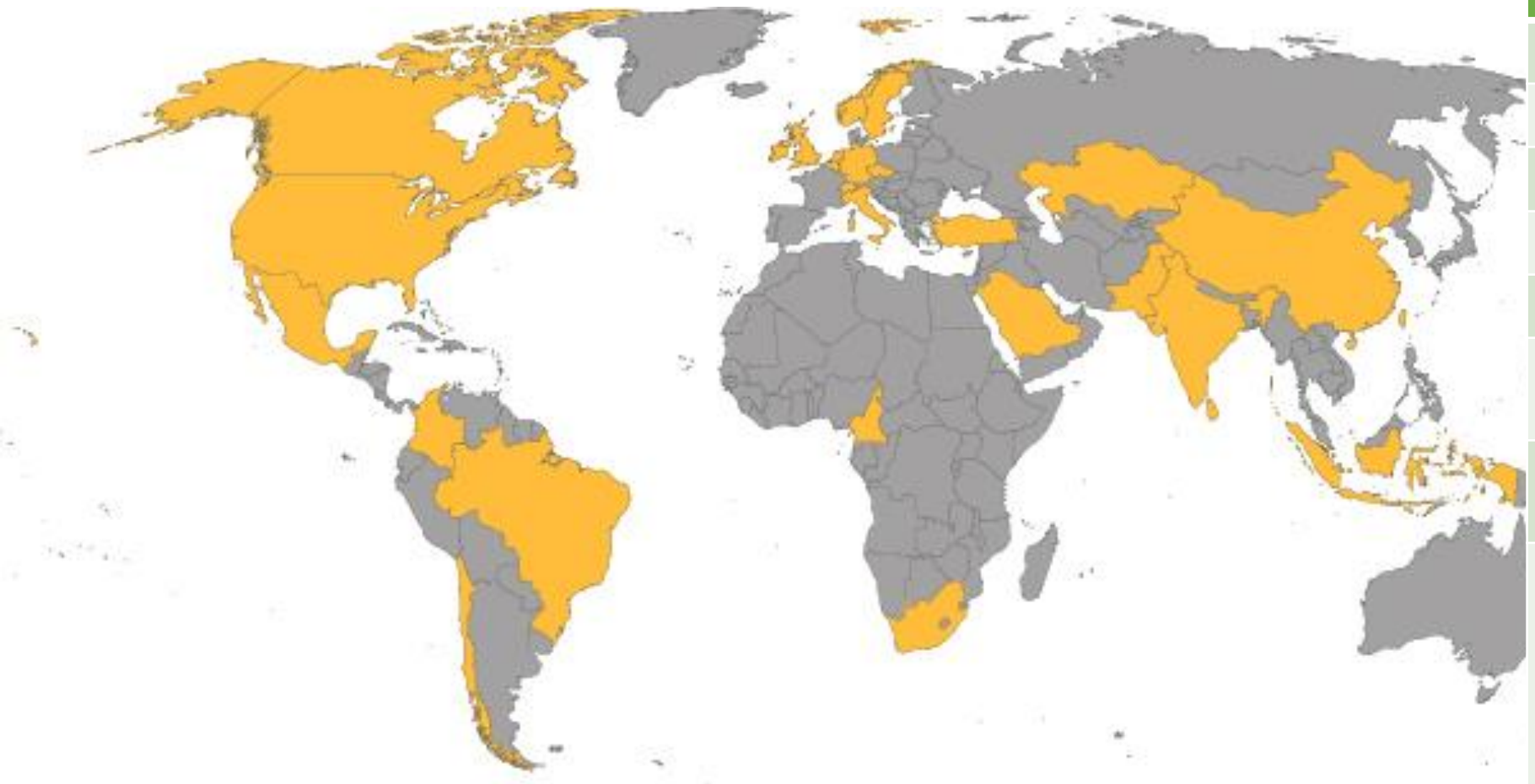
SIAM ACTIVITY GROUPS

Thank you to the SIAG Officers and volunteers!





