

Griffin 129

MS05: Advances in Application-Oriented Computation and Optimization

Friday (11/3)

- 03:00 pm - 03:30 pm: Tiffany Frugé Jones, Expressibility of the Global Difference of Exponential Splitting Approximations
03:30 pm - 04:00 pm: Eduardo Servin Torres, A study of a time-space nonuniform finite difference approximation of the Kawarada equation solutions
04:00 pm - 04:30 pm: Yunhui He, Some theoretical results on finite convergence property of Anderson acceleration on linear systems
04:30 pm - 05:00 pm: Olaniyi Samuel Iyiola, Double Inertial Iterative Schemes and Dynamical System

MS01: Recent Developments and Applications of High-fidelity Numerical Simulations for Fluid Flows

Saturday (11/4)

- 09:45 am - 10:15 am: Shiming Yuan, Evaluating Modern High-Resolution WENO Schemes for Supersonic Flow Simulations
10:15 am - 10:45 am: Yonghua Yan, Investigating Vortex Interactions in Tandem Micro Vortex Generator Arrangements for Supersonic Flow Control
10:45 am - 11:15 am: Yong Yang, Advancements in 3D High-Density Ratio Two-Phase Lattice Boltzmann Method for Capturing Complex Fluid Dynamics
11:15 am - 11:45 am: Alex Fedoseyev, Simulation of Rarefied Hypersonic Gas Flow Using Alexeev Generalized Hydrodynamic Equations

MS29: Data-driven learning and model reduction

- 01:30 pm - 02:00 pm: Shuang Zhang, Tracking multi-scale river responses to enhanced rock weathering
02:00 pm - 02:30 pm: Lianghao Cao, Efficient geometric MCMC enabled by neural operators with parametric derivative training
02:30 pm - 03:00 pm: Alejandro Diaz, Nonlinear manifold reduced order models with domain decomposition
03:00 pm - 03:30 pm: Marco Tezzele, Predictive digital twins for the structural health monitoring of civil structures

MS05: Advances in Application-Oriented Computation and Optimization

- 03:45 pm - 04:15 pm: Jie Long, Sparse Data Regulation on GRUs Neural Network for Solving Time-Dependent PDEs
04:15 pm - 04:45 pm: Lihan Wang, Accelerate Sampling Using Birth-Death Dynamics

Sunday (11/5)

- 09:45 am - 10:15 am: Chenyu Tian, Numerical methods for equations governing partial melting materials
10:15 am - 10:45 am: Shuhao Cao, Immersed Virtual Element Methods for $H(\text{curl})$ Interface Problems in Three Dimensions
11:00 am - 11:30 am: Bryant Wyatt, Modeling Supraventricular Tachycardia Using Dynamic Computer-Generated Left Atrium
11:30 am - 12:00 pm: Mohammad Mahabubur Rahman, Global Regularity Issue of the Hall-Magnetohydrodynamics System
12:00 pm - 12:30 pm: Rui Zhang, Seismic sparse-layer reflectivity inversion using basis pursuit decomposition

Griffin 130

MS07: Higher Order and Minimum Residual Finite Element Methods

Friday (11/3)

03:00 pm - 03:30 pm: Beatrice Riviere, Mixed Hybrid and Hybridizable Discontinuous Galerkin Method for Flow and Transport

03:30 pm - 04:00 pm: Davood Damircheli, Exploring Financial Derivatives through the Lens of the DPG Approach: A Study on Option Pricing and Sensitivity Analysis

04:00 pm - 04:30 pm: Loic Cappanera, Towards high order methods for incompressible Navier-Stokes equations with variable density

04:30 pm - 05:00 pm: Jiaqi Li, A DPG method for the full-potential equation

Saturday (11/4)

09:45 am - 10:15 am: Jesse Chan, High order entropy stable schemes for the quasi-one-dimensional shallow water and compressible Euler equations

10:15 am - 10:45 am: Christina G. Taylor, Energy stable state redistribution cut-cell discontinuous Galerkin methods for wave propagation

10:45 am - 11:15 am: Jonathan Zhang, A study of linear elasticity with DPG, and the nonlinear Cook's Membrane problem

11:15 am - 11:45 am: Ankit Chakraborty, An Anisotropic hp -mesh Adaptation Framework for Ultraweak DPG Formulations

MS08: Computational Methods for Kinetic and Hyperbolic Equations

01:30 pm - 02:00 pm: William A. Sands, An S_N Discretization with Angular Adaptivity for Radiative Transfer Applications

