At-a-Glance Schedule

Conference on Computational Science and Engineering

March 3–7, 2025 • Fort Worth, Texas, U.S.

Held jointly with:

SIAM International Meshing Roundtable Workshop 2025 (IMR25)
March 3–6, 2025 • Fort Worth Texas, U.S.

All events will take place at either the Fort Worth Convention Center (FWCC) •1201 Houston Street, Fort Worth, Texas, 76102
OR
The Omni Fort Worth Hotel (Omni) • 1300 Houston Street, Fort Worth, Texas, 76102

Online Program and Mobile App

Attendees are encouraged to visit the following to view the Online Program Schedules via the Mobile App or by visiting these links:

CSE25 *https://meetings.siam.org/program.cfm?CONFCODE=CSE25*

IMR25 *https://internationalmeshingroundtable.com/imr33/program/*

The Mobile App and Online Program Schedules contain the most up-to-date information. A searchable abstract document for CSE25 is also posted.

SIAM Events Mobile App

www.tripbuildermedia.com/apps/siam

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Sunday, March 2

4:00 p.m. – 8:00 p.m.
Registration Open
Hall A Foyer, FWCC

6:00 p.m. – 8:00 p.m.
Welcome Reception
Ballroom AB, FWCC

Monday, March 3

7:00 a.m. – 5:00 p.m.
Registration Open
Hall A Foyer, FWCC

8:15 a.m. – 8:30 a.m.
Welcome Remarks
Ballroom AB, FWCC

8:30 a.m. – 9:15 a.m.
IP1 Strong Stability Preserving Methods for Evolution of Hyperbolic Pdes
Sigal Gottlieb, University of Massachusetts, Dartmouth, U.S.
Ballroom AB, FWCC

9:00 a.m. – 4:30 p.m.
Exhibit Hall Open
Hall A. FWCC

9:15 a.m. – 9:45 a.m.
Coffee Break
Hall A, FWCC

9:45 a.m. – 11:25 a.m.
Concurrent Sessions
MT1 How to Give Good Talks Part I of II
109, FWCC
MS1 Physics-Enhanced Data-Driven Control of Complex Systems Part I of II
Fort Worth Ballroom 4, Omni
MS2 Computational Approaches to Problems in Medicine and Biology Part I of II
Fort Worth Ballroom 5, Omni
MS3 Anderson-type Accelerations for Fixed-point Iterative Solvers Part I of II
Sundance 1, Omni
MS4 Recent Advances in Computational Methods for Electromagnetic Waves and Plasmonics Part I of II
Sundance 2, Omni
MS5 Computational Fluctuating Hydrodynamics: Mathematical Introduction and Applications Part I of II
106, FWCC
MS6 Advanced UQ with Challenging Models - Software and Methods Part I of II
108, FWCC
MS8 Leveraging Co-Design on Emerging Supercomputers Part I of II
111, FWCC
MS9 New Developments in GPU-accelerated Linear Solvers Part I of II
112, FWCC
MS10 Contemporary Data Assimilation: Methods, Models, and Applications Part I of II
113, FWCC
MS11 Reduced Order Modeling for Parametric Flow Problems Part I of II
201A, FWCC
MS12 Recent Advances on Numerical Methods for Complex PDE Systems with Applications Part I of II
201B, FWCC
MS13 Recent Advances in Scientific Machine Learning and Digital Twins Part I of II
201C, FWCC
MS14 Machine Learning Methods for Plasma Physics Computations and Control Part I of II
204A, FWCC
MS16 Recent Advances in Predicting Uncertainty in Dynamic Models for Scientific Computing Problems
101, FWCC
MS17 Progress and Challenges in Extreme Scale Computing and Big Data
202D, FWCC
MS18 High-Scale Linear Algebra Computation & AI
FWCC, 102
MS19 Performance Benchmarking of Scientific Libraries and Applications
Stockyards 1, Omni
MS20 Tensor Computation and Applications: A Graduate Student Session
110A, FWCC
MS21 Recent Advances in Diffusion Models from a Differential Equation Viewpoint
114, FWCC
MS22 Advancing Scientific Software Stewardship through CASS Working Groups
110B, FWCC
MS23 Advanced Kinetic/Hybrid Methods for Low Temperature Plasma Applications
Fort Worth Ballroom 3, Omni
MS24 Numerical Methods for Gaussian Processes: Beyond Standard Covariance Functions
Fort Worth Ballroom 8, Omni
MS25 Krylov Methods and Polynomials
202C, FWCC
MS26 Investigating Inverse Problems using Bayesian Inference: Challenges and Advances
203A, FWCC
MS27 Fast Algorithms for Modeling Waves in Complicated Media
203B, FWCC
MS184 Low-complexity Algorithmic and Data-driven Approaches in Scientific Computing and Engineering Part I of II
Sundance 5, Omni

Monday, March 3

11:40 a.m. – 12:55 p.m.
PD1 Fair and Responsible AI
Ballroom AB, FWCC

1:10 p.m. – 1:40 p.m.
SP1 Tensor-Tensor Algebra for Optimal Representation and Compression of Multiway Data
Misha E. Kilmer, Tufts University, U.S.
Ballroom AB, FWCC

1:40 p.m. – 2:10 p.m.
SP2 SIAG/CSE Early Career Prize Lecture: Solving High-Dimensional Partial Differential Equations using Deep Learning: Original Insights and Recent Progress
Jiequn Han, Flatiron Institute, U.S.
Ballroom AB, FWCC

