



Conference on Applications of Dynamical Systems

May 11–15, 2025 • Sheraton Denver Downtown Hotel, Denver, Colorado, U.S.

Online Program and Mobile App

Attendees are encouraged to view the Online Program Schedule:

<https://www.siam.org/conferences-events/siam-conferences/ds25/program/program-abstracts/>

The Mobile App and Online Program Schedule contain the most up-to-date information.
A searchable abstract document is also posted.

SIAM Events Mobile App



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Saturday, May 10**Sunday, May 11****Sunday, May 11**

Unless **otherwise noted,** all meeting rooms are located in the Plaza Building of the Sheraton Denver Downtown, on the Concourse Level or Lobby Level.

4:00 p.m. – 8:00 p.m.

Registration

Plaza Concourse Level - Plaza Exhibit/Foyer

4:30 p.m. – 5:30 p.m.

Icebreaker Session

Plaza Concourse Level - Plaza Ballroom A

6:00 p.m. – 8:00 p.m.

Welcome Reception

Plaza Concourse Level - Plaza Exhibit/Foyer

Sunday, May 11

7:30 a.m. – 5:15 p.m.

Registration

Plaza Concourse Level - Plaza Exhibit/Foyer

8:30 a.m. – 8:45 a.m.

Opening Remarks

Plaza Concourse Level - Plaza Ballroom BCEF

8:45 a.m. – 9:30 a.m.

IP1 Modern Sensing and Physics Learning with Shallow Recurrent Decoders

J. Nathan Kutz, University of Washington, U.S.

Plaza Concourse Level - Plaza Ballroom BCEF

9:00 a.m. – 5:00 p.m.

Exhibitor Hours

Plaza Concourse Level - Plaza Exhibit/Foyer

9:30 a.m. – 10:00 a.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

10:00 a.m. – 12:00 p.m.

Concurrent Sessions

MT1 A Practical Guide to Modeling with Higher-order Networks - Part I

Plaza Concourse Level - Plaza Ballroom BCEF

MS1 Dynamics of Large-scale Structures and Waves - Part I of II

Plaza Concourse Level - Plaza Ballroom A

MS2 Theory of Koopman Operators for Data Driven Dynamical Systems- Part I of II

Plaza Concourse Level - Plaza Ballroom D

MS3 Multiple Timescales and Rate-Induced Phenomena - Part I of II

Plaza Concourse Level - Governors Square 14

MS4 Dynamics of Colonies - Part I of II

Plaza Concourse Level - Governors Square 15

MS5 Learning with Dynamical Systems and their Observable Statistics - Part I of II

Plaza Concourse Level - Governors Square 12

MS6 Dynamical Systems in Mathematical Biology: Disease Modeling and Biological Processes- Part I of III

Plaza Concourse Level - Governors Square 10

MS7 Rhythm Generation, Robustness, and Control in Neuronal Networks - Part I of II

Plaza Concourse Level - Governors Square 11

MS8 Dynamics and Control of Excitable Media - Part I of II

Plaza Lobby Level - Directors Row H

MS9 Taming PDE with Randomness- Part I of II

Plaza Concourse Level - Governors Square 16

MS10 Analysis and Control of Collective Behavior in Interacting Populations - Part I of II

Plaza Lobby Level - Directors Row I

MS11 Data Driven Methods for State and Parameter Determination for Dynamical Systems and Applications - Part I of II

Plaza Lobby Level - Directors Row E

MS12 Emerging Dynamical Phenomena in Optical Platforms - Part I of II

Plaza Lobby Level - Directors Row J

MS13 Higher Dimensional Dynamics and Chaos: Theory and Computations

Plaza Concourse Level - Plaza Court 1

MS14 Low-Dimensional Hamiltonian Dynamics with Applications to Plasma Confinement - Part I of III

Plaza Concourse Level - Plaza Court 2

MS15 Nonlinear Dynamics of Simple Mechanical Systems

Plaza Concourse Level - Governors Square 9

MS16 Machine Learning and its Applications in Diabetes Studies and Medical Research - Part I of II

Plaza Concourse Level - Plaza Court 7

12:00 p.m. – 1:30 p.m.

Lunch Break

1:30 p.m. – 3:30 p.m.

Concurrent Sessions

MT2 A Practical Guide to Modeling with Higher-order Networks - Part II

Plaza Concourse Level - Plaza Ballroom BCEF

MS18 Theory of Koopman Operators for Data Driven Dynamical Systems - Part II of II

Plaza Concourse Level - Plaza Ballroom D

MS19 Computer-assisted Proofs in Dynamics - Part I of III

Plaza Concourse Level - Governors Square 14

MS20 Dynamics of Colonies - Part II of II

Plaza Concourse Level - Governors Square 15

MS21 Learning with Dynamical Systems and their Observable Statistics - Part II of II

Plaza Concourse Level - Governors Square 12

3:30 p.m. – 4:00 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

4:00 p.m. – 4:45 p.m.

IP2 Hidden Networks: From Phase Reductions to Effective Network Interactions

Christian Bick, Vrije Universiteit Amsterdam, The Netherlands

Plaza Concourse Level - Plaza Ballroom BCEF

4:45 p.m. – 5:00 p.m.

Intermission

MS22 Dynamical Systems in Mathematical Biology: Disease Modeling and Biological Processes- Part II of III

Plaza Concourse Level - Governors Square 10

MS23 Rhythm Generation, Robustness, and Control in Neuronal Networks - Part II of II

Plaza Concourse Level - Governors Square 11

MS24 Dynamics and Control of Excitable Media - Part II of II

Plaza Lobby Level - Directors Row H

MS25 Taming PDE with Randomness- Part II of II

Plaza Concourse Level - Governors Square 16

MS26 Emergent Collective Dynamics on Networks: Theory and Computational Discovery - Part I of II

Plaza Concourse Level - Governors Square 17

MS27 Analysis and Control of Collective Behaviour in Interacting Populations- Part II of II

Plaza Lobby Level - Directors Row I

MS28 Data Driven Methods for State and Parameter Determination for Dynamical Systems and Applications - Part II of II

