



# Annual Report 2021/22

July 12, 2022

SUSANNE C. BRENNER, SIAM PRESIDENT

SUZANNE L. WEEKES, SIAM EXECUTIVE DIRECTOR

# 2022 SIAM Officers

**President**

**Susanne C. Brenner**

Louisiana State University

**President-Elect\***

**Sven Leyffer**

Argonne National Laboratory

**VP-at-Large\***

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Ludwig-Maximilians Univ, Munich

**Secretary\***

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University of Texas, Dallas

**Treasurer**

**Samuel Gubins**

Annual Reviews

**VP for Education**

**Kathleen Kavanagh**

Clarkson University

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**Ron Buckmire**

Occidental College

**VP for Industry**

**Sharon Arroyo**

Boeing Company

**VP for Programs**

**James G. Nagy**

Emory University

**VP for Publications**

**Howard Elman**

University of Maryland

**VP for Science Policy**

**Anne Gelb**

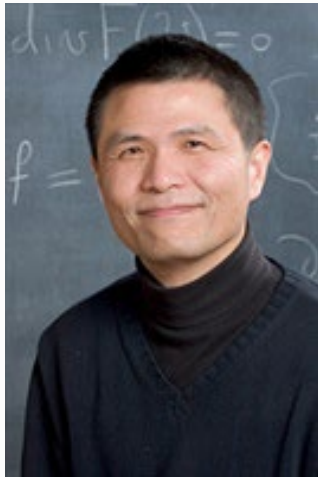
Dartmouth College



\* elected/re-elected  
in fall 2021

# 2022 SIAM Leadership

## New Year, New Term SIAM Board of Trustees



**3 members were elected or re-elected\* to the Board**

- **Alison Ramage\***, University of Strathclyde
- **Beatrice Riviere**, Rice University
- **Chi-Wang Shu**, Brown University

**1 member was appointed to the Board**

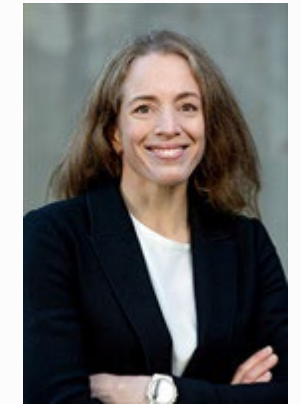
- **Raymond Chan**, City University of Hong Kong

# 2022 SIAM Leadership

## New Year, New Term SIAM Council

4 members were elected or re-elected\* to the Council

- **Natalia Alexandrov\***, NASA Langley Research Center
- **Inga Berre**, University of Bergen
- **Evelyn Sander**, George Mason University
- **Carola-Bibiane Schoenlieb**, University of Cambridge



# Candidates - SIAM Board & Council Elections

SIAM elections will run September to November.

## Board of Trustees (3 seats)

**Ricardo Cortez**, Tulane University

**Alex Pothén**, Purdue University

**Ami Radunskaya**, Pomona College

**Gianluigi Rozza**, SISSA, Italy

**Bonita Saunders**, NIST\*

**Ulrike Yang**, Lawrence Livermore Nat'l Lab

## SIAM Council (4 seats)

**Aydin Buluc**, Lawrence Berkeley Nat'l Lab

**Fioralba Cakoni**, Rutgers University

**Jose Cuminato**, Universidade de Sao Paulo

**Alicia Dickenstein**, Universidad de Buenos Aires\*

**Heike Fassbender**, TU Braunschweig\*

**Johnny Guzman**, Brown University

**Dirk Hartmann**, SIEMENS

**Valeria Simoncini**, Universita' di Bologna\*



# SIAM Conferences

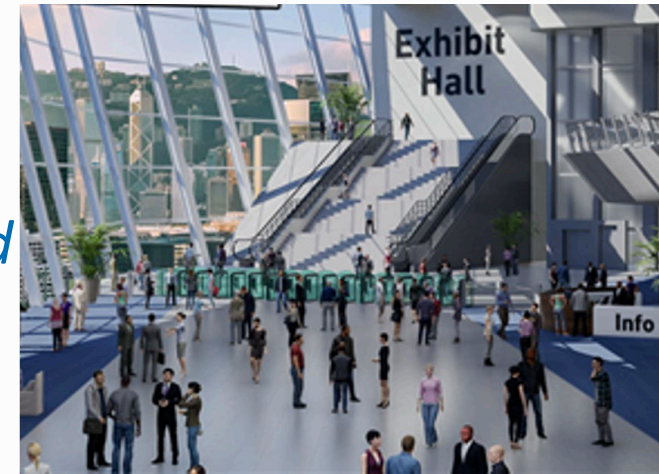


# Since we last met:

- **Applied Algebraic Geometry (AG21)** - Aug 2021 - *virtual*
- **Geometric and Physical Modeling (GD/SPM21)** - Sep 2022 - *virtual*
- **Discrete Algorithms et al (SODA22, SOSA22, ALENEX22, APOCS22)** - January 2022 - *virtual*
- **Parallel Processing (PP22)** - February 2022 - *virtual*
- **PDEs (PD22)** - March 2022 - *virtual*
- **Imaging Science (IS22)** - March 2022 – *virtual*
- **Data Mining (SDM22)** - April 2022 – *virtual*
- **Uncertainty Quantification (UQ22)** - April 2022 - Atlanta, GA - *hybrid*
- **Discrete Math (DM22)** - June 2022 - Pittsburgh, PA – *in person only*
- **AN22, LS22, ED22, MPE22** in July 2022 – Pittsburgh, PA – *hybrid*