217 SIAM Student Chapters in 29 Countries



Chapter Counts by Country	
USA	138
UK	15
Germany	9
India	6
Canada, China, Hong Kong	4
Chile, Ireland, Japan, Pakistan, Taiwan	3
Italy, Mexico, South Africa, Switzerland, Turkey	2
Belgium, Brazil, Czech Republic, Indonesia, Kazakhstan, Netherlands, Saudi Arabia, Singapore, South Korea, Sri Lanka, Sweden	1

Publications

Thank you to the 800+ SIAM journals editorial board members and to our reviewers!

2022 SIAM Editors-in-Chief

JUQ – Peter Challenor, Sebastian Reich

MMS – Liliana Borcea

SIADS – Evelyn Sander

SIAGA – Jan Draisma

SIAP – Qiang Du

SICOMP – Robert Krauthgamer

SICON – George Yin

SIDMA – Daniel Kral

SIFIN – Mete Soner

SIIMS – Gabriele Steidl

SIMA – Robert Lipton

SIMAX – Michele Benzi

SIMODS -Tamara Kolda

SINUM – Mark Ainsworth

SIOPT – Jong-Shi Pang

SIREV – Desmond Higham

SISC – Hans De Sterck

SIURO – Joanna Wares

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SINUM – Mark Ainsworth

SIOPT – Jong-Shi Pang

SIREV – Carola-Bibiane Schonlieb

SISC – Hans De Sterck

SIURO – Joanna Wares

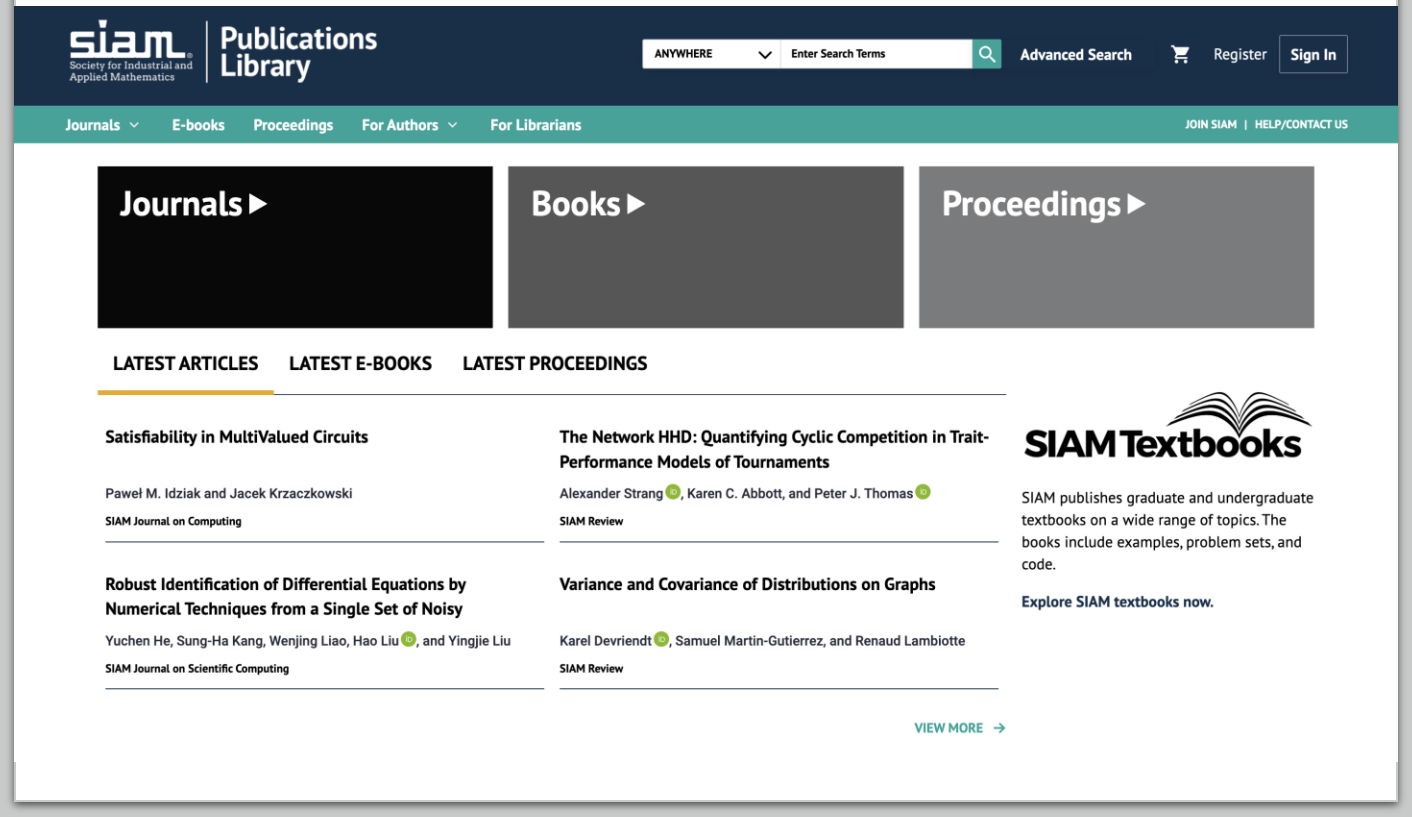
New features delivered:

