

GLSIAM 2022 CONFERENCE PROGRAM

8:10 am – 8:50 am	Registration, Breakfast and Coffee									
8:50 am – 9:00 am	Welcome Remarks (Stephanie Hartwell, 0027)									
9:00 am – 9:05 am	Remarks on the GLSIAM Section (Hengguang Li, 0027)									
9:05 am – 9:55 am	Plenary Talk (Wayne M. Raskind, 0027)									
10:00 am – 10:50 am	Plenary Talk (Guowei Wei, 0027)									
10:50 am – 11:15 am	Coffee break									
11:15 am – 12:30 pm	Morning sessions									
	Session CT1 0112	Session CT2 0201	Session CT3 0301	Session MS1 0020	Session MS2 0024	Session MS3 0027	Session MS4 0029	Session MS5 0401	Session MS6 0501	Session MS7 0601
12:30 pm – 12:40 pm	Group photo									
12:40 pm – 1:30 pm	Lunch									
1:30 pm – 2:20 pm	Plenary Talk (R. Tyrell Rockafellar, 0027)									
2:30 pm – 3:20 pm	Plenary Talk (Ridgway Scott, 0027)									
3:20 pm – 3:45 pm	Coffee break									
3:45 pm – 5:25 pm	Afternoon sessions									
	Session MS8 0112	Session MS9 0201	Session MS10 0301	Session MS11 0020	Session MS12 0024	Session MS13 0027	Session MS14 0029	Session MS15 0401		

The conference is hosted in STEM Innovation Learning Center (SILC), Gullen Mall, Detroit, MI, see <https://goo.gl/maps/Grju5Mk6B7aQq99e7>

*CT: Contributed Talk

*MS: Mini-symposium

For more information, please check out: <http://hli.wayne.edu/conferences/glsiam2022/main.html>

There are 25mins for each talk including the presentation and questions

In each contributed talk section, we ask the first speaker to chair the section

In mini-symposia, organizers are going to chair their sections

*CT: Contributed Talk

*MS: Mini-symposium

Morning Sessions

CT1	STEM 0112	11:15 am – 12:30 pm
11:15 am – 11: 35 am	Sarah Beetham	The effect of particle clustering on the thermal entrance length in moderately dense gas-solid flows
11:40 am – 12:00 pm	Maria Han Veiga	Convergence of numerical schemes for the Euler equations via dissipative weak solutions
12:05 am – 12:25 pm	Oday Hazaimah	On the weak and strong convergence of a gradient-based method for variational inequalities
CT2	STEM 0201	11:15 am – 12:00 pm
11:15 am – 11: 35 am	Kyle Bower	Fast Computation of Electrostatic Potentials for Piecewise Constant Conductivities
11:40 am – 12:00 pm	Prashant Khanduri	Stochastic Bilevel Optimization in Machine Learning: Algorithms and Guarantees
CT3	STEM 0301	11:15 am – 12:00 pm
11:15 am – 11: 35 am	Nicolae Tarfulea	Well-posed Boundary Conditions for Constrained Hyperbolic Systems of PDE
11:40 am – 12:00 pm	Paulina Volosov	A Classification Metric for Reconstructed Small-World Networks
12:05 am – 12:25 pm	Mohamed El-Houssieny	Applications of Adomian Decomposition Method to certain Partial Differential Equations
MS1	STEM 0020	11:15 am – 12:30 pm
<small>Recent Development on Mathematical and Numerical Analysis of PDEs and Their Applications</small>		
11:15 am – 11: 35 am	Hengguang Li	A CO FEM for the Biharmonic Problem with the Navier BC
11:40 am – 12:00 pm	Qian Zhang	Spurious solutions for high-order curl problems
12:05 am – 12:25 pm	Peimeng Yin	Implicit dynamical low rank discontinuous Galerkin methods for homogeneous neutrino transport equations.
MS2	STEM 0024	11:15 am – 12:30 pm
<small>Optimal Transport and applications in Economics, Statistics, and Machine Learning</small>		
11:15 am – 11: 35 am	Kelvin Shuangjian Zhang	Transferable Utility matching under capacities on finite spaces
11:40 am – 12:00 pm	Chamila Malagoda Gamage	Capacity constrained barycenter problem
12:05 am – 12:25 pm	Harris Chen	Risk Measurement under Dependence Structure Ambiguity