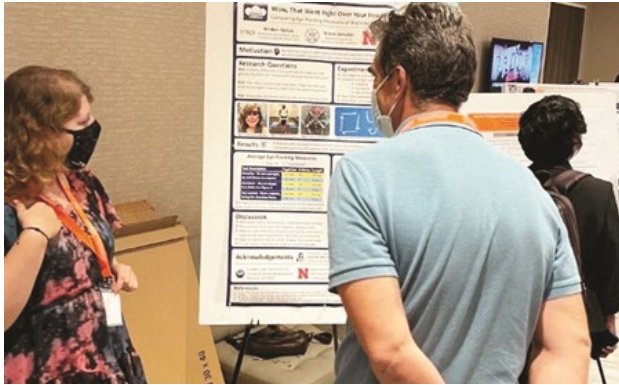
## *Coming up:*

- **Nonlinear Waves and Coherent Structures (NWCS22)** - Aug 2022 *hybrid* in Bremen, Germany
- **Mathematics of Data Science (MDS22)** - Sept 2022 *hybrid* in San Diego, CA





# SIAM Section Meetings



- **Southeastern Atlantic Section Annual Meeting – Sept 2021**
- **Central States Section Annual Meeting – Oct 2021**
- **Northern States Section Bi-annual Meeting – Oct 2021**
- **East Asia Section Annual Meeting – Nov 2021**
- **Texas-Louisiana Section Annual Meeting – Nov 2021**
- **Colombia Section Annual Meeting – Dec 2021**
- **United Kingdom and the Republic of Ireland Section Annual Meeting – Jan 2022**
- **Pacific Northwest Section Annual Meeting – May 2022**
- **Mexico Section Annual Meeting – June 2022**



*and more coming up!*



# Hybrid at SIAM Conferences in 2022

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For 2022, “**hybrid**” at SIAM denotes a conference that allows presenters and attendees to take part **synchronously** in talks and sessions while either physically at the conference site or from a location away from the conference site via a virtual platform.

Sessions will be recorded and recordings made available to conference registrants on demand for at least one month from the first day of the conference.

In-person attendees must provide proof of vaccination and booster against COVID-19 using a primary vaccine and booster series approved either by the CDC or the World Health Organization.

SIAM has added an Outreach Member rate for virtual participation from qualifying countries. If a country is on the World Bank’s “high income” list for 3 successive years, it is not “Outreach”.

**We are learning as we go!**

# SIAM Conferences Notes

- **SIAM Conferences receive financial support from**
  - the **US National Science Foundation** grant DMS 1757085
    - *Workshop Celebrating Diversity* at Annual Meetings
    - Travel support for invited presenters, students, early career professionals
  - the **US Department of Energy** DE-SC0006811
  - **Conference sponsors**
- **Student Travel Awards to SIAM Conferences**
  - 2021: 433                      2022 YTD: 200 *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**
  - 2021: 135                      2022 YTD: 50
- **Childcare Grants** – both virtual and in-person attendees eligible



