Society for Industrial and Applied Mathematics

Annual Report 2021/22

July 12, 2022

SUSANNE C. BRENNER, SIAM PRESIDENT

SUZANNE L. WEEKES, SIAM EXECUTIVE DIRECTOR

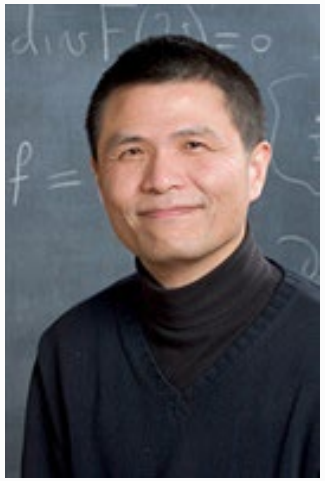
2022 SIAM BUSINESS MEETING

2022 SIAM Officers

President	**Susanne C. Brenner**	Louisiana State University
President-Elect*	**Sven Leyffer**	Argonne National Laboratory
VP-at-Large*	**Gitta Kutyniok**	Ludwig-Maximilians Univ, Munich
Secretary*	**Susan Minkoff**	University of Texas, Dallas
Treasurer	**Samuel Gubins**	Annual Reviews
VP for Education	**Kathleen Kavanagh**	Clarkson University
VP for EDI	**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 Pothen, 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

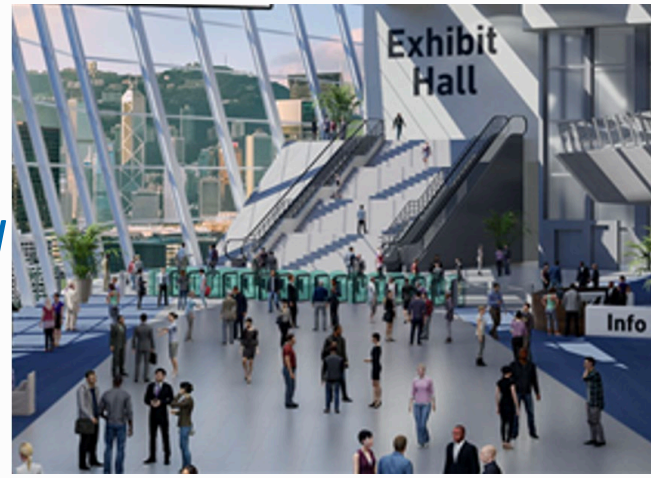
Dirk Hartmann, SIEMENS

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

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!

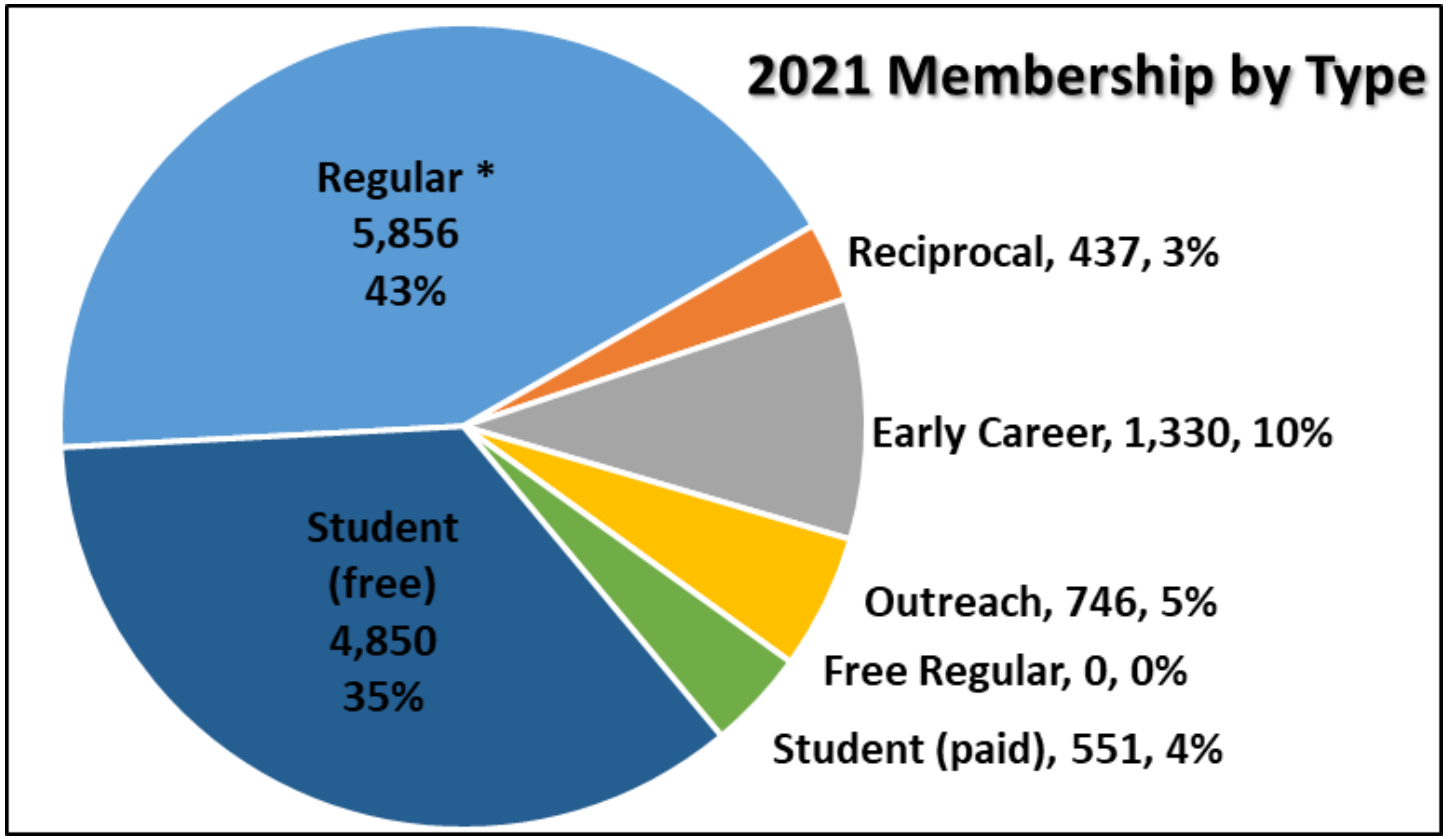
- **NSF Early Career Travel Awards to SIAM Conferences**
  - 2021: 135 2022 YTD: 50