02:00 pm - 02:30 pm: Johannes Krotz, A Hybrid Monte Carlo, Discontinuous Galerkin method for linear kinetic transport equations

02:30 pm - 03:00 pm: Yimin Zhong, Fast solver for radiative transfer based on integral formulation

03:00 pm - 03:30 pm: Juntao Huang, Hyperbolic machine learning moment closure models for the radiative transfer equation

03:45 pm - 04:15 pm: Andrés Felipe Galindo-Olarte, Superconvergence and accuracy enhancement of discontinuous Galerkin solutions for Vlasov-Maxwell equations

04:15 pm - 04:45 pm: Kunlun Qi, Stability and convergence analysis of the Fourier-Galerkin spectral method for the Boltzmann equation

Sunday (11/5)

09:45 am - 10:15 am: Chen Liu, An Efficient Nonsmooth Convex Optimization-based High-order Accurate Bound-preserving Limiter for time-dependent Problems

10:15 am - 10:45 am: Zheng Sun, Oscillation-Eliminating Discontinuous Galerkin Methods for Hyperbolic Conservation Laws

MS20: Advances in computational techniques for numerical solutions of partial differential equations

11:00 am - 11:30 am: Lisa M. Kuhn, Numerical studies of finite element solutions to one and two-dimensional structures

11:30 am - 12:00 pm: Justin Biggs, Challenges with simulating multiple component beam structures with linear control design

12:00 pm - 12:30 pm: Jacob Boyt, Neural network method for solving parabolic two-temperature micro/nanoscale heat conduction in double-layered thin films exposed to ultrashort-pulsed lasers

Griffin 144

MS30: Explorations in Topological Data Analysis

Friday (11/3)

03:00 pm - 03:30 pm: Astrit Tola, Relative Growth as a Topological Graph Invariant

03:30 pm - 04:00 pm: Brighton Nuwagira, Topological Data Analysis in Medical Imaging

Saturday (11/4)

09:45 am - 10:15 am: Asim Dey, Survival Analysis for Topological Data Analysis Features

10:15 am - 10:45 am: Kyle Williams, Evader Detection In 3-Dimensional Mobile Sensor Networks

10:45 am - 11:15 am: Wenwen Li, Configuration Spaces of Metric Graphs with Restraint Parameters

11:15 am - 11:45 am: Henry Adams, Hausdorff vs Gromov-Hausdorff distances

MS13: Recent Developments in Numerical Methods for PDEs and Applications

01:30 pm - 02:00 pm: Beatrice Riviere, Bound-Preserving Discontinuous Galerkin Solutions for Compressible Two-Phase Flows

02:00 pm - 02:30 pm: Haizhao Yang, A Symbolic Approach for Scientific Machine Learning

02:30 pm - 03:00 pm: Yang Yang, The reinterpreted discrete fracture model

03:00 pm - 03:30 pm: Chunmei Wang, Friedrichs Learning for PDEs

03:45 pm - 04:15 pm: Zheng Sun, The Runge-Kutta discontinuous Galerkin method with compact stencils for hyperbolic conservation laws

04:15 pm - 04:45 pm: Shuhao Cao, Noise-robust Deep Direct Sampling via Transformers

Sunday (11/5)

09:45 am - 10:15 am: Andrés Felipe Galindo-Olarte, Numerical analysis of a hybrid method for radiation transport

10:15 am - 10:45 am: Lander Besabe, Large Eddy Simulation for the quasi-geostrophic equations

11:00 am - 11:30 am: Yuan Liu, Discontinuous Galerkin methods for network patterning phase-field models

11:30 am - 12:00 pm: Joseph Hunter, Realizability-Preserving DG-IMEX Method for a Two-Moment Model of Special Relativistic Transport

12:00 pm - 12:30 pm: Peimeng Yin, A semi-implicit dynamical low-rank discontinuous Galerkin method for space homogeneous kinetic equations

12:30 pm - 01:00 pm: Nanyi Zheng, A fourth-order conservative semi-Lagrangian finite volume WENO scheme without operator splitting for kinetic and fluid simulations

Griffin 201

MS14: Nonlinear algebra in applications

Friday (11/3)

03:00 pm - 03:30 pm: J.M. Landsberg, Geometry and the complexity of matrix multiplication: recent developments

03:30 pm - 04:00 pm: Abeer Al Ahmadieh, The principal minor map

04:00 pm - 04:30 pm: Chia-Yu Chang, Maximal Border Subrank Tensors

04:30 pm - 05:00 pm: Joe Kileel, Moment Estimation of Nonparametric Mixtures Through Implicit Tensor Decomposition

