



**jmm** Joint  
**2024** Mathematics  
**Meetings**

**San Francisco • January 3–6**

Moscone North/South, Moscone Center,  
San Francisco, CA

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*Please note: The times listed herein were current as of press time. For the most up to date JMM 2024 scheduling information, please see: [https://www.jointmathematicsmeetings.org/meetings/national/jmm2024/2300\\_timetable.html](https://www.jointmathematicsmeetings.org/meetings/national/jmm2024/2300_timetable.html).*

Welcome to JMM 2024! Reimagined by 16 (and counting!) partners and again happening in person, this largest annual mathematics gathering in the world offers you a broad range of addresses, sessions, posters, presentations, panels, exhibits, minicourses, professional enhancement programs, and social gatherings.

Expect to learn, to celebrate mathematics and mathematicians, and to build and renew relationships.

The reimagined Joint Mathematics Meetings feature new organizations, disciplines, participants, and programming to advance research, pedagogy, inclusion, career opportunities, the arts, recreation, and more.

Scientific exploration and discovery remain at the heart of JMM 2024. Leaf through the robust offerings on the following pages to find how JMM partners (listed below) have poured their collective energy into this gathering. Prepare to come together to connect and collaborate. At JMM 2024, we will learn from each other. We will see old friends, and we will make new ones. Stay tuned for JMM updates via social media and [www.jointmathematicsmeetings.org](http://www.jointmathematicsmeetings.org). We can't wait to see you January 3–6 in San Francisco!

Best regards,

Boris Hasselblatt, Secretary of the AMS

As of press time, these are the 16 organizations that have joined forces to organize the JMM:

- American Institute of Mathematics
- American Mathematical Society
- American Statistical Association
- Association for Symbolic Logic
- Association for Women in Mathematics
- Centre de Recherches Mathématiques—Pacific Institute for the Mathematical Sciences—Atlantic Association for Research in Mathematical Sciences
- Consortium for Mathematics and its Applications
- International Linear Algebra Society
- Julia Robinson Mathematics Festival
- National Association of Mathematicians
- Pi Mu Epsilon
- Pro Mathematica Arte
- Simons Laufer Mathematical Sciences Institute/MSRI
- Society for Industrial and Applied Mathematics
- Spectra, the Association for LGBTQ+ Mathematicians
- Transforming Post-Secondary Education in Mathematics

## San Francisco, CA

*Moscone North/South, Moscone Center*

**January 3–6, 2024**

*Wednesday – Saturday*

### Meeting #1192

*This meeting includes the annual meetings of the AMS, American Institute of Mathematics (AIM), American Statistical Association (ASA), Association for Women in Mathematics (AWM), and National Association of Mathematicians (NAM), winter meeting of Association for Symbolic Logic (ASL), and sessions/events by them and Centre de Recherches Mathématiques—Pacific Institute for the Mathematical Sciences—Atlantic Association for Research in Mathematical Sciences (CRM-PIMS-AARMS), Consortium for Mathematics and its Applications (COMAP), International Linear Algebra Society (ILAS), Julia Robinson Mathematics Festival (JRMF), Pi Mu*

*Epsilon (PME), Pro Mathematica Arte (PMA), The Simons Laufer Mathematical Sciences Institute (SLMath), formerly Mathematical Sciences Research Institute (MSRI), Society for Industrial and Applied Mathematics (SIAM), Spectra, and Transforming Post-Secondary Education in Mathematics (TPSE).*

Associate Secretary for the AMS: Michelle Ann Manes  
Program first available on AMS website: To be announced  
Issue of Abstracts: Volume 45, Issue 1

### Deadlines

For organizers: Expired  
For abstracts: September 12, 2023

*The scientific information listed below may be dated. For the latest information, see <https://www.ams.org/amsmtgs/national.html>.*

## Joint Invited Addresses

**Maria Chudnovsky**, Princeton University, *What Makes a Problem Hard?* (MAA-AMS-SIAM Gerald and Judith Porter Public Lecture).

**Anne Schilling**, University of California, Davis, *The Ubiquity of Crystal Bases* (AWM-AMS Noether Lecture).

**Peter Winkler**, Dartmouth College, *Permutons* (AAAS-AMS Invited Address).

**Kamuela E. Yong**, University of Hawaii West Oahu, *When Mathematicians Don't Count* (MAA-SIAM-AMS Hrabowski-Gates-Tapia-McBay Lecture).

## AMS Invited Addresses

**Ruth Charney**, Brandeis University, *From Braid Groups to Artin Groups* (AMS Retiring Presidential Address).

**Daniel Erman**, University of Wisconsin-Madison, *Title to be announced*.

**Suzanne Marie Lenhart**, University of Tennessee/Knoxville, *Natural System Management: A Mathematician's Perspective* (AMS Josiah Willard Gibbs Lecture).

**Ankur Moitra**, Massachusetts Institute of Technology, *Learning from Dynamics* (von Neumann Lecture).

**Kimberly Sellers**, Georgetown University, *Dispersed Methods for Handling Dispersed Count Data*.

**Terence Tao**, UCLA, *Machine Assisted Proof* (AMS Colloquium Lecture I).

**Terence Tao**, UCLA, *Machine Assisted Proof* (AMS Colloquium Lecture II).

**Terence Tao**, UCLA, *Machine Assisted Proof* (AMS Colloquium Lecture III).

**John Urschel**, MIT, *Title to be announced* (AMS Erdős Lecture for Students).

**Suzanne L. Weekes**, SIAM, *Title to be announced* (AMS Lecture on Education).

**Melanie Matchett Wood**, Harvard University, *An Application of Probability Theory for Group to 3-Manifolds* (AMS Maryam Mirzakhani Lecture).

## Invited Addresses of Other JMM Partners

**Katherine Ensor**, Rice University, *Celebrating Statistical Foundations Driving 21st-Century Innovation* (ASA Invited Address).

**Stephan Ramon Garcia**, Pomona College, *Title to be announced* (ILAS Invited Address).

**Sylvester James Gates, Jr**, Clark Leadership Chair in Science, University of Maryland; past president of American Physical Society, National Medal of Science, *What Challenges Does Data Science Present to Mathematics Education?* (TPSE Invited Address).

**Trachette Jackson**, University of Michigan, *Mobilizing Mathematics for the Fight Against Cancer* (PME J. Sutherland Frame Lecture).

**Joni Teräväinen**, University of Turku, *Title to be announced* (AIM Alexanderson Award Lecture).

**Matthew Harrison-Trainor**, UIC, *The Complexity of Classifying Topological Spaces* (ASL Invited Address).

**Åsa Hirvonen**, University of Helsinki, *Games for Measuring Distances Between Metric Structures* (ASL Invited Address).

**François Loeser**, Institut Universitaire de France, Sorbonne, *Model Theory and Non-Archimedean Geometry* (ASL Invited Address).

**Toby Meadows**, University of California Irvine, *A Moderate Foundational Argument for the Generic Multiverse* (ASL Invited Address).

**Dima Sinapova**, Rutgers University, *Combinatorial Principles at Successors of Singular Cardinals* (ASL Invited Address).

**Sławomir Solecki**, Cornell University, *Descriptive Set Theory and Generic Measure Preserving Transformations* (ASL Invited Address).

**Mariana Vicaria**, University of California, Los Angeles, *Model Theory of Valued Fields* (ASL Invited Address).

**Henri Darmon**, McGill University, *Title to be announced* (CRM-PIMS-AARMS Invited Address).

**Mariel Vazquez**, UC Davis, *Title to be announced* (SIAM Invited Address).

**Shelly M. Jones**, Central Connecticut State University, *Title to be announced* (NAM Claytor-Woodard Address).

**Ranthonny A.C. Edmonds**, Duke University, *Hidden Figures Revealed* (NAM Cox-Talbot Address).

## Joint Prize Session

Join the JMM 2024 Partners in celebrating the achievements of a selection of their prize and award winners at 4:30 p.m. PST on Wednesday. All participants are invited and encouraged to attend.

## Special Sessions of the JMM

If you are volunteering to speak in a Special Session, you should submit your abstract as early as possible via the abstract submission form found at [www.jointmathematicsmeetings.org/meetings/abstracts/abstract.pl?type=jmm](http://www.jointmathematicsmeetings.org/meetings/abstracts/abstract.pl?type=jmm).

### American Institute for Mathematics Special Sessions

*AIM Special Session Associated with the Alexanderson Award and Lecture* (Code: AIMSS2A), **Joni Teräväinen**, University of Turku, **Terence Tao**, UCLA, **Kasia Matomäki**, University of Turku, **Maksym Radziwill**, California Institute of Technology, and **Tamar Ziegler**, Hebrew University.

*Equivariant Techniques in Stable Homotopy Theory* (Code: AIMSS4A), **Michael A. Hill**, UCLA, and **Anna Marie Bohmann**, Vanderbilt University.

*Graphs and Matrices* (Code: AIMSS5A), **Mary Flagg**, University of St. Thomas, and **Bryan A Curtis**, Iowa State University.

*Little School Dynamics: Cool Research by Researchers at PUIs* (Code: AIMSS1A), **Kimberly Ayers**, California State University, San Marcos, **Ami Radunskaya**, Pomona College, **Andy Parrish**, Eastern Illinois University, **David M. McClendon**, Ferris State University, and **Han Li**, Wesleyan University.

*Math Circle Activities as a Gateway Into Research* (Code: AIMSS3A), **Jeffrey Musyt**, Slippery Rock University, **Lauren L Rose**, Bard College, **Tom G. Stojsavljevic**, Beloit College, **Nick Rauh**, Julia Robinson Math Festivals, **Edward Charles Keppelmann**, University of Nevada Reno, **Allison Henrich**, Seattle University, **Violeta Vasilevska**, Utah Valley University, and **Gabriella A. Pinter**, University of Wisconsin, Milwaukee.

### American Mathematical Society Special Sessions

Some sessions are cosponsored with other organizations. These are noted within the parenthesis at the end of each listing, where applicable.

*Advances in Analysis, PDE's and Related Applications* (Code: SS 50A), **Tepper L. Gill**, Howard University, **E. Kwessi**, Trinity University, and **Henok Mawi**, Howard University (Washington, DC, US).

*Advances in Coding Theory* (Code: SS 13A), **Emily McMillon**, Rice University, **Christine Ann Kelley**, University of Nebraska-Lincoln, **Tefjol Pllaha**, University of Nebraska-Lincoln, and **Mary Wootters**, Stanford University.

*Algebraic Approaches to Mathematical Biology* (Code: SS 71A), **Nicolette Meshkat**, Santa Clara University, **Cash Bortner**, California State University, Stanislaus, and **Anne Shiu**, Texas A&M University.

*Algebraic Structures in Knot Theory* (Code: SS 69A), **Sam Nelson**, Claremont McKenna College, and **Neslihan Gügümcu**, Izmir Institute of Technology in Turkey.

*AMS-AWM Special Session for Women and Gender Minorities in Symplectic and Contact Geometry and Topology* (Code: SS 46A), **Sarah Blackwell**, Max Planck Institute for Mathematics, **Luya Wang**, University of California, Berkeley, and **Nicole Magill**, Cornell University (AMS-AWM).

*Analysis and Differential Equations at Undergraduate Institutions* (Code: SS 24A), **Evan Randles**, Colby College, and **Lisa Naples**, Macalester College.