**SIAM**<sup>®</sup> | Society for Industrial and Applied Mathematics

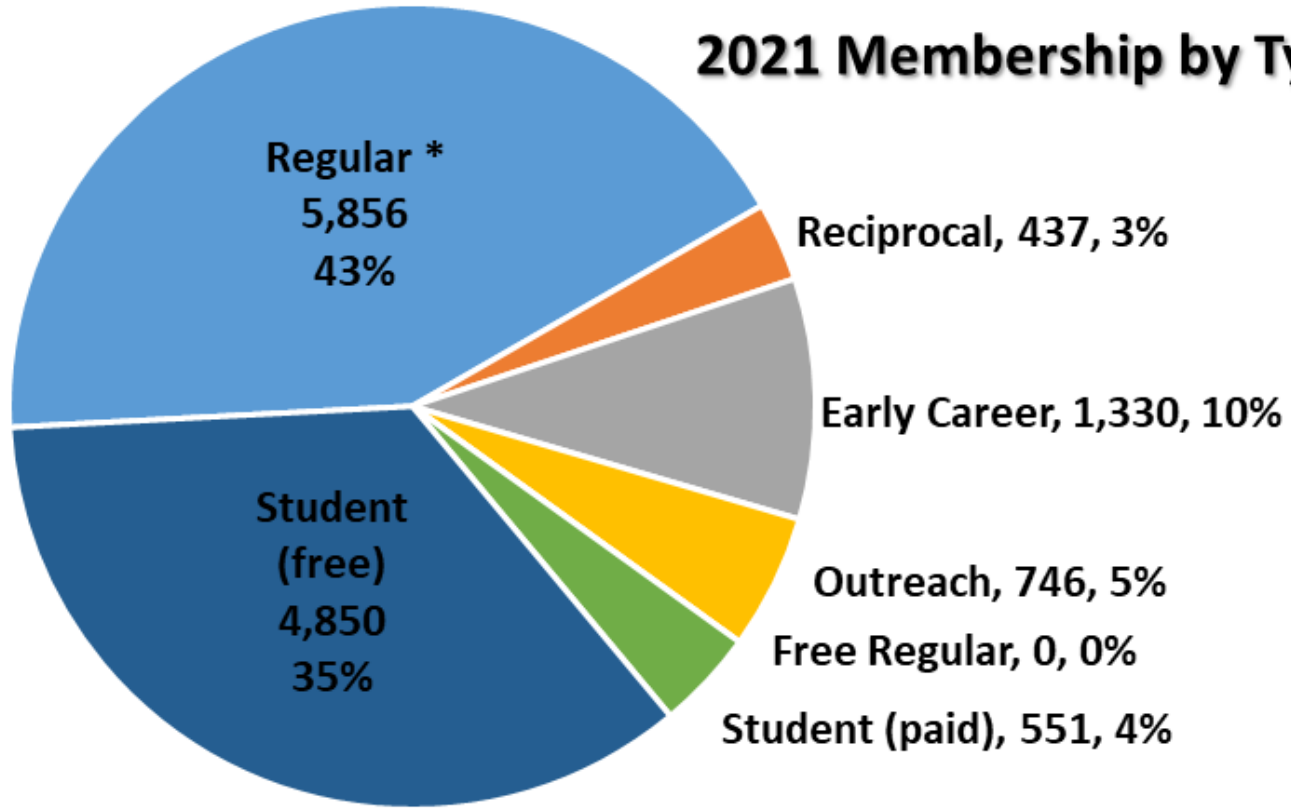
# Membership



2022 SIAM BUSINESS MEETING

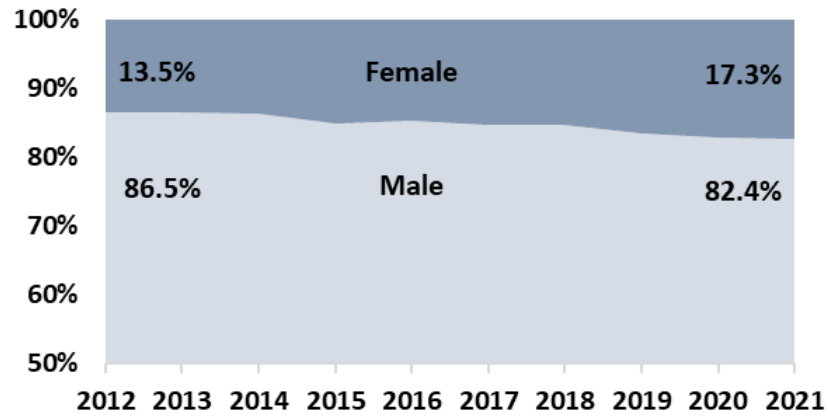
# SIAM Membership

**2021 Membership by Type**

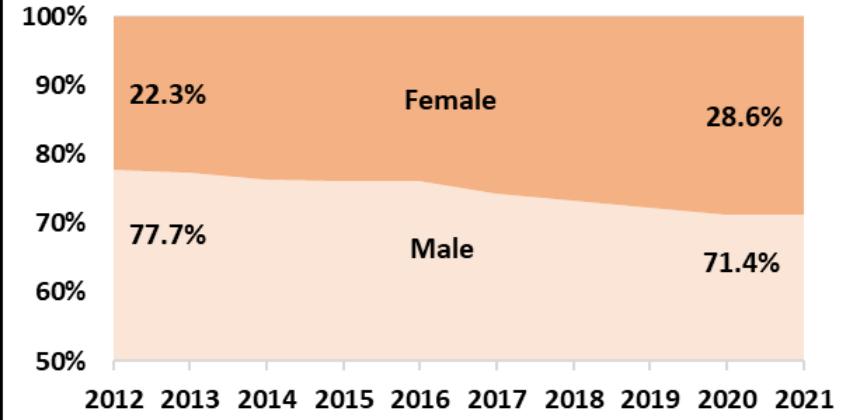




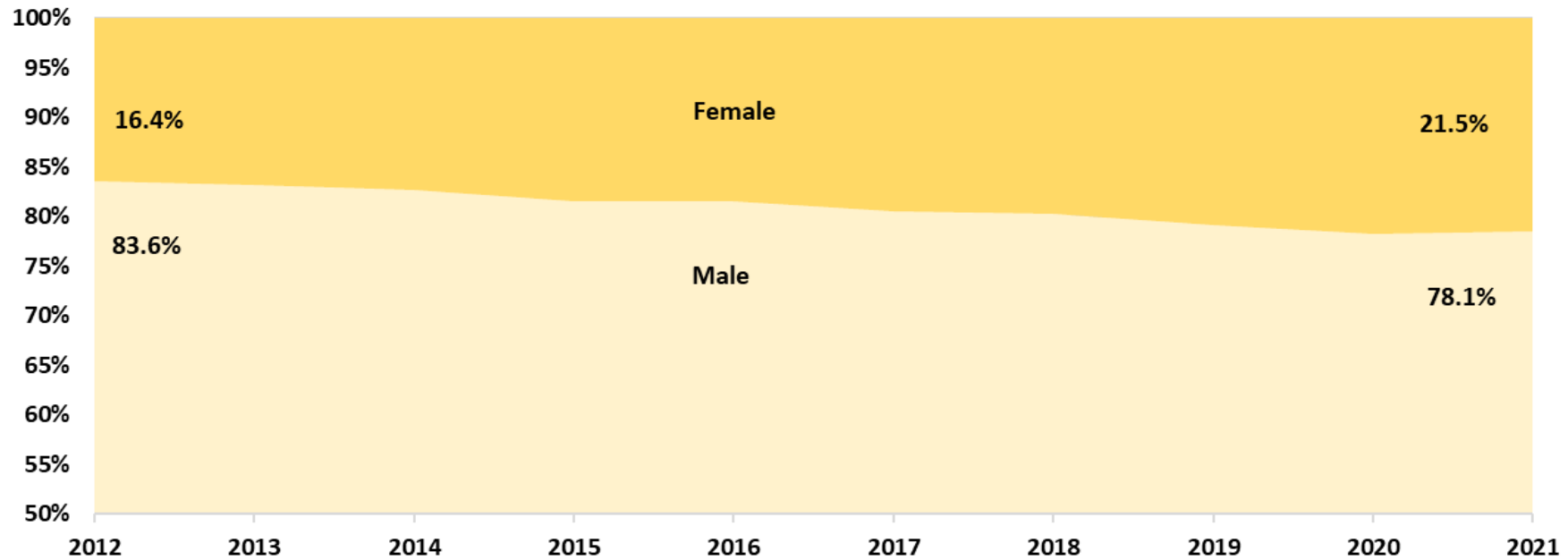
### Known Nonstudent Gender Breakdown



### Known Student Gender Breakdown



### Total Known Gender Breakdown

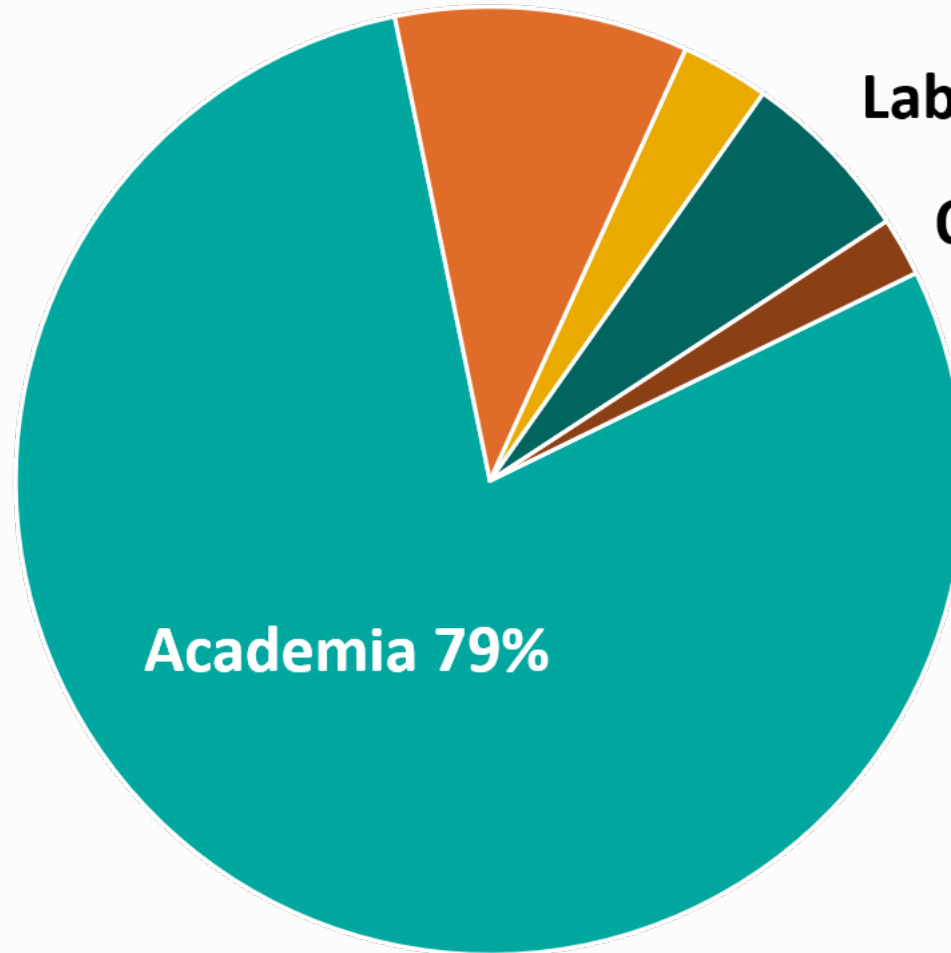


# Employer type (Excluding Students)

Industry 10% Government 3%

Laboratory 6%

Other 2%



# SIAM Members are in 106 Countries

Top 10 by Total Members					
1	USA	8626	6	China	260
2	United Kingdom	618	7	Japan	222
3	Germany	571	8	Italy	209
4	Canada	474	9	Switzerland	164
5	India	286	10	France	159

# 14 SIAM Sections

Thank you to the Section Officers and volunteers!