MS3 <small>Recent Development on Mathematical and Numerical Analysis of PDEs and Their Applications</small>	STEM 0027	11:15 am – 12:30 am
11:15 am – 11:35 am	Guosheng Fu	HDG for fractured porous media flows on unfitted meshes
11:40 am – 12:00 pm	Hongsong Feng	A Fourth Order Finite Difference Method for Solving Elliptic Interface Problems with the FFT Acceleration
12:05 am – 12:25 pm	Yingda Cheng	Sparse grid discontinuous Galerkin (DG) methods for high dimensional PDEs
MS4 <small>Variational Analysis and Optimization</small>	STEM 0029	11:15 am – 12:30 am
11:15 am – 11:35 am	Nghia Tran	Sharp, strong, and unique minimizers for low complexity robust recovery
11:40 am – 12:00 pm	Dat Tran	Inexact reduced gradient methods in smooth nonconvex optimization
12:05 am – 12:25 pm	Trang Nguyen	Optimal control for sweeping processes to prox-regular sets with free-time
MS5 <small>Showcasing Undergraduate Research in Applied Mathematics</small>	STEM 0401	11:15 am – 12:30 am
11:15 am – 11:35 am	Emilee Gootee	Applications of Google's PageRank Algorithm: Predicting Olympic Snowboarding Outcomes
11:40 am – 12:00 pm	Erika Hozeski	Analysis of Detroit Police Department 911 Call Response Time
12:05 am – 12:25 pm	Minki Lee	A level set Kalman Filter approach to estimate the circadian phase and its uncertainty from wearable data.
MS6 <small>Recent Developments in Computational Harmonic Analysis Research from Michigan</small>	STEM 0501	11:15 am – 12:30 am
11:15 am – 11:35 am	Cullen Haselby	Modewise Measurements for Efficient Sketching and Recovery of Low Rank Tensors
11:40 am – 12:00 pm	Longxiu Huang	Efficient methods for robust decompositions
12:05 am – 12:25 pm	Craig Gross	Sparsifying high-dimensional, multiscale Fourier spectral methods
MS7 <small>Recent Developments in Complex Systems, Reduced Order Modeling and Data Assimilation</small>	STEM 0601	11:15 am – 12:30 am
3:45 pm – 4:05 pm	Yinling Zhang	A Causality-Based Learning Approach for Discovering the Underlying Dynamics of Complex Systems from Partial Observations with Stochastic Parameterization
4:10 pm – 4:30 pm	Changhong Mou	An Efficient Data-Driven Multiscale Stochastic Reduced Order Modeling Framework for Complex Systems
4:35 am – 4:55 pm	Jiuhua Hu	Wavelet-based Edge Multiscale Parareal Algorithm for Parabolic Equations with Heterogeneous Coefficients

