

HAPPENING VIRTUALLY: 2021 SIAM Annual Meeting (AN21)

Times Listed are Eastern Time (UTC-4)

Conference Program

Sunday, July 18	
10:30 AM - 11:15 AM	Student Orientation Click Here to Register
Monday, July 19	
9:45 AM - 11:45 AM Concurrent Sessions	MT Effective Communication for Nontechnical Audiences - SIAM Policy Fellowship Project MT1 Tutorials for Students: Accessible Introductions to Active Research Areas - Part I of II MS1 Advances in Algorithms for Electrical Impedance Tomography - Part I of II MS2 Advances in Integrable Systems and Inverse Scattering Transform - Part I of III MS3 AWM Workshop: Control and Optimization in Differential Equations - Part I of II MS4 Financial Risk Management MS5 Inverse Distance Weighting-Partition of Unity Methods and Applications MS6 Market Microstructure MS7 Mathematical Theories and Computational Algorithms for Novel Optical Materials - Part I of II MS8 Matroids and Antimatroids MS9 Models and Numerical Methods in Computational Geosciences - Part I of II MS10 Numerical Methods for Incompressible Fluid Systems - Part I of II MS11 Regularization Techniques for Infinite-Dimensional Optimization with Integralities MS12 Sampling and Analysis of Rare Events and Metastable Systems - Part I of II MS13 Systemic Risk MS14 Uncertainty Quantification Strategies for Data-Driven, Large-Scale Problems - Part I of II MS15 Undergrad Session - Part I of IV MS16 Wave Based Imaging in Complex Media - Part I of II CP1 Spectral Methods and Linear Algebra CP2 Partial Differential Equations
11:45 AM - 12:45 PM	IP1 Opening Remarks and Presentation: Scientific Uses of Automatic Differentiation Michael Brenner, <i>Harvard University and Google, U.S.</i>
12:45 PM - 1:30 PM	JP1 Joint Plenary Speaker with the SIAM Conference on Applied and Computational Discrete Algorithms

	Towards Scalable and Practical Real-Time Computational Epidemiology Madhav Marathe, <i>University of Virginia, U.S.</i>	
1:30 PM - 2:30 PM Concurrent Sessions	Networking break – Explore the Gather space Student Days: Student Chapter Meeting	
2:30 PM - 3:15 PM	IP2 Machine Learning for Multi-Scale Systems: From Turbulence to Climate Prediction Laure Zanna, <i>New York University, U.S.</i>	
3:15 PM - 4:00 PM	SP1 AWM-SIAM Sonia Kovalevsky Lecture From Linear Poroelasticity to Nonlinear Implicit Elastic and Related Models Vivette Girault, <i>Sorbonne Université, CNRS, France</i>	
4:00 PM - 4:15 PM	Networking break – Explore the Gather space	
4:15 PM - 6:15 PM Concurrent Sessions	MT2 Tutorials for Students: Accessible Introductions to Active Research Areas - Part II of II MS17 Advances in Algorithms for Electrical Impedance Tomography - Part II of II MS18 Advances in Integrable Systems and Inverse Scattering Transform - Part II of III MS19 Analyzing Real Time Series in Health and Biology MS20 Applications of Optimal Transport to Finance and Economics MS21 Computational Methods for Eigenvalue Problems: Theory and Applications - Part I of II MS22 Deep Learning for High-Dimensional Parametric PDEs - Part I of II MS23 Edge Computing and Applications MS24 Game-Theoretic Models in Finance MS25 High Performance One-Sided Communication Support on GPUs MS26 In Memoriam: Tom Coleman's Contributions to Applied Mathematics and Optimization MS27 Machine Learning in Finance MS28 Mathematical Theories and Computational Algorithms for Novel Optical Materials - Part II of II MS29 Mathematics and Numerical Simulation for Sea Ice Prediction - Part I of II MS30 Mean Field Game Models in Finance - Part I of II MS31 Modelling and Methods in Mathematical Biology MS32 Numerical Methods for Incompressible Fluid Systems - Part II of II MS33 Presentations by LGBTQ Mathematicians MS34 Uncertainty Quantification Strategies for Data-Driven, Large-Scale Problems - Part II of II MS35 Water Waves: Instabilities, Singularities and Solitons - Part I of II MS36 Wave Based Imaging in Complex Media - Part II of II MS37 Workshop Celebrating Diversity (WCD): Lessons from Mathematical Modeling of COVID-19 - Part I of IV CP3 Life Sciences and Medicine CP4 Partial Differential Equations CP5 Applied Mathematics CP6 Numerical Approximation and Estimation	
Tuesday, July 20		
9:45 AM - 11:45 AM Concurrent Sessions	PD1 Industry Panel: Industrial Secrets: Shedding Light on Opportunities for Mathematicians in BIG (Business-Industry-Government) Careers MS38 AWM Workshop: Control and Optimization in Differential Equations -	