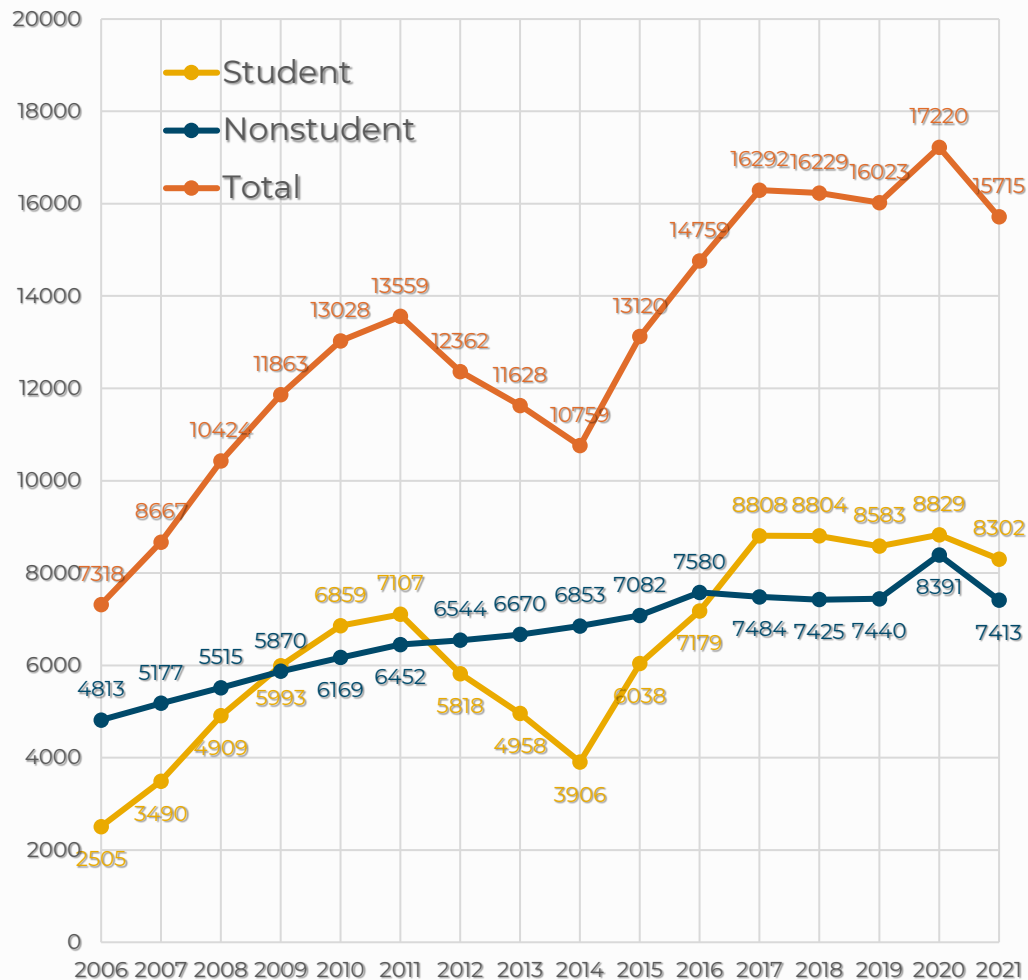




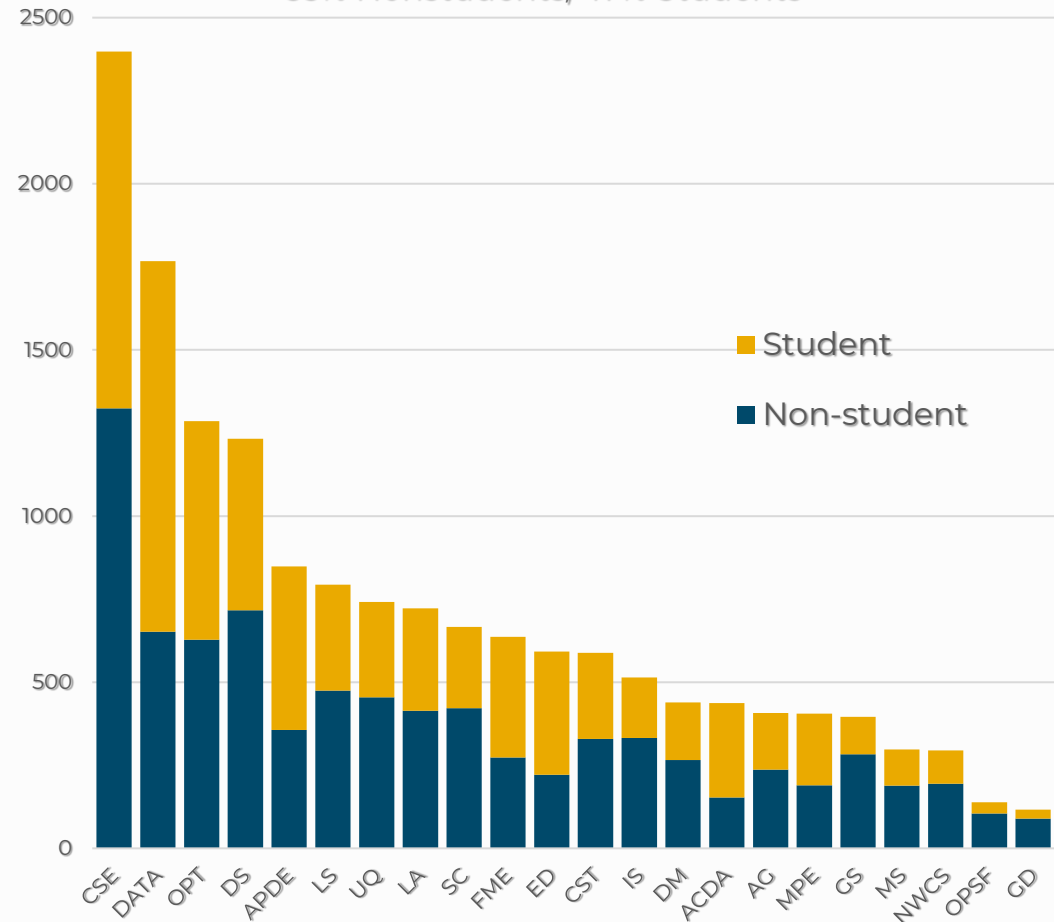
# SIAM ACTIVITY GROUPS

Thank you to the SIAG Officers and volunteers!