*Applications of Extremal Graph Theory to Network Design* (Code: SS 91A), **Kelly Isham**, Colgate University, and **Laura Monroe**, Los Alamos National Laboratory.

*Applications of Hypercomplex Analysis* (Code: SS 3A), **Mihaela B. Vajiac**, Chapman University, **Daniel Alpay**, Chapman University, and **Paula Cerejeiras**, University of Aveiro, Portugal.

*Applied Topology Beyond Persistence Diagrams* (Code: SS 61A), **Nikolas Schonsheck**, University of Delaware, **Lori Ziegelmeier**, Macalester College, **Gregory Henselman-Petrusek**, University of Oxford, and **Chad Giusti**, Oregon State University.

*Applied Topology: Theory, Algorithms, and Applications* (Code: SS 35A), **Woojin Kim**, Duke University, **Johnathan Bush**, University of Florida, **Alex McCleary**, Ohio State University, **Sarah Percival**, Michigan State University, and **Iris Yoon**, University of Oxford.

*Arithmetic Geometry with a View toward Computation* (Code: SS 81A), **David Lowry-Duda**, ICERM/Brown University, **Barinder Banwait**, Boston University, **Shiva Chidambaram**, Massachusetts Institute of Technology, **Juanita Duque-Rosero**, Boston University, **Brendan Hassett**, ICERM/Brown University, and **Ciaran Schembri**, Dartmouth College.

*Bridging Applied and Quantitative Topology* (Code: SS 62A), **Henry Adams**, University of Florida, and **Ling Zhou**, The Ohio State University.

*Coding Theory for Modern Applications* (Code: SS 74A), **Rafael D'Oliveira**, Clemson University, **Hiram H. Lopez**, Cleveland State University, and **Allison Beemer**, University of Wisconsin-Eau Claire.

*Combinatorial Insights into Algebraic Geometry* (Code: SS 73A), **Javier Gonzalez Anaya**, UC Riverside.



*Combinatorial Perspectives on Algebraic Curves and their Moduli* (Code: SS 17A), **Sam Payne**, UT Austin, **Melody Chan**, Brown University, **Hannah K. Larson**, Harvard University and UC Berkeley, and **Siddarth Kannan**, Brown University.

*Combinatorics for Science* (Code: SS 52A), **Stephen J. Young**, **Bill Kay**, and **Sinan Aksoy**, Pacific Northwest National Laboratory.

*Commutative Algebra and Algebraic Geometry (associated with Invited Address by Daniel Erman)* (Code: SS 98A), **Daniel Erman**, University of Wisconsin-Madison, and **Aleksandra C. Sobieska**, University of Wisconsin-Madison.

*Complex Analysis, Operator Theory, and Real Algebraic Geometry* (Code: SS 42A), **J. E. Pascoe**, Drexel University, **Kelly Bickel**, Bucknell University, and **Ryan K. Tully-Doyle**, Cal Poly SLO.

*Complex Social Systems (a Mathematics Research Communities session) I* (Code: SS 104A), **Ekaterina Landgren**, University of Colorado, Boulder, **Cara Sulyok**, Lewis University, **Casey Lynn Johnson**, UCLA, **Molly Lynch**, Hollins University, and **Rebecca Hardenbrook**, Dartmouth College.

*Computable Mathematics: A Special Session Dedicated to Martin D. Davis* (Code: SS 1A), **Valentina S. Harizanov**, George Washington University, **Alexandra Shlapentokh**, East Carolina University, and **Wesley Calvert**, Southern Illinois University.

*Computational Biomedicine: Methods - Models - Applications* (Code: SS 7A), **Nektarios A. Valous**, Center for Quantitative Analysis of Molecular and Cellular Biosystems (Bioquant), Heidelberg University, Germany, **Anna Konstorum**, Center for Computing Sciences, Institute for Defense Analyses, **Heiko Enderling**, Department of Integrated Mathematical Oncology, H. Lee Moffitt Cancer Center & Research Institute, Tampa, and **Dirk Jäger**, Center for Quantitative Analysis of Molecular and Cellular Biosystems (Bioquant), Heidelberg University, Germany.

*Computational Techniques to Study the Geometry of the Shape Space* (Code: SS 97A), **Shira Faigenbaum-Golovin**, Duke University, **Shan Shan**, University of Southern Denmark, and **Ingrid Daubechies**, Duke University.

*Covering Systems of the Integers and Their Applications* (Code: SS 41A), **Joshua Harrington**, Cedar Crest College, **Tony Wing Hong Wong**, Kutztown University of Pennsylvania, and **Matthew Litman**, University of California, Davis.

*Cryptography and Related Fields* (Code: SS 86A), **Ryann Cartor**, Clemson University, **Angela Robinson**, NIST, and **Daniel Everett Martin**, Clemson University.

*Derived Categories, Arithmetic, and Geometry (a Mathematics Research Communities session) I* (Code: SS 105A), **Anirban Bhaduri**, University of South Carolina, **Gabriel Dorfsman-Hopkins**, St. Lawrence University, **Patrick Lank**, University of South Carolina, and **Peter McDonald**, University of Utah.

*Developing Students' Technical Communication Skills through Mathematics Courses* (Code: SS 36A), **Michelle L. Ghrist**, Gonzaga University, **Timothy P. Chartier**, Davidson College, **Maila B. Hallare**, US Air Force Academy, and **Denise Taunton Reid**, Valdosta State University.

*Diffusive Systems in the Natural Sciences* (Code: SS 88A), **Francesca Bernardi**, Worcester Polytechnic Institute, and **Owen Lewis**, University of New Mexico.

*Discrete Homotopy Theory* (Code: SS 25A), **Krzysztof R. Kapulkin**, University of Western Ontario, **Anton Dochtermann**, Texas State University, and **Antonio Rieser**, CONACYT-CIMAT.

*Dynamical Systems Modeling for Biological and Social Systems* (Code: SS 75A), **Daniel Brendan Cooney**, University of Pennsylvania, **Chadi M. Saad-Roy**, University of California, Berkeley, and **Chris M. Heggerud**, University of California, Davis.

*Dynamics and Management in Disease or Ecological Models (associated with Gibbs Lecture by Suzanne Lenhart)* (Code: SS 100A), **Suzanne Lenhart**, University of Tennessee, Knoxville, **Christina Edholm**, Scripps College, and **Wandi Ding**, Middle Tennessee State University.

*Dynamics and Regularity of PDEs* (Code: SS 32A), **Zongyuan Li**, Rutgers University, **Weinan Wang**, University of Arizona, **Xueying Yu**, University of Washington, and **Zhiyuan Zhang**, Northeastern University.

*Epistemologies of the South and the Mathematics of Indigenous Peoples* (Code: SS 77A), **María Del Carmen Bonilla Tumi-alán**, National University of Education Enrique Guzman y Valle, **Wilfredo Vidal Alanguí**, University of the Philippines Baguio, and **Domingo Yojcom Rocché**, Center for Scientific and Cultural Research.

*Ergodic Theory, Symbolic Dynamics, and Related Topics* (Code: SS 10A), **Andrew T. Dykstra**, Hamilton College, and **Shrey Sanadhya**, Ben Gurion University of the Negev, Israel.

*Ethics in the Mathematics Classroom* (Code: SS 6A), **Victor Piercey**, Ferris State University, and **Catherine Buell**, Fitchburg State University.

*Explicit Computation with Stacks (a Mathematics Research Communities session) I* (Code: SS 103A), **Santiago Arango**, Emory University, **Jonathan Richard Love**, CRM Montreal, and **Sameera Vemulapalli**, Princeton University.

*Exploring Spatial Ecology via Reaction Diffusion Models: New Insights and Solutions* (Code: SS 20A), **Jerome Goddard II**, Auburn University Montgomery, and **Ratnasingham Shivaji**, University of North Carolina Greensboro.

*Extremal and Probabilistic Combinatorics* (Code: SS 15A), **Sam Spiro**, Rutgers University, and **Corrine Yap**, Georgia Institute of Technology

*Geometric Analysis in Several Complex Variables* (Code: SS 9A), **Ming Xiao**, University of California, San Diego, **Bernhard Lamel**, Texas A&M University at Qatar, and **Nordine Mir**, Texas A&M University at Qatar.

*Geometric Group Theory (Associated with the AMS Retiring Presidential Address)* (Code: SS 38A), **Kasia Jankiewicz**, University of California Santa Cruz, **Edgar A. Bering**, San José State University, **Marion Campisi**, San José State University, and **Tim Hsu** and **Giang Le**, San José State University.

*Geometry and Symmetry in Differential Equations, Control, and Applications* (Code: SS 93A), **Taylor Joseph Klotz** and **George Wilkens**, University of Hawai'i.

*Geometry and Topology of High-Dimensional Biomedical Data* (Code: SS 67A), **Smita Krishnaswamy**, Yale University, **Dhananjay Bhaskar**, Yale University, **Bastian Rieck**, Technical University of Munich, and **Guy Wolf**, Université de Montréal.

*Group Actions in Commutative Algebra* (Code: SS 51A), **Alessandra Costantini**, Oklahoma State University, **Alexandra Seceleanu**, University of Nebraska-Lincoln, and **Andras Lorincz**, University of Oklahoma.

*Hamiltonian Systems and Celestial Mechanics* (Code: SS 23A), **Zhifu Xie**, The University of Southern Mississippi, and **Ernesto Pérez-Chavela**, ITAM.

*Harmonic Analysis, Geometry Measure Theory, and Fractals* (Code: SS 54A), **Kyle Hambrook**, San Jose State University, **Chun-Kit Lai**, San Francisco State University, and **Caleb Marshall**, University of British Columbia.

*History of Mathematics* (Code: SS 89A), **Adrian Rice**, Randolph-Macon College, **Sloan Evans Despeaux**, Western Carolina University, **Deborah Kent**, University of St. Andrews, and **Jemma Lorenat**, Pitzer College.

*Homological Techniques in Noncommutative Algebra* (Code: SS 48A), **Robert Won**, George Washington University, **Ellen E. Kirkman**, Wake Forest University, and **James J. Zhang**, University of Washington.

*Homotopy Theory* (Code: SS 47A), **Krzysztof R. Kapulkin**, University of Western Ontario, **Daniel K. Dugger**, University of Oregon, **Jonathan Beardsley**, University of Nevada, Reno, and **Thomas Brazelton**, University of Pennsylvania.

*Ideal and Factorization Theory in Rings and Semigroups* (Code: SS 4A), **Scott Chapman**, Sam Houston State University, and **Alfred Geroldinger**, University of Graz.

*Informal Learning, Identity, and Attitudes in Mathematics* (Code: SS 44A), **Sergey Grigorian**, **Mayra Ortiz**, **Xiaohui Wang**, and **Aaron Wilson**, University of Texas Rio Grande Valley.

*Integer Partitions, Arc Spaces and Vertex Operators* (Code: SS 59A), **Hussein Mourtada**, Université Paris Cité, and **Andrew R. Linshaw**, University of Denver.

*Interplay Between Matrix Theory and Markov Systems: Applications to Queueing Systems and of Duality Theory* (Code: SS 58A), **Alan Krinik** and **Randall J. Swift**, California State Polytechnic University, Pomona.

*Issues, Challenges and Innovations in Instruction of Linear Algebra* (Code: SS 96A), **Feroz Siddique**, University of Wisconsin-Eau Claire, and **Ashish K. Srivastava**, Saint Louis University.