Saturday (11/4)

09:45 am - 10:15 am: Frank Sottile, Welschinger Signs and the Wronskii map

10:15 am - 10:45 am: Derek Wu, Border rank bounds for $GL(V)$ -invariant tensors arising from matrices of constant rank

10:45 am - 11:15 am: Papri Dey, Combinatorial Aspects of Polynomials with Lorentzian Signature

11:15 am - 11:45 am: Hang Huang, Betti Tables of the 2×2 permanents of a $2 \times n$ matrix

MS06: Applications of combinatorial and computational algebraic geometry

02:00 pm - 02:30 pm: Matthew Faust, Critical Points of Discrete Periodic Operators

02:30 pm - 03:00 pm: Jonah Robinson, Invariants of the Dispersion Relation for Discrete Periodic Operators

03:00 pm - 03:30 pm: Jordy Lopez Garcia, \mathbb{A}^1 -Brouwer Degrees in Macaulay2

03:45 pm - 04:15 pm: Michael DiPasquale, Lex-segment initial ideals and the dimension of planar splines

04:15 pm - 04:45 pm: Hal Schenck, Kuramoto Oscillators: Algebra and Topology

Griffin 202

MS18: Algebraic Combinatorics and Parking Functions

Saturday (11/4)

01:30 pm - 02:00 pm: Mikhail Mazin, Triangular Partitions

02:00 pm - 02:30 pm: Erik Carlsson, Descents polynomial and parking functions

02:30 pm - 03:00 pm: Galen Dorpalen-Barry, Intersection Posets and Weyl Cones of Shi Arrangements

03:00 pm - 03:30 pm: Theo Douvropoulos, Decompositions of parking spaces and reflection Laplacians

03:45 pm - 04:15 pm: Catherine H. Yan, 2-Dimensional Vector Parking Functions

04:15 pm - 04:45 pm: Garrett Nelson, Periodic Points of Parking Functions

Sunday (11/5)

09:45 am - 10:15 am: Nathan Williams, Trees from Affine Braid Varieties

10:15 am - 10:45 am: Weston Miller, Rational Catalan Numbers for Complex Reflection Groups

Griffin 203

MS27: Special Topics in Control and Optimization

Friday (11/3)

- 03:00 pm - 03:30 pm: Vinicio Rios, Approximations of optimal solutions of a Mayer problem for a controlled and time-delayed perturbed sweeping process
03:30 pm - 04:00 pm: Safeyya Alyahia, Dynamic Event-Triggered Control of Linear Continuous-Time Systems
04:00 pm - 04:30 pm: Jackson Knox, A Discrete-Time Trajectory-Based Stabilization Approach
04:30 pm - 05:00 pm: Zequn Zheng, Generating Polynomial Method for Non-symmetric Tensor Decomposition

MS16: Combinatorial algebraic geometry and rigidity theory

Saturday (11/4)

- 10:15 am - 10:45 am: Jidong Wang, Statistics via tropical geometry
10:45 am - 11:15 am: Christin Bibby, From configurations on graphs to moduli spaces of (tropical) curves
11:15 am - 11:45 am: Greg Blekherman, Tropicalization in Extremal Combinatorics
01:30 pm - 02:00 pm: Georgy Scholten, Global Minimization of Analytic Functions over Compact Domains
02:00 pm - 02:30 pm: Hernan Iriarte, Higher rank tropical geometry and the variation of the demand
02:30 pm - 03:00 pm: Nate Vaduthala, Flag Matroids as Greedoids
03:00 pm - 03:30 pm: Daniel Corey, Singular matroid realization spaces

Griffin 204

MS32: Dynamics of Mathematical Models in Biology

Saturday (11/4)

- 10:15 am - 10:45 am: Fahad Mostafa, Improved Graph Based Statistical Clustering Techniques with Application to Breast Cancer Image Segmentation
10:45 am - 11:15 am: Mahmudul Bari Hridoy, Investigating Patterns of Disease Emergence in Stochastic Epidemic Models with Seasonality
11:15 am - 11:45 am: Tingting Tang, Identifiability of compartment models for infectious diseases under both perfect and flawed data

MS09: Computational nonlinear algebra

- 01:30 pm - 02:00 pm: Zehua Lai, Tensor products of reproducing kernel Banach spaces
02:00 pm - 02:30 pm: C.J. Bott, SchubertIdeals.m2: A Software Package for the Schubert Calculus of Flag Varieties
02:30 pm - 03:00 pm: Weixun Deng, Computing isotopy type of positive zero sets faster for n -variate $(n + k)$ -nomials
03:00 pm - 03:30 pm: Yijun Dong, Efficient Bounds and Estimates for Canonical Angles in Randomized Subspace Approximations