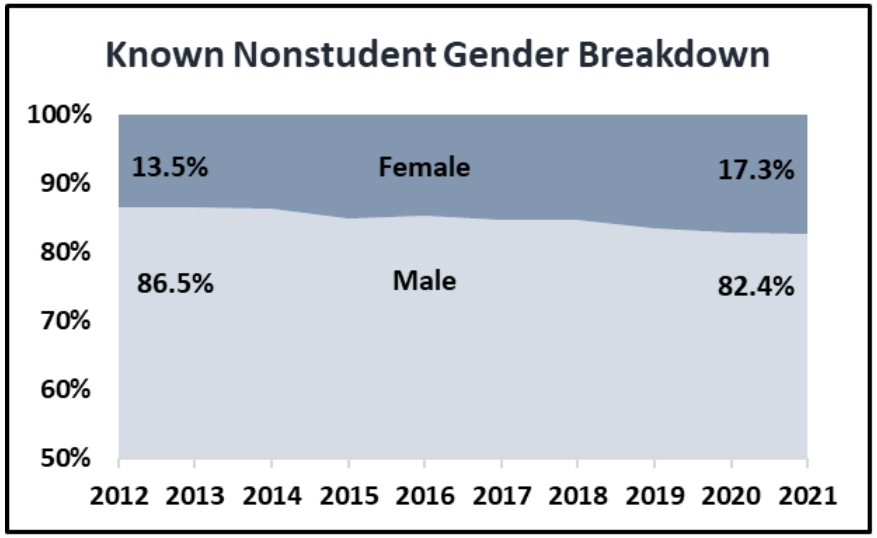
- **Childcare Grants –** both virtual and in-person attendees eligible

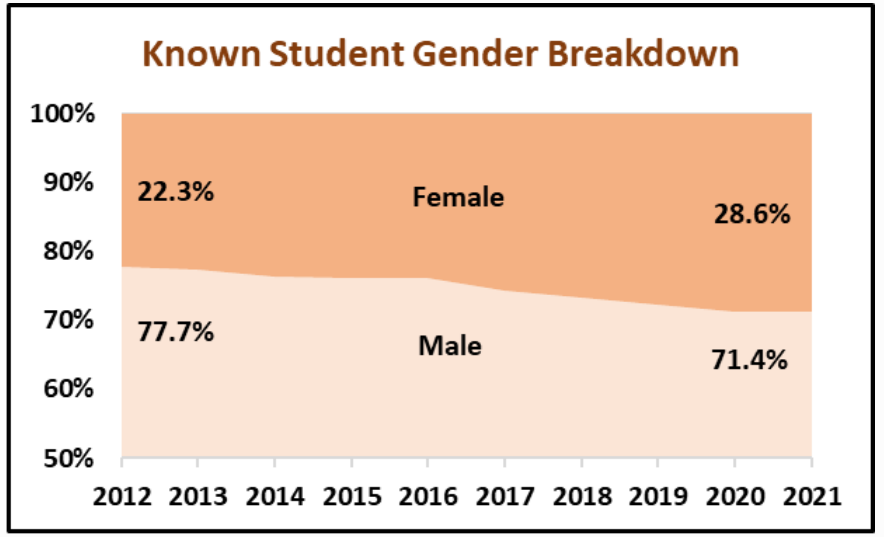
Society for Industrial and Applied Mathematics