- Most SIAM journals now publishing full text XML in addition to PDF
- Improved search, including predictive typeahead search
- Optimized for desktop, tablet and smartphone
- Related content recommendations
- One-click BibTeX download
- One-page Email Alert Sign-Up

Coming in 2023:

- Integrated SIAM online bookstore, enabling SIAM to sell e-books direct to individuals for the first time
- Single sign-on for SIAM members
- Inline video for articles and book chapters

SIAM Publications Library Enhancements



SIAM Journals

SIAM Journal on Applied Mathematics (SIAP) *Special Section on the Life Sciences* is ongoing; 8 papers have appeared electronically, and the rest of the submissions are now under review.

SIAM Journal on Scientific Computing (SISC) Reproducibility Badges: SISC now allows authors to request a reproducibility badge at submission. The badge will appear with the published manuscript for qualifying SISC papers as a recognition that authors follow reproducibility principles valued by the journal and the scientific computing community.

SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: greenspan@siam.org

Published in 2022:

- Adcock et al., *Sparse Polynomial Approximation of High-Dimensional Functions*
- Börgers, *Introduction to Numerical Linear Algebra*
- Ciaramella/Gander, *Iterative Methods and Preconditioners for Systems of Linear Equations*
- Garon/Delfour, *Transfinite Interpolation and Eularian/Lagrangian Dynamics*
- Higham/Sherwood, *How to Be Creative: A Practical Guide for the Mathematical Sciences*
- Trefethen, *An Applied Mathematician's Apology*
- Gatto, *Mathematical Foundations of Finite Elements and Iterative Solvers*

SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: greenspan@siam.org

Published in 2022 cont'd :

- Brezinski et al., *A Journey through the History of Numerical Linear Algebra*
- Levy, *Basics of Practical Optimization, 2e*
- Asch, *A Toolbox for Digital Twins: From Model-Based to Data-Driven*
- Kaszkurewicz/Bhaya, *Business Dynamics Models: Optimization-Based One Step Ahead Optimal Control*
- Kelley, *Solving Nonlinear Equations with Iterative Methods: Solvers and Examples in Julia*
- Pedregal, *A Variational Approach to Optimal Control of PDEs*
- Bouman, *Foundations of Computational Imaging*

SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: greenspan@siam.org

Published in 2022 cont'd:

- Cartis et al., *Evaluation Complexity of Algorithms for Nonvenvex Optimization*
- Cakoni et al., *Inverse Scattering Theory and Transmission Eigenvalues, 2e*
- Rozza et al, *Reduced Order Methods in Computational Fluid Dynamics and Applications*
- Driscoll/Braun, *Foundations of Numerical Computation: Julia Edition*
- Calvetti/Somersalo, *The Less is More Linear Algebra of Vector Spaces and Matrices*
- Kogge, *The Zen of Exotic Computing*
- Milton, *Theory of Composites*
- Oliveira/Krstic, *Extremum Seeking Through Delays and PDEs*

SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: greenspan@siam.org

Published in 2023 thus far:

- Golubitsky/Stewart, *Dynamics and Bifurcation in Networks*
- Meyer, *Matrix Analysis and Applied Linear Algebra, 2e*
- Meyer, *Matrix Analysis and Applied Linear Algebra, 2e: Study and Solutions Guide*
- Haddad et al., *Network Information Systems: A Dynamical Systems Approach*
- Calogero, *A First Course in Options Pricing Theory*
- Wilkinson, *Rounding Errors in Algebraic Processes*
- Nie, *Moment and Polynomial Optimization*
- Beck, *Introduction to Nonlinear Optimization, 2e*

siam news

https://sinews.siam.org

SIAM News articles fall into the following general categories:

- Conference Coverage
- Research
- Students and Education
- Careers in Mathematical Science
- Software and Programming
- Ethics in Mathematics
- Science Policy
- Book Reviews
- SIAM Around the World
- From the SIAM Bookshelf
- Obituaries
- Q&As
- Nuggets –applied research in SIAM journals for a broader audience.

Suggestions for articles?
Interested in writing for *SIAM News*?
Email sinews@siam.org

Lina Sorg, *SIAM News* Managing Editor

Hans Kaper, *SIAM News* Editor-in-Chief

Society for Industrial and Applied Mathematics

Activities & Programs

SIAM Convening on Climate Science, Sustainability, and Clean Energy

Nine Recommendations

1) A Paradigm for Digital Twins to Safeguard the Planet
2) What Happens in the Arctic Does Not Stay in the Arctic
3) Transforming Education to Address Complex Futures
4) Extreme Learning
5) The End of Fossil Fuels
6) ACED: Accelerated Circular Economy Development
7) Sustainable Smart Water Systems
8) Unraveling the Climate Vulnerability Web: Integration of Physical, Biological, Human Social, and Economic Models in Time and Space
9) Change the Conversation at the Local Level

DMS 2227218 **Oct 10-12, 2022**

https://siam.org/publications/reports

MathWorks Math Modeling Challenge

A program of siam

Since 2006 over 11,000 teams comprised of over 50,000 high school students have worked on big, open-ended problems using math modeling, and those rising to the top have shared more than $1.85 million in scholarship awards.

Over 5,000 different math teachers have served as team coaches. Among other resources, two modeling handbooks have been published and ~150 videos produced.

In 2023, 650 teams comprised of ~3000 high school juniors and seniors in the US and sixth form students in the UK competed for $100,000 in scholarship awards.

MathWorks Math Modeling Challenge

A program of siam

All finalist teams travelled to NYC to present their solutions in front of a panel of five SIAM judges.

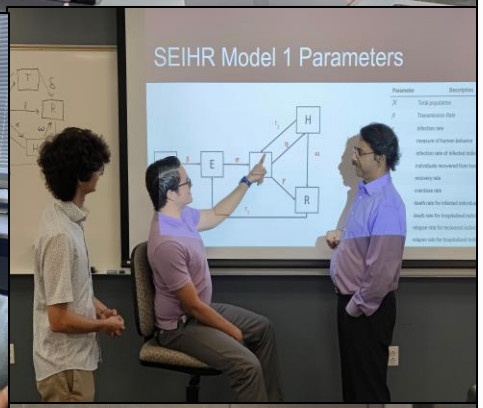
This year's question was about the growth of e-bike usage, and teams also heard from an expert at the NYC Department of Transportation about how they make data-driven decisions about traffic.

The 2023 Champion team is from Thomas Jefferson High School of Science and Technology in Alexandria, Virginia.

SIAM-Simons Undergraduate Summer Research Program

Funded via award 1036702 from the Simons Foundation.

Each summer, SIAM establishes five sites across the US,
each with two undergrads working under a faculty mentor
on an applied math, computational science,
and/or data science project.



- In addition to research, participants:
  - engage in community-building activities,
  - learn about career options,
  - learn about and grad school, and
  - present their work.

- This program targets students who are currently underrepresented in our disciplines.