*Joint Meetings Registration* (Code: REGSAT), **Radmila Sazdanovic**, NC State University (Joint).

*Knots, Skein Modules, and Categorification* (Code: SS 66A), **Rhea Palak Bakshi**, ETH Institute for Theoretical Studies, Zurich, **Sujoy Mukherjee**, University of Denver, and **Jozef Henryk Przytycki**, George Washington University.

*Large Random Permutations (affiliated with AAAS-AMS Invited Address by Peter Winkler)* (Code: SS 101A), **Peter Winkler**, Dartmouth College, and **Jacopo Borga**, Stanford University.

*Loeb Measure after 50 Years* (Code: SS 12A), **Yeneng Sun**, National University of Singapore, **Robert M. Anderson**, UC Berkeley, and **Matt Insall**, Missouri University of Science and Technology.

*Looking Forward and Back: Common Core State Standards in Mathematics (CCSSM), 12 Years Later* (Code: SS 85A), **Yunhee Lee**, Southern Connecticut State University, **James Alvarez**, University of Texas Arlington, **Ekaterina Fuchs**, City College of San Francisco, **Tyler Kloefkorn**, American Mathematical Society, **Yvonne Lai**, University of Nebraska-Lincoln, and **Carl Olimb**, Augustana University.

*Mathematical Modeling and Simulation of Biomolecular Systems* (Code: SS 79A), **Zhen Chao**, Western Washington University, and **Jiahui Chen**, University of Arkansas.

*Mathematical Modeling of Nucleic Acid Structures* (Code: SS 70A), **Pengyu Liu**, University of California, Davis, **Van Pham**, University of South Florida, and **Svetlana Poznanovic**, Clemson University.

*Mathematical Physics and Future Directions* (Code: SS 34A), **Shanna Dobson**, University of California, Riverside, **Tepper L. Gill**, Howard University, **Michael Anthony Maroun**, University of California, Riverside, and **Lance W. Nielsen**, Creighton University.

*Mathematics and Philosophy* (Code: SS 53A), **Tom Morley**, Georgia Tech, and **Bonnie Gold**, Monmouth University.

*Mathematics and Quantum* (Code: SS 82A), **Kaifeng Bu** and **Arthur M. Jaffe**, Harvard, **Sui Tang**, UCSB, and **Jonathan Weitsman**, Northeastern University.

*Mathematics and the Arts* (Code: SS 76A), **Karl Kattchee**, University of Wisconsin-La Crosse, **Doug Norton**, Villanova University, and **Anil Venkatesh**, Adelphi University.

*Mathematics of Computer Vision* (Code: SS 94A), **Timothy Duff** and **Max Lieblich**, University of Washington.

*Mathematics of DNA and RNA* (Code: SS 87A), **Marek Kimmel**, Rice University, **Chris McCarthy**, BMCC, City University of New York, and **Johannes Familton**, Borough of Manhattan Community College, CUNY.

*Metric Dimension of Graphs and Related Topics* (Code: SS 18A), **Briana Foster-Greenwood**, Cal Poly Pomona, and **Christine Uhl**, St. Bonaventure University.

*Metric Geometry and Topology* (Code: SS 33A), **Christine M. Escher**, Oregon State University, and **Catherine Searle**, Wichita State University.

*Mock Modular forms, Physics, and Applications* (Code: SS 40A), **Amanda Folsom**, Amherst College, **Terry Gannon**, University of Alberta, and **Larry Rolen**, Vanderbilt University.

*Modeling Complex Adaptive Systems in Life and Social Sciences* (Code: SS 57A), **Yun Kang** and **Theophilus Kwofie**, Arizona State University, and **Sabrina H. Streipert**, University of Pittsburgh.

*Modeling to Motivate the Teaching of the Mathematics of Differential Equations* (Code: SS 21A), **Brian Winkel**, SIMIODE, **Kyle T. Allaire**, Worcester State University, **Maila B. Hallare**, US Air Force Academy, **Yanping Ma**, Loyola Marymount University, and **Lisa Naples**, Macalester College.

*Modelling with Copulas: Discrete vs Continuous Dependent Data* (Code: SS 19A), **Martial Longla**, University of Mississippi, and **Isidore Seraphin Ngongo**, University of Yaounde I.

*Modern Developments in the Theory of Configuration Spaces* (Code: SS 31A), **Christin Bibby**, Louisiana State University, and **Nir Gadish**, University of Michigan.

*Modular Tensor Categories and TQFTs beyond the Finite and Semisimple* (Code: SS 27A), **Colleen Delaney**, UC Berkeley, and **Nathan Geer**, Utah State University.

*Navigating the Benefits and Challenges of Mentoring Students in Data-Driven Undergraduate Research Projects* (Code: SS 64A), **Vinodh Kumar Chellamuthu**, Utah Tech University, and **Xiaoxia Xie**, Idaho State University.

*New Faces in Operator Theory and Function Theory* (Code: SS 37A), **Michael R Pilla**, Ball State University, and **William Thomas Ross**, University of Richmond.

*Nonlinear Dynamics in Human Systems: Insights from Social and Biological Perspectives* (Code: SS 95A), **Armando Roldan**, University of Central Florida, and **Thomas Dombrowski**, Moffitt Cancer Center.

*Number Theory in Memory of Kevin James* (Code: SS 39A), **Jim L. Brown**, Occidental College, and **Felice Manganiello**, Clemson University.

*Numerical Analysis, Spectral Graph Theory, Orthogonal Polynomials, and Quantum Algorithms* (Code: SS 92A), **Anastasiia Minenkova**, University of Hartford, and **Gamal Mograby**, University of Cincinnati.

*On Topological and Algebraic Approaches for Optimization* (Code: SS 80A), **Ali Mohammad Nezhad**, Carnegie Mellon University.

*Partition Theory and  $q$ -Series* (Code: SS 30A), **William Jonathan Keith**, Michigan Technological University, **Brandt Kronholm**, University of Texas Rio Grande Valley, and **Dennis Eichhorn**, University of California, Irvine.

*Polymath Jr REU Student Research* (Code: SS 106A), **Steven Joel Miller**, Williams College, and **Alexandra Secleanu**, University of Nebraska-Lincoln.

*Principles, Spatial Reasoning, and Science in First-Year Calculus* (Code: SS 16A), **Yat Sun Poon** and **Catherine Lussier**, University of California, Riverside, and **Bryan Carrillo**, Saddleback College.

*Quantitative Justice* (Code: NAMSS1A), **Ron Buckmire**, Occidental College, **Omayra Ortega**, Sonoma State University, and **Robin Wilson**, California State Polytechnic University, Pomona (NAM-SIAM-AMS).

*Quaternions* (Code: SS 49A), **Chris McCarthy**, BMCC, City University of New York, **Johannes Familton**, Borough of Manhattan Community College, CUNY, and **Terrence Richard Blackman**, Medgar Evers Community College, CUNY.

*Recent Advances in Mathematical Models of Diseases: Analysis and Computation* (Code: SS 22A), **Najat Ziyadi** and **Jemal S. Mohammed-Awel**, Morgan State University.

*Recent Advances in Stochastic Differential Equation Theory and its Applications in Modeling Biological Systems* (Code: SS 72A), **Tuan A. Phan**, IMCI, University of Idaho, **Nhu N. Nguyen**, University of Rhode Island, and **Jianjun P. Tian**, New Mexico State University.

*Recent Developments in Commutative Algebra* (Code: SS 45A), **Austyn Simpson** and **Alapan Mukhopadhyay**, University of Michigan, and **Thomas Marion Polstra**, University of Virginia.

*Recent Developments in Numerical Methods for PDEs and Applications* (Code: SS 2A), **Chunmei Wang**, University of Florida, **Long Chen**, UC Irvine, **Shuhao Cao**, University of Missouri-Kansas City, and **Haizhao Yang**, University of Maryland College Park.

*Recent Developments on Markoff Triples* (Code: SS 68A), **Elena Fuchs**, UC Davis, and **Daniel Everett Martin**, Clemson University



*Recent Progress in Inference and Sampling (Associated with AMS Invited Address by Ankur Moitra)* (Code: SS 99A), **Ankur Moitra**, Massachusetts Institute of Technology, and **Sitan Chen**, Harvard University.

*Research in Mathematics by Undergraduates and Students in Post-Baccalaureate Programs* (Code: SS 29A), **Darren A. Narayan**, Rochester Institute of Technology, **John C. Wierman**, Johns Hopkins University, **Mark Daniel Ward**, Purdue University, **Khang Duc Tran**, California State University, Fresno, and **Christopher O'Neill**, San Diego State University.

*Research Presentations by Math Alliance Scholar Doctorates* (Code: SS 84A), **Teresa Martines**, University of Texas, Austin, and **David Goldberg**, Math Alliance/Purdue University.

*Ricci Curvatures of Graphs and Applications to Data Science (a Mathematics Research Communities session) I* (Code: SS 102A), **Aleyah Dawkins**, George Mason University, **Xavier Ramos Olive**, Smith College, **Zhaiming Shen**, University of Georgia, **David Harry Richman**, University of Washington, and **Michael G Rawson**, PNNL.

*Serious Recreational Mathematics* (Code: SS 8A), **Erik Demaine**, Massachusetts Institute of Technology, **Robert A. Hearn**, H3 Labs, and **Tomas Rokicki**, California.

*Solvable Lattice Models and their Applications Associated with the Noether Lecture* (Code: SS 43A), **Amol Aggarwal**, Columbia, **Benjamin Brubaker**, University of Minnesota-Twin Cities, **Daniel Bump**, Stanford University, **Andrew Hardt**, Stanford University, **Slava Naprienko**, Stanford University and University of North Carolina, **Leonid Petrov**, University of Virginia, and **Anne Schilling**, University of California, Davis.

*Spectral Methods in Quantum Systems* (Code: SS 26A), **Matthew Powell**, Georgia Institute of Technology, and **Wencai Liu**, Texas A&M University.

*Structure-preserving Algorithms, Analysis and Simulations for Differential Equations* (Code: SS 5A), **Brian E. Moore**, University of Central Florida, and **Qin Sheng**, Baylor University.

*The EDGE (Enhancing Diversity in Graduate Education) Program: Pure and Applied Talks by Women Math Warriors* (Code: SS 11A), **Quiyana Murphy**, Virginia Tech, **Sofia Rose Martinez Alberga**, Purdue University, **Kelly Buch**, Austin Peay State University, and **Alexis Hardesty**, Texas Tech University.

*The Mathematics of Decisions, Elections, and Games* (Code: SS 60A), **David McCune**, William Jewell College, **Michael A. Jones**, Mathematical Reviews | AMS, and **Jennifer M. Wilson**, Eugene Lang College, The New School.

*Theoretical and Numerical Aspects of Nonlocal Models* (Code: SS 63A), **Nicole Buczkowski**, Worcester Polytechnic Institute, **Christian Alexander Glusa**, Sandia National Laboratories, and **Animesh Biswas**, University of Nebraska Lincoln.

*Theta Correspondence* (Code: SS 56A), **Edmund Karasiewicz** and **Petar Bakic**, University of Utah.

*The Teaching and Learning of Undergraduate Ordinary Differential Equations* (Code: SS 14A), **Viktoria Savatorova**, Central Connecticut State University, **Chris Goodrich**, The University of New South Wales, **Itai Seggev**, Wolfram Research, **Beverly H. West**, Cornell University, and **Maila B. Hallare**, US Air Force Academy.