Sunday (11/5)

- 11:00 am - 11:30 am: Joshua Goldstein, Near-optimal bounds for the number of p -adic roots of circuit systems
11:30 am - 12:00 pm: Yifan Zhang, Applications of Real Algebraic Geometry to Neural Networks and Optimization
12:00 pm - 12:30 pm: Elzbieta Polak, Discriminants in Weighted Low-Rank Approximation
12:30 pm - 01:00 pm: Georgy Scholten, Rational approximations for computing critical points of analytic functions

Griffin 215

MS22: Coding theory and Cryptography

Saturday (11/4)

- 09:45 am - 10:15 am: Giacomo Micheli, On a Class of Optimal Locally Recoverable Codes with Availability
10:15 am - 10:45 am: Felice Manganiello, Generic Error SDP and Generic Error CVE
10:45 am - 11:15 am: Allison Beemer, Transforming Adversarial MACs to Erasure Channels for Partial Correction
11:15 am - 11:45 am: Kirsten Morris, Graphical Characterization of Decoding Failures for Quantum LDPC Codes
02:30 pm - 03:00 pm: Hiram H. López, Monomial norm-trace codes
03:00 pm - 03:30 pm: Rodrigo San-José, Subfield subcodes of projective Reed-Solomon codes
03:45 pm - 04:15 pm: Daniel P. Bossaller, List Decoding of Skew Reed-Solomon Codes
04:15 pm - 04:45 pm: Indalecio Ruiz Bolanos, Nonlinear Reed Solomon codes

Sunday (11/5)

- 09:45 am - 10:15 am: Ryann Cartor, Total Break of a Public Key Cryptosystem Based on a Group of Permutation Polynomials
10:15 am - 10:45 am: Shi Bai, Concrete hardness in lattice-based cryptography
11:00 am - 11:30 am: Seungki Kim, A physical study of the LLL algorithm
11:30 am - 12:00 pm: Aria Nosratinia, On the Performance Evaluation of Wiretap Codes

Griffin 301

MS02: Accurate, robust, and structure-preserving methods for computational fluid dynamics

Friday (11/3)

- 03:00 pm - 03:30 pm: Justin Swain, Efficient Numerical Schemes for the \mathbf{Q} -Tensor Model of Nematic Liquid Crystals
03:30 pm - 04:00 pm: Yimin Lin, Limiting techniques for high order, entropy stable, and positivity-preserving discontinuous Galerkin discretizations
04:00 pm - 04:30 pm: Juntao Huang, Positivity-preserving time discretizations for production-destruction equations with applications to non-equilibrium flows
04:30 pm - 05:00 pm: An Vu, Semi-implicit projection methods for incompressible flows with variable density coupled with the temperature equation

Saturday (11/4)

- 09:45 am - 10:15 am: Wei Guo, A learned conservative semi-Lagrangian finite volume scheme for transport simulations
10:15 am - 10:45 am: Keegan Kirk, Convergence of a pressure-robust space-time hybridized discontinuous Galerkin method for incompressible flows
10:45 am - 11:15 am: Jean-Luc Guermond, Invariant-domain preserving and involution preserving IMEX schemes for magneto-hydrodynamics
11:15 am - 11:45 am: Sambit Mishra, Online Bayesian Optimization of Polynomial-Multigrid Cycles for Flux Reconstruction
01:30 pm - 02:00 pm: Jordan Hoffart, Towards an involution-preserving solver for the time-dependent Maxwell equations
02:00 pm - 02:30 pm: Matthias Maier, Structure-preserving finite-element schemes for the Euler-Poisson equations
02:30 pm - 03:00 pm: Madison Sheridan, Invariant Domain Preserving and Exactly Conservative Approximation of the Lagrangian Hydrodynamics Equations
03:00 pm - 03:30 pm: Zuodong Wang, Asymptotic-preserving and invariant-preserving schemes for hyperbolic conservation laws with stiff reaction source term

Griffin 302

MS04: Recent developments in electromagnetics and related eigenvalue problems

Friday (11/3)

- 03:00 pm - 03:30 pm: Aaron Welters, Spectral theory for linear periodic DAEs arising in the electrodynamics of 1D photonic crystals
03:30 pm - 04:00 pm: Robert Viator Jr., Bloch Waves for Maxwell's Equations in High-Contrast Photonic Crystals
04:00 pm - 04:30 pm: Stephen P. Shipman, Spectrum of the Neumann-Poincaré operator for thin doubly connected domains
04:30 pm - 05:00 pm: Seth Gerberding, High-order approximation of dispersive PDEs