SIAM-Simons Undergraduate Summer Research Program

Funded via award 1036702 from the Simons Foundation.

YOUNGSTOWN STATE UNIVERSITY

MOFFITT CANCER CENTER

ASU ARIZONA STATE UNIVERSITY

GEORGE MASON UNIVERSITY

RICE

SIAM Postdoctoral Support Program

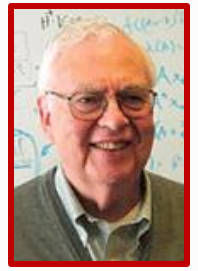
This program is made possible by gifts to the SIAM Postdoctoral Support Fund established by Dr. Martin Golubitsky and Dr. Barbara Keyfitz.

- The program provides up to $15,000 in financial support for postdoctoral researchers to work with a mentor from a different institution.
- The goal is to foster direct research experience and professional development.

- Up to four postdoc/mentor pairs will be selected annually
- Three postdoc-mentor pairs have been offered funds in 2023

- The application for the next round of support will open in September.

SIAM Programs



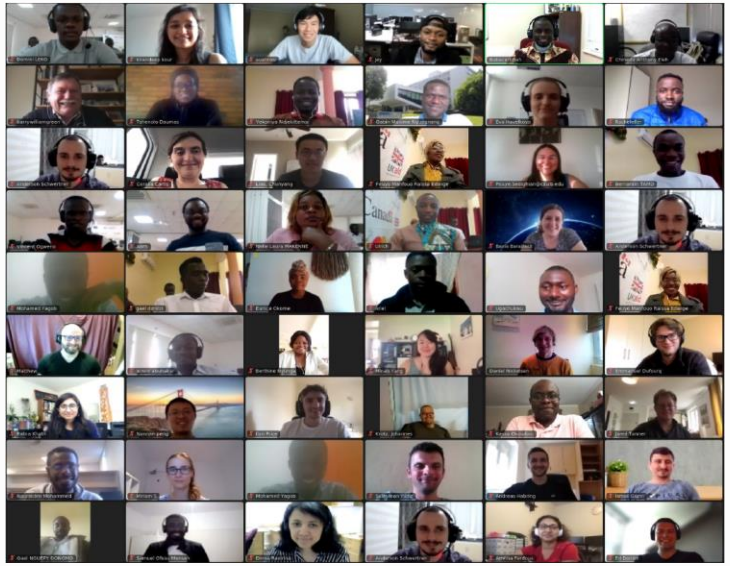
Gene Golub SIAM Summer School

funded from the generous bequest of former SIAM President Gene Golub

- 2022: ***Financial Analytics: Networks, Learning, and High Performance Computing***, L'Aquila, Italy, Aug. 1-12
- 2023: ***Quantum Computing and Optimization***, Lehigh University, July 31 – Aug 11
- 2024: ***Iterative & Randomized Methods for Large-Scale Inverse Problems***, Quito, Ecuador, July 22 – Aug 2

SIAM Activity Group webinar series

- Seminar In the Analysis and Methods of PDE – *Analysis of PDEs*
- Seminar on Applied Geometry and Algebra – *Algebraic Geometry*
- Virtual Talk Series – *Financial Mathematics and Engineering*
- Geosciences Webinar Series – *Geosciences*
- Online Seminar Series – *Applied and Computational Discrete Algorithms*
- Imaging & Inverse Problems (IMAGINE) OneWorld - *Imaging Science*
- SIAG/LA Virtual Talk Series – *Linear Algebra*
- Supercomputing Spotlights Webinar Series - *Supercomputing*



Career Fairs

SIAM Career Fairs

- Sept 29, 2022 – at Mathematics of Data Science (MDS22) conference – *in person*
  - First in-person career fair since 2019
  - 9 employers and ~175 jobseekers
- April 4, 2023 – spring career fair – *virtual*
  - 9 employers and 187 jobseekers

Coming up:

- October 11, 2023 – fall career fair – *virtual*

We are currently seeking companies to participate in the career fairs – email programs@siam.org if you have suggestions & contacts!