*Thresholds in Random Structures* (Code: SS 78A), **Will Perkins**, Georgia Tech.

*Topics in Combinatorics and Graph Theory* (Code: SS 90A), **Cory Palmer**, University of Montana, **Neal Bushaw**, Virginia Commonwealth University, and **Anastasia Halfpap**, University of Montana.

*Topics in Equivariant Algebra* (Code: SS 65A), **Ben Spitz**, University of California Los Angeles, and **Christy Hazel** and **Michael A. Hill**, UCLA.

*Undergraduate Research Activities in Mathematical and Computational Biology* (Code: SS 55A), **Timothy D. Comar**, Benedictine University, and **Anne E. Yust**, University of Pittsburgh.

*Using 3D-Printed and Other Digitally-Fabricated Objects in the Mathematics Classroom* (Code: SS 83A), **Shelby Stanhope**, US Air Force Academy, **Paul E. Seeburger**, Monroe Community College, and **Stepan Paul**, North Carolina State University.

*Water Waves* (Code: SS 28A), **Anastasiya Semenova** and **Bernard Deconinck**, University of Washington, **John Carter**, Seattle University, and **Eleanor Devin Byrnes**, University of Washington.

## Association for Symbolic Logic Special Sessions

*Descriptive Methods in Dynamics, Combinatorics, and Large Scale Geometry* (Code: ASLSS1A), **Jenna Zomback**, Williams College, and **Forte Shinko**, UCLA.

## Association for Women in Mathematics Special Sessions

*EvenQuads Live and In-person: The Honorees and the Games* (Code: AWMSS2A), **sarah-marie belcastro**, Mathematical Staircase, Inc., **Sherli Koshy-Chenthittayil**, Touro University Nevada, **Oscar Vega**, California State University, Fresno, **Monica D. Morales-Hernandez**, Adelphi University, **Linda McGuire**, Muhlenberg College, and **Denise A. Rangel Tracy**, Fairleigh Dickinson University.

*Mathematics in the Literary Arts and Pedagogy in Creative Settings* (Code: AWMSS4A), **Shanna Dobson**, University of California, Riverside, and **Claudia Maria Schmidt**, California State University.



*Recent Developments in Harmonic Analysis* (Code: AWMSS1A), **Betsy Stovall**, University of Wisconsin-Madison, and **Sarah E. Tammen**, Massachusetts Institute of Technology.

*Women in Mathematical Biology* (Code: AWMSS3A), **Christina Edholm**, Scripps College, **Lihong Zhao**, University of California, Merced, and **Lale Asik**, University of the Incarnate Word.

### Consortium for Mathematics and its Applications Special Sessions

*Math Modeling Contests: What They Are, How They Benefit, What They Did – Discussions with the Students and Advisors* (Code: COMAPSS1A), **Jack A. Picciuto**, COMAP, and **Kayla Blyman**, Saint Martin's University.

### International Linear Algebra Society Special Sessions

*Generalized Numerical Ranges and Related Topics* (Code: ILASSS2A), **Tin-Yau Tam** and **Pan-Shun Lau**, University of Nevada, Reno.

*Graphs and Matrices* (Code: ILASSS1A), **Jane Breen**, Ontario Tech University, and **Stephen Kirkland**, University of Manitoba.

*Innovative and Effective Ways to Teach Linear Algebra* (Code: ILASSS6A), **David M. Strong**, Pepperdine University, and **Sepideh Stewart**, University of Oklahoma.

*Linear algebra, matrix theory, and its applications* (Code: ILASSS3A), **Stephan Ramon Garcia**, Pomona College.

*Sign-pattern Matrices and Their Applications* (Code: ILASSS4A), **Bryan L. Shader**, University of Wyoming, and **Minerva Catral**, Xavier University.

*Spectral and combinatorial problems for nonnegative matrices and their generalizations* (Code: ILASSS5A), **Pietro Paparella**, University of Washington Bothell, and **Michael J. Tsatsomeros**, Washington State University.

### National Association of Mathematicians Special Sessions

*NAM-SIAM-AMS Special Session on Quantitative Justice* (Code: NAMSS1A), **Ron Buckmire**, Occidental College, **Omayra Ortega**, Sonoma State University, and **Robin Wilson**, Loyola Marymount University (NAM-SIAM-AMS).

### The Simons Laufer Mathematical Sciences Institute (SLMath), formerly MSRI Special Sessions

*African Diaspora Joint Mathematics Working Groups (ADJOINT)* (Code: SLMSS1A), **Caleb Ashley**, Boston College, and **Anisah Nabilah Nu'Man**, Spelman College.

*Summer Research in Mathematics (SRiM): Recent Trends in Nonlinear Boundary Value Problems* (Code: SLMSS3A), **Maya Chhetri**, UNC Greensboro, **Elliott Zachary Hollifield**, University of North Carolina at Pembroke, and **Nsoki Mavinga**, Swarthmore College.

*The MSRI Undergraduate Program (MSRI-UP)* (Code: SLMSS2A), **Maria Mercedes Franco**, Queensborough Community College-CUNY.

### National Science Foundation Special Sessions

*NSF Special Session Exploring Funding Opportunities in the Division of Mathematical Sciences* (Code: NSFSS1A), **Elizabeth Wilmer**, NSF, and **Junping Wang**, National Science Foundation.

*NSF Special Session on Outcomes and Innovations from NSF Undergraduate Education Programs in the Mathematical Sciences* (Code: NSFED), **Michael Ferrara**, National Science Foundation.

### Pro Mathematica Arte Special Sessions

*BSM Special Session: Mathematical Research in Budapest for Students and Faculty* (Code: PMASS1A), **Kristina Cole Garrett**, St. Olaf College.

### Society for Industrial and Applied Mathematics Minisymposia

*SIAM Minisymposium on Computational Mathematics and the Power Grid* (Code: SIAM5A), **Todd Munson**, Argonne National Laboratory.

*SIAM Minisymposium on Current Advances in Modeling and Simulation to Uncover the Complexity of Disease Dynamics* (Code: SIAM3A), **Naveen K. Vaidya**, San Diego State University, and **Elissa Schwartz**, Washington State University.

*SIAM Minisymposium on Mathematical Methods in Computer Vision and Image Analysis* (Code: SIAM6A), **Andreas Mang**, University of Houston.

*SIAM Minisymposium on Mathematical Modeling of Complex Materials Systems* (Code: SIAM2A), **Maria G Emelianenko**, George Mason University.

SIAM Minisymposium on Mathematics of Bacterial Viruses: From Virus Discovery to Mathematical Principles (Code: SIAM1A), **Javier Arsuaga**, University of California, Davis, **Carme Calderer**, University of Minnesota, and **Ami Bhatt**, Stanford University.

SIAM Minisymposium on Recent Developments in the Analysis and Control of Partial Differential Equations Arising in Fluid and Fluid-Structure Interactive Dynamics (Code: SIAM7A), **George Avalos**, University of Nebraska-Lincoln, and **Pelin Guven Geredeli**, Iowa State University.

SIAM Minisymposium on Scientific Machine Learning to Advance Modeling and Decision Support (Code: SIAM4A), **Erin Acquesta**, Sandia National Laboratories, **Timo Bremer**, Lawrence Livermore National Laboratories, and **Joseph Hart**, Sandia National Laboratories.

SIAM ED Session on Artificial Intelligence and its Uses in Mathematical Education, Research, and Automation in the Industry (Code: SIAM8A), **Kathleen Kavanagh**, Clarkson University, **Alvaro Ortiz Lugo**, Georgia Gwinnett College, and **Sergio Molina**, University of Cincinnati.

NAM-SIAM-AMS Special Session on Quantitative Justice (Code: NAMSS1A), **Ron Buckmire**, Occidental College, **Omayra Ortega**, Sonoma State University, and **Robin Wilson**, Loyola Marymount University (NAM-SIAM-AMS).

### SPECTRA Special Sessions

Research by LGBTQ+ Mathematicians (Code: SPECTSS1A), **Devavrat Dabke**, Princeton University, **Joseph Nakao**, Swarthmore College, and **Michael A. Hill**, UCLA.

## Contributed Paper Sessions of the JMM

### AMS Contributed Paper Sessions

There will be sessions of ten-minute contributed talks. Although an individual may present only one contributed paper at a meeting, any combination of joint authorship may be accepted, provided no individual speaks more than once on the contributed paper program. Contributed papers will be grouped together by related subject classifications into sessions.

### ASL Contributed Paper Sessions

ASL Contributed Paper Session (Code: ASLCP1A), **David Reed Solomon**, University of Connecticut.

### COMAP Contributed Paper Sessions

COMAP Contributed Paper Session: Integrating Modeling into Established Courses (Code: COMAPCP1A), **Kayla Blyman**, Saint Martin's University.

### NAM Contributed Paper Sessions

NAM Haynes-Granville-Browne Session of Presentations by Recent Doctoral Recipients (Code: NAMCPA), **Aris Winger**, Georgia Gwinnett College, **Torina D. Lewis**, American Mathematical Society, and **Omayra Ortega**, Sonoma State University.

### PME Contributed Paper Sessions

PME Contributed Session on Research by Undergraduates (Code: PMECP1), **Thomas Wakefield**, Youngstown State University, and **Jennifer Beineke**, Western New England University.

### TPSE Contributed Paper Sessions

TPSE Contributed Paper Session on Using Institutional and National Data Sources to Recruit, Retain and Support a Diverse Population of Mathematics Students (Code: TPSECP1A), **Rick Cleary**, Babson College, and **Mitchel T. Keller**, University of Wisconsin-Madison.

### Submission of Abstracts for JMM Sessions

Authors must submit abstracts of talks through the JMM abstract submission site.<sup>1</sup> Simply follow the step-by-step instructions through to completion, until you receive confirmation of your successful submission. No submission is complete until you receive this confirmation. The deadline for all submissions is **September 12, 2023**. Late papers cannot be accommodated. Please email [meet@ams.org](mailto:meet@ams.org) if you have questions.

<sup>1</sup><https://meetings.ams.org/math/jmm2024/cfp.cgi>

## Programs of JMM Partners

Please see complete descriptions of these sessions on the JMM website.

### American Mathematical Society

#### AMS Poster Session

*AMS-PME Student Poster Session*, organized by **Chad Awtrey**, Samford University, and **Frank Patane**, Samford University; Friday, 12–1:30 p.m. and 3:30–5:00 p.m. These sessions provide a venue for undergraduate students to deliver poster presentations based on original research; presentations that are purely expository in nature are not appropriate for these sessions. First-year graduate students are eligible to present if their research was completed while they were still undergraduates. High school students are eligible to present if their research was conducted under the supervision of a faculty member at a post-secondary institution. Presenters need not be members of any particular mathematics or honorary society.

Participants should submit an abstract through the JMM abstract submission portal by **September 26**. Questions regarding this session should be directed to **Chad Awtrey**, [cawtre@samford.edu](mailto:cawtre@samford.edu) or **Frank Patane**, [fpatane@samford.edu](mailto:fpatane@samford.edu).

#### AMS Panels

Please see complete descriptions of these sessions on the JMM website.

*AMS Committee on Education Panel Discussion*, organized by **Terrence Blackman**, Medger Evans College, **Michael Dorff**, Brigham Young University, **William Yslas Velez**, University of Arizona, and **Erica Walker**, Ontario Institute for Studies in Education; Thursday, 1:00–2:30 p.m. The moderator and panelists are to be announced. This panel is sponsored by the AMS Committee on Education.

