



Conference on Applications of Dynamical Systems

May 14–18, 2023 • DoubleTree by Hilton Hotel Portland, Portland, Oregon, U.S.

Online Program and Mobile App

Attendees are encouraged to visit

<https://www.siam.org/conferences/cm/program/program-and-abstracts/ds23-program-abstracts>
to view the Online Program Schedule.

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

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Saturday, May 13**Sunday, May 14****Sunday, May 14****4:00 p.m. – 8:00 p.m.**

Registration

*Foyer - 1st Level***4:30 p.m. – 5:30 p.m.**

Student and Postdoc Icebreaker Session

*Hawthorne/Sellwood - 1st Level***6:00 p.m. – 8:00 p.m.**

Welcome Reception

Foyer - 1st Level**Sunday, May 14****7:30 a.m. – 5:30 p.m.**

Registration

*Foyer - 1st Level***8:30 a.m. – 8:45 a.m.**

Opening Remarks

*Lloyd Center Ballroom - 1st Level***8:45 a.m. – 9:30 a.m.****IP1** Animal Behaviors in Response to Fluid InstabilitiesSunghwan “Sunny” Jung, Cornell University, U.S.
*Lloyd Center Ballroom - 1st Level***9:30 a.m. – 10:00 a.m.**

Coffee Break

Foyer - 1st Level**9:30 a.m. – 5:00 p.m.**

Exhibitor Hours

*Foyer - 1st Level***10:00 a.m. – 12:00 p.m.****Concurrent Sessions****MT1** Spatial Patterns in Nature: An Entry-Level Introduction to Their Emergence and Dynamics - Part I of II*Lloyd Center Ballroom - 1st Level***MS1** Dynamics of Complex Social Systems*Oregon - 1st Level***MS2** Koopman Operator Theory in Dynamical Systems: Theory*Mt. Hood - 2nd Level***MS3** Challenges for Pattern Formation Theory - Part I of II*Mt. St. Helens - 2nd Level***MS4** Data-Driven Methods and Operator Learning for Dynamical Systems and Control - Part I of II*Mt. Bachelor - 2nd Level***MS5** Women in Network Science - Part I of III
*3 Sisters - 2nd Level***MS6** Fingerprints of Higher-Dimensional Chaos
*Alaska/Idaho - 1st Level***MS7** Metastability: Transient Dynamics in Complex Systems - Part I of II*Roosevelt - Executive Meeting Center - 1st Level***MS8** Nonlinear Dynamics of the Heart - Part I of III
*Ross Island - 1st Level***MS9** Stochastic Processes in Biological Systems - Part I of II*Morrison - 1st Level***MS10** Applied Models of Immunotherapy - Part I of III*Adams - Executive Meeting Center - 1st Level***MS11** Analysis, Control and Applications of Large-Scale Complex Multiagent Systems*Jefferson - Executive Meeting Center - 1st Level***MS12** Analysis of Turbulent Fluids and Complex Networks using Transfer Operator and Dynamic Laplacian Methods - Part I of II*Jackson - Executive Meeting Center - 1st Level***MS13** Self-Organized Patterns in Cells and Cellular Assemblies: from Molecular to Continuum Mechanisms - Part I of II*Washington - Executive Meeting Center - 1st Level***MS14** Studying Dynamics using Polynomial Optimization Tools - Part I of II*Hamilton - Executive Meeting Center - 1st Level***12:00 p.m. – 1:30 p.m.**

Lunch Break

*Attendees on their own***1:30 p.m. – 3:30 p.m.****Concurrent Sessions****MT2** Spatial Patterns in Nature: An Entry-level Introduction to Their Emergence and Dynamics - Part II of II*Lloyd Center Ballroom - 1st Level***MS15** Disorder-Promoted Cooperative Dynamics - Part I of II*Oregon - 1st Level***MS16** Koopman Operator in Dynamical Systems: Control - Part I of II*Mt. Hood - 2nd Level***MS17** Challenges for Pattern Formation Theory - Part II of II*Mt. St. Helens - 2nd Level***MS18** Data-Driven Methods and Operator Learning for Dynamical Systems and Control - Part II of II*Mt. Bachelor - 2nd Level***MS19** Women in Network Science - Part II of III
*3 Sisters - 2nd Level***MS20** Graphon Systems: Games, Patterns, and Signals - Part I of II*Alaska/Idaho - 1st Level***MS21** Metastability: Transient Dynamics in Complex Systems - Part II of II*Roosevelt - Executive Meeting Center - 1st Level***MS22** Nonlinear Dynamics of the Heart - Part II of III*Ross Island - 1st Level***MS23** Stochastic Processes in Biological Systems - Part II of II*Morrison - 1st Level***MS24** Applied Models of Immunotherapy - Part II of III*Adams - Executive Meeting Center - 1st Level***MS25** Tori and Chaos in Near-Hamiltonian Dynamics with Applications - Part I of III*Jefferson - Executive Meeting Center - 1st Level***MS26** Analysis of Turbulent Fluids and Complex Networks using Transfer Operator and Dynamic Laplacian Methods - Part II of II*Jackson - Executive Meeting Center - 1st Level***MS27** Self-Organized Patterns in Cells and Cellular Assemblies: from Molecular to Continuum Mechanisms - Part II of II*Washington - Executive Meeting Center - 1st Level***MS28** Studying Dynamics using Polynomial Optimization Tools - Part II of II*Hamilton - Executive Meeting Center - 1st Level***3:30 p.m. – 4:00 p.m.**

