PROGRAM SCHEDULE

Friday, May 18

8:00-8:40 a.m. Registration + Coffee/Pastries — Kupfrian 1st Floor Lobby
Set Up Posters — Kupfrian 103
Poster session all day

8:45-9:00 a.m. **Introductory Remarks** — Theater
Jonathan Luke, Chair, Department of Mathematical Sciences
Welcoming Remarks
Joel Bloom, President, New Jersey Institute of Technology

9:00-10:00 a.m. **Plenary Lecture I** — Theater
Keith Promislow, Michigan State University
Network Formation and Ion Conduction in Ionomer Membranes

10:00-10:30 a.m. Coffee Break — Kupfrian 1st Floor Lobby

Minisymposium I			
	Membrane Morphology and Ionic Transport I Kupfrian 117 *Chair: Keith Promislow*	**Numerical Methods in Fluids & Electromagnetics** Kupfrian 106 *Chair: Michael Booty*	**Mathematical Biology I** Kupfrian 118 *Chair: Anna Georgieva*
10:30 – 11:00	**Bo Li** University of California *Modeling and Simulation of Biomolecular Interactions with Solute Mechanics and Implicit Solvent*	**Peter Minev** University of Alberta *A New Class of Massively-parallel Direction Splitting Techniques for the Incompressible Navier-Stokes Equations*	**Yuan Xiong** Novartis Pharmaceuticals Corporation *A Systems Modeling Approach to Understanding the Mechanisms of Salt Sensitivity in Essential Hypertensive Patients and the Effect of Salt Sensitivity on Blood Pressure Response to Antihypertensive Agents*
11:00 – 11:30	**Brian Wetton** University of British Columbia *A General Framework for High Accuracy Solutions to Energy Gradient Flows from Material Science Models*	**Anna-Karin Tornberg** KTH, Royal Institute of Technology *Spectrally Accurate Fast Summation Methods Applied to Stokes Flow*	**Karim Azer** Merck Research Laboratories *Near to the Heart - Physiological Modeling in Cardiovascular Diseases*

11:30 – 12:00	**Shibin Dai** Michigan State University *Functionalized Cahn-Hilliard Equation: Competitive Evolution of Bilayers and Pores*	**Johannes Tausch** Southern Methodist University *Solution of Shape Optimization Problems for the Heat Equation using the Parabolic Fast Multipole Method*	**Dean Bottino** Hoffmann-La Roche, Inc. *A Mathematical Modeling Framework for Antibody-Dependent Cell Mediated Cytotoxicity (ADCC)*
12:00 – 12:30	**Greg Hayrapetyan** Carnegie Mellon University *Geometric Evolution of Interfaces in the Functionalized Cahn-Hilliard Equation*	**Alexander Barnett** Dartmouth College *Fast Computation of Eigenfrequencies of Planar Domains via the Spectrum of the Neumann-to-Dirichlet Map*	**Chyi-Hung Hsu** Johnson & Johnson *Improving Clinical Study Design and Understanding via Modeling and Simulation*

12:30-2:30 p.m. Lunch and Poster Session — Kupfrian 1st Floor Lobby, Kupfrian 103

2:30-3:30 p.m. **Plenary Lecture II** — Theater

Mark Ablowitz, University of Colorado

Nonlinear waves: from oceans to `optical graphene'

3:30-4:00 p.m. Coffee Break — Kupfrian 1st Floor Lobby

Minisymposium II			
	Membrane Morphology and Ionic Transport II Kupfrian 117 *Chair: Keith Promislow*	**Nonlinear Waves** Kupfrian 106 *Chair: Roy Goodman*	**Fluids I** Kupfrian 118 *Chair: Shahriar Afkhami*
4:00 – 4:30	**Fredric S. Cohen** Rush University Medical Center *Physical Aspects of Biological Membrane Fusion*	**Boaz Ilan** University of California *Dark Solitons, Dispersive Shock Waves and Their Transverse Instabilities*	**Jason Fowlkes** Oak Ridge National Laboratory *The Directed Assembly of Linear Metallic Nanoparticle Chains by Nanolithography and Pulsed Laser Induced Dewetting*
4:30 – 5:00	**Bob Eisenberg** Rush Medical College *Ionic Interactions in Biological Systems: a Variational Treatment*	**Sean Nixon** University of Vermont *Perturbations of Dark Solitons*	**Miguel Fuentes-Cabrera** Oak Ridge National Lab *Molecular Dynamics Simulations of the De-wetting on Copper Nanostructures on Graphite*