*AMS Committee on the Profession Panel Discussion: Building a Successful Research Career in Mathematics*, organized by **Edray Herber Goins**, Pomona College, and **Pamela E. Harris**, University of Wisconsin at Milwaukee; Wednesday, 1:00–2:30 p.m. The moderator for this panel is **Edray Herber Goins**, Pomona College. Panelists are **Priyam Patel**, University of Utah, **Abbey Bourdon**, Wake Forest University, and **Henok Mawi**, Howard University. This panel is sponsored by the AMS Committee on the Profession.

*AMS Committee on Science Policy Panel Discussion*, organized by **Gunnar Carlsson**, Stanford University, **Duane Cooper**, Morehouse College, **Carla Cotwright-Williams**, US Department of Defense, **Fern Hunt**, National Institute of Standards and Technology, and **Jerry McNerney**, US Congressman, retired; Friday, 2:30–4:00 p.m. The moderator and panelists are to be announced. This panel is sponsored by the Committee on Science Policy.

#### AMS Workshops

Please see complete descriptions of these sessions on the JMM website.

*2024 AMS Workshop for Department Chairs and Leaders*. This annual one-day workshop for department chairs, leaders, and prospective leaders will be held on Tuesday, January 2, 2024, 9:00 a.m.–3:00 p.m., the day before the JMM begins.

The workshop will provide opportunities to share experiences with issues and trends that have an impact on math department chairs, math departments, and colleges and universities. Workshop topics could include, but are not limited to, resources, handling stress (students, staff, and faculty), curriculum, and instructional delivery. The organizers expect the workshop to help build a community of leaders who can continue to exchange ideas and offer each other support and advice.

Registration for this workshop will include breakfast and lunch. More details about registration and associated fees will be available on the workshop web page.<sup>2</sup> Please send questions to [chairsworkshop@ams.org](mailto:chairsworkshop@ams.org).

#### Other AMS Events

Please see complete descriptions of these sessions on the JMM website.

*Council*, Time and location to be announced.

*Business Meeting*, Time and location to be announced.

*MAA-SIAM-AMS Hrabowski-Gates-Tapia-McBay Session*, organized jointly by the Mathematical Association of America, Society for Industrial and Applied Mathematics, and the American Mathematical Society; Friday, 9:00–10:30 a.m. This year the session will consist of a lecture from 9:00–9:50 a.m. given by **Kamuela Yong**, University of Hawaii–West Oahu, *Title to be announced*, and a short panel discussion, *Title to be announced*, from 9:50–10:30 a.m. Panelists to be announced.

*Career Fair*, Thursday, 8:30–10:30 a.m. The AMS Career Fair is an opportunity for mathematically trained job seekers at various phases of education and experience—undergraduates, graduate students, postdocs, and others—to interact in

<sup>2</sup><https://www.ams.org/chairsworkshop>

person with employers in Business, Entrepreneurship, Government, Industry, and Nonprofit (BEGIN). This event is job seekers' chance to discover how their mathematical training makes them strong candidates for BEGIN jobs.

Recruiters can represent their companies or organizations and connect with potential employees. For **US\$180/\$0 AMS Corporate Member**, recruiters will be provided with a table for print materials, where they will also be welcome to engage personally with interested BEGIN job seekers.

Information is available here: <https://www.ams.org/career-fair>.

*Graduate School Fair*, Friday, 8:30–10:30 a.m. This event is undergraduate and master's students' chance for one-stop shopping in the graduate school market. January is a great time for college juniors to learn more about applying to graduate school, and seniors may still be able to refine their search. Meet representatives from mathematical sciences graduate programs from universities all over the United States. At JMM 2023, over 300 students engaged with representatives from more than 60 graduate programs.

Colleges and universities that offer graduate programs in the mathematical sciences are invited to exhibit at this event. For **US\$200/\$140 AMS Institutional Member**, program representatives will be provided with a table on which to display posters and printed materials, and where they will be able to speak directly with interested students.

Information is available here: <https://www.ams.org/gradfair>.

*Current Events Bulletin*, organized by **David Eisenbud**, Mathematical Sciences Research Institute; Friday, 2:00–6:00 p.m.

### AMS Travel Grants

**PUI Faculty Travel Grants.** The AMS is excited to offer an opportunity for faculty at primarily undergraduate institutions (PUI) to apply for funding to support attendance at the JMM. Grant funds can be used to offset expenses for travel, registration, lodging, and meals. One advantage of this funding is that it can be used to support participation in the Chairs' Workshop. Additional information can be found here: <https://www.ams.org/pui-fac-tg>.

**Graduate Student Travel Grants.** With funding from the AMS Next Generation Fund, the AMS will be accepting applications for partial travel support for graduate students attending the JMM in San Francisco, CA, January 3–6, 2024. While the AMS encourages students' institutions to match the award, matching is not required.

Applications will be accepted **ONLY** from doctoral students in mathematics who are in their last year of study; applicants must not have received their doctoral degrees before the travel takes place but must expect to receive their degrees within twelve months of the JMM. No student shall receive a grant more than once. Information can be found here: <https://www.ams.org/emp-student-JMM>.

**Undergraduate Student Travel Grants.** With support from the National Science Foundation and an anonymous donor, the AMS is offering travel support to a limited number of undergraduate students who are presenting in the following JMM sessions: Pi Mu Epsilon Undergraduate Poster Session, AMS-SIAM Special Session on Research in Mathematics by Undergraduates and Students in Post-baccalaureate Programs, and Other Special or Contributed Sessions at the JMM in San Francisco, CA, January 3–6, 2024.

Awards will help undergraduate students defray travel expenses associated with JMM participation. Applications are especially encouraged from students from groups that have been underrepresented in the mathematical sciences and from those with financial need. Additional information can be found here: <https://www.ams.org/undergrad-tg>.

*Please also see the section on Child Care Grants.*

### American Association for the Advancement of Science

*The AAAS-AMS Invited Address* will be given by **Peter Winkler**, Dartmouth College, *Permutons*; Friday, 4:45 p.m.

### American Institute for Mathematics

*Please see complete descriptions of these sessions on the JMM website.*

AIM has several AIM Special Sessions. A full list of these sessions can be found under the heading AIM Special Sessions above; a joint AMS-AIM Special Session is included.

AIM will host a reception; please see the listing in the Social Events section of the announcement.

### American Statistical Association

*The ASA Invited Address* will be given by **Kathy Ensor**, Rice University, *Celebrating Statistical Foundations Driving 21st-Century Innovation*.

ASA will host a reception; please see the listing in the Social Events section of the announcement.

### Association for Symbolic Logic

*Please see complete descriptions of these sessions on the JMM website.*



*Association for Symbolic Logic Tutorial, Parts I & II*, organized by **Solomon Reed**, ASL; Wednesday, 9:00–10:00 a.m. and 1:00–2:00 p.m. The speaker for these tutorial sessions is to be announced.

The ASL Invited Address program will take place on Friday and Saturday. The program will include invited addresses by **Åsa Hirvonen**, University of Helsinki, **Dima Sinapova**, Rutgers University, **François Loeser**, Institute Universitaire de France, Sorbonne, **Mariana Vicaria**, University of California, Los Angeles, **Matthew Harrison-Trainor**, UIC, **Sławomir Solecki**, Cornell University, and **Toby Meadows**, University of California Irvine.

ASL will also host an ASL Contributed Paper Session on Friday afternoon and two ASL Special Sessions on Thursday; more information on these sessions can be found under the heading Association for Symbolic Logic Special Sessions above.

### Association for Women in Mathematics

Please see complete descriptions of these sessions on the JMM website.

*AWM Panel: Celebrating Academic Pivots in Mathematics*; Friday, 1:00–2:30 p.m. Panel moderator and panelists are to be announced.

*Business Meeting*, organized by **Darla Kremer**, Association for Women in Mathematics; Time and location to be announced.

*The AWM-AMS Noether Lecture* will be delivered on Thursday at 9:45 a.m. by **Anne Schilling**, University of California, Davis, *The Ubiquity of Crystal Bases*.

*AWM Workshop Poster Presentations and Reception*, Friday, 4:00–5:30 p.m. AWM will conduct its workshop poster presentations by women graduate students. This session is open to all JMM attendees. AWM seeks volunteers to serve as mentors for workshop participants. If you are interested, please contact the AWM office at [awm@awm-math.org](mailto:awm@awm-math.org).

*Association for Women in Mathematics Reception and Award Presentation*, Friday, 5:00–6:30 p.m. Please see the listing in the Social Events section of the announcement.

*AWM Workshop: Women in Operator Theory*, organized by **Catherine A. Beneteau**, University of South Florida, and **Asuman Aksoy**, Claremont McKenna College; Saturday, 8:00 a.m.–12:00 p.m. and 1:00–5:00 p.m. A Poster Session for graduate students and recent PhDs will be held in conjunction with the workshop on Friday. Updated information about the workshop is available at [www.awm-math.org](http://www.awm-math.org).

AWM also has a number of AWM Special Sessions. A full list of these sessions can be found under the heading AWM Special Sessions above.

### Consortium for Mathematics and its Applications

Please see complete descriptions of these sessions on the JMM website.

*COMAP Workshop on Modeling for Educators: Integrate Modeling into Your Classroom*, organized by **Michelle Isenhour**, Consortium for Mathematics and Its Applications, **Victor Piercey**, Ferris State University, and **Daniel Teague**, North Carolina School of Science and Mathematics; Saturday, 1:00 p.m.–5:00 p.m.

*COMAP Contributed Paper Session: Integrating Modeling into Established Courses I and II*, organized by **Kayla Blyman**, Saint Martin's University, **Keith Erickson**, Georgia Gwinnett College, **Marie Meyer**, Lewis University, and **Katherine Pinzon**, Georgia Gwinnett College; Thursday, 8:00 a.m.–12:00 p.m. and 1:00–5:00 p.m.

*COMAP Panel on Math Modeling Contests: Trends, Topics, and Tips*, organized by **Kayla Blyman**, Saint Martin's University; Friday, 3:00–4:30 p.m.

COMAP also has a COMAP Special Session. More information on this session can be found under the heading Consortium for Mathematics and its Applications Special Sessions.

### International Linear Algebra Society

The *ILAS Invited Address* will be given by **Stephan Ramon Garcia**, Pomona College, *Title to be announced*.

ILAS also has a number of ILAS Special Sessions. A full list of these sessions can be found under the heading ILAS Special Sessions above.

### Julia Robinson Mathematics Festival

Please see complete descriptions of these sessions on the JMM website.

*Julia Robinson Math Festival*, organized by **Daniel Kline**, Julia Robinson Mathematics Festival; Saturday, 9:00 a.m.–12:00 p.m.

### The Simons Laufer Mathematical Sciences Institute (SLMath), formerly MSRI

Please see complete descriptions of these sessions on the JMM website.

NAM/MSRI/SLMath Film Presentation: World Premiere of George Csicsery's film "Journeys of Black Mathematicians: Part 1" and Panel Discussion, organized by **Omayra Ortega**, Sonoma State University, **Johnny Houston**, Elizabeth City State University, **Jenn Murawski**, MSRI/SLMath, and **George Csicsery**, Zala Films; Saturday, 11:30 a.m.–1:00 p.m. Moderator and panelists to be announced.