Plaza Lobby Level - Directors Row E

MS29 Emerging Dynamical Phenomena in Optical Platforms - Part II of II

Plaza Lobby Level - Directors Row J

MS30 Higher Dimensional Dynamics and Chaos: Theory and Computations - Part II of II

Plaza Concourse Level - Plaza Court 1

MS31 Low-Dimensional Hamiltonian Dynamics with Applications to Plasma Confinement - Part II of III

Plaza Concourse Level - Plaza Court 2

MS32 Stochastic Dynamics of Nonlinear Dynamical Systems and Their Applications - Part I of II

Plaza Concourse Level - Governors Square 9

MS138 Contemporary Approaches in Conceptual Climate Modeling

Plaza Concourse Level - Plaza Ballroom A

MS234 Machine Learning and its Applications in Diabetes Studies and Medical Research - Part II of II

Plaza Concourse Level - Plaza Court 7

3:30 p.m. – 4:00 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

4:00 p.m. – 4:45 p.m.

IP2 Hidden Networks: From Phase Reductions to Effective Network Interactions

Christian Bick, Vrije Universiteit Amsterdam, The Netherlands

Plaza Concourse Level - Plaza Ballroom BCEF

4:45 p.m. – 5:00 p.m.

Intermission

Sunday, May 11

5:00 p.m. – 7:00 p.m.

Concurrent Sessions**MS33** Collective Motion in Biological Groups - Part I of II*Plaza Concourse Level - Plaza Ballroom BCEF***MS34** Spatial Localisation: A Global Perspective on Local Phenomena - Part I of III*Plaza Concourse Level - Plaza Ballroom A***MS35** Data-driven Modeling of Dynamical Systems Via the Transfer Operator- Part I of II*Plaza Concourse Level - Plaza Ballroom D***MS36** Multiple Timescales and Rate-Induced Phenomena - Part II of II*Plaza Concourse Level - Governors Square 14***MS37** Water Waves - Part I of II*Plaza Concourse Level - Governors Square 15***MS38** Data-driven Modeling and Topological Data Analysis for Complex Biological Systems - Part I of II*Plaza Concourse Level - Governors Square 12***MS39** Dynamical Systems in Mathematical Biology: Disease Modeling and Biological Processes- Part III of III*Plaza Concourse Level - Governors Square 10***MS40** Modeling in Transitions and Temperature in Seizures, Neurotransmitters, and Delays*Plaza Concourse Level - Governors Square 11***MS41** Invariant Sets in Dynamics: Applications and Future Directions*Plaza Lobby Level - Directors Row H***MS43** Emergent Collective Dynamics on Networks: Theory and Computational Discovery - Part II of II*Plaza Concourse Level - Governors Square 17***MS44** Emergent Collective Behavior in Oscillatory and Neuronal Networks: Modeling and Applications*Plaza Lobby Level - Directors Row I***MS45** Multi-Scale Dynamics of Cardiac Arrhythmias: Models and Mechanisms - Part I of III*Plaza Lobby Level - Directors Row E***MS46** Modeling Neural Dynamics*Plaza Lobby Level - Directors Row J***MS47** Collective Dynamics in Multi-Agent Systems: Advances in Learning and Optimization - Part I of III*Plaza Concourse Level - Plaza Court 1***MS48** Low-Dimensional Hamiltonian Dynamics with Applications to Plasma Confinement - Part III of III*Plaza Concourse Level - Plaza Court 2***MS49** Stochastic Dynamics of Nonlinear Dynamical Systems and Their Applications - Part II of II*Plaza Concourse Level - Governors Square 9***MS50** Dynamical Systems Models of Health and Sickness*Plaza Concourse Level - Plaza Court 7***MS92** Exploring Functional Roles of Neuronal Network Dynamics in Brain Computation*Plaza Concourse Level - Governors Square 16***Sunday, May 11**

7:00 p.m. – 8:30 p.m.

Dinner Break

SIADS Editorial Meeting

Tower Building, Terrace Level - Columbine

8:30 p.m. – 8:45 p.m.

Prize Presentations - Jürgen Moser and J. D.

Crawford

Plaza Concourse Level - Plaza Ballroom BCEF

8:45 p.m. – 9:30 p.m.

SP1 Jürgen Moser Lecture - Not Just Another Pretty Phase: The Use of Phase Models in Neuroscience and Biology

Bard Ermentrout, University of Pittsburgh, U.S.

*Plaza Concourse Level - Plaza Ballroom BCEF***Monday, May 12**

8:00 a.m. – 5:00 p.m.

Registration

Plaza Concourse Level - Plaza Exhibit/Foyer

8:30 a.m. – 10:30 a.m.

Concurrent Sessions**MS51** Collective Motion in Biological Groups - Part II of II*Plaza Concourse Level - Plaza Ballroom BCEF***MS52** Spatial Localisation: A Global Perspective on Local Phenomena - Part II of III*Plaza Concourse Level - Plaza Ballroom A***MS53** Data-driven Modeling of Dynamical Systems Via the Transfer Operator- Part II of II*Plaza Concourse Level - Plaza Ballroom D***MS54** Computer-assisted Proofs in Dynamics - Part II of III*Plaza Concourse Level - Governors Square 14***MS55** Water Waves - Part II of II*Plaza Concourse Level - Governors Square 15***MS56** Data-driven Modeling and Topological Data Analysis for Complex Biological Systems - Part II of II*Plaza Concourse Level - Governors Square 12***MS57** Recent Advances Towards Understanding Biological Mechanisms Through the Lens of Dynamical Systems - Part I of II*Plaza Concourse Level - Governors Square 10***MS58** Patterns of Neural Activity - Part I of II*Plaza Concourse Level - Governors Square 11***MS59** Dynamics of Reservoir Computers - Part I of II*Plaza Lobby Level - Directors Row H***MS60** Machine Learning: Cardiac Dynamics and Theoretical Applications - Part II of II*Plaza Concourse Level - Governors Square 16***MS61** Advances in Disease Modeling - Part I of II*Plaza Concourse Level - Governors Square 17***Monday, May 12****MS62** Exploring Geometric Mechanics and Dynamics, Deterministic and Stochastic Perspectives - Part I of III*Plaza Lobby Level - Directors Row I***MS63** Multi-Scale Dynamics of Cardiac