2:25 p.m. – 4:05 p.m.
Concurrent Sessions
MT2 How to Give Good Talks Part II of II
109, FWCC
MS28 Physics-Enhanced Data-Driven Control of Complex Systems Part II of II
Forth Worth Ballroom 4, Omni
MS29 Computational Approaches to Problems in Medicine and Biology Part II of II
Forth Worth Ballroom 5, Omni
MS30 Decision Making for Coupled Systems Part I of II
101, FWCC
MS31 Advances in Particle Methods Part I of II
102, FWCC
MS32 Anderson-type Accelerations for Fixed-point Iterative Solvers Part II of II
Sundance 1, Omni
MS33 Recent Advances in Computational Methods for Electromagnetic Waves and Plasmonics Part II of II
Sundance 2, Omni
MS34 Geometric Mechanics Formulations and Structure-Preserving Discretizations for Models of Physical Systems Part I of II
Sundance 3, Omni
MS35 Computational Fluctuating Hydrodynamics: Mathematical Introduction and Applications Part II of II
106, FWCC
MS36 Advanced UQ with Challenging Models - Software and Methods Part II of II
108, FWCC
MS37 Recent Advances in Computational Magnetohydrodynamics Part I of II
110A, FWCC
MS39 Leveraging Co-Design on Emerging Supercomputers Part II of II
111, FWCC
MS40 New Developments in GPU-accelerated Linear Solvers Part II of II
112, FWCC

Monday, March 3

MS41 Contemporary Data Assimilation: Methods, Models, and Applications Part II of II
113, FWCC
MS42 Recent Advances in Structure-Preserving Machine Learning and Reduced Order Modeling Part I of II
114, FWCC
MS43 Learning to Learn: New Trends in Scientific Machine Learning Part I of II
Sundance 4, Omni
MS44 Reduced Order Modeling for Parametric Flow Problems Part II of II
201A, FWCC
MS45 Recent Advances on Numerical Methods for Complex PDE Systems with Applications Part II of II
201B, FWCC
MS46 Recent Advances in Scientific Machine Learning and Digital Twins Part II of II
201C, FWCC
MS47 Reduce Order Modelling and Its Applications Part I of II
Fort Worth Ballroom 3, Omni
MS48 Uncertainty Quantification in Scientific Machine Learning Part I of II
Fort Worth Ballroom 8, Omni
MS49 Generative AI for Extreme Events in Physical Systems: Methods & Applications Part I of II
202C, FWCC
MS50 Machine Learning Algorithms for Material Models Part I of II
202D, FWCC
MS51 Data Enabled Inverse Problem Approaches for Image and Data Analysis Part I of II
203A, FWCC
MS52 Singular Functions for PDEs Part I of II
203B, FWCC
MS53 Advances in High Dimensional PDE Methods Using Sparse Grids and Low-Rank Part I of II
203C, FWCC
MS54 Machine Learning Methods for Plasma Physics Computations and Control Part II of II
204A, FWCC
MS207 Low-complexity Algorithmic and Data-driven Approaches in Scientific Computing and Engineering Part II of II
Sundance 5, Omni

4:05 p.m. – 4:35 p.m.
Coffee Break
Hall A, FWCC

4:35 p.m. – 5:05 p.m.
SP3 Ivo & Renata Babuška Prize Lecture
Omar Ghattas, The University of Texas at Austin, U.S
Ballroom AB, FWCC

Monday, March 3

5:05 p.m. – 5:35 p.m.
SP4 James H. Wilkinson Prize in Numerical Analysis and Scientific Computing: Mixed Precision Numerical Linear Algebra
Erin C. Carson, Charles University, Czech Republic
Ballroom AB, FWCC

5:35 p.m. – 6:05 p.m.
SP5 SIAM/ACM Prize in Computational Science & Engineering
TBA
Ballroom AB, FWCC

Tuesday, March 4

7:30 a.m. – 4:30 p.m.
Registration Open
Hall A Foyer, FWCC

8:30 a.m. – 9:15 a.m.
IP2 To the Exascale and Beyond: Computing Challenges in Hpc
Kate Clark, NVIDIA, U.S.
Ballroom AB, FWCC

9:00 a.m. – 4:30 p.m.
Exhibit Hall Open
Hall A, FWCC

Career Fair
Hall A, FWCC

9:15 a.m. – 9:45 a.m.
Coffee Break
Hall A, FWCC

9:45 a.m. – 11:25 a.m.
Concurrent Sessions
MT3 Understanding Generative AI: the Core Concepts
109, FWCC
MS56 Computational Methods for Radiative Transfer Part I of II
Fort Worth Ballroom 4, Omni
MS57 BGCE Student Paper Prize Part I of II
Fort Worth Ballroom 5, Omni
MS58 Decision Making for Coupled Systems Part II of II
101, FWCC
MS59 Advances in Particle Methods Part II of II
102, FWCC
MS60 CSE Research Supported by the DOE Computational Science Graduate Fellowship Part I of II
Sundance 1, Omni

Tuesday, March 4

MS61 Recent Advances in Discretization and Numerical Methods for Fluid Flows Part I of II
Sundance 2, Omni
MS62 Geometric Mechanics Formulations and Structure-Preserving Discretizations for Models of Physical Systems Part II of II
Sundance 3, Omni
MS63 Surrogate Modeling, Information Fusion from Multiple Sources and Data-driven Strategies for Optimization, Inverse Problems, and Uncertainty Quantification - Session A - Part I of II
106, FWCC
MS64 Fast Algorithms for Data- and Compute-Intensive Deterministic and Statistical Inverse Problems Part I of II
108, FWCC
MS65 Recent Advances in Computational Magnetohydrodynamics Part II of II
110A, FWCC
MS66 Robust High-order Discretizations Part I of II
110B, FWCC
MS67 Assessing and Quantifying Model Reliability Through Model-form Uncertainty Quantification Part I of II
111, FWCC
MS69 Mathematics of Digital Twins Part I of II
113, FWCC
MS70 Recent Advances in Structure-Preserving Machine Learning and Reduced Order Modeling Part II of II
114, FWCC
MS71 Learning to Learn: New Trends in Scientific Machine Learning Part II of II
Sundance 4, Omni
MS72 Overcoming Obstacles to Practical Adoption of Integral Equation Methods for PDEs Part I of II
201A, FWCC
MS73 New Trends on Inverse Problems and Machine Learning Part I of II
201B, FWCC
MS74 Reduced Order Models and Machine Learning for Fluid Flows: Modeling, Analysis, and Simulation Part I of II
201C, FWCC
MS75 Reduce Order Modelling and Its Applications Part II of II
Fort Worth Ballroom 3, Omni
MS76 Uncertainty Quantification in Scientific Machine Learning Part II of II
Fort Worth Ballroom 8, Omni
MS77 Generative AI for Extreme Events in Physical Systems: Methods & Applications Part II of II
202C, FWCC
MS78 Machine Learning Algorithms for Material Models Part II of II
202D, FWCC
MS79 Data Enabled Inverse Problem Approaches for Image and Data Analysis Part II of II
203A, FWCC