Afternoon Sessions

MS8 <small>Mathematical Analysis of Bio-molecular Data</small>	STEM 0112	3: 45 pm – 4:55 pm
3:45 pm – 4:05 pm	Xiaoqi Wei	Persistent Sheaf Laplacians
4:10 pm –4:30 pm	Dong Chen	Persistent path homology in molecular and materials sciences;
4:35 am – 4:55 pm	Yuta Hozumi	CCP: Correlated Clustering and Projection for Dimensionality Reduction
MS9 <small>Taming the curse of dimensionality in non-equilibrium transport systems: reduced order models and machine learning</small>	STEM 0201	3: 45 pm – 5:20 pm
3:45 pm – 4:05 pm	Yingda Cheng	Machine learning (ML) moment closure models for the radiative transfer equations
4:10 pm –4:30 pm	Huan Lei	DeePN2: A machine-learning based model of non-Newtonian fluids with molecular fidelity
4:35 am – 4:55 pm	Zhichao Peng	A reduced order model for the time-dependent Radiative Transfer Equation
5:00 pm – 5:20 pm	Nicholas Krupansky	Deep Learning Moment Closures for the Boltzmann BGK Model
MS10 <small>Mathematical modeling for structure based molecular analysis</small>	STEM 0301	3: 45 pm – 4:55 pm
3:45 pm – 4:05 pm	Jiahui Chen	Hodge Laplacians and their biological applications
4:10 pm – 4:30 pm	Azzam Alfarraj	Geometric algebra generation of molecular surfaces
4:35 am – 4:55 pm	Zhen Chao	Integral method for the 1D steady state Poisson-Nernst-Planck equations
MS11 <small>High-order numerical methods for the solution of partial differential equations</small>	STEM 0020	3: 45 pm – 5:20 pm
3:45 pm – 4:05 pm	Fangyao Zhu	Discontinuous Galerkin Methods with Patankar time discretization for chemical reacting flows
4:10 pm –4:30 pm	Andrés Galindo-Olarte	Accuracy enhancement of discontinuous Galerkin solutions for Vlasov-Maxwell equations
4:35 am – 4:55 pm	Michelle Michelle	Sixth Order Compact Finite Difference Method for 2D Helmholtz Equations
5:00 pm – 5:20 pm	Yann-Meing Law	The Hermite-Taylor Correction Function Method for Embedded Boundary and Maxwell's Interface Problems
MS12 <small>Multiscale and data-driven approaches in complex biological systems</small>	STEM 0024	3: 45 pm – 4: 55 pm
3:45 pm – 4:05 pm	Yutong Sha	Inference of Cell Fate Transition from Single-Cell Transcriptomic Data
4:10 pm –4:30 pm	Li Shen	Multitransformers for biomolecular predictions
4:35 am – 4:55 pm	Daniel Bergman	A global method for simulating intracellular signaling reduces computational time in multiscale agent-based models with systems biology applications

MS13 Recent Development on Mathematical and Numerical Analysis of PDEs and Their Applications	STEM 0027	3: 45 pm – 5:20 pm
3:45 pm – 4:05 pm	Charuka	A C0 finite element method for the biharmonic problem with Dirichlet boundary conditions in a polygonal domain
4:10 pm –4:30 pm	Wickramasinghe Yue Kang	Bound-preserving discontinuous Galerkin methods with second-order implicit pressure explicit concentration time marching for compressible miscible displacements in porousmedia
4:35 am – 4:55 pm	Chen Liu	An invariant domain preserving implicit-explicit discontinuous Galerkin algorithm for compressible flow simulation
5:00 pm – 5:20 pm	Xiaoming Zheng	Tumor Grows to Lower Extracellular Matrix Conductivity Regions under Darcy's Law and Steady Morphology
MS14 Variational Analysis and Optimization	STEM 0029	3: 45 pm – 4:30 pm
3:45 pm – 4:05 pm	Carlos Rautenberg	Analysis and Perturbation of Non-diffusive Variational Problems with Distributional and Weak Gradient Constraints
4:10 pm –4:30 pm	Ebrahim Sarabi (online)	Strict Twice Epi-Differentiability and its Applications
MS15 Mathematical Applications in Medical Physics	STEM 0401	3: 45 pm – 4:55 pm
3:45 pm – 4:05 pm	Sophie Wuyckens	Multicriteria optimization applied to proton arc therapy problem
4:10 pm –4:30 pm	Lewei Zhao	An overview of the spot sparsity optimization algorithms development for proton arc therapy
4:35 am – 4:55 pm 5:00 pm-5:20 pm	Weijie Zhang (online) Zeyu Zhou	Optimization methods used in intensity modulated radiation therapy Geometry Calibration in Medical CT