Arrhythmias: Models and Mechanisms - Part II of III

*Plaza Lobby Level - Directors Row E***MS64** Dynamics Near Homoclinic and Heteroclinic Structures - Part I of II*Plaza Lobby Level - Directors Row J***MS65** Collective Dynamics in Multi-Agent

Systems: Advances in Learning and Optimization - Part II of III

*Plaza Concourse Level - Plaza Court 1***MS66** Systems-Theoretic Approaches to Learning: Applications to Estimation and Control 3.0*Plaza Concourse Level - Plaza Court 2***MS67** Modeling and Controlling Human Behavior in Complex Systems - Part I of II*Plaza Concourse Level - Governors Square 9***MS68** Analysis of Spreading Processes in Complex Networks*Plaza Concourse Level - Plaza Court 7*

9:00 a.m. – 5:00 p.m.

Exhibitor Hours

Plaza Concourse Level - Plaza Exhibit/Foyer

10:30 a.m. – 11:00 a.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

11:00 a.m. – 11:45 a.m.

IP3 Data Driven Homological Approaches for Detecting Changes in Dynamical Systems
Elizabeth Munch, Michigan State University, U.S.*Plaza Concourse Level - Plaza Ballroom BCEF*

11:45 a.m. – 1:20 p.m.

Lunch Break

12:00 p.m. – 1:00 p.m.

Mentoring Session

Plaza Concourse Level - Plaza Ballroom D

1:20 p.m. – 3:20 p.m.

Concurrent Sessions**MS69** Advances in Dynamic Data Analysis: Transfer Operators, Machine Learning, and Networks - Part I of II*Plaza Concourse Level - Plaza Ballroom BCEF***MS70** Spatial Localisation: A Global Perspective on Local Phenomena - Part III of III*Plaza Concourse Level - Plaza Ballroom A***MS71** Stochastic Dynamics and Convergence in Interacting Particle Systems: Nonlinear Markov Processes of Ising Model on Random Graphs*Plaza Concourse Level - Plaza Ballroom D*

Monday, May 12**Monday, May 12****Tuesday, May 13**

MS72 Computer-assisted Proofs in Dynamics - Part III of III

Plaza Concourse Level - Governors Square 14

MS73 Structure and Dynamics of Higher-order Systems - Part I of II

Plaza Concourse Level - Governors Square 15

MS74 Celestial Mechanics and Computational Methods for Dynamical Analysis- Part I of III

Plaza Concourse Level - Governors Square 12

MS75 Recent Advances Towards Understanding Biological Mechanisms Through the Lens of Dynamical Systems - Part II of II

Plaza Concourse Level - Governors Square 10

MS76 Patterns of Neural Activity - Part II of II

Plaza Concourse Level - Governors Square 11

MS77 Dynamics of Reservoir Computers - Part II of II

Plaza Lobby Level - Directors Row H

MS78 Discovering Structure in a Complex World - Part I of II

Plaza Concourse Level - Governors Square 16

MS79 Advances in Disease Modeling - Part II of II

Plaza Concourse Level - Governors Square 17

MS80 Exploring Geometric Mechanics and Dynamics, Deterministic and Stochastic Perspectives - Part II of III

Plaza Lobby Level - Directors Row I

MS81 Multi-Scale Dynamics of Cardiac Arrhythmias: Models and Mechanisms - Part III of III

Plaza Lobby Level - Directors Row E

MS82 Dynamics Near Homoclinic and Heteroclinic Structures - Part II of II

Plaza Lobby Level - Directors Row J

MS83 Collective Dynamics in Multi-Agent Systems: Advances in Learning and Optimization - Part III of III

Plaza Concourse Level - Plaza Court 1

MS84 Reduced Order Modeling of Fluid Flow with Coherent Structures

Plaza Concourse Level - Plaza Court 2

MS85 Modeling and Controlling Human Behavior in Complex Systems - Part II of II

Plaza Concourse Level - Governors Square 9

MS86 EMT Simulation of Power Networks: Challenges and Opportunities

Plaza Concourse Level - Plaza Court 7

3:20 p.m. – 3:50 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

3:50 p.m. – 4:35 p.m.

IP4 Interpretability and Reproducibility Principles for Computational Experiments

Tamara G. Kolda, MathSci.ai, U.S.

Plaza Concourse Level - Plaza Ballroom BCEF

4:35 p.m. – 4:45 p.m.

Intermission

4:45 p.m. – 6:45 p.m.

Concurrent Sessions

MS42 Machine Learning: Cardiac Dynamics and Theoretical Applications - Part I of II

Plaza Concourse Level - Governors Square 11

MS87 Advances in Dynamic Data Analysis: Transfer Operators, Machine Learning, and Networks - Part II of II

Plaza Concourse Level - Plaza Ballroom BCEF

MS88 Dynamics and Stability of Localized Structures in Nonlinear Optics - Part I of II

Plaza Concourse Level - Plaza Ballroom A

MS89 Nonlinear and Stochastic Dynamics in Weather and Climate Science - Part I of II

Plaza Concourse Level - Plaza Ballroom D

MS90 Structure and Dynamics of Higher-order Systems - Part II of II

Plaza Concourse Level - Governors Square 15

MS91 Celestial Mechanics and Computational Methods for Dynamical Analysis- Part II of III

Plaza Concourse Level - Governors Square 12

MS93 Discovering Structure in a Complex World- Part II of II

Plaza Concourse Level - Governors Square 16

MS95 Exploring Geometric Mechanics and Dynamics, Deterministic and Stochastic Perspectives - Part III of III

Plaza Lobby Level - Directors Row I

MS145 Dynamics in Neuroendocrine Regulation: Healthy Activity, Perturbation Responses, and Disease - Part I of III

Plaza Concourse Level - Governors Square 17

CP1 Data-Driven Methods and Topological Techniques

Plaza Concourse Level - Governors Square 14

CP2 Complex Social Systems I

Plaza Concourse Level - Governors Square 10

CP3 Chaos and Related Dynamics

Plaza Lobby Level - Directors Row H

CP4 Mathematical Biology I

Plaza Lobby Level - Directors Row E

CP5 Networks and Synchronization I

Plaza Lobby Level - Directors Row J

CP6 Bifurcation and Nonlinear Dynamics I

Plaza Concourse Level - Plaza Court 1

CP7 Neural Networks and Machine Learning I

Plaza Concourse Level - Plaza Court 2

CP8 Fluids

Plaza Concourse Level - Governors Square 9

CP9 Control and Systems Theory

Plaza Concourse Level - Plaza Court 7

6:45 p.m. – 8:00 p.m.