MS80 Singular Functions for PDEs Part II of II
203B, FWCC
MS81 Advances in High Dimensional PDE Methods Using Sparse Grids and Low-Rank Part II of II
203C, FWCC
MS82 Matrix Computations and Scientific Applications Part I of II
204A, FWCC
MS83 Recent Advances for Modeling, Numerical Algorithm for Quantum Many-body Systems
Stockyards 1, Omni

11:40 a.m. – 12:55 p.m.
PD2 Forward Looking
Ballroom AB, FWCC

1:10 p.m. – 1:55 p.m.
IP3 Virtual Lungs in Respiratory Medicine: Multiscale Pulmonary Models and Clinical Applications
Daniel Hurtado, Pontificia Universidad Católica de Chile, Chile
Ballroom AB, FWCC

2:10 p.m. – 3:50 p.m.
Concurrent Sessions
MS84 Computational Methods for Radiative Transfer Part I of II
Fort Worth Ballroom 4, Omni
MS85 BGCE Student Paper Prize Part II of II
Fort Worth Ballroom 5, Omni
MS86 Modern Developments and Emerging Aspects in Eigensolver Methods and Applications Part I of II
101, FWCC
MS87 Introducing the Consortium for the Advancement of Scientific Software (CASS) Part I of II
102, FWCC
MS88 CSE Research Supported by the DOE Computational Science Graduate Fellowship Part II of II
Sundance 1, Omni
MS89 Recent Advances in Discretization and Numerical Methods for Fluid Flows Part II of II
Sundance 2, Omni
MS90 Computational Relativistic Astrophysics in the Exascale Era Part I of II
Sundance 3, Omni
MS91 Surrogate Modeling, Information Fusion from Multiple Sources and Data-driven Strategies for Optimization, Inverse Problems, and Uncertainty Quantification - Session A - Part II of II
106, FWCC
MS92 Fast Algorithms for Data- and Compute-Intensive Deterministic and Statistical Inverse Problems Part II of II
108, FWCC
MS93 Recent Advances in Cut Cell Discretizations: Accuracy, Stability, and Applications Part I of II
110A, FWCC
MS94 Robust High-order Discretizations Part II of II
110B, FWCC
MS95 Assessing and Quantifying Model Reliability Through Model-form Uncertainty Quantification Part II of II
111, FWCC
MS97 Mathematics of Digital Twins Part II of II
113, FWCC
MS98 Accelerating Inference, UQ, and Optimization with Machine Learning Models Part I of II
114, FWCC
MS99 Emerging Machine-Learning Methods in Geoscience Applications Part I of II
Sundance 4, Omni
MS100 Overcoming Obstacles to Practical Adoption of Integral Equation Methods for PDEs Part II of II
201A, FWCC
MS101 New Trends on Inverse Problems and Machine Learning Part II of II
201B, FWCC
MS102 Reduced Order Models and Machine Learning for Fluid Flows: Modeling, Analysis, and Simulation Part II of II
201C, FWCC
MS103 Mathematics in Structural Biology Part I of II
Fort Worth Ballroom 3, Omni
MS104 Numerical Advancements in Control and Games Part I of II
Fort Worth Ballroom 8, Omni
MS105 Uncertainty Quantification in Neural Network Models Part I of II
202C, FWCC
MS106 Computational Methods for Non-Newtonian Flows Part I of II
202D, FWCC
MS107 Measure Transport - Algorithms and Analysis Part I of II
203A, FWCC
MS108 Recent Advancements in Data Assimilation Part I of II
203B, FWCC
MS109 Advances in Derivative-Free Optimization for Computational Science and Engineering Part I of II
203C, FWCC
MS110 Matrix Computations and Scientific Applications Part II of II
204A, FWCC
MS111 Next-Generation Techniques in Topological Data Analysis and PDE Post-Processing
Stockyards 1, Omni

3:50 p.m. – 4:20 p.m.
Coffee Break
Hall A, FWCC

4:20 p.m. – 6:00 p.m.
Concurrent Sessions
MS15 Recent Advances in Kinetic Plasma Simulations: Methods and Applications
Fort Worth Ballroom 5, Omni
MS112 Introducing the Consortium for the Advancement of Scientific Software (CASS) Part II of II
102, FWCC
MS113 Computational Relativistic Astrophysics in the Exascale Era Part II of II
Sundance 3, Omni
MS114 Surrogate Modeling, Information Fusion from Multiple Sources and Data-driven Strategies for Optimization, Inverse Problems, and Uncertainty Quantification - Session B - Part I of II
106, FWCC
MS115 Tensors in Scientific Computing and Engineering Part I of II
108, FWCC
MS116 Recent Advances in Cut Cell Discretizations: Accuracy, Stability, and Applications Part II of II
110A, FWCC
MS117 Machine Learning with Applications in Chemical and Materials Sciences Part I of II
110B, FWCC
MS118 Advanced Machine Learning Approaches for PDEs and Nonlinear Dynamics
111, FWCC
MS119 Computational Advances in Modeling of Dispersed Multiphase Flows Part I of II
113, FWCC
MS120 Accelerating Inference, UQ, and Optimization with Machine Learning Models Part II of II
114, FWCC
MS121 Emerging Machine-Learning Methods in Geoscience Applications Part II of II
Sundance 4, Omni
MS122 Recent Developments on Sparse Grids and Applications Part I of II
201A, FWCC
MS123 Recent Advances of Operator Learning and Foundation-Model-Assisted Multi-Operator Learning Part I of II
201B, FWCC
MS124 Trajectories in Scientific Machine Learning Part I of II
201C, FWCC
MS125 Mathematics in Structural Biology Part II of II
Fort Worth Ballroom 3, Omni
MS126 Numerical Advancements in Control and Games Part II of II
Fort Worth Ballroom 8, Omni