	Part II of II	
	MS39 Deep Learning for High-Dimensional Parametric PDEs - Part II of II	
	MS40 Mathematics and Numerical Simulation for Sea Ice Prediction - Part II of II	
	MS41 Mean Field Game Models in Finance - Part II of II	
	MS42 Models and Numerical Methods in Computational Geosciences - Part II of II	
	MS43 Nonlinear Waves, Dynamics, and Singularities in Hydrodynamics and Physics - Part I of II	
	MS44 Sampling and Analysis of Rare Events and Metastable Systems - Part II of II	
11:45 AM - 12:00 PM	Networking break – Explore the Gather space	
12:00 PM - 12:45 PM	IP3 Wave Propagation and Correlation-Based Imaging in Random Media Josselin Garnier, <i>Ecole Polytechnique, France</i>	
12:45 PM - 1:30 PM	JP2 Joint Plenary Speaker with the SIAM Conference on Control and Its Applications Spiking Control Systems Rodolphe Sepulchre, <i>University of Cambridge, United Kingdom</i>	
1:30 PM - 2:30 PM	SP2 I. E. Block Community Lecture Can You Hear the Will of the People in the Vote? Assessing Fairness in Redistricting via Monte Carlo Sampling Jonathan C. Mattingly, <i>Duke University, U.S.</i>	
2:30 PM - 3:15 PM	IP4 Convergence of AI, Simulations and HPC Anima Anandkumar, <i>California Institute of Technology & NVIDIA, U.S.</i>	
3:15 PM - 4:15 PM	SP3 The John von Neumann Prize Lecture High Order Numerical Methods for Hyperbolic Equations Chi-Wang Shu, <i>Brown University, U.S.</i>	
4:15 PM - 4:30 PM	Networking break – Explore the Gather space	
4:30 PM - 6:30 PM Concurrent Sessions	PD2 Industry Panel: Careers in Data Science MS45 Advances in Integrable Systems and Inverse Scattering Transform - Part III of III MS46 Computational Methods for Eigenvalue Problems: Theory and Applications - Part II of II MS47 Data Science, Remote Sensing, and Uncertainty Quantification for Sea Ice MS48 Physics-Aware Machine Learning for Solving and Discovering PDEs - Part I of II MS49 Water Waves: Instabilities, Singularities and Solitons - Part II of II MS50 Workshop Celebrating Diversity (WCD): Advancements Across Mathematical Biology - Part II of IV	
6:30 PM - 8:30 PM Concurrent Sessions	PP1 General Poster Session MP2 AWM Workshop: Poster Session MP3 Undergraduate Poster Presentations	
Wednesday, July 21		
9:00 AM - 9:45 AM	SIAM 2021 Prize Recipients and Fellows Recognition Join SIAM President Susanne C. Brenner and SIAM Vice President-at-Large Carol Woodward for a reception to honor SIAM Prize recipients and Fellows from 2021. Come help us celebrate the awardees!	
9:45 AM - 11:45 AM Concurrent Sessions	MS51 Fast Analysis Based Algorithms for Solution of Forward and Inverse Problems - Part I of III MS52 Machine Learning for Scientific Discovery - Part I of II MS53 Nonlinear Waves, Dynamics, and Singularities in Hydrodynamics and	