Dinner Break

8:00 p.m. – 9:00 p.m.

SIAG/DS Business Meeting

Complimentary beer and wine will be served

Plaza Concourse Level - Plaza Ballroom BCEF

8:00 a.m. – 5:00 p.m.

Registration

Plaza Concourse Level - Plaza Exhibit/Foyer

8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS96 Recent Advances in Random Dynamical Systems - Part I of III

Plaza Concourse Level - Plaza Ballroom BCEF

MS97 Dynamics and Stability of Localized Structures in Nonlinear Optics - Part II of II

Plaza Concourse Level - Plaza Ballroom A

MS98 Polynomial Optimization and Computer-assisted Proof for Dynamics

Plaza Concourse Level - Plaza Ballroom D

MS99 The Role of Noise From Single Cells to Populations - Part I of II

Plaza Concourse Level - Governors Square 14

MS100 Dynamical Systems on Networks and Fractals- Part I of III

Plaza Concourse Level - Governors Square 15

MS101 Celestial Mechanics and Computational Methods for Dynamical Analysis- Part III of III

Plaza Concourse Level - Governors Square 12

MS102 Machine Learning and Dynamical Systems: from Theory to Applications - Part I of II

Plaza Concourse Level - Governors Square 10

MS103 Connectome-constrained Network Dynamics from C. Elegans Neural Activity - Part I of II

Plaza Concourse Level - Governors Square 11

MS104 Data-driven Dynamics in Dynamical Systems - Part I of II

Plaza Lobby Level - Directors Row H

MS105 Dynamics of Stochastic Partial Differential Equations - Part I of II

Plaza Concourse Level - Governors Square 16

MS107 Coupled Stochastic Systems from Oscillators to Pattern Formation - Part I of II

Plaza Lobby Level - Directors Row I

MS108 Data-driven Reconstruction and Forecasting of Dynamical Systems - Part I of II

Plaza Lobby Level - Directors Row E

MS109 Mean Field Limits of Particle Dynamics - Part I of II

Plaza Lobby Level - Directors Row J

MS110 Computational Advances in Koopman, Operator Learning and Related Fields - Part I of III

Plaza Concourse Level - Plaza Court 1

MS111 Mixed Quantum-classical Dynamics in Molecular Systems - Part I of II

Plaza Concourse Level - Plaza Court 2

MS112 Vortices and Geometric Mechanics - Part I of II

Plaza Concourse Level - Governors Square 9

MS113 Mathematics of Brain Function and Disease

Plaza Concourse Level - Plaza Court 7

MS162 Dynamics in Neuroendocrine Regulation: Healthy Activity, Perturbation Responses, and Disease - Part II of III

Plaza Concourse Level - Governors Square 17

Tuesday, May 13

9:00 a.m. – 5:00 p.m.

Exhibitor Hours

Plaza Concourse Level - Plaza Exhibit/Foyer

10:30 a.m. – 11:00 a.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

11:00 a.m. – 11:45 a.m.

IP5 A Journey Through Random Dynamical Systems and Multiplicative Ergodic Theory

Cecilia Gonzalez Tokman, University of Queensland, Australia

Plaza Concourse Level - Plaza Ballroom BCEF

11:45 a.m. – 1:20 p.m.

Lunch Break

12:10 p.m. – 1:10 p.m.

PD1 The Future of Interdisciplinary Research in Dynamical Systems: A Panel Discussion*Plaza Concourse Level - Plaza Ballroom BCEF*

1:20 p.m. – 3:20 p.m.

Concurrent Sessions**MS114** Recent Advances in Random Dynamical Systems - Part II of III*Plaza Concourse Level - Plaza Ballroom BCEF***MS115** Recent Developments in Pattern and Wave Formation: Theory and Applications - Part I of II*Plaza Concourse Level - Plaza Ballroom A***MS116** Nonlinear and Stochastic Dynamics in Weather and Climate Science - Part II of II*Plaza Concourse Level - Plaza Ballroom D***MS117** The Role of Noise From Single Cells to Populations - Part II of II*Plaza Concourse Level - Governors Square 14***MS118** Dynamical Systems on Networks and Fractals- Part II of III*Plaza Concourse Level - Governors Square 15***MS119** Inference and Prediction in Complex Social Systems*Plaza Concourse Level - Governors Square 12***MS120** Machine Learning and Dynamical Systems: from Theory to Applications - Part II of II*Plaza Concourse Level - Governors Square 10***MS121** Connectome-constrained Network

Dynamics from C. Elegans Neural Activity - Part II of II

*Plaza Concourse Level - Governors Square 11***MS122** Data-driven Dynamics in Dynamical Systems - Part II of II*Plaza Lobby Level - Directors Row H***MS123** Dynamics of Stochastic Partial Differential Equations - Part II of II*Plaza Concourse Level - Governors Square 16***MS125** Coupled Stochastic Systems from Oscillators to Pattern Formation - Part II of II*Plaza Lobby Level - Directors Row I***MS126** Data-driven Reconstruction and Forecasting of Dynamical Systems- Part II of II*Plaza Lobby Level - Directors Row E***MS127** Mean Field Limits of Particle Dynamics - Part II of II*Plaza Lobby Level - Directors Row J***MS128** Computational Advances in Koopman, Operator Learning and Related Fields - Part II of III*Plaza Concourse Level - Plaza Court 1***MS129** Mixed Quantum-classical Dynamics in Molecular Systems - Part II of II*Plaza Concourse Level - Plaza Court 2***MS130** Vortices and Geometric Mechanics - Part II of II*Plaza Concourse Level - Governors Square 9***MS131** Geophysical Fluid Dynamics - Part I of III*Plaza Concourse Level - Plaza Court 7***MS179** Dynamics in Neuroendocrine Regulation: Healthy Activity, Perturbation Responses, and Disease - Part III of III*Plaza Concourse Level - Governors Square 17*

3:20 p.m. – 3:50 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

3:50 p.m. – 4:35 p.m.