Tuesday, March 4

MS127 Uncertainty Quantification in Neural Network Models Part II of II
202C, FWCC
MS128 Computational Methods for Non-Newtonian Flows Part II of II
202D, FWCC
MS129 Measure Transport - Algorithms and Analysis Part II of II
203A, FWCC
MS130 Recent Advancements in Data Assimilation Part II of II
203B, FWCC
MS131 Advances in Derivative-Free Optimization for Computational Science and Engineering Part II of II
203C, FWCC
MS132 Computational Algorithms For Data Assimilation and Inverse Problems Part I of II
204A, FWCC
MS133 Modern Developments and Emerging Aspects in Eigensolver Methods and Applications Part II of II
101, FWCC

6:00 p.m. – 8:00 p.m.
Dinner Break

8:00 p.m. – 10:00 p.m.
PP1 Poster Presentations and Dessert Reception
MP1 Advancing Medical Diagnosis and Graph Learning with Topological Deep Learning and GNNs
MP2 BE: Program Participant Posters
Ballroom C, FWCC

Wednesday, March 5

8:00 a.m. – 4:30 p.m.
Registration Open
Hall A Foyer, FWCC

8:30 a.m. – 9:15 a.m.
IP4 Physics-Based Model Reduction in the Age of Digital Twins
Karen Veroy-Grepl, Technische Universiteit Eindhoven, The Netherlands
Ballroom AB, FWCC

9:00 a.m. – 4:30 p.m.
Exhibit Hall Open
Hall A, FWCC

9:15 a.m. – 9:45 a.m.
Coffee Break
Hall A, FWCC

Wednesday, March 5

9:45 a.m. – 11:25 a.m.
Concurrent Sessions
MS134 Digital Twins in Science and Engineering: Transformative Applications and Emerging Technologies Part I of II
102, FWCC
MS135 Recent Advances in Time Integrators for Multiphysics Simulations: Applications Part I of II
Sundance 1, Omni
MS136 Numerical Methods for Coupled Multiphysics Problems Part I of II
Sundance 2, Omni
MS137 Shock Capturing Approaches for High Order Methods Part I of II
Fort Worth Ballroom 5, Omni
MS138 Surrogate Modeling, Information Fusion from Multiple Sources and Data-driven Strategies for Optimization, Inverse Problems, and Uncertainty Quantification - Session B - Part II of II
106, FWCC
MS139 Tensors in Scientific Computing and Engineering Part II of II
108, FWCC
MS140 Advances in Discontinuous Galerkin and Trefftz Methods
109, FWCC
MS141 Application of Optimal Transport in Control and Inverse Problems Part I of II
110A, FWCC
MS142 Machine Learning with Applications in Chemical and Materials Sciences Part II of II
110B, FWCC
MS143 Recent Advances in Modeling and Numerical Methods for Inverse Problems
111, FWCC
MS144 Efficient Solution Methods for Non-linear and Coupled Large Scale Problems Part I of II
112, FWCC
MS145 Computational Advances in Modeling of Dispersed Multiphase Flows Part II of II
113, FWCC
MS146 Scientific Machine Learning for Stable Prediction of Dynamical Systems Part I of II
114, FWCC
MS147 Latest Advances in Neural PDE Solvers Part I of II
Fort Worth Ballroom 4, Omni
MS148 Recent Developments on Sparse Grids and Applications Part II of II
201A, FWCC
MS149 Recent Advances of Operator Learning and Foundation-Model-Assisted Multi-Operator Learning Part II of II
201B, FWCC
MS150 Trajectories in Scientific Machine Learning Part II of II
201C, FWCC
MS151 Quantum Algorithms for Scientific Computing Part I of II
Fort Worth Ballroom 3, Omni

Wednesday, March 5

MS152 Nonlocal Models in Computational Science and Engineering Part I of II
Fort Worth Ballroom 8, Omni
MS153 New Advances in Multigrid Methods Part I of II
202C, FWCC
MS154 Advancing Science with AI: ML Algorithmic Innovations and Neuromorphic Systems Part I of II
202D, FWCC
MS155 Recent Theoretical Developments in Approximation Theory of Neural Networks Part I of II
203A, FWCC
MS156 Recent Advances on Structure-preserving Numerical Methods for PDEs Part I of II
203B, FWCC
MS157 Structure-preserving Priors for Large-scale Static and Dynamic Inverse Problem Part I of II
203C, FWCC
MS158 Computational Algorithms For Data Assimilation and Inverse Problems Part II of II
204A, FWCC
MS159 Recent Developments in High-order Finite Elements Part I of II
101, FWCC
MS193 Predictive Disease Modeling and Simulations for Decision-making Part I of II
Sundance 3, Omni

11:40 a.m. – 12:55 p.m.
PD3 Entrepreneurship
Ballroom AB, FWCC

1:10 p.m. – 1:55 p.m.
IP5 What Happens to a Dream Deferred? Chasing Language-Based Parallel Programming for HPC and AI
Damian W. Rouson, Lawrence Berkeley National Laboratory, U.S.
Ballroom AB, FWCC

2:10 p.m. – 3:50 p.m.
Concurrent Sessions
MT6 Data-Driven Reduced Modeling in the Time and Frequency Domains: Fundamentals, Best Practices, and Implementation Part I of II
109, FWCC
MS68 Recent Advances in Integral Equation Methods and Their Applications Part I of II
111, FWCC
MS160 Digital Twins in Science and Engineering: Transformative Applications and Emerging Technologies Part II of II
102, FWCC
MS161 Recent Advances in Time Integrators for Multiphysics Simulations: Applications Part II of II
Sundance 1, Omni