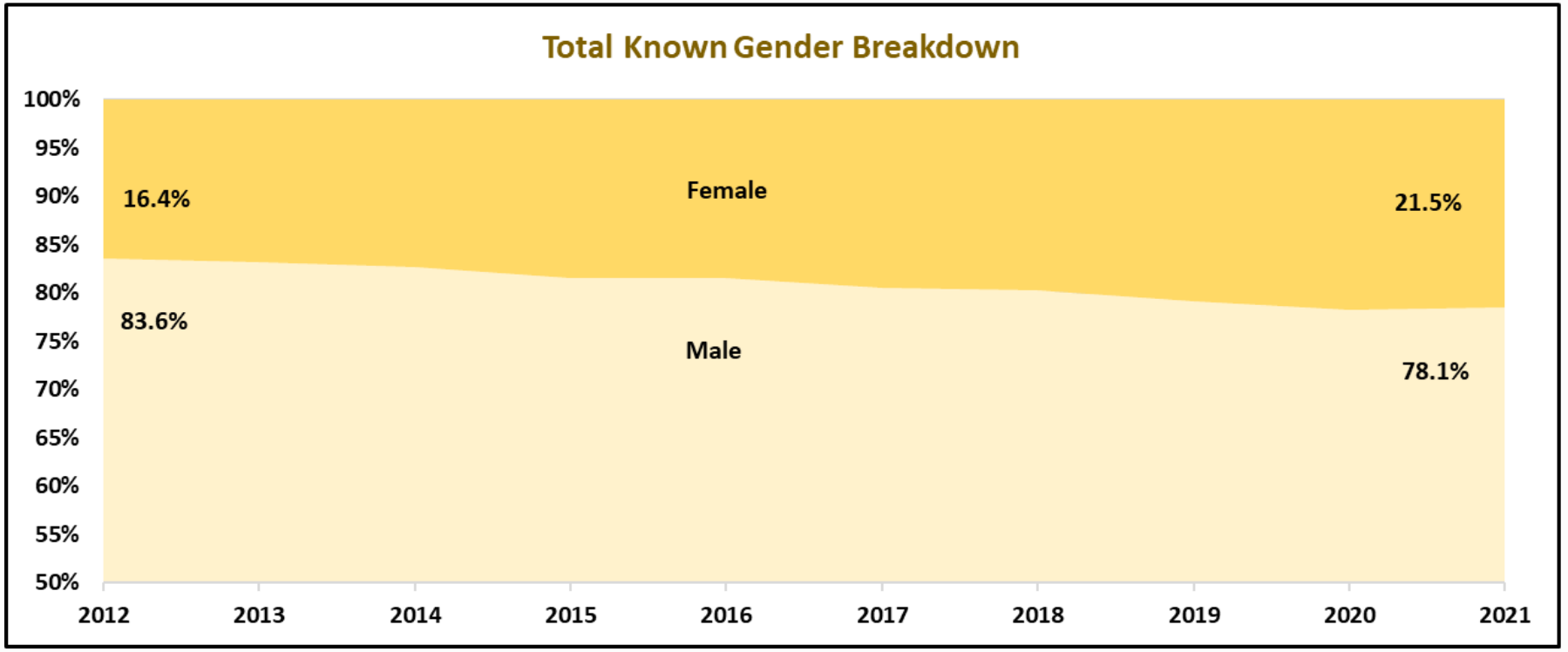
Membership

SIAM Membership

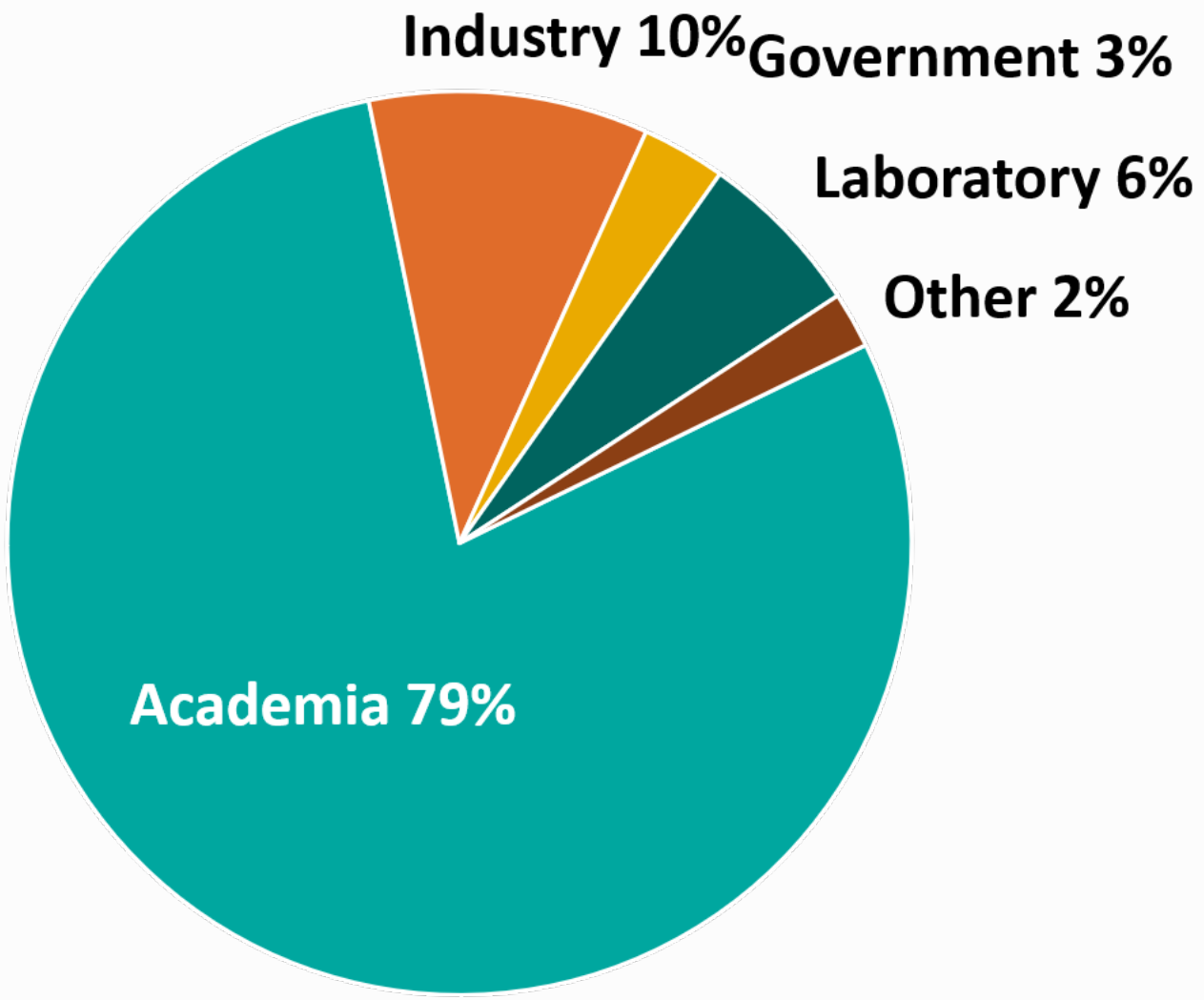


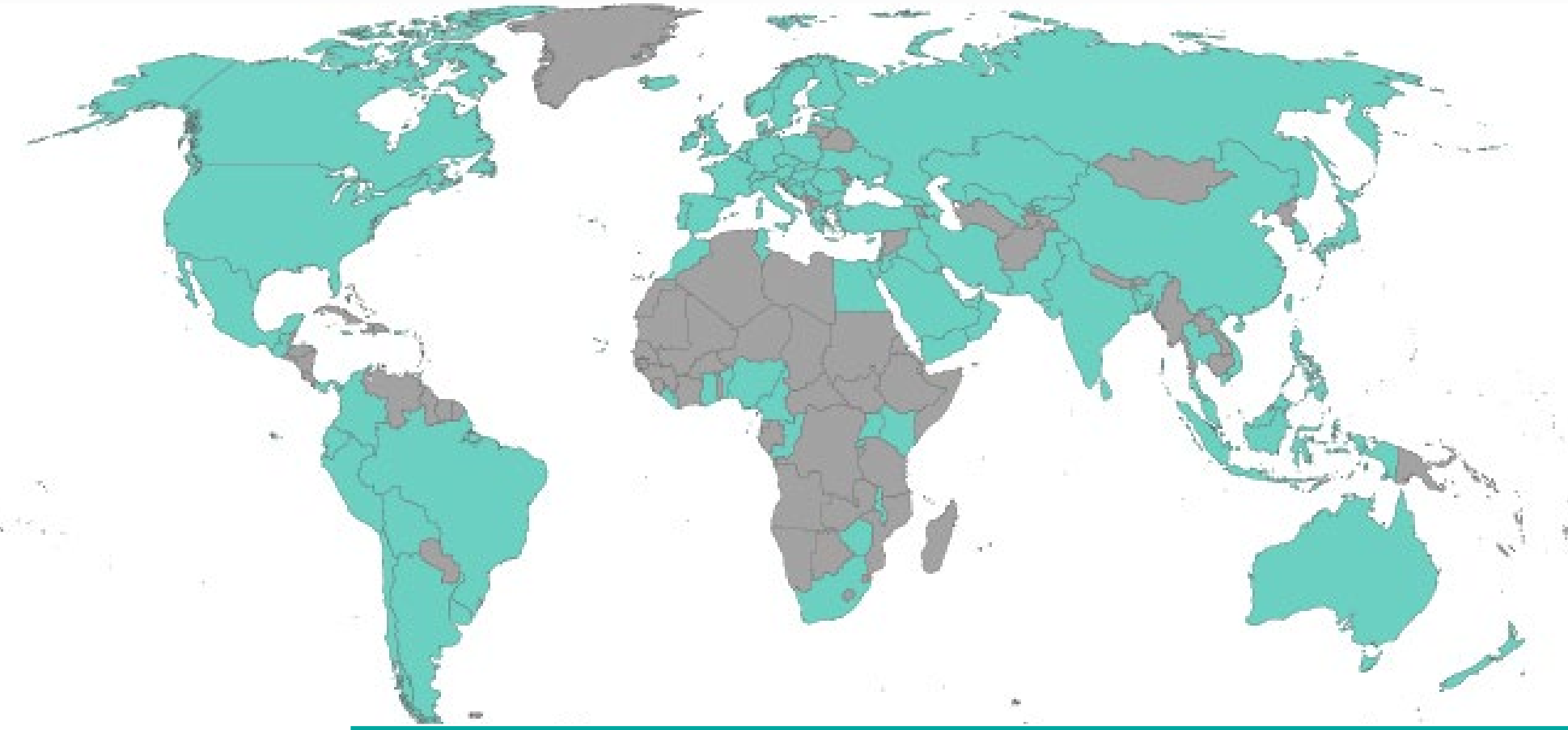

Known Nonstudent Gender Breakdown
100%
90%
80%
70%
60%
50%
13.5%
Female
17.3%
86.5%
Male
82.4%
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021


Known Student Gender Breakdown
100%
90%
80%
70%
60%
50%
22.3%
Female
28.6%
77.7%
Male
71.4%
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021


Total Known Gender Breakdown
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
16.4%
Female
21.5%
83.6%
Male
78.1%
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

Employer type (Excluding Students)