Coffee Break

Foyer - 1st Level**4:00 p.m. – 4:45 p.m.****IP2** Determining Spectral Stability via the Maslov Index and Conjugate PointsMargaret Beck, Boston University, U.S.
*Lloyd Center Ballroom - 1st Level***4:45 p.m. – 4:55 p.m.**

Intermission

4:55 p.m. – 6:55 p.m.**Concurrent Sessions****MS29** Tipping Points in Natural Systems; Theory and Applications - Part I of II*Lloyd Center Ballroom - 1st Level***MS30** Disorder-Promoted Cooperative Dynamics - Part II of II*Oregon - 1st Level***MS31** Koopman Operator in Dynamical Systems: Control - Part II of II*Mt. Hood - 2nd Level***MS32** Patterns in Nonlinear Partial Differential Equations - Part I of II*Mt. St. Helens - 2nd Level***MS33** Data-Driven Model Discovery of Non-Linear Dynamical Systems for Biological and Medical Applications*Mt. Bachelor - 2nd Level***MS34** Women in Network Science - Part III of III
*3 Sisters - 2nd Level***MS35** Graphon Systems: Games, Patterns, and Signals - Part II of II*Alaska/Idaho - 1st Level***MS36** Singular Perturbation Methods for Multi-Scale Infinite-Dimensional Systems - Part I of II*Roosevelt - Executive Meeting Center - 1st Level*

Sunday, May 14

MS37 Nonlinear Dynamics of the Heart - Part III of III

Ross Island - 1st Level

MS38 Advances in Infectious Disease Modeling - Part I of II

Morrison - 1st Level

MS39 Applied Models of Immunotherapy - Part III of III

Adams - Executive Meeting Center - 1st Level

MS40 Tori and Chaos in Near-Hamiltonian Dynamics with Applications - Part II of III

Jefferson - Executive Meeting Center - 1st Level

MS41 Wave Dynamics of Random and Heterogeneous Media - Part I of II

Jackson - Executive Meeting Center - 1st Level

MS42 Phase Transitions in Network Dynamical Systems

Washington - Executive Meeting Center - 1st Level

MS43 Stochastic Dynamical Systems, Optimal Control and Testing

Hamilton - Executive Meeting Center - 1st Level

6:55 p.m. – 8:25 p.m.

Dinner Break

Attendees on their own

8:25 p.m. – 8:35 p.m.

Prize Presentations - Juergen Moser and J. D. Crawford

Lloyd Center Ballroom - 1st Level

8:35 p.m. – 9:20 p.m.

SP1 Juergen Moser Lecture - Exploring the World of Coupled Oscillators

Yoshiki Kuramoto, Kyoto University, Japan

Lloyd Center Ballroom - 1st Level

Monday, May 15

8:00 a.m. – 5:15 p.m.

Registration

Foyer - 1st Level

8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS44 PART II CANCELLED - Tipping Points in Natural Systems; Theory and Applications - Part II of II

Lloyd Center Ballroom - 1st Level

MS45 Mechanistic Models Meet Data: Hybrid Modelling of Dynamical Systems

Oregon - 1st Level

MS46 Koopman Operator in Dynamical Systems: Numerics - Part I of II

Mt. Hood - 2nd Level

MS47 Pattern in Nonlinear Partial Differential Equations - Part II of II

Mt. St. Helens - 2nd Level

MS48 Data-Driven Modeling and Model Reduction: Theory Meets Applications - Part I of III

Mt. Bachelor - 2nd Level

MS49 Methods for Large but Finite-Size Dynamic Networks

3 Sisters - 2nd Level

MS50 Singular Perturbation Methods for Multi-Scale Infinite-Dimensional Systems - Part II of II

Roosevelt - Executive Meeting Center - 1st Level

MS51 The Cardiac Fibrillation Challenge: from Principles to Patients - Part I of II

Ross Island - 1st Level

MS52 Advances in Infectious Disease Modeling - Part II of II

Morrison - 1st Level

MS53 Computational Modelling Applied to Neuronal Processes

Adams - Executive Meeting Center - 1st Level

MS54 Tori and Chaos in Near-Hamiltonian Dynamics with Applications - Part III of III

Jefferson - Executive Meeting Center - 1st Level

MS55 Wave Dynamics of Random and Heterogeneous Media - Part II of II

Jackson - Executive Meeting Center - 1st Level

MS56 Invariant Manifolds and Low-Dimensional Descriptions of Oscillator Populations

Washington - Executive Meeting Center - 1st Level

MS57 Emergent Properties of Stochastic Systems with Active Noise

Hamilton - Executive Meeting Center - 1st Level

MS177 Workshop Celebrating Diversity (WCD): Diverse Applications and Approaches in Biological Dynamics - Part I of II

Alaska/Idaho - 1st Level

9:30 a.m. – 5:00 p.m.