Wednesday, March 5 Wednesday, March 5 Wednesday, March 5

MS162 Numerical Methods for Coupled Multiphysics Problems Part II of II
Sundance 2, Omni
MS163 Shock Capturing Approaches for High Order Methods Part II of II
Fort Worth Ballroom 5, Omni
MS164 Digital Twins for Large-scale Complex Systems Part I of II
106, FWCC
MS165 Time Integration of Dynamical Systems Using Machine Learning Part I of II
108, FWCC
MS166 Application of Optimal Transport in Control and Inverse Problems Part II of II
110A, FWCC
MS167 Advances in Algorithms for Extreme Events in Science and Engineering Part I of II
110B, FWCC
MS168 Efficient Solution Methods for Non-linear and Coupled Large Scale Problems Part II of II
112, FWCC
MS169 FASTMATH Advances in High-Performance Computing for Sparse Systems, Multilevel Methods, and Scientific Simulations Part I of II
113, FWCC
MS170 Scientific Machine Learning for Stable Prediction of Dynamical Systems Part II of II
114, FWCC
MS171 Latest Advances in Neural PDE Solvers Part II of II
Fort Worth Ballroom 4, Omni
MS172 Scientific Machine Learning at Scale Part I of II
201A, FWCC
MS173 Advances in Domain Decomposition Methods and Fast Solvers Part I of II
201B, FWCC
MS174 Modern Approaches in Machine Learning for Model Order Reduction Part I of II
201C, FWCC
MS175 Quantum Algorithms for Scientific Computing Part II of II
Fort Worth Ballroom 3, Omni
MS176 Nonlocal Models in Computational Science and Engineering Part II of II
Fort Worth Ballroom 8, Omni
MS177 New Advances in Multigrid Methods Part II of II
202C, FWCC
MS178 Advancing Science with AI: ML Algorithmic Innovations and Neuromorphic Systems Part II of II
202D, FWCC
MS179 Recent Theoretical Developments in Approximation Theory of Neural Networks Part II of II
203A, FWCC
MS180 Recent Advances on Structure-preserving Numerical Methods for PDEs Part II of II
203B, FWCC
MS181 Structure-preserving Priors for Large-scale Static and Dynamic Inverse Problem Part II of II
203C, FWCC
MS182 Julia for High-Productive Scientific HPC Part I of II
204A, FWCC
MS183 Recent Developments in High-order Finite Elements Part II of II
101, FWCC
MS219 Predictive Disease Modeling and Simulations for Decision-making Part II of II
Sundance 3, Omni
MS243 Recent Advances in Algorithmic Differentiation Part I of II
Sundance 5, Omni

3:50 p.m. – 4:20 p.m.
Coffee Break
Hall A, Foyer

4:20 p.m. – 6:00 p.m.
Concurrent Sessions
MT7 Data-Driven Reduced Modeling in the Time and Frequency Domains: Fundamentals, Best Practices, and Implementation Part II of II
Fort Worth Ballroom 4, Omni
MS96 Recent Advances in Integral Equation Methods and Their Applications Part II of II
111, FWCC
MS185 Leveraging Engagement and Advocacy Practices for Effective Participation by Underrepresented Groups in STEM
Sundance 1, Omni
MS186 Methods for Image Processing and Numerical Modeling in Computational Medicine Part I of II
Fort Worth Ballroom 5, Omni
MS187 Digital Twins for Large-scale Complex Systems Part II of II
106, FWCC
MS188 Time Integration of Dynamical Systems Using Machine Learning Part II of II
108, FWCC
MS189 Multilinear Methods for Comparative Data Analysis, Data Fusion, and More Part I of II
110A, FWCC
MS190 Advances in Algorithms for Extreme Events in Science and Engineering Part II of II
110B, FWCC
MS191 FASTMATH Advances in High-Performance Computing for Sparse Systems, Multilevel Methods, and Scientific Simulations Part II of II
113, FWCC
MS192 Recent Advances of Complex Fluids Modeling and Computations with Applications Part I of II
114, FWCC
MS194 Scientific Machine Learning at Scale Part II of II
201A, FWCC
MS195 Advances in Domain Decomposition Methods and Fast Solvers Part II of II
201B, FWCC
MS196 Modern Approaches in Machine Learning for Model Order Reduction Part II of II
201C, FWCC
MS197 Double, Single or Half the Fun - Mixed and Reduced Precision Computing in CSE Projects Part I of II
Fort Worth Ballroom 3, Omni
MS198 Numerical Methods for Quantum Many-body Problems Part I of II
Fort Worth Ballroom 8, Omni
MS199 Computing Sensitivities for Particle Monte Carlo Simulations Part I of II
202C, FWCC
MS200 Tensor Decompositions for Computational and Data Sciences Part I of II
202D, FWCC
MS201 Generative Models for Scientific Applications Part I of II
203A, FWCC
MS202 UQ and OED at the Interface Between Theory and Applications Part I of II
203B, FWCC
MS203 Machine Learning for Computational Solid Mechanics Part I of II
203C, FWCC
MS204 Julia for High-Productive Scientific HPC Part II of II
204A, FWCC
MS205 Recent Advances in Time Integrators for Multiphysics Simulations Part I of II
101, FWCC
MS266 Recent Advances in Algorithmic Differentiation Part II of II
Sundance 5, Omni
MS285 Addressing Intractability in Optimal Control
Sundance 2, Omni

6:15 p.m. – 7:00 p.m.
SIAG/CSE Business Meeting
Complimentary beer and wine will be served
Sundance 3, Omni

7:00 p.m. – 9:00 p.m.
SISC Editorial Board Meeting
Sundance 4, Omni

Thursday, March 6

8:00 a.m. – 4:30 p.m.
Registration Open
Hall A Foyer, FWCC

8:15 a.m. – 8:30 a.m.
Poster Awards Presentation
Ballroom AB, FWCC

Thursday, March 6 Thursday, March 6 Thursday, March 6

8:30 a.m. – 9:15 a.m.
IP6 Computational Modelling of Coupled Thermo-Poro-Elastic Deformation of Fractured Rocks in the Context of the Energy Transition
Adriana Paluszny, Imperial College London, United Kingdom
Ballroom AB, FWCC