SIAM Members are in 106 Countries

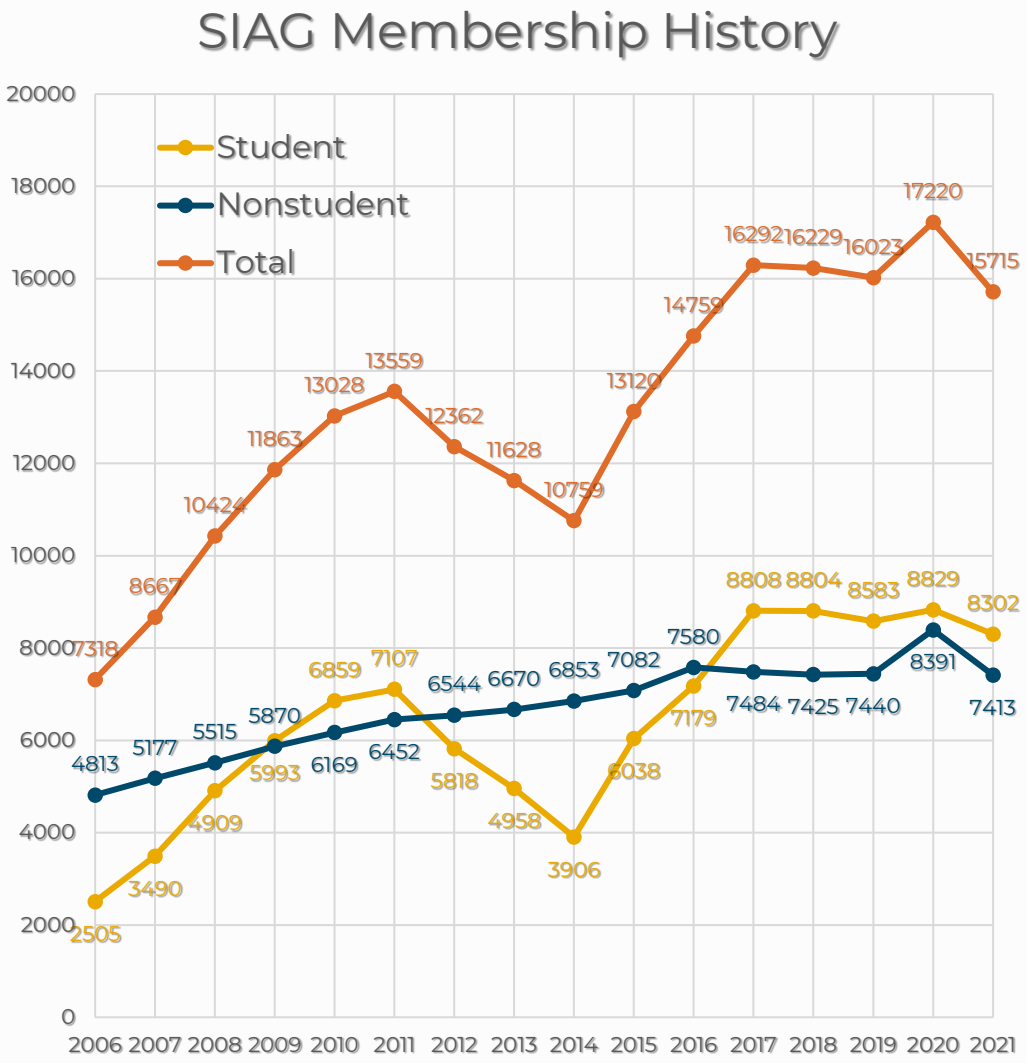
Top 10 by Total Members					
1	USA	8626	6	China	260
2	United Kingdom	618	7	Japan	222
3	Germany	571	8	Italy	209
4	Canada	474	9	Switzerland	164
5	India	286	10	France	159

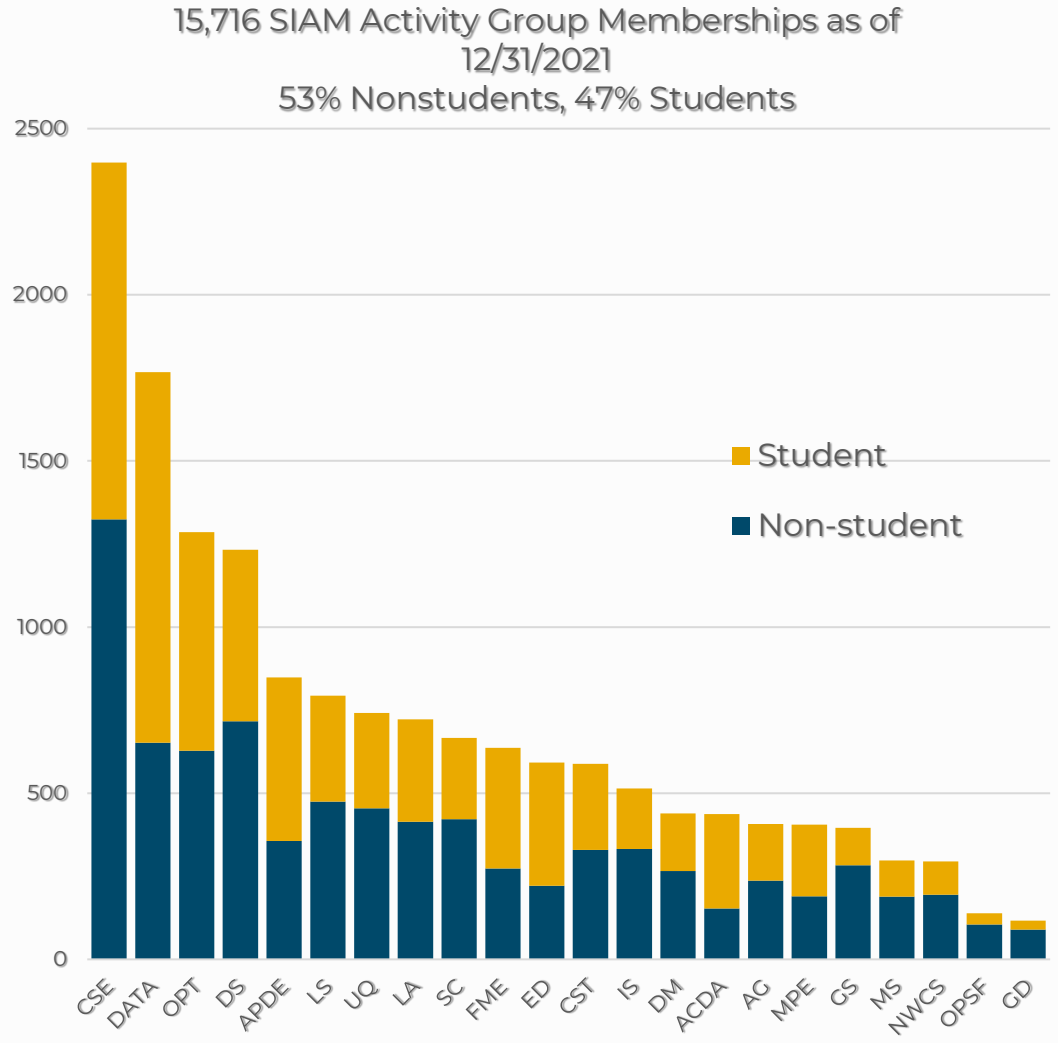
14 SIAM Sections

Thank you to the Section Officers and volunteers!