MSRI/SLMath has a number of MSRI/SLMath Special Sessions. A full list of these sessions can be found under the heading The Simons Laufer Mathematical Sciences Institute (SLMath), formerly MSRI Special Sessions.

MSRI/SLMath will host a reception; please see the listing in the Social Events section of the announcement.

## National Association of Mathematicians

Please see complete descriptions of these sessions on the JMM website.

The Haynes-Granville-Browne Session of Presentations by Recent Doctoral Recipients in the Mathematical Sciences organized by **Aris Winger**, Georgia Gwinnett College, **Torina Lewis**, American Mathematical Society, and **Omayra Ortega**, Sonoma State University; Thursday, 8:00 a.m.–12:00 p.m.

The Cox-Talbot Address, **Ranthonny A.C. Edmonds**, Duke University, *Hidden Figures Revealed*, organized by **Aris Winger**, Georgia Gwinnett College, **Torina Lewis**, American Mathematical Society, and **Omayra Ortega**, Sonoma State University; Friday, 7:45–8:45 p.m., after the banquet. See details about the banquet on Friday in the Social Events section.

NAM/MSRI/SLMath Film Presentation: World Premiere of George Csicsery's film "Journeys of Black Mathematicians: Part 1" and Panel Discussion, organized by **Omayra Ortega**, Sonoma State University, **Johnny Houston**, Elizabeth City State University, **Jenn Murawski**, MSRI/SLMath, and **George Csicsery**, Zala Films; Saturday, 11:30 a.m.–1:00 p.m. Moderator and panelists to be announced.

The NAM Business Meeting will take place on Saturday, 10:00–11:00 a.m.

NAM Claytor-Woodard Lecture, **Shelly M. Jones**, Central Connecticut State University, *Title to be announced*, organized by **Aris Winger**, Georgia Gwinnett College, **Torina Lewis**, American Mathematical Society, and **Omayra Ortega**, Sonoma State University; Thursday, 2:15–3:20 p.m.

## Pi Mu Epsilon

Please see complete descriptions of these sessions on the JMM website.

Pi Mu Epsilon Contributed Sessions on Research by Undergraduates, organized by **Thomas Wakefield**, Youngstown State University, and **Jennifer Beineke**, Western New England University; Thursday, 1:00–5:00 p.m. and Friday, 8:00 a.m.–12:00 p.m.

The PME J. Sutherland Frame Lecture will be delivered on Friday at 2:15 p.m. by **Trachette Jackson**, University of Michigan, *Mobilizing Mathematics for the Fight Against Cancer*.

AMS-PME Student Poster Session, organized by **Chad Awtrey**, Samford University, and **Frank Patane**, Samford University; Friday, 12:00–1:30 p.m. and 3:30–5:00 p.m. These sessions feature research done by undergraduate students. First-year graduate students are eligible to present if their research was completed while they were still undergraduates. Research by high school students can be accepted if the research was conducted under the supervision of a faculty member at a post-secondary institution.

Appropriate content for a poster includes, but is not limited to, a new result, a new proof of a known result, a new mathematical model, an innovative solution to a Putnam problem, or a method of solution to an applied problem. Purely expository material is not appropriate for this session.

Participants should submit an abstract through the JMM abstract submission portal by **September 26**. Questions regarding this session should be directed to **Chad Awtrey**, [cawtre@samford.edu](mailto:cawtre@samford.edu) or **Frank Patane**, [fpatane@samford.edu](mailto:fpatane@samford.edu).

PME Panel: *What Every Student Should Know about the JMM*, organized by **Jennifer Beineke**, Western New England University, **Stephanie Edwards**, Hope College, and **Thomas Wakefield**, Youngstown State University; Wednesday, 1:00–2:30 p.m. and Thursday, 10:30 a.m.–12:00 p.m. This panel is sponsored by Pi Mu Epsilon.

## Pro Mathematica Arte

Please see complete descriptions of these sessions on the JMM website.

The PMA program includes a Budapest Semesters in Math Special Session. Information on this session can be found under the heading Pro Mathematica Arte Special Sessions above.

PMA will also host a reception for BSM Alumni. Please see the listing in the Social Events section of the announcement.

## Society for Industrial and Applied Mathematics

Please see complete descriptions of these sessions on the JMM website.

SIAM Minisymposia for JMM 2024 will take place Wednesday–Saturday. There are 8 Minisymposia. A full list of these sessions can be found under the heading Society for Industrial and Applied Mathematics Minisymposia above.

*The SIAM Invited Address* will be delivered by **Maríel Vazquez**, University of California, Davis, *Title to be announced*; Thursday, 11:10 a.m.

*SIAM Panel on Business-Industry-Government Careers for Mathematicians*, organized by **Nessy Tania**, Pfizer; Thursday, 8:30–10:00 a.m. Panelists to be announced.

*MAA-SIAM-AMS Hrabowski-Gates-Tapia-McBay Session*, organized jointly by the Mathematical Association of America, Society for Industrial and Applied Mathematics, and the American Mathematical Society; Friday, 9:00–10:30 a.m. This year the session will consist of a lecture from 9:00–9:50 a.m. given by **Kamuella E. Yong**, University of Hawaii West Oahu, *Title to be announced*, and a short panel discussion, *Title to be announced*, from 9:50–10:30 a.m. Panelists to be announced.

*MAA-AMS-SIAM Gerald and Judith Porter Public Lecture* will be given by **Maria Chudnovsky**, Princeton University, *Title to be announced*; Saturday, 3:30 p.m.

SIAM will also host a reception; please see the listing in the Social Events section of the announcement.

### Association for LGBTQ+ Mathematicians (Spectra)

Please see complete descriptions of these sessions on the JMM website.

*Spectra Lavender Lecture*, Speaker and title to be announced; Thursday, 8:30 a.m. The Spectra Lavender Lecture honors LGBTQ+ mathematicians who have made significant contributions to the mathematical sciences, mathematical education, or the mathematical community at large.

*Spectra Business Meeting*, organized by **Devavrat Dabke**, Princeton University, Time and location to be announced

*Spectra Workshop: Creating an Inclusive Undergraduate Mathematics Curriculum*, organized by **Devavrat Dabke**, Princeton University; Thursday, 1:00–5:00 p.m.

Spectra will also host a reception; please see the listing in the Social Events section of the announcement.

Spectra also has a Spectra Special Session on the program; a listing of this session can be found under the heading Spectra Special Sessions.

### Transforming Post-Secondary Education in Mathematics

Please see complete descriptions of these sessions on the JMM website.

*TPSE Invited Address* will be delivered on Friday at 11:00 a.m. by **Sylvester James Gates, Jr**, Clark Leadership Chair in Science, University of Maryland; past president of American Physical Society, National Medal of Science, *What Challenges Does Data Science Present to Mathematics Education?*

*TPSE Panel on Grading for Active Learning & Department Change*, organized by **Katherine Stevenson**, CSU Northridge, **Rachel Weir**, Allegheny College, **Scott Wolpert**, University of Maryland and TPSE Math, and **Stan Yoshinobu**, University of Toronto; Thursday, 1:00–2:30 p.m.

*TPSE Panel on Developing Innovative Upper Division Pathways in Mathematics: Strategies for Enrollment and Inclusion*, organized by **Oscar Vega**, California State University, Fresno, and **Padmanabhan Seshaiyer**, George Mason University; Thursday, 3:00–4:30 p.m.

## JMM Sessions and Events

### Professional Enhancement Programs (PEP)

Professional Enhancement Programs (PEP) are open only to persons who register for the Joint Meetings and pay the Joint Meetings registration fee in addition to the appropriate PEP fee. The AMS reserves the right to cancel any PEP that is undersubscribed. Participants should read the descriptions of each PEP thoroughly as some require participants to bring their own laptops and special software; laptops will not be provided in any PEP. The enrollment in each PEP is limited to 45; the cost is US\$125 per program for the member rate (AIM, AMS, AWM, ASA, NAM, or SIAM) and US\$175 for the nonmember rate.

Please see complete descriptions of these JMM Professional Enhancement Programs (PEP) on the JMM website.

**Professional Enhancement Program (PEP) 1: Visualizing Projective Geometry Through Photographs and Perspective Drawings**, presented by **Annalisa Crannell**, Franklin & Marshall College, and **Fumiko Futamura**, Southwestern University; Part A, Wednesday, 1:00–3:00 p.m., and Part B, Thursday, 1:00–3:00 p.m.

**Professional Enhancement Program (PEP) 2:** *GitHub for Mathematicians*, presented by **Steven Clontz**, University of South Alabama; Part A, Wednesday, 1:00–3:00 p.m., and Part B, Thursday, 1:00–3:00 p.m.

**Professional Enhancement Program (PEP) 3:** *Changing Math Department Culture: Embracing Servingness*, presented by **Ben Ford**, Sonoma State University, **Rochelle Gutiérrez**, University of Illinois, **Brigitte Lahme**, Sonoma State University, **Luis Leyva**, Vanderbilt-Peabody College, **Omayra Ortega**, Sonoma State University, and **Aris Winger**, Georgia Gwinnett College; Part A, Friday, 9:00–11:00 a.m., and Part B, Saturday, 1:00–3:00 p.m.

**Professional Enhancement Program (PEP) 4:** *Becoming a Math JEDI: Working for Justice, Equity, Diversity, and Inclusion*, presented by **Michael Dorff**, TPSE Math, Brigham Young University, **Abbe Herzig**, TPSE Math, and **Aris Winger**, Georgia Gwinnett College; Part A, Friday, 1:00–3:00 p.m., and Part B, Saturday, 9:00–11:00 a.m.

**Professional Enhancement Program (PEP) 5:** *Development of Mathematics Programs for Workforce Preparation*, presented by **Rick Cleary**, Babson College, and **Chris Malone**, Winona State University; Part A, Thursday, 1:00–3:00 p.m., and Part B, Friday, 1:00–3:00 p.m.

**Professional Enhancement Program (PEP) 6:** *Skills and Tools for Communicating your Research to the Public, Policymakers, and Future Funders*, presented by **Sadie Witkowski**, Institute for Mathematical and Statistical Innovation, University of Chicago, and **Sam Hansen**, Acmescience/University of Michigan, Ann Arbor; Part A, Wednesday, 9:00–11:00 a.m., and Part B, Thursday, 9:00–11:00 a.m.

**Professional Enhancement Program (PEP) 7:** *Effective Technical Advocacy: How to Talk About Mathematics so Policymakers will Hear you*, presented by **Audrey Malagon**, Virginia Wesleyan University, and **Stephanie Singer**, Hatfield School of Government, Portland State University and Campaign Scientific; Part A, Friday, 9:00–11:00 a.m., and Part B, Saturday, 9:00–11:00 a.m.

**Professional Enhancement Program (PEP) 8:** *Shaping Thoughtful Conversations on the Past and Future of Data*, presented by **Jemma Lorenat**, Pitzer College, and **Deborah Kent**, University of St. Andrews; Part A, Wednesday, 9:00–11:00 a.m., and Part B, Thursday, 9:00–11:00 a.m.

**Professional Enhancement Program (PEP) 9:** *Developing Learning Activities for Multivariable Calculus using CalcPlot3D and 3D-Printed Surfaces*, presented by **Paul Seeburger**, Monroe Community College, **Shelby Stanhope**, Air Force Academy, and **Stepan Paul**, North Carolina State University; Part A, Friday, 9:00–11:00 a.m., and Part B, Saturday, 9:00–11:00 a.m.