9:00 a.m. – 4:30 p.m.
Exhibit Hall Open
Hall A, FWCC

9:15 a.m. – 9:45 a.m.
Coffee Break
Hall A, FWCC

9:45 a.m. – 11:25 a.m.
Concurrent Sessions
MT8 PETSc the Portable Extensible Toolkit for Scientific Computations
109, FWCC
MS7 PDE-Constrained Optimization: Analysis and Algorithms Part I of II
Fort Worth Ballroom 4, Omni
MS206 Recent Advances in Time Integrators for Multiphysics Simulations Part II of II
101, FWCC
MS208 Numerical Linear Algebra for Efficient Neural Networks
Sundance 1, Omni
MS209 Social Dynamics: Modeling and Simulations
Sundance 2, Omni
MS210 Methods for Image Processing and Numerical Modeling in Computational Medicine Part II of II
Fort Worth Ballroom 5, Omni
MS211 Recent Development in Inverse Problems and Imaging Part I of II
106, FWCC
MS212 The Interplay of Learning and Classical Methods for PDEs Part I of II
108, FWCC
MS213 Multilinear Methods for Comparative Data Analysis, Data Fusion, and More Part II of II
110A, FWCC
MS214 Data-driven and Model-reduction Methods for Multiscale and Multiphysics Problems Part I of II
110B, FWCC
MS215 Stochastic Methods for Mesoscale Fluid Dynamics
111, FWCC
MS216 Multi-fidelity Approaches in Mathematical Biology
112, FWCC
MS217 Machine Learning for Ice-Sheet Modeling and Observations Part I of II
113, FWCC
MS218 Recent Advances of Complex Fluids Modeling and Computations with Applications Part II of II
114, FWCC
MS220 Computational Methods in Environmental Fluid Mechanics Part I of II
201A, FWCC
MS221 Novel Methods for Unstructured Mesh Calculations Part I of II
201B, FWCC
MS222 Low-Rank Methods for Scientific Simulation Part I of II
201C, FWCC
MS223 Double, Single or Half the Fun - Mixed and Reduced Precision Computing in CSE Projects Part II of II
Fort Worth Ballroom 3, Omni
MS224 Numerical Methods for Quantum Many-body Problems Part II of II
Fort Worth Ballroom 8, Omni
MS225 Computing Sensitivities for Particle Monte Carlo Simulations Part II of II
202C, FWCC
MS226 Tensor Decompositions for Computational and Data Sciences Part II of II
202D, FWCC
MS227 Generative Models for Scientific Applications Part II of II
203A, FWCC
MS228 UQ and OED at the Interface Between Theory and Applications Part II of II
203B, FWCC
MS229 Machine Learning for Computational Solid Mechanics Part II of II
203C, FWCC
MS230 Radiation Boundary Conditions, Far Field Evaluation, and Reduced Order Modeling Part I of II
204A, FWCC

11:40 a.m. – 12:55 p.m.
PD4 Funding and Opportunities
Ballroom AB, FWCC

1:10 p.m. – 1:55 p.m.
IP7 Artificial Intelligence: Applications in Scientific and Domain–Rich Fields
Julia Ling, Google X, Mountain View, U.S.
Ballroom AB, FWCC

2:10 p.m. – 3:50 p.m.
Concurrent Sessions
MT5 Fast Direct Solvers for Elliptic PDEs Part II of II
112, FWCC
MT9 BE: Accessible High-Performance Computing Using the Julia Language
109, FWCC
MS55 PDE-Constrained Optimization: Analysis and Algorithms Part II of II
Fort Worth Ballroom 4, Omni
MS232 Digital Twins for Predictive Decision-Making Part I of II
102, FWCC
MS233 Advances in Parallel-in-Time Algorithms
Sundance 1, Omni
MS234 Spectral Deferred Correction Methods
Sundance 2, Omni
MS235 Numerical Methods for Quantum Optimal Control and Quantum Computing Hardware Emulation Part I of II
Fort Worth Ballroom 5, Omni
MS236 Recent Development in Inverse Problems and Imaging Part II of II
106, FWCC
MS237 The Interplay of Learning and Classical Methods for PDEs Part II of II
108, FWCC
MS238 Recent Developments in Numerical Methods for Kinetic Equations Part I of II
110A, FWCC
MS239 Data-driven and Model-reduction Methods for Multiscale and Multiphysics Problems Part II of II
110B, FWCC
MS240 Advances in Simulation of Curved Fluid Interfaces and Membranes: Geometric and Hydrodynamic Methods
111, FWCC
MS241 Machine Learning for Ice-Sheet Modeling and Observations Part II of II
113, FWCC
MS242 Team Science in CSE for All
114, FWCC
MS244 Computational Methods in Environmental Fluid Mechanics Part II of II
201A, FWCC
MS245 Novel Methods for Unstructured Mesh Calculations Part II of II
201B, FWCC
MS246 Low-Rank Methods for Scientific Simulation Part II of II
201C, FWCC
MS247 Data-Driven Uncertainty Quantification Algorithms and Applications Part I of II
Fort Worth Ballroom 3, Omni
MS248 Current Developments in Mimetic Differences and Applications Part I of II
Fort Worth Ballroom 8, Omni
MS249 Data-driven Methods for Multiscale Modeling and Homogenization Part I of II
202C, FWCC
MS250 Advancing Turbulence Modeling with Scientific Machine Learning Part I of II
202D, FWCC
MS251 Adaptive Mesh Refinement for Multiphysics Simulations Part I of II
203A, FWCC

Thursday, March 6

MS252 Recent Advancements in Unfitted Finite Element Methods Part I of II
203B, FWCC
MS253 Radiation Boundary Conditions, Far Field Evaluation, and Reduced Order Modeling Part II of II
204A, FWCC
MS254 Generative Machine Learning Models for Uncertainty Quantification Part I of II
101, FWCC
MS255 RandNLA: Algorithms for Scientific Computing Part I of II
203C, FWCC