SIAM Partner Programs

Graduate Student Math Modeling Camp

Univ of Delaware, June 7 – 10, 2023

Mathematical Problems in Industry Workshop

New Jersey Institute of Technology, June 12 – 16, 2023

Support from NSF and *from SIAM through donations to the* ***SIAM Jim Crowley Fund for Student Support****.*

Thank you to our donors!

MAA-SIAM PIC Math Program

funded by NSF grant DMS-1722275

PICMath

MGB-SIAM Early Career Fellows

Jorge Cisneros
University of Texas at Austin

Olaniyi Samuel Iyiola
Clarkson University

Oscar Leong
California Institute of Technology

Danielle J. Middlebrooks
National Institute of Standards and Technology

Marieme Ngom
Argonne National Laboratory

Steven Noel Rodriguez
U.S. Naval Research Laboratory

Devina Pribadi Sanjaya
University of Tennessee, Knoxville

Andrés R. Vindas Meléndez
University of California, Berkeley

Welcome to the second cohort of MGB-SIAM Early Career Fellows!

Recognizing and supporting the achievements, professional activities and development of early career applied mathematicians – particularly those belonging to racial and ethnic groups historically excluded from the mathematical sciences in the United States.

Applications open for our third cohort in fall 2023.

2023 SIAM Science Policy Fellows

Julie Bessac
National Renewal Energy Laboratory

Victor Churchill
Ohio State University, Trinity College

Jeffrey Larson
Argonne National Laboratory

Bashir Mohammed
Intel Labs

Jake Price
University of Puget Sound

The **SIAM Science Policy Fellowship Program** develops post-doctoral fellows and early career researchers into strong advocates for U.S. federal support in applied mathematics and computational science.

Applications for 2024 open in Fall 2023.

Fellows and SIAM Science Policy Committee members attend congressional meetings in Washington D.C. to advocate for SIAM's interests, and work on policy projects.

SIAM Honors and Awards

SIAM now has 18 major awards and lectures, 36 activity group prizes, 3 student prizes, and 9 joint prizes, for a total of 66 prizes.

Major award, the Ivo and Renata Babuška Prize, approved by the Board in July 2022.

The Ivo & Renata Babuška Prize will be awarded every two years in recognition of high-quality interdisciplinary work that targets any aspect of modeling and numerical solution of a specific engineering or scientific application, including mathematical modeling, numerical analysis, algorithms, and validation.

Thank you to the Babuškas who made this prize possible!

New Activity Group Prize

SIAG/Optimization Test of Time Award (first awarded at OP23)

Please nominate people who deserve to be recognized for their contributions and achievements!

Questions? Contact prizeadmin@siam.org

Visit also https://www.siam.org/deadline-calendar

2023 Class of SIAM Fellows

Rodrigo Bañuelos
Purdue University

George Biros
The University of Texas at Austin

Ron Buckmire
Occidental College

Fioralba Cakoni
Rutgers, The State University of New Jersey

Daniela Calvetti
Case Western Reserve University

Coralia Cartis
University of Oxford

Alina Chertock
North Carolina State University

Lenore Jennifer Cowen
Tufts University

Petros Drineas
Purdue University

Aric Hagberg
Los Alamos National Laboratory

Chandrika Kamath
Lawrence Livermore National Laboratory

Angela Kunoth
University of Cologne

James Donald Meiss
University of Colorado Boulder

Andrew M. Odlyzko
University of Minnesota

Ali Pinar
Sandia National Laboratories

Edward B. Saff
Vanderbilt University

David James Silvester
The University of Manchester

Barry Simon
California Institute of Technology

Catherine Sulem
University of Toronto

Sivan Toledo
Tel Aviv University

Konstantina Trivisa
University of Maryland, College Park

Caroline Uhler
Massachusetts Institute of Technology and Broad Institute

John S. Wettlaufer
Yale University and Nordic Institute for Theoretical Physics

Dongbin Xiu
The Ohio State University

Laurent Younes
Johns Hopkins University

Yongjie Jessica Zhang
Carnegie Mellon University

Society for Industrial and Applied Mathematics

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