IP6 Agent-Based and Continuous Models of Locust Hopper Bands

Andrew J. Bernoff, Harvey Mudd College, U.S.

Plaza Concourse Level - Plaza Ballroom BCEF

4:35 p.m. – 4:45 p.m.

Intermission

4:45 p.m. – 6:45 p.m.

Concurrent Sessions**MS132** Starting Your Own Research Experiences for Undergraduate Program*Plaza Concourse Level - Plaza Ballroom BCEF***MS133** Biological Oscillations in Celebration of Richard Bertram's 60th Birthday - Part I of II*Plaza Concourse Level - Plaza Ballroom D***MS134** Dynamical Systems on Networks and Fractals- Part III of III*Plaza Concourse Level - Governors Square 15***CP10** Pattern Formation I*Plaza Concourse Level - Plaza Ballroom A***CP11** Data-Driven Methods I*Plaza Concourse Level - Governors Square 14***CP12** Networks and Synchronization II*Plaza Concourse Level - Governors Square 12***CP13** Complex Social Systems II*Plaza Concourse Level - Governors Square 10***CP14** Data-Driven Methods in Mathematical Biology*Plaza Concourse Level - Governors Square 11***CP15** Collective Behavior I*Plaza Lobby Level - Directors Row H*

Tuesday, May 13

CP16 Epidemiology*Plaza Concourse Level - Governors Square 16***CP17** Data and Koopman Analysis*Plaza Concourse Level - Governors Square 17***CP18** PDE*Plaza Lobby Level - Directors Row I***CP19** Stochastic and Random Systems*Plaza Lobby Level - Directors Row E***CP20** Neuroscience I*Plaza Lobby Level - Directors Row J***CP21** Neural Networks and Machine Learning II*Plaza Concourse Level - Plaza Court 1***CP22** Bifurcation and Nonlinear Dynamics II*Plaza Concourse Level - Plaza Court 2***CP23** Ecology, Environmental Science, and

Population Dynamics

*Plaza Concourse Level - Governors Square 9***CP24** Mechanics and Hamiltonian Systems*Plaza Concourse Level - Plaza Court 7*

6:45 p.m. – 8:00 p.m.

Dinner Break

8:00 p.m. – 10:00 p.m.

PP1 Poster Session and Dessert Reception*Plaza Concourse Level - Plaza Exhibit/Foyer*

Wednesday, May 14

8:00 a.m. – 5:15 p.m.

Registration

Plaza Concourse Level - Plaza Exhibit/Foyer

8:30 a.m. – 10:30 a.m.

Concurrent Sessions**MS17** Dynamics of Large-scale Structures and Waves - Part II of II*Plaza Concourse Level - Governors Square 14***MS94** Physiological, Cyborg, and Cyborgozooid Systems: Dynamics and Model Estimation - Part I of III*Plaza Concourse Level - Governors Square 17***MS135** Recent Advances in Random Dynamical Systems - Part III of III*Plaza Concourse Level - Plaza Ballroom BCEF***MS136** The Dynamics of Tissue Growth and

Invasive Tumors

*Plaza Concourse Level - Plaza Ballroom A***MS137** Biological Oscillations in Celebration of

Richard Bertram's 60th Birthday - Part II of II

*Plaza Concourse Level - Plaza Ballroom D***MS139** Collective Motions: a Pair of Insects to Large-scale Autonomous Systems*Plaza Concourse Level - Governors Square 15***MS140** Nonlinear Wave Dynamics for Lattice Differential Equations*Plaza Concourse Level - Governors Square 12*

Wednesday, May 14

Wednesday, May 14

Wednesday, May 14

MS141 Dynamical Systems for Machine Learning-
Part I of III

Plaza Concourse Level - Governors Square 10

MS142 Mathematical Modeling of Complex
Dynamics and Modulation of Neural Networks -
Part I of II

Plaza Concourse Level - Governors Square 11

MS143 Data-driven Modeling for Complex
Systems: Structure, Robustness, and Cross-
disciplinary Applications - Part I of III

Plaza Lobby Level - Directors Row H

MS144 Dynamical Systems Models for Spatial and
Group-Structured Populations - Part I of II

Plaza Concourse Level - Governors Square 16

MS146 Data Assimilation and Parameter Estimation
of Chaotic or Turbulent Systems - Part I of III

Plaza Lobby Level - Directors Row I

MS147 Studies of Persistence/Resilience in
Population Dynamics Models and Data - Part I of II

Plaza Lobby Level - Directors Row E

MS148 Theoretical Advances on Filippov and
Hybrid Systems

Plaza Lobby Level - Directors Row J

MS149 Computational Advances in Koopman,
Operator Learning and Related Fields - Part III of III

Plaza Concourse Level - Plaza Court 1

MS150 Quantum Mechanics for Modeling Classical
Dynamics - Part I of III

Plaza Concourse Level - Plaza Court 2

MS151 Nonautonomous Dynamical Systems:
Theory and Applications - Part I of III

Plaza Concourse Level - Governors Square 9

MS152 Geophysical Fluid Dynamics - Part II of III

Plaza Concourse Level - Plaza Court 7

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9:00 a.m. – 5:00 p.m.

Exhibitor Hours

Plaza Concourse Level - Plaza Exhibit/Foyer

.....
10:30 a.m. – 11:00 a.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

.....
11:00 a.m. – 11:15 a.m.

Red Sock and DSWeb Tutorial Award
Announcements

Plaza Concourse Level - Plaza Ballroom BCEF

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11:15 a.m. – 12:00 p.m.

IP7 Multiscale Models for Enhancing our
Understanding of Tumor-Immune Dynamics and
Combination Therapies

Trachette Jackson, University of Michigan, Ann
Arbor, U.S.

Plaza Concourse Level - Plaza Ballroom BCEF

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12:00 p.m. – 1:30 p.m.

Lunch Break

DSWeb Editorial Board Meeting

Tower Building, Terrace Level - Columbine

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1:30 p.m. – 3:30 p.m.

Concurrent Sessions

MT3 Nonlinear Spectral Reduction for Equations
and Data - Part I

Plaza Concourse Level - Plaza Ballroom BCEF

MS106 Physiological, Cyborg, and Cyborgozoid
Systems: Dynamics and Model Estimation - Part II
of III

Plaza Concourse Level - Governors Square 17

MS153 Recent Developments in Pattern and Wave
Formation: Theory and Applications - Part II of II

Plaza Concourse Level - Plaza Ballroom A

MS154 Diverse Applications of the Koopman
Operator Theory- Part I of II

Plaza Concourse Level - Plaza Ballroom D

MS155 Tipping in Complex Systems: Theory and
Applications - Part I of III

Plaza Concourse Level - Governors Square 14

MS156 Dynamics of Higher-order Interaction
Networks: Theory and Applications - Part I of II

Plaza Concourse Level - Governors Square 15

MS157 Modeling Dynamics in Organ Tissue

Plaza Concourse Level - Governors Square 12

MS158 Dynamical Systems for Machine Learning-
Part II of III

Plaza Concourse Level - Governors Square 10

MS159 Mathematical Modeling of Complex
Dynamics and Modulation of Neural Networks -
Part II of II

Plaza Concourse Level - Governors Square 11

MS160 Data-driven Modeling for Complex
Systems: Structure, Robustness, and Cross-
disciplinary Applications- Part II of III

Plaza Lobby Level - Directors Row H

MS161 Dynamical Systems Models for Spatial and
Group-Structured Populations - Part II of II

Plaza Concourse Level - Governors Square 16

MS163 Data Assimilation and Parameter Estimation
of Chaotic or Turbulent Systems - Part II of III

Plaza Lobby Level - Directors Row I

MS164 Studies of Persistence/Resilience in
Population Dynamics Models and Data - Part II of II

Plaza Lobby Level - Directors Row E

MS165 Recent Advances in Nonlinear Optics,
Turbulence and Surface Wave Phenomena - Part I of
III

Plaza Lobby Level - Directors Row J

MS166 Recent Advances in Analysis of Non-
Smooth Dynamical Systems - Part I of II

Plaza Concourse Level - Plaza Court 1

MS167 Quantum Mechanics for Modeling Classical
Dynamics - Part II of III

Plaza Concourse Level - Plaza Court 2

MS168 Nonautonomous Dynamical Systems:
Theory and Applications - Part II of III

Plaza Concourse Level - Governors Square 9

MS169 Geophysical Fluid Dynamics - Part III of III

Plaza Concourse Level - Plaza Court 7

.....
3:30 p.m. – 4:00 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

.....
4:00 p.m. – 4:45 p.m.

IP8 Spectral Representations and Model Inference
for Multiscale Biological Dynamics
Jörn Dunkel, Massachusetts Institute of Technology,
U.S.

Plaza Concourse Level - Plaza Ballroom BCEF

.....
4:45 p.m. – 5:00 p.m.

Intermission

.....
5:00 p.m. – 7:00 p.m.

Concurrent Sessions

MT4 Nonlinear Spectral Reduction for Equations
and Data - Part II

Plaza Concourse Level - Plaza Ballroom BCEF

MS124 Physiological, Cyborg, and Cyborgozoid
Systems: Dynamics and model estimation - Part III
of III

Plaza Concourse Level - Governors Square 17

MS170 Adaptive Dynamical Networks - Part I of II

Plaza Concourse Level - Plaza Ballroom A

MS171 Diverse Applications of the Koopman
Operator Theory- Part II of II

Plaza Concourse Level - Plaza Ballroom D

MS172 Tipping in Complex Systems: Theory and
Applications - Part II of III

Plaza Concourse Level - Governors Square 14

MS173 Dynamics of Higher-order Interaction
Networks: Theory and Applications - Part II of II

Plaza Concourse Level - Governors Square 15

MS174 Machine Learning for Dynamical Systems
& Dynamical Systems for Machine Learning, Part
I of III

Plaza Concourse Level - Governors Square 12

MS175 Waves in Continuous and Discrete
Domains: Theory and Applications

Plaza Concourse Level - Governors Square 10

MS176 The Dynamics of Neurological Disorders-
Part I of III

Plaza Concourse Level - Governors Square 11

MS177 CANCELLED

MS178 Role of Transient Dynamics and Switching
Transitions for Natural Systems - Part I of II

Plaza Concourse Level - Governors Square 16

MS180 Nonlinear Data Assimilation and
Applications - Part I of III

Plaza Lobby Level - Directors Row I

MS181 Data Driven and Reduced Order Methods in
Dynamical System - Part I of III

Plaza Lobby Level - Directors Row E

MS182 Recent Advances in Nonlinear Optics,
Turbulence and Surface Wave Phenomena - Part II
of III

Plaza Lobby Level - Directors Row J

Wednesday, May 14

MS183 Recent Advances in Analysis of Non-Smooth Dynamical Systems - Part II of II
Plaza Concourse Level - Plaza Court 1

MS184 Topological & Geometric Computational Methods For Dynamical Systems
Plaza Concourse Level - Plaza Court 2

MS185 Coupled Systems: Emergence of Complex Dynamics with Coupling
Plaza Concourse Level - Governors Square 9

MS186 Dynamics in N-body Problems - Part I of III
Plaza Concourse Level - Plaza Court 7

Thursday, May 15

.....
8:00 a.m. – 5:15 p.m.

Registration
Plaza Concourse Level - Plaza Exhibit/Foyer

.....
8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS187 Dynamical Systems Approaches to Active Matter- Part I of III
Plaza Concourse Level - Plaza Ballroom BCEF

MS188 Adaptive Dynamical Networks - Part II of II
Plaza Concourse Level - Plaza Ballroom A

MS189 Evolutionary Dynamics in Ecological, Biological and Social Systems - Part I of II
Plaza Concourse Level - Plaza Ballroom D

MS190 Tipping in Complex Systems: Theory and Applications - Part III of III
Plaza Concourse Level - Governors Square 14

MS191 Pattern Formation and Emergent Phenomena in Life Sciences - Part I of III
Plaza Concourse Level - Governors Square 15

MS192 Numerical Methods for Partial Differential Equations with Singular Source Terms
Plaza Concourse Level - Governors Square 12

MS193 Dynamical Systems for Machine Learning- Part III of III
Plaza Concourse Level - Governors Square 10

MS194 The Dynamics of Neurological Disorders - Part II of III
Plaza Concourse Level - Governors Square 11

MS195 Data-driven Modeling for Complex Systems: Structure, Robustness, and Cross-disciplinary Applications- Part III of III
Plaza Lobby Level - Directors Row H

MS196 Role of Transient Dynamics and Switching Transitions for Natural Systems - Part II of II
Plaza Concourse Level - Governors Square 16

MS197 Motility, Mixing and Transport of Swimming Microorganisms - Part I of II
Plaza Concourse Level - Governors Square 17

MS198 Data Assimilation and Parameter Estimation of Chaotic or Turbulent Systems - Part III of III
Plaza Lobby Level - Directors Row I

Thursday, May 15

MS199 Nonautonomous Dynamical Systems: Theory and Applications - Part III of III
Plaza Lobby Level - Directors Row E

MS200 Recent Advances in Nonlinear Optics, Turbulence and Surface Wave Phenomena - Part III of III
Plaza Lobby Level - Directors Row J

MS201 Vibro-Impact Dynamics and Their Applications
Plaza Concourse Level - Plaza Court 1

MS202 Quantum Mechanics for Modeling Classical Dynamics - Part III of III
Plaza Concourse Level - Plaza Court 2

MS203 Stochastic Reaction Networks with Applications in Biology - Part I of II
Plaza Concourse Level - Governors Square 9

MS204 Dynamics in N-body Problems - Part II of III
Plaza Concourse Level - Plaza Court 7

.....
9:00 a.m. – 2:30 p.m.

Exhibitor Hours
Plaza Concourse Level - Plaza Exhibit/Foyer

.....
10:30 a.m. – 11:00 a.m.

Coffee Break
Plaza Concourse Level - Plaza Exhibit/Foyer

.....
11:00 a.m. – 1:00 p.m.

Concurrent Sessions

MS205 Dynamical Systems Approaches to Active Matter- Part II of III
Plaza Concourse Level - Plaza Ballroom BCEF

MS206 Human Behavior in Climate Opinion, Policy, and Environmental Systems - Part I of II
Plaza Concourse Level - Plaza Ballroom A

MS207 Evolutionary Dynamics in Ecological, Biological and Social Systems - Part II of II
Plaza Concourse Level - Plaza Ballroom D

MS208 Recent Advances in Wave Propagation and Dispersive Dynamics - Part I of II
Plaza Concourse Level - Governors Square 14

MS209 Pattern Formation and Emergent Phenomena in Life Sciences - Part II of III
Plaza Concourse Level - Governors Square 15

MS210 Machine Learning for Dynamical Systems & Dynamical Systems for Machine Learning, Part II of III
Plaza Concourse Level - Governors Square 12

MS211 Delay Equations in Mathematical Biology - Part I of II
Plaza Concourse Level - Governors Square 10

MS212 The Dynamics of Neurological Disorders - Part III of III
Plaza Concourse Level - Governors Square 11

MS213 Disorder-promoted Network Dynamics - Part I of II
Plaza Lobby Level - Directors Row H

MS214 Dynamics of Anomalous Stochastic Processes - Part I of II
Plaza Concourse Level - Governors Square 16

Thursday, May 15

MS215 Motility, Mixing and Transport of Swimming Microorganisms - Part II of II
Plaza Concourse Level - Governors Square 17

MS216 Nonlinear Data Assimilation and Applications - Part II of III
Plaza Lobby Level - Directors Row I

MS217 Data Driven and Reduced Order Methods in Dynamical System - Part II of III
Plaza Lobby Level - Directors Row E

MS218 Koopman Operator in Control - Part I of II
Plaza Lobby Level - Directors Row J

MS219 Vibro-Impact Dynamics and Their Applications - Part II
Plaza Concourse Level - Plaza Court 1

MS220 Extensions and Applications of the Ott-Antonsen Ansatz in Neuroscience
Plaza Concourse Level - Plaza Court 2

MS221 Stochastic Reaction Networks with Applications in Biology - Part II of II
Plaza Concourse Level - Governors Square 9

MS222 CANCELLED

.....
1:00 p.m. - 2:30 p.m.

Lunch Break

.....
2:30 p.m. - 4:30 p.m.

Concurrent Sessions

MS223 Dynamical Systems Approaches to Active Matter- Part III of III
Plaza Concourse Level - Plaza Ballroom BCEF

MS224 Human Behavior in Climate Opinion, Policy, and Environmental Systems - Part II of II
Plaza Concourse Level - Plaza Ballroom A

MS225 Recent Advances in Wave Propagation and Dispersive Dynamics - Part II of II
Plaza Concourse Level - Governors Square 14

MS226 Pattern Formation and Emergent Phenomena in Life Sciences - Part III of III
Plaza Concourse Level - Governors Square 15

MS227 Machine Learning for Dynamical Systems & Dynamical Systems for Machine Learning, Part III of III
Plaza Concourse Level - Governors Square 12

MS228 Delay Equations in Mathematical Biology - Part II of II
Plaza Concourse Level - Governors Square 10

MS229 Disorder-promoted Network Dynamics - Part II of II
Plaza Lobby Level - Directors Row H

MS230 Dynamics of Anomalous Stochastic Processes - Part II of II
Plaza Concourse Level - Governors Square 16

MS231 CANCELLED

MS232 Data Driven and Reduced Order Methods in Dynamical System - Part III of III
Plaza Lobby Level - Directors Row E

MS233 Koopman Operator in Control - Part II of II
Plaza Lobby Level - Directors Row J

CP25 Data-Driven Methods II
Plaza Concourse Level - Plaza Ballroom D

Thursday, May 15

CP26 Pattern Formation II

Plaza Concourse Level - Governors Square 11

CP27 Networks and Synchronization III

Plaza Concourse Level - Governors Square 17

CP28 Electronic, Optical, and Condensed Matter Systems

Plaza Concourse Level - Plaza Court 1

CP29 Neuroscience II

Plaza Concourse Level - Plaza Court 2

CP30 Mathematical Biology II

Plaza Concourse Level - Governors Square 9

CP31 Collective Behavior II

Plaza Concourse Level - Plaza Court 7

4:30 p.m. - 5:00 p.m.

Coffee Break

Plaza Concourse Level - Plaza Exhibit/Foyer

5:00 p.m. - 5:10 p.m.

Closing Remarks

Plaza Concourse Level - Plaza Ballroom BCEF

5:10 p.m. - 5:55 p.m.

IP9 Relating the Future to the Past: The Non-autonomous Dynamics of Tipping Points
Peter Ashwin, University of Exeter, United Kingdom

Plaza Concourse Level - Plaza Ballroom BCEF

Abbreviation Key

CP = Contributed Presentation Session

IP = Invited Plenary Speaker

MS = Minisymposium

MT = Minitutorial

PD = Panel Discussion

PP = Poster Session

SP = Special Lecture

FUNDING AGENCIES

SIAM and the Organizing Committee wish to extend their thanks and appreciation to the U.S. National Science Foundation and the DOE Office of Advanced Scientific Computing Research for their support of this conference.



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SIAM

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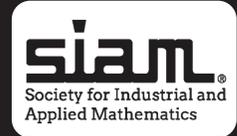
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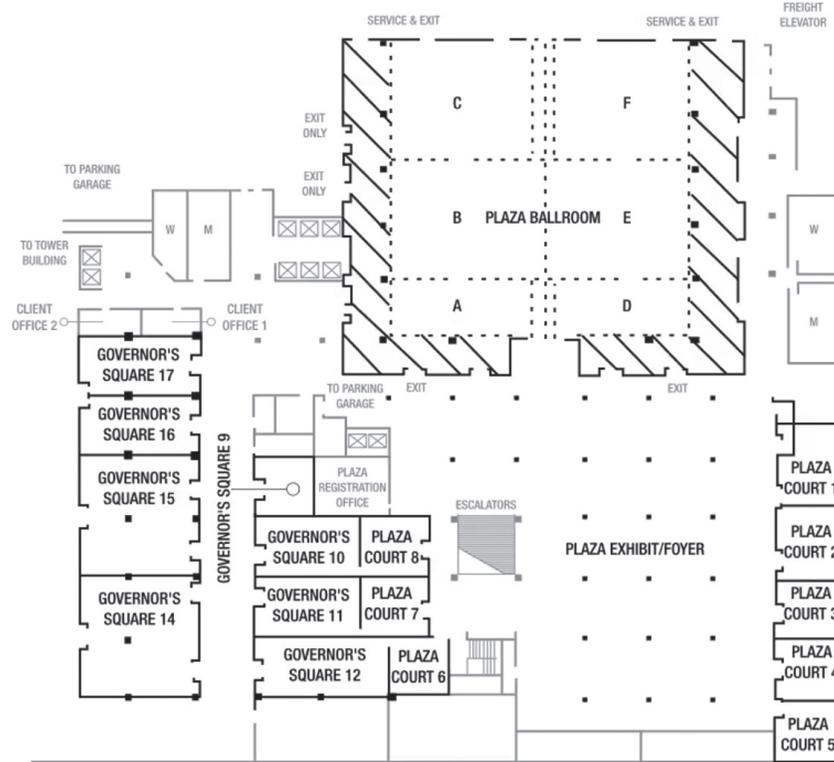
Learn more: siam.org/an25

Themes

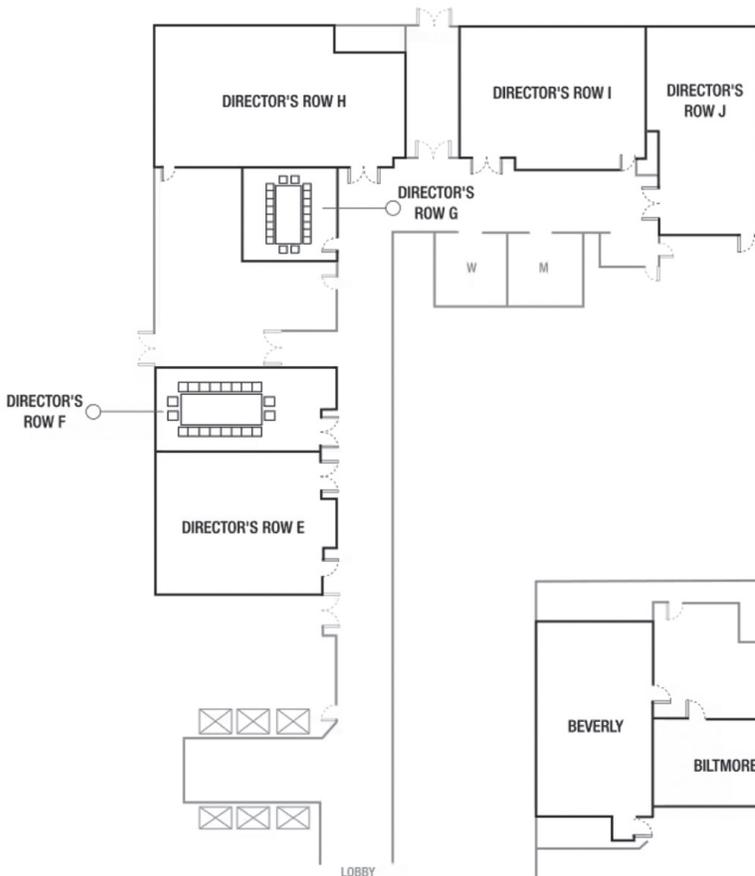
- Analysis of partial differential equations
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- Numerical linear algebra
- Optimization
- Quantum science
- Scientific machine learning

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**Plaza Building
Concourse Level**



**Plaza Building
Lobby Level**



Tower Building Terrace Level