3:50 p.m. – 4:20 p.m.
Coffee Break
Hall A, FWCC

4:20 p.m. – 6:00 p.m.
Concurrent Sessions
MT4 Fast Direct Solvers for Elliptic PDEs Part I of II
112, FWCC
MS256 Digital Twins for Predictive Decision-Making Part II of II
102, FWCC
MS257 Computational Techniques for Brownian Motion with Constraints
Sundance 2, Omni
MS258 Numerical Methods for Quantum Optimal Control and Quantum Computing Hardware Emulation Part II of II
Fort Worth Ballroom 5, Omni
MS259 Scientific Machine Learning for Biological Mechanics Models from Medical Data
106, FWCC
MS260 Likelihood-free Inference and Approximate Bayesian Computation
108, FWCC
MS261 Recent Developments in Numerical Methods for Kinetic Equations Part II of II
110A, FWCC
MS262 Advances in Non-linear Data Assimilation
110B, FWCC
MS263 Code Coupling Strategies for Multiphysics Codes: Lessons Learned
111, FWCC
MS264 Advancements in Data Driven Seismic Imaging
113, FWCC
MS265 Machine Learning in Physics-based Computational Medicine
114, FWCC
MS267 Advances in Linear Algebra and Optimization for Heterogeneous GPUs
201A, FWCC
MS268 Sample-efficient Bayesian and Sequential Decision-making under Uncertainty for Complex Systems Part I of II
201B, FWCC

Thursday, March 6

MS269 Machine Learning with Applications in Chemical and Materials Sciences II
201C, FWCC
MS270 Data-Driven Uncertainty Quantification Algorithms and Applications Part II of II
Fort Worth Ballroom 3, Omni
MS271 Current Developments in Mimetic Differences and Applications Part II of II
Fort Worth Ballroom 8, Omni
MS272 Data-driven Methods for Multiscale Modeling and Homogenization Part II of II
202C, FWCC
MS273 Advancing Turbulence Modeling with Scientific Machine Learning Part II of II
202D, FWCC
MS274 Adaptive Mesh Refinement for Multiphysics Simulations Part II of II
203A, FWCC
MS275 Recent Advancements in Unfitted Finite Element Methods Part II of II
203B, FWCC
MS276 Structure-preserving Model Order Reduction for Large-scale Systems Part I of II
204A, FWCC
MS277 RandNLA: Algorithms for Scientific Computing Part II of II
203C, FWCC
MS278 Generative Machine Learning Models for Uncertainty Quantification Part II of II
101, FWCC
MS304 PDE-Constrained Optimization: Algorithms and Applications
Fort Worth Ballroom 4, Omni

Friday, March 7

8:00 a.m. – 12:00 p.m.
Registration Open
Hall A Foyer, FWCC

8:15 a.m. – 8:30 a.m.
Closing Remarks
Ballroom AB, FWCC

8:30 a.m. – 9:15 a.m.
IP8 Randomized Linear Algebra in Scientific Computing
Daniel Kressner, École Polytechnique Fédérale de Lausanne, Switzerland
Ballroom AB, FWCC

9:00 a.m. – 12:30 p.m.
Exhibit Hall Open
Hall A, FWCC

9:15 a.m. – 9:30 a.m.
Coffee Break
Hall A, FWCC

Friday, March 7

9:30 a.m. – 11:10 a.m.
Concurrent Sessions
MS280 Uncertainty Quantification and Surrogate Models
Sundance 2, Omni
MS281 Inference of Constitutive Relations from Micro-scale Simulation or Observational Data
106, FWCC
MS282 Computational Plasma Physics Part I of II
108, FWCC
MS283 Numerical Methods and Analysis for Elliptic and Parabolic PDE
109, FWCC
MS284 Assessing and Quantifying Model Reliability Through Validation and Sensitivity Analysis
110B, FWCC
MS286 Embedded Boundary Methods for Partial Differential Equations on Cartesian Meshes
113, FWCC
MS287 Advances in Kernel Methods for PDE and Integral Equations
201A, FWCC
MS288 Energy Research and Forecasting (ERF): A New Performance-Portable Atmospheric Modeling Code
201B, FWCC
MS289 Applied and Computational Geometry for Science and Engineering
201C, FWCC
MS290 Advanced Techniques for Mesh Adaptivity and Node Generation
202D, FWCC
MS291 Structure-preserving Model Order Reduction for Large-scale Systems Part II of II
204A, FWCC
MS292 Structure Preserving Numerical Methods of Fluid Dynamic Equations Part I of II
101, FWCC
MS293 Hardware-Aware Multigrid Methods Part I of II
104, FWCC
MS294 Sparse Matrix and Tensor Algorithms and Their Applications Part I of II
Fort Worth Ballroom 5, Omni
MS295 FASTMATH Advances in Simulation, Optimization, and Surrogate Modeling for Scientific Applications Part I of II
110A, FWCC
MS296 Neural Differentiable Physics: Unifying Numerical PDEs and Deep Learning via Differentiable Programming Part I of II
114, FWCC
MS297 Methods for the Numerical Simulation of Plasma Part I of II
Fort Worth Ballroom 4, Omni
MS298 Advances in Federated Learning Algorithms Part I of II
Fort Worth Ballroom 3, Omni

Friday, March 7 Friday, March 7

MS299 Generative Machine Learning Approaches for Science and Engineering Part I of II
Fort Worth Ballroom 8, Omni
MS300 Applications of Tensor Methods for Computational and Data Sciences Part I of II
202C, FWCC
MS301 Nonlinear Dimensionality Reduction and Model Reduction Methods for Physical Sciences and Engineering Part I of II
203A, FWCC
MS302 Structure-preserving Machine Learning for Physical Applications Part I of II
203B, FWCC
MS303 DEC/FEEC: Discrete and Finite Element Exterior Calculus Part I of II
203C, FWCC