	Physics - Part II of II	
	MS54 Preparing Faculty to Prepare Students for Tomorrow's Workforce	
	MS55 Volatility Modeling - Part I of II	
	CP7 Fluids	
11:45 AM - 12:00 PM	Networking break – Explore the Gather space	
12:00 PM - 12:45 PM	JP5 Selective Inference for Trees Daniela M. Witten, <i>University of Washington, U.S.</i>	
12:45 PM - 1:30 PM	JP3 Joint Plenary Speaker with the SIAM Conference on Optimization Augmented Lagrangians and Problem Decomposition in Optimization R. Tyrrell Rockafellar, <i>University of Washington, U.S.</i>	
1:30 PM - 2:30 PM	SIAM Business Meeting	
2:30 PM - 3:30 PM	SP4 Past President's Address Mixed Precision Numerical Linear Algebra with More Realistic Error Bounds Nicholas J. Higham, <i>The University of Manchester, United Kingdom</i>	
3:30 PM - 4:00 PM	SP5 W. T. and Idalia Reid Prize Lecture Solution Concepts for Optimal Feedback Control of Nonlinear Partial Differential Equations Karl Kunisch, <i>University of Graz and Radon Institute, Austrian Academy of Science, Austria</i>	
4:00 PM - 4:15 PM	Networking break – Explore the Gather space	
4:15 PM - 6:15 PM Concurrent Sessions	MS56 Asymptotics and Numerics in the Theory of Nonlinear Waves - Part I of II	
	MS57 Fast Analysis Based Algorithms for Solution of Forward and Inverse Problems - Part II of III	
	MS58 Nonlocal Problems in Analysis and Numerics - Part I of II	
	MS59 Recent Advancements in Dispersive Hydrodynamics - Part I of III	
	MS60 Workshop Celebrating Diversity (WCD): Survey of Different Research Problems at Different Career Stages - Part III of IV	
	CP8 Numerical Methods for Fluids	
Thursday, July 22		
9:45 AM - 11:45 AM Concurrent Sessions	MS61 20 Years of Regularized Stokeslets: Theory and Computation - Part I of II	
	MS62 Advances in Uncertainty Quantification with Model Order Reduction Methods - Part I of II	
	MS63 Approximation Theory of Neural Networks - Part I of II	
	MS64 Computational Frontiers in Numerical Linear Algebra - Part I of II	
	MS65 Computational Lower Bounds in Numerical Linear Algebra - Part I of II	
	MS66 Fast Analysis Based Algorithms for Solution of Forward and Inverse Problems - Part III of III	
	MS67 Inverse Problems and Uncertainty Quantification in Biological and Medical Applications - Part I of II	
	MS68 Machine Learning for Scientific Discovery - Part II of II	
	MS69 Models and Computational Methods for Biofluid Dynamics & Mechanics - Part I of II	
	MS70 Nonlinear Waves, Dynamics, and Singularities in Physics and Hydrodynamics - Part I of II	
	MS71 Nonlocal Problems in Analysis and Numerics - Part II of II	
	MS72 The Unified Transform Method and Its Applications	
	MS73 Undergrad Session - Part II of IV	

	CP9 Numerical Analysis
	CP10 Ordinary Differential Equations
	CP11 Life Sciences and Medicine
11:00 AM - 5:00 PM	SIAM Council Meeting
11:45 AM - 12:00 PM	Networking break – Explore the Gather space
12:00 PM - 12:45 PM	JP6 Randomized Algorithms for Linear Algebraic Computations Gunnar Martinsson, <i>The University of Texas at Austin, U.S.</i>
12:45 PM - 1:30 PM	JP4 Joint Plenary Speaker with the SIAM Conference on Discrete Mathematics Stability in Strategic Queueing Systems Éva Tardos, <i>Cornell University, U.S.</i>
1:00 PM - 2:00 PM	Workshop Celebrating Diversity (WCD) Luncheon event (taking place in gather.town space)
1:30 PM - 2:30 PM Concurrent Sessions	PD3 Thinking of Writing a Book? Networking break – Explore the Gather space
2:30 PM - 3:15 PM	IP7 ***Due to unforeseen circumstances this lecture is cancelled.*** James Daniel Whitfield, <i>Dartmouth College, U.S.</i>
3:15 PM - 4:15 PM	PD4: INTERACTIVE SESSION: Justice, Equity, Diversity, and Inclusion in the Applied Mathematics Community Organizers: Ron Buckmire, SIAM VP-EDI and Padmanabhan Seshaiyer, SIAM Diversity Advisory Committee Chair
4:00 PM - 4:15 PM	Networking break – Explore the Gather space
4:15 PM - 6:15 PM Concurrent Sessions	MS74 20 Years of Regularized Stokeslets: Cilia, Flagella, and Microswimmers - Part I of II
	MS75 Applied Machine Learning for Numerical Studies of Fluid Physics - Part I of II
	MS76 Asymptotics and Numerics in the Theory of Nonlinear Waves - Part II of II
	MS77 Bohemian Matrices and Applications - Part I of II
	MS78 Data-Driven Decision Control for Complex Systems - Part I of II
	MS79 Deep Learning for Predictive Science and Design - Part I of II
	MS80 Nonlinear Waves in Lattice Dynamical Systems - Part I of II
	MS81 Novel Time-Stepping Methods with Applications in Computational Physics - Part I of II
	MS82 Practical and Efficient Partitioned Global Address Space Support for Data Intensive Applications - Part I of II
	MS83 Recent Advancements in Dispersive Hydrodynamics - Part II of III
	MS84 Undergrad Session - Part III of IV
	MS85 Workshop Celebrating Diversity (WCD): Numerical Methods for Partial Differential Equations - Part IV of IV
	CP12 Simulation of Fluids
	CP13 Computational Methods for Partial Differential Equations
	CP14 Epidemiology and Ecology
	CP15 Machine Learning and Data Mining
8:15 PM - 9:00 PM	Spectra Reception for LGBTQ+ Attendees and Allies Organizers: Alexander Hoover, University of Akron, U.S. and Ron Buckmire, Occidental College, U.S. Spectra, the Association for LGBTQ+ mathematicians, will be hosting a social reception during the SIAM annual meeting. This will be an opportunity for conference attendees who are LGBTQ+ (and allies!) to network, learn more about Spectra and gather in a welcoming and inclusive space.