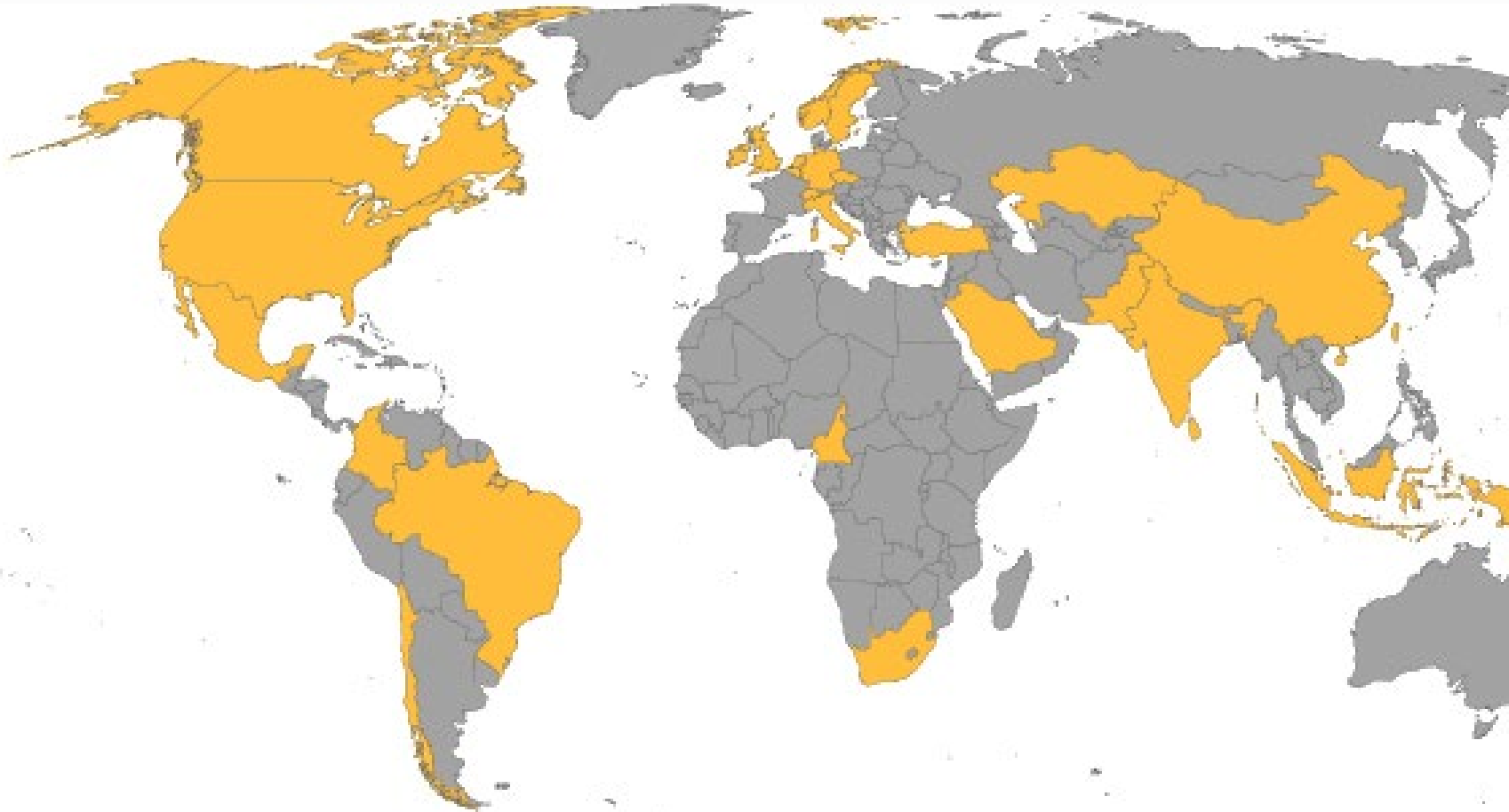
## SIAG Membership History



15,716 SIAM Activity Group Memberships as of 12/31/2021  
53% Nonstudents, 47% Students



# 212 SIAM Student Chapters in 29 Countries



Chapter Counts by Country	
USA	142
UK	14
Germany	8
Canada, India	5
Chile, China, Ireland, Taiwan	3
Brazil, Hong Kong, Italy, Pakistan, South Africa, Turkey	2
Belgium, Cameroon, Colombia, Czech Republic, Indonesia, Kazakhstan, Mexico, Netherlands, Saudi Arabia, Singapore, South Korea, Sri Lanka, Sweden, Switzerland	1



Membership questions?

Contact SIAM Senior Membership Manager, Tim Fest [fest@siam.org](mailto:fest@siam.org)



# Publications





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

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## 2021 SIAM Editors-in-Chief

JUQ – Peter Challenor, Sebastian Reich

MMS – Liliana Borcea

SIADS – Evelyn Sander

SIAGA – Bernd Sturmfels

SIAP – Qiang Du

SICOMP – Robert Krauthgamer

SICON – George Yin

SIDMA – Daniel Kral

SIFIN – Mete Soner

SIIMS – Michael Elad

SIMA – Robert Lipton

SIMAX – Michele Benzi

SIMODS -Tamara Kolda

SINUM – Angela Kunoth

SIOPT – Jong-Shi Pang

SIREV – Desmond Higham

SISC – Jan Hesthaven

SIURO – Joanna Wares

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SIOPT – Jong-Shi Pang

SIREV – Desmond Higham

SISC – Hans De Sterck

SIURO – Joanna Wares

## Launched Feb 2022 3-year project

### New features delivered:

- Responsive design
- Ability to publish full text XML
- Related content recommendations
- Enhanced support for supplementary materials and code

### Post-launch items coming:

- 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

The screenshot displays the SIAM Publications Library Upgrade website. At the top, the title "SIAM Publications Library Upgrade" is prominently featured in a large, blue, sans-serif font. Below the title is a dark blue navigation bar containing the SIAM logo (Society for Industrial and Applied Mathematics) and the text "Publications Library". To the right of the logo is a search bar with a dropdown menu set to "ANYWHERE", a search input field with the placeholder "Enter Search Terms", a magnifying glass icon, and links for "Advanced Search", "Register", and "Sign In". Below the navigation bar is a teal-colored horizontal menu with links for "Journals", "E-books", "Proceedings", "For Authors", and "For Librarians", along with "JOIN SIAM" and "HELP/CONTACT US". The main content area features three large, dark gray buttons labeled "Journals", "Books", and "Proceedings", each with a white right-pointing arrow. Below these buttons are three columns of "LATEST" articles, each with a title, author names, and the journal name. The first article is "Satisfiability in MultiValued Circuits" by Pawel M. Idziak and Jacek Krzaczkowski, published in "SIAM Journal on Computing". The second is "The Network HHD: Quantifying Cyclic Competition in Trait-Performance Models of Tournaments" by Alexander Strang, Karen C. Abbott, and Peter J. Thomas, published in "SIAM Review". The third is "Robust Identification of Differential Equations by Numerical Techniques from a Single Set of Noisy" by Yuchen He, Sung-Ha Kang, Wenjing Liao, Hao Liu, and Yingjie Liu, published in "SIAM Journal on Scientific Computing". The fourth article is "Variance and Covariance of Distributions on Graphs" by Karel Devriendt, Samuel Martin-Gutierrez, and Renaud Lambiotte, published in "SIAM Review". At the bottom right of the article grid is a "VIEW MORE" link with a right-pointing arrow. On the right side of the page, there is a "SIAM Textbooks" section with a logo of an open book and the text "SIAM Textbooks". Below this is a paragraph: "SIAM publishes graduate and undergraduate textbooks on a wide range of topics. The books include examples, problem sets, and code." and a link: "Explore SIAM textbooks now."