Saturday (11/4)

- 09:45 am - 10:15 am: Junshan Lin, Edge modes in several topological wave insulators
10:15 am - 10:45 am: Daniel Massatt, Mathematical Models of Topologically Protected Transport in Electrically Gated Twisted Bilayer Graphene
10:45 am - 11:15 am: Jacob Badger, Scalable DPG Multigrid Solver for High-Frequency Helmholtz Problems
11:15 am - 11:45 am: Manaswinee Bezbaruah, Shape optimization of optical microscale inclusions

MS03: Recent Developments in Mathematical and Numerical Analysis of Partial Differential Equations and Their Applications

- 01:30 pm - 02:00 pm: Yukun Yue, On convergence analysis of an IEQ-based numerical scheme for hydrodynamical Q-tensor model
02:00 pm - 02:30 pm: Andrew Hicks, Modeling and Numerical Analysis of the Cholesteric Landau-de Gennes model
02:30 pm - 03:00 pm: Jiguang Sun, Computational Methods for Scattering Resonances
03:00 pm - 03:30 pm: Tommaso Buvoli, Exponential Integrators and the Polynomial Time Integration Framework
03:45 pm - 04:15 pm: Yang Yang, Sign-preserving second-order IMPEC time discretization
04:15 pm - 04:45 pm: Qingguo Hong, A New Practical Framework for the Stability Analysis of Perturbed Saddle-point Problems and Applications

Sunday (11/5)

- 09:45 am - 10:15 am: Yerbol Palzhanov, A scalar auxiliary variable unfitted FEM for the surface Cahn-Hilliard equation
10:15 am - 10:45 am: Carlos Nicolas Rautenberg, Variational Problems in Measure Spaces with Regular Divergences and Mixed Boundary Conditions
11:00 am - 11:30 am: Shawn W. Walker, Computing the Shape Operator with the HHJ Method
11:30 am - 12:00 pm: Alan Demlow, Nodal finite element methods for the surface Stokes problem
12:00 pm - 12:30 pm: Paul Schwering, An Eulerian finite element method for tangential Navier-Stokes equations on evolving surfaces
12:30 pm - 01:00 pm: Jeonghun J. Lee, Hybridizable discontinuous Galerkin methods for coupled systems of porous/poroelastic media and free flow equations

Griffin 304

MS17: (Complex) analysis in differential equations

Saturday (11/4)

09:45 am - 10:15 am: Alex Fedoseyev, Alexeev Generalized Hydrodynamic Equations for Turbulent Flows

10:15 am - 10:45 am: Shreedhar Bhat, p -Skwarczyński distance

10:45 am - 11:15 am: Qi Han, On partial differential equations of Waring's-problem form in several complex variables

11:15 am - 11:45 am: John Treuer, The Levi Core

01:30 pm - 02:00 pm: Bingyuan Liu, The Diederich–Fornæss index and the $\bar{\partial}$ -Neumann problem

02:00 pm - 02:30 pm: Tanuj Gupta, Modifications of the Levi Core

02:30 pm - 03:00 pm: Ilya Kachkovskiy, Arithmetic phase transitions for one-dimensional quasiperiodic operators with monotone potentials

03:00 pm - 03:30 pm: Matthew Faust, On Irreducibility of the Bloch variety

Griffin 305

MS33: Mathematical and computational foundations of predictive digital twins

Friday (11/3)

- 03:00 pm - 03:30 pm: Jonathan Cangelosi, Adaptive Gaussian Process Modeling for Trajectory Optimization with Model Inexactness
03:30 pm - 04:00 pm: Nicole Aretz, Exploiting Structure via Nested Operator Inference in Physics-Based Learning
04:00 pm - 04:30 pm: Suparno Bhattacharyya, Role of Hyper-Reduction in Enhancing the Efficacy of Digital Twins
04:30 pm - 05:00 pm: Shreyas Sunil Gaikwad, Can eXplainable-AI (XAI) Capture Robust Dynamical Relationships in Ice and Ocean Modeling?