Friday, July 23

9:45 AM - 11:45 AM Concurrent Sessions	MS86 20 Years of Regularized Stokeslets: Theory and Computation - Part II of II MS87 Advances in Stochastic Control with Financial Applications MS88 Advances in Uncertainty Quantification with Model Order Reduction Methods - Part II of II MS89 Approximation Theory of Neural Networks - Part II of II MS90 Computational Frontiers in Numerical Linear Algebra - Part II of II MS91 Computational Lower Bounds in Numerical Linear Algebra - Part II of II MS92 Inverse Problems and Uncertainty Quantification in Biological and Medical Applications - Part II of II MS93 Modelling Species Distributions in Ecosystems Altered by Climate Change MS94 Models and Computational Methods for Biofluid Dynamics & Mechanics - Part II of II MS95 Nonlinear Waves, Dynamics, and Singularities in Physics and Hydrodynamics - Part II of II MS96 The Interplay of Complex Dynamics and Modern Machine Learning MS97 Undergrad Session - Part IV of IV CP16 Optimization CP17 Probability and Statistics
10:00 AM - 11:30 AM	Compensation Committee
11:45 AM - 12:45 PM	IP8 Closing Remarks and Presentation: Dispersive Hydrodynamics: Dispersive Shock Waves, Solitons, and (Non)Convexity Mark A. Hoefer, <i>University of Colorado Boulder, U.S.</i>
12:30 PM - 2:00 PM	Systems Oversight Committee
12:45 PM - 1:30 PM	IP9 Changing Frame of Reference: Insights from Unsteady Fluid Fragmentation Lydia Bourouiba, <i>Massachusetts Institute of Technology, U.S.</i>
1:30 PM - 2:30 PM Concurrent Sessions	PD5:INTERACTIVE SESSION: Justice, Equity, Diversity, and Inclusion in the Applied Mathematics Community Organizers: Ron Buckmire, SIAM VP-EDI and Padmanabhan Seshaiyer, SIAM Diversity Advisory Committee Chair Networking break – Explore the Gather space
2:30 PM - 3:15 PM	IP10 Sparse Integer Solutions of Systems of Linear Equations Jesús A. De Loera, <i>University of California, Davis, U.S.</i>
2:30 PM - 4:30 PM	Financial Management Committee
3:15 PM - 3:30 PM	Networking break – Explore the Gather space
3:30 PM - 5:30 PM Concurrent Sessions	MS98 20 Years of Regularized Stokeslets: Cilia, Flagella, and Microswimmers - Part II of II MS99 Applied Machine Learning for Numerical Studies of Fluid Physics - Part II of II MS100 Bohemian Matrices and Applications - Part II of II MS101 Data-Driven Decision Control for Complex Systems - Part II of II MS102 Deep Learning for Predictive Science and Design - Part II of II MS103 Nonlinear Waves in Lattice Dynamical Systems - Part II of II MS104 Novel Time-Stepping Methods with Applications in Computational Physics - Part II of II MS105 Physics-Aware Machine Learning for Solving and Discovering PDEs - Part II of II

	MS106 Practical and Efficient Partitioned Global Address Space Support for Data Intensive Applications - Part II of II	
	MS107 Recent Advancements in Dispersive Hydrodynamics - Part III of III	
	MS108 SIAM Student Paper Prize Presentations	
	MS109 Volatility Modeling - Part II of II	
	CP18 Partial Differential Equations	
	CP19 Applied Geometry	
4:45 PM - 6:15 PM	Executive Session of the Board of Trustees	
Saturday, July 24		
10:00 AM - 4:00 PM	Regular Session of the Board of Trustees	
-	PP Accepted Posters Not Uploaded to Virtual Platform	