Exhibitor Hours

Foyer - 1st Level

10:30 a.m. – 11:00 a.m.

Coffee Break

Foyer - 1st Level

11:00 a.m. – 11:05 a.m.

Remarks

Lloyd Center Ballroom - 1st Level

11:05 a.m. – 11:50 a.m.

IP3 Using Dynamical Systems Tools to Incorporate Diverse Sensing into Models of Collective Motion

Nicole Abaid, Virginia Tech, U.S.

Lloyd Center Ballroom - 1st Level

11:50 a.m. – 1:20 p.m.

Lunch Break

Attendees on their own

Monday, May 15

12:00 p.m. – 1:00 p.m.

Mentoring Session

Oregon - 1st Level

1:20 p.m. – 3:20 p.m.

Concurrent Sessions

MT3 Topological Signal Processing for Dynamical Systems - Part I of II

Lloyd Center Ballroom - 1st Level

MS58 Dynamics of Decisions and Behavior in Social Systems - Part I of II

Oregon - 1st Level

MS59 Koopman Operator in Dynamical Systems: Numerics - Part II of II

Mt. Hood - 2nd Level

MS178 Workshop Celebrating Diversity (WCD): Diverse Applications and Approaches in Biological Dynamics - Part II of II

Alaska/Idaho - 1st Level

CP1 Fluid Dynamics and Pattern Formation

Mt. St. Helens - 2nd Level

CP2 Machine Learning

Mt. Bachelor - 2nd Level

CP3 Coupled Oscillators

3 Sisters - 2nd Level

CP4 Multiple Timescale Systems

Roosevelt - Executive Meeting Center - 1st Level

CP5 Software and Algorithms for Dynamical Systems

Ross Island - 1st Level

CP6 Epidemiology

Morrison - 1st Level

CP7 Neuroscience

Adams - Executive Meeting Center - 1st Level

CP8 Bifurcations I

Jefferson - Executive Meeting Center - 1st Level

CP9 Many Body Problems

Jackson - Executive Meeting Center - 1st Level

CP10 Networks I

Washington - Executive Meeting Center - 1st Level

CP11 Stochastic Dynamical Systems

Hamilton - Executive Meeting Center - 1st Level

3:20 p.m. – 3:50 p.m.

Coffee Break

Foyer - 1st Level

3:50 p.m. – 4:35 p.m.

IP4 The Remarkable Accuracy of a Pendulum Clock

Hugh Hunt, University of Cambridge, United Kingdom

Lloyd Center Ballroom - 1st Level

4:35 p.m. – 4:45 p.m.

Intermission

4:45 p.m. – 6:45 p.m.

Concurrent Sessions

MT4 Topological Signal Processing for Dynamical Systems - Part II of II

Lloyd Center Ballroom - 1st Level

Monday, May 15**Tuesday, May 16****Tuesday, May 16**

MS60 Dynamics of Decisions and Behavior in Social Systems - Part II of II

Oregon - 1st Level

MS61 Koopman Operators in Dynamical Systems: Theory and Applications - Part I of II

Mt. Hood - 2nd Level

MS62 Pattern Formation in Nature; from Busse Balloons to Homoclinic Snaking - Part I of II

Mt. St. Helens - 2nd Level

MS63 Data-Driven Modeling and Model Reduction: Theory Meets Applications - Part II of III

Mt. Bachelor - 2nd Level

MS64 Network Dynamics - Part I of II

3 Sisters - 2nd Level

MS65 Long-Term Dynamics: Attraction and Stability Properties of Invariant Sets - Part I of II
Roosevelt - Executive Meeting Center - 1st Level

MS66 The Cardiac Fibrillation Challenge: from Principles to Patients - Part II of II

Ross Island - 1st Level

MS67 Integrating Mean Field Models with Synaptic Dynamics

Morrison - 1st Level

MS68 Dynamic Regulatory Principles in Neuroendocrine Systems - Part I of II

Adams - Executive Meeting Center - 1st Level

MS69 The Mathematics of Time Writ Large: In Memoriam the Work of Denis L. Blackmore - Part I of II

Jefferson - Executive Meeting Center - 1st Level

MS70 Vortex Dynamics Meets Dynamical Systems: Theory, Application, and Computation - Part I of II

Jackson - Executive Meeting Center - 1st Level

MS71 Networks and High-Order Models. Interconnecting Theory and Applications - Part I of II

Washington - Executive Meeting Center - 1st Level

MS72 Uncertainty Quantification for Random Differential Equations

Hamilton –

Executive Meeting Center - 1st Level

6:45 p.m. – 8:15 p.m.

Dinner Break

Attendees on their own

8:15 p.m. – 9:15 p.m.

SIAG/DS Business Meeting
Complimentary beer and wine
will be served

Lloyd Center Ballroom - 1st Level



8:00 a.m. – 5:15 p.m.