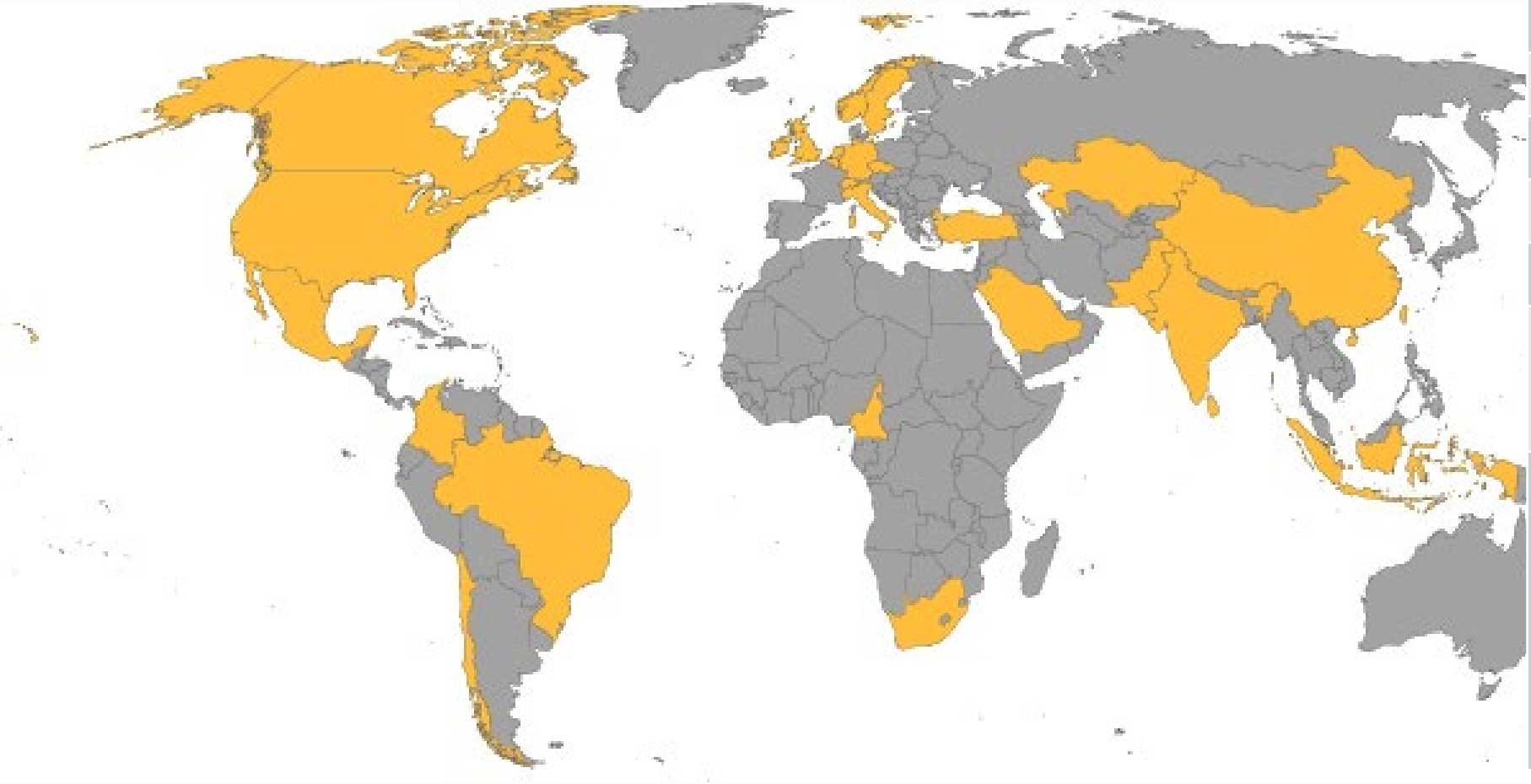
SIAM ACTIVITY GROUPS

Thank you to the SIAG Officers and volunteers!





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

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Publications

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

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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SIMODS -Tamara Kolda
SINUM – Mark Ainsworth
SIOPT – Jong-Shi Pang
SIREV – Desmond Higham
SISC – Hans De Sterck
SIURO – Joanna Wares