11:10 a.m. – 11:40 a.m.
Coffee Break
Hall A, FWCC

11:40 a.m. – 1:20 p.m.
Concurrent Sessions
MS305 Filling Scientific Domain Gaps with Quality Machine Learning Benchmarks
Sundance 1, Omni
MS306 Sparse Matrix and Tensor Algorithms and Their Applications Part II of II
Fort Worth Ballroom 5, Omni
MS307 Physical and Computational Modeling of Glioblastoma Multiforme Treatment in Rats
106, FWCC
MS308 Computational Plasma Physics Part II of II
108, FWCC
MS309 FASTMATH Advances in Simulation, Optimization, and Surrogate Modeling for Scientific Applications Part II of II
110A, FWCC
MS310 Advanced Network Analysis Software: Challenges and Opportunities
113, FWCC
MS311 Neural Differentiable Physics: Unifying Numerical PDEs and Deep Learning via Differentiable Programming Part II of II
114, FWCC
MS312 Methods for the Numerical Simulation of Plasma Part II of II
Fort Worth Ballroom 4, Omni
MS313 Structure-exploiting Bayesian Approaches for Inverse Problems
201A, FWCC
MS314 Integrating Simulations and Statistical/ Machine Learning for Evaluation of Quantities-of-Interest
201B, FWCC
MS315 Machine Learning, HPC, and Uncertainty Analysis in Complex Biology Systems
201C, FWCC
MS316 Advances in Federated Learning Algorithms Part II of II
Fort Worth Ballroom 3, Omni
MS317 Generative Machine Learning Approaches for Science and Engineering Part II of II
Fort Worth Ballroom 8, Omni
MS318 Applications of Tensor Methods for Computational and Data Sciences Part II of II
202C, FWCC
MS319 Nonlinear Dimensionality Reduction and Model Reduction Methods for Physical Sciences and Engineering
203A, FWCC
MS320 Structure-preserving Machine Learning for Physical Applications Part II of II
203B, FWCC
MS321 DEC/FEEC: Discrete and Finite Element Exterior Calculus Part II of II
203C, FWCC
MS322 Advances in Bayesian Optimal Experimental Design
204A, FWCC
MS323 Neural Acceleration, Surrogate Models, and Learning Techniques for HPC Kernels
202D, FWCC
MS324 Structure Preserving Numerical Methods of Fluid Dynamic Equations Part II of II
101, FWCC
MS325 Hardware-Aware Multigrid Methods Part II of II
104, FWCC

Abbreviation Key
IP = Invited Plenary Speaker
MP = Miniposteria
MS = Minisymposium
MT = Minitutorial
PD = Panel Discussion
PP = Poster Session
SP = Special Lecture

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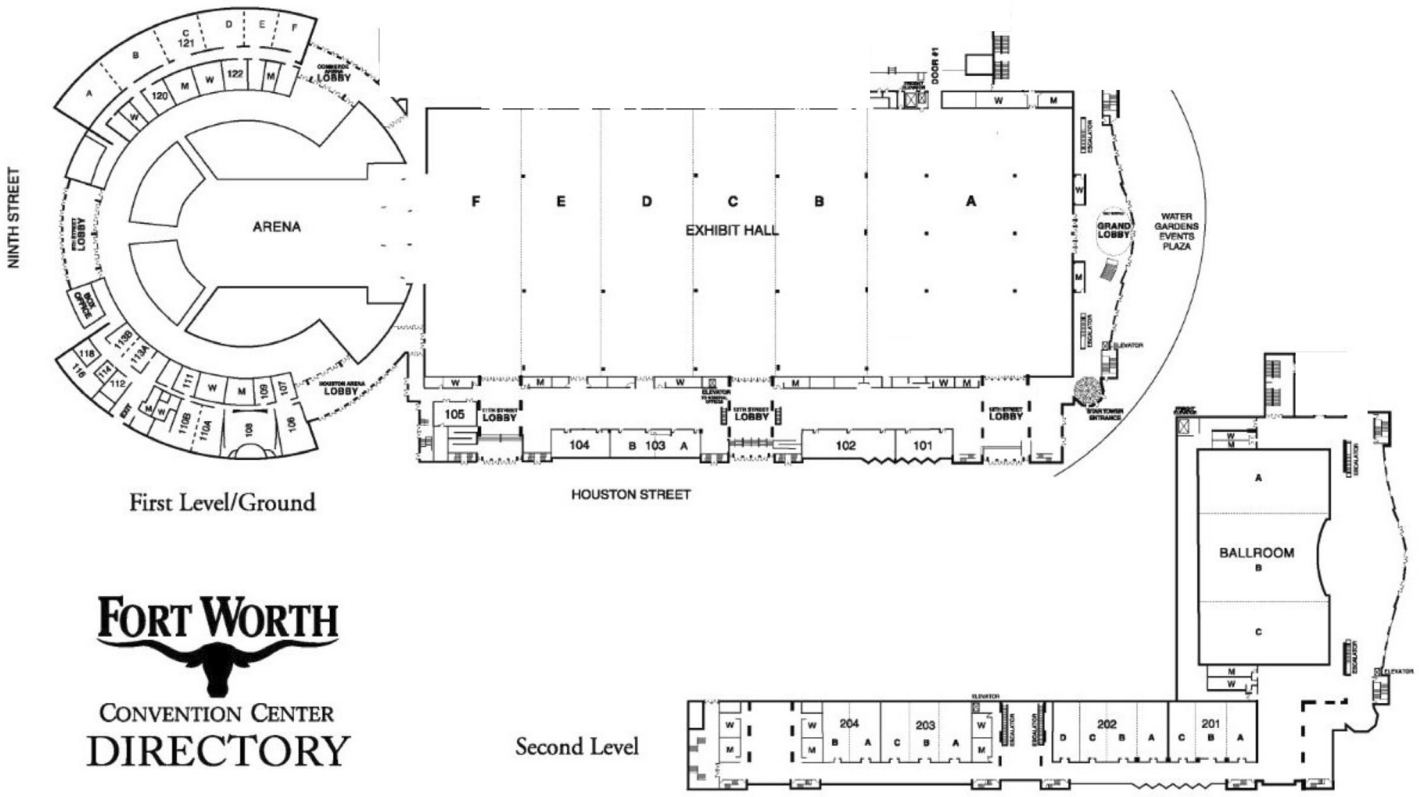
Fort Worth Convention Center (FWCC) Floor Plan



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