Saturday (11/4)

- 09:45 am - 10:15 am: Shane A. McQuarrie, Learning Reduced Operators with Gaussian Processes
10:15 am - 10:45 am: Yuan Qiu, Derivative-informed Deep Operator Network
10:45 am - 11:15 am: Cyrus Neary, Incorporating Physics-Based Knowledge into Neural Differential Equations for the Modeling and Control of Robotic Systems
11:15 am - 11:45 am: Qingguang Guan, Modeling the Open Probability of Ion Channels on Cell/Organelle Membranes using Deep Neural Networks

MS15: Combinatorial commutative algebra

- 01:30 pm - 02:00 pm: Tai Ha, Scarf complexes of graphs and their powers
02:00 pm - 02:30 pm: Aleksandra Sobieska, Minimal Free Resolutions of Numerical Semigroup Algebras Via Apery Specializations
02:30 pm - 03:00 pm: Yupeng Li, Minimal resolutions of lattice ideals
03:00 pm - 03:30 pm: Naufil Sakran, Unipotent Numerical Semigroups
03:45 pm - 04:15 pm: Ayah Almousa, Alexander Duals of Symmetric Simplicial Complexes and Stanley-Reisner Ideals
04:15 pm - 04:45 pm: Nestor Diaz, Shellability of symmetric spaces and Bruhat orders

Sunday (11/5)

- 09:45 am - 10:15 am: Mahir Can, K-orbit closures and Hessenberg varieties
10:15 am - 10:45 am: Corey Wolfe, On the Nilpotent Subsemigroups of M_n and MSp_n

Oliver 101

MS28: Translational Mathematical Modeling and Data Science in Medicine

Friday (11/3)

- 03:00 pm - 03:30 pm: Travis B. Thompson, The role of clearance in neurodegenerative diseases
03:30 pm - 04:00 pm: Charles Puelz, Computer models and image processing to study surgeries for the treatment of single ventricle physiology
04:00 pm - 04:30 pm: Bradley Vigil, Networks, Topology, Data and Pathology
04:30 pm - 05:00 pm: Adrian Celaya, Multigrid Inspired Deep Learning Architectures for Medical Imaging Segmentation

Saturday (11/4)

- 09:45 am - 10:15 am: Keon Ho Kim, An immersed peridynamics method for fluid-driven material damage and failure
10:15 am - 10:45 am: Raven Shane Johnson, A Pseudo-differential Sweeping Method for the Helmholtz Equation
10:45 am - 11:15 am: Bilyana Tzolova, Flow and Transport in the Liver Organ
11:15 am - 11:45 am: Hongfei Chen, Hydrodynamic Strategies in Choanoflagellate Colonies: A Reduced Model Approach

MS12: Discrete and Continuous Schrödinger Operators

- 01:30 pm - 02:00 pm: Matthew Powell, Regularity of the Lyapunov exponent for multifrequency quasi-periodic cocycles
02:00 pm - 02:30 pm: Burak Hatinoglu, Logarithmic Capacities of Rational Frequency Approximants for Almost Mathieu Operator
02:30 pm - 03:00 pm: Tal Malinovitch, Ballistic motion for Schrödinger operators in a periodic strip model
03:00 pm - 03:30 pm: Omar Hurtado, Unique continuation, Wegner lemma, and localization for non-stationary random Schrödinger operators on \mathbb{Z}^2
03:45 pm - 04:15 pm: Wencai Liu, Geometric Borg's Theorem in arbitrary dimensions
04:15 pm - 04:45 pm: Frank Sottile, Bloch Discriminants

Sunday (11/5)

- 09:45 am - 10:15 am: Xiaowen Zhu, Closure of bulk spectral gaps for topological insulator with general edges
10:15 am - 10:45 am: Iris Emilsdottir, Johnson-Schwartzman gap labelling and applications
11:00 am - 11:30 am: Stephen P. Shipman, Defect states in the continuum of Bernal stacked graphene
11:30 am - 12:00 pm: Jordy Lopez Garcia, Operators, Polytopes and Toric Geometry
12:00 pm - 12:30 pm: Marshall King, Exotic Eigenvalues for Quantum Graphs with Shrinking Edges
12:30 pm - 01:00 pm: Yuliia Yershova, Norm-resolvent convergence for Neumann Laplacians on manifolds thinning to graphs

Oliver 112

MS11: Stability and Dynamics of Nonlinear Waves and Coherent Structures

Friday (11/3)

- 03:00 pm - 03:30 pm: Jimmie Adriaola, Optimal Control of Branched Flow
03:30 pm - 04:00 pm: Hewan Shemtaga, A Chemotaxis Model With A Logistic Source On a Compact Graph
04:00 pm - 04:30 pm: John Zweck, A split-step method for a nonlinear nonlocal wave equation with applications to laser stability
04:30 pm - 05:00 pm: Mat Johnson, Subharmonic Stability of Periodic Traveling Waves in Dissipative Systems