5:00 – 5:30	**Tai-Chia Lin** National Taiwan University *A New Approach to the Lennard-Jones Potential and a New Model: PNP-delta Equations*	**Mark Hoefer** North Carolina State University *Dispersive Shock Waves in Eulerian Fluids*	**Vladimir Ajaev** Southern Methodist University *Rupture of Liquid Films on Structured Surfaces*
5:30 – 6:00	**Rolf Ryham** Fordham University *Qualitative and Modeling Aspects for Ionic Fluid PDE*	**Yi Zhu** Tsinghua University *Nonlinear Waves in Shallow Honeycomb Lattices*	**Mikhail Khenner** Western Kentucky University *Analysis of a Model for Dewetting of the Pulsed Laser-melted Thin Metallic Films*

PROGRAM SCHEDULE

Saturday, May 19

8:00-8:50 a.m. Coffee and pastries — Kupfrian 1st Floor Lobby

9:00-10:00 a.m. **Plenary Lecture III** — Theater
Sally Morton, University of Pittsburgh
Statistics and Comparative Effectiveness Research

10:00-10:30 a.m. Coffee Break — Kupfrian 1st Floor Lobby

Minisymposium III			
	Animal Locomotion Kupfrian 117 *Chair: Denis Blackmore*	**Waves I** Kupfrian 118 *Chair: Peter Petropoulos*	**Clinical Trials & Biostatistics Applications I** Kupfrian 106 *Chair: Sunil Dhar*
10:30 – 11:00	**Laura Miller** University of North Carolina *Using 3D Numerical Simulations and Physical Models to Understand the Role of Wing Flexibility in Tiny Insect Flight*	**Fioralba Cakoni** University of Delaware *Transmission Eigenvalues in Inverse Scattering Theory*	**Paul Albert** National Institutes of Health *A Linear Mixed Model for Predicting a Binary Event Under Random Effects Misspecification*
11:00 – 11:30	**Silas Alben** Georgia Institute of Technology *Interactions between Vortices and Flexible Bodies*	**Julien Diaz** INRIA, France *Stability Analysis of the Interior Penalty Discontinuous Galerkin Method for the Wave Equation*	**Mithat Gonen** Memorial Sloan-Kettering Cancer Center *Combining Historical and Randomized Controls in Phase II Oncology Trials*
11:30 – 12:00	**Sarah Olson** Worchester Polytechnic Institute *Coupling Biochemistry, Mechanics, and Hydrodynamics to Model Sperm Motility*	**Shingyu Leung** Hong Kong University of Science and Technology *A Grid Based Particle Method for Solving Partial Differential Equations on Evolving Surfaces and Modeling High Order Geometrical Motion*	**Mary Putt** University of Pennsylvania *Determining Changes in Blood Flow when the Baseline Function is Modeled with a Smoothing Spline*
12:00 – 12:30	**Christel Hohenegger** University of Utah *Dynamics of Active Suspensions Near Boundaries*	**Yassine Boubendir** New Jersey Institute of Technology *About Domain Decomposition Methods for Acoustic Problems*	**Zhigang Zhang** Memorial Sloan-Kettering Cancer Center *A Class of Transformed Mean Residual Life Models under Right Censoring*

12:30-2:00 p.m. Lunch and Poster Session — Kupfrian 1st Floor Lobby, Kupfrian 103

2:00-3:00 p.m. **Plenary Lecture IV** — Kupfrian 118
Jane Wang, Cornell University
How do Insects Fly and Turn