## JMM Panels

Please see complete descriptions of these sessions on the JMM website.

*JMM Panel: Cal-Bridge: Building Bridges and Diversifying Mathematics*, organized by **Suzanne Sindi**, University of California, Merced; Saturday, 2:00–3:30 p.m.

*JMM Panel: Regional Math Alliances: Activities and Formation of Regional Groups to Support the Goals of the National Math Alliance*, organized by **Teresa Martines**, University of Texas, Austin; Friday, 8:30–10:00 a.m.

*JMM Panel: The Future of Graduate Mathematics Textbooks*, organized by **Ravi Vakil**, Stanford University; Thursday, 10:30 a.m.–12:00 p.m.

*JMM Panel: Decolonizing Mathematics*, organized by **Tarik Aougab**, Haverford College; Wednesday, 3:00–4:30 p.m.

## JMM Workshops

Please see complete descriptions of these sessions on the JMM website.

*JMM Workshop on Leveraging Research-Based Instruction in Introductory Proofs Courses*, organized by **Rachel Arnold**, Virginia Tech; Friday, 1:00–2:30 p.m.

*JMM Workshop on Teaching Student-Centered Mathematics: Active Learning & the Learning Assistant Model*, organized by **Katherine Johnson**, Florida Gulf Coast University; Wednesday, 3:00–4:30 p.m.

*JMM Workshop: Building Conceptual Understanding of Multivariable Calculus using 3D Visualization in CalcPlot3D and 3D-Printed Surfaces*, organized by **Shelby Stanhope**, US Air Force Academy, **Paul Seeburger**, Monroe Community College, and **Stepan Paul**, North Carolina State University; Wednesday, 10:30 a.m.–12:00 p.m.

## Programs of Other Organizations

This section includes scientific sessions. Several organizations or special groups are having receptions or other social events. Please see the Social Events section of this announcement for those details.

Please see complete descriptions of these sessions on the JMM website.



## National Science Foundation (NSF)

The NSF will be represented in several sessions and events taking place at the 2024 JMM.

*NSF Special Session on Outcomes and Innovations from NSF Undergraduate Education Programs in the Mathematical Sciences*, organized by **Michael Ferrara**, Division of Undergraduate Education, National Science Foundation.

*NSF Special Session: Exploring Funding Opportunities in the Division of Mathematical Sciences*, organized by **Elizabeth Wilmer** and **Junping Wang**, Division of Mathematical Sciences, National Science Foundation. This interactive session will provide information on a range of DMS programs and offer advice on submitting effective proposals. DMS program officers will be available to answer questions.

## MAA Project NExT

*MAA Project NExT Workshop*, Details to be announced.

*MAA Project NExT Lecture on Teaching*, Details to be announced.

*MAA Project NExT Reception*, Details to be announced.

## Special Interest Groups of the MAA (SIGMAA)

Please see complete descriptions of these sessions on the JMM website.

### SIGMAA on the Philosophy of Mathematics

*SIGMAA on the Philosophy of Mathematics Guest Lecture*, Title to be announced will be delivered on Friday at 5:30 p.m. by **Arezoo Islami**, San Francisco State University, organized by **Bonnie Gold**, Monmouth University, and **Kevin Iga**, Pepperdine University.

## Sessions for Students

Please see complete descriptions of these sessions on the JMM website.

*PME Panel: What Every Student Should Know about the JMM*, organized by **Jennifer Beineke**, Western New England University, **Stephanie Edwards**, Hope College, and **Tom Wakefield**, Youngstown State University; Wednesday, 1:00–2:30 p.m. and Thursday, 10:30 a.m.–12:00 p.m. This panel is sponsored by Pi Mu Epsilon.

*Grad School Fair*, Thursday, 3:30–5:00 p.m. Sponsored by the AMS.

*AMS-PME Student Poster Session*, organized by **Chad Awtrey**, Samford University, and **Frank Patane**, Samford University; Friday, 12:00–1:30 p.m. and 3:30–5:00 p.m. These sessions feature research done by undergraduate students. First-year graduate students are eligible to present if their research was completed while they were still undergraduates. Research by high school students can be accepted if the research was conducted under the supervision of a faculty member at a post-secondary institution.

Appropriate content for a poster includes, but is not limited to, a new result, a new proof of a known result, a new mathematical model, an innovative solution to a Putnam problem, or a method of solution to an applied problem. Purely expository material is not appropriate for this session.

Participants should submit an abstract through the JMM abstract submission portal by **September 26**. Questions regarding this session should be directed to **Chad Awtrey**, [cawtrey@samford.edu](mailto:cawtrey@samford.edu) or **Frank Patane**, [fpatane@samford.edu](mailto:fpatane@samford.edu).

*Career Fair*, Thursday, 8:30–10:30 a.m. The AMS Career Fair is an opportunity for mathematically trained job seekers at various phases of education and experience—undergraduates, graduate students, postdocs, and others—to interact in person with employers in Business, Entrepreneurship, Government, Industry, and Nonprofit (BEGIN). This event is job seekers' chance to discover how their mathematical training makes them strong candidates for BEGIN jobs.

## Other Events

The Mathematical Art Exhibit is organized by **Robert Fathauer**, Tessellations Company, and **Nathan Selikoff**, Digital Awakening Studios, and supported by the Bridges Organization. A popular feature at the Joint Mathematics Meetings, this exhibition provides a break in your day.

On display will be works in various media by artists who are inspired by mathematics and by mathematicians who use visual art to express their love of mathematics. Topology, fractals, polyhedra, and tiling are some of the ideas at play here. Do not miss this unique opportunity for a different perspective on mathematics. The exhibition will be located inside the Joint Mathematics Exhibits and open during exhibit hours.

Submissions will be accepted online from September 15 through October 15 at <http://gallery.bridgesmathart.org/>.

For questions about the Mathematical Art Exhibition, please contact Robert Fathauer at [tesselations@cox.net](mailto:tesselations@cox.net).

## Exhibits

The Joint Mathematics Meetings Exhibits include the country's leading scientific publishers, professional organizations, companies that offer mathematics-enrichment products and services, computer hardware and software companies, and the Mathematical Art Exhibit. It will be open to all registered participants on Wednesday (starting with the Grand Opening Reception) 6:00–8:30 p.m., on Thursday and Friday 9:00 a.m.–5:00 p.m., and Saturday 9:00 a.m.–2:00 p.m. See more details on the JMM website.

## Welcoming Environment Policy

The AMS strives to ensure that participants in the JMM, including exhibitors, enjoy a welcoming environment. In all its activities, the AMS seeks to foster an atmosphere that encourages free expression and exchange of ideas. The AMS supports equality of opportunity and treatment for all participants, regardless of gender, gender identity or expression, race, color, national or ethnic origin, religion or religious belief, age, marital status, sexual orientation, disabilities, veteran status, or immigration status.

Harassment is a form of misconduct that undermines the integrity of the AMS, their activities and missions.

The AMS will make every effort to maintain an environment that is free of harassment, even though it does not control the behavior of third parties. A commitment to a welcoming environment is expected of all participants of JMM activities, including mathematicians, students, guests, staff, contractors and exhibitors, and participants in scientific sessions and social events. To this end, the AMS will include a statement concerning its expectations towards maintaining a welcoming environment in registration materials for the JMM and has put in place a mechanism for reporting violations. Violations may be reported confidentially and anonymously to 855-282-5703 or at [www.mathsociety.ethicspoint.com](http://www.mathsociety.ethicspoint.com). The reporting mechanism ensures the respect of privacy while alerting the AMS to the situation.

Assistance may also be sought from any staff or volunteer member wearing a MathSafe badge. Learn more about the MathSafe program.<sup>3</sup> Violations may also be brought to the attention of the AMS Director of Meetings & Conferences at the registration desk during the meeting.

## MathSafe

MathSafe is a program by and for the mathematical community to support safe and welcoming meetings. MathSafe volunteers will be available at the JMM to listen to and guide participants who experience harassing behavior. Volunteers will be identifiable by their MathSafe buttons. See more details on the JMM website.

## How to Reserve Hotel Rooms

*See details about hotels and how to reserve a room on the JMM website.*

### Importance of Staying in an Official JMM Hotel

The importance of reserving a room at one of the official JMM hotels cannot be stressed enough. The AMS makes every effort to keep participants' expenses at the meeting as low as possible and a lot of work and effort goes into negotiating the most affordable hotel rates. When a participant registers for the meeting and reserves a room at an official JMM hotel, they are helping to support not only JMM 2024, but future JMMs as well.

### Reserving a Room

Participants are encouraged to register for the JMM in order to reserve hotel rooms at the JMM rates. If a participant needs to reserve a hotel room before they are registered for the JMM, they should contact the Mathematics Meetings Services Bureau (MMSB) at [mmsb@ams.org](mailto:mmsb@ams.org) or 1-800-321-4267 (ext. 4094 or ext. 4144) for further instructions.

Special rates have been negotiated exclusively for this meeting at the following hotels: San Francisco Marriott Marquis, Hilton San Francisco Union Square, Marriott Union Square, Hotel Spero San Francisco, Hotel Abri, Galleria Park Hotel, and The Barnes Hotel. See details on these hotels and more details on the JMM website.

<sup>3</sup><https://www.jointmathematicsm meetings.org/jmm-mathsafe>

Reservations must be made through the MMSB. The hotels will not be able to accept reservations directly until after **December 11, 2023**. At that time, rooms and rates will be based on availability. Any rooms reserved directly with the hotels after **December 11, 2023**, will be subject to higher rates.

A link to the JMM 2024 hotel reservation portal will be included in the confirmations of registrations sent by email. If a participant needs the link sent directly to them, they should send a request to [mmsb@ams.org](mailto:mmsb@ams.org). If any participant has difficulty reserving a hotel room, they should send email to [mmsb@ams.org](mailto:mmsb@ams.org) for assistance.

Any participant who needs to reserve a hotel room and does not have a credit card to guarantee it should send email to [mmsb@ams.org](mailto:mmsb@ams.org) for further instructions. If a check is being used to guarantee a room, the reservation and check must be received by the MMSB no later than **November 30, 2023**.

## Miscellaneous

Please see details about audio-visual equipment; email services; information distribution; local information; the JMM Broadcasting, Photographing, and Videotaping Policy; and telephone messages on the JMM website.

## Child Care Grants

Please see details about how to apply for child care grants on the JMM website.

## Registration Information

**Everyone is welcome at the JMM.** The American Mathematical Society (AMS) encourages all participants to register for the JMM. The importance of registering for the meeting cannot be overemphasized. Paying a registration fee helps to support a wide range of activities associated with planning, organizing, and executing the meetings.

All participants who wish to attend sessions are expected to register for the JMM and should be prepared to show their badges, if requested. Badges are required to enter the Exhibits and the AMS Employment Center. The Mathematics Meetings Service Bureau (MMSB) is the official registration and housing bureau for the meeting and will be available to assist you with your registration and housing arrangements.

### Cancellation Policy

100% of fees paid will be issued for cancellations of any registrations, including the PEP programs and banquet tickets, up to November 6, 2023. 50% refunds will be issued for any cancellations after that date up to December 27, 2023. No refunds can be issued for any cancellations after December 27, 2023. To cancel any registration, send an email to [mmsb@ams.org](mailto:mmsb@ams.org).