Saturday (11/4)

- 09:45 am - 10:15 am: Anna Ghazaryan, Stability of fronts in the diffusive Rosenzweig - MacArthur Model
10:15 am - 10:45 am: Gabriela Jaramillo, Patterns in Oscillatory Media with Nonlocal Coupling
10:45 am - 11:15 am: Austin Marstaller, Dynamics and localization in the discrete fractional nonlinear Schrödinger Equation
11:15 am - 11:45 am: Alexey Sukhinin, New perspective on modeling high power light propagation in nonlinear media

MS10: Data- and model-driven approaches for inverse problems

- 01:30 pm - 02:00 pm: Shari Moskow, The Lippmann Schwinger Lanczos algorithm for inverse scattering problems
02:00 pm - 02:30 pm: Peijun Li, A data-assisted two-stage method for the inverse random source problem
02:30 pm - 03:00 pm: Taoufik Meklachi, Spectral analysis of scattering resonances with application on high-contrast nanospheres
03:00 pm - 03:30 pm: Daniel Onofrei, On the problem of personalized sound
03:45 pm - 04:15 pm: Bart van Bloemen Waanders, Hyper-Differential Sensitivity Analysis with respect to Model Discrepancy: Optimal Experimental Design
04:15 pm - 04:45 pm: Matthias Chung, Big Data Inverse Problems – Promoting Sparsity and Learning to Regularize

Sunday (11/5)

- 09:45 am - 10:15 am: Amit N Subrahmanya, Randomized Preconditioners for SC-4DVAR
10:15 am - 10:45 am: Zheyu Wen, Uncertainty Quantification in the Inverse Problem of Temporal Dynamic Systems for Medical Imaging: An Application to Alzheimer's Disease
11:00 am - 11:30 am: Tan Bui-Thanh, Model-constrained uncertainty quantification for scientific deep learning of inverse solutions
11:30 am - 12:00 pm: Mikhail Zaslavsky, Completed-data-driven ROMs for SAR imaging
12:00 pm - 12:30 pm: Vladimir Druskin, Monotonically converging two-sided computable bounds for exponential matrix moments via Lanczos algorithm
12:30 pm - 01:00 pm: Jinpu Zhou, Bayesian nonparametric learning of stochastic differential equations

Oliver 116

MS26: Problems in Kinetic Theory and Nonlinear Waves

Friday (11/3)

03:00 pm - 03:30 pm: Thomas Hagstrom, Direct Computation of Singular Solutions for Fluid Models

03:30 pm - 04:00 pm: Pavel Lushnikov, Conformal mappings, computation of dynamics on various Riemann surface sheets and integrability of surface dynamics

04:00 pm - 04:30 pm: Paul Blochas, Uniform Asymptotic Stability for Convection-Reaction-Diffusion Equations in the Inviscid Limit Towards Riemann Shocks

MS21: Modern Methods for Solution of Inverse Problems

Saturday (11/4)

09:45 am - 10:15 am: Susan E. Minkoff, A comparison of extension methods for seismic inversion

10:15 am - 10:45 am: Alexander Mamonov, Waveform inversion via reduced order modeling

10:45 am - 11:15 am: Tyler Masthay, Optimal Transport for Elastic Source Inversion

MS26: Problems in Kinetic Theory and Nonlinear Waves

01:30 pm - 02:00 pm: Benno Rumpf, Cold discrete breathers

02:00 pm - 02:30 pm: Benjamin Seeger, Weak solutions of nonlinear, nonconservative transport systems

02:30 pm - 03:00 pm: Minh Binh Tran, Some Recent Results On Wave Turbulence Theory

03:00 pm - 03:30 pm: Andrei Tarfulea, Decay Estimates for the non-cutoff Boltzmann equation

Oliver 117

MS25: Data-driven (mathematical and statistical) modeling approaches to population biology

Friday (11/3)

03:00 pm - 03:30 pm: Hayriye Gulbudak, Sensitivity Analysis in an Immuno-Epidemiological Vector-Host Model

03:30 pm - 04:00 pm: Leah LeJeune, Mathematical formulations for representing human risk response in epidemic models

04:00 pm - 04:30 pm: Joshua Macdonald, Robust parameterization of a viral-immune kinetics model for sequential Dengue virus (DENV) infections with Antibody-Dependent Enhancement (ADE)

04:30 pm - 05:00 pm: Cameron Browne, Connecting the evolutionary genetics of HIV to prey-predator dynamics with immune response

Saturday (11/4)

09:45 am - 10:15 am: Zhuolin Qu, Modeling Immunity to Malaria with an Age-Structured PDE Framework

10:15 am - 10:45 am: Nazia Afrin, Bistability in models of Hepatitis B virus dynamics

10:45 am - 11:15 am: Joan Ponce, HIV Spread and Treatment Distribution: Two Country Case Studies

11:15 am - 11:45 am: Summer Atkins, An Immuno-epidemiological Model of Foot-and-Mouth Disease in African Buffalo

MS24: Analysis and Numerical Methods in Mathematical Biology

01:30 pm - 02:00 pm: Hristo V. Kojouharov, Modeling of biological systems using higher-order modified nonstandard finite difference methods for autonomous dynamical systems

02:00 pm - 02:30 pm: Sylvia Amihere, Benchmarking Electrostatic Free Energy of the Nonlinear Poisson-Boltzmann Model for the Kirkwood Sphere

02:30 pm - 03:00 pm: Joshua Macdonald, Within-host viral growth and immune response rates predict FMDV transmission dynamics for African Buffalo

03:00 pm - 03:30 pm: Tamer Oraby, Vaccination Acceptance of Rational and Boundedly Rational Parents

MS19: Across scale modeling in population dynamics & validating with data

Sunday (11/5)

11:00 am - 11:30 am: Hana Dobrovolny, Dynamics of polyaneploid cancer cell quiescence under stress

11:30 am - 12:00 pm: Manar Alkuzweny, Characterizing a novel dengue vaccine by leveraging clinical trial data with a multi-level model

12:00 pm - 12:30 pm: Saburi Rasheed, A mathematical model of tuberculosis and diabetes co-infection dynamics with saturated treatment

12:30 pm - 01:00 pm: Quiyana M. Murphy, Understanding Neutrophil Dynamics during Covid-19 Infection

Oliver 119A

MS23: Mathematical Models for Population and its application to Ecology and Epidemiology

Saturday (11/4)

09:45 am - 10:15 am: Junping Shi, Modelling Phytoplankton-Virus Interactions: Phytoplankton Blooms and Lytic Virus Transmission

10:15 am - 10:45 am: Rongsong Liu, Mathematical modeling of population structure in bioreactors seeded with light-controllable microbial stem cells

10:45 am - 11:15 am: Christopher Mitchell, Importance of underlying mechanisms for interpreting relative risk of *Clostridioides difficile* infection among antibiotic-exposed patients in healthcare facilities

11:15 am - 11:45 am: Scott Cook, Neural Network-Based Amortized Bayesian Inference Methods for Parameter Estimation in ODE Epidemic Models

MS31: Stochastic Methods in Gene Regulation and Spatial Dynamics

01:30 pm - 02:00 pm: William Ott, Noisy delay denoises biochemical oscillators

02:00 pm - 02:30 pm: Bhargav Karamched, Stochastic Switching of Delayed Feedback Suppresses Oscillations in Genetic Regulatory Systems

02:30 pm - 03:00 pm: Amanda M. Alexander, A Subdiffusive Analysis of Transcription Factor Binding Kinetics

03:00 pm - 03:30 pm: Jay Newby, Extreme first passage times for populations of identical rare events

MS34: Recent advances in modeling and analysis of biological dynamics

03:45 pm - 04:15 pm: Jude Kong, Phytoplankton competition for nutrients and light in a stratified lake: A mathematical model connecting epilimnion and hypolimnion

04:15 pm - 04:45 pm: Keng Deng, Asymptotic profiles of the steady state for a diffusive SIS epidemic model with Dirichlet boundary conditions

Sunday (11/5)

09:45 am - 10:15 am: Saber Elaydi, Global Dynamics of Discrete Mathematical Models of Tuberculosis

10:15 am - 10:45 am: Nusrat Tabassum, Temperature-Dependent Competitive Dynamics of Two Invasive Mosquito Species in Larval Stage

11:00 am - 11:30 am: Narendra Pant, The dynamics of a discrete-time predator-prey model with predator evolution and periodic prey reproduction

11:30 am - 12:00 pm: Mohammad Mihrab Uddin Chowdhury, Amphibian Fungal Pathogen: Unravelling the BSal Epidemic Across the Life Stages of Salamanders

12:00 pm - 12:30 pm: Ananth Vedururu Srinivas, Synchronization of Clusters of Pulse Coupled Oscillators with Synaptic Delays

12:30 pm - 01:00 pm: Jenita Jahangir, A Discrete-time stage-structured host-parasitoid model with combinations of various pest control strategies