**SIAM Journal on Control and Optimization (SICON) special section on *Mathematical Modeling, Analysis, and Control of Epidemics*** published in April 2022

**SIAM Journal on Applied Mathematics (SIAP) *Special Section on the Life Sciences*** is planned; papers are now under review

**SIAM Journal on Imaging Science (SIIMS)** now allows authors to submit ***Short Communications***; 12 page limit and rapid peer review; follows the success of SCs in SIFIN



# SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: [greenspan@siam.org](mailto:greenspan@siam.org)

## Published in 2021:

- Bai/Pan, *Matrix Analysis and Computations*
- Ciarlet, *Locally Convex Spaces and Harmonic Analysis: An Introduction*
- Da Veiga et al., *Basics and Trends in Sensitivity Analysis: Theory and Practice in R*
- Darve/Wootters, *Numerical Linear Algebra with Julia*
- Hansen et al., *Computing Tomography: Algorithms, Insight, and Just Enough Theory*
- Hoffman, *Methods in Computational Science*
- Ioannou, *Mathematics and Tools for Financial Engineering*
- Klapper et al., *Metabolic Networks, Elementary Flux Modes, and Polyhedral Cones*
- Lai/Wang, *Sparse Solutions of Underdetermined Linear Systems and Their Applications*

# SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: [greenspan@siam.org](mailto:greenspan@siam.org)

## Published in 2021 cont'd:

- Uecker, *Numerical Continuation and Bifurcation in Nonlinear PDEs*
- Ciarlet, *Mathematical Elasticity: Vol I: Three-Dimensional Elasticity*
- Ciarlet, *Mathematical Elasticity: Vol II: Theory of Plates*
- Ciarlet, *Mathematical Elasticity: Vol III: Theory of Shells*
- Cui/Pang, *Modern Nonconvex Nondifferentiable Optimization*
- Gill et al., *Numerical Linear Algebra and Optimization*
- Hager, *Applied Numerical Linear Algebra*
- Higham/Kloeden, *Introduction to the Numerical Simulation of Stochastic Differential Equations*
- Shapiro et al, *Lectures on Stochastic Programming, 3e*

# SIAM Books Program

SIAM welcomes potential authors and suggestions for new topics!

Contact Elizabeth Greenspan: [greenspan@siam.org](mailto:greenspan@siam.org)

## Published in 2022 thus far:

- 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 Eulerian/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 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](mailto:sinews@siam.org)

Lina Sorg, SIAM News Managing Editor  
Hans Kaper, SIAM News Editor-in-Chief

# Programs



# M3 MathWorks Math Modeling Challenge

A program of SIAM.

All finalist teams travelled to NYC to present their papers and answer questions from a panel of five SIAM judges.

2022 was first in-person M3 Challenge final event since 2019 at Jane Street's offices!

The 2022 Champion team is from Homestead High School in Mequon, Wisconsin.







## 2022 M3 Challenge

- In 2022, 612 teams comprised of more than 2,700 high school juniors and seniors in the US and sixth form students in the UK competed for \$100,000 in scholarship awards.
- 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 \$1,755,000 in scholarship awards.
- Over 5,000 different math teachers have served as team coaches. Among other resources, two modeling handbooks have been published and 141+ videos produced.

# SIAM Programs

## Gene Golub SIAM Summer School

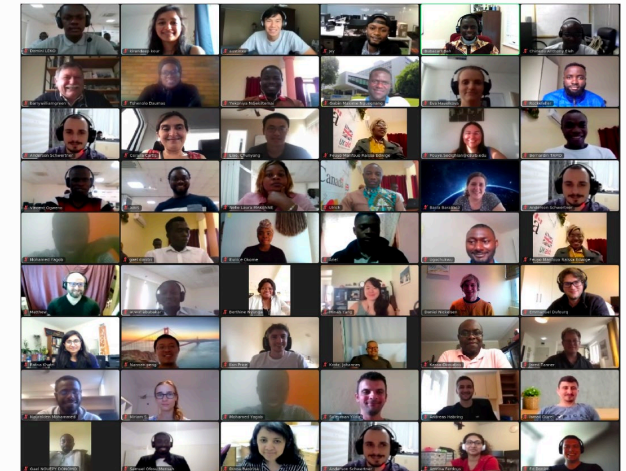
*funded from the generous bequest of former SIAM President Gene Golub*

- 2021: ***Theory and Practice of Deep Learning*** - organized by the African Institute for Mathematical Science (AIMS), South Africa, July 2021
- 2022: ***Financial Analytics: Networks, Learning, and High Performance Computing***, L'Aquila, Italy, Aug. 1-12
- 2023: to be finalized



## 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*





# Career Fairs

## Job-Seekers Workshops

- Nov 2021 - SIAM Business, Industry, and Government (BIG) Job-Hunting Bootcamp w/ Zhennovate
- July 2022 - *Standing Out in the Job Market: A Professional Development Workshop* at AN22  
*funded from a generous gift to SIAM from Philippe and Claire-Lise Tondeur*