Registration

Foyer - 1st Level

8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS73 Dynamical Systems Methods in Climate Modeling - Part I of II

Lloyd Center Ballroom - 1st Level

MS74 Koopman Operators in Dynamical Systems: Theory and Applications - Part II of II

Mt. Hood - 2nd Level

MS75 Pattern Formation in Nature; from Busse Balloons to Homoclinic Snaking - Part II of II

Mt. St. Helens - 2nd Level

MS76 Data-Driven Modeling and Model Reduction: Theory Meets Applications - Part III of III

Mt. Bachelor - 2nd Level

MS77 Network Dynamics - Part II of II

3 Sisters - 2nd Level

MS78 Long-Term Dynamics: Attraction and Stability Properties of Invariant Sets - Part II of II
Roosevelt - Executive Meeting Center - 1st Level

MS79 Physiologic Timeseries Analysis and Modeling in Critical Care - Part I of II

Ross Island - 1st Level

MS80 Applications of Chemical Reactions Networks in Micro and Macro Biological Models
Morrison - 1st Level

MS81 Dynamic Regulatory Principles in Neuroendocrine Systems - Part II of II

Adams - Executive Meeting Center - 1st Level

MS82 The Mathematics of Time Writ Large: In Memoriam the Work of Denis L. Blackmore - Part II of II

Jefferson - Executive Meeting Center - 1st Level

MS83 Vortex Dynamics Meets Dynamical Systems: Theory, Application, and Computation - Part II of II
Jackson - Executive Meeting Center - 1st Level

MS84 Networks and High-Order Models. Interconnecting Theory and Applications - Part II of II

Washington - Executive Meeting Center - 1st Level

MS85 Mean-Field Coupled Systems: from Theory to Applications - Part I of II

Hamilton - Executive Meeting Center - 1st Level

MS179 Workshop Celebrating Diversity (WCD): Little School Dynamics: Cool Dynamics Research Done by Researchers at PUIs

Alaska/Idaho - 1st Level

9:30 a.m. – 5:00 p.m.

Exhibitor Hours

Foyer - 1st Level

10:30 a.m. – 11:00 a.m.

Coffee Break

Foyer - 1st Level



11:00 a.m. – 11:05 a.m.

Remarks

Lloyd Center Ballroom - 1st Level

11:05 a.m. – 11:50 a.m.

IP5 Modeling Complex Oscillations in Pancreatic Beta Cells: A History of Successes, A Future of Challenges

Arthur Sherman, National Institutes of Health, U.S.

Lloyd Center Ballroom - 1st Level

11:50 a.m. – 1:20 p.m.

Lunch Break

Attendees on their own

DSWeb Editorial Meeting

Hawthorne/Sellwood - 1st Level

12:00 p.m. – 1:00 p.m.

Workshop Celebrating Diversity (WCD) Luncheon (by invitation)

Oregon - 1st Level

1:20 p.m. – 3:20 p.m.

Concurrent Sessions

MS86 Dynamical Systems Methods in Climate Modeling - Part II of II

Lloyd Center Ballroom - 1st Level

MS87 The Koopman Operator in Classical and Quantum Dynamical Systems

Mt. Hood - 2nd Level

MS88 Branching Out: a New Generation's Perspective on Spatial Localisation in Higher Dimensions - Part I of II

Mt. St. Helens - 2nd Level

MS89 Data Driven Modelling and Numerical Analysis of Complex Systems - Part I of III

Mt. Bachelor - 2nd Level

MS90 Phase-Based Reduction of Limit Cycle Oscillators - Part I of III

3 Sisters - 2nd Level

MS91 Multiple-Timescale Dynamics with a View Towards Biological Applications - Part I of II

Roosevelt - Executive Meeting Center - 1st Level

MS92 Physiologic Timeseries Analysis and Modeling in Critical Care - Part II of II

Ross Island - 1st Level

MS93 Applied Dynamics in Biology - Part I of II
Morrison - 1st Level

MS94 Topics in Mathematical Biology - Part I of II
Adams - Executive Meeting Center - 1st Level

MS95 Theory and Applications of Transition Path Theory - Part I of II

Jefferson - Executive Meeting Center - 1st Level

MS96 Reduced Order Modeling and Forecasting in Geophysical Flows and Complex Dynamical Systems - Part I of II

Jackson - Executive Meeting Center - 1st Level

MS97 Discrete Media - Lattices, Graphs, and Nonlocal Coupling

Washington - Executive Meeting Center - 1st Level

Tuesday, May 16

MS98 Mean-Field Coupled Systems: from Theory to Applications - Part II of II

Hamilton - Executive Meeting Center - 1st Level

MS180 Workshop Celebrating Diversity (WCD): Modeling, Prediction, and Control of Biological and Bio-inspired Systems

Alaska/Idaho - 1st Level

3:20 p.m. – 3:50 p.m.

Coffee Break

Foyer - 1st Level



3:50 p.m. – 4:35 p.m.

IP6 A Journey Through the Use of Mathematical Models to Gain Insight into Ecological and Sociological Phenomena

Nancy Rodriguez, University of Colorado Boulder, U.S.

Lloyd Center Ballroom - 1st Level

4:35 p.m. – 4:45 p.m.

Intermission

4:45 p.m. – 6:45 p.m.

Concurrent Sessions

MS99 Rate-Induced Tipping - Part I of II

Lloyd Center Ballroom - 1st Level

CP12 Koopman Analysis

Mt. Hood - 2nd Level

CP13 Delayed Dynamics

Mt. St. Helens - 2nd Level

CP14 Biochemical Systems

Mt. Bachelor - 2nd Level

CP15 Oscillatory Dynamics

3 Sisters - 2nd Level

CP16 Collective Behavior in Biological and Social Systems

Roosevelt - Executive Meeting Center - 1st Level

CP17 Nonlinear Systems and Chaos

Ross Island - 1st Level

CP18 Population Models in Ecology

Morrison - 1st Level

CP19 Bifurcations II

Adams - Executive Meeting Center - 1st Level

CP20 Dynamical Systems and Games

Jefferson - Executive Meeting Center - 1st Level

CP21 Planet Earth

Jackson - Executive Meeting Center - 1st Level

CP22 Networks II

Washington - Executive Meeting Center - 1st Level

CP23 Control I

Hamilton - Executive Meeting Center - 1st Level

6:45 p.m. – 8:15 p.m.

Dinner Break

Attendees on their own

SIADS Editorial Meeting

Hawthorne/Sellwood - 1st Level

Tuesday, May 16

8:15 p.m. – 10:15 p.m.

PP1 Poster Session and Dessert Reception

Exhibit Hall - 1st level (next to parking garage)

**Wednesday, May 17**

8:00 a.m. – 5:15 p.m.

Registration

Foyer - 1st Level

8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS100 Rate-Induced Tipping - Part II of II

Lloyd Center Ballroom - 1st Level

MS101 Dynamics of and on Networks with Varying Topologies

Oregon - 1st Level

MS102 Data-Driven Reduced Order Modeling and Control via Spectral Submanifolds - Part I of II

Mt. Hood - 2nd Level

MS103 Branching Out: a New Generation's Perspective on Spatial Localisation in Higher Dimensions - Part II of II

Mt. St. Helens - 2nd Level

MS104 Data Driven Modelling and Numerical Analysis of Complex Systems - Part II of III

Mt. Bachelor - 2nd Level

MS105 Phase-Based Reduction of Limit Cycle Oscillators - Part II of III

3 Sisters - 2nd Level

MS106 Multiple-Timescale Dynamics with a View Towards Biological Applications - Part II of II

Roosevelt - Executive Meeting Center - 1st Level

MS107 Predicting Cardiac Dynamics using Machine Learning - Part I of II

Ross Island - 1st Level

MS108 Applied Dynamics in Biology - Part II of II

Morrison - 1st Level

MS109 Topics in Mathematical Biology - Part II of II

Adams - Executive Meeting Center - 1st Level

MS110 Theory and Applications of Transition Path Theory - Part II of II

Jefferson - Executive Meeting Center - 1st Level

MS111 Reduced Order Modeling and Forecasting in Geophysical Flows and Complex Dynamical Systems - Part II of II

Jackson - Executive Meeting Center - 1st Level

MS112 Dynamics of Biochemical Interaction Networks - Part I of III

Washington - Executive Meeting Center - 1st Level

MS113 Analytical Tools for Noise-Induced Transitions in Smooth and Nonsmooth SDEs - Part I of II

Hamilton - Executive Meeting Center - 1st Level

Wednesday, May 17

9:30 a.m. – 5:00 p.m.

Exhibitor Hours

Foyer - 1st Level

10:30 a.m. – 11:00 a.m.

Coffee Break

Foyer - 1st Level



11:00 a.m. – 11:10 a.m.

Remarks and Red Sock Award Announcement

Lloyd Center Ballroom - 1st Level

11:10 a.m. – 11:55 a.m.

IP7 Linear Response Theory, Koopmanism, and Optimal Fingerprinting Methods for Climate Change

Valerio Lucarini, University of Reading, United Kingdom

Lloyd Center Ballroom - 1st Level

11:55 a.m. – 1:25 p.m.

Lunch Break

Attendees on their own

12:15 p.m. – 1:15 p.m.

PD1 Forward Looking Panel Discussion

Lloyd Center Ballroom - 1st Level

1:25 p.m. – 3:25 p.m.

Concurrent Sessions

MS114 Patterns in Earth's Climate System - Part I of II

Lloyd Center Ballroom - 1st Level

MS115 Simulating Complex Dynamical Systems on Quantum Platforms - Part I of II

Oregon - 1st Level

MS116 Data-Driven Reduced Order Modeling and Control via Spectral Submanifolds - Part II of II

Mt. Hood - 2nd Level

MS117 Clustering and Chimeras: Spatio-Temporal Dynamics in Biological Systems

Mt. St. Helens - 2nd Level

MS118 Data Driven Modelling and Numerical Analysis of Complex Systems - Part III of III

Mt. Bachelor - 2nd Level

MS119 Phase-Based Reduction of Limit Cycle Oscillators - Part III of III

3 Sisters - 2nd Level

MS120 Mathematical and Data Analysis of Biological and Physiological Systems - Part I of II

Roosevelt - Executive Meeting Center - 1st Level

MS121 Predicting Cardiac Dynamics using Machine Learning - Part II of II

Ross Island - 1st Level

MS122 In-Host Dynamics of the Immune System during Respiratory Virus Infection

Morrison - 1st Level

MS123 Dynamics and Inference in Biomedicine and Informatics - Part I of II

Adams - Executive Meeting Center - 1st Level

Wednesday, May 17

MS124 Dynamical Systems Approaches to Active Mixing

Jefferson - Executive Meeting Center - 1st Level

MS125 Geophysical Flows, Rotating Convection and Transport Bounds

Jackson - Executive Meeting Center - 1st Level

MS126 Dynamics of Biochemical Interaction Networks - Part II of III

Washington - Executive Meeting Center - 1st Level

MS127 Synchronization in Oscillators Networks with Higher-Order Interactions

Hamilton - Executive Meeting Center - 1st Level

3:25 p.m. – 3:55 p.m.

Coffee Break

Foyer - 1st Level



3:55 p.m. – 4:40 p.m.

IP8 Mathematical Modeling and Simulation of Multi-scale Yeast Prion Aggregate Dynamics
Suzanne Sindi, University of California, Merced, U.S.

Lloyd Center Ballroom - 1st Level

4:40 p.m. – 4:50 p.m.

Intermission

4:50 p.m. – 6:50 p.m.

Concurrent Sessions

MS128 Patterns in Earth's Climate System - Part II of II

Lloyd Center Ballroom - 1st Level

MS129 Simulating Complex Dynamical Systems on Quantum Platforms - Part II of II

Oregon - 1st Level

MS130 Modeling and Data-Driven Methods for Collective Behavior and Pattern Formation - Part I of II

Mt. Hood - 2nd Level

MS131 Nonlinear Dynamics: Patterns, Attractors and Controls - Part I of III

Mt. St. Helens - 2nd Level

MS132 Rigorous and Computational Studies of Data Assimilation and Parameter Estimation - Part I of III

Mt. Bachelor - 2nd Level

MS133 The Why and How of (Hyper)Networks
3 Sisters - 2nd Level

MS134 Mathematical and Data Analysis of Biological and Physiological Systems - Part II of II

Roosevelt - Executive Meeting Center - 1st Level

MS135 Phase Transitions in Electrophysiological Systems - Part I of III

Ross Island - 1st Level

MS136 The Dynamics of Biological Clocks: From Molecules to People - Part I of III

Morrison - 1st Level

MS137 Dynamics and Inference in Biomedicine and Informatics - Part II of II

Adams - Executive Meeting Center - 1st Level

Wednesday, May 17

MS138 Front Propagation and Invasion Phenomena - Part I of III

Jefferson - Executive Meeting Center - 1st Level

MS139 Dynamics and PDE Models of Geophysical Flows - Part I of III

Jackson - Executive Meeting Center - 1st Level

MS140 Dynamics of Biochemical Interaction Networks - Part III of III

Washington - Executive Meeting Center - 1st Level

MS141 Analytical Tools for Noise-Induced Transitions in Smooth and Nonsmooth SDEs - Part II of II

Hamilton - Executive Meeting Center - 1st Level

MS181 Workshop Celebrating Diversity (WCD): Integrating Data into Dynamical Models in Biology
Alaska/Idaho - 1st Level

Thursday, May 18

8:00 a.m. – 5:00 p.m.

Registration

Foyer - 1st Level

8:30 a.m. – 10:30 a.m.

Concurrent Sessions

MS142 Non-Smooth Dynamical Systems With Impacts: Analysis and Applications - Part I of II

Lloyd Center Ballroom - 1st Level

MS143 Machine Learning for Dynamical Systems & Dynamical Systems for Machine Learning - Part I of III

Oregon - 1st Level

MS144 Modeling and Data-Driven Methods for Collective Behavior and Pattern Formation - Part II of II

Mt. Hood - 2nd Level

MS145 Computer-Assisted Proofs in Dynamics - Part I of III

Alaska/Idaho - 1st Level

MS146 PART I CANCELLED - Waves: Theory and Applications to Biomedical Sciences - Part I of III

Roosevelt - Executive Meeting Center - 1st Level

CP24 Social Science and Economics

Mt. St. Helens - 2nd Level

CP25 Dynamics in Physics

Mt. Bachelor - 2nd Level

CP26 Control II

3 Sisters - 2nd Level

CP27 Nonlinear Waves and Instabilities

Ross Island - 1st Level

CP28 Biological Systems

Morrison - 1st Level

CP29 Bifurcations III

Adams - Executive Meeting Center - 1st Level

Thursday, May 18

CP30 Reduced-Order Nonlinear Models and Solutions

Jefferson - Executive Meeting Center - 1st Level

CP31 Fluids

Jackson - Executive Meeting Center - 1st Level

CP32 Time Series Analysis

Washington - Executive Meeting Center - 1st Level

CP33 Delay Embedding and Dynamics

Hamilton - Executive Meeting Center - 1st Level

10:30 a.m. – 11:00 a.m.

Coffee Break

Foyer - 1st Level



11:00 a.m. – 1:00 p.m.

Concurrent Sessions

MS147 Non-Smooth Dynamical Systems With Impacts: Analysis and Applications - Part II of II

Lloyd Center Ballroom - 1st Level

MS148 Machine Learning for Dynamical Systems & Dynamical Systems for Machine Learning - Part II of III

Oregon - 1st Level

MS149 Data Science for Dynamical Systems - Part I of II

Mt. Hood - 2nd Level

MS150 Nonlinear Dynamics: Patterns, Attractors and Controls - Part II of III

Mt. St. Helens - 2nd Level

MS151 Rigorous and Computational Studies of Data Assimilation and Parameter Estimation - Part II of III

Mt. Bachelor - 2nd Level

MS152 Stability of Modern Power Grids due to Strong Perturbation - Part I of II

3 Sisters - 2nd Level

MS153 Computer-Assisted Proofs in Dynamics - Part II of III

Alaska/Idaho - 1st Level

MS154 Waves: Theory and Applications to Biomedical Sciences - Part II of III

Roosevelt - Executive Meeting Center - 1st Level

MS155 Phase Transitions in Electrophysiological Systems - Part II of III

Ross Island - 1st Level

MS156 The Dynamics of Biological Clocks: From Molecules to People - Part II of III

Morrison - 1st Level

MS157 Novel Insights Into the Dynamics and Computation of Neuronal Networks - Part I of II

Adams - Executive Meeting Center - 1st Level

MS158 Front Propagation and Invasion Phenomena - Part II of III

Jefferson - Executive Meeting Center - 1st Level

MS159 Dynamics and PDE Models of Geophysical Flows - Part II of III

Jackson - Executive Meeting Center - 1st Level

MS160 Oscillation Propagation in Continuous and Discrete-Space Reaction-Diffusion Type Networks - Part I of II

Washington - Executive Meeting Center - 1st Level

Thursday, May 18

MS161 Interpretable Neural Network with Data Driven Stochastic Dynamical Systems - Part I of II
Hamilton - Executive Meeting Center - 1st Level

1:00 p.m. – 2:30 p.m.

Lunch Break
Attendees on their own

2:30 p.m. – 4:30 p.m.

Concurrent Sessions

MS162 Control-Based Continuation and Experimental Bifurcation Analysis
Lloyd Center Ballroom - 1st Level

MS163 Machine Learning for Dynamical Systems & Dynamical Systems for Machine Learning - Part III of III
Oregon - 1st Level

MS164 Data Science for Dynamical Systems - Part II of II
Mt. Hood - 2nd Level

MS165 Nonlinear Dynamics: Patterns, Attractors and Controls - Part III of III
Mt. St. Helens - 2nd Level

MS166 Rigorous and Computational Studies of Data Assimilation and Parameter Estimation - Part III of III
Mt. Bachelor - 2nd Level

MS167 Stability of Modern Power Grids due to Strong Perturbation - Part II of II
3 Sisters - 2nd Level

MS168 Computer-Assisted Proofs in Dynamics - Part III of III
Alaska/Idaho - 1st Level

MS169 Waves: Theory and Applications to Biomedical Sciences - Part III of III
Roosevelt - Executive Meeting Center - 1st Level

MS170 Phase Transitions in Electrophysiological Systems - Part III of III
Ross Island - 1st Level

MS171 The Dynamics of Biological Clocks: From Molecules to People - Part III of III
Morrison - 1st Level

MS172 Novel Insights Into the Dynamics and Computation of Neuronal Networks - Part II of II
Adams - Executive Meeting Center - 1st Level

MS173 Front Propagation and Invasion Phenomena - Part III of III
Jefferson - Executive Meeting Center - 1st Level

MS174 Dynamics and PDE Models of Geophysical Flows - Part III of III
Jackson - Executive Meeting Center - 1st Level

MS175 Oscillation Propagation in Continuous and Discrete-Space Reaction-Diffusion Type Networks - Part II of II
Washington - Executive Meeting Center - 1st Level

MS176 Interpretable Neural Network with Data Driven Stochastic Dynamical Systems - Part II of II
Hamilton - Executive Meeting Center - 1st Level

Thursday, May 18

4:30 p.m. – 5:00 p.m.

Coffee Break
Foyer - 1st Level



5:00 p.m. – 5:10 p.m.

Closing Remarks
Lloyd Center Ballroom - 1st Level

5:10 p.m. – 5:55 p.m.

IP9 Exotic Patterns in Faraday Waves
 Laurette S. Tuckerman, CNRS, France
Lloyd Center Ballroom - 1st Level

Funding Agencies

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

**Key to abbreviations and symbols**

= Business Meeting



= Coffee Break



= Refreshments Served



= Poster Session

CP = Contributed Presentation Session

IP = Invited Plenary Speaker

MS = Minisymposium

MT = Minitutorial

PD = Panel Discussion

PP = Poster Session

SP = Special Lecture

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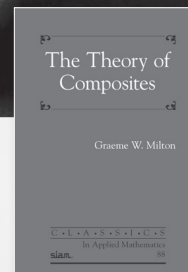
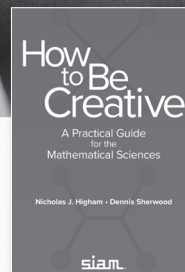
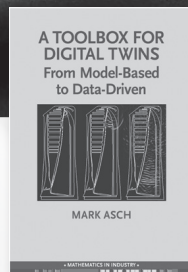
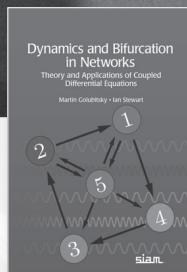
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New books from SIAM



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In recent years, there has been an explosion of interest in network-based modeling in many branches of science. This book synthesizes some of the common features of many such models, providing a general framework analogous to the modern theory of nonlinear dynamical systems. How networks lead to behavior not typical in a general dynamical system and how the architecture and symmetry of the network influence this behavior are the book's main themes.

2023 • xxii + 834 pages • Hardcover • 9781611977325 • List \$129.00 • SIAM Member \$90.30 • OT185

Advanced Reduced Order Methods and Applications in Computational Fluid Dynamics Gianluigi Rozza, Giovanni Stabile, and Francesco Ballarin

Reduced order modeling is an important, growing field in computational science and engineering, and this is the first book to address the subject in relation to computational fluid dynamics. It focuses on complex parametrization of shapes for their optimization and includes recent developments in advanced topics such as turbulence, stability of flows, inverse problems, optimization, and flow control, as well as applications.

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A Toolbox for Digital Twins From Model-Based to Data-Driven Mark Asch

This book brings together the mathematical and numerical frameworks needed for developing digital twins. Starting from the basics—probability, statistics, numerical methods, optimization, and machine learning—and moving on to data assimilation, inverse problems, and Bayesian uncertainty quantification, the book provides a comprehensive toolbox for digital twins. Emphasis is also placed on the design process, denoted as the “inference cycle,” the aim of which is to propose a global methodology for complex problems.

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How to Be Creative A Practical Guide for the Mathematical Sciences Nicholas J. Higham and Dennis Sherwood

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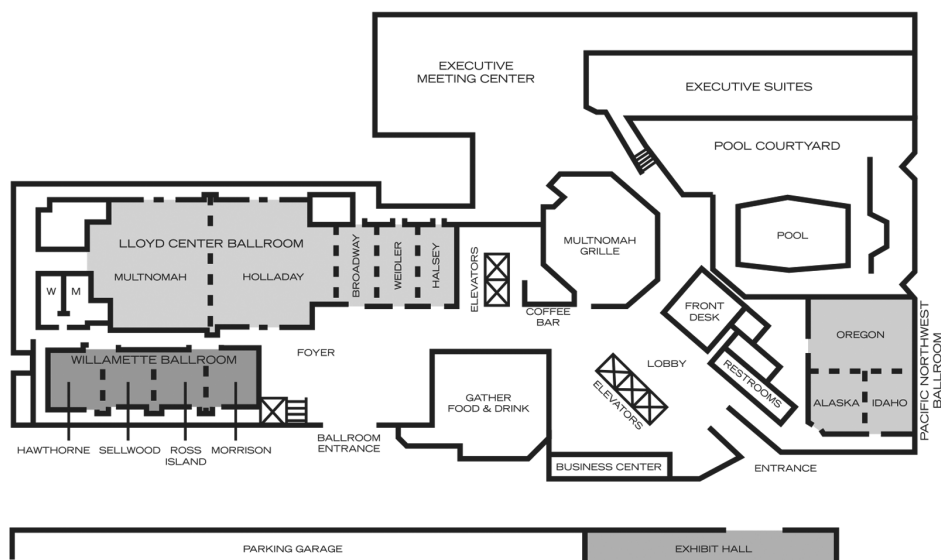
The Theory of Composites Graeme W. Milton

The Theory of Composites surveys these aspects, among others, and complements the new body of literature that has emerged since the book was written. It remains relevant today by providing historical background, a compendium of numerous results, and through elucidating many of the tools still used today in the analysis of composite properties.

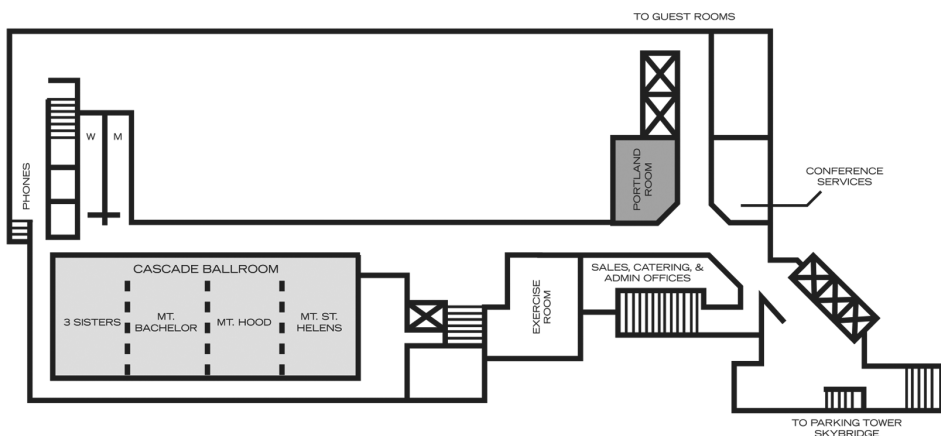
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