3:00-3:30 p.m. Coffee Break — Kupfrian 1st Floor Lobby

Minisymposium IV

	Mathematical Biology II Kupfrian 117 *Chair: Robert Miura*	**Numerical Methods** Kupfrian 105 *Chair: Michael Siegel*	**Fluids II** Kupfrian 118 *Chair: Wooyoung Choi*	**Large Scale Multiple Testing** Kupfrian 106 *Chair: Wenge Guo*
3:30 – 4:00	**Mark Kramer** Boston University *Multi-scale Seizure Dynamics: Analysis and Models*	**Johan Helsing** Lund University *On the Polarizability and Capacitance of the Cube*	**Matthew Paoletti** University of Texas at Austin *Propagating and Evanescent Internal Waves in Nonuniform Stratifications*	**Sanat Sarkar** Temple University *Capturing the Severity of Type II Errors in High-Dimensional Multiple Testing*
4:00 – 4:30	**Bijan Pesaran** New York University *A Sequential Probability Ratio Test to Detect Behavioral Events in Neuronal Activity*	**Laurent Demanet** Massachusetts Institute of Technology *What type of matrix structure is right for the high-frequency Helmholtz equation?*	**Boyce Griffith** New York University *Cardiac Fluid-structure and Electro-mechanical Interaction*	**Zhiyi Chi** University of Connecticut *Asymptotic Power Equivalence of False Discovery Rate Control and Bayes Classification under Sparsity*
4:30 – 5:00	**Guillaume Lajoie** University of Washington *Spike Time Reliability of Temporally Driven Neural Networks in Balanced Regimes*	**Catalin Turc** Case Western Reserve University *Approximations of Singular Solutions of PDEs in Domains with Corners and Edges by Solutions of PDEs in Nearby*	**Shilpa Khatri** University of NC *Settling of Porous Particles in Density Stratified Fluids: Analysis and Experiments*	**Wenguang Sun** University of Southern California *False Discovery Control in Large-Scale Spatial Multiple Testing*

		Smooth Domains		
5:00 – 5:30	**Peter Thomas** Case Western Reserve University *Phase Resetting in an Asymptotically Phaseless System: On the Phase Response of Limit Cycles Verging on a Heteroclinic Orbit*	**Adrianna Gillman** Dartmouth College *A New Direct Solution Technique for Two-dimensional Quasi-periodic Fields*	**Sara Zahedi** Uppsala University *A Nitsche Method for a Stokes Interface Problem*	**Wenge Guo** New Jersey Institute of Technology *Further Results on Controlling the False Discovery Proportion*

5:45 p.m. Reception and Banquet Weston Hall Gallery

PROGRAM SCHEDULE

Sunday, May 20

8:00-8:55 a.m. Coffee and pastries Kupfrian 1st Floor Lobby

9:00-10:00 a.m. **Plenary Lecture V** Theater
Carson Chow, National Institutes of Health
Finite-size Effects in Neural Networks

10:00-10:30 a.m. Coffee Break Kupfrian 1st Floor Lobby

Minisymposium V				
	Mathematical Biology III Kupfrian 117 *Chair: Victor Matveev*	**Waves II** Kupfrian 105 *Chair: Peter Petropoulos*	**Fluids III** Kupfrian 118 *Chair: Lou Kondic*	**Censoring and Survival Analysis** Kupfrian 106 *Chair: Sundar Subramanian*
10:30 – 11:00	**Georgi Medvedev** Drexel University *The Geometry of Spontaneous Spiking in Neuronal Networks*	**Nilima Nigam** Simon Fraser University *Fast Methods for Boundary Integral Equations on Compact Manifolds*	**Jasna Brujic** New York University *From Sphere Packings Towards Biological Tissues*	**Edsel Pena** University of South Carolina *Some Recent Developments in the Analysis of Recurrent Event Data*
11:00 – 11:30	**Hermann Riecke** Northwestern University *Stimulus Decorrelation by Adaptive Neurogenetic Networks in Olfaction*	**Vrushali Bokil** Oregon State University *An Analysis of the Uniaxial PML Model For Maxwell's Equations in Dispersive Media*	**Matthieu Wyart** New York University *Geometrical Analysis of Suspension Flows near Jamming*	**Derick Peterson** University of Rochester *Local Polynomial Density Estimation with Interval Censored Data*
11:30 – 12:00	**Andrea Barreiro** Southern Methodist University *Modeling Collective Neural Activity: When are Pairwise Maximum Entropy Methods Good Enough?*	**Zydrunas Gimbutas** Courant Institute of Mathematical Sciences, NYU *Efficient Algorithm for Rotating Spherical Harmonic Grids with*	**Leonardo E. Silbert** Southern Illinois University *Finite Compressibility of Jammed and Glassy Matter*	**Ying Zhang** University of Iowa *A Nonparametric Least-squares Estimation Method for Tumor Growth Function with Interval Censored Observations*