SIAM Publications Library Upgrade

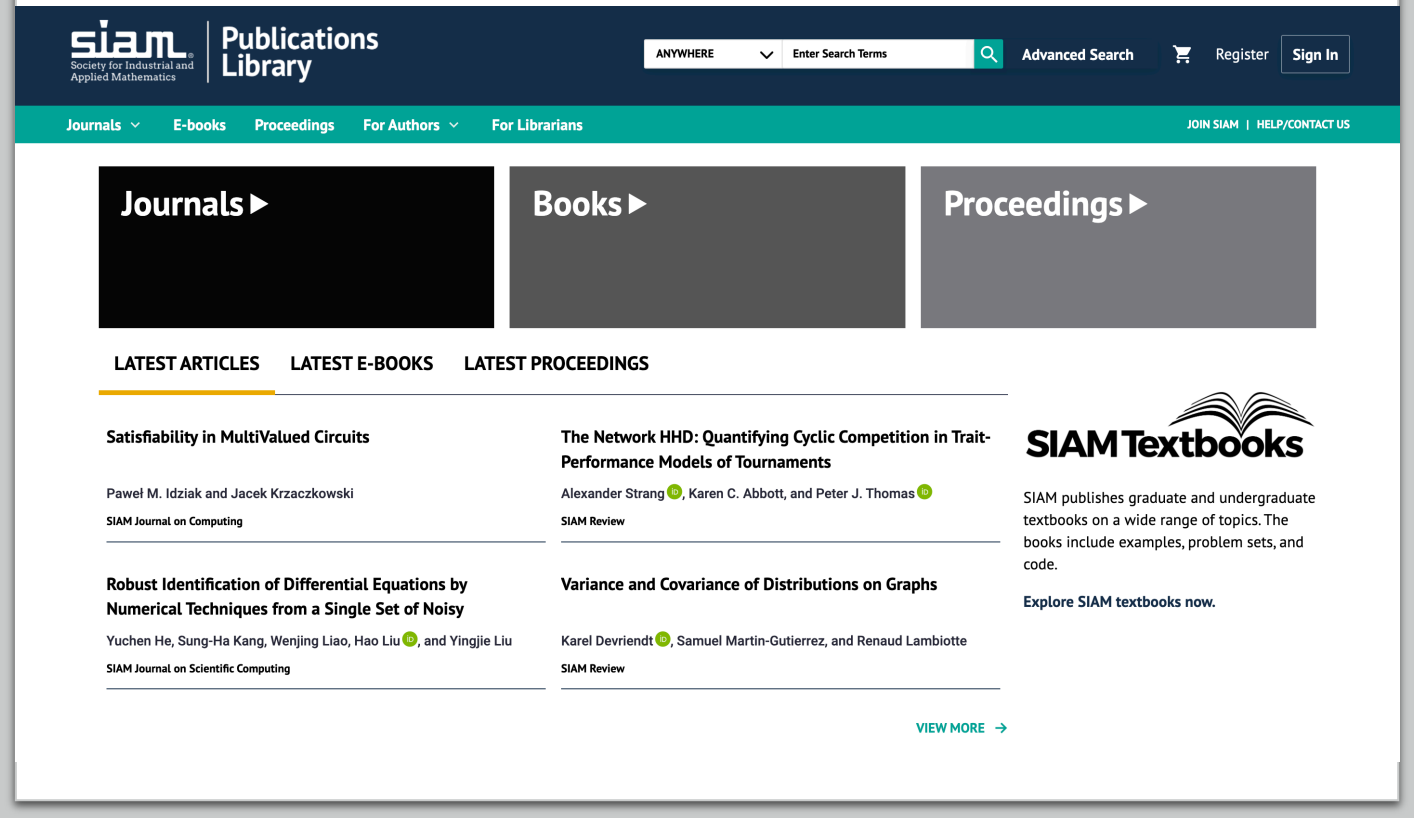
Launched Feb 2022
3-year project

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



SIAM Journals

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

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 Engineer*ing
- 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

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

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 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 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

Programs

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.

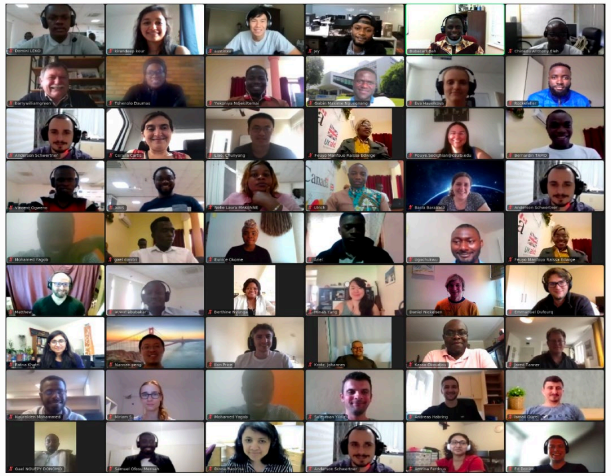
SIAM Programs

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 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**.*