### Deadlines

Register by December 20, 2023, midnight EST to be eligible for discounted registration fees. After this date, registration will continue through the end of the meeting, but increased fees will apply. Updates and corrections received too late to be included in the program books will be included in the online program on the JMM website and in the JMM Mobile App.

Registration for PEPs: Online registration will turn off for PEPs after January 2. After that, registration for a PEP can only be done in person at a cashier station, through January 3. Registration will close after January 3 for the PEPs.

Registration for NAM Banquet: Online registration will turn off for the NAM banquet after December 27. After that, registration for the banquet can only be done in person at a cashier station, through January 3. Registration for the banquet will close after January 3.

Please see detailed information about registration fees and categories on the JMM 2024 website under Registration Fees.<sup>4</sup>

### Register for the Meeting

Registration can only be done online until Tuesday, January 2 when the registration desk opens at the meeting. At that date, you can either register online or in person. Paper registration forms are no longer available for online registration. To register for the meeting online, go to the online registration form and choose "Register." You will be asked to enter

<sup>4</sup>[https://www.jointmathematicsm meetings.org/2300\\_regfees](https://www.jointmathematicsm meetings.org/2300_regfees)

your email address and to sign in with your personal AMS web account. If you do not have an AMS web account, you will need to create one. After you have signed in, proceed with completing the registration form.

VISA, MasterCard, Discover, and American Express are the only methods of payment accepted for registrations and charges to credit cards will be made in US funds. Registration acknowledgments will be sent to the email addresses provided.

See details on how to register at [https://www.jointmathematicsm meetings.org/meetings/national/jmm2024/2300\\_reg](https://www.jointmathematicsm meetings.org/meetings/national/jmm2024/2300_reg).

## Special Registration Codes

To allow for easy tracking of registrations for participants that belong to certain groups and are attending the meeting solely to participate in those groups, a registration code will be sent to them to register. See details at [https://www.jointmathematicsm meetings.org/meetings/national/jmm2024/2300\\_reg](https://www.jointmathematicsm meetings.org/meetings/national/jmm2024/2300_reg).

## Joint Mathematics Meetings Registration Fees (all fees in US\$)

Registration Category (see definitions below)	By Dec. 20 (midnight EST)	After Dec. 20
Member of AIM, AMS, AWM, ASA, NAM, or SIAM.....	US\$411.....	US\$541
Nonmember.....	652.....	832
Graduate Student.....	92.....	108
Undergraduate Student.....	92.....	108
High School Student.....	92.....	108
Unemployed.....	92.....	108
Retired.....	92.....	108
Developing Country Participant.....	92.....	108
High School Teacher.....	92.....	108
Librarian.....	92.....	108
One-day Only—Member (AIM, AMS, AWM, ASA, NAM, or SIAM).....	N/A.....	294
One-day Only—Nonmember.....	N/A.....	458
Non-mathematician Guest.....	31.....	31
Commercial Exhibitor.....	0.....	0

JMM Professional Enhancement Program (PEP)—Per Program	By Dec. 20 (midnight EST)	After Dec. 20
Member of AIM, AMS, AWM, ASA, NAM, or SIAM.....	US\$125.....	US\$125
Nonmember.....	175.....	175

Grad School Fair / Career Fair	By Dec. 20 (midnight EST)	After Dec. 20
Grad School Fair Non-Institutional Members.....	US\$200.....	US\$200
Grad School Fair AMS Institutional Members.....	140.....	140
Graduate Program Table.....	fees apply per table for Grad School Fair	
Career Fair.....		180 per table

Free for AMS Corporate Members  
 Career Fair Table..... fees apply per table for Career Fair

Department Chairs Workshop	By Dec. 20 (midnight EST)	After Dec. 20
Members of AMS (in person).....	US\$220.....	US\$220
Nonmember (in person).....	330.....	330

## Registration Category Definitions

### Full-Time Students

Any person over 16 years of age who is currently working toward a degree or diploma is eligible for this category. Students are asked to determine whether their status can be described as a graduate (working toward a degree beyond the bachelor's), an undergraduate (working toward a bachelor's degree), or high school (working toward a high school diploma) and to mark the registration form accordingly. Any child 16 years and younger can attend the meeting free of charge but must be accompanied by an adult at all times.

### Retired

Any person who has been a member of the AMS for twenty years or more and who retired because of age or long-term disability from his or her latest position is eligible for this category.



### Librarian

Any librarian who is not a professional mathematician is eligible for this category.

### Unemployed

Any person who is currently unemployed, actively seeking employment, and is not a student is eligible for this category. This category is not intended to include any person who has voluntarily resigned or retired from his or her latest position.

### Developing Country Participant

Any person who is employed in a developing country, where salary levels are radically not commensurate with those in the US, is eligible for this category. See the most recent list of developing countries at <https://worldpopulationreview.com/country-rankings/developing-countries>.

### Non-mathematician Guest

Any family member, friend, or associate, who is not a mathematician, and who is accompanied by a participant in the meeting is eligible for this category. Guests will receive a badge and may attend any session, talk, or other event at the meeting.

### Commercial Exhibitor

Any person who is exhibiting in the Joint Mathematics Meetings Exhibits is eligible for this category. This does not include anyone participating in a poster session or the art exhibit. Any exhibitor who is a mathematician and is participating in the scientific program and/or wants to attend sessions, talks, etc. is expected to register separately for the meeting.

## Social Events

All events listed are open to all registered participants. It is strongly recommended that for any event requiring a ticket, tickets should be purchased through advance registration. Only a very limited number of tickets, if any, will be available for sale on site. If you must cancel your participation in a ticketed event, you may request a 50% refund by returning your tickets to the Mathematics Meetings Service Bureau (MMSB) by **December 30, 2023**. After that date, no refunds can be made. Special meals are available at banquets upon advance request, but this must be indicated on the Registration/Housing Form. *Please see complete descriptions of these events on the JMM website.*

*American Institute for Mathematics Math Circles Dessert and Games Night Reception*, Thursday, 8:00–9:30 p.m.

*American Statistical Association Reception*, Thursday, 6:00–7:00 p.m. An open reception—the opportunity to celebrate the contributions of statistics to science and society and to build community.

*AMS Journal Reviewer Appreciation Reception*, Thursday, 7:00–8:00 p.m.

*Association of Christians in the Mathematical Sciences (ACMS) Reception and Lecture*, Day and time to be announced.

*Association for Women in Mathematics Reception and Awards Presentation*, Friday, 5:00–6:30 p.m. The AWM Reception is open to all JMM participants and will begin at 5:00 p.m., during the poster presentations.

*Budapest Semesters in Mathematics Annual Alumni Reunion*, Thursday, 6:00–7:00 p.m. Budapest Semesters in Mathematics (BSM) Alumni Reunion Event. BSM alums are invited for light appetizers. The BSM North American Directors and staff will be hosting this event. BSM is the prestigious and essential study abroad program for undergraduates studying mathematics, established in 1985.

*Canada/USA Mathcamp Alumni and Friends Gathering*, Thursday, 6:00–7:30 p.m.

*Estimathon!*, organized by **Andrew Niedermaier**, Jane Street Capital; Time to be announced.

*Grand Opening Reception*, Wednesday, 6:00–8:30 p.m. The JMM officially opens with a brief ribbon-cutting ceremony (at 4:30 p.m.), followed by an Awards Ceremony. Participants will then enjoy festivities to further celebrate our vibrant mathematical community. At the reception, the mathematical art display, vendor, and exhibitor booths will all be available to you, along with hors d'oeuvres, food stations, beverages, and entertainment. ALL are welcome! FREE!

Meet up with friends or explore on your own, but be sure to take in all the fun, refreshments, and special offerings. Travel each aisle—many exhibitors are planning special offerings just for this evening!

*Inspiring Stories: How an Academic Rejection Led to Something Amazing*, organized by **Allison Henrich**, Seattle University, and **Aaron Wooten**, University of Portland; Friday, 3:00–4:30 p.m.

*Knitting Circle*, Thursday, 8:15–9:45 p.m. Bring a project (knitting/crochet/tatting/beading/etc.) and chat with other mathematical crafters!

*Mathematical Reviews Reception*, Friday, 6:00–7:00 p.m. All friends of Mathematical Reviews (MathSciNet®) are invited to join reviewers as well as editors and staff of Mathematical Reviews (past and present) for a reception in honor of all of the efforts that go into the creation and publication of the Mathematical Reviews database. This year we are also

celebrating the release of the brand new user interface for MathSciNet. We look forward to seeing old and new friends this year. Refreshments will be served.

*Mathematical Institutes Open House*, Day and time to be announced.

*Mathematically Bent Theater*, organized by **Colin Adams**, Williams College; Friday, 6:00–7:00 p.m. When you are trying to prove a theorem, does it help to bang your head against the wall? Why does the Skiponacci Quarterly only produce three issues per year? Did you mistakenly take my tote-bag at the Wisconsin reception at JMM 2023? These are just a few of the questions we will not answer in this presentation of four short humorous math pieces.

*Mathematical Variety Show*, organized by **Dan Margalit**, Georgia Institute of Technology; Friday, 8:00 p.m. at the Alcazar Theater. Ticket purchases can be made on the JMM registration page: \$25 student ticket/\$30 general admission.

*MEET and SHARE: A Mathematicians' Storytelling Event*, presented by The Coalition for the Amplification of Historically Excluded Mathematicians (The Coalition), Day and time to be announced.

*National Association of Mathematicians Banquet*, Friday, 6:00–9:00 p.m. A cash bar reception will be held at 6:00 p.m., and dinner will be served at 6:30 p.m. The Cox-Talbot Invited Address will be given after the dinner, 7:45–8:45 p.m. Tickets will be available for sale once registration is open for the JMM.

*Nevertheless She Persisted: The Daughters of Hypatia*, organized by **Karl Schaffer**, De Anza College. Day and time to be announced. Dedicated to the foremothers of mathematics as well as to their leading contemporaries, this exciting six-woman dance concert celebrates great mathematical women throughout the ages, telling their stories with thoughtful dances, dynamic storytelling, colorful projections, and more. The dancers recount intriguing stories from the women's lives and perform powerful dances inspired by their mathematical work.

*NSA WiMS Networking Event*, Day and time to be announced.

*Project NExT Reception*, Friday, 8:00–10:00 p.m.

*SLMath (MSRI) Reception for Current and Future Donors*, Friday, 6:00–7:30 p.m.

*Society for Industrial and Applied Mathematics (SIAM) Reception on Industrial Math Modeling*, Thursday, 7:00–9:00 p.m.

*Spectra Reception for LGBT Mathematicians*, Day and time to be announced.

*Undergraduate Student Reception*, Friday, 6:00–8:00 p.m. A community-building event open to all undergraduate students and their supporters. Join us for activities, games, food, and fun. Organized by AMS and Pi Mu Epsilon, with funding from an AMS anonymous donor.

*University of Michigan Alumni and Friends Reception*, Day and time to be announced. Please join us for the University of Michigan, Mathematics, Alumni and Friends Reception!

*Wrong Answers Only*, a science comedy game show; Wednesday, 8:45–9:45 p.m. Created by LabX.

*Yearly Gather: Collaborative Puzzle Time!*, Wednesday, 8:45–10:00 p.m., organized by **sarah-marie belcastro**, MathILy, **Corinne Yap**, Rutgers University, **Brian Freidin**, Auburn University, and **Jonah Ostroff**, University of Washington.

## Travel/Transportation

Please see details about travel and transportation options on the JMM website.