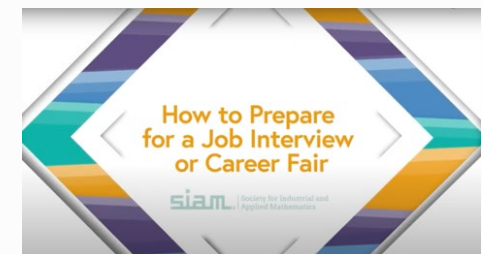
## SIAM Career Fairs

- Nov 2021 - first SIAM career fair not in conjunction with a conference - *virtual*
  - 26 employers and 422 jobseekers
  - April 2022 – spring virtual career fair
  - 12 employers and 206 jobseekers

## Coming up

- Sept 29, 2022 - *in-person* at Mathematics of Data Science (MDS22) conference
- April 4, 2023 - *virtual* career fair

**We are currently seeking companies to participate in the career fairs –  
email [marketing@siam.org](mailto:marketing@siam.org) if you have suggestions & contacts!**



# SIAM Partner Programs



## Graduate Student Math Modeling Camp

Univ of Delaware, June 8 – 11, 2022

## Math Problems in Industry Workshop

Worcester Polytechnic Institute, June 13 – 17, 2022

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

*Thank you to our donors!*



## PIC Math Program & PIC Math Interdisciplinary Workshop on Data Science

MAA, SIAM, NSF grant DMS-1722275

**PICMath**



# MGB-SIAM Early Career Fellows

Keisha Cook



Clemson University

Kyle Dahlin



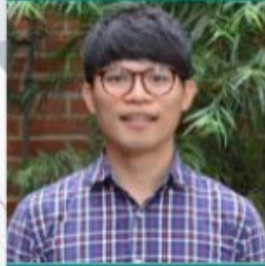
University of Georgia

Ranthy A.C.  
Edmonds



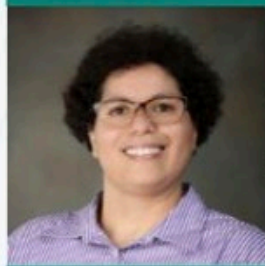
The Ohio State  
University

Samy Wu Fung



Colorado School  
of Mines

Nicole D. Jackson



Sandia National  
Laboratories

**Welcome to the first 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 second  
cohort in fall 2022.**

Reginald L.  
McGee II



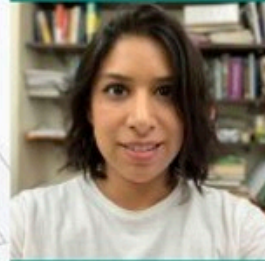
College of the  
Holy Cross

Iván Ojeda-Ruiz



Texas State  
University

Joan Ponce



University of  
California, Los Angeles

Ludovic Tangpi



Princeton  
University

Oyita Udiani



Virginia  
Commonwealth  
University



# 2022 SIAM Science Policy Fellows



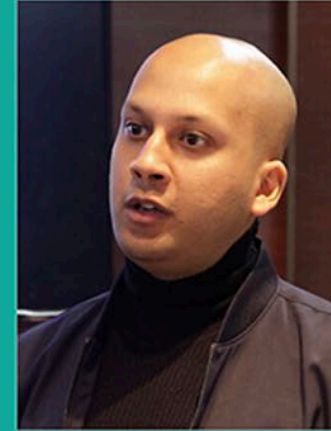
Elie "Eli" Alhajjar  
United States  
Military Academy



Mario Bañuelos  
California State  
University, Fresno



David Hyde  
Vanderbilt University



Mayank Kejriwal  
University of  
Southern California



L. Minah Yang  
Courant Institute,  
New York University

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 2023 open in Fall 2022.**

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 17 major awards and lectures, 35 activity group prizes, 3 student prizes, and 9 joint prizes, for a total of 64 prizes.

## **New major award, the Ericksen Prize, was approved by the Board in December 2021.**

*The Jerald L. Ericksen Prize is awarded for the original formulation of a mathematical theory of a significant scientific or engineering problem. The prize may recognize either a formulation that enables the novel application of mathematical ideas or a formulation that raises new questions in mathematics.*

*Thank you to the donors who have made this prize possible!*

## **New Prizes**

SIAG/Data Science Career Prize (will be awarded in 2024)

SIAG/Data Science Early Career Prize (will be awarded in 2022)

SIAG/Mathematics of Planet Earth Early Career Prize (will be awarded in 2024)

SIAG/Applied and Computational Discrete Algorithms Early Career Prize (will be awarded in 2023)

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

**Questions? Contact [prizeadmin@siam.org](mailto:prizeadmin@siam.org)**

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

## 2022 Class of SIAM Fellows

**Remi Abgrall**

Universität Zürich

**Sharon F. Arroyo**

The Boeing Company

**Weizhu Bao**

National University of Singapore

**Bonnie Berger**

Massachusetts Institute of Technology

**Zhiming Chen**

Chinese Academy of Sciences

**James Michael Crowley**

SIAM

**James H. Curry**

University of Colorado Boulder

**Zlatko Drmac**

University of Zagreb

**Chen Greif**

The University of British Columbia

**Abba B. Gumel**

Arizona State University

**Eldad Haber**

The University of British Columbia

**John Robert King**

University of Nottingham

**Daniel Kressner**

EPFL

**Jose Nathan Kutz**

University of Washington

**Lek-Heng Lim**

University of Chicago

**Fang-Hua Lin**

New York University

**Peter B. Monk**

University of Delaware

**Houman Owhadi**

California Institute of Technology

**Keith Promislow**

Michigan State University

**Rosemary Anne Renaut**

Arizona State University

**Wil Schilders**

Eindhoven University of Technology

**Leonard J. Schulman**

California Institute of Technology

**Amit Singer**

Princeton University

**Gabriele Steidl**

Technische Universität Berlin

**Raymond Tuminaro**

Sandia National Laboratories

**Hongkai Zhao**

Duke University



# Questions?

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