		Application to Singular Quadrature		
12:00 – 12:30	**Badal Joshi** Duke University *Identifying Multistationarity in Chemical Reaction Networks Based on Reaction Network Structure*	**Nathan Gibson** Oregon State University *High Order Finite Difference Methods for Maxwell's Equations in Dispersive Media*	**Qi Wang** University of South Carolina *Modeling and Simulation of Biofilms and Fusion of Multicellular Aggregates*	**Ying Guo** Emory University *Statistical Methods for Assessing Agreement among Correlated Survival Outcomes*
12:30 – 1:00	**Fangxu Jing** Georgia Institute of Technology *Optimization of Two-link and Three-link Snake Like Locomotion*	**Jichun Li** University of Nevada *Recent Advances in Numerical Modeling of Electromagnetic Wave Propagation in Metamaterials*		

1:00 – 2:30 Lunch and Poster Session — Kupfrian 1st Floor Lobby
Removal of posters — Kupfrian 103

Minisymposium VI				
	Clinical Trials & Biostatistics Applications II Kupfrian 106 *Chair: Satrajit Roychoudhury*	**Waves III** Kupfrian 105 *Chair: Roy Goodman*	**Fluids IV** Kupfrian 118 *Chair: Michael Siegel*	**Mathematical Biology IV** Kupfrian 117 *Chair: Amitabha Bose*
2:30 - 3:00	**Debajyoti Sinha** Florida State University *Semiparametric Bayesian Survival Analysis using Models with Log-linear Median*	**Ricardo Carretero** San Diego State University *Matter Wave Vortices: The Quantum Spirograph*	**Kellen Petersen** New York University *Use of the String Method to Find Minimal Energy Paths of Droplets on Superhydrophobic Surfaces*	**Pilhwa Lee** University of Connecticut Health Center *Modeling Collective Cell Migration: Wound Healing and Cancer Metastasis*
3:00 – 3:30	**Daniel Heitjan** University of Pennsylvania School of Medicine *Real-Time Prediction in Clinical Trials: A Statistical History of REMATCH*	**Omri Gat** Hebrew University of Jerusalem *Pulse Dynamics and Synchronization in Externally Seeded Passively Mode Locked Lasers*	**Nick Lowman** North Carolina State University *A Characterization of Dispersive Shock Waves in the Magma Equation*	**Ying Wang** University of Minnesota *A Continuum Mathematical Model of Endothelial Layer Maintenance and Senescence*

3:30 –4:00	**Kyle Wathen** Johnson & Johnson Research and Development *Utilizing Safety and Efficacy Data in a Phase II Study to Select the Best Treatment for a Phase III Study*	**Theodoros Horikis** University of Ioannina *Solitons in Mode-locked Lasers*	**Xiaolin Wang** Georgia Institute of Technology *A Numerical Study of Vorticity Enhanced Heat Transfer*	**Jeffrey Pohlmeyer** New Jersey Institute of Technology *Mathematical Model of Growth Factor Driven Haptotaxis and Proliferation in a Tissue Engineering Scaffold*
4:00 - 4:30	**Sunil K. Dhar** New Jersey Institute of Technology *Bootstrap Tests for Increased Discrimination of New Hemodynamic Variables*	**Jerónimo Rodríguez** University of Santiago *Retarded Potentials and Discontinuous Galerkin Methods with Upwind Fluxes for Transient Wave Propagation on Unbounded Domains*		

End of Conference