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Tuesday, July 20

PP1 General Poster Session

6:30 PM - 8:30 PM

Computational Simulation of Patterns in a Reaction-Diffusion Model [abstract](#)

Cesar Acosta-Minoli, Jhon Prias, and Monica Velasco, Universidad del Quindío, Colombia

LGN-CNN: a Biologically Inspired CNN Architecture [abstract](#)

Federico Bertoni, Sorbonne University, France and University of Bologna, Italy

The Select Boost Algorithm Improves Variable Selection in Linear Models [abstract](#)

Frederic Bertrand and Myriam Maumy, Troyes Technology University, France

Viscoelastic Flows with First-Order Conservation Laws and Relaxation [abstract](#)

Sebastien J. Boyaval, École des Ponts ParisTech, France

Seamless Numerical Homogenization for Multiscale Problems [abstract](#)

Ziheng Chen and Björn Engquist, University of Texas at Austin, U.S.

Cpfloat: A C Library for Emulating Low-Precision Arithmetic [abstract](#)

Massimiliano Fasi, Örebro University, Sweden; Mantas Mikaitis, The University of Manchester, United Kingdom

Repeated Measures Analysis of Natural Killer Cell Data at the 50% Cytotoxicity Level [abstract](#)

Paul Johnson, Biostatistical Software Development, U.S.; *Kate Johnson*, University of California, Davis, U.S.; Ling Huang, Sacramento City College, U.S.

Effectivity of Crowd-Sourcing Functional Connectivity Network Inference Methods of fMRI Data [abstract](#)

Sherli Koshy-Chenthittayil and Martha Paola Vera-Licona, University of Connecticut Health Center, U.S.

Machine Learning Assisted Chimera and Solitary States in Networks [abstract](#)

Niraj Kushwaha and Naveen Mendola, Indian Institute of Technology, Indore, India; Saptarshi Ghosh, Norwegian University of Science and Technology, Norway; Ajaydeep Kachhvah and Sarika Jalan, Indian Institute of Technology, Indore, India

Two-Dimensional Laminar Flow of the Generalized Fluid Across an Unconfined Inclined Square Cylinder using Finite Element Methods [abstract](#)

Hsueh-Chen Lee, Wenzao Ursuline University of Languages, Taiwan

A New Algorithm for Reverse-Engineering Patterned Heterogenous Networks [abstract](#)

Myriam Maumy and Frederic Bertrand, Troyes Technology University, France

Modeling of Cooperative Associations in Harvester Ant, *Pogonomyrmex Californicus* [abstract](#)

Tamantha C. Pizarro, Arizona State University, U.S.

Confidence Assessment using Optimal Feature and State Characterization for an In-Situ Phosphate Level Time Series Array [abstract](#)

Nicholas V. Scott, Riverside Research, U.S.; Jack McCarthy, Duke University, U.S.

Multiparameter Full Waveform Inversion and Optimal Transport [abstract](#)

Yiran Shen and Björn Engquist, University of Texas at Austin, U.S.

Diagnosing Respiratory Illness Deterioration Using Machine-Learning Classifiers Trained on Simulated Patient Vignettes [abstract](#)

Sumanth Swaminathan and Botros Toro, Vironix, U.S.; Anna Berryman and James Morrill, Oxford University, United Kingdom; Nicholas Wysham, The Vancouver Clinic, Canada; Vinay Konda, University of Illinois at Urbana-Champaign, U.S.; Shreyas Iyer, Charlotte Latin School, U.S.; Christopher Landon, Ventura Clinic, U.S.

Hemodynamics in Hypoplastic Left Heart Syndrome Patients Assessed with a 1D Arterial Network Model [abstract](#)

Alyssa Taylor, North Carolina State University, U.S.

Premelting Controlled Active Matter in Ice [abstract](#)

Jeremy Vachier, Nordita, Copenhagen, Denmark; John S. Wettlaufer, Yale University, U.S.

A Dynamic Inflammatory Response Model for Bolus Versus Continuous Administration of Endotoxin [abstract](#)

Kristen Windoloski and Mette S. Olufsen, North Carolina State University, U.S.

Parameter Estimation in Branching Random Walks [abstract](#)

Duncan Wright, Andrea Arnold, and Sarah D. Olson, Worcester Polytechnic Institute, U.S.

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SIAM Conference Participation System

Corrections or problems using this system? Email meetings@siam.org.

Bug reports to duggan@siam.org.