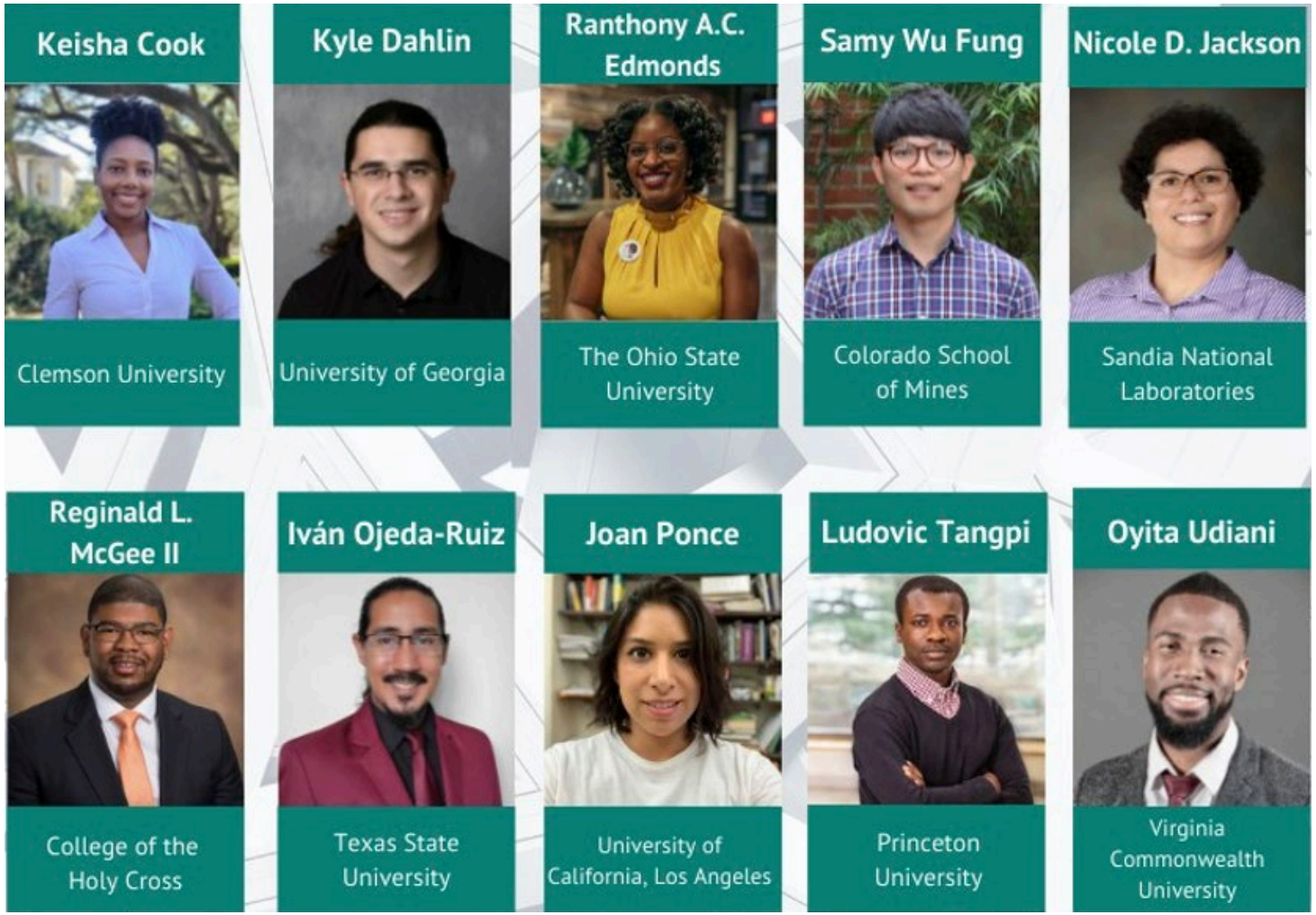
Thank you to our donors!

PIC Math Program & PIC Math Interdisciplinary Workshop on Data Science

MAA, SIAM, NSF grant DMS-1722275

PICMath

MGB-SIAM Early Career Fellows

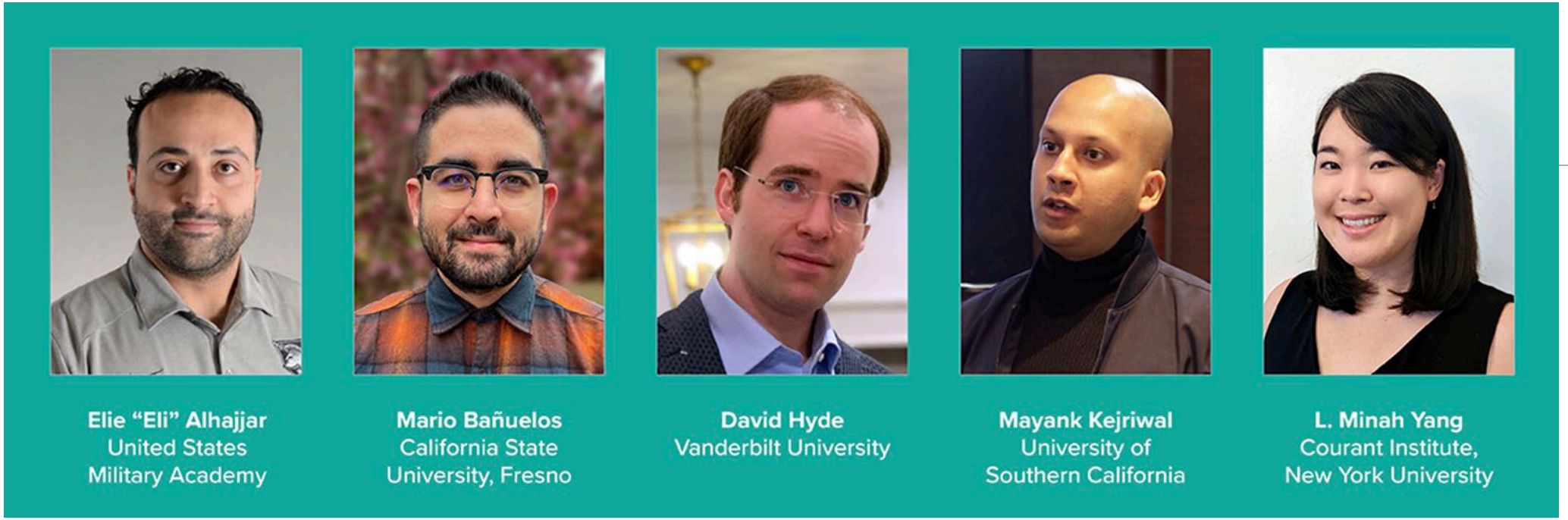


Welcome to the first cohort of MGB-SIAM Early Career Fellows!

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.

2022 SIAM Science Policy